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NATIONAL PROGRAM OF INSPECTION OF NON-FEDERAL DAMS, TENNESSEE. --ETC(U)
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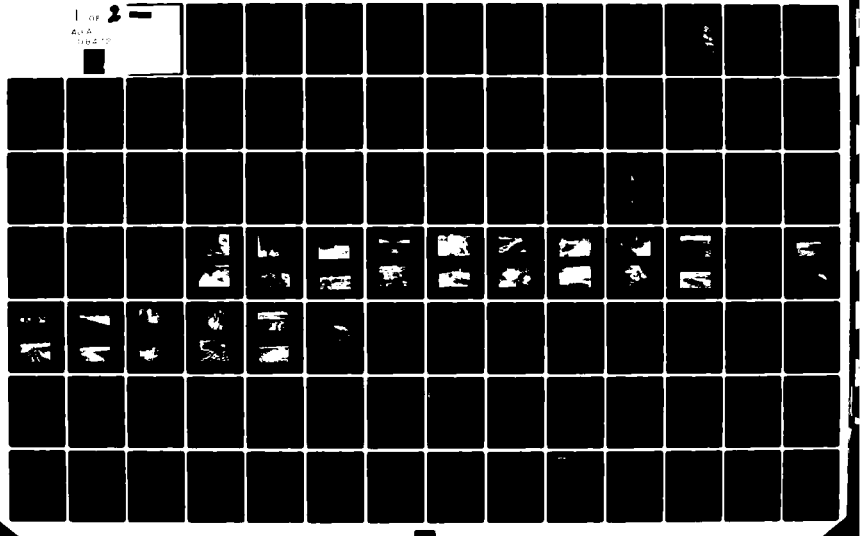

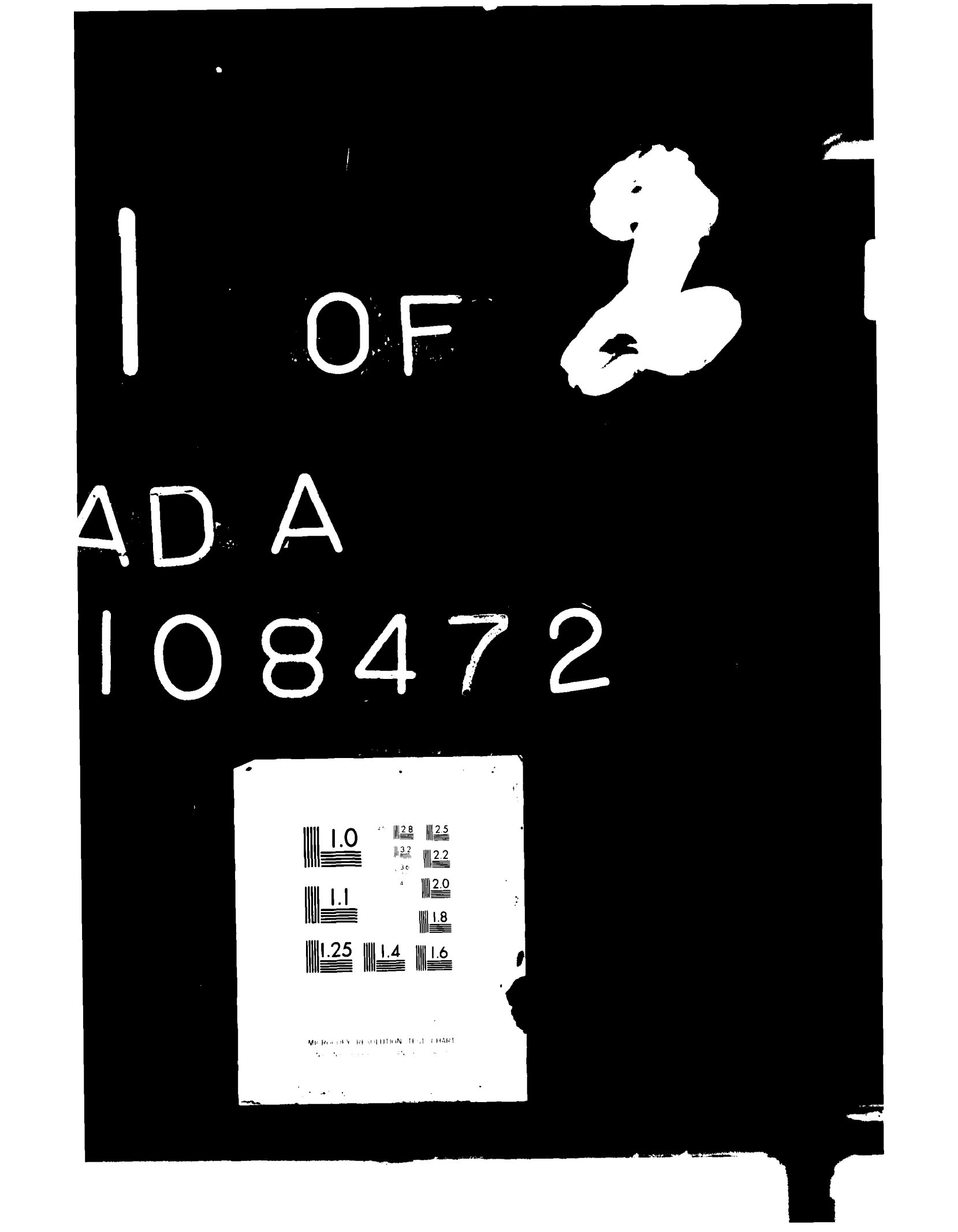
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	3. RECIPIENT'S CATALOG NUMBER
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	6. PERFORMING ORG. REPORT NUMBER
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9. PERFORMING ORGANIZATION NAME AND ADDRESS Tennessee Department of Conservation Division of Water Resources 4721 Trousdale Dr., Nashville, TN 37220	10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
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Shelby County, TN
Embankments
Visual Inspection
Structural Analysis

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

Mary's Creek Watershed Dam No. 8 is a curvilinear earthen structure 1120 feet long and 30.0 feet high with a crest width of 12 feet. The upstream and downstream slopes are 1V:2.4H and 1V:3.5H respectively. At normal pool, the 25 acre lake has a storage capacity of 149 acre-feet. At the top of the dam the pool area increases to 45 acres with an impoundage of 380 acre-feet. The drainage area for the lake is 286 acres. It is predominantly pasture and woodland with an average ground slope of approximately 5.6%. The dam is uniform, well grassed and clear of any deleterious vegetation. The upstream

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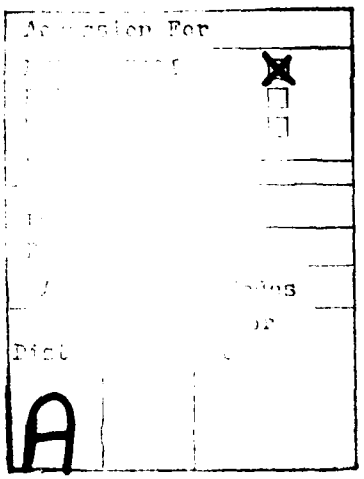
slope of the embankment shows appreciable sloughing near the principal spillway. Scattered minor depressions appear sporadically along the downstream slope, presumably the result of dispersive soil. There are no indications of seepage on the slope or in the area downstream of the dam. No signs of differential settlement or other slope instabilities were observed. The principal spillway is a reinforced concrete riser with an approximate 3 foot square flow area. It feeds a 24 inch asbestos cement pipe approximately 180 feet long. The drawdown is a 12 inch formed opening controlled by a 12 inch manually operated sliding headgate. According to the owner, the drawdown has always leaked extensively, so to minimize the flow, the inlet was clogged with clay several years ago. The emergency spillway is an uncontrolled earthen saddle type channel with a trapezoidal cross-section located at the left end of the dam. It has a top width of 57 feet and 2.6 feet of available head (2.9 feet to top of dam). It is well grassed and has a reasonably uniform cross-section. Appreciable erosion occurs near the water surface and along the upstream left side slope, apparently the result of cattle congregating in these areas. The dam is in the high hazard potential and small size classifications. OCE guidelines require such dams to pass the one-half probable maximum flood (1/2 PMF) to full PMF. Hydraulic and hydrologic analyses reveal that the emergency spillway is capable of passing the 1/2 PMF without causing the dam to overtop nor breach during the storm. The upstream dam will overtop under the 1/2 PMF. Should failure of the upstream dam occur, analysis indicates that Mary's Creek Dam will be overtopped by 0.2 feet for 1.8 hours. The dam is given a condition classification of "deficient" because of the erosion near the emergency spillway entrance and elsewhere along the upstream slope.



DEPARTMENT OF THE ARMY
NASHVILLE DISTRICT, CORPS OF ENGINEERS
P. O. BOX 1070
NASHVILLE, TENNESSEE 37202

21 SEP 1981

IN REPLY REFER TO
ORNED-G

Honorable Lamar Alexander
Governor of Tennessee
Nashville, TN 37219

Dear Governor Alexander:

Furnished herewith is the Phase I Investigation Report on Marys Creek Watershed Dam No. 8 near Crossroads, Tennessee. The report was prepared under the authority and provisions of PL 92-367, the National Dam Inspection Act, dated 8 August 1972.

The report presents details of the field inspection, background information, technical analyses, findings, and recommendations for improving the condition of the dam.

Based upon the inspection and subsequent evaluation, Marys Creek Watershed Dam No. 8 is classified as deficient due to insufficient storage and spillway capacity to pass the one-half probable maximum flood and minor erosion of the dam.

We do not consider this an emergency situation at this time, but the recommendation concerning project modifications to allow safe passage of the design flood and others contained in this report should be undertaken in the near future.

Public release of the report and initiation of public statements fall within your prerogative. However, under provisions of the Freedom of Information Act, the Corps of Engineers is required to respond fully to inquiries on information contained in the report and to make it accessible for review on request.

Your assistance in keeping me informed of any further developments will be appreciated.

Sincerely,

Kenneth W. Ashley, LTC
For LEE W. TUCKER
Colonel, Corps of Engineers
Commander

1 Incl
As stated

CF:
Mr. Robert A. Hunt, Director
Division of Water Resources
4721 Trousdale Drive
Nashville, TN 37220

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
TENNESSEE

Name of Dam ..... Mary's Creek Watershed Dam #8

County ..... Shelby

Stream ..... Unnamed Trib. of Mary's Creek

Date of Inspection ..... March 11, 1981

This investigation and evaluation was prepared by the Tennessee Department of Conservation, Division of Water Resources.

Prepared By:

William Culbert, Jr.
Water Resources Engineer

Approved By:

Edmond B. O'Neill
Chief Engineer
Safe Dams Section

Approved By:

Robert A. Hunt, P.E.
Director, Division of
Water Resources
Tennessee Department
of Conservation

PREFACE

This report is prepared under guidance contained in the Department of the Army, Office of the Chief of Engineers, Recommended Guidelines for Safety Inspection of Dams, for a Phase I investigation. The purpose of the 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 the review of 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. Additional data or data furnished containing incorrect information could alter the findings of this report. 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 structures and may obscure certain conditions which might be detectable if inspected under the normal operating environment of the structure.

The analyses and recommendations included in this report are related to the hazard classification of the structure at the time of the report. Changes in conditions downstream of the dam may change the hazard classification of the structure. A change in hazard classification may in turn change the design flood on which the hydraulic and hydrologic analyses are based and may have a significant impact on the assessment of the safety 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 conditions of the dam will continue to represent the condition of the dam at some point in the future. Only through continued care and inspections can there be any chance that unsafe conditions will be detected.

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MARY'S CREEK WATERSHED DAM NO. 8
SHELBY COUNTY
MARCH 27, 1981

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
TENNESSEE

Name of Dam ..... Mary's Creek Watershed Dam No. 8

County ..... Shelby

Stream ..... Unnamed Tributary of Mary's Creek

Date of Inspection ..... March 11, 1981

ABSTRACT

Mary's Creek Watershed Dam No. 8 is a curvilinear earthen structure 1120 feet long and 30.0 feet high with a crest width of 12 feet. The upstream and downstream slopes are 1V:2.4H and 1V:3.5H respectively. At normal pool, the 25 acre lake has a storage capacity of 149 acre-feet. At the top of the dam the pool area increases to 45 acres with an impoundage of 380 acre-feet. The drainage area for the lake is 286 acres. It is predominantly pasture and woodland with an average ground slope of approximately 5.6%

The dam is uniform, well grassed, and clear of any deleterious vegetation. The upstream slope of the embankment shows appreciable sloughing near the principal spillway and especially near the emergency spillway. Scattered minor depressions appear sporadically along the downstream slope, presumably the result of dispersive soil. There are no indications of seepage on the slope or in the area downstream of the dam. No signs of differential settlement or other slope instabilities were observed.

The principal spillway is a reinforced concrete riser with an approximate 3 foot square flow area. It feeds a 24 inch asbestos cement pipe approximately 180 feet long. The drawdown is a 12 inch formed opening controlled by a 12 inch manually operated sliding headgate. According to the owner, the drawdown has always leaked extensively, so to minimize the flow, the inlet was clogged with clay several years ago.

The emergency spillway is an uncontrolled earthen saddle type channel with a trapezoidal cross-section located at the left end of the dam. It has a top width of 57 feet and 2.6 feet of available head (2.9 feet to top of dam). It is well grassed and has a reasonably uniform cross-section. Appreciable erosion occurs near the water surface and along the upstream left side slope, apparently the result of cattle congregating in these areas.

Mary's Creek Watershed Dam #8 is in the "high" hazard potential and "small" size classifications. OCE guidelines require such dams to pass the one-half probable maximum flood (½ PMF) to full PMF. Hydraulic and hydrologic analyses reveal that the emergency spillway is capable of passing the ½ PMF without causing the dam to overtop provided a dam immediately upstream (Stotts Dam) does not breach during the storm. Further analysis reveals that the upstream dam will overtop under the ½ PMF. Should failure of the upstream dam occur, analysis indicates that Mary's Creek Dam will be overtopped by 0.2 feet for 1.8 hours.

The dam is given a condition classification of "deficient" because of the erosion near the emergency spillway entrance and elsewhere along the upstream slope.

PHASE I INSPECTION REPORT
NATIONAL DAM SAFETY PROGRAM
MARY'S CREEK WATERSHED DAM NO. 8
SHELBY COUNTY, TENNESSEE

SECTION 1 - GENERAL

1.1 Authority - The Phase I inspection of this dam was carried out under the authority of Tennessee Code Annotated, Sections 70-2501 to 70-2530, The Safe Dams Act of 1973, and in cooperation with the U. S. Army Corps of Engineers under the authority of Public Law 92-367, The National Dam Inspection Act.

1.2 Purpose and Scope - The purpose of a Phase I investigation is to develop an engineering assessment of the general condition of a dam with respect to safety and stability. This is accomplished by conducting a visual inspection; reviewing any available design and construction data; and performing appropriate hydraulic, hydrologic, and other analyses. A comprehensive description of the Phase I investigation program is given in Recommended Guidelines for Safety Inspection of Dams, by the Department of the Army, Chief of Engineers, Washington, D. C. 20314.

1.3 Past Inspections - The site was surveyed by state personnel as part of the pre-inspection reconnaissance on February 18, 1981.

1.4 Details of Inspection - The Phase I inspection of Mary's Creek Dam No. 8 was conducted on March 11, 1981. The weather was sunny and breezy with a temperature of 70° F.

1.5 Inspection Team Members - The field inspection was conducted by the following State personnel:

Edmond O'Neill, Chief Engineer
George Moore, Regional Engineer
William Culbert, Jr., Regional Engineer

SECTION 2 - PROJECT DESCRIPTION

2.1 Location - The dam is located in Shelby County, Tennessee, 1.5 miles southeast of the Fisherville community at mile 1 of an unnamed tributary confluent with Mary's Creek at approximate mile 5. The site is shown on the USGS Eads quadrangle map (416NW) at 35°08'45" north latitude and 89°38'59" west longitude. (See Appendix B for location maps).

2.2 History of Project - Mary's Creek Watershed Dam #8 was constructed as a flood retention structure in 1954 by McComick Construction Company of Covington, Tennessee (no longer in business) under the authority of the Pilot Watershed Program established by an act predating Public Law 566. The project was sponsored by Shelby and Fayette County Soil Conservation Districts with assistance from the Wolf River Watershed Association, the SCS, and various other agencies of the Department of Agriculture. The property is owned by L.E. Bryant, and the Shelby and Fayette County Soil Conservation Districts are responsible for operating and maintaining the site with labor, materials, and funding provided by the Wolf River Watershed Association, county courts, and local landowners.

In 1957, severe jugging on the downstream slope provided sufficient impetus for the SCS to have 3 feet of fill material removed from the surface of the slope and replaced with new material. In the early 1960's, the SCS implemented an alteration to the dam with the help of farm labor. The riser and corresponding normal pool elevation were raised 5 feet. The dam height was raised 4 feet by the addition of new fill material over the downstream slope and crest. This required that the principal spillway culvert be extended downstream into the plunge pool with an additional 16 foot section of asbestos cement pipe.

2.3 Upstream Dam - Stotts Dam is located approximately 800 feet upstream of Mary's Creek Lake. It is owned by Cedar Hill Farms (Tolly Murff and T. G. Barbee, principal shareholders). The dam is 17 feet high, 422 feet long, with a maximum impounding capacity of 54 acre-feet. The drainage area is 41 acres.

Hydraulic analysis indicates that the ½ PMF will overtop the dam. Routing the breach hydrograph from Stotts, downstream, indicates that the Mary's Creek Dam will also be overtopped under this flood condition. Data for Stotts Dam is given in Appendices A, B, C, D, and F following data for Mary's Creek.

2.4 Size and Hazard Classification - Based on a structural height of 30 feet and a maximum storage capacity of 380 acre-feet, the dam is given a size classification of "small". A federal hazard classification of "high" was chosen for the dam because a sudden failure of the structure could result in the deaths of several persons living in the two homes near the channel approximately 4600 feet downstream of the dam.

2.5 Description of Dam and Appurtenances

2.5.1 Embankment - The dam is a curvilinear earthen structure 1120 feet long and 30 feet high with a crest width of 12 feet. The upstream and downstream slopes are 1V:2.4H and 1V:3.5H respectively. The dam crest elevation varies from 369.6 feet to 371.4 feet msl. (Elevations referenced to pool surface as given on USGS quadrangle.)

Review of geologic quadrangle maps of the area and the regional state geologic map indicate that the area is overlain predominantly with Memphis and Grenada soils derived from deep Loess brown loam. Collins and Falayia are the principal bottom soils. (Loess soils consist of clayey and sandy silt, gray to brown, with a maximum thickness of 20 to 35 feet in the Wolf River tributaries area with a 40-50 foot thick fuluvial formation deep to this.) Being wind blown material, the Loess lays in about equal thickness through extensive changes in elevation, so deeper formations cannot be identified without borings. No boring profiles are provided in the design drawings.

The design specifies a cutoff trench with a 10 foot base and 1:1 side slopes to be excavated along the centerline of the dam to a low point elevation approximately equal to that of the principal spillway outlet invert. Sixty feet upstream of the outlet is the design location of an SCS box type embankment drain, 4 feet square by 550 feet long. A 6" helical corrugated metal pipe discharges to the right of the principal spillway.

2.5.2 Service Spillway and Drawdown - The principal spillway consists of a 17 foot tall reinforced concrete riser with an approximately 3 foot square flow area. The riser feeds a 24 inch asbestos cement culvert 180 feet long. Three 8.5' X 12.5' antiseep collars are located along the culvert on 26 foot centers. The drawdown is a 12 inch formed opening at the upstream base of the riser controlled by a 12 inch manually operated gate valve (see photo no. 7).

2.5.3 Emergency Spillway - The emergency spillway is an uncontrolled saddle type channel located at the left end of the dam. It has a trapezoidal cross-section with a 25 foot base width and approximately 1V:7H side slopes. The spillway has 2.6 feet of available head within its horizontal boundaries but provides 2.9 feet of head at what is considered the effective low point in the dam crest, elevation 369.6 (see sheet 5 of sketches).

Approximately 106 feet to the right of the dam is a small open channel following the natural contour of the abutment. It has a width of 20 feet at the top of the dam with 1.1 feet of available head. The channel was apparently excavated as part of a terracing system (see photo no. 1). The hydraulic capacity of the channel was considered in the flood routing.

2.6 Downstream Channel - The natural channel downstream of the embankment lies on approximately a 0.5% slope. It is 10 to 12 feet wide and 5 to 8 feet deep. It can be approximated as a trapezoidal channel with a relatively flat base and side slopes ranging from 1:1 to almost vertical.

2.7 Reservoir and Drainage Area - At normal pool the reservoir has a surface area of 24.8 acres and a storage capacity of 149 acre-feet. At maximum pool, the surface area is 45 acres with 380 acre-feet of total storage.

The drainage area of the basin is 286 acres (245 acres excluding drainage area of Stotts Lake Dam) with an average ground slope of approximately 5.6%. The area is predominantly woodland and pasture with major surface soils of Memphis, Loring, and Grenada.

SECTION 3 - FINDINGS

3.1 Visual Inspection

3.1.1 Embankment - The embankment is free of trees and other woody vegetation except for one large bush at the left downstream toe of the linear portion of the dam and a few small coniferous seedlings.

The structure is free of observable seepage with no noticeable wet areas along the downstream slope. There are, however, some small inactive depressions on the downstream slope. They are presumably the result of cattle traffic or poor grading during construction.

Immediately downstream of the dam near mid-section a terrace excavation has left a 100 square foot low area 2 feet deep with a gully trench that tapers away to an intersection with the plunge pool. The depressed area has a wet base and the gully contains a small amount of pooled water near its downstream end, apparently the result of surface runoff. If it is the result of seepage, there was no observable flow and it would appear to be of little consequence.

The upstream slope of the dam is significantly eroded in the area of the riser and at the emergency spillway entrance. Both upstream and downstream slopes have a good Bermuda grass cover (see photo nos. 6, 9, and 10).

The downstream slope of the dam is flat and well grassed with no significant deleterious vegetation. It exhibits no signs of seepage or differential settlement.

The crest of the dam is flat, uniform, and well grassed.

3.1.2 Service Spillway and Drawdown - The spillway riser appears to be in good condition as viewed from the dam. There appears to be no broken or lost timbers from the anti-vortex baffle or floor cap (see photo no. 7). The spillway outlet is submerged in the plunge pool and was inaccessible for inspection (see photo nos. 13 and 14).

According to the owner, the drawdown leaked extensively for several years after construction. The valve was considered to be poorly designed and its use was discontinued by the SCS soon afterwards. To remedy the leakage problem, clay was dumped at the inlet. A leakage flow of only a few gallons per minute was observed at the outlet during the inspection (see photo no. 13).

3.1.3 Emergency Spillway - The emergency spillway has a reasonably uniform cross-section. It has a good grass cover and is clear of undesirable vegetation. There is appreciable erosion on the left side slope from near the water surface to the control section (see photo nos. 17 and 18). Erosion at the upstream right side slope is more severe but represents little danger to the structure because it occurs on the end wall upstream of the embankment (see photo nos. 9 and 10).

3.1.4 Downstream Channel - The stream channel downstream of the dam is adequately protected with natural cover. Four and six inch median diameter trees grow along most of the bank (see photo nos. 11 and 12). The side slopes of the channel are relatively steep and the base is flat with no significant erosion.

3.2 Review of Data - Information reviewed for the preparation of the report includes the Watershed Work Plan for Mary's and Sand Creek tributaries and the SCS design plans. Information from the review of this data is incorporated into the report.

3.3 Static and Seismic Stability Analysis - The dam is in Seismic Zone 3, indicating that damage from seismic activity would be major. The actual margin of safety for static stability was not determined because an analytical stability analysis is beyond the scope of this report. Consequently, the assessment of embankment stability must be based on visual evidence and engineering judgment. No signs of instability were observed.

3.4 Hydraulic and Hydrologic Analysis - According to OCE guidelines, dams in the small size and high hazard categories are required to pass the one-half probable maximum flood (½ PMF) to the full PMF.

