FLOOD PLAIN INFORMATION REPORT

LOOSAHATCHIE RIVER

SHELBY COUNTY, TENNESSEE

Prepared as Part of
THE CHICKASAW-METROPOLITAN SURFACE WATER MANAGEMENT SURVEY
by
UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
AUGUST 1970

4-30052 1-71
USDA-SCS-FORT WORTH, TEX. 1971

Cover Photo: Bottom land recently developed for cropland flooded by Loosahatchie River. This type of flood occurred three times in March 1968.

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by
United States Department of Agriculture
Soil Conservation Service
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INTRODUCTION

This flood plain information report on Loosahatchie River within Shelby County, Tennessee, was made as a part of the Chickasaw-Metropolitan Surface Water Management Survey. It was prepared, pursuant to a request by the Shelby County Conservation Board, by the Soil Conservation Service of the U. S. Department of Agriculture under authority of Section 6, Public Law 566, The Watershed Protection and Flood Prevention Act, as amended.

The report is a condensation of information obtained during the flood plain study. It covers the history of floods on the Loosahatchie River and describes future floods to be expected. It delineates the flood plain areas that would be inundated by the 100-year flood and provides flood information on discharges and stages at selected points.

Guidelines are suggested for the use of local officials in planning the most efficient use of flood plain lands in view of present and potential flood hazards. Such guidelines include (1) preventive measures that would reduce flood damages by management of flood plain lands and (2) corrective measures to control flooding by land treatment, dams, and channel improvement.

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LOOSAHATCHIE RIVER WATERSHED

Physical Characteristics

The Loosahatchie River Watershed has a drainage area of about 741 square miles with approximately 328 square miles in Shelby County and the remaining areas in Hardeman, Fayette, Tipton, and Haywood Counties, Tennessee. The watershed is rectangular in shape, extending 50 miles from its headwaters to its outlet into the Mississippi River. Maximum width of the watershed is approximately 25 miles. Main tributaries of the Loosahatchie River are Big Creek and Beaver Creek.

The Loosahatchie River Watershed lies within the Gulf Coastal Plain physiographic area. The topography is rolling in the uplands with moderately-wide valley floors. The area is underlain by unconsolidated Coastal Plain materials made up largely of sand and gravels. Surface soils of the watershed are developed from deep silts deposited by the wind.

Development Affecting Floods

The sustained use of the uplands for row crop farming without adequate conservation practices and the clearing of both upland and flood plain forest land for increased row crop acres have accelerated both the runoff and erosion from the uplands and increased the flooding and sedimentation on the flood plains of the Loosahatchie River.

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The approach to channel improvements by the old drainage districts has also contributed to flood problems by beginning excavation upstream and progressing downstream. Following each stage of development, logs, silt, and debris brought down by the more efficient straight channel, lodged at the head of the natural channel (see Exhibit 1). This was due to the abrupt change in channel alignment, cross section, and gradient. Flow in the river became blocked, forcing the river out of its banks to flood the low lands. Lack of adequate maintenance allowed the new channel to deteriorate.

With few exceptions, houses and farm buildings are located outside the flood boundaries. The towns of Arlington and Brunswick have isolated buildings subject to flood at relatively high stages.

Past Floods

The reach of the Loosahatchie River through Shelby County, as covered by this report, has a history of frequent flooding. Published records for the Loosahatchie River stream gage near Brunswick, Tennessee, show sixty-one instances of overbank flow during a twenty-year period. Forty-eight of these floods occurred during the winter months and thirteen occurred during the cropping season of April through November. Nine of the thirteen cropping season floods occurred in the months of April and November and four occurred in the months of May through September. Flooding of the Loosahatchie River tributary streams can occur during any month of the year, but is more common during the winter and spring months.

East side of bridge over Loosahatchie River on the Raleigh-Millington Road.
Note straight, even flow without obstructions.

(Photo Courtesy of Memphis Press-Scimitar)

West side of bridge over Loosahatchie River on the Raleigh-Millington Road.
Note log jams and other debris.

(Photo Courtesy of Memphis Press-Scimitar)

Exhibit 1

Floods approaching the maximum recorded flood stage have occurred during the winter months, causing little agricultural damage other than the loss of livestock and inconvenience to local residents through interruption of traffic on many rural roads for relatively short periods. These floods were not sufficiently newsworthy for reporting in detail by newspapers, consequently details such as dates of floods, area inundated, and depths of inundation have faded from the memory of local residents interviewed during the investigation of this report.

The flood of January 21-22, 1935, stands out in particular because of its magnitude and relevance to projected future floods.

Flood of January 21-22, 1935

The flood of January 21-22, 1935, was the largest known flood on the Loosahatchie River. Outlet conditions for the Loosahatchie River were good with the Mississippi River well below flood stage. Continuous heavy rainfall over the basin and West Tennessee generally produced soil-moisture conditions conducive to high runoff and flooding.

Newspaper accounts report that traffic on every major highway and many railroad lines into Memphis were interrupted due to flooding. The Loosahatchie River overflowed both Highway 70 and L&N Railroad near Arlington, Tennessee, causing passengers of the Pan American passenger train to be taken to Arlington for the night. Damage to Highway 70 east of Arlington was considerable with the roadbed washed away.

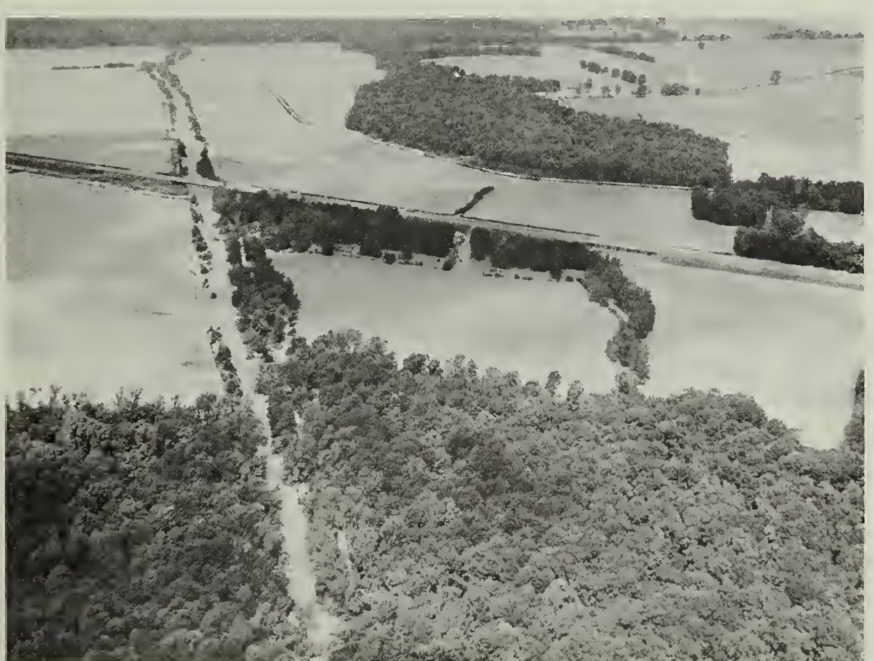
School bus loaded with children braving the Loosahatchie floodwater ripping across Brunswick Road between Brunswick and Bolton, Tennessee, January 15, 1951.

(Photo Courtesy of Memphis Press-Scimitar)

December 14, 1949 floodwaters of Loosahatchie River, as seen from Highway 70 overpass, one mile west of Arlington, Tennessee.

(Photo Courtesy of Memphis Press-Scimitar)

15,000 acres was inundated on June 16, 1970, necessitating replanting of crops.
(Photo Courtesy of Memphis Light, Gas, and Water Division)



Annual average flood damages are in excess of $200,000.
(Photo Courtesy of Memphis Light, Gas, and Water Division)

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Exhibit 3

Reports of damage other than at highways and railroads were not covered by the news media due to the rural character of the basin, but flooding was extensive, covering some 26,300 acres, and damage to agricultural lands from sediment and scour was estimated to be high.

Flood Plain Development Policies

The city of Memphis has the following policy concerning subdivision of land along Loosahatchie River:

> The City Engineer presently restricts subdivision development of land adjacent to Loosahatchie River by the setting of minimum curb elevations and the dedication of drainage easements. Minimum curb elevations are established one and one-half feet above flood profiles maintained in the City Engineer's office.

