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FLORIDA GEOLOGICAL SURVEY

Robert O. Vernon, Director

REPORT OF INVESTIGATIONS NO. 26

**THE DROUGHT OF 1954-56,
ITS EFFECT ON FLORIDA'S SURFACE-WATER
RESOURCES**

By

**R. W. Pride and J. W. Crooks
U. S. Geological Survey**

Prepared by the
UNITED STATES GEOLOGICAL SURVEY
in cooperation with the
FLORIDA GEOLOGICAL SURVEY

**TALLAHASSEE, FLORIDA
1962**

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FLORIDA GEOLOGICAL SURVEY Tallahassee

August 31, 1961

Honorable Farris Bryant, *Chairman*
Florida State Board of Conservation
Tallahassee, Florida

Dear Governor Bryant:

The Florida Geological Survey has published as its Report of Investigations No. 26, a summary of "The Drought of 1954-56, Its Effect on Florida's Surface-Water Resources." This study was prepared by R. W. Pride and J. W. Crooks of the U. S. Geological Survey, Surface-Water Branch, in cooperation with the Florida Geological Survey.

This is the most severe drought on record, and the statewide runoff was about 43 percent of the average runoff. The study provides extensive data on the quality-of-water changes that were brought about during the severe drought. Minimum flows were recorded at 135 continuous record stations, and 190 low-flow measurements were made. Quality-of-water stations numbering 133 are included in the study. The effects of this drought are widespread and will be important in all future design and planning work throughout the State.

Respectfully yours,
Robert O. Vernon, *Director*

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CONTENTS

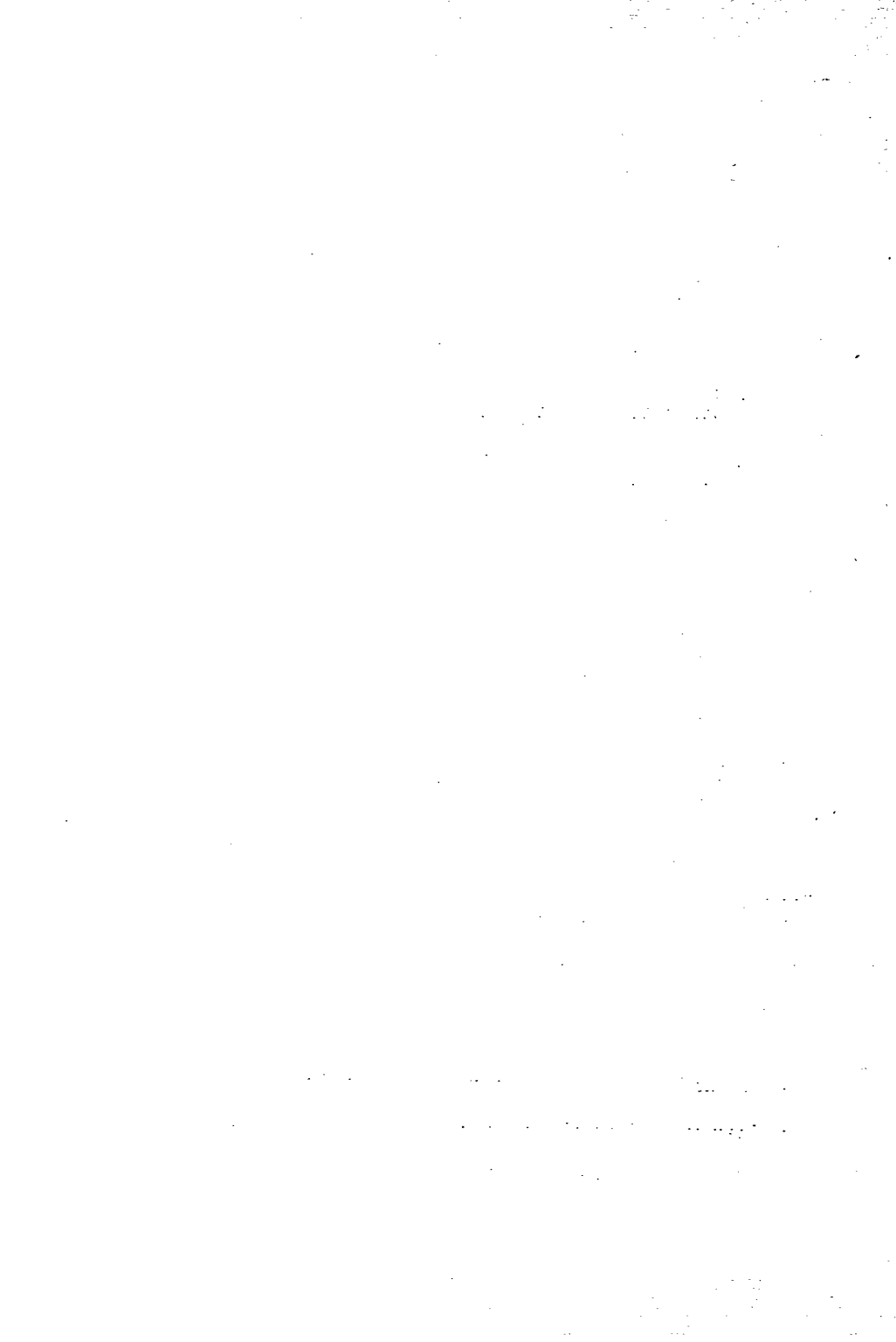
	<i>Page</i>
Abstract	1
Introduction	1
Purpose and scope	1
Acknowledgments	2
Description of the area	2
Climate	3
The drought	4
The rainfall index	5
Deficiencies of rainfall	6
Surface-water records available	8
Deficiencies of surface-water supplies	9
Streamflow	9
West Florida	10
The Florida Peninsula	11
Lake levels	12
Effect on chemical quality of water	13
Streams	16
Springs	20
Economic effects of the drought	20
Summary	21
References	22