Hydraulic and hydrologic analysis of Mary's Creek drainage area under the influence of the ½ PMF, assuming no breach of the upstream dam, indicates that the Mary's Creek Reservoir has sufficient flood storage to contain the ½ PMF providing 0.71 feet of freeboard.

The dam will overtop by a maximum of 0.2 feet for 1.8 hours under the ½ PMF incorporating failure of Stotts Lake Dam. (See Appendix A and Appendix F for hydrologic details of Stotts Dam).

3.5 Conclusions and Recommendations

3.5.1 Conclusions - The dam shows no significant signs of structural instability.

The dam is located in Seismic Zone 3, indicating that risk of damage due to seismic activity is major.

Analysis indicates that the emergency spillway is inadequate to pass the ½ PMF in addition to a failure of the Stotts Dam upstream. This spillway is not considered to be seriously inadequate, however, because the depth and duration of over-topping are not considered great enough to fail the dam.

There is appreciable sloughing of a few areas on the upstream slope.

The dam is given a condition classification of "deficient" because of the minor erosion occurring on the upstream slope and because of the marginal spillway adequacy.

3.5.2 Recommendations - The Shelby County Soil Conservation District should:

a. Provide erosion protection for the upstream slope and repair any other areas of erosion occurring on the dam.

b. Develop an emergency action plan to warn downstream residents in the event a serious problem develops with the dam.

c. Establish a program of regular inspection and maintenance.

d. A qualified engineer should be retained to:

1. Evaluate the stability of the embankment under seismic loading condition.

2. Make recommendations for restoring the lake drawdown facilities to an operable condition.

3. Make recommendations to expose the principal spillway and embankment drain outlets.

SECTION 4 REVIEW BOARD FINDINGS

The Interagency Review Board for the National Program of Inspection of Non-Federal Dams met in Nashville on 30 July 1981 to examine the technical data contained in the Phase I investigation report on Mary's Creek Watershed Dam No. 8. The Review Board considered the information and recommended that (1) the data relating to the failure of Stott's Dam through structural failure alone or through failure during the ½ PMF should be included in the report, (2) the report should conclude that the dam would probably not fail if it were overtopped by 0.2 ft. for 1.8 hours during the ½ PMF, (3) a qualified engineer should be engaged to perform an embankment stability analysis to determine if the dam meets seismic stability requirements, and (4) recommendation "d" should be revised to include the services of a qualified engineer to investigate the feasibility of lowering the water level in the stilling basin. The engineer should also investigate and make recommendations for the repair of the drawdown facilities. They agreed with other report conclusions and recommendations. A copy of the letter report presented by the Review Board is included in Appendix C.

APPENDIX A

DATA SUMMARY

MARY'S CREEK NO. 8

APPENDIX A
DATA SUMMARY

A.1 Dam

A.1.1 Type - Earthfill

A.1.2 Dimensions and Elevations

a. Crest length - 1120 feet
b. Crest width - 12 feet
c. Height - 30.0 feet (downstream pipe invert to low point in crest)
d. Crest elevation (low point) - 369.6
e. Upstream slope - 2.4H:1V
f. Downstream slope - 2.5H:1V
g. Size classification - Small

A.1.3 Zones, Cutoffs, Grout Curtains - The embankment is comprised of homogeneous fill material. A cutoff trench was designed to be constructed along the dam centerline with a base width of 10 feet, 1:1 side slopes, and a maximum depth approximately equal to that of the invert of the principal spillway outlet.

A.1.4 Instrumentation - None

A.2 Reservoir and Drainage Area

A.2.1 Reservoir

a. Normal Pool

1) Elevation - 363 (msl)
2) Surface area - 24.8 acres (0.039 mi^2)
3) Capacity - 149 acre-feet
4) Length - 2130 feet

b. Maximum Pool (top of dam)

1) Elevation - 369.6 (msl)
2) Surface area - 45 acres
3) Total capacity - 380 acre-feet

A.2.2 Drainage Area

a. Size - 286 acres (total)
245 acres (excluding drainage area of Stotts Lake upstream)
b. Average ground slope - Approximately 5.6%
c. Soils - Memphis 64%(B), Loring 22%(B), Grenada 14%(C)
d. Land use - 50% pasture, 35% woodland, 12% water, 3% residential
e. Runoff (AMC II)

1) PMF - 24.7 inches
2) ½PMF - 12.5 inches
3) 100 year flood - 2.3 inches

A.3 Outlet Structures

A.3.1 Service Spillway

a. Type - Asbestos cement circular culvert
b. Size - 24 inch inside diameter
c. Pipe gradient - 3.6%
d. Drawdown - 12 inch formed opening controlled by 12 inch manually operated sliding headgate

A.3.2 Emergency Spillway

a. Type - Open channel saddle; trapezoidal cross-section
b. Crest elevation - 366.9 feet msl (effective)
c. Size - Base-25 feet
Side slopes-7H:1V
T-57 feet
Head-2.9 feet
d. Maximum capacity - 360 cfs

A.4 Historical Data

A.4.1 Construction Date - Originally constructed in 1951; renovated in approximately 1958

A.4.2 Designer - Soil Conservation Service

A.4.3 Builder - Originally McComick Construction Company, Covington, Tennessee; alteration by Rollin Wiggs of Cedar Hill Farms, Memphis, Tennessee

A.4.4 Owner - L. E. Bryan

A.4.5 Previous Inspections - State personnel performed pre-inspection reconnaissance survey on February 18, 1981.

A.4.6 Seismic Zone - 3

A.4.7 Operation and Maintenance - The Shelby County Soil Conservation District is responsible for operation and maintenance of the structure by open market purchase with limited funds provided primarily by Shelby and Fayette County courts.

A.5 Downstream Hazard Data

A.5.1 Downstream Hazard Classification - High

A.5.2 Persons in Likely Floodpath - 10 (estimate)

A.5.3 Downstream Property - 2 homes and 1 large horse stable and track 4600 feet downstream.

A.5.4 Warning Systems - None

STOTTS LAKE DAM

APPENDIX A
DATA SUMMARY

A.1 Dam

A.1.1 Type - Earthfill

A.1.2 Dimensions and Elevations

a. Crest length - 422 feet
b. Crest width - 7 feet
c. Height - 17 feet
d. Crest elevation (low point) - 388.9 feet msl
e. Upstream slope - 1.2H:1V (potential for error is great due to extensive sloughing)
f. Downstream slope - 1.6H:1V
g. Size classification - Small

A.1.3 Zones, Cutoffs, Grout Curtains - There is no readily available means of confirming cutoff trench construction. No engineering supervision was provided during construction and the owner has no recollection or records of the work performed, but because the SCS provided technical assistance, a cutoff trench would certainly have been recommended.

A.1.4 Instrumentation - None

A.2 Reservoir and Drainage Area

a. Normal Pool

1) Elevation - 387 feet msl
2) Surface area - 6.6 acres
3) Storage capacity - 40 acre-feet
4) Reservoir length - 730 feet

b. Maximum Pool (designated top of dam)

1) Elevation - 388.9 feet msl
2) Surface area - 8 acres
3) Total capacity - 54 acre-feet

A.2.2 Drainage Area

a. Size - 41 acres (0.064 mi^2)
b. Average ground slope - Approximately 5.6%
c. Soils - Memphis (60%), Grenada (25%), Loring (15%)

d. Land use - Pasture (64%), wooded (18%), water (16%), residential or hard surface (2%)
e. Runoff (AMC II)

1) PMF - 25.3 inches
2) ½ PMF - 12.6 inches
3) 100 year - 2.6 inches

A.3 Outlet Structures

A.3.1 Service Spillway

a. Type - Open channel parabolic
b. Size - T = 30 feet
Hd = 1.9 feet
c. Crest elevation - 387 feet msl
d. Maximum capacity - 150 cfs (HEC-1 interpolates 161 cfs)

A.3.2 Emergency Spillway - Service/emergency combination (see above)

A.4 Historical Data

A.4.1 Construction Date - 1951

A.4.2 Design - SCS technical assistance

A.4.3 Builder - Farm labor and equipment were used

A.4.4 Owner - Cedar Hill Farms (T. G. Barbee and Tolly Murff are principal or sole shareholders)

A.4.5 Previous Inspections - None. Dam was not previously on state or federal inventory.

A.4.6 Seismic Zone - 3

A.5 Downstream Hazard Data

A.5.1 Downstream Hazard Classification - High

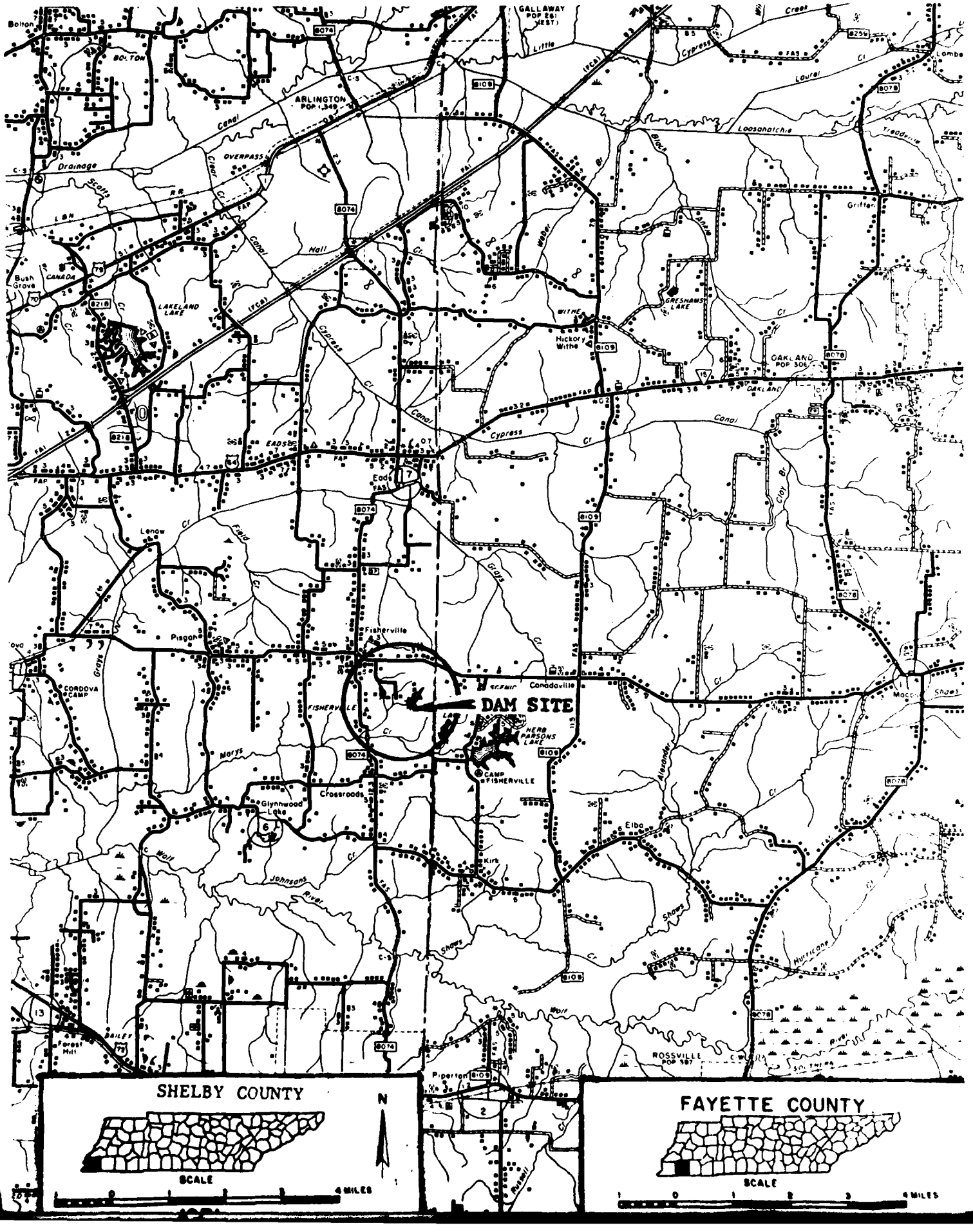
A.5.2 Persons in Likely Flood Path - 10 (est.)

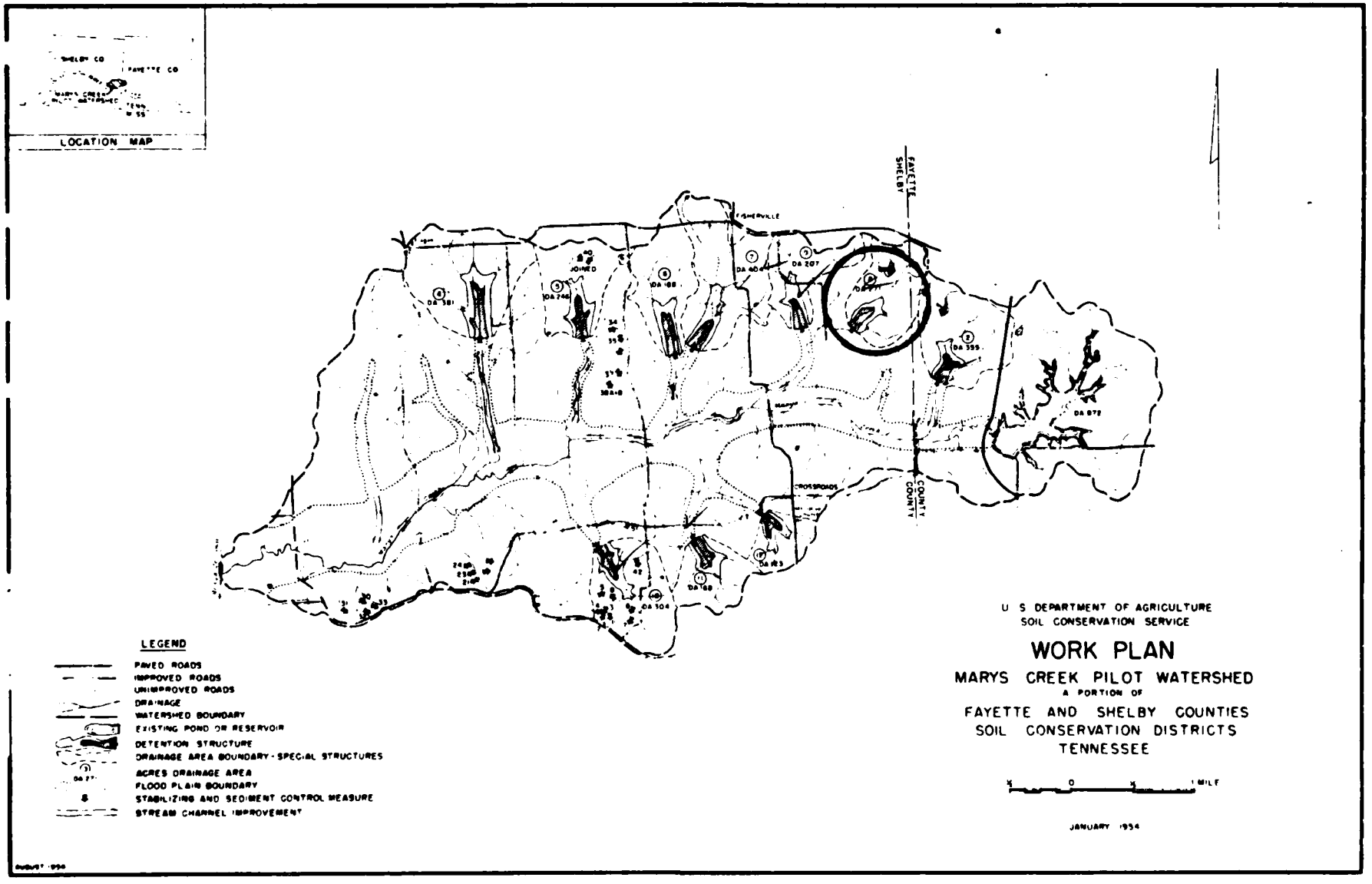
A.5.3 Downstream Property - 2 homes, 1 horse stable and track approximately 7,600 feet downstream

A.5.4 Warning System - None

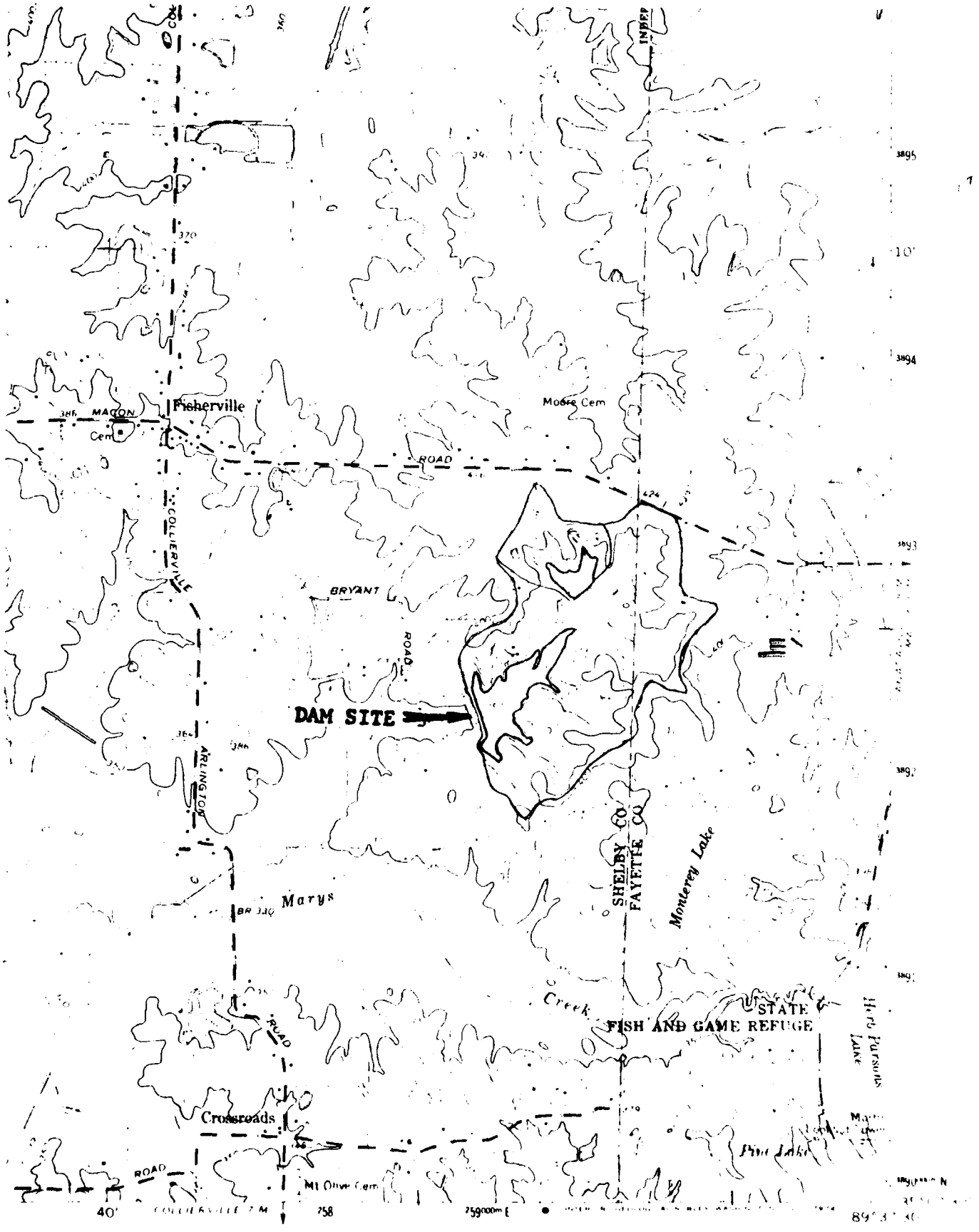
APPENDIX B

SKETCHES AND LOCATION MAPS

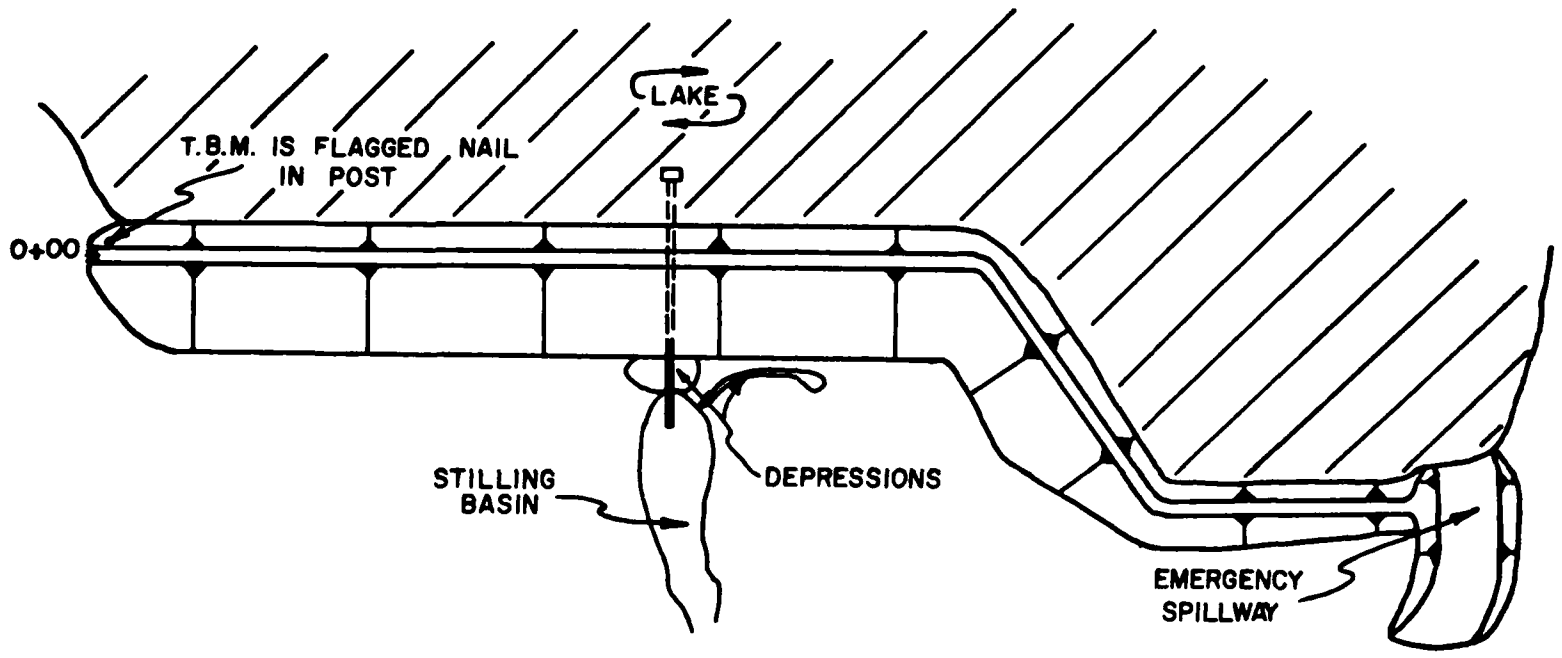

DAM SITE
HERB PARSONS LAKE
CAMP FISHERVILLE
FISHERVILLE
Fisherville
Canadaville
Crossroads
Glynnwood Lake
Kirk
Elba
Piperton
ROSSVILLE
POP 187
ARLINGTON
POP 1,349
GALLAWAY
POP 261
(EST.)
OAKLAND
POP 506
Bolton
Bush
Grove
CANADA
LAKELAND
LAKE
Hickory
Withe
GRESHAM'S
LAKE
Eads
Forest
Hill
BAILEY
Pisgah
CORDOVA
CAMP
Lenow
Cr.
Canal
Drainage
Overpass
Creek
Cypress
Little
Laurel
Loosahatchie
Treadville
Griffin
Hall
Walker
Field
Grays
Marys
Wolf
Johnsons
River
Shoes
Hurricane
Alexander
Clay Br.
Scotts
Ditch
Lamb
Shaw
SHELBY COUNTY
FAYETTE COUNTY
N
SCALE
4 MILES
SCALE
4 MILES


LOCATION MAP
SHELBY CO
FAYETTE CO
FAYETTE
SHELBY
COUNTY
COUNTY
FISHERVILLE
CROSSROADS
JOINED
DA 381
DA 744
DA 108
DA 604
DA 207
DA 555
DA 878
DA 183
DA 188
DA 504
LEGEND
PAVED ROADS
IMPROVED ROADS
UNIMPROVED ROADS
DRAINAGE
WATERSHED BOUNDARY
EXISTING POND OR RESERVOIR
DETENTION STRUCTURE
DRAINAGE AREA BOUNDARY - SPECIAL STRUCTURES
ACRES DRAINAGE AREA
FLOOD PLAIN BOUNDARY
STABILIZING AND SEDIMENT CONTROL MEASURE
STREAM CHANNEL IMPROVEMENT
U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
WORK PLAN
MARYS CREEK PILOT WATERSHED
A PORTION OF
FAYETTE AND SHELBY COUNTIES
SOIL CONSERVATION DISTRICTS
TENNESSEE
0
1 MILE
JANUARY 1954

2-O-8550-2

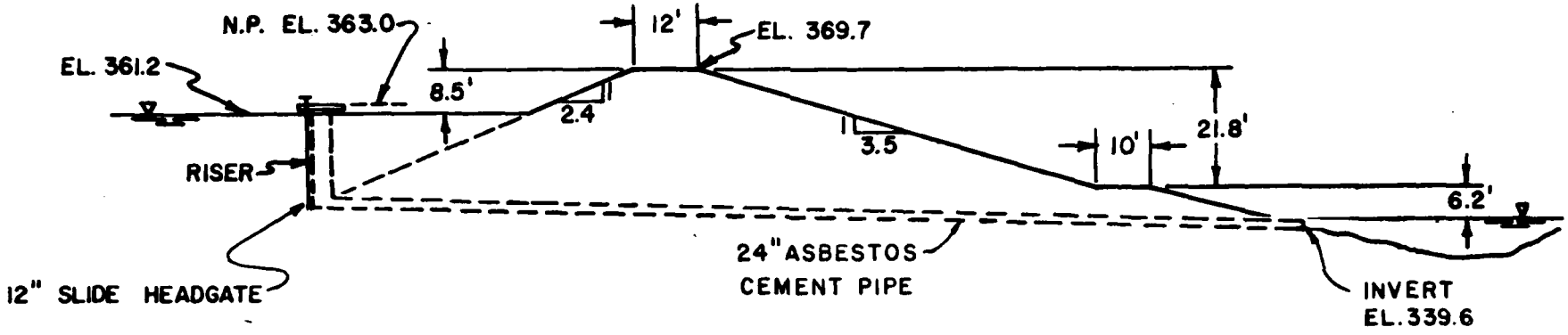


EADS QUADRANGLE
10' CONTOUR INTERVAL
416 NW
PHOTO REVISED 1973



GENERAL PLAN
N.T.S.