The policy of Shelby County concerning subdivision of land along the Loosahatchie River is generally in agreement with that of the city of Memphis.

Past Flood Control Works of Improvement and Studies

Local interest, through organized drainage districts, constructed channels in the Loosahatchie Watershed beginning at the upper end and progressing downstream. Work on the main stem of the Loosahatchie River began approximately five miles east of Somerville, and extended downstream to approximately Loosahatchie

River mile 20. This work was done in several stages over a period of years.

In 1938, Shelby County extended this channel improvement downstream to the vicinity of the Raleigh-Millington Road with a $7,500 grant from the W. P. A.

The Corps of Engineers, in 1952, removed snags, drift and other debris from the lower three miles of the 1938 improvement and extended the channel downstream beyond the Raleigh-Millington Road at a cost of $60,500.

Shelby County, during 1956, constructed a new channel beginning at the Raleigh-Millinton Road downstream to approximately the Illinois Central Railroad bridge.

Past studies on Loosahatchie River included feasibility studies of a proposed lock and dam approximately at the mouth of the Loosahatchie River. Original studies were by the G. A. Heft Company of New Orleans, and a private study by Mr. A. M. Mallory of the U. S. Corps of Engineers. Later studies were made by the School of Engineering at Memphis State University working through the Bureau of Business Research, Memphis State University. Analysis of foundation problems were made by Dr. F. H. Kellogg, assisted by S. J. Spigalon, both on the Engineering Faculty at Memphis State University. This study was financed by the city of Memphis and Shelby County.

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In March 1968, the joint venture team of Ellers and Reaves Consulting Engineers, Inc. and Winsett-Simmonds, Engineers, Inc. completed a study of the storm drainage of Memphis and Shelby County, Tennessee, and determined the adequacy of present drainage facilities, future drainage needs, long-range plan to meet the needs, and general cost estimates. This study included the laterals, but not the main channel of the Loosahatchie River.

Current Studies on Loosahatchie River

The proposal for a constant level harbor at the mouth of the Loosahatchie River is part of a long-term Memphis Harbor Study by the Memphis District, Corps of Engineers.

A United States Department of Agriculture staff under leadership of the Soil Conservation Service and including the Forest Service and Economic Research Service is at present making the Chickasaw-Metropolitan Surface Water Management Survey. This survey covers the entire Loosahatchie River Basin, and will result in a comprehensive plan, including watershed protection (land treatment and sediment control) and flood prevention.

FUTURE FLOODS

A flood having an average frequency of occurrence in the order of once in 100 years was selected to reflect flooding problems on the Loosahatchie River. A frequency analysis of stream gage records for Brunswick, Tennessee, indicates that the flood of January 1935 generally meets the above criteria. Although this is the largest flood of record, it is recognized that even larger floods are possible. Floods larger than the 100-year flood would be rare but would inundate larger areas and result in greater property damages.

Records of the stream gage at Brunswick, Tennessee, were analyzed statistically using the Log-Pearson Type III Frequency Method. The January 1946, February 1950, and January 1951 flood hydrographs were obtained for the Brunswick gage. Soil-Cover Complex data for the entire basin was developed to obtain rainfall-runoff relationships. Distribution and depths of rainfall were obtained from U. S. Weather Bureau records for selected stations both within and nearby the Loosahatchie Basin. The 1935 and 1946 storms were then floodrouted through the basin. A comparison of hydrographs produced from this routing with the gaged hydrographs were favorable with relation to peak and distribution.

Table I lists the drainage areas in square miles and the computed discharges for the 100-year frequency flood under flood plain conditions existing at the time of survey (1968).

Table II shows the estimated flood elevations for (1) existing (1968) flood plain conditions and (2) assuming expansions of flood plain development on both sides of the Loosahatchie River channel to within 1000 feet of the present channel centerline. 1/ The 100-year flood elevations reflect overall effects of existing land fills and other development on flood flow. Further encroachments would increase flood elevations significantly by confining

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1/ See Plate 5.

TABLE I

Discharges for the 100-year flood
Loosahatchie River, Shelby County,
Tennessee

Station	Drainage area square miles	Discharge of computed flood in cubic feet per second
Benjestown Road	742.40	106,300
Robertson Road	727.60	104,000
U. S. Highway 51	568.69	76,000
Illinois Central Railroad	567.46	76,300
Illinois Central Railroad	564.15	76,300
Raleigh-Millington Road	550.76	76,250
Tennessee Highway 14	531.19	75,900
Brunswick Road	507.00	73,900
Collierville-Arlington Rd.	415.09	57,000
U. S. Highway 70	264.84	42,000

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TABLE II

Flood profile information
Loosahatchie River, Shelby County,
Tennessee

Station	Location river miles 2/	Selected past flood crest January 1935	Elevation - feet MSL: Future 100-year flood with present flood plain	Elevation - feet MSL: Future 100-year flood with 2000 ft. floodway
Benjestown Road	2.2	222.8	228.7 1/	232.2 1/
Robertson Road	6.1	226.8	230.8 1/	235.0 1/
U. S. Highway 51	9.8	231.0	231.0 1/	236.0 1/
Illinois Central Railroad	11.8	233.2	232.3 1/	237.0 1/
Illinois Central Railroad	13.4	235.2	233.0 1/	237.2 1/
Raleigh-Millington Road	15.9	236.9	236.8 1/	242.2 1/
Tennessee Highway 14	20.4	245.5	244.5 1/	252.0 1/
Brunswick Road	25.4	256.2	257.0	262.4
Collierville-Arlington Road	31.3	-	267.9	274.3
U. S. Highway 70	33.0	-	271.9	276.5

1/ These elevations are influenced by backwater of the Mississippi River.

2/ Determined from U. S. Engineer Quadrangle Maps, Jericho, Arkansas-Tennessee 1961, Millington, Tennessee 1961, and Arlington, Tennessee 1965

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flows to constricted areas, thereby increasing velocities and subjecting flooded areas to extensive damage. This table also includes elevations produced by the January 1935 flood for comparative purposes.

The areas along Loosahatchie River that would be affected by the 100-year flood are shown on Plates 3/1 through 3/8. Depths of flow can be estimated from the crest profiles which are shown on Plate 4.

The profiles for Loosahatchie River were computed by using stream characteristics for selected reaches as determined from flood profiles, topographic maps, and valley sections as surveyed in 1968. A basic assumption in developing surface water profiles on Loosahatchie River was a starting elevation of 228.7 mean sea level. This is the anticipated elevation of a flood on the Mississippi River that can be expected to occur on the average of once in 25 years. While it is true that large floods can occur on Loosahatchie River simultaneously with large floods on the Mississippi River, the possibility of receiving the 100-year flood concurrently on both streams would be extremely rare. The elevations shown on Table II and the overflow areas shown on Plates 3/1 through 3/8 have been determined with an accuracy consistent with accuracy of the basic data and the purposes of this study.

The profiles of the 100-year flood depend in part upon the degree of destruction and clogging of various culverts and bridges.

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Because it is impossible to forecast these events, it was assumed that culverts and bridges would not be washed out, and no clogging would occur.

The 100-year flood profiles generally approximate the January 1935 flood. Due to the flat stream gradient of the Loosahatchie River (average of two feet per mile), neither channel or overbank velocities are considered dangerous to life and property.

NEED FOR EFFECTIVE GUIDELINES

At the present time, urban expansion into the Loosahatchie River flood plain has been limited to a few isolated dwellings, an industrial park, and individual small commercial areas which could profitably be developed on high fills. The city of Memphis and Shelby County subdivision policy has effectively limited the intrusions of large subdivision developments into the flood plains.

The need for development of uniform flood plain restrictions by both city and county is evident, and the enforcement of such a standard is an absolute necessity. Making exceptions to these restrictions could result in severe economic losses and possible loss of life from a large flood. Guidelines for a more effective flood damage prevention program are set forth in the following pages of this report.