ILLUSTRATIONS

<i>Figure</i>	<i>Page</i>
1 Distribution of average annual rainfall, in inches, in Florida	4
2 Annual rainfall in Florida, 1881-1958	6
3 Rainfall deficiency in Florida, 1954-56	7
4 Location of data-gathering points in Florida during the drought in 1956	facing 10
5 Monthly flows and their relation to normal for selected streams in Florida	facing 12
6 Month-end stages and the departures from average for selected lakes in Florida	facing 14
7 Relation of dissolved solids to discharge, St. Johns River near DeLand, Florida, 1948	15
8 Comparison of rainfall departure from normal at Kissimmee with discharge and dissolved solids concentration of Kissimmee River near Okeechobee, Florida	17
9 A comparison of rainfall departure from normal at Merritt Island with discharge and dissolved solids concentration of St. Johns River near Cocoa, Florida	19

Table

1 Departure from normal annual rainfall in Florida, 1954-56	22
2 Minimum flow, in cubic feet per second, of Florida streams	24
3 Low-flow measurements made at partial-record gaging stations during the 1956 drought	36
4 Chemical analysis of surface waters during the drought in 1956	56
5 Chemical analysis of springs in Florida, 1946 and 1956	65



THE DROUGHT OF 1954-56, ITS EFFECT ON FLORIDA'S SURFACE-WATER RESOURCES

By
R. W. Pride and J. W. Crooks

ABSTRACT

The most severe drought of record occurred in Florida during the 3-year period 1954-56. The drought was caused by rainfall deficiencies in amounts ranging from 7 to 11 inches during each of the 3 years.

The statewide runoff during 1955 was estimated to be 6 inches as compared with 14 inches for an average year.

Observed facts concerning the effect of the drought on the surface-water resources of the State are presented. Minimum streamflow recorded at 135 continuous-record stations, low-flow measurements at 190 partial-record stations, and chemical analyses of the water at 133 sites are summarized in tabular form.

Records of streamflow for 13 representative streams and records of stage for 17 representative lakes are compared with average flows or stages to indicate the severity of the drought.

Information is presented to show that the dissolved solids concentrations in most streams increased as the flows declined.

INTRODUCTION

PURPOSE AND SCOPE

During the 3-year period, 1954-56, a severe drought, caused by deficient rainfall, occurred over most of Florida. Diminished streamflow, lowered lake levels, and lack of soil moisture were direct effects of the drought.

Normally, rainfall deficiencies in Florida are of short duration, and though some agricultural areas may suffer from lack of rainfall during the crop season, the overall effects of dry periods are not serious.

The 1954-56 drought caused critical shortages of surface water in many areas of the State and, because of its 3-year duration, was an event of unusual occurrence.

This report was prepared to give factual drought information. It presents information on water levels, flows, and chemical quality of surface waters at a number of locations. It defines the areal extent and relative intensity of the drought and the effect of the drought on the quantity and quality of the surface waters of the State. No special effort has been made previously to provide state-wide information on the effect of drought on surface-water supplies although Florida is known to experience frequent drought—variable in duration, intensity, and areal extent.

ACKNOWLEDGMENTS

The study of the drought of 1954-56 was made in cooperation with the Florida Geological Survey. Data included in the report were obtained from special and continuing record studies conducted in cooperation with the following agencies:

- Corps of Engineers, Department of the Army
- Florida Division of Water Survey and Research
- Florida State Geological Survey
- Florida State Road Department
- Central and Southern Florida Flood Control District
- Florida State Trustees of Internal Improvement Fund
- Florida Board of Parks
- Dade County
- Hillsborough County
- Pinellas County
- Polk County
- City of Jacksonville
- Cities of Miami and Miami Beach
- City of Pensacola
- City of Perry
- City of Tampa
- Florida Power Corporation

Climatological data furnished by the U. S. Weather Bureau were used to define zones of rainfall deficiency. The compilation and evaluation of the data were made by the U. S. Geological Survey in Ocala, Florida.

The report was prepared in the Ocala District of the U. S. Geological Survey under the supervision of A. O. Patterson, district engineer, Surface Water Branch, and J. W. Geurin, district chemist, Quality of Water Branch.

DESCRIPTION OF THE AREA

The topography of Florida is relatively flat, with elevations ranging from the highest known point of 345 feet down to sea level. Rolling hills are predominant in the western part of the State,

lakes and some hills are extensive in the north central part, and the flat swamplands of the Everglades are predominant in the lower part of the State.

Florida is well endowed with water. Tens of thousands of lakes and ponds, more than 50 river systems, and many bays and estuaries comprise 3,805 square miles of water surface in the 58,666 square miles of the State. Replenishment of these water sources occurs in several ways. Rainfall provides the greatest amount of water. Additional water comes from streams that originate in other states and from underground flow from these states. Water is lost from the State through evaporation, transpiration, consumptive uses, and stream and underground flow to the Atlantic Ocean and the Gulf of Mexico.

On the Florida Peninsula the Central Highlands form the divide between drainage to the east into the Atlantic Ocean and that to the south and west into the Gulf of Mexico. In northwestern Florida most of the area is drained by river systems that originate in Georgia or Alabama and flow southward through Florida to the Gulf of Mexico.