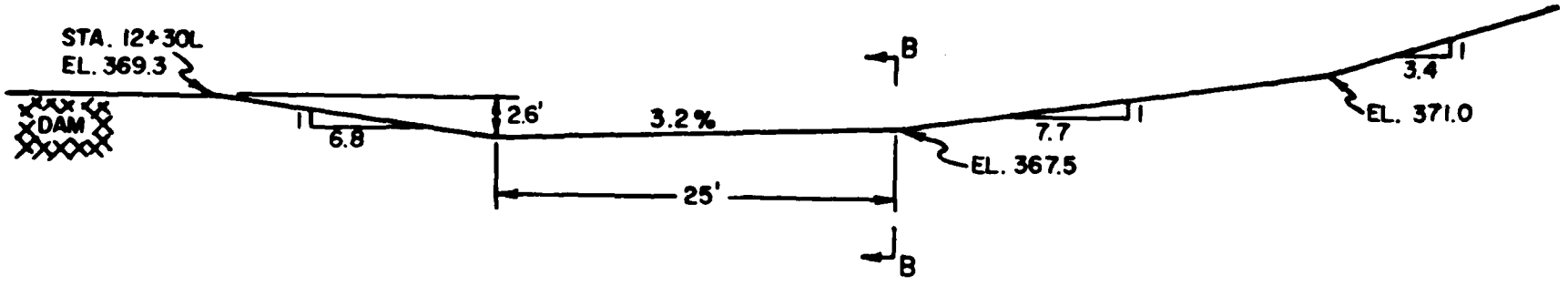
MARYS CREEK DAM #8
DRAWN BY: G.A.D.
DATE: 5/4/81
SHEET: 1 OF 5



MAXIMUM SECTION @ STA. 5+00L
SCALE: 1" = 30'

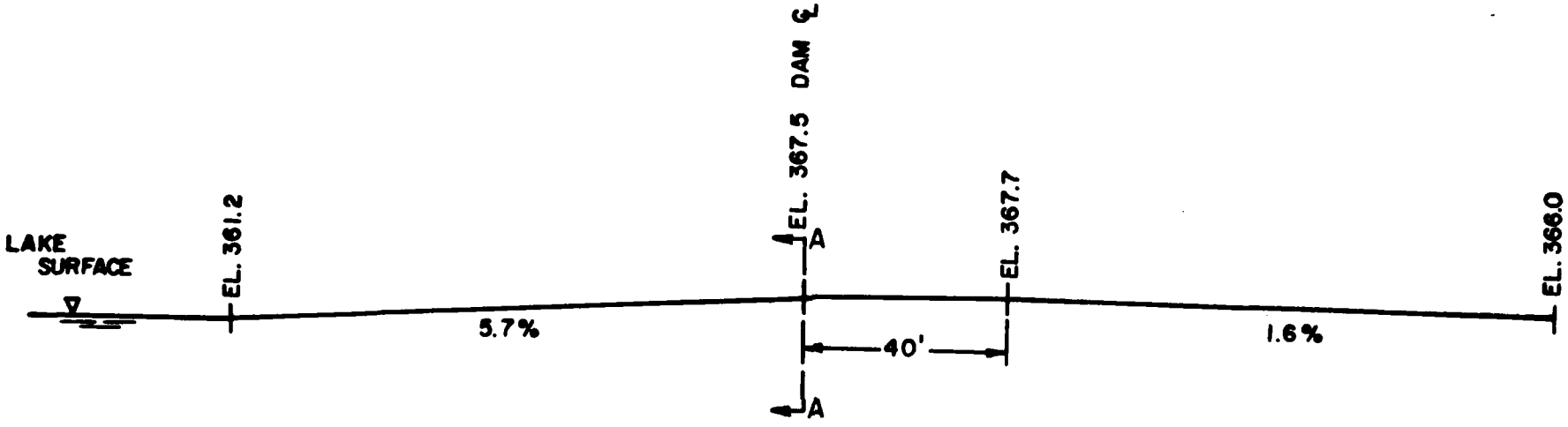
NOTE: ELEVS. REFERENCED TO N.P. AS GIVEN ON U.S.G.S. TOPOGRAPHIC MAP.

MARYS CREEK DAM #8
DRAWN BY: G.A.D.
DATE: 5/4/81
SHEET: 2 OF 5



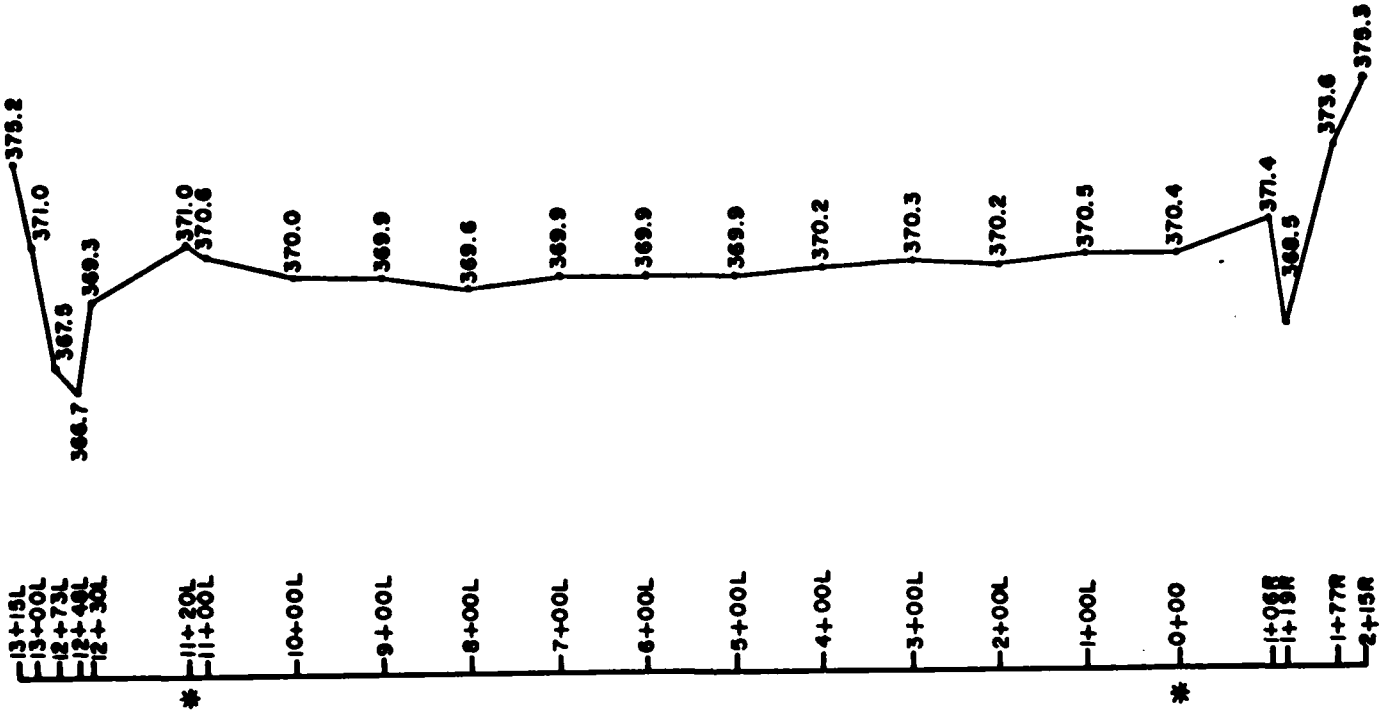
EMERGENCY SPILLWAY CONTROL SECTION A-A
SCALE: 1"=10'

MARYS CREEK DAM # 8
DRAWN BY: G.A.D
DATE: 4/30/81
SHEET: 3 OF 5



SECTION B-B
EMERGENCY SPILLWAY PROFILE
SCALE: 1"=30'

MARYS CREEK DAM #8
DRAWN BY: G.A.D.
DATE: 4/30/81
SHEET: 4 OF 5



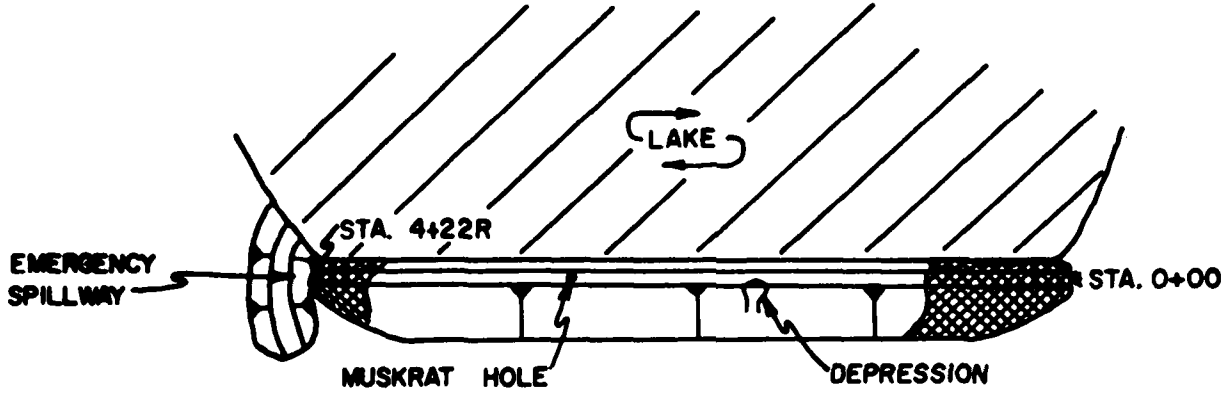
CREST ℄ PROFILE

H. SCALE: 1" = 200'

V. SCALE: 1" = 5'

*END OF DAM

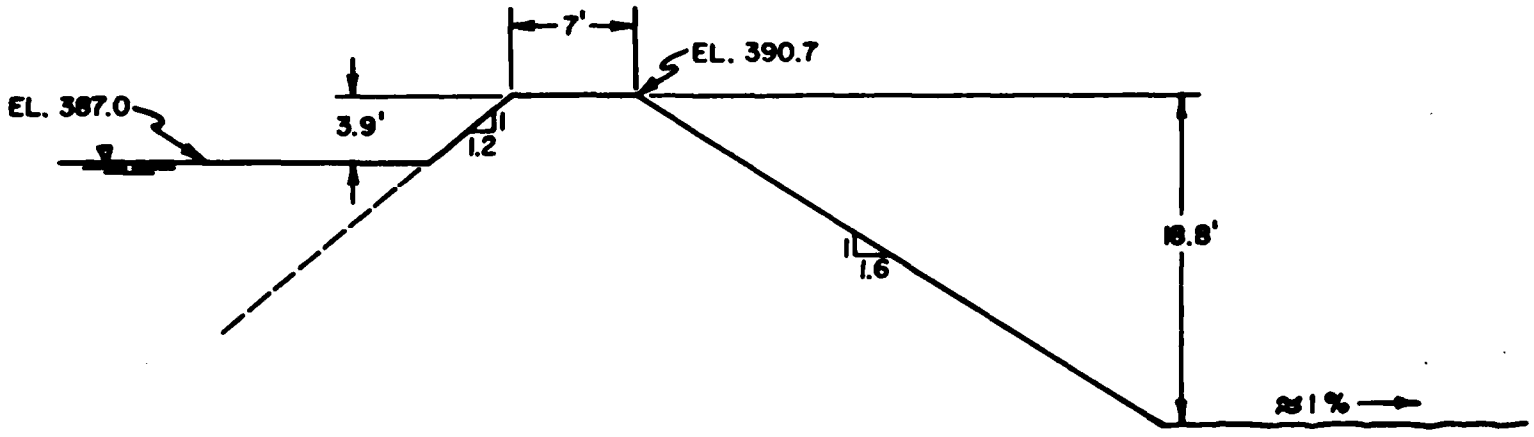
MARYS CREEK DAM #8
DRAWN BY: G.A.D.
DATE: 5/4/81
SHEET: 5 OF 5



NOTE: ▒▒ — NEW FILL MATERIAL

GENERAL PLAN
SCALE: 1" = 100'

STOTTS LAKE DAM
DRAWN BY: G.A.D.
DATE: 5/19/81
SHEET: 1 OF 5

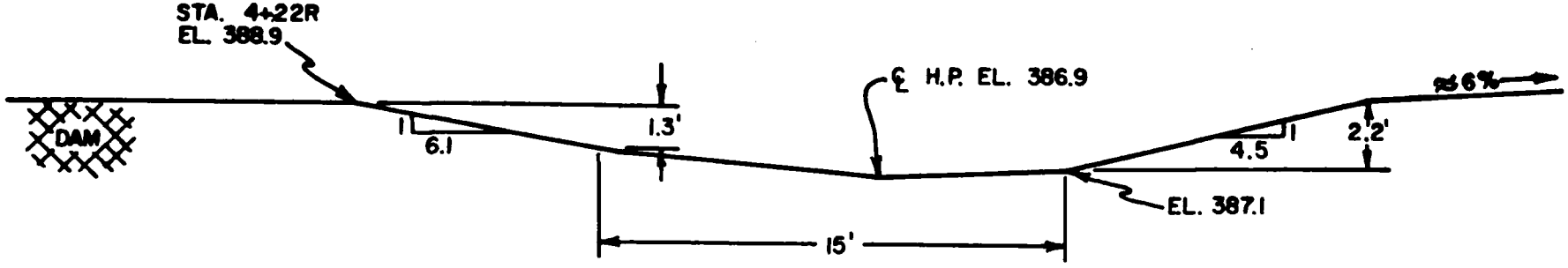


MAXIMUM SECTION @ STA. 2+70R

SCALE: 1"=10'

NOTE: ELEVS. REFERENCED TO APPROX. LAKE SURFACE EL. 387 AS SHOWN ON USGS QUADRANGLE MAP.

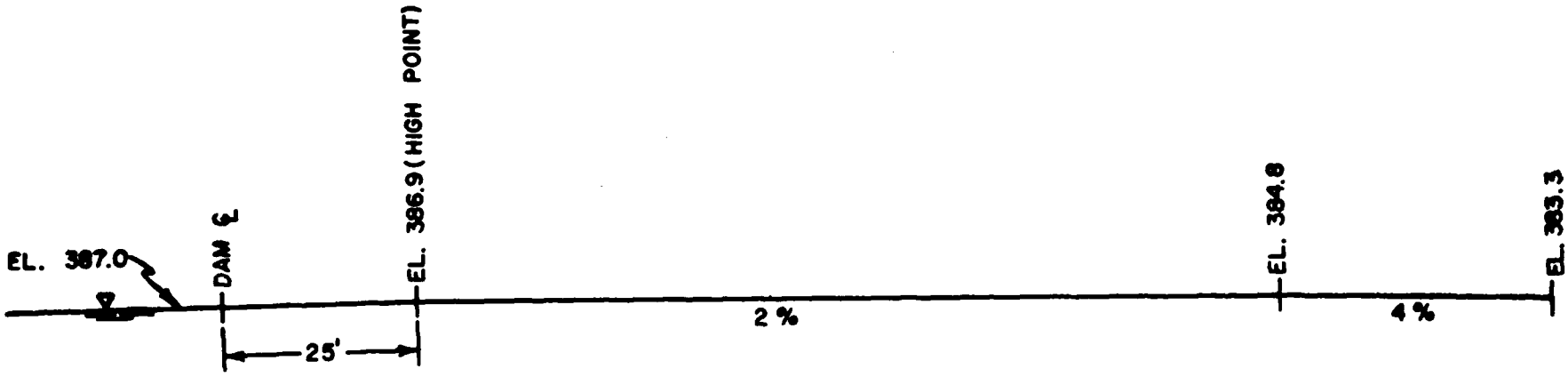
STOTTS LAKE DAM
DRAWN BY: G.A.D.
DATE: 5/19/81
SHEET: 2 OF 5



EMERGENCY SPILLWAY CONTROL SECTION

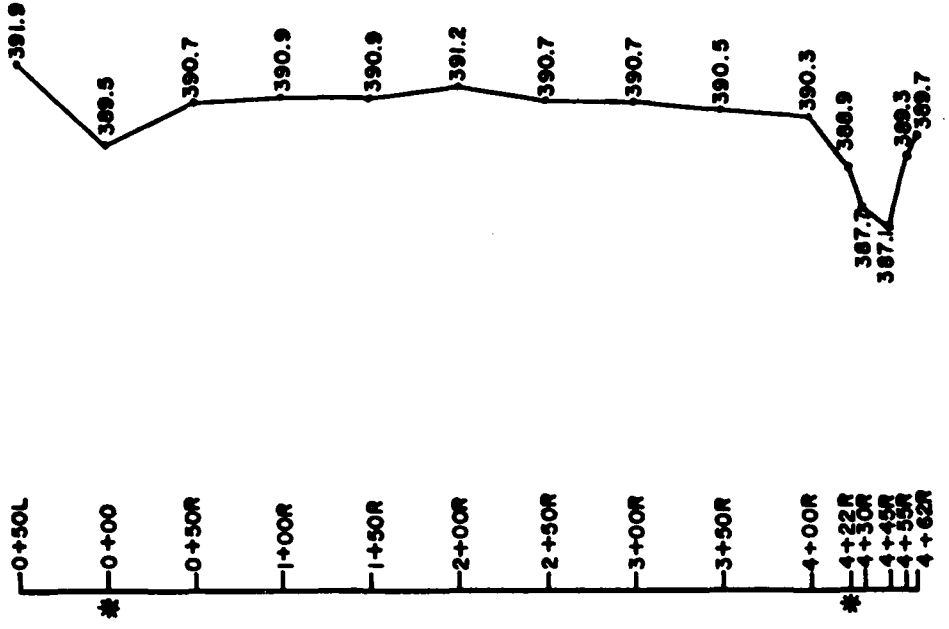
SCALE: 1" = 5'

STOTTS LAKE DAM.
DRAWN BY: G.A.D.
DATE: 5/20/81
SHEET: 3 OF 5



EMERGENCY SPILLWAY PROFILE
SCALE: 1" = 20'

STOTTS LAKE DAM
DRAWN BY: G.A.D.
DATE: 5/20/81
SHEET: 4 OF 5



*END OF DAM

CREST ℄ PROFILE

H. SCALE: 1" = 100'
V. SCALE: 1" = 5'

STOTTS LAKE DAM
DRAWN BY: G.A.D.
DATE: 5/20/81
SHEET: 5 OF 5

APPENDIX C

PHOTOGRAPHIC RECORD

Mary's Creek No. 8

Photographic Record

Photo No. 1 - Aerial shot.

Photo No. 2 - Aerial shot showing Stotts Lake Dam upstream of Mary's Creek.

Photo No. 3 - Aerial shot looking downstream.

Photo No. 4 - Aerial shot looking upstream.

Photo No. 5 - Downstream slope of dam from left.

Photo No. 6 - Downstream slope and curvilinear portion of dam.

Photo No. 7 - Riser.

Photo No. 8 - Downstream of toe showing excavated drainage ditch.

Photo No. 9 - Sloughing along upstream slope just right of emergency spillway.

Photo No. 10 - Sloughing along entrance channel of emergency spillway.

Photo No. 11 - Stilling basin from crest.

Photo No. 12 - Downstream channel.

Photo No. 13 - Stilling basin from downstream.

Photo No. 14 - Stilling basin.

Photo Nos. 15 & 16 - Pooled water in downstream section of drainage ditch shown in Photo No. 8.

Photo No. 17 - Entrance channel of emergency spillway.

Photo No. 18 - Exit channel of spillway.