GENERAL GUIDELINES FOR REDUCING FLOOD DAMAGES

Flood damages may be minimized by careful planning and management. Flood plain management should consider preventive and

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corrective measures and could include several different combinations thereof.

PREVENTIVE MEASURES do not eliminate or reduce flooding, but reduce the threat of damage or loss of life from the design flood and include flood plain regulations, development policies, greenbelts or open spaces, warning signs, tax adjustments and flood insurance. Damage control may be carried out by the following means:

<u>Encroachment Lines</u>

Encroachment lines are the lateral boundaries of a designated floodway. They are two definitely established lines, one on each side of the stream, and between these lines no construction or filling which will cause impedance to flow should be permitted.

<u>Zoning</u>

Zoning is a legal tool used to implement and enforce the details of the flood plain management program, to conserve property values and to achieve the most appropriate and beneficial use of available land.

<u>Subdivision Regulations</u>

Subdivision regulations are used by city and county governments to specify the manner in which land may be subdivided within the entire area under their jurisdiction. Regulations may state the required width of streets, requirements for curbs and gutters, size of lots, elevation of land, freedom from flooding, size of

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floodways and other points pertinent to the welfare of the community.

Building Codes

The primary purpose of building codes is to set up minimum standards for controlling the design, construction and quality of materials used in buildings and structures within a given area, so that life, health, property and public welfare are safeguarded. Since it may not be practical to prevent the location of any building in all areas subject to flooding, building codes can be used to minimize structural and consequential damages resulting from flood velocities and inundation. Some of the methods adaptable to building codes are:

(1) Prevent flotation of buildings from their foundations by specifying anchorage.

(2) Establish basement elevations and minimum first floor elevations consistent with potential flood occurrences.

(3) Prohibit basements in those areas subject to very shallow, infrequent flooding where filling and slab construction would prevent virtually all damage.

(4) Require reinforcement to withstand water pressure or high velocity flow and restrict the use of materials which deteriorate rapidly in the presence of water.

(5) Prohibit equipment that might be hazardous to life when submerged. This includes chemical storage, boilers, or electrical equipment.

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Development Policies

Wise day-to-day policy and action decisions to prevent construction of streets and utility systems in undesirable areas will slow development of the flood plains.

Greenbelts or Open Spaces

Terms related to the development and retention of stream frontages and flood plains as "greenbelts". Permissive use of these public or private lands for pasture or grazing, parks, golf courses and similar uses would materially reduce or regulate the damage potential in the high-hazard flood plain area. The "greenbelt" is an integral part of overall planning and open-space plans of Shelby County and the city of Memphis.

Warning Signs

A method which may be used to discourage development is the erection of flood warning signs in the flood plain area or the prominent posting of previous high-water levels. These signs carry no enforcement, but simply serve to inform prospective buyers that a flood hazard exists.

Tax Adjustments

Tax adjustments for land dedicated to agriculture, recreation, conservation or other open-space uses may be effective in preserving existing floodways along streams.

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Flood Insurance

Flood insurance, as established under Title XIII of P. L. 90-448 can provide still another supplement to many programs for reducing damage. Flood insurance, as presently available, requires that the local units of government have to agree to put restrictions on future development of flood prone areas. Thus, insurance would only be used in connection with other measures.

CORRECTIVE MEASURES are physical measures that are designed to reduce or control floods and flood damage and can be carried out by the following means:

Land Treatment

These are both vegetative and mechanical measures installed on the uplands to prevent destruction of land by erosion and reduce the movement of huge and damaging amounts of sediment to the streams and flood plains. Both existing agricultural lands and lands in transition from agriculture to urban through subdivision developments should be protected by temporary vegetation, mulch and/or sediment basins.

Floodwater Retarding Structures

These are earth and concrete impoundments that check the uncontrolled flow of floodwater rushing downstream. These structures are located and planned to protect the largest possible area of land subject to flooding, encroach as little as possible on high value lands, and provide a high level of protection so that maximum utilization of the protected area can be obtained.

Channel Improvements

Improvement of the channel itself, either by excavation, channel lining, or both, so that it will contain the design flood.

Levees

An embankment along the shore of a river of stream, built for the protection from floods.

Evacuation

Permanent evacuation of developed areas subject to inundation. This involves the acquisition of lands by purchase, the removal of improvements, and the relocation of the population from such areas. Such lands could be used for agriculture, parks or other purposes that would not interfere with flood flows.

Flood Proofing

A combination of structural provisions, changes, or adjustment to properties subject to flooding primarily for the reduction or elimination of flood damages.

Urban Redevelopment

The overall program of public and private action, growing out of the National Housing Act of 1954 as amended, designed to prevent the spread of blight, to rehabilitate and conserve urban areas that can be economically restored, and to clear and redevelop areas that cannot be saved.

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ALTERNATE SOLUTIONS

Two general approaches for the reduction of flood damages on Loosahatchie River flood plains are suggested for consideration by the Memphis and Shelby County governing bodies.

1. A combination of preventive measures such as flood plain regulations, greenbelts and wise development policies. This type of program would restrict future development within the high-damage zones, provide a basis for insurance protection for the small number of homes presently located within the high-damage zone, and provide recreation areas. Essentially this approach will require that a majority of the remaining undeveloped flood plains remain open.

2. A combination of both preventive and corrective measures such as a concrete-lined channel and/or large floodwater-retarding structures, in combination with some of the above preventive measures.

The Soil Conservation Service is at present making a study of the entire Loosahatchie River Watershed. This study, when completed, will provide the Memphis and Shelby County governing bodies a better basis for selecting a solution in the best interest of Shelby County.

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SELECTED TERMS

1. <u>Channel.</u> A natural or artificial water course of perceptible extent, with definite bed and banks to confine and conduct continuously or periodically flowing water. Channel flow thus is that water which is flowing within the limits of the defined channel.

2. <u>Channel bottom.</u> The elevation of the deepest part of a stream channel at a particular section. Such elevations, when determined for many sections along the length of a stream, provide a profile of the bottom from mouth to source.

3. <u>Flood frequency.</u> A means of expressing the probability of flood occurrences as determined from a statistical analysis of representative stream flow records. It is customary to estimate the frequency with which specific flood stages or discharges may be equalled or exceeded, rather than the frequency of an exact stage or discharge. Such estimates by strict definition are designated "exceedence frequency", but in practice the term "frequency" is used. The frequency of a particular stage or discharge is usually expressed as occurring once in a specified number of years. Also see: Recurrence interval.

4. <u>Flood peak.</u> The highest value of stage or discharge attained during a flood event; thus peak stage or peak discharge.

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5. Flood plain. The relatively flat lowlands adjoining a water course or other body of water subject to overflow therefrom during flood periods.

6. Flood profile. The longitudinal profile traced by the crest of a flood event expressed in elevation.

7. Floodway. The channel of the stream or body of water and that portion of the flood plain that is inundated by a flood and used to carry the flow of the flood.

8. 100-year flood. A flood having an average frequency of occurrence in the order of once in 100 years although the flood may occur in any year. This flood is commonly referred to as the "Intermediate Regional Flood" by the U. S. Army Corps of Engineers.

9. Recurrence interval. The average interval of time, based on a statistical analysis of actual or representative stream flow records, which can be expected to elapse between floods equal to or greater than a specified stage or discharge. Recurrence interval is generally expressed in years. Also see: Flood frequency.

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ACKNOWLEDGEMENTS

The Soil Conservation Service would like to acknowledge the cooperation of the following organizations in furnishing information and flood photographs.