CLIMATE

Florida's climate is its greatest attraction to more than five million people who visit the State each year. In general, temperatures are not extremely low during the winter months, averaging from 54° F. in the northern part to 75° F. in the southern part. During the warmest months in July and August, the statewide average temperature is 81° F.

Nearly all precipitation in Florida occurs as rain. The amounts that occur as snow, sleet, and other forms are inconsequential. The average annual rainfall is about 53 inches and varies from 46 inches to 64 inches in different parts of the State. Normally, rainfall is greatest from June through September and least from November through January. Distribution of average rainfall for the State is shown in figure 1.

Three patterns of rainfall occur in Florida. Thundershowers during the summer provide over half of the annual rainfall. Rainfall at this time is frequent and intense but of short duration. Thunderstorm activity in north central Florida has the highest incident rate of the United States. Of longer duration are the winter rains that result from contact between the warm moist air from the Gulf and the cold air of invading cold fronts. Rainfall is generally light at this time but may be continuous for several days.

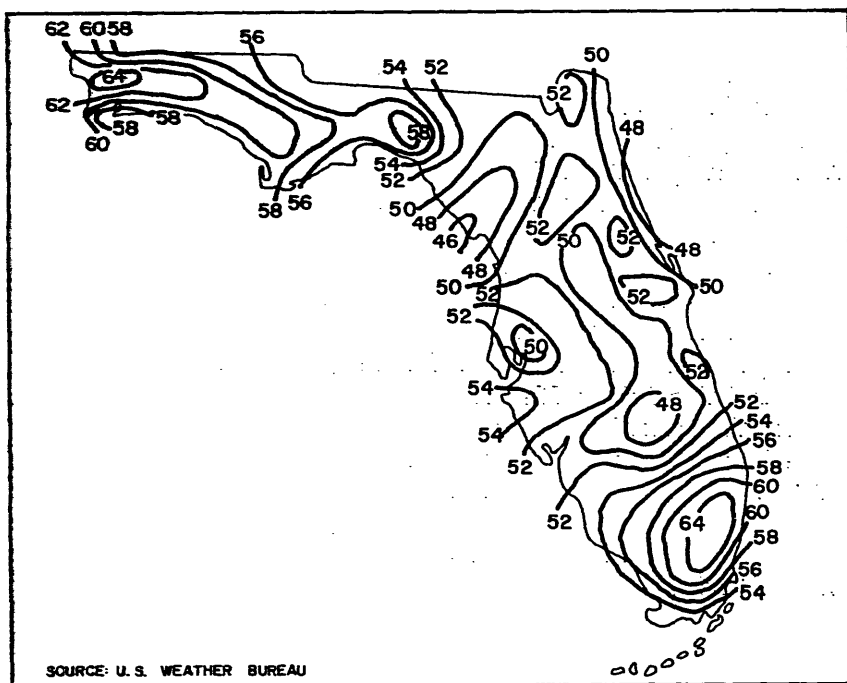


Figure 1. Distribution of average annual rainfall, in inches, in Florida.

Great amounts of rainfall occur in Florida as a result of hurricanes that pass near or across the State. Rainfall at this time is intense, widespread, and often of several days' duration.

THE DROUGHT

Drought conditions, as ordinarily defined in humid areas, exist when there is insufficient moisture in the soil to maintain plant life or when precipitation is insufficient to meet the needs of established human activities. The severity of a drought depends on many factors: the relation of the deficiency to the normal rainfall; the land cover and use; the specific location and time of occurrence; and the duration of the deficiency. In areas where rainfall is normally high, a deficiency of a few inches may cause only minor adverse effects. On the other hand, in some areas this same amount may be a high proportion of the total rainfall and may cause serious problems in crop production, in soil conservation, and in providing for domestic water supplies.

During periods of deficient rainfall, the removal of soil moisture to support plant growth adds to the severity of a drought. Heavy vegetal cover transpires more water than a sparse cover and therefore increases the water deficiency.

The effects of drought are more severe on some types of vegetal cover than on others. During drought conditions shallow-rooted plants do not live as long as deep-rooted plants that derive water from greater depths. Thus, a drought affects cropland sooner than forests.

In northern climates, where vegetation is dormant in the winter, water needs are less during winter than during the growing season, and a greater portion of the precipitation runs off in streams. Precipitation deficiencies during the winter cause little immediate inconvenience and result only in low stream discharges. In most of Florida there is year-round vegetal growth, however, and water is used in the winter months though in lesser amounts.

Variation in rainfall has an important influence on droughts. Rainfall is not uniformly distributed areally nor is it properly timed for optimum utilization. Floods occur when the intensity and timing of storms result in runoff of water in excess of immediate utilization and storage. Drought could occur even though the rainfall for a given period was higher than the average, when the distribution is such that most of the rain falls during a short period.

Records of rainfall and streamflow provide data for studying droughts by defining the area covered, the severity, the frequency, and the duration of drought.

THE RAINFALL INDEX

Records of the U. S. Weather Bureau provide data on annual rainfall for Florida during the years 1881 to 1958. These data are plotted as bar graphs in figure 2. Another type of plot, the moving mean graph, is illustrated by the heavy line of figure 2. The mean rainfall for successive 3-year periods has been plotted at the mid-year position. The duration of the period of rainfall deficiency is one of the more important factors that influence the severity of a drought and is probably the most significant cause of extreme drought in Florida. From the moving mean graph, it is possible to observe critical wet and dry periods and to study climatic variations.