PHOTO NO. 1

PHOTO NO. 2

PHOTO NO.3

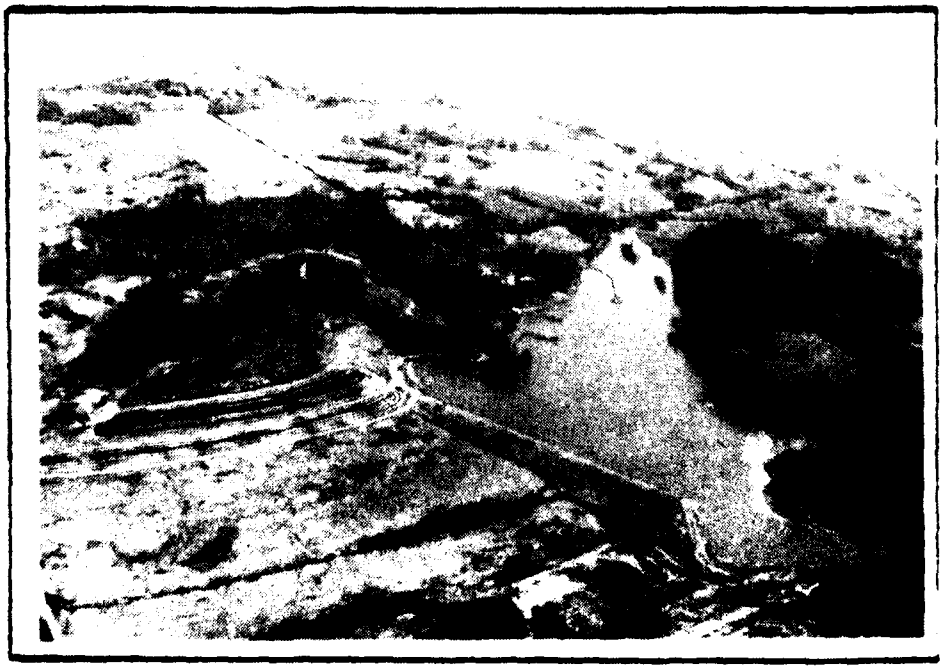


PHOTO NO.4

PHOTO NO.5

PHOTO NO.6

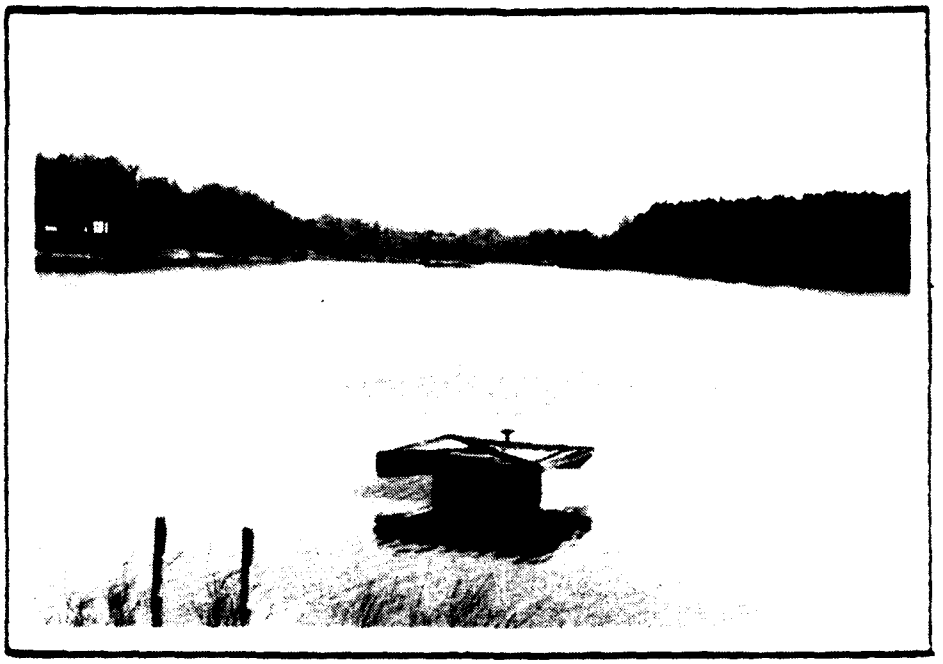


PHOTO NO.7

PHOTO NO.8

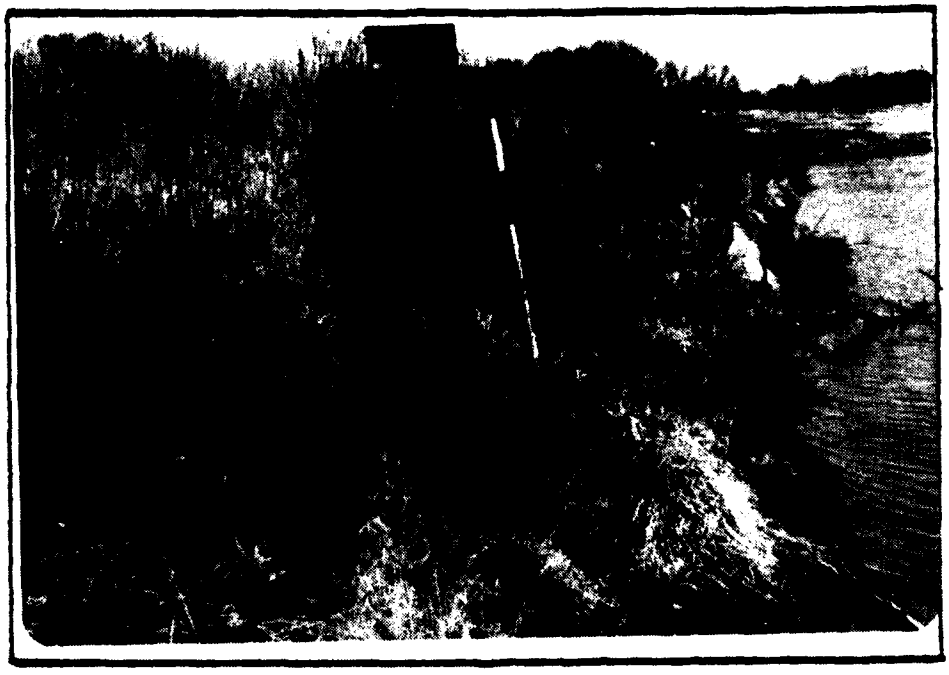


PHOTO NO. 9

PHOTO NO. 10

PHOTO NO. 11

PHOTO NO. 12

PHOTO NO.13

PHOTO NO.14

PHOTO NO.15

PHOTO NO.16

PHOTO NO.17

PHOTO NO.18

Stotts Lake Dam

Photographic Log

Photo No. 1 - Downstream slope at left end of dam showing new fill material.

Photo No. 2 - Downstream slope looking left from mid-section.

Photo No. 3 - Downstream slope from emergency spillway exit channel.

Photo No. 4 - Crest of dam looking right from near mid-section.

Photo No. 5 - Upstream slope of dam showing extensive sloughing.

Photo No. 6 - Upstream slope at left end of dam.

Photo No. 7 - Depression on downstream side of crest.

Photo No. 8 - Muskrat hole on crest.

Photo No. 9 - Sloughing along upstream slope (turned 90°).

Photo No. 10 - Longitudinal surface crack along upstream slope of new fill material at left end of dam.

Photo No. 11 - Spillway, from right of dam.

Photo No. 12 - Spillway, looking upstream.

Photo No. 13 - Eroded area along spillway channel approximately 150 feet downstream of dam.

PHOTO NO.1

PHOTO NO.2

PHOTO NO.3

PHOTO NO.4

PHOTO NO.5

PHOTO NO.6

PHOTO NO.7

PHOTO NO.8

PHOTO NO. 9

PHOTO NO. 10

PHOTO NO. 11

PHOTO NO. 12

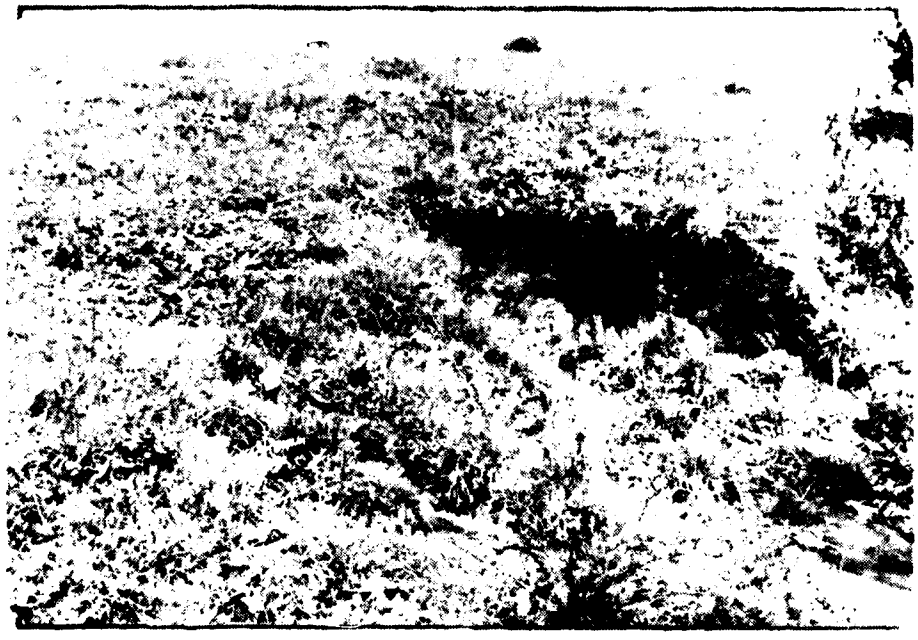


PHOTO NO. 13

APPENDIX D

TECHNICAL CRITIQUE
CHECKLISTS FOR VISUAL INSPECTION
ENGINEERING DATA
SOIL TESTS

Check List
Visual Inspection of Earth Dams
Department of Conservation
Division of Water Resources

Name of Dam Mary's Creek Lake Dam No. 8

County Shelby **Date of Inspection** March 11, 1981

ID # - State 79-7027 **Federal** TN 15727

Type of Dam Earth

Hazard Category-Federal 1 **State** High

Weather Sunny **Temperature** 70° F

Pool at Time of Inspection Normal Pool (distance from crest)

Tailwater at Time of Inspection at top of pipe (distance from stream bed)

Design/As Built Drawings Available: Yes X No ____

Location: SCS - Nashville

Copy Obtained: Yes X No ____

Reviewed: Yes X No ____

Construction History Available: Yes ____ No X

Location: ____

Copy Obtained: Yes ____ No ____

Reviewed: Yes ____ No ____

Other Records and Reports Available: Yes X No ____

Location: Watershed Work Plan - TDWR & SCS Regional Office, Nashville

Copy Obtained: Yes X No ____

Reviewed: Yes X No ____

Prior Incidents or Failures: Yes ____ No X

Inspection Personnel and Affiliation:

Ed O'Neill - TDWR ____

George Moore - TDWR ____

William Culbert - TDWR ____

____ ____

CN-0385

F. Embankment

A. Crest

Description (1st inspection) Relatively flat, rounded upstream and downstream edges. Good Bermuda grass cover.

1. Longitudinal Alignment Straight over most of its length. Curved near emergency spillway.

2. Longitudinal Surface Cracks None

3. Transverse Surface Cracks None

4. General Condition of Surface Good

5. Miscellaneous

B. Upstream Slope

1. Undesirable Growth or Debris None

2. **Sloughing, Subsidence, or Depressions** Appreciable erosion. Rilling and gully formation over much of length.

3. **Slope Protection** Bermuda grass only.

a. **Condition of Riprap** N/A

b. **Durability of Individual Stones** N/A

c. **Adequacy of Slope Protection Against Waves and Runoff** Inadequate. Will need riprap within next year or two.

d. **Gradation of Slope Protection - Localized Areas of Fine Material** N/A

4. **Surface Cracks** None

C. **Downstream Slope**

1. **Undesirable Growth or Debris** Large bush and small evergreen near middle toe of dam.

2. **Sloughing, Subsidence, or Depressions; Abnormal Bulges or Non-Uniformity** Some scattered small depressions. May be dispersive soil. Appear inactive.

3. **Surface Cracks on Face of Slope** None

4. **Surface Cracks or Evidence of Heaving at Embankment Toe** None

5. **Wet or Saturated Areas or Other Evidence of Seepage on Face of Slope; Evidence of "Piping" or "Boils"** None

6. **Drainage System** 6" toe drain - submerged

7. **Fill Contact with Outlet Structure** Cannot be ascertained because outlet is submerged

8. **Condition of Grass Slope Protection** Reasonably full and uniform. Bermuda grass.

D. Abutments

1. Erosion of Contact of Embankment with Abutment from Surface Water Runoff, Upstream or Downstream _____

Nothing significant

2. Springs or Indications of Seepage Along Contact of Embankment with the Abutments None

3. Springs or Indications of Seepage in Areas a Short Distance Downstream of Embankment - Abutment Tie-in

None

II. **Area Downstream of Embankment, Including Channel**

A. **Localized Subsidence, Depressions, Sinkholes, Etc.** 100 square feet depressed area 100' left of the principal spillway. Base of depression is moist. It tapers to a shallow gully and extends D/S, intersecting the principal spillway exit channel. 35' D/S of dam, depressed area breaks into hole with standing water. No observable flow.

B. **Evidence of "Piping", "Boils", or "Seepage"** None besides that previously mentioned.

C. **Unusual Presence of Lush Growth, such as Swamp Grass, etc.** None

D. **Unusual Muddy Water in Downstream Channel** Relatively muddy because there is no flow and cows drink there.

E. **Sloughing or Erosion** Some minor sloughing initiated by cattle traffic.

F. **Surface Cracks or Evidence of Heaving Beyond Embankment Toe** None

G. **Stability of Channel Sideslopes** Good. Relatively steep.

H. **Condition of Channel Slope Protection** Good. Natural cover.

I. **Adequacy of Slope Protection Against Waves, Currents, and Surface Runoff** Adequate

J. **Miscellaneous** Mud blocks stilling basin. Pipe and especially embankment drains should not be submerged. Could cause build up of methane gas in embankment.

K. **Condition of Relief Wells, Drains, and Other Appurtenances** N/A

L. **Unusual Increase or Decrease in Discharge from Relief Wells** N/A

III. Instrumentation

A. Monumentation/Surveys N/A

B. Observation Wells N/A

C. Weirs N/A

D. Piezometers N/A

E. Other

IV. **Spillways**

A. **Service Spillway (Service/Emergency Combination Yes __ No X__)**

1. **Intake Structure Condition** Good (observed from dam). Timbers are noticeably weathered.

2. **Outlet Structure Condition** No structure - outlet submerged.

3. **Pipe Condition** Submerged in impact basin.

4. **Evidence of Leakage or Piping** None

5. **General Remarks** Pipe is apparently not laid according to specifications. Outlet is approximately 4 feet below design location.

B. **Emergency Spillway**

1. **General Condition** Good. Uniform and well grassed. Some noteable erosion along upstream left side slope.

2. **Entrance Channel** Some appreciable sloughing near water surface. Rest is uniform and well grassed. Fence across entrance channel.

3. **Control Section** Same as general condition. Best grass cover.

3. **Exit Channel** Same as general condition.

4. **Vegetative/Woody Cover** Grass only.

5. **Other Observations**

V. Emergency Drawdown Facilities (if part of service spillway so state), Valve stem visable at riser. Doesn't work. Always leaked so clay was dumped over inlet.

Are Facilities Operable: Yes _____ No X

Were Facilities Operated During Inspection: Yes _____ No X

Date Facilities Were Last Used Soon after dam was built

VI. Reservoir

A. Slopes Some erosion around entire reservoir.

B. Sedimentation Moderate to high.

C. Turbidity Low to moderate.

VII. Drainage Area

Description (for hydrologic analysis) Mostly pasture and woodland.

A. Changes in Land Use None

VIII. Downstream Area (Stream)

A. Condition (obstructions, debris, etc.) 2 houses and several farm buildings 4600 feet downstream.

B. Slopes 0.5% channel slope

C. Approximate No. Homes, Population, and Distance D/S

2 houses 4600 feet downstream.

D. Other Hazards Horse stables and track some distance downstream.

IX. Miscellaneous

Incidents/Failures No incidents reported by owner.

Observed Geology of Area Loess soils (wind blown) covers most of area.

X. Conclusions

1) The dam is uniform and well grassed.

2) A few areas of significant erosion were observed on the upstream slope of the dam and downstream of the toe.

3) There was no measurable seepage found.

XI. Recommendations

1) Monitor depressions on downstream slope for development of flow.

2) Riprap upstream slope, particularly in area of extreme sloughing.

3) Develop an emergency action plan for alerting downstream residents in the event that failure appears imminent.

William R. Gallagher
Regional Engineer

Chief Engineer

OHIO RIVER DIVISION, NASHVILLE DISTRICT
SOIL TEST DATA SUMMARY

PROJECT MARYS CREEK NO.B HOLE 1 ELEV. TOP _____ SHEET 1 OF 1 SHEETS

SAMPLE NO.	DEPTH OF SAMPLE	LABORATORY CLASSIFICATION	NAT. WATER CONT.	ATTERBERG LIMITS		MECHANICAL ANAL.		
				LL	PL	Gravel %	Sand %	Fines %
1	0.0-1.5'	MEDIUM BROWN, SILTY, SLIGHTLY SANDY CLAY, SLIGHTLY DAMP, MEDIUM, TRACE ORGANIC, OCCASIONAL FINE CHERT GRAVEL, AND A FEW SMALL ROOTLETS (CL)	22.0	30.6	21.0	P.I.	9.6	

ORN 344
SEPT 67

ORNED-D

Check List
Visual Inspection of Earth Dams
Department of Conservation
Division of Water Resources

Name of Dam Stotts (Tolly Murff)

County Shelby Date of Inspection April 1, 1981

ID # - State 79-7078 Federal TN 15776

Type of Dam Earth

Hazard Category-Federal 1 State High

Weather Sunny, breezy Temperature 70° F

Pool at Time of Inspection At Normal Pool (spillway crest) (distance from crest)

Tailwater at Time of Inspection app 1/10 (distance from stream bed)

Design/As Built Drawings Available: Yes X No ____

Location: SCS Regional Office, Nashville and TDWR

Copy Obtained: Yes X No ____

Reviewed: Yes X No ____

Construction History Available: Yes ____ No X

Location: ____

Copy Obtained: Yes ____ No ____

Reviewed: Yes ____ No ____

Other Records and Reports Available: Yes X No ____

Location: Watershed Work Plan - SCS Regional Office and TDWR

Copy Obtained: Yes X No ____

Reviewed: Yes X No ____

Prior Incidents or Failures: Yes ____ No X

Inspection Personnel and Affiliation:

George Moore - TDWR ____

Bill Culbert - TDWR ____

Gene Davis - TDWR ____

David Roe - TDWR ____

I. Embankment

A. Crest

Description (1st inspection) Adequate grass cover. Relatively flat and uniform. Sloughing from upstream slope extends well into crest. Dam has new fill on both ends. No grass cover or new embankment. Deep animal burrows near mid-section. 2' deep gully/ depression begins approximately in middle of crest extending 5-10' downstream. Some minor remnants of it all the way to toe.

1. Longitudinal Alignment Straight

2. Longitudinal Surface Cracks New fill at left side of dam has crack running its entire length. Apparently the water has weakened the upstream slope to the point that major sloughing would be inevitable with any appreciable wave action.

3. Transverse Surface Cracks None

4. General Condition of Surface Poor

5. Miscellaneous

B. Upstream Slope

1. Undesirable Growth or Debris One small woody bush.

2. **Sloughing, Subsidence, or Depressions** Severe sloughing over entire length from water surface well into crest.

3. **Slope Protection** None. Some patches of grass where slope remains, but virtually all of the surface has sloughed off.

   a. **Condition of Riprap** N/A

   b. **Durability of Individual Stones** N/A

   c. **Adequacy of Slope Protection Against Waves and Runoff** Poor

   d. **Gradation of Slope Protection - Localized Areas of Fine Material** N/A

4. **Surface Cracks** New fill of left side of dam has surface crack near junction of upstream slope and crest. Runs onto upstream slope as it mates with old embankment material.

C. **Downstream Slope**

1. **Undesirable Growth or Debris** Only 1 tree, approximately 6" diameter, near toe right of center. Approximately 50 square yard area of woody bushes near center toe. Few others just downstream of right side of crest.

2. **Sloughing, Subsidence, or Depressions; Abnormal Bulges or Non-Uniformity** No significant sloughing. Pervasive minor nonuniformity from cattle traffic, but no gullying has been set up and surface is extensively grassed. Few small depressions along toe. One large shallow one around tree, but looks to have been created by cattle. No sign of seepage. (See crest)

3. **Surface Cracks on Face of Slope** None

4. **Surface Cracks or Evidence of Heaving at Embankment Toe** None

5. **Wet or Saturated Areas or Other Evidence of Seepage on Face of Slope; Evidence of "Piping" or "Boils"** None

6. **Drainage System** None apparent.

7. **Fill Contact with Outlet Structure** N/A

8. **Condition of Grass Slope Protection** Good

D. Abutments

1. Erosion of Contact of Embankment with Abutment from Surface Water Runoff, Upstream or Downstream New embankment construction at both ends of dam. No significant erosion observed downstream along tie-ins. Good grass cover.

2. Springs or Indications of Seepage Along Contact of Embankment with the Abutments None

3. Springs or Indications of Seepage in Areas a Short Distance Downstream of Embankment - Abutment Tie-in None

II. Area Downstream of Embankment, Including Channel

A. Localized Subsidence, Depressions, Sinkholes, Etc. None

B. Evidence of "Piping", "Boils", or "Seepage" None

C. Unusual Presence of Lush Growth, such as Swamp Grass, etc. None

D. Unusual Muddy Water in Downstream Channel None

E. Sloughing or Erosion Nothing significant.

F. Surface Cracks or Evidence of Heaving Beyond Embankment Toe None

G. Stability of Channel Sideslopes Good. Practically flat cross-section.

H. Condition of Channel Slope Protection Excellent grass cover except on the left side of dam near critical section where embankment was refilled. No grass cover here.

I. Adequacy of Slope Protection Against Waves, Currents, and Surface Runoff Good

J. Miscellaneous

K. Condition of Relief Wells, Drains, and Other Appurtenances None

L. Unusual Increase or Decrease in Discharge from Relief Wells N/A

III. Instrumentation

A. Monumentation/Surveys N/A

B. Observation Wells N/A

C. Weirs N/A

D. Piezometers N/A

E. Other

IV. Spillways

A. Service Spillway (Service/Emergency Combination Yes X No __)

1. Intake Structure Condition See Emergency Spillway

2. Outlet Structure Condition

3. Pipe Condition

4. Evidence of Leakage or Piping

5. General Remarks

B. Emergency Spillway

1. General Condition Good. Well grassed and uniform cross-section.

2. Entrance Channel Submerged, practically non-existant. Control section occurs approximately along dam centerline.

3. Control Section Same as general.

3. **Exit Channel** Same

4. **Vegetative/Woody Cover** Grass only. Adequate.

5. **Other Observations** Approximately 150 feet downstream the channel takes a 3 foot drop then widens appreciably.

V. Emergency Drawdown Facilities (if part of service spillway so state) None

Are Facilities Operable: Yes _____ No _____

Were Facilities Operated During Inspection: Yes _____ No __

Date Facilities Were Last Used _____

VI. Reservoir

A. Slopes Gradual

B. Sedimentation Assumed moderate to high

C. Turbidity High

VII. Drainage Area

Description (for hydrologic analysis) Predominantly active pasture land.

A. Changes in Land Use None expected.

VIII. Downstream Area (Stream)

A. Condition (obstructions, debris, etc.) Nothing significant

B. Slopes 0.7% (immediately upstream of Mary's Creek Dam No. 8 reservoir)

C. Approximate No. Homes, Population, and Distance D/S

2 homes and horse stables approximately 8100 feet downstream.

D. Other Hazards

IX. Miscellaneous

Incidents/Failures None reported by owner.

Observed Geology of Area Predominantly Loess soil.

X. Conclusions

1) The dam is uniform and well grassed with some undesirable vegetation.
2) The upstream slope has undergone considerable sloughing extending well into the crest.
3) No signs of seepage were observed.