The City Engineer
Department of Public Works
Memphis, Tennessee

The Press-Scimitar
Memphis, Tennessee

Department of the Army
Memphis District, Corps of Engineers
Memphis, Tennessee

Technical material developed during this study on past floods, flood plain information, methods of flood damage reduction, and related technical material which will be especially useful to planners, contractors, and engineers, can be obtained by making a request to:

State Conservationist
U. S. Department of Agriculture
Soil Conservation Service
561 U. S. Courthouse
Nashville, Tennessee 37203

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LEGEND
HAYWOOD
TIPTON
SHELBY
LOOSAHATCHIE RIVER
FAYETTE
HARDEMAN
MEMPHIS
MISSISSIPPI RIVER
SHELBY FOREST STATE PARK
FULLER STATE PARK
TENNESSEE
MARSHALL
DESOTO
MISSISSIPPI
BENTON
TIPPAH
HOLLY SPRINGS NATIONAL FOREST
PLATE I
LOOSAHATCHIE RIVER WATERSHED
CHICKASAW-METROPOLITAN
SURFACE WATER MANAGEMENT SURVEY
SOIL CONSERVATION SERVICE
4-R-28686
Revised August 1967

PLATE 2

INDEX OF PLATE 3 SHEETS

FOR

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MOUTH TO SHELBY–FAYETTE COUNTY LINE

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE

August 1970

4-R-29674-1

PLATE 3–1

FLOOD PLAIN INFORMATION REPORT

Shelby County Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MOUTH TO MILE 5.1