Annual rainfall totals in Florida for 1954, 1955, and 1956 were 45.89, 42.33, and 42.46 inches, respectively. Since 1881, lower annual rainfalls have occurred for only two other years, 41.33

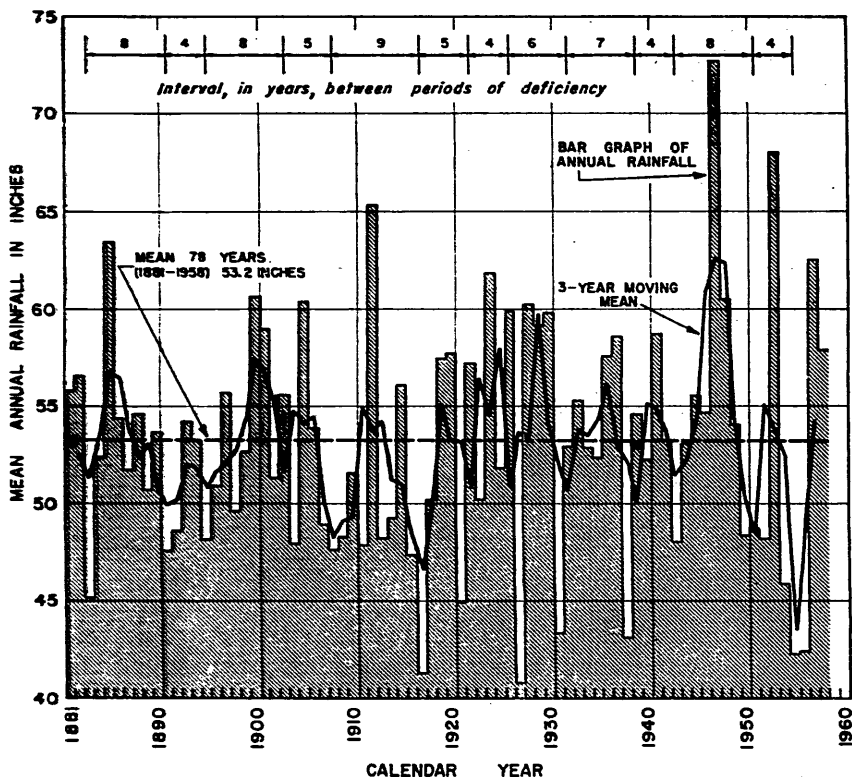


Figure 2. Annual rainfall in Florida, 1881-1958.

inches in 1917 and 40.78 inches in 1927. However, the moving mean for the 3 years, 1954-56, is the lowest of the means for any 3-year period since 1881. Thus, the rainfall pattern shows that the 1954-56 drought in Florida ranks as the most severe in the past 78 years.

DEFICIENCIES OF RAINFALL

Table 1 shows the departures from normal of the 1954-56 annual rainfall at several U. S. Weather Bureau stations. Normals are based on long-term records collected at each station.

The areal extent, intensity, and duration of the rainfall deficiency are shown in figure 3, which has been prepared from the data shown in table 1. It shows that the maximum rainfall deficiencies in 1954 occurred in the northern part of the State, particularly in the extreme northwest. The 1954 deficiency was nearly 33 inches at the Pensacola station and ranged from 20 to 30 inches at most

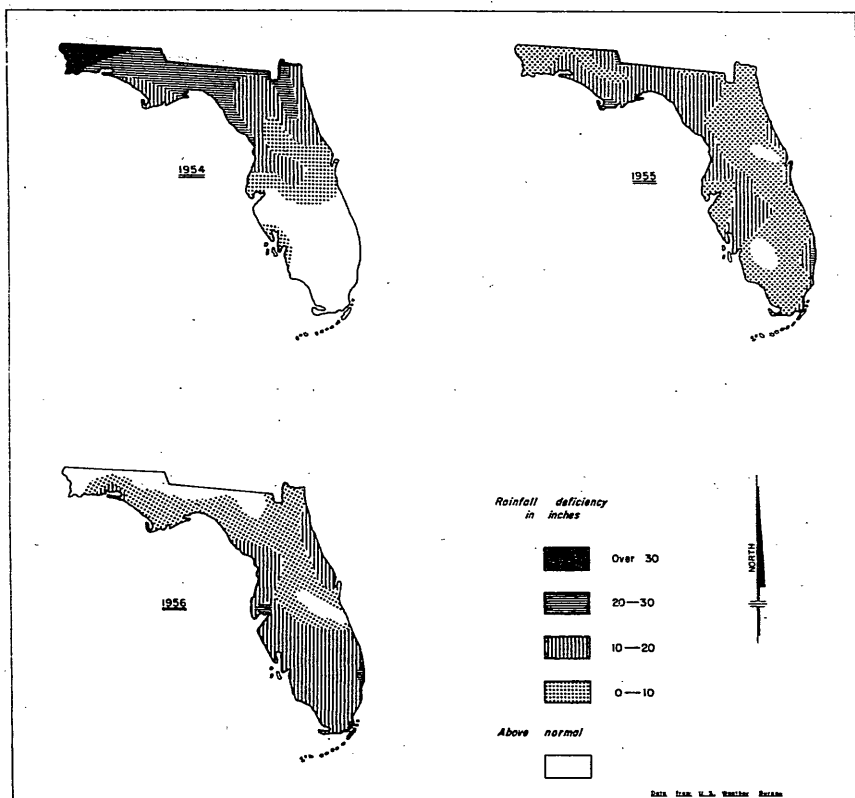


Figure 3. Rainfall deficiency in Florida, 1954-56.

of the other stations in northwestern Florida. In 1954 the area of rainfall deficiency did not extend into southern Florida except for a small area along the southwestern Gulf coast. By contrast, along the southeastern coast, from about the middle of the peninsula southward, the 1954 rainfall was excessive in amounts up to 20 inches.