XI. Recommendations

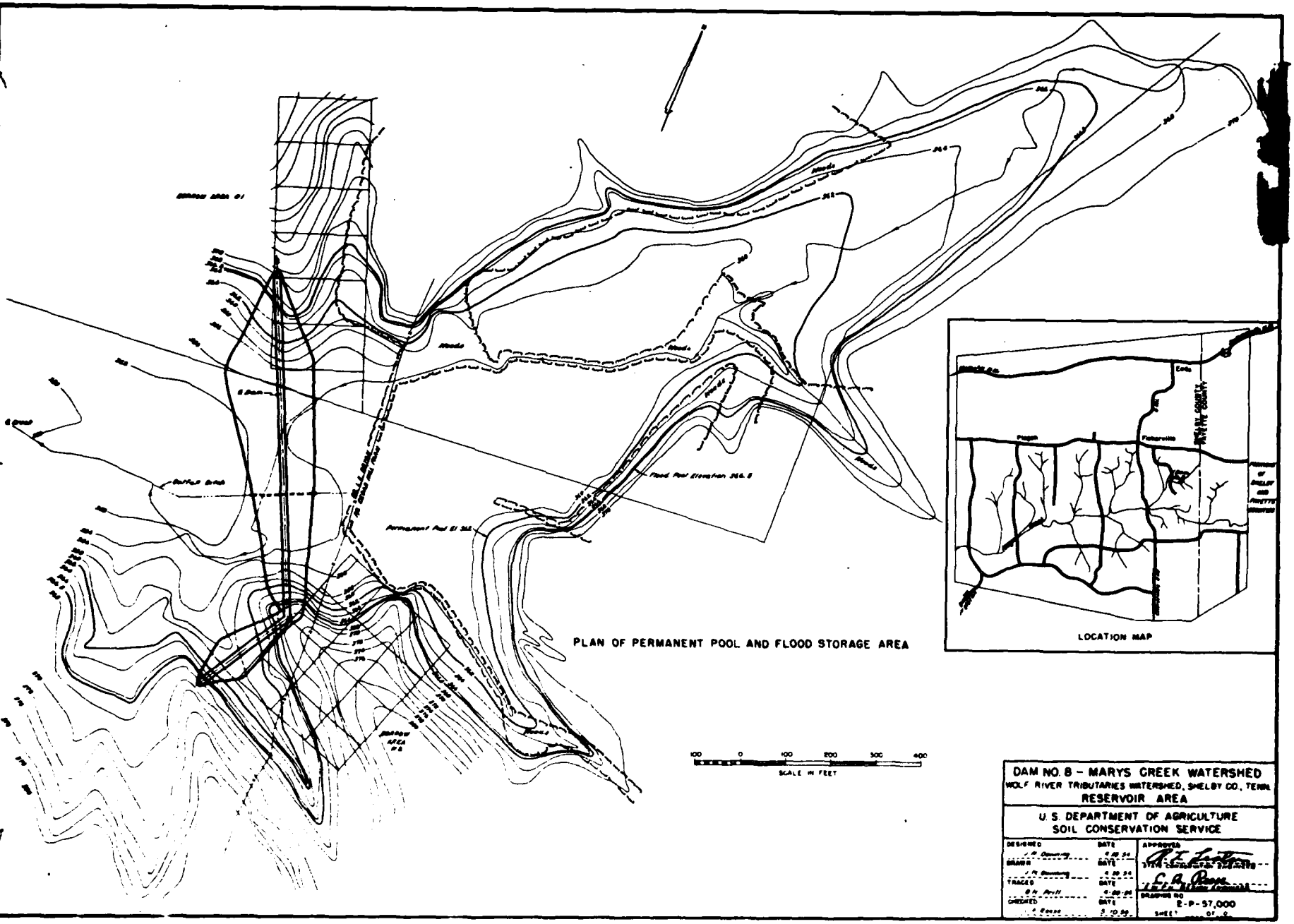
1) Provide some protection for the upstream slope of the dam.
2) Remove the tree and bushes from the downstream slope.
3) Prevent cattle from walking on the dam.
4) Develop an emergency action plan for alerting downstream residents in the event that failure appears imminent.

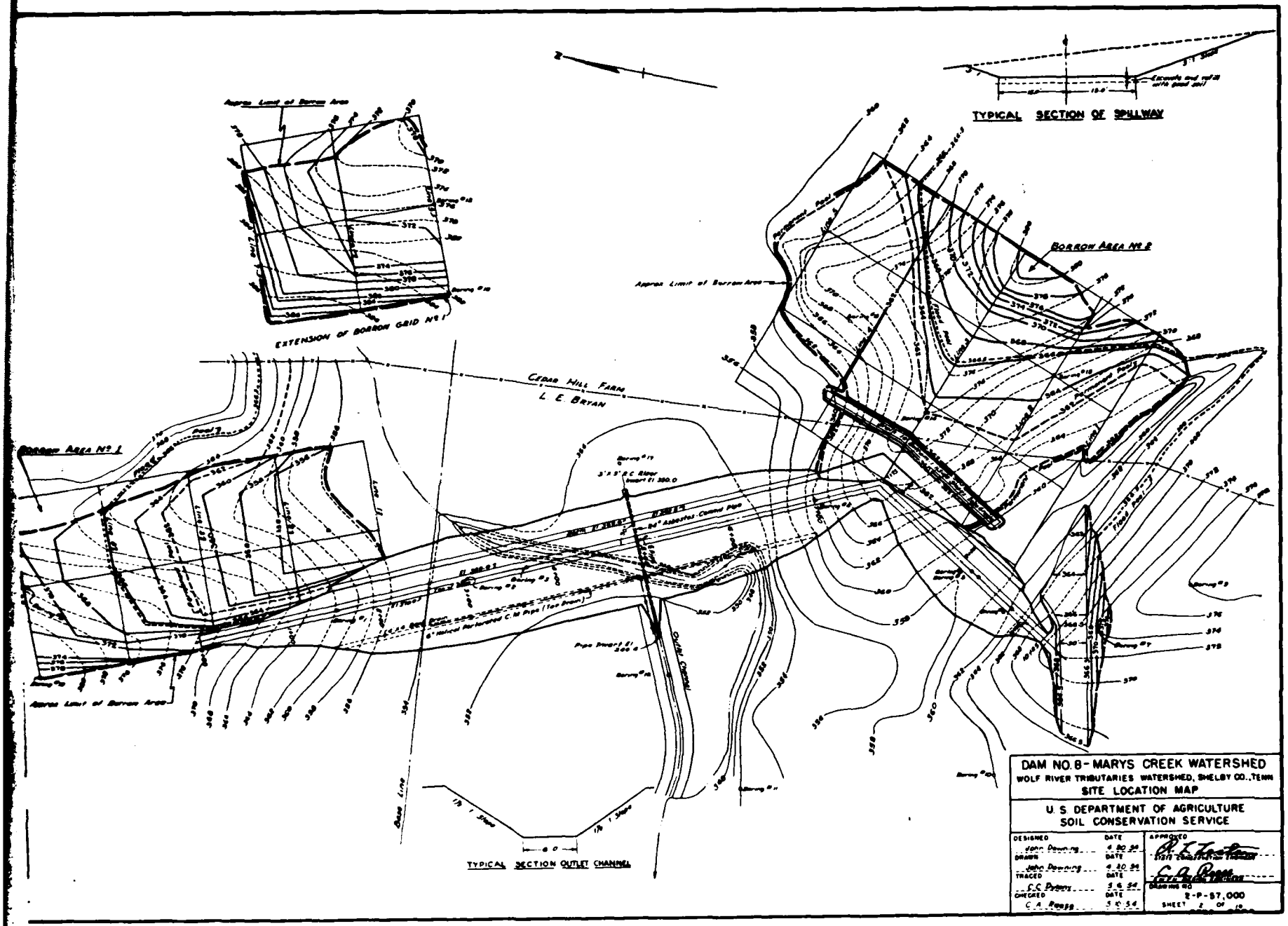
William H. Colbert
Regional Engineer

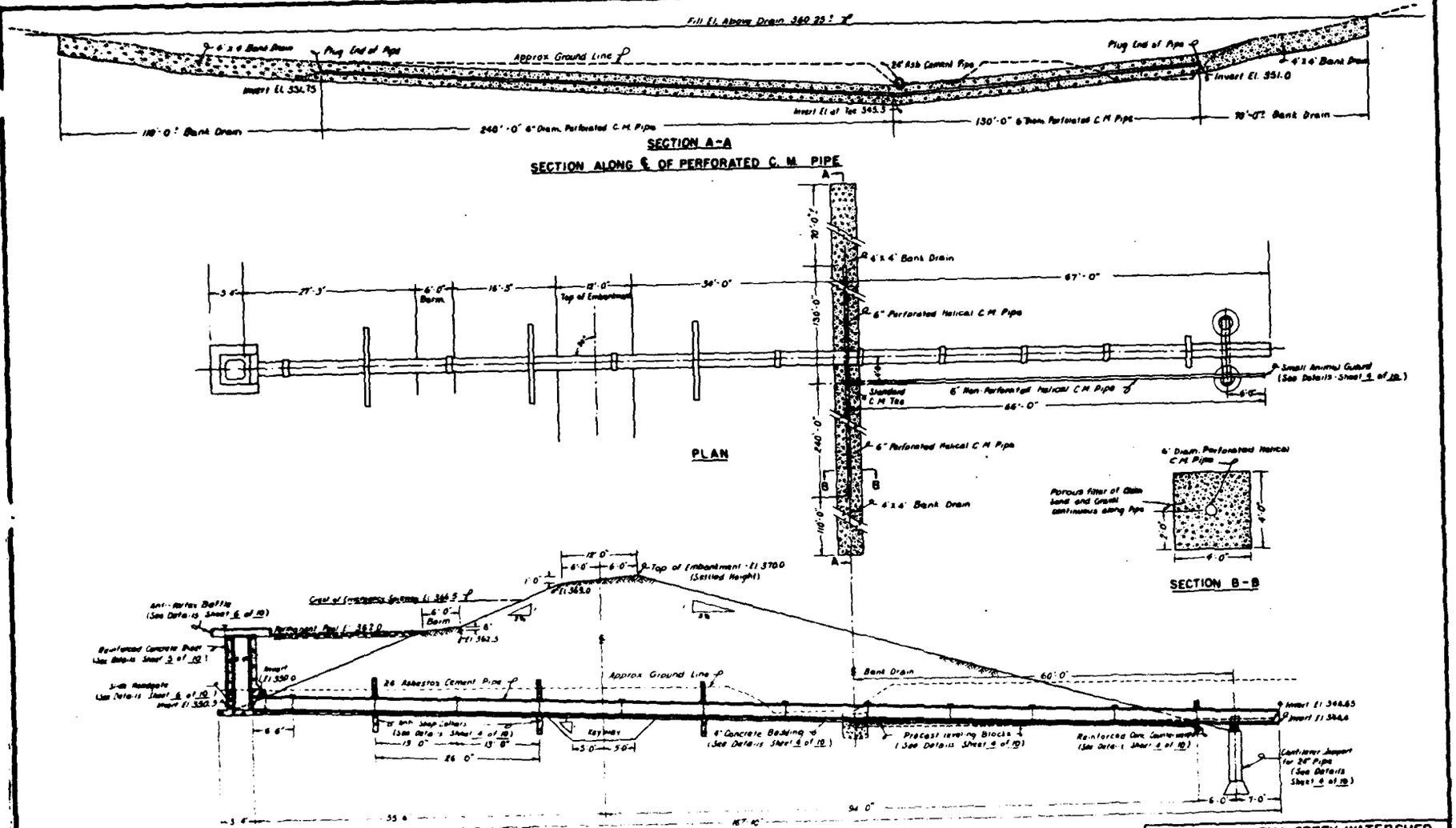
Chief Engineer

APPENDIX E

DESIGN DRAWINGS


PLAN OF PERMANENT POOL AND FLOOD STORAGE AREA
LOCATION MAP
SCALE IN FEET
DAM NO. 8 - MARYS CREEK WATERSHED
WOLF RIVER TRIBUTARIES WATERSHED, SHELBY CO., TENN.
RESERVOIR AREA
U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DESIGNED
DRAWN
TRACED
CHECKED
APPROVED
DRAWING NO
B-P-57,000
SHEET

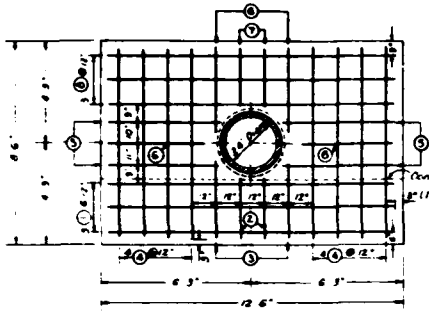

TYPICAL SECTION OF SPILLWAY
EXTENSION OF BORROW GRID NO 1
BORROW AREA NO 2
BORROW AREA NO 1
CEDAR HILL FARM
L. E. BRYAN
Approx. Limit of Borrow Area
Approx. Limit of Borrow Area
Base Line
TYPICAL SECTION OUTLET CHANNEL
DAM NO. 8 - MARYS CREEK WATERSHED
WOLF RIVER TRIBUTARIES WATERSHED, SHELBY CO., TENN.
SITE LOCATION MAP
U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
DESIGNED John Downing DATE 4-30-54
DRAWN John Downing DATE 4-30-54
TRACED C.C. Powers DATE 5-6-54
CHECKED C.A. Rowes DATE 5-10-54
APPROVED
DRAWING NO 2-P-57,000
SHEET 2 OF 10



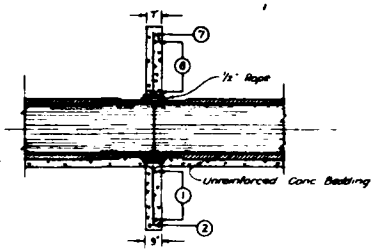
DAM NO. 8 - MARYS CREEK WATERSHED
WOLF RIVER TRIBUTARIES WATERSHED, SHELBY CO., TENN.
DROP INLET - 24" ASBESTOS CEMENT PIPE

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED - A. REESE	DATE 4-20-54	APPROVED A. I. Zeeb, STATE CONSERVATIONIST FOR HEAD
DRAWN - W. D. KNEECE	DATE 5-3-54	C. A. Dane, Acting Director
TRACED - W. O. CLARK	DATE 5-3-54	DRAWING NO. 2-P-67,000
CHECKED - A. REESE	DATE 5-10-54	SHEET 3 OF 10 SHEETS

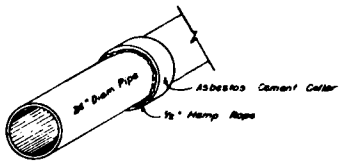


ELEVATION



SECTION THRU ℄

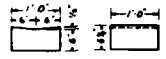
DETAIL OF ANTI-SEEP COLLARS



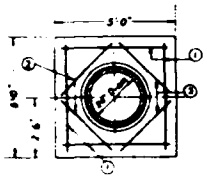
DETAIL OF ½" HEMP ROPE TO BE TIED AROUND PIPE EACH SIDE OF COUPLINGS AT EVERY JOINT TO PREVENT CONCRETE SEEPING UNDER COUPLINGS DURING POURING OPERATIONS.

1 Required

DETAIL OF SMALL ANIMAL GUARD AT OUTLET END OF 6" C.M. PIPE



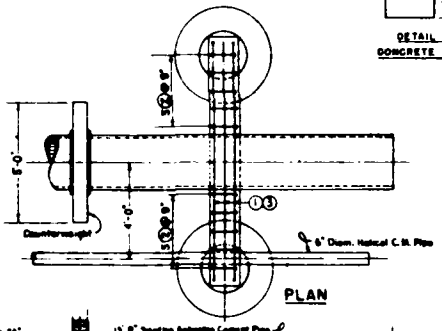
DETAIL OF PRE-CAST CONCRETE LEVELING BLOCK



FRONT ELEVATION

END ELEVATION

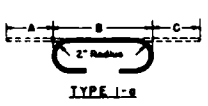
DETAILS OF CONCRETE COUNTERWEIGHT



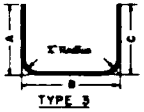
PLAN

BAR TYPES

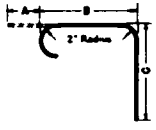
STRAIGHT



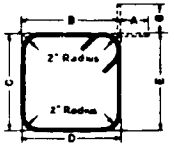
TYPE 1-a



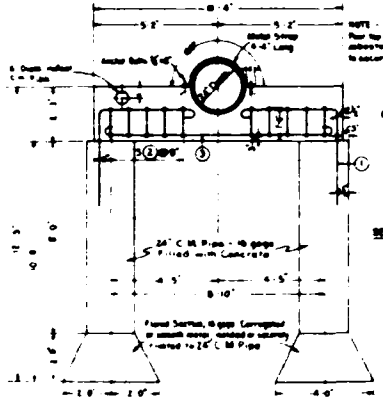
TYPE 3



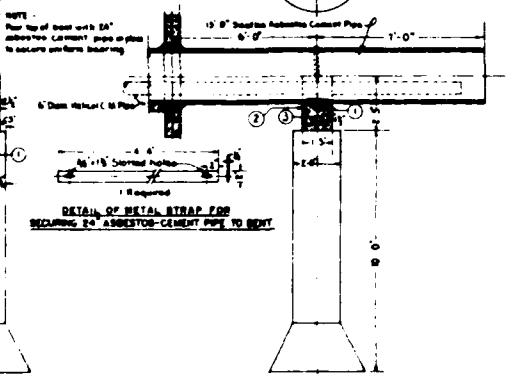
TYPE II



TYPE TI



ELEVATION

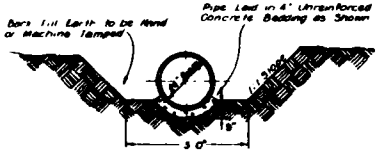


LONGITUDINAL SECTION

1 Required

DETAIL OF METAL STRAP FOR SECURING 24" ASBESTOS-CEMENT PIPE TO BENT

DETAIL OF BENT AND PIPE OUTLET



PIPE INSTALLATION DETAIL

BEDDING

TOTAL VOLUME OF CONCRETE FOR PIPE BEDDING - 5.35 CU YDS.

ANTI-SEEP COLLARS

STEEL SCHEDULE FOR THREE COLLARS

LOCATION	MARK	SIZE	QUAN.	LENGTH	TYPE	TOTAL FEET
Anti-Seep Collar	B-1	4	8	12'-0"	ST	96'-0"
" - "	B-2	4	6	2'-6"	ST	15'-0"
" - "	B-3	4	6	2'-3"	ST	13'-6"
" - "	B-4	4	24	6'-0"	ST	144'-0"
" - "	B-5	4	12	6'-9"	ST	81'-0"
" - "	B-6	4	12	5'-9"	ST	69'-0"
" - "	B-7	4	6	2'-6"	ST	15'-0"
" - "	B-8	4	9	12'-0"	ST	108'-0"

QUANTITIES

VOLUME OF CONCRETE - 1.45 CU YDS.
REINFORCING STEEL - 558.0 FT-931.9 LBS

STEEL SCHEDULE FOR COUNTERWEIGHT

LOCATION	MARK	SIZE	QUAN.	LENGTH	TYPE	TOTAL FEET
COUNTERWEIGHT	C-1	4	4	4'-6"	ST	18'-0"
" - "	C-2	4	4	3'-0"	ST	12'-0"

QUANTITIES

VOLUME OF CONCRETE 0.48 CU YDS.
REINFORCING STEEL 60 L.FT 22.01 LBS.

STEEL SCHEDULE FOR BENT

LOCATION	MARK	SIZE	QUAN.	LENGTH	TYPE	A	B	C	D	E	θ	TOTAL FT.
BENT	C-1	4	6	8'-6"	11	0'-4"	4'-0"	4'-0"	-	-	-	51'-0"
"	C-2	4	10	5'-0"	TI	0'-5"	1'-0"	1'-4"	1'-0"	1'-1"	10.5°	50'-0"
"	C-3	4	3	10'-6"	10	0'-6"	9'-6"	0'-6"	-	-	-	31'-6"

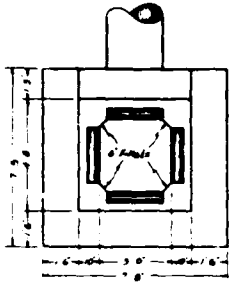
QUANTITIES

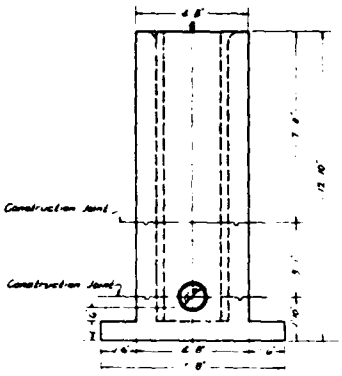
VOLUME OF CONCRETE 4.0 CU YDS.
REINFORCING STEEL 132.5 L FT 88.24 LBS.

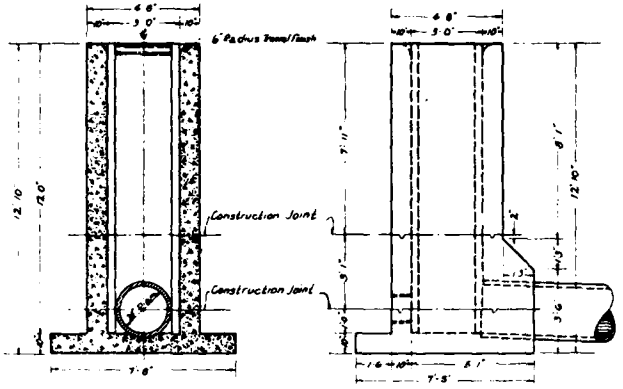
DAM NO. 6 - MARYS CREEK WATERSHED
WOLF RIVER TRIBUTARIES WATERSHED SHELBY CO., TENN.
DETAILS OF BENT, ANTI-SEEP COLLAR, JOINT & BEDDING, COUNTERWEIGHT, & PIPE INSTALLATION

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED C. A. BUSH	DATE 3-15-54	APPROVED A. T. Cooley, State Conservation Engineer
DRAWN C.L. DULANY	DATE 4-6-54	C. A. Bush, Jr., Design Engineer
TRACED M. P. & C.N.K.	DATE 4-8-54	DRAWING NO. 2-P-87,000
CHECKED A. BUSH	DATE 4-10-54	SHEET 9 OF 10

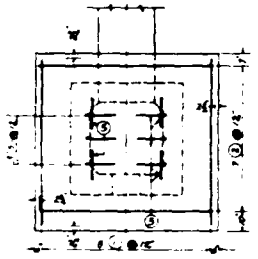


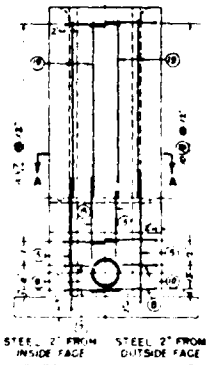


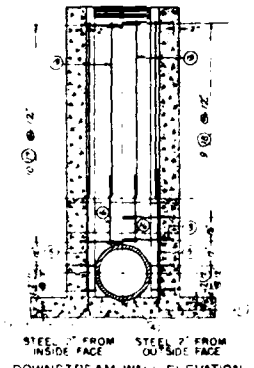


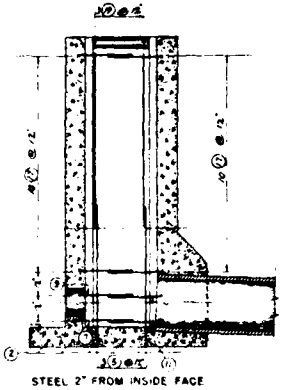
STEEL SCHEDULE

LOCATION	MARK	SIZE	QUAN.	LENGTH	TYPE	A	B	C	TOTAL FEET
FLOOR	A-1	3	14	7'-0"	ST				98'-0"
FLOOR	A-2	3	13	7'-3"	ST				94'-5"
FLOOR	A-3	3	4	2'-9"	ST				11'-0"
FLOOR	A-4	3	2	4'-0"	ST				8'-0"
FLOOR & RISER	A-5	3	20	6'-9"	2	1'-3"	6'-6"		135'-0"
FLOOR & ELBOW	A-6	3	2	4'-0"	2	1'-3"	2'-9"		8'-0"
RISER	A-7	3	2	4'-6"	2	2'-3"	2'-9"		9'-0"
RISER	A-8	3	2	5'-6"	2	2'-3"	2'-9"		11'-0"
RISER	A-9	3	2	3'-3"	2	1'-0"	2'-3"		6'-6"
RISER	A-10	3	2	4'-3"	2	1'-6"	2'-6"		8'-6"
ELBOW & RISER	A-11	3	4	2'-9"	2	0'-6"	2'-3"		11'-0"
ELBOW & RISER	A-12	3	4	5'-0"	2	1'-0"	6'-0"		20'-0"
ELBOW & RISER	A-13	3	2	6'-9"	2	2'-9"	6'-0"		13'-6"
ELBOW	A-14	3	6	4'-6"	5	1'-0"	2'-3"	1'-3"	27'-6"
RISER	A-15	3	4	5'-6"	ST				16'-0"
RISER	A-16	3	4	2'-9"	ST				11'-0"
RISER	A-17	3	40	4'-6"	2	2'-3"	2'-3"		180'-0"
RISER	A-18	3	38	5'-6"	2	2'-9"	2'-9"		209'-0"
RISER	A-19	3	28	7'-9"	ST				203'-0"

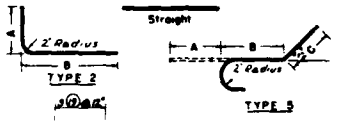


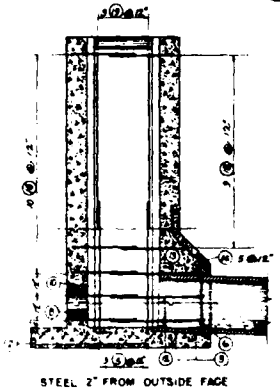


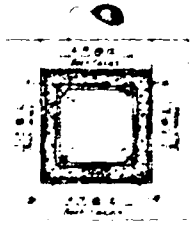




BAR TYPES







QUANTITIES

STEEL 10748 FT 400.08 LBS

VOLUME OF CONCRETE 7.88 CU YDS

DAM NO 8 - MARYS CREEK WATERSHED

WOLF RIVER TRIBUTARIES WATERSHED, SHELBY CO., TENN.