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

August 1970

4–R–29694–2

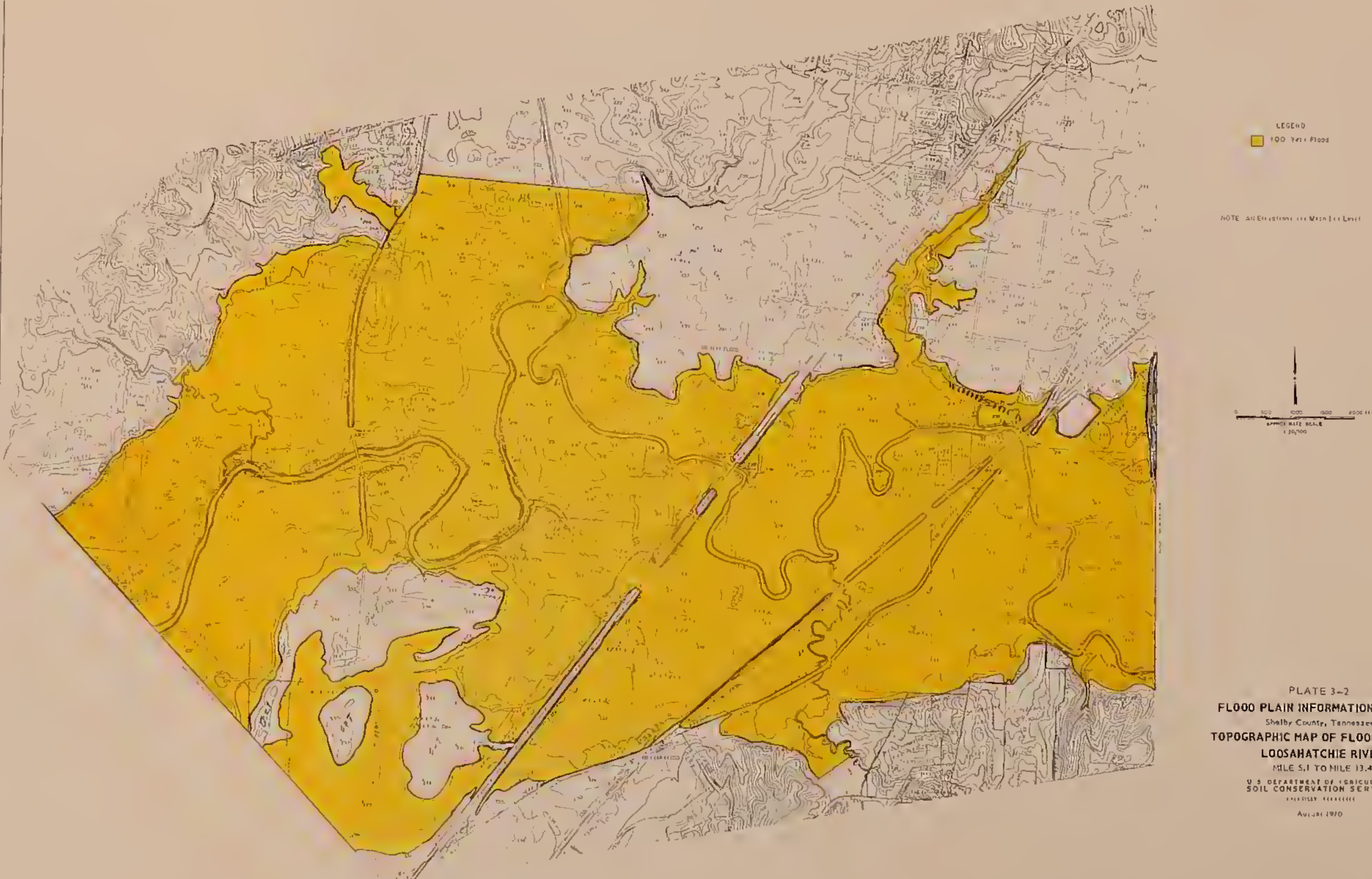


PLATE 3-2

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

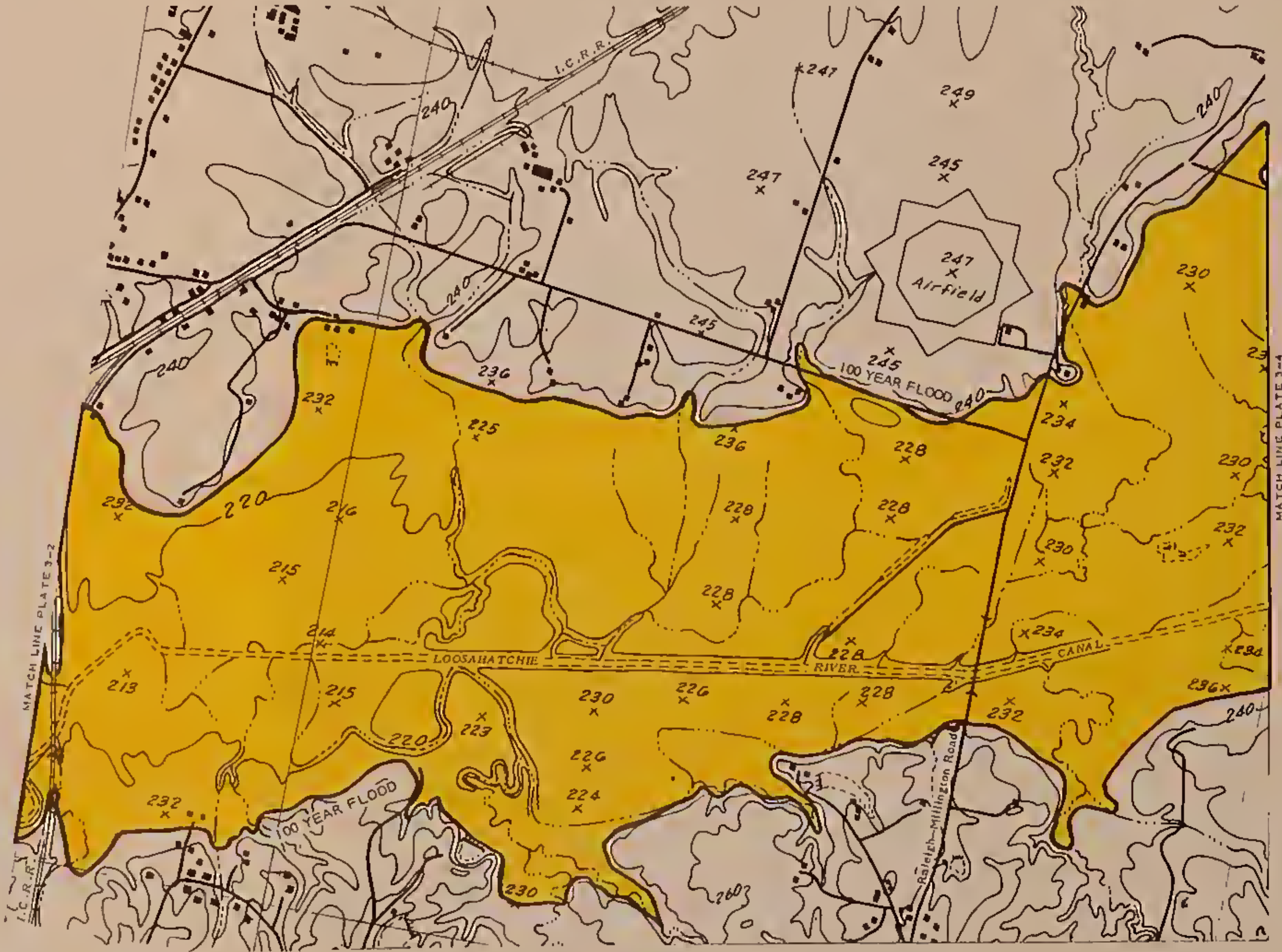
LOOSAHATCHIE RIVER

MILE 5.1 TO MILE 13.4

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

August 1970

4-R-29694-3



LEGEND

100 Year Flood

NOTE: All Elevations are Mean Sea Level

0 1000 2000 FEET

APPROXIMATE SCALE

1:20,000

PLATE 3–3

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MILE 13.4 TO MILE 16.7

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE
August 1970

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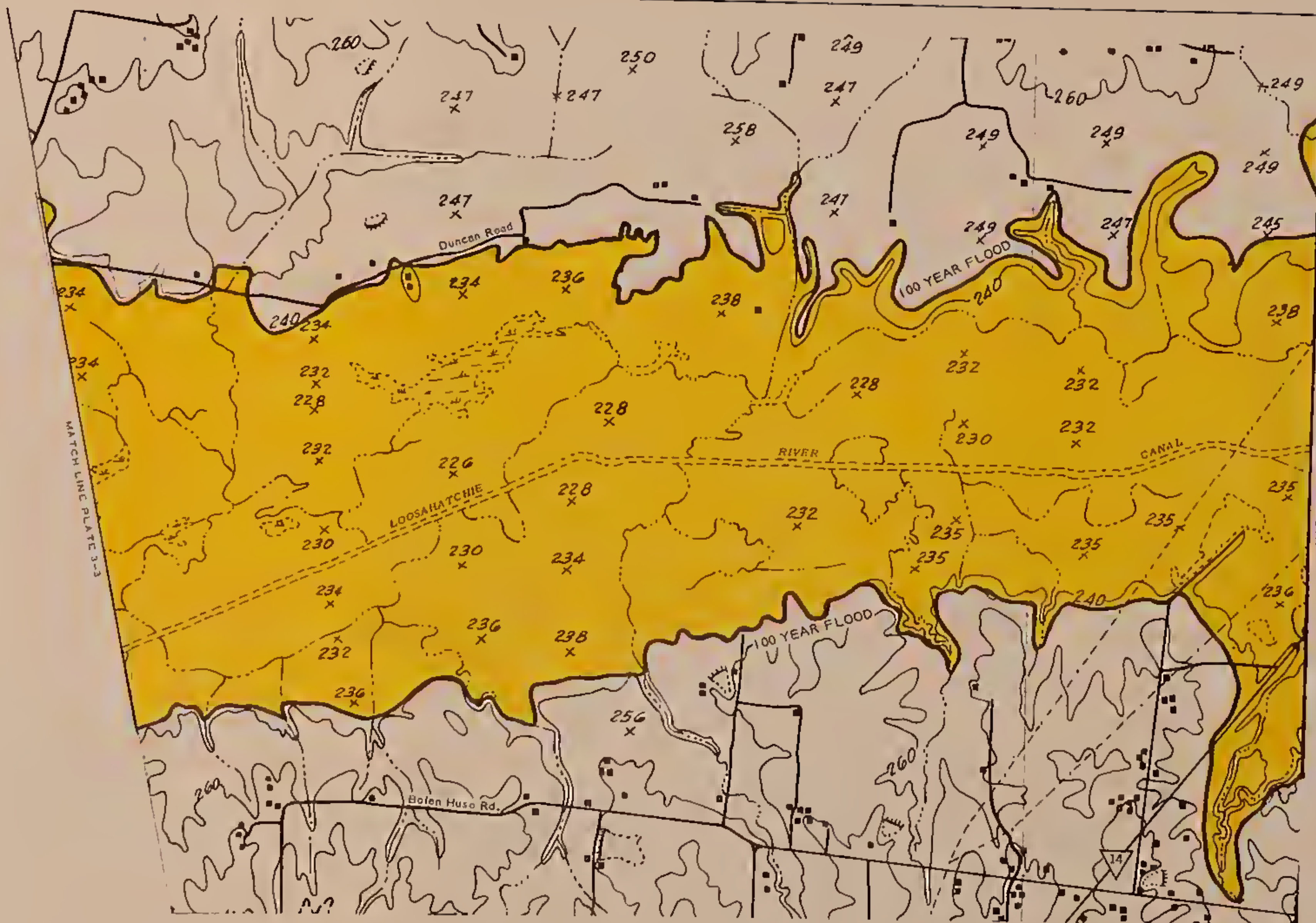

PLATE 3-4

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MILE 16.7 TO MILE 19.9

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE
August 1970

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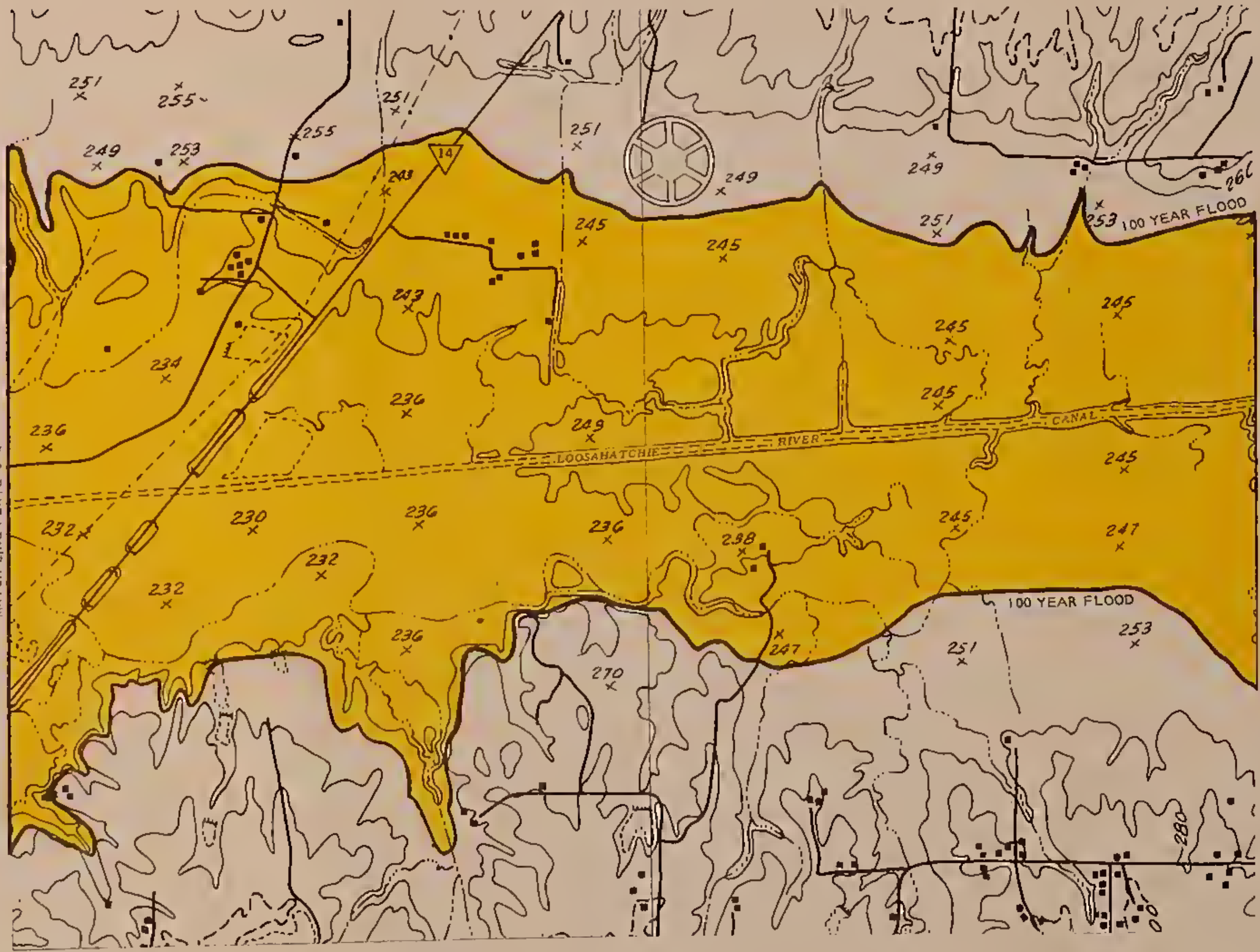