In 1955 rainfall deficiencies continued in the western part of the State but in lesser amounts than in 1954. The area of deficient rainfall included the entire State except for three small areas on the peninsula where rainfall was slightly above normal. However, these areas of excess rainfall were insignificant in comparison with the rest of the State. The areas of greatest rainfall deficiency in 1955 were along the northwestern Gulf coast and along the Atlantic coastline.

In 1956 rainfall was deficient throughout the State except across the extreme northern part and in a small area in the central part of the peninsula. In that year, the greatest deficiencies were in the southern part of the peninsula.

The drought was ended by heavy rains during the latter part of 1956 and in 1957. Statewide, the 1957 rainfall was above normal. Amounts of about 25 inches above normal occurred at stations at the Miami Beach Airport and at Tarpon Springs.

SURFACE-WATER RECORDS AVAILABLE

Information on water levels, spring and stream discharge, and chemical quality of water is obtained regularly at various locations in Florida by the U. S. Geological Survey. During the period 1954-56 continuous records of stage and discharge were collected by the Survey at 135 gaging stations in the State, and continuous records of stage only were collected at 160 gaging stations on lakes and streams. The minimum flows recorded at each of the stream-gaging stations are shown in table 2. This table shows the minimum for the period of record as well as for the 1954-56 drought. At many gaging stations the minimum for the period of record occurred during the 1954-56 drought.

Information on chemical quality of water is not as extensive. Daily records of from 1 to 3 years of continuous operation are available for 13 locations. Monthly, or less frequent, records are available for 54 locations. Although these records are valuable in showing chemical characteristics of the water at the time of operation, the lack of long-term records prevents definition of trends. For example, data may be available for a period of high or low water levels but often are not available for both of these conditions or the intervening periods between such events.

These records of water level, streamflow, and chemical quality show the effect of the drought on surface-water supplies. The long-term records of water level and streamflow are particularly valuable for studying the drought.

In 1956, particularly in April and May, discharge measurements were made at 190 partial-record sites to supplement the streamflow data collected at the stream-gaging stations. The results of these measurements are shown in table 3. Samples were collected for chemical analyses at 133 of these locations and at 46 other locations during this period; the results of analyses on these samples are shown in table 4. Locations of stream-gaging stations,

partial-record sites, and sample sources are shown in figure 4. Each location has been numbered to provide a cross-reference with the tables of flow data or analyses. These data have been used and compared with earlier records, where available, for this report.

DEFICIENCIES OF SURFACE-WATER SUPPLIES

STREAMFLOW

As discussed earlier in the report, the 1954-56 drought was caused by rainfall deficiencies for the 3-year period. The effects of the drought on the stage and flow of streams and an indication of its relative severity are revealed by records collected at gaging stations, many of which have been operated for several years. Table 2 gives the minimum flow recorded for the 1954-56 drought and for the period of record at each stream-gaging station in the State. The results of measurements of streamflow at many additional sites on the peninsula during one of the most severe periods of the drought, the early part of 1956, are given in table 3.

The statewide effects of the drought on streamflow are represented by records from 13 selected gaging stations. These representative stations were selected to provide geographic distribution, antecedent records for comparison, variations in topography and geology, and a range in sizes of drainage basins.

Figure 5 shows graphically the monthly flows and their relation to normal for the 13 representative gaging stations in Florida for 1954-57. The normal for each month is the median value of the monthly mean discharges for the period of record at each gaging station.

Study of the rainfall and streamflow records indicates that the most severe period of the drought occurred in northwestern Florida earlier than on the peninsula. In the northwestern part of the State the most severe years were 1954 and 1955. The drought in this area was broken during the latter part of 1956. The years of the most severe drought on the peninsula were 1955 and 1956, with minimum flows of most streams occurring in the first half of 1956.

Owing to the statewide extent of rainfall deficiencies in 1955, the total runoff from the State during that year was probably less than in either 1954 or 1956. The runoff from the State during 1955 was estimated to be 24,000 cubic feet per second. This estimate was based on the unit figures of runoff determined from the network of gaging stations. This is equivalent to 15½ billion gallons per

day, or a depth of about 6 inches per year over the total land surface. The statewide runoff for an average year is estimated to be 14 inches (Patterson, 1955, p. 34). Rainfall over the State during 1955 was 42.33 inches; the difference between rainfall and runoff was about 36 inches. This difference represents the composite amount of water lost by evaporation and transpiration, and by net changes in surface and ground water storage.

West Florida: Streamflow conditions in West Florida are represented by index stations on Shoal River near Crestview, Perdido River at Barrineau Park, Econfinia Creek near Bennett, and Ochlockonee River near Havana. Above-normal rates of streamflow occurred at the beginning of 1954. However, the flow dropped below normal at each of the index stations by April and continued to decline for the remainder of the year. Record-low flows occurred in 1954 for many of the streams in this region. The occurrence of new minimum flows for a long-term record is significant in establishing the relative severity of the drought. Records are available for Ochlockonee River near Havana since June 1926. The minimum monthly flow at this station occurred in October 1954; it was only 10 percent of the normal flow for October.

The base flows of streams in West Florida are fairly well sustained by accretions from ground water and, even during the prolonged drought, the streams continued to flow, though at reduced rates.

Rainfall deficiencies persisted through the normally wet season from June through September, and at the end of 1954 streamflow was still low.