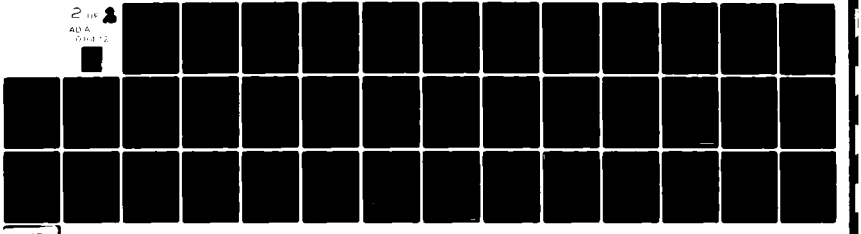
DETAILS OF REINFORCED CONCRETE RISER

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED	DATE	APPROVED
DRAWN	DATE	
TRACED	DATE	
CHECKED	DATE	DRAWING NO.

AD-A108 472 TENNESSEE STATE DEPT OF CONSERVATION NASHVILLE DIV O--ETC F/G 13/13
NATIONAL PROGRAM OF INSPECTION OF NON-FEDERAL DAMS. TENNESSEE. --ETC(U)
SEP 81 W CULBERT DACW62-81-C-0056

UNCLASSIFIED NL



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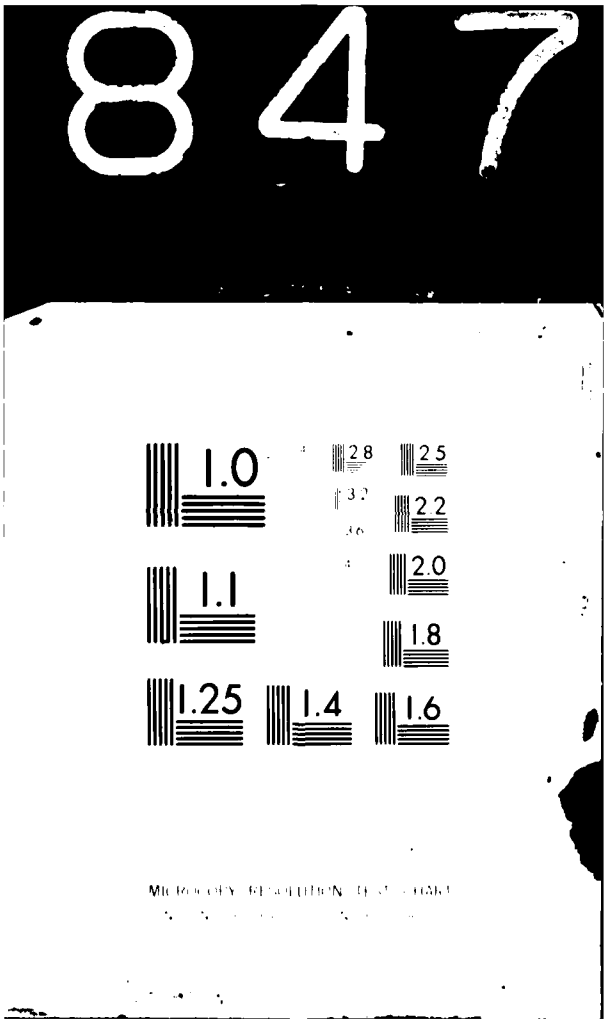
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1.0
2.8
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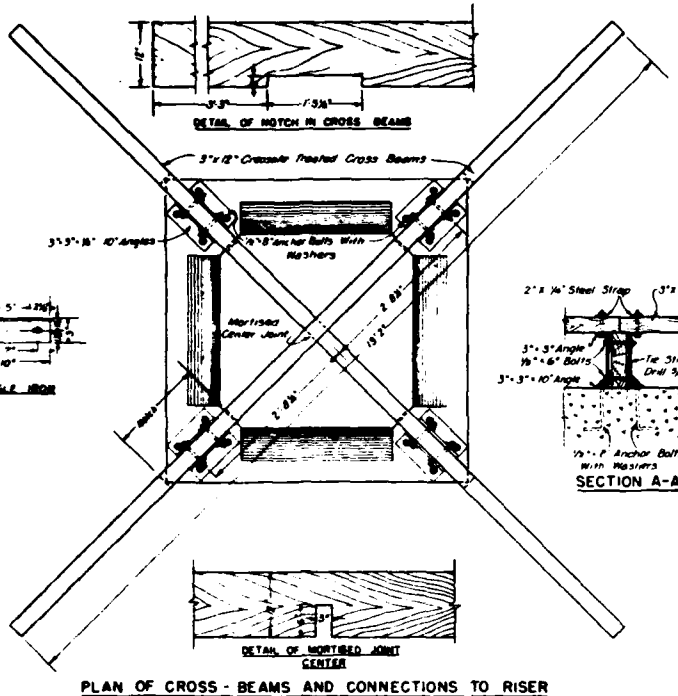
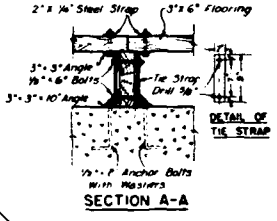
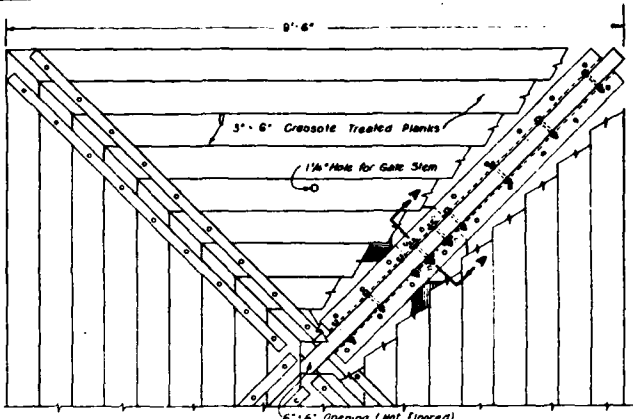


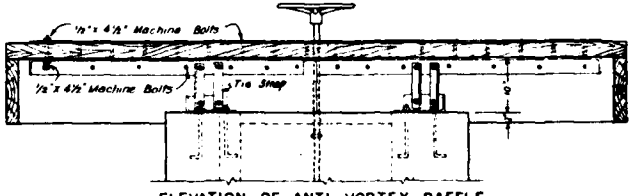
PLAN OF CROSS - BEAMS AND CONNECTIONS TO RISER



SECTION A-A

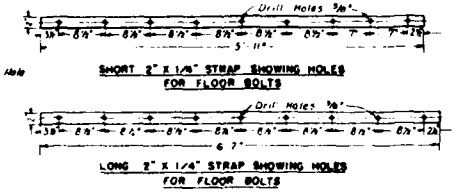


PLAN OF FLOOR AND CONNECTIONS TO CROSS - BEAMS

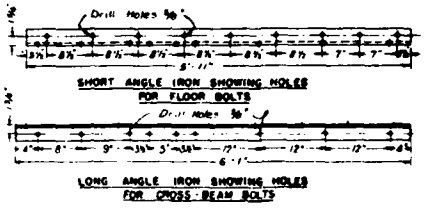


ELEVATION OF ANTI-VORTEX BAFFLE

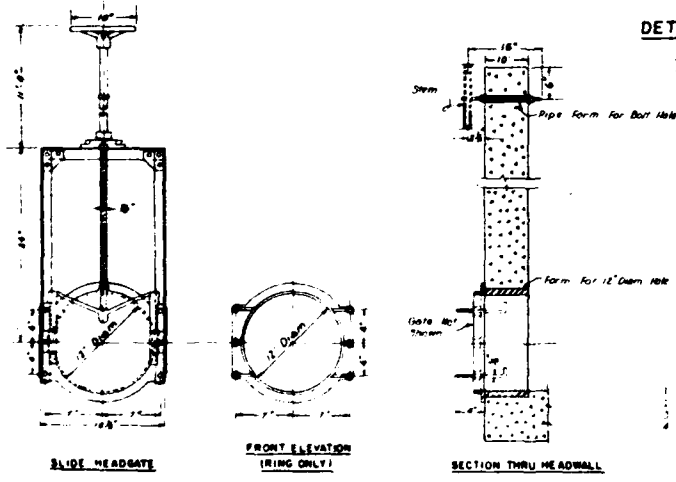
DETAIL OF ANTI-VORTEX BAFFLE



FLOOR STRAP DETAIL



DRILL HOLE DETAIL FOR 3"X3"X 1/4" ANGLE IRON



DETAIL OF HEADGATE AND HEADWALL

- NOTES -

1. All Angles Shall Be Steel
2. All Bolts Shall Be Steel ½" Diameter
3. All Holes In Angles And Straps Shall Be ⅝" Diameter
4. All Angles & Straps Shall Be Painted After Holes Are Drilled Prior To Installation

MATERIAL FOR ANTI-VORTEX BAFFLE

ITEM	QUANTITY	UNIT	LOCATION
½"x 4" Machine Bolts	100	Each	Floor & Cross Beams
½"x 6" " "	16	"	Cross Beam at Anchor
½"x 8" Anchor Bolts w/ Washers	16	"	Set in Riser Corners
4"x 3"x ⅜"x 10" Angle	8	"	Connect to Anchor Bolts
3"x 3"x ¼"x 5" " "	4	"	Bolted to Cross Beams
3"x 3"x ¼"x 6" " "	4	"	" " "
2"x ⅛"x 5' 11" Steel Strap	4	"	Top of Floor
2"x ⅛"x 6' 2" " "	4	"	" " "
2"x ⅛"x 9" " "	16	"	Shown in Section A-A
5"x12"x15' 2" Creo. Timber	2 Pcs. 70 Bd. Ft.		Cross Beams
3"x 6" Creo. Timber (Var. Length)	34 207		Floor

DAM NO. 8 - MARYS CREEK WATERSHED
WOLF RIVER TRIBUTARIES WATERSHED SHELBY CO., TENN.
DETAILS OF ANTI-VORTEX BAFFLE & HEADGATE

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

DESIGNED	C. A. REESE	DATE	3-15-54
DRAWN		DATE	
TRACED	C. C. CLEARY	DATE	4-8-54
CHECKED	H. L. PRIDEAUX & R. GUESS	DATE	4-8-54
		DATE	5-10-54

APPROVED
STATE CONSERVATIONIST
STATE CONSERVATION ENGINEER

DRAWING NO. 2-D-57,000
SHEET 1 OF 1

APPENDIX F

HYDRAULIC AND HYDROLOGIC DATA

HYDRAULIC AND HYDROLOGIC ANALYSIS

According to OCE guidelines, Mary's Creek Dam No. 8 must be able to safely pass a minimum of the one-half Probable Maximum Flood (½PMF). Six hour rainfall depths for the Probable Maximum Precipitation and the 100 year rainfall were obtained from the U. S. Weather Service's Technical Paper 40. Flood routings were performed using the HEC-1-CB computer program. The program uses the dimensionless hydrograph technique described in Section 4 of the Soil Conservation Service National Engineering Handbook and the modified puls method of reservoir routing.

The peak outflow from the ½PMF (AMC II) is 449 cfs. This flood overtops the dam by 0.2 feet for 1.8 hours.

Mary's Creek No. 8

SUMMARY OF ROUTINGS

EVENT	ANTECEDENT MOISTURE CONDITION	
	II	III
PMF	Overtops the dam 1.2' maximum for 3.2 hours	Overtops the dam 1.5' maximum for 3.3 hours
½ PMF	Overtops the dam 0.2' maximum for 1.8 hours	Overtops the dam 0.5' maximum for 2.2 hours
100 - YEAR	Maintains 5.5' of freeboard	Maintains 4.7' of freeboard

The spillways are inadequate to pass the ½PMF by:

136 cfs (AMC II)
424 cfs (AMC III)

MARY'S CREEK DAM #8

CURVE # AND LAG TIME DETERMINATION :

PMP = 29.7"

			CN	
			B	C
LAND USE:	PASTURE	- 50%	62	75
(% OF D.A.)	WOODLd.	- 35%	60	73
	RESIDENTIAL	- 3%	75	82
	WATER	- 12%	100	

AVER. GROUND SLOPE : ≈ 5.6 %

		HYDROLOGIC SOIL GP.
SOIL TYPES :	MEMPHIS - 64%	B
	LOESS - 22%	B
	GRENADA - 14%	C

$$CN = 0.50\,[\,0.86\,(62) + 0.14\,(75)\,] + 0.35\,[\,0.86\,(60) + 0.14\,(73)\,] + 0.03\,[\,0.86\,(75) + 0.14\,(82)\,] + 0.12\,(100)$$

$$= 68 \text{ (AMC II)}$$
$$84 \text{ (AMC III)}$$

LONGEST WATER COURSE (ℓ) = 2600'

$$LAG = \frac{\ell^{0.8}\,(S+1)^{0.7}}{1900\,Y^{0.5}}$$

$$= 0.41 \text{ hrs. (AMC II)}$$

$$= 0.25 \text{ hrs. (AMC III)}$$

MARYS CREEK DAM #8

SPILLWAY RATING

PRINCIPAL SPILLWAY FLOW

$D = 24''$

$L = 163'$

$K_e = 0.8$ (HANDBOOK OF CONC. & CULV. PIPE HYDRAULICS - DROP INLETS & SAG CULVERTS P. 178)

$K_b = 0$

$n = 0.012$

$$K_p = \frac{5077\, n^2}{D^{4/3}}$$

$$= \frac{5077\,(0.012)^2}{24^{4/3}}$$

$$= 0.016$$

$$Q_p = A\sqrt{\frac{2gH}{1 + K_e + K_b + K_p L}}$$

$$= 3.14\sqrt{\frac{64.4}{1 + 0.8 + 0 + 0.0106\,(163)}}\sqrt{H}$$

$$Q_p = 13.42\sqrt{H}$$

LK. EL.	H	Q_p	Q_w
363	0	0	0
364	2	43	46
365	14	50	129
368	16.7	55	
T.O. 369.6	18.6	58	
372	21	61	

* Q_p = PIPE FLOW

Q_w = WEIR FLOW

$= CL H^{3/2}$

$= 3.5\,(13)\,H^{3/2}$

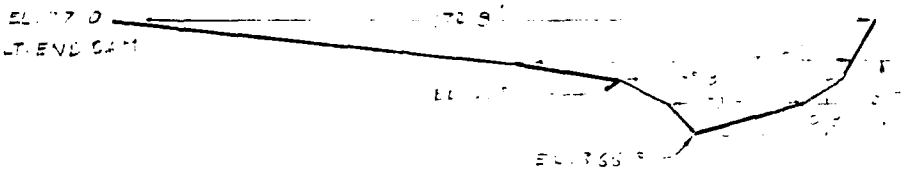
$= 45.5\,H^{3/2}$

EMERGENCY SPILLWAY FLOW

$$\frac{Q^2}{g} = \frac{A^3}{T}$$ FLOW & CRITICAL DEPTH

EQUATION SOLVED BY TRIAL

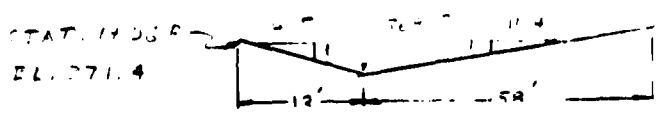
LK. EL.	EL. OF TRIAL	T	A_{trial}	V	$\frac{V^2}{2g}$
369.6	370.6	0	-	-	0
370.6	371.6	52.4	0.0	####	0.00
371.4	372.4	62.8	52.4	25.6	0.75
372.0	373.0	67.6	62.8	21.3	0.56
372.4	373.4	71.6	67.6	19.9	0.49

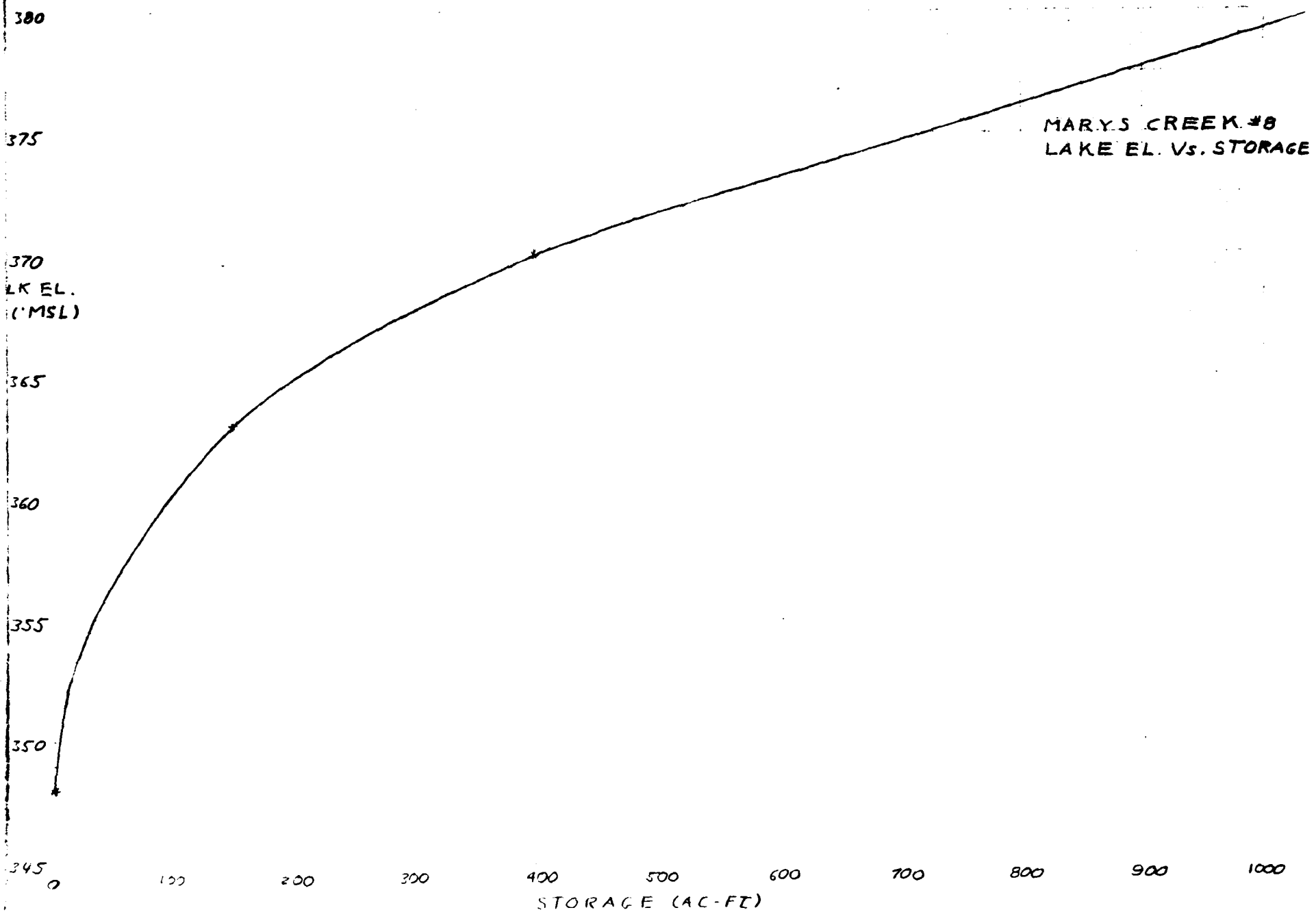


NOTE: EL OF LOW POINT IN ROAD IS THE SAME AS TOP OF DAM. INCREASE THE CREST LENGTH TO 40' D/S OF THE DAM TO PREVENT OVERTOPPING OF THE DAM.

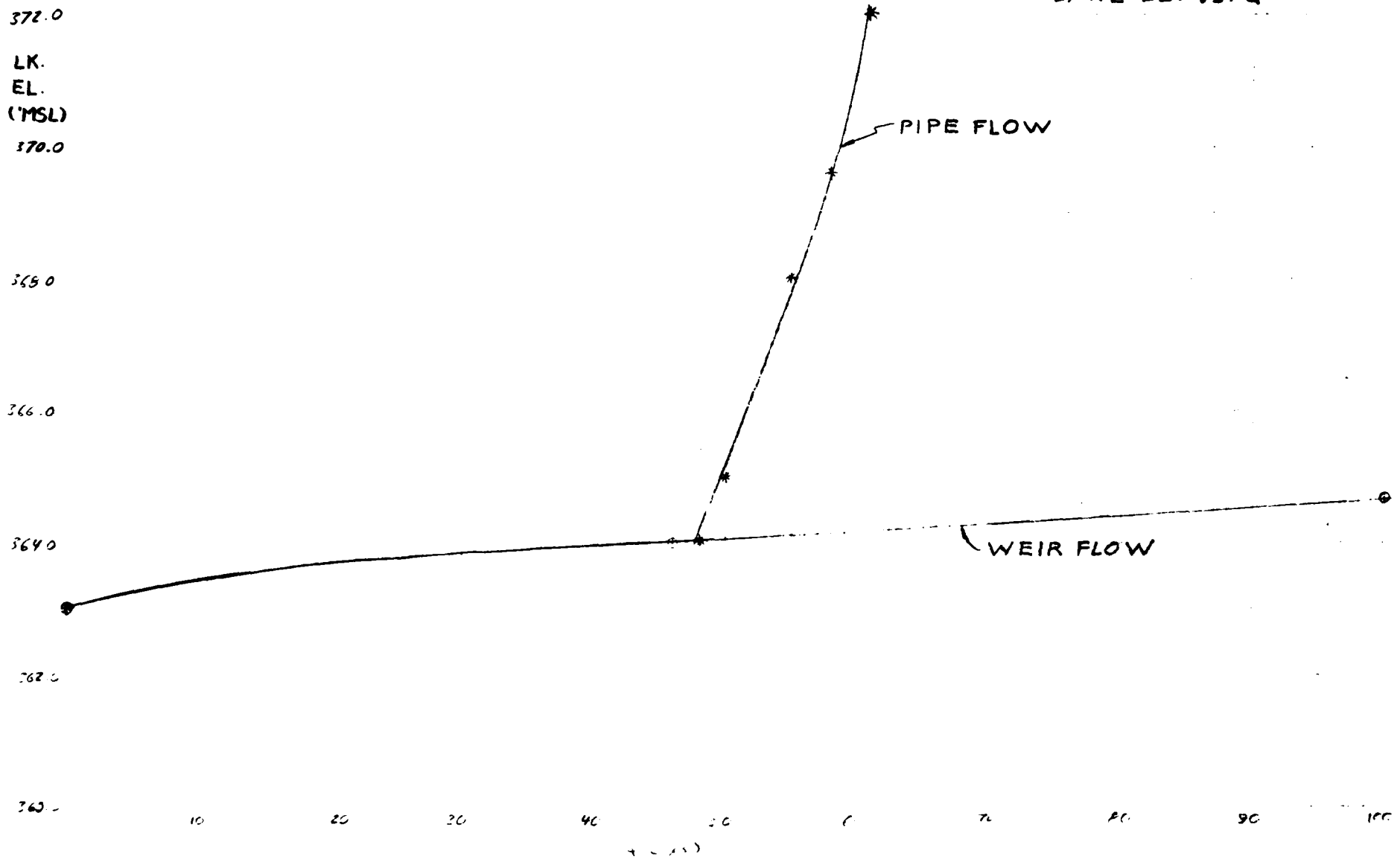
FOR A WALL CHANNEL OF THIS SHAPE AND A FLOW OF 185 CFS

EL.	DEPTH	T	A	V	$\frac{V^2}{2g}$	TOTAL EL
369.6	0	0	0	0	0	369.6
370.6	1.0	52.4	26.2	7.1	0.78	371.38
371.4	1.8	74.8	88.0	2.1	0.07	371.47
372.0	2.4	91.6	174.4	1.06	0.02	372.02
372.4	2.8	103.6	247.6	0.75	0.01	372.41