LEGEND

100 Year Flood

NOTE: All Elevations are Mean Sea Level

0 1000 2000 FEET

APPROXIMATE SCALE

1:20,000

PLATE 3-5

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MILE 19.9 TO MILE 23.1

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE
August 1970

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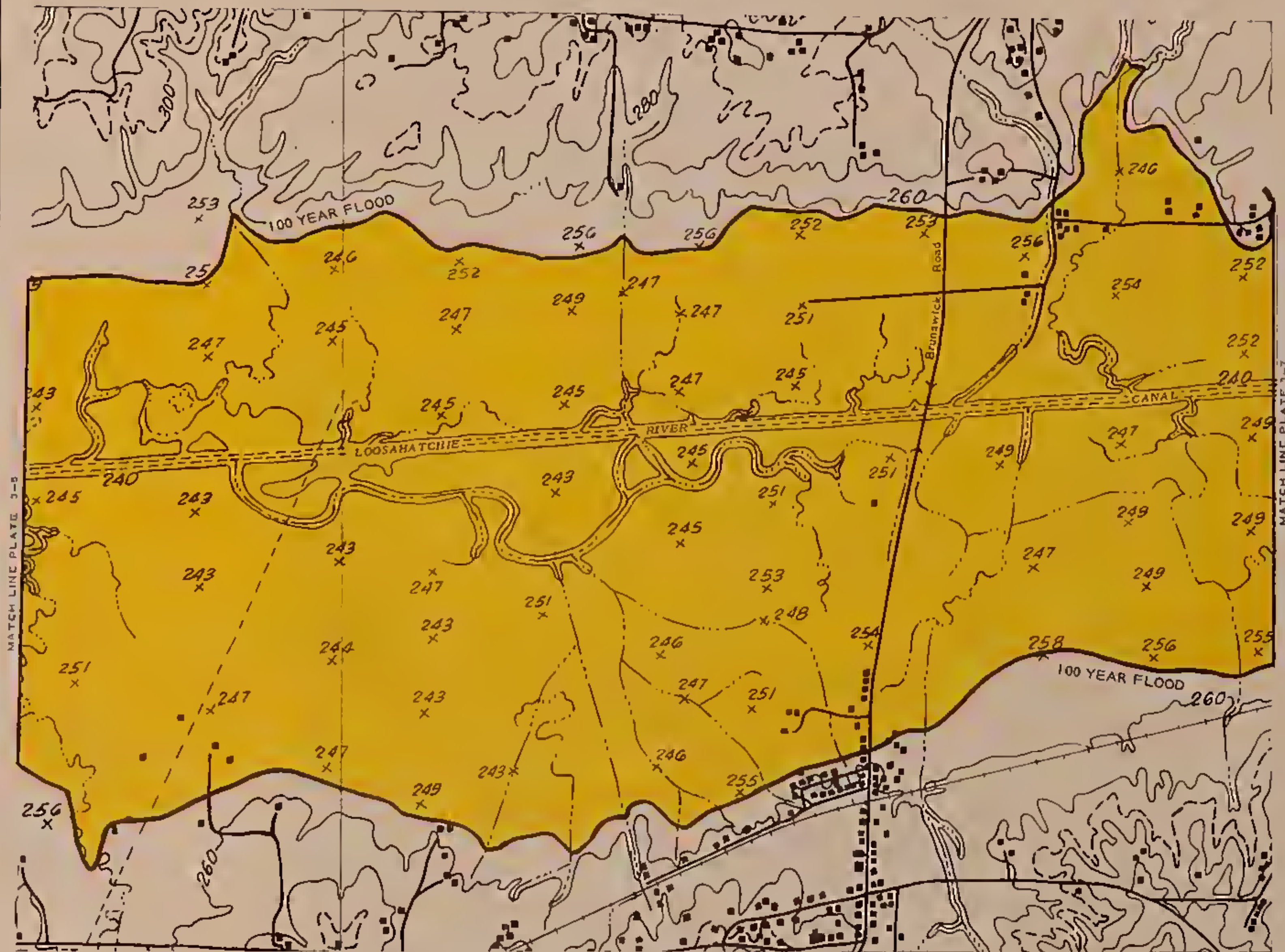


LEGEND

100 Year Flood

NOTE: All Elevations are Mean Sea Level

APPROXIMATE SCALE

1:20,000

PLATE 3-6

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

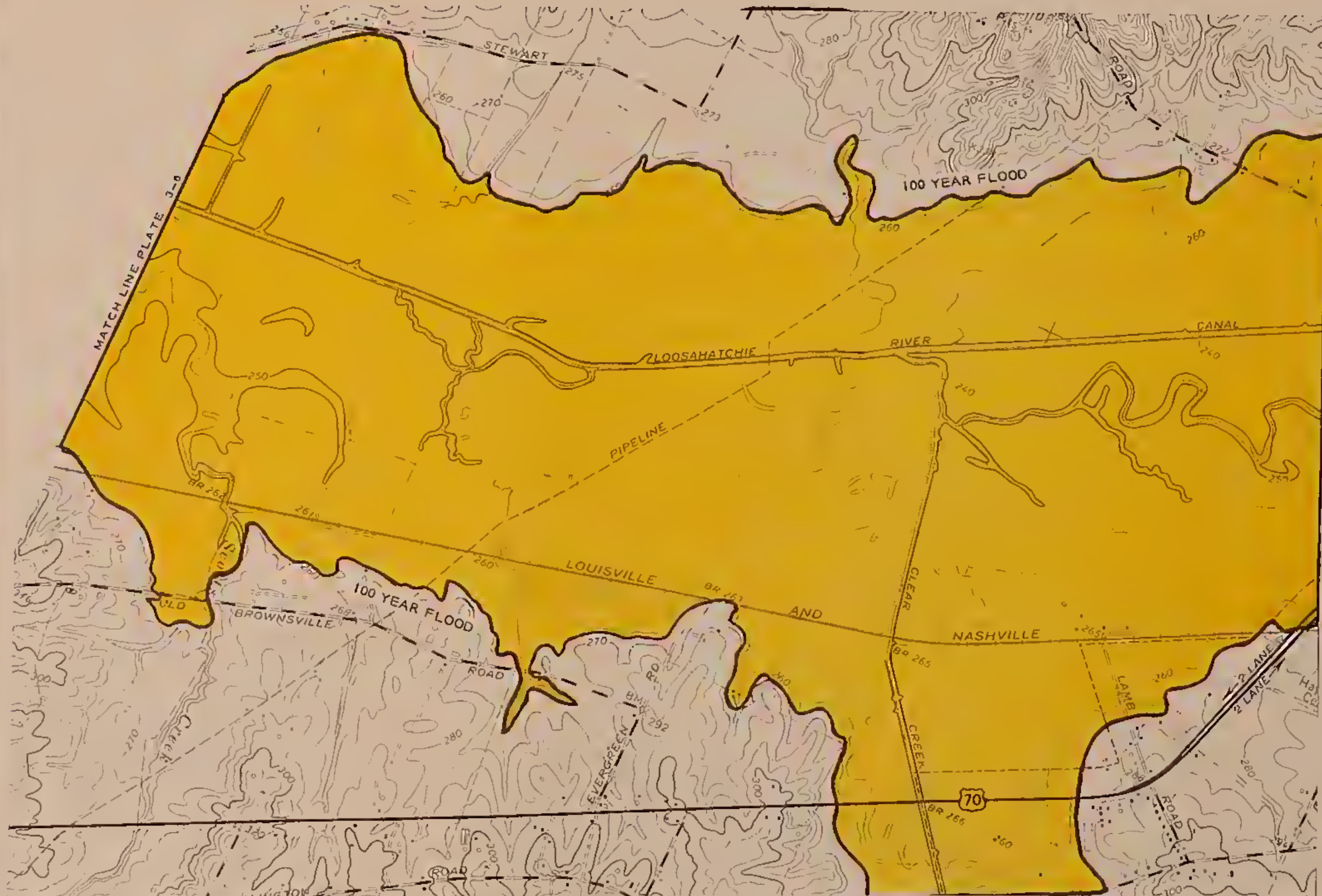
TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MILE 23.1 TO MILE 26.3