Streamflow increased slightly in this region in the early part of 1955 but, in general, continued below normal. In contrast to the drought conditions that existed over most of the State, flooding occurred in the extreme western part. In April 1955 intense rainfall occurred over a narrow area in the extreme western part of Florida and the southern parts of Alabama, Mississippi, and Louisiana, producing flash floods of considerable magnitude in the Perdido River basin and in many of the smaller tributaries of the Escambia River. Temporarily the drought in this area was broken. However, the rain that produced the flood was concentrated within a short time interval and the greater part ran off as flood flow. Sustained effects of the flood were negligible and streamflow in the western area again dropped below normal after April 1955.

Other areas of West Florida received less than normal amounts of rainfall during 1955, and for the second consecutive year the

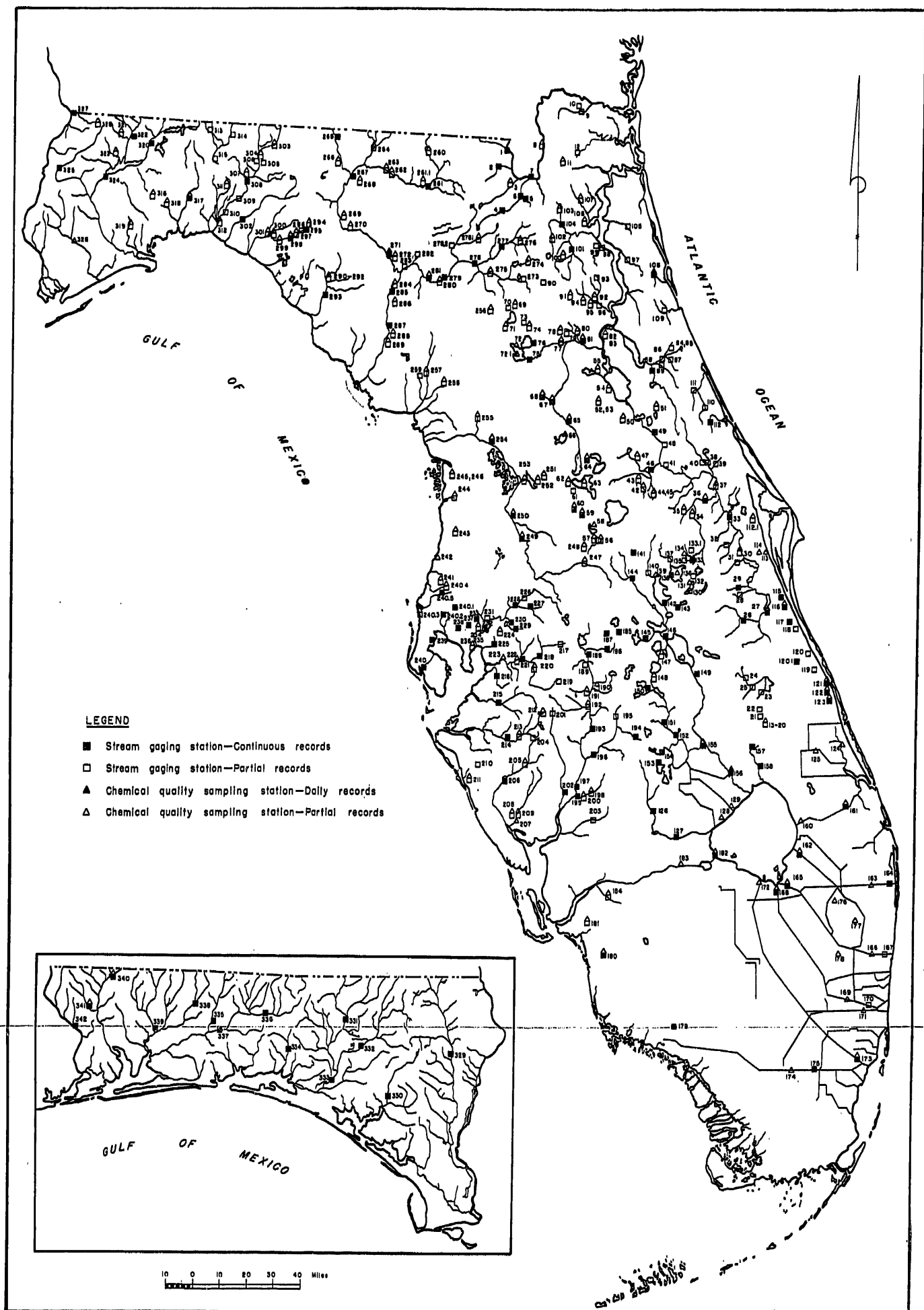


Figure 4. Location of data-gathering points in Florida during the drought in 1956

drought continued. Many streams with large ground-water inflows declined gradually during the two years of deficient rainfall. By the end of 1955 the prolonged period of ground-water depletion without replenishment began to take a toll on the ground-water accretions to base flow and these streams dropped to new record lows. Figure 5 shows that the monthly mean flow for Econfina Creek near Bennett declined rather uniformly for the 2-year period, 1954-55, and reached a minimum in December 1955, when the flow was 62.6 percent of normal for the month.

The drought continued in West Florida during the early part of 1956. Streamflow had increased slightly from the record lows of 1954 and 1955 but generally was still below normal. However, by the summer of 1956, the drought in the western part of the State was broken and streamflow was generally back to normal. Econfina Creek was an exception; owing to the lag in the replenishment of ground-water supplies, it did not regain sustained normal flow until May 1957. This represents a 3-year period of below-normal flow at this station and is an indication of the depleted ground-water supply of the area.