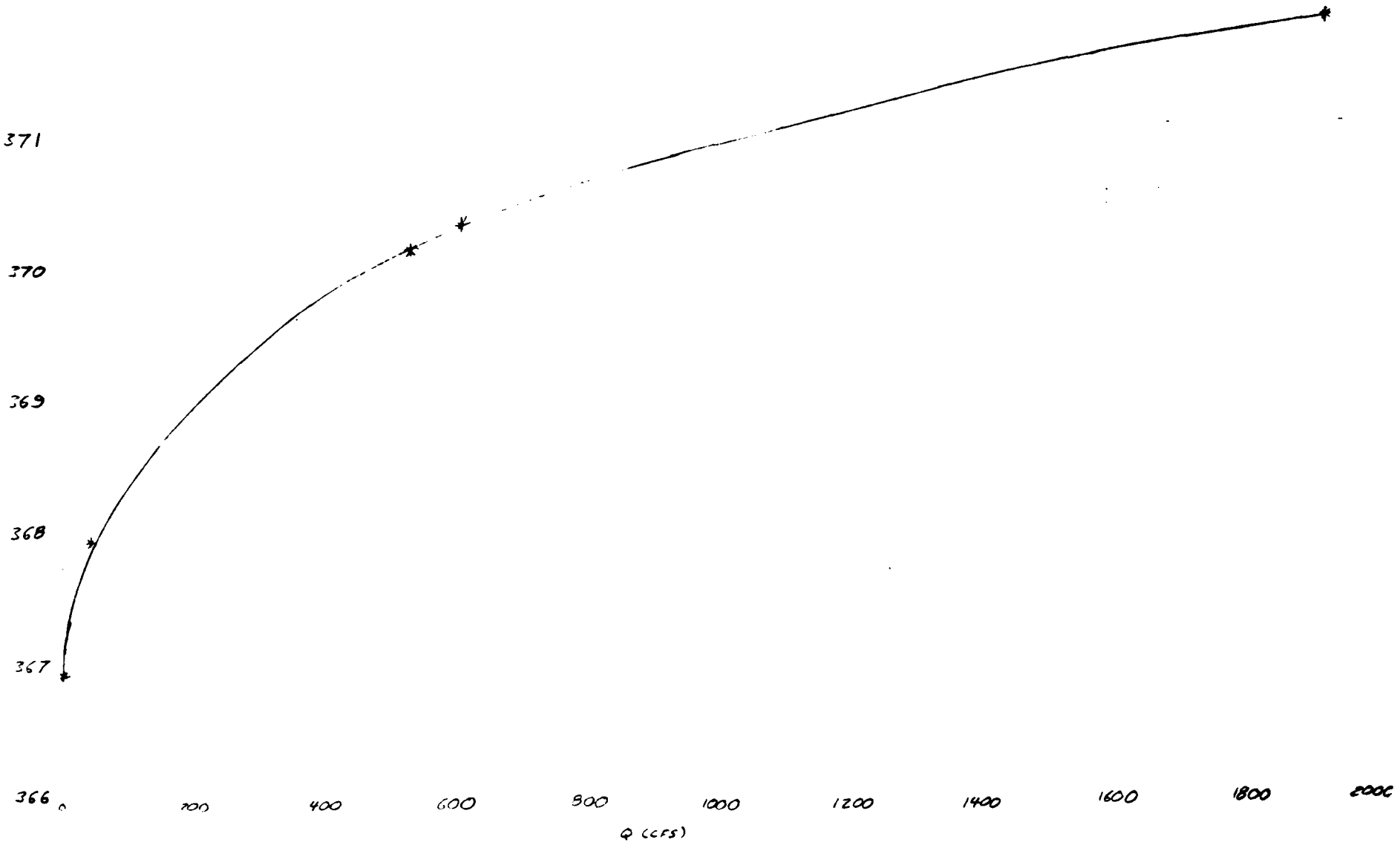



MARYS CREEK #8
LAKE EL. Vs. STORAGE
380
375
370
LK EL.
('MSL)
365
360
355
350
345
0
100
200
300
400
500
600
700
800
900
1000
STORAGE (AC-FT)

MARYS CREEK #8
PRINCIPAL SPILLWAY
RATING
LAKE EL. Vs. Q

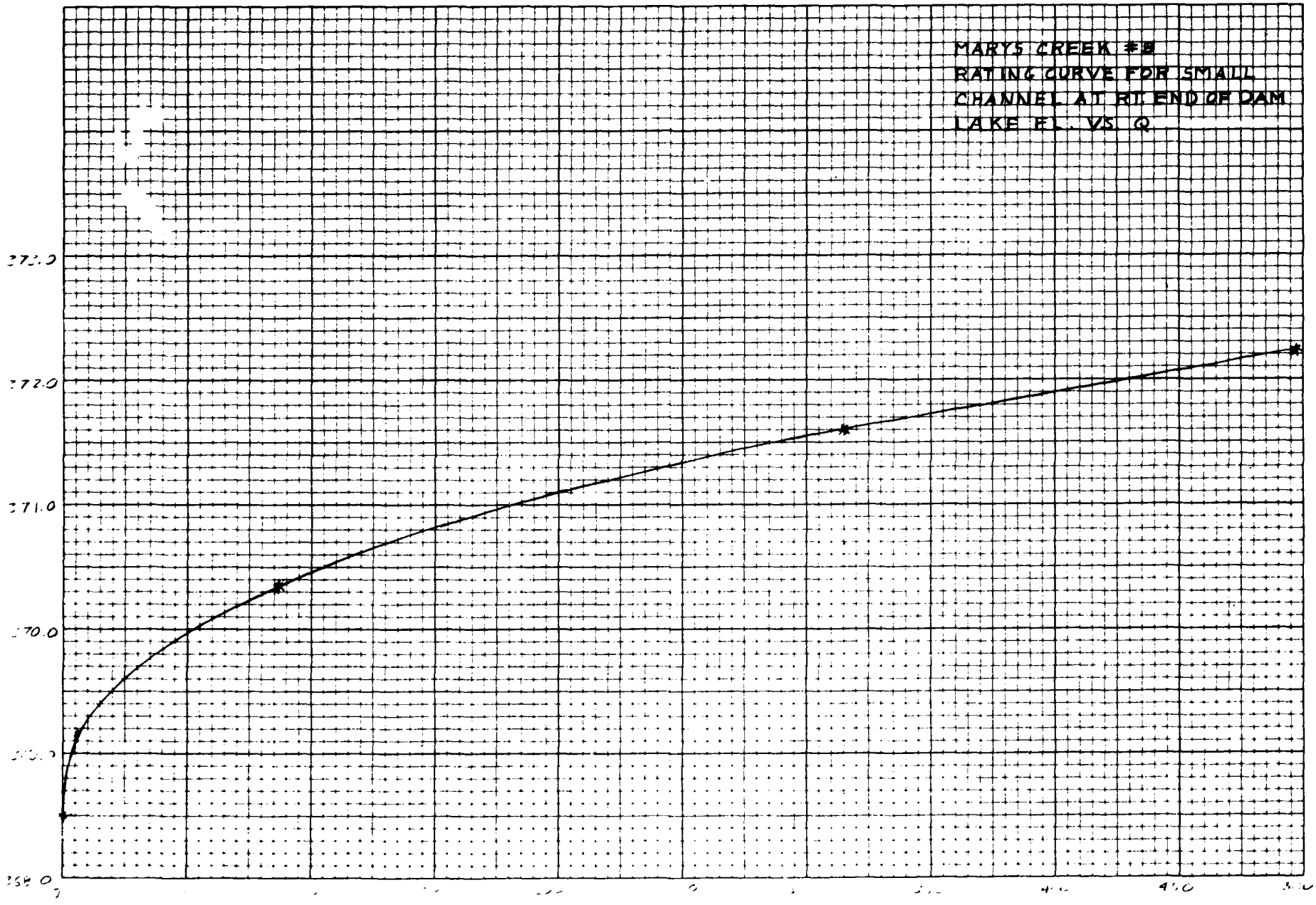


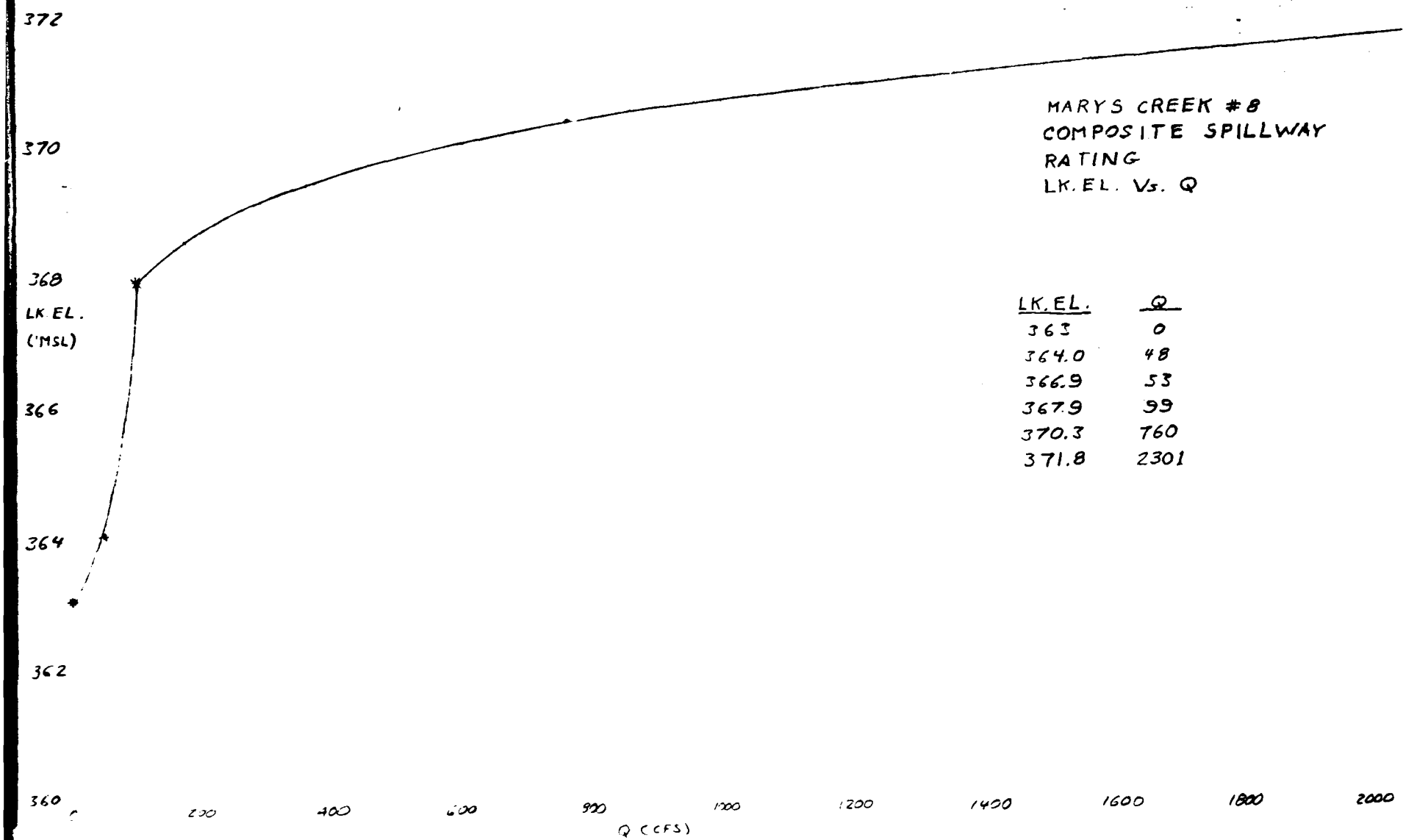
MARYS CK. #8
EMER. SPILLWAY RATING
LAKE EL. Vs. Q



10 X 10 PER INCH

MADE IN U.S.A.





MARYS CREEK #8
COMPOSITE SPILLWAY
RATING
LK. EL. Vs. Q

LK. EL.	Q
363	0
364.0	48
366.9	53
367.9	99
370.3	760
371.8	2301

PROGRAM PROCEDURE

Input Sequence	Page	
I	1	a) Routing inflow hydrograph through Stotts Lake Dam (Tolly Murff).
		b) Routing breech hydrograph from Stotts through reach between Stotts Dam and Mary's Creek Reservoir.
		c) Combing inflow hydrograph to Mary's Creek No. 8 and breech hydrograph from Stotts.
		d) Routing composite inflow through Mary's Creek Dam.
II	9	Same sequence as above for AMC III condition.
III	11	Standard inflow hydrograph routing through Mary's Creek Dam assuming Stotts Lake does not exist.[1]
IV	13	Same procedure as above for AMC III condition.

[1]This is a reasonable approximation if Stotts Dam does not breech. It is a conservative approach from a design standpoint (i.e., it gives higher flow values) because spillway outflow will not exceed the inflow that is assumed if the dam is absent, until the dam overtops.

```
                                                                                A
                                                                                A
A1          MARYS CREEK AND TOLLY MURFF DAMS                                    A
A2          SHELBY CO.                                                          A
A3          ARC II
B    100                6                                                                  4
B1     5                                                                       E>
J      1        3       1
J1 0.003      0.5       1
K      0        1                       1                 1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR TOLLY MURFF
M      1        2   0.064                         1                                      1
P           29.7      100      101      102
T                                                          -1       -71
U2        0.202
X      0        1       1.5
K      1        2                       1                 1
K1          ROUTING FLOW THROUGH TOLLY MURFF
Y                                1       1
Y1     1                                                  -387       -1
Y4   387    387.8      389      390      391
Y5     0       25      173      567     1124
$S     0     39.9     63.6    206.1
$E 371.9      387      390      400
$$   387
$D 388.9      3.1      1.5      422
$L     0      150      360      422
$U 388.9    390.6    390.9    391.2
$B    19        1    371.9      0.5      387    388.9
K      1        3                       1                 1
K1     ROUTING OF BREACH HYDROGRAPH THROUGH REACH BETWEEN RESERVOIRS
Y                                1       1
Y1     1
Y6 0.025    0.025    0.025      363      380      870   0.0102
Y7     0      385      108      374      215      363      300      363      394      363
Y7   507      374      564      380      620      385
K      0        4                       1                 1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR MARYS CREEK
M      1        2   0.383                         1                                      1
P           29.7      100      101      102
T                                                          -1       -68
U2        0.406
X      0        1       1.5
K      2        5                       1                 1
K1                HYDROGRAPHS COMBINED AT THIS PT.
K      1        6                       1                 1
K1                  ROUTING THROUGH MARYS CREEK
Y                                1       1
Y1     1                                                  -363       -1
Y4   363      364    366.9    367.9    369.4    370.3    371.8
Y5     0       48       53       99      360      760     2301
$S     0      149      396     1045
$E   348      363      370      380
$$   363
$D 369.6      3.1      1.5     1120
$L     0      960     1080     1120
$U 369.6      370    370.5      371
K     99
```

```
  3E (HEC-1)
DAM SAFETY VERSION     JULY 1978
  LAST MODIFICATION  01 APR 80
**********************************

RUN  DATE= 81/06/09.
     TIME= 06.59.05.
```

MARYS CREEK AND TOLLY MURFF DAMS
SHELBY CO.
AMC II

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
100	0	6	0	0	0	0	0	4	0

JOPER	NWT	LROPT	TRACE
5	0	0	0

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 3 LRTIO= 1
RTIOS= .09 .50 1.00

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

SUB-AREA RUNOFF COMPUTATION

INFLOW HYDROGRAPH COMPUTATIONS FOR TOLLY MURFF

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

HYDROGRAPH DATA

IHYDG	IUNG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	.06	0.00	.06	1.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	29.70	100.00	101.00	102.00	0.00	0.00	0.00

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	-71.00	0.00	0.00

E>

HYDROGRAPH ROUTING

ROUTING FLOW THROUGH TOLLY RUFF

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
2	1	0	0	1	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	-387.	-1

STAGE	387.00	387.80	389.00	390.00	391.00
FLOW	0.00	25.00	173.00	567.00	1124.00
CAPACITY=	0.	40.	64.	206.	
ELEVATION=	372.	387.	390.	400.	

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
387.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COOD	EXPD	DAMWID
388.9	3.1	1.5	422.

CREST LENGTH AT OR BELOW ELEVATION	0.	150.	360.	422.
	388.9	390.6	390.9	391.2

DAM BREACH DATA

BRWID	Z	ELBM	TFAIL	WSEL	FAILEL
19.	1.00	371.90	.50	387.00	388.90

PEAK OUTFLOW IS 16. AT TIME 16.60 HOURS

BEGIN DAM FAILURE AT 15.90 HOURS

PEAK OUTFLOW IS 1856. AT TIME 16.24 HOURS

BEGIN DAM FAILURE AT 15.50 HOURS

PEAK OUTFLOW IS 2662. AT TIME 15.

E>

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

HYDROGRAPH ROUTING

ROUTING OF BREACH HYDROGRAPH THROUGH REACH BETWEEN RESERVOIRS

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
3	1	0	0	1	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)	ELNUT	ELMAX	RLNTH	SEL
.0250	.0250	.0250	363.0	380.0	870.	.01020

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

0.00 385.00 108.00 374.00 215.00 363.00 300.00 363.00 394.00 363.00
507.00 374.00 564.00 380.00 620.00 385.00

STORAGE	0.00	3.36	7.04	11.04	15.35	19.99	24.95	30.23	35.82
41.74	47.98	54.53	61.41	68.60	76.11	83.92	92.04	100.47	109.20
118.25									
OUTFLOW	0.00	916.64	2980.23	5998.73	9921.35	14733.30	20435.87	27039.12	34558.38
43012.27	52421.67	62808.95	74197.51	87613.94	102558.69	118656.97	135936.91	154424.41	174144.29
195120.70									
STAGE	363.00	363.89	364.79	365.68	366.58	367.47	368.37	369.26	370.16
371.05	371.95	372.84	373.74	374.63	375.53	376.42	377.32	378.21	379.11
380.00									
FLOW	0.00	916.64	2980.23	5998.73	9921.35	14733.30	20435.87	27039.12	34558.38
43012.27	52421.67	62808.95	74197.51	87613.94	102558.69	118656.97	135936.91	154424.41	174144.29
195120									

E>

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	29.70	100.00	101.00	102.00	0.00	0.00	0.00

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	-00.00	0.00	0.00

CURVE NO = -68.00 WETNESS = -1.00 EFFECT CN = 68.00

UNIT HYDROGRAPH DATA
TC= 0.00 LAG= .41

RECESSION DATA
STRTQ= 0.00 QRCSN= 1.00 RTIOR= 1.50

END-OF-PERIOD FLOW

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	30.29	25.30	5.00	62452.
										(769.)	(643.)	(127.)	(1768.44)

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

COMBINE HYDROGRAPHS

HYDROGRAPHS COMBINED AT THIS PT.

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
5	2	0	0	1	0	1	0	0

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

HYDROGRAPH ROUTING

ROUTING THROUGH MARYS CREEK

ISTAQ	ICOMP	IECON	ITAPE	JPLT	JPRT	INAME	ISTAGE	IAUTO
6	1	0	0	1	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	-363.	-1

S

E>

CREST LENGTH	0.	550.	1080.	1120.
AT OR BELOW ELEVATION	369.6	370.0	370.5	371.0

PEAK OUTFLOW IS 48. AT TIME 18.50 HOURS

PEAK OUTFLOW IS 585. AT TIME 17.30 HOURS

PEAK OUTFLOW IS 3708. AT TIME 16.20 HOURS

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

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 .09	RATIO 2 .50	RATIO 3 1.00
HYDROGRAPH AT	1	.06	1	71.	380.	761.
	(	.17)	(	2.00)(	10.77)(	21.55)(
ROUTED TO	2	.06	1	16.	1670.	2573.
	(	.17)	(	.46)(	47.29)(	72.87)(
ROUTED TO	3	.06	1	16.	1726.	2461.
	(	.17)	(	.46)(	48.87)(	69.68)(
HYDROGRAPH AT	4	.38	1	309.	1663.	3326.
	(	.99)	(	8.76)(	47.09)(	94.19)(
2 COMBINED	5	.45	1	324.	2803.	5767.
	(	1.16)	(	9.18)(	79.37)(	163.31)(
ROUTED TO	6	.45	1	48.	585.	3708.
	(	1.16)	(	1.37)(	16.56)(	104.99)(

1 SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM

E>

```
                                        .50       1726.       364.2    16.30
                                       1.00       2461.       364.8    15.90
1                                        SUMMARY OF DAM SAFETY ANALYSIS


     PLAN  1 ..............                 INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                ELEVATION          363.00             363.00          369.60
                                STORAGE               149.               149.            382.
                                OUTFLOW                 0.                 0.            449.


                      RATIO      MAXIMUM      MAXIMUM      MAXIMUM      MAXIMUM     DURATION      TIME OF      TIME OF
                         OF    RESERVOIR        DEPTH      STORAGE      OUTFLOW     OVER TOP   MAX OUTFLOW      FAILURE
                        PMF     W.S.ELEV     OVER DAM       AC-FT          CFS        HOURS         HOURS        HOURS

                        .09       364.13         0.00         189.         48.         0.00         18.50         0.00
                        .50       369.82          .22         390.        585.         1.80         17.30         0.00
                       1.00       370.81         1.21         449.       3708.         3.20         16.20         0.00
1*****************************************
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION     JULY 1978
   LAST MODIFICATION  01 APR 80
 *****************************************
EOI.
E>
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A1          MARYS CREEK AND TOLLY MURFF DAMS                                A
A2          SHELBY CO.                                                      A
A3          AMC III                                                         A
B    100                6                                                 A
B1     5                                                                   EOI.       4
J      1        3        1                                                 E>
J1 0.133      0.5        1
K      0        1                          1                    1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR TOLLY MURFF
M      1        2    0.064                                    1                    1
P           29.7      100      101      102
T                                                                 -1      -86
U2        0.127
Y      0        1      1.5
K      1        2                          1                    1
K1          ROUTING FLOW THROUGH TOLLY MURFF
Y                                 1        1
Y1     1                                                         -387       -1
Y4   387   387.8      389      390      391
Y5     0       25      173      567     1124
S$     0     39.9     63.6   206.1
SE 371.9      387      390      400
S$   387
SD 388.9      3.1      1.5      422
SL     0      150      360      422
SU 388.9    390.6    390.9    391.2
S$    19        1    371.9      0.5      387    388.9
K      1        3                          1                    1
K1    ROUTING OF BREACH HYDROGRAPH THROUGH REACH BETWEEN RESERVOIRS
Y                                 1        1
Y1     1
Y6 0.025    0.025    0.025      363      380      870   0.0102
Y7     0      385      108      374      215      363      300      363      394      363
Y7   507      374      564      380      620      385
K      0        4                          1                    1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR MARYS CREEK
M      1        2    0.383                                    1                    1
P           29.7      100      101      102
T                                                                 -1      -84
U2        0.250
X      0        1      1.5
K      2        5                          1                    1
K1                  HYDROGRAPHS COMBINED AT THIS PT.
K      1        6                          1                    1
K1                    ROUTING THROUGH MARYS CREEK
Y                                 1        1
Y1     1                                                         -363       -1
Y4   363      364    366.9    367.9    369.4    370.3    371.8
Y5     0       48       53       99      360      760     2301
S$     0      149      396     1045
SE   348      363      370      380
S$   383
SD 369.6      3.1      1.5     1120
SL     0      560     1000     1120
SU 369.6      370    370.5      371
K     99
```

```
                                                1.00        2446.        364.6     15.70
1                                                    SUMMARY OF DAM SAFETY ANALYSIS


     PLAN  1 ..............                                INITIAL VALUE      SPILLWAY CREST      TOP OF DAM
                                                ELEVATION          363.00              363.00           369.60
                                                STORAGE               149.                148.             382.
                                                OUTFLOW                 0.                  0.             449.

                                RATIO      MAXIMUM       MAXIMUM       MAXIMUM       MAXIMUM      DURATION      TIME OF       TIME OF
                                  OF     RESERVOIR         DEPTH       STORAGE       OUTFLOW     OVER TOP     MAX OUTFLOW     FAILURE
                                 PMF      W.S.ELEV      OVER DAM        AC-FT           CFS         HOURS           HOURS       HOURS

                                .13        364.91          0.00          216.            50          0.00           18.40        0.00
                                .50        370.06           .46          400.           873.         2.20           16.50        0.00
                               1.00        371.07          1.47          465.          5197.         3.30           15.90        0.00
1*******************************
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION      JULY 1978
   LAST MODIFICATION  01 APR 80
 *******************************
EOI.
E>
```

```
A1          MARYS CREEK DAM 88
A2          SHELBY CO.
A3          AMC II
B    100                6                                                    4
B1     5
J      1        3        1
J1 0.093      0.5        1
K      0        1                          1                 1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR MARYS CREEK
M      1        2    0.383                          1                       1
P           29.7      100      101      102
T                                                              -1      -68
U2        0.406
X      0        1      1.5
K      1        2                          1                 1
K1                        ROUTING THROUGH MARYS CREEK
Y                                 1        1
Y1     1                                                      -363      -1
Y4   363      364    366.9    367.9    369.4    370.3    371.8
YS     0       48       53       99      360      760     2301
$S     0      149      396     1045
$E   348      363      370      380
$$   363
$D 369.6      3.1      1.5     1120
$L     0      950     1080     1120
$U 369.6      370    370.5      371
K     99
A
A
A
A
A
EOI.
E>
```

1 SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	363.00	363.00	389.60
STORAGE	149.	149.	382.
OUTFLOW	0.	0.	449.

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
.09	364.01	0.00	185.	48.	0.00	18.40	0.00
.50	368.89	0.00	357.	271.	0.00	18.40	0.00
1.00	370.42	.82	424.	1871.	3.00	16.40	0.00

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

```
A1          MARYS CREEK DAM #8
A2          SHELBY CO.
A3          AMC III
B    100                6                                                  4
B1     5
J      1        3       1
J1 0.133      0.5       1
K      0        1                        1                 1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR MARYS CREEK
M      1        2   0.383                          1                      1
P              29.7     100      101      102
T                                                          -1      -84
W2          0.250
X      0        1     1.5
K      1        2                        1                 1
K1                        ROUTING THROUGH MARYS CREEK
Y                                  1       1
Y1     1                                                  -363      -1
Y4   363      364   366.9   367.9   369.4   370.3   371.8
Y5     0       48      53      99     360     760    2301
$S     0      149     396    1045
$E   348      363     370     380
$$   363
$D 369.6      3.1     1.5    1120
$L     0      950    1080    1120
$U 369.6      370   370.5     371
K     99
A
A
A
A
A
EOI.
E>
```

1 SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	363.00	363.00	369.60
STORAGE	149.	149.	382.
OUTFLOW	0.	0.	449.

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
.13	364.71	0.00	209.	49.	0.00	18.30	0.00
.50	369.25	0.00	369.	333.	0.00	18.20	0.00
1.00	370.67	1.07	439.	2949.	3.00	16.00	0.00

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

HYDRAULIC AND HYDROLOGIC ANALYSIS

According to OCE guidelines, Stotts Dam must be able to safely pass a minimum of the one-half Probable Maximum Flood (½PMF). Six hour rainfall depths for the Probable Maximum Precipitation and the 100 year rainfall were obtained from the U. S. Weather Service's Technical Paper 40. Flood routings were performed using the HEC-1-DB computer program. The program uses the dimensionless hydrograph technique described in Section 4 of the Soil Conservation Service National Engineering Handbook and the modified puls method of reservoir routing.