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE
August 1970

4-R-29694-7



LEGEND

100 Year Flood

NOTE: All Elevations are Mean Sea Level

0 1000 2000 FEET

APPROXIMATE SCALE

1:20,000

PLATE 3-7

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

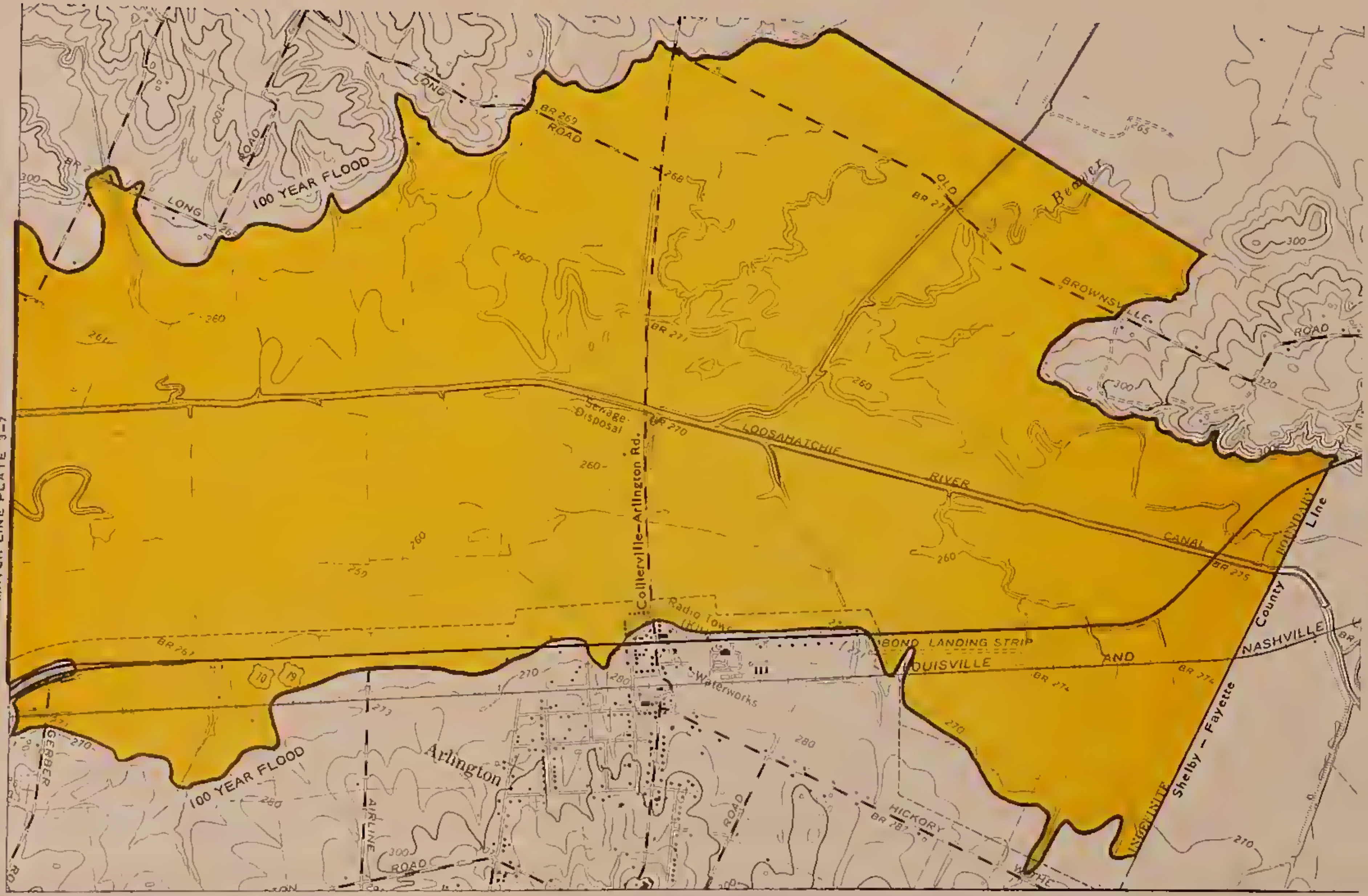
TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MILE 26.3 TO MILE 29.5