The Florida Peninsula: Streamflow conditions on the peninsula are represented by nine index stations shown in figure 5. In the northern part of the peninsula, streamflow dropped below normal at some stations early in 1954. Records for Suwannee River at Branford indicate the severity of the drought in that area. The flow of Suwannee River dropped below normal in March 1954 and remained below through May 1957 except for a temporary return to normal during May 1956. The flow dropped to a low of 13.7 percent of normal in October 1955.

The flow of Silver Springs is perhaps the best index of the prolonged effect of the drought in the central part of Florida. The flow dropped below normal in August 1954 and remained below until May 1958. It remained about 70 percent of normal for the greater part of this period. The minimum flow for Silver Springs occurred in May 1957.

The St. Johns River at U. S. Highway 192, west of Melbourne, did not flow on many days in 1955 and 1956. Water losses by evapotranspiration in this river channel are probably very high, accounting for the prolonged periods of deficient flows. The wide shallow river channel in the upper basin affords the maximum opportunity for evaporation. Water hyacinths and other aquatic plants grow profusely in the channel and use considerable amounts of water in the process of transpiration.

At the gaging station on the St. Johns River near Christmas, the longest period of deficient flow occurred from January to August 1956. The minimum flow during this period was 23 cubic feet per second on June 20. However, records indicated that flow ceased at this station for several days in 1939. This is one of the few gaging stations in the State at which flows less than the 1954-56 minimum had been recorded.

The flow of the Kissimmee River declined rather steadily from midyear of 1954 and was at a record low at the station near Okeechobee in May and June 1956. The flow was below normal for 23 consecutive months, November 1954 to September 1956.

Streamflow conditions in the southern part of the peninsula are represented by records for Fisheating Creek near Palmdale, Tamiami Canal Outlets, and Myakka River near Sarasota. At each of these stations the flow ceased for many days in 1955 and 1956. No flow has been recorded at times in most years at these stations. However, the 1955 and 1956 drought caused minimum or no flows of longer duration than other droughts of record.

By the latter part of 1956, the drought was broken in most parts of the Florida Peninsula and streamflow generally was back to normal. Exceptions were springs and streams deriving a large percentage of base flow from ground-water accretion. The flow hydrographs for Suwannee River and Silver Springs in figure 5 show the lag between the times of recovery of these streams and those that react more immediately to surface runoff following heavy rainfall. North Fork Black Creek, Myakka River, and Fisheating Creek are streams that have high flood flows and poorly sustained base flows.

LAKE LEVELS

During periods of excess rainfall the storage of water in uncontrolled lakes which are parts of river courses substantially reduces flood peaks downstream. During dry seasons some of the water in storage returns to the drainage system and greatly augments the base flow of streams. Thus, lakes serve as a natural buffer to reduce the extremes of both flood and drought.

During prolonged drought periods surface-water supplies stored in lakes, ponds, and reservoirs are usually depleted. Some of the water is lost by evaporation and transpiration, and some of it seeps into the ground to replenish the depleted ground-water supply. When the rainfall over the tributary areas is insufficient to