The peak outflow from the ½PMF (AMC II) is 202 cfs. This flood overtops the dam by 0.2' for 30 minutes.

Stotts Lake Dam

SUMMARY OF ROUTINGS

EVENT	ANTECEDENT MOISTURE CONDITION	
	II	III
PMF	Overtops by maximum of 1.0' for 2.1 hours	Overtops by maximum 1.1' for 2.2 hours
½ PMF	Overtops by maximum 0.2' for 30 minutes	Overtops by maximum 0.3' for 0.7 hours
100 - YEAR	1.3' of freeboard is maintained	1.0' of freeboard is maintained

Spillway is inadequate to pass the ½PMF by:

50 cfs (AMC II)
95 cfs (AMC III)

CURVE NUMBER & LAG TIME DETERMINATION FOR STOTTS

PMP = 29.7"

LAND USE:			CN B	CN C
18%	WOODED		60	72
2%	RESIDENTIAL OR HARD SURFACE		75	82
16%	WATER		100	100
64%	PASTURE		62	75

SOIL TYPES		HYDROLOGIC SOIL GROUP
25%	GRENADA	C
60%	MEMPHIS	B
15%	LORING	B

$$CN = 0.18\,[0.75\,(60) + 0.25\,(72)] + 0.02\,[0.75\,(75) + 0.25\,(82)] + 0.64\,[0.75\,(62) + 0.25\,(75)] + 0.16\,[100]$$

$$= \underline{71} \quad (AMC\ II)$$

$$= \underline{86} \quad (AMC\ III)$$

LONGEST WATERSHED FLOW (L) = 1200'

$$LAG = \frac{L^{0.8}\,(S+1)^{0.7}}{1900\,Y^{0.5}}$$

$$S = \frac{1000}{CN} - 10$$

$$LAG = \frac{1200^{0.8}\,(\quad)^{0.7}}{1900\,(\quad)^{0.5}}$$

$$= 0.202\ hrs\ (AMC\ II)$$

$$= 0.127\ hrs\ (AMC\ III)$$

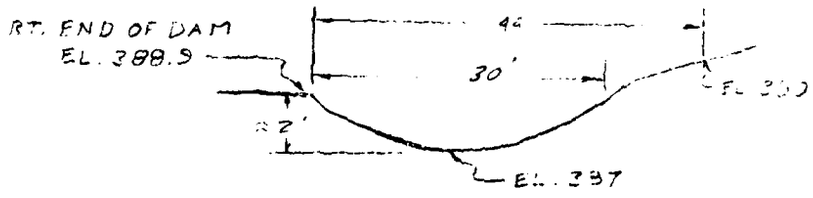
SPILLWAY RATING FOR STOTTS

ELEV. ('MSL)	AREA (0')	STORAGE (AC-FT)
371.9	0	0
387	6.6	40
390	9.2	64
400	19.3	206

ASSUMING PARABOLIC CROSS-SECT. FROM ELEVS. 387 TO 389
USE EQUATION FOR FLOW @ CRIT. DEPTH IN RECTANGULAR CHAN. (FROM 2-391)

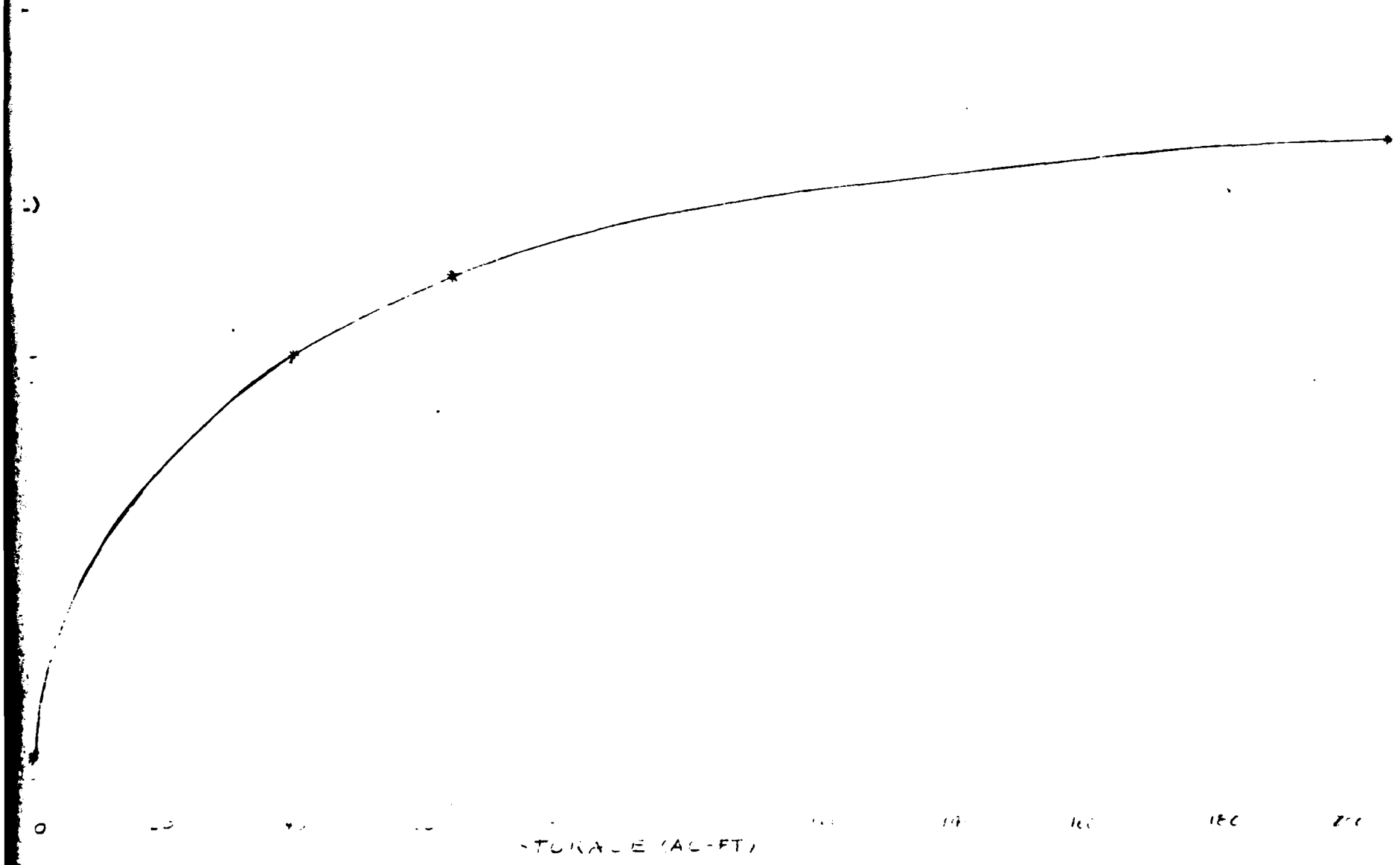
$$Q_{rect.} = 2.005\ T\ H_m^{3/2} \qquad Q_{irr.} = \sqrt{\frac{g A^3}{T}}$$

LK EL.	H_m'	T'	Q (c.f.s.)	A (s.f.)
387	0	0	0	
387.9	0.9	17.5	25	
389	2	39.5	173	
390	3	44	567	76
391	4	44 *	1124	120

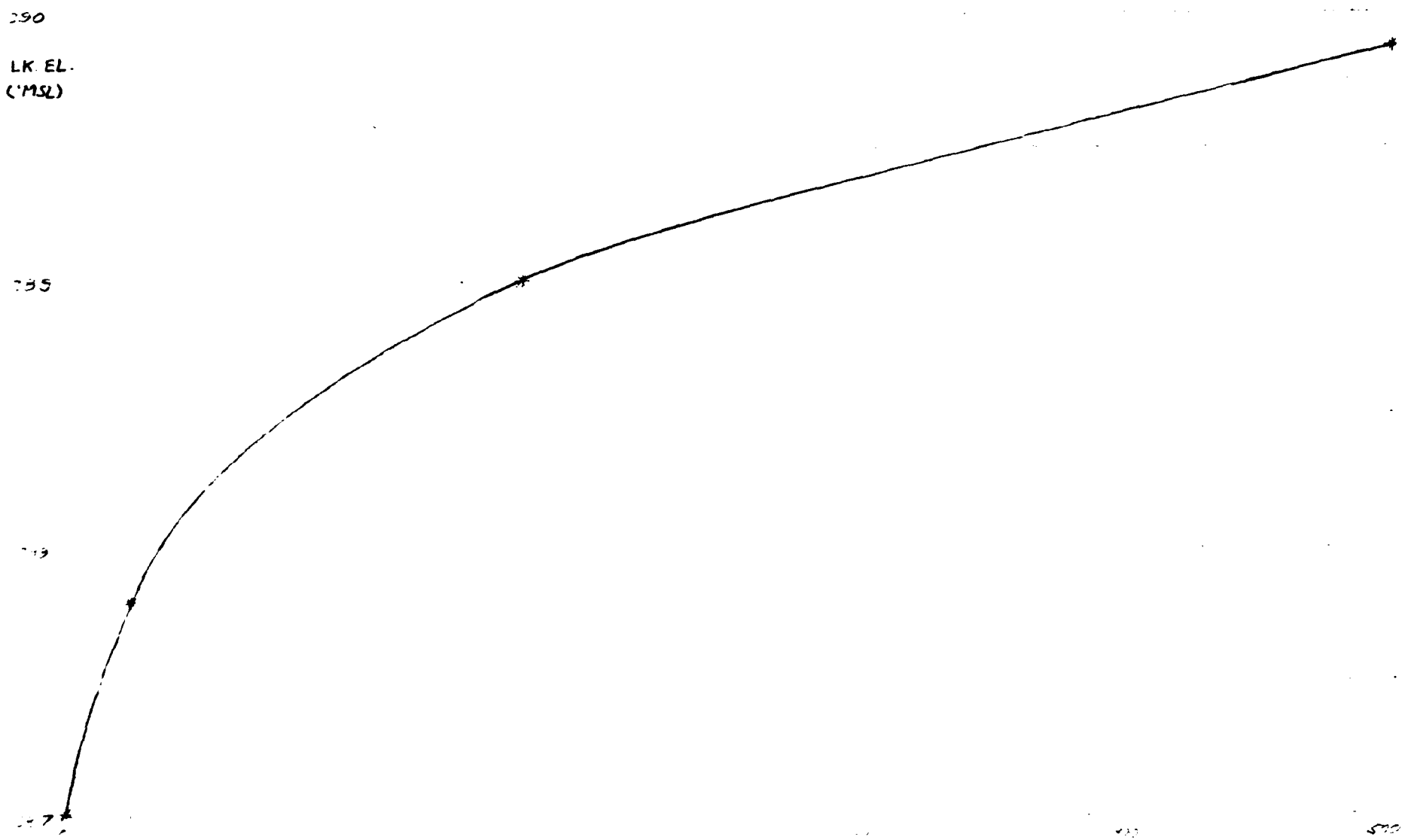


* ASSUMING THAT AT ELEVATIONS OVER 390 [illegible]
STOPS INCREASING. A FLO[illegible] AT EL. 391
BY EXTR[illegible]
THIS IS INCONSEQUENTIAL IN THIS CASE [illegible]
[illegible] COMPUTATIONS FOLLOWING TO [illegible]

STOTTS LAKE DAM
STAGE vs. STORAGE



SIOTTS LK. DAM
SPILLWAY RATING
LAKE EL. Vs. Q



```
A1          STOTTS LAKE DAM
A2          SHELBY CO.
A3          AMC II
B    100                6
 4
B1     5
J      1        3       1
J1 0.103      0.5       1
K      0        1                    1                    1
K1          INFLOW HYDROGRAPH COMPUTATIONS FOR STOTTS
M      1        2   0.064                          1
 1
P           29.7      100      101      102
T                                                  -1      -71
W2         0.282
X      0        1      1.5
K      1        2                    1                    1
K1          ROUTING FLOW THROUGH STOTTS
Y                                   1        1
Y1     1                                           -387      -1
Y4   387    387.8      389      390      391
Y5     0       25      173      567     1124
9S     0     39.9     63.6    206.1
9E 371.9      387      390      400
9S   387
9D 388.9      3.1      1.5      422
9L     0      150      360      422
9U 388.9    390.6    390.9    391.2
K     99
A
A
A
A
A
EOI.
E>
```

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

 RUN  DATE: 81/05/18.
      TIME: 14.21.52.
```

STOTTS LAKE DAM
SHELBY CO.
AMC II

JOB SPECIFICATION

NQ	NHR	NMIN	IDAY	IHR	IMIN	METRC	IPLT	IPRT	NSTAN
100	0	6	0	0	0	0	0	4	0
			JOPER	NWT	LROPT	TRACE			
			5	0	0	0			

MULTI-PLAN ANALYSES TO BE PERFORMED
NPLAN= 1 NRTIO= 3 LRTIO= 1

RTIOS= .10 .50 1.00

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

SUB-AREA RUNOFF COMPUTATION

INFLOW HYDROGRAPH COMPUTATIONS FOR STOTTS

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

HYDROGRAPH DATA

IHYDG	IUHG	TAREA	SNAP	TRSDA	TRSPC	RATIO	ISNOW	ISAME	LOCAL
1	2	.06	0.00	.06	1.00	0.000	0	1	0

PRECIP DATA

SPFE	PMS	R6	R12	R24	R48	R72	R96
0.00	29.70	100.00	101.00	102.00	0.00	0.00	

E>

CURVE NO = -71.00 WETNESS = -1.00 EFFECT CN = 71.00

UNIT HYDROGRAPH DATA
TC= 0.00 LAG= .20

RECESSION DATA
STRTQ= 0.00 QRCSN= 1.00 RTIOR= 1.50

MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	END-OF-PERIOD FLOW COMP Q	MO.DA	HR.MN	PERIOD	RAIN	EXCS	LOSS	COMP Q
									SUM	30.29	25.89	4.40	10877.
										(769.)	(658.)	(112.)	(302.34)

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

HYDROGRAPH ROUTING

ROUTING FLOW THROUGH STOTTS

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

ROUTING DATA

QLOSS	CLOSS	AUG	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	-387.	-1

STAGE	387.00	387.80	389.00	390.00	391.00
FLOW	0.00	25.00	173.00	567.00	1124.00
CAPACITY=	0.	40.	64.	206.	
ELEVATION=	372.	387.	390.	400.	

CREL	SPWID	COOW	EXPW	ELEVL	COOL	CAREA	EXPL
387.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

DAM DATA

TOPEL	COQD	EXPD	DAMWID

E>

```
                                          .10        .50       1.00

HYDROGRAPH AT       1       .06       1     78.       388.      761.
                     (      .17)       (   2.22)(   10.77)(   21.55)(

ROUTED TO           2       .06       1     18.       202.      612.
                     (      .17)       (    .52)(    5.71)(   17.33)(

1                                    SUMMARY OF DAM SAFETY ANALYSIS


     PLAN  1 ..............                INITIAL VALUE     SPILLWAY CREST     TOP OF DAM
                                ELEVATION          387.00             387.00         388.90
                                STORAGE                40.                40.            55.
                                OUTFLOW                 0.                 0.           161.


                      RATIO      MAXIMUM      MAXIMUM      MAXIMUM      MAXIMUM     DURATION      TIME OF      TIME OF
                        OF     RESERVOIR        DEPTH      STORAGE      OUTFLOW     OVER TOP   MAX OUTFLOW      FAILURE
                       PMF      W.S.ELEV     OVER DAM       AC-FT          CFS        HOURS        HOURS        HOURS

                       .10        387.58         0.00          45.          18.         0.00        16.60         0.00
                       .50        389.07          .17          56.         202.          .50        16.00         0.00
                      1.00        389.87          .97          63.         612.         2.10        15.90         0.00
1*************************************
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION      JULY 1978
   LAST MODIFICATION  01 APR 80
 *************************************
EOI.
E>
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E>

SUMMARY OF DAM SAFETY ANALYSIS

PLAN 1 .....

	INITIAL VALUE	SPILLWAY CREST	TOP OF DAM
ELEVATION	387.00	387.00	388.90
STORAGE	40.	40.	65.
OUTFLOW	0.	0.	161.

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
.14	387.87	0.00	47.	33.	0.00	16.10	0.00
.50	389.17	.27	57.	245.	.70	15.90	0.00
1.00	390.02	1.12	64.	711.	2.20	15.80	0.00

```
1*************************************
 FLOOD HYDROGRAPH PACKAGE (HEC-1)
 DAM SAFETY VERSION      JULY 1978
   LAST MODIFICATION  01 APR 80
 *************************************
EOI.
E>Q
C>GET,STOTTS
C>CRE,STOTTS
E>P,28

A1           STOTTS LAKE DAM
A2           SHELBY CO.
A3           AMC III
B    100                6
 4
B1     5
J      1        3        1
J1 0.143      0.5        1
K      0          1                  1                  1
K1           INFLOW HYDROGRAPH COMPUTATIONS FOR STOTTS
M      1          2    0.064                          1
 1
P                29.7      100      101      102
T                                                    -1      -86
U2             0.127
X      0          1      1.5
K      1          2                  1                  1
K1           ROUTING FLOW THROUGH STOTTS
Y                                    1                  1
Y1     1                                               -387      -1
Y4   387      387.8      389      390      391
Y5     0         25      173      587     1124
Y6     0       30.9     63.6    206.1
YE 371.9        387      390      400
YQ   387
YS 388.9        3.1      1.5      422
YL     0        160      260      422
YV 388.9      390.6    390.9    391.2
K     99
```

APPENDIX G

CORRESPONDENCE

TENNESSEE DEPARTMENT OF CONSERVATION
DIVISION OF WATER RESOURCES
4721 TROUSDALE DRIVE, NASHVILLE 37220
615/741-6860

Certified

December 1, 1980

Mr. L. E. Bryan
1371 West Crestwood Dr.
Memphis, TN 38117

Dear Dam Owner:

As provided by the State Safe Dams Act, Tennessee Code Annotated, Sections 70-2501 to 70-2530, non-federal dams in Tennessee must be inspected and certified for safety by our agency. According to our records, you are identified as the owner of Mary's Creek #8 Dam, located in Shelby County, Tennessee. Enclosed for your information and review is a copy of our inventory record on the structure along with a copy of the Act and adopted rules and regulations.

Tentative plans are to schedule a safety inspection of your dam within the next few months. A staff engineer will very shortly be in further communication with you to discuss the pending inspection and your responsibilities under the Safe Dams Act. Your immediate attention, however, is called to the matter of maintaining the earthen dam with a good grass cover and clear of all brush, undergrowth and tree growth. If these conditions do not presently exist, please make plans to remove the brush, undergrowth and all trees less than two inches in diameter as soon as possible. Larger trees may have to be removed at a later date but must be done so under the direction of an experienced engineer.

Please let me, or our Chief Engineer, Mr. Ed O'Neill, know of any assistance we might be.

Very truly yours,

Robert A. Hunt, P.E.
Director, Division of Water Resources

RAH:lt

Enclosures

ORNED-G

NON-FEDERAL DAM INSPECTION REVIEW BOARD
PO BOX 1070
NASHVILLE, TENNESSEE 37202

Commander, Nashville District
US Army Corps of Engineers
PO Box 1070
Nashville, TN 37202

1. The Interagency Review Board, appointed by the Commander on 19 June 1981, presents the following recommendations after meeting on 30 July 1981, to consider the Phase I investigation report on Mary's Creek Watershed Dam No. 8, inspected by the Tennessee Department of Conservation.

2. The data relating to the failure of Stott's Dam through structural failure alone or through failure during the 1/2 PMF should be included in the report.

3. The report should conclude that the dam would probably not fail if it were overtopped by 0.2 ft for 1.8 hours during the 1/2 PMF.

4. A qualified engineer should be engaged to perform an embankment stability analysis to determine if the dam meets seismic stability requirements.

5. Recommendation "d" should be revised to include the services of a qualified engineer to investigate the feasibility of lowering the water level in the stilling basin. The engineer should also investigate and make recommendations for the repair of the drawdown facilities.

ORNED-G
Commander, Nashville District
US Army Corps of Engineers

6. The Board is in agreement with other report conclusions and recommendations following minor revisions.

FRANK B. COUCH, JR.
Chief, Geotechnical Branch
Chairman

O'GENE W. BARKEMEYER
State Conservation Engineer
Soil Conservation Service

GEORGE MOORE
Alternate, Division of Water Resources
State of Tennessee

H. F. PHILLIPS
Chief, Hydraulics Section
Alternate, Hydrology and Hydraulics Branch

EDWARD B. BOYD
Hydrologic Technician
Alternate, US Geological Survey

BRADLEY B. HOOT
Chief, Structural Section
Alternate, Design Branch