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE
August 1970

4-R-29694-B



LEGEND

100 Year Flood

NOTE: All Elevations are Mean Sea Level

0 1000 2000 FEET

APPROXIMATE SCALE

1:20,000

PLATE 3-8

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

TOPOGRAPHIC MAP OF FLOODED AREA

LOOSAHATCHIE RIVER

MILE 29.5 TO SHELBY – FAYETTE COUNTY LINE

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE

August 1970

4-R-29694-9

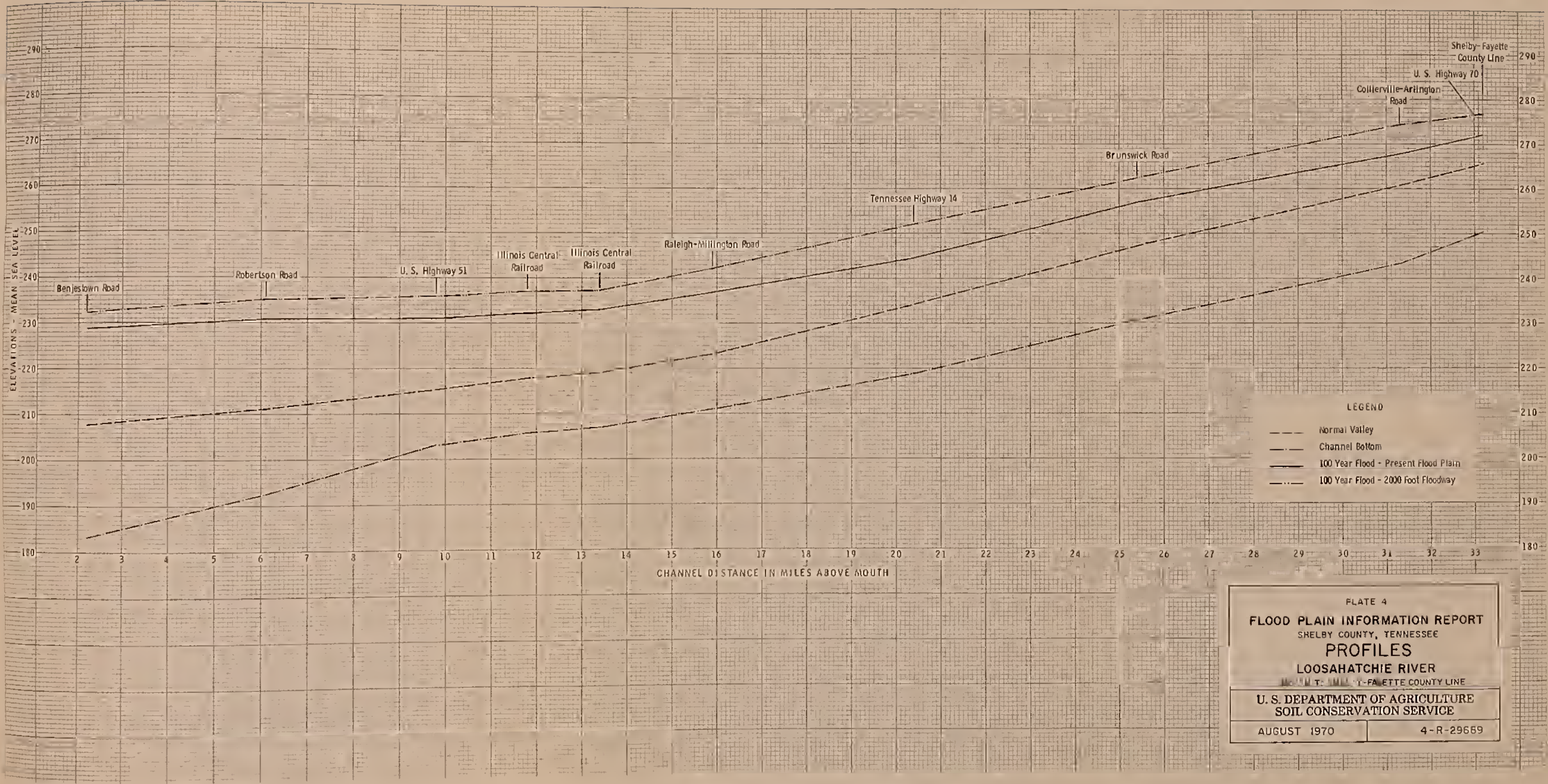


PLATE 4

FLOOD PLAIN INFORMATION REPORT

SHELBY COUNTY, TENNESSEE

PROFILES

LOOSAHATCHIE RIVER

-FAYETTE COUNTY LINE

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

AUGUST 1970 | 4-R-29669

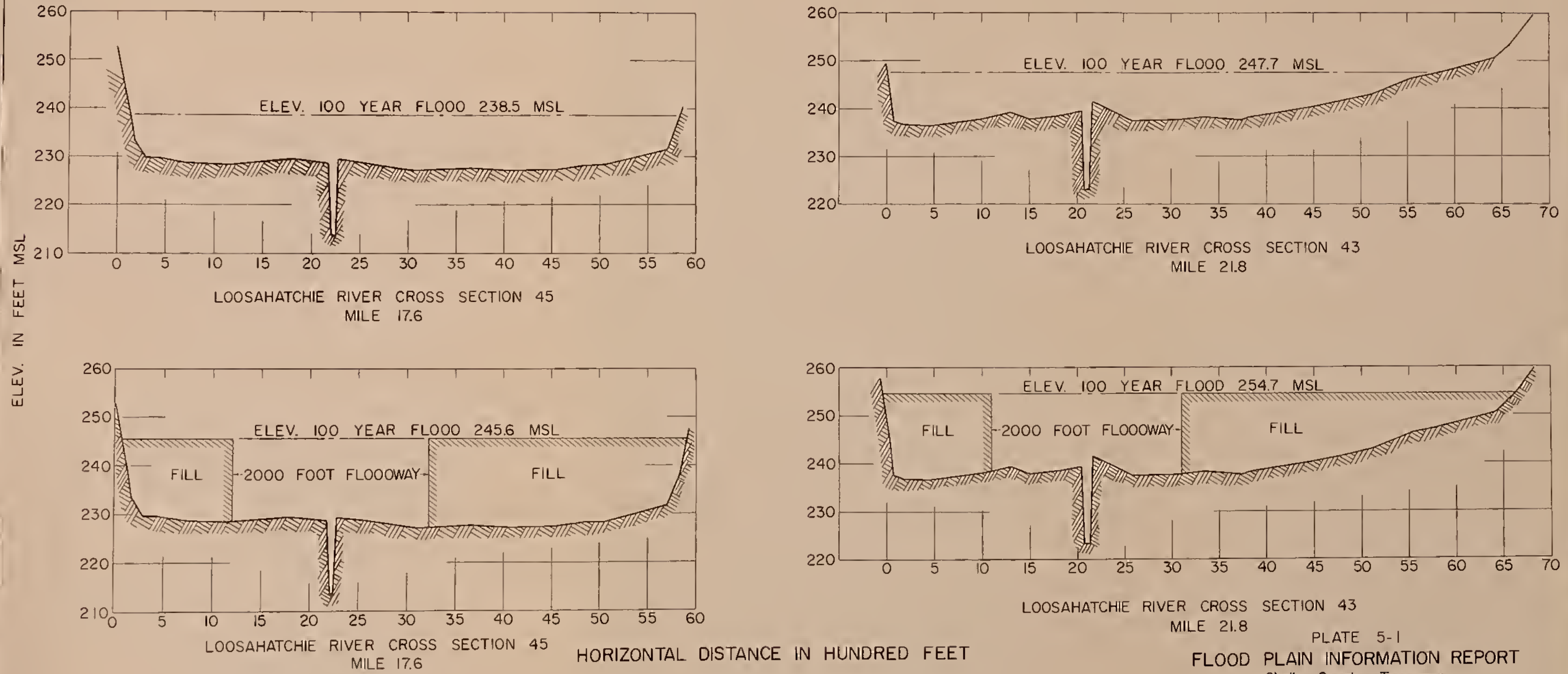


PLATE 5-1

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

Cross Sections

LOOSAHATCHIE RIVER

U. S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE TENNESSEE

8-70 4-R-29,695

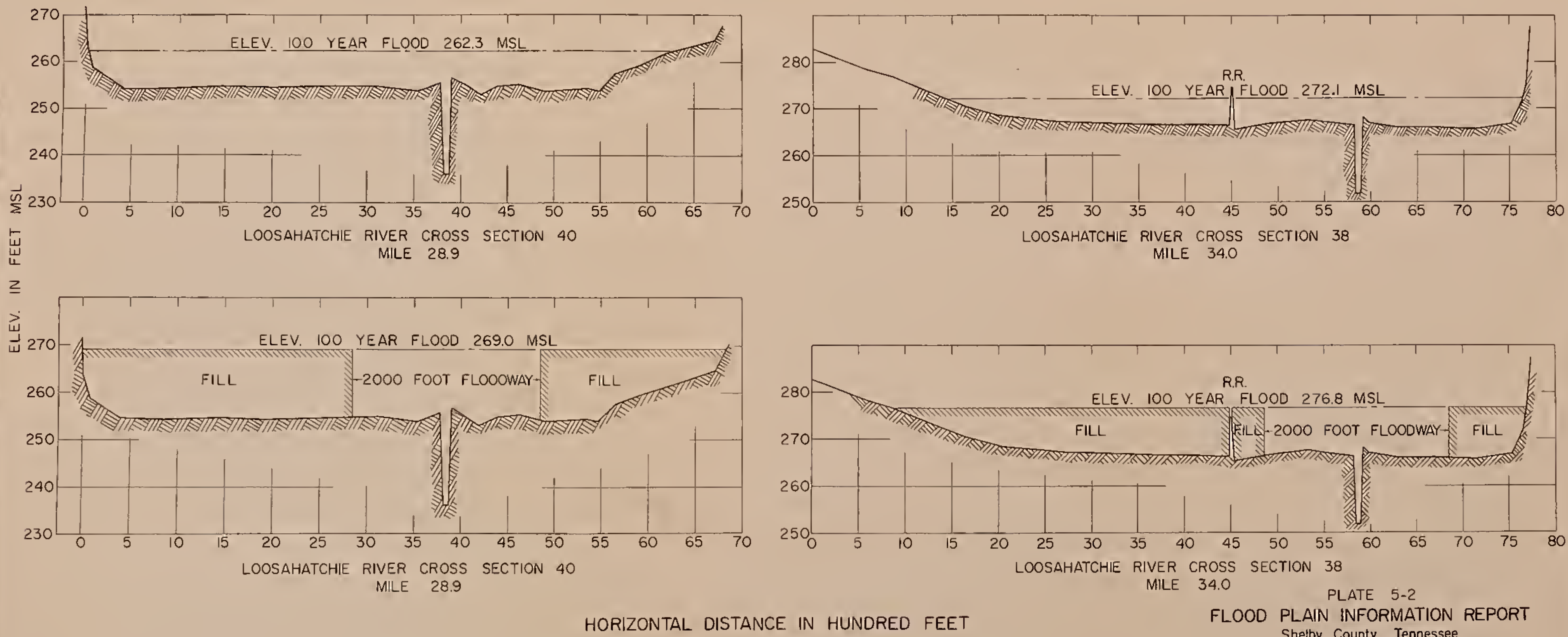


PLATE 5-2

FLOOD PLAIN INFORMATION REPORT

Shelby County, Tennessee

Cross Sections

LOOSAHATCHIE RIVER

U S DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE
NASHVILLE, TENNESSEE

8-70 4-R-29,696