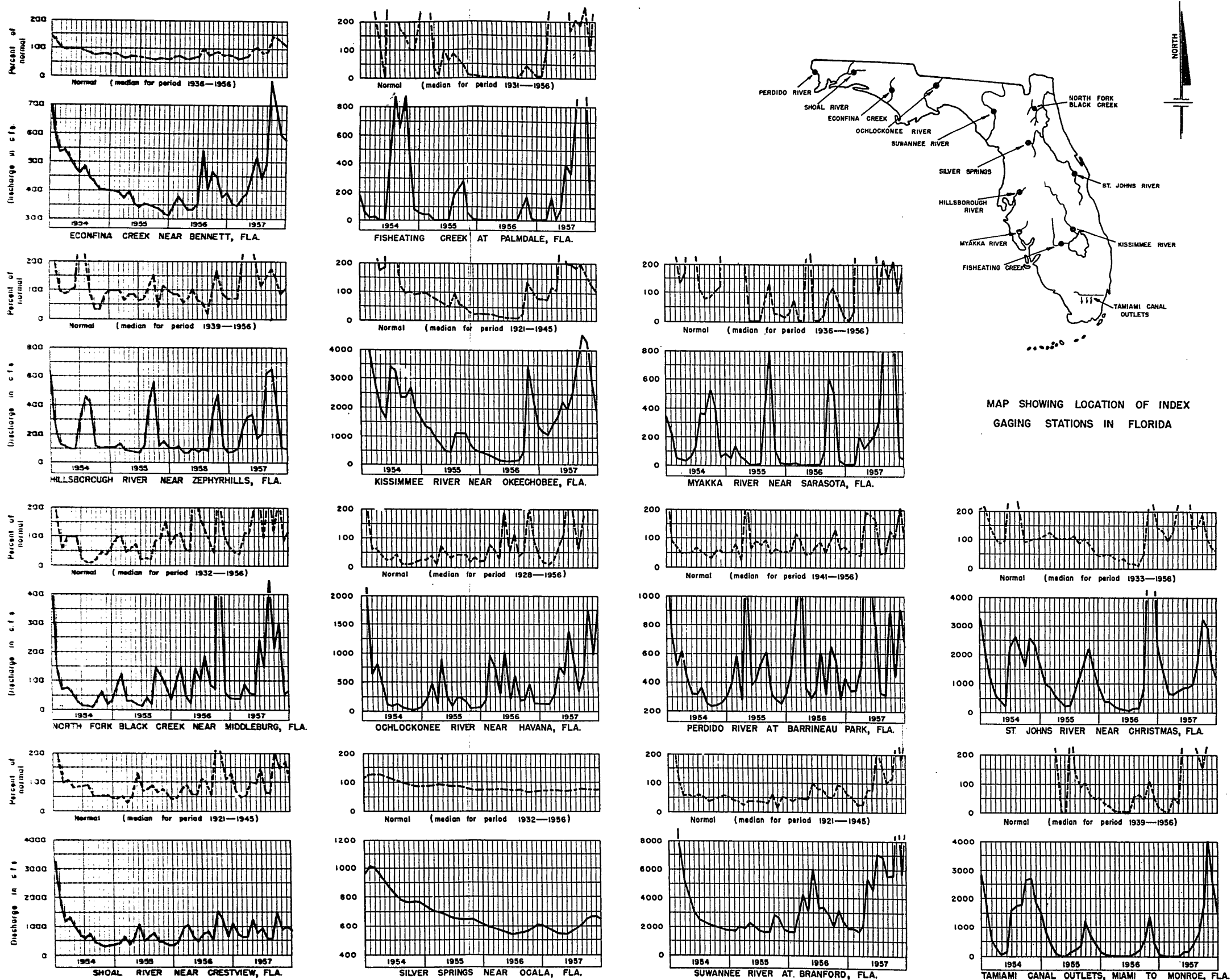


Figure 5. Monthly flows and their relation to normal for selected streams in Florida.

offset these natural losses, the lakes, ponds, and reservoirs experience declining stages and contracting surface areas.

The 1954-56 drought took its toll on the lakes on the Florida Peninsula. The stages of many of the larger lakes were materially lowered and many of the smaller ones practically dried up. The lowest stages of record were established for many of the lakes during this drought.

Records of lake stages are equal in importance to records of streamflow for studying the effects of droughts in Florida. During the drought of 1954-56 records of stage were collected for more than 80 lakes on the peninsula. Several years of record are available for some of these lakes. Though the periods of lake record are not as long as those for precipitation and streamflow, they nevertheless can be used for comparing the stages during the drought with stages during previous years of average climatic conditions.

The effects of the drought on lake levels are represented by records from 17 lakes. These lakes were selected to provide geographical coverage, antecedent records for comparison, and variations in geology and its effect on ground water.

Figure 6 shows graphically the month-end stages and departures from average for each of the 17 representative lakes from 1954 to 1957. The average month-end stage for each lake was computed on the basis of a 10-year period, 1946-55. The statewide average rainfall for this 10-year period was 54.4 inches compared to the long-term average of 53.2 inches.

The graphs in figure 6 show that the stages of most of these lakes were from 1 to 4 feet above average at the beginning of 1954. However, the dry years of 1954, 1955, and 1956 caused a steady decline in lake stages. The lowest stages of most lakes occurred about midyear of 1956, when they were 2 to 4 feet below average.

Not all lakes in the peninsula followed this general pattern. One of the lakes most critically affected by the drought was Orange Lake, in Alachua County. The stage of this lake dropped to more than 7 feet below average in the spring of 1956 and remained at a low stage for more than a year. The surface area of Orange Lake is normally about 26 square miles but during the lowest stage the surface area shrank to about one-fifth of the normal size. The lake began to recover by July 1957 but did not regain its normal stage until the spring of 1958.

Lake Weir in Marion County and Crooked Lake in Polk County performed differently from most of the representative lakes studied but their patterns of fluctuation during the drought were

remarkably similar to each other. The stages of these lakes declined steadily from the beginning of 1954, reached their lowest at about 4 feet below average in early 1957, recovered only slightly in 1957 and 1958, and regained average stage in June 1959. These lakes remained below average for more than 4 years and their rates of recovery were slower than those of the other lakes studied.

Lake Trafford in Collier County is the southernmost of the lakes studied. The stage of this lake remained near or slightly above average through the entire period of the drought except for July, August, and September, 1956, when the stage dropped to about 1 foot below average. The effect of the drought on this lake was not severe.

The stages of some lakes in the north central part of the peninsula were much lower than those in other areas. The conditions at Orange Lake have been previously described. Brooklyn Lake in Clay County declined to an extremely low stage and became separated into several small lakes and ponds. Collection of stage records for this lake was started in July 1957 and the lowest stages were recorded in February 1958. There were no previous records on this lake for comparative purposes. However, boat docks, beach piers, and other waterfront structures which were exposed during the low stages of the lake were again in water after the lake stage recovered during the period of heavy rainfall in 1958 and 1959. The rise in lake level from its lowest stage to the stage that was reached in 1959 was about 15 feet. The range in stage of this lake is among the widest of any in the State.

Other lakes near Brooklyn Lake also declined to low stages as the result of the drought. One of these was Lake Geneva where investigation of part of the exposed lake bottom during the drought revealed several pine stumps which indicated that, at some time in the unrecorded past, the stage had been lower for a sufficient length of time to permit the growth of pine trees.

EFFECT ON CHEMICAL QUALITY OF WATER

Water is in a constant state of physical and chemical activity. Some phases of water movement, such as precipitation and stream-flow, are easily recognized. Less apparent are movements by processes of evaporation, transpiration, recharge to and discharge from ground-water reservoirs, thermal movements of lakes and ponds, and metabolism of aquatic plant life.

The various chemical changes that water undergoes are equally difficult or more difficult to perceive. Concentration of dissolved solids increases or decreases as a result of various physical and chemical activities. Compositions are altered through variations in the concentration of individual constituents as a result of these processes.

Variations in streamflow and water levels are among the factors that cause changes in water quality. Generally, dissolved solids are higher during periods of low flow. Thus, in Florida, dissolved solids are usually highest in streams during the period April through June. To a certain extent, the increases are in proportion to the decreases in water level or stream flow. Figure 7 is an example of this relationship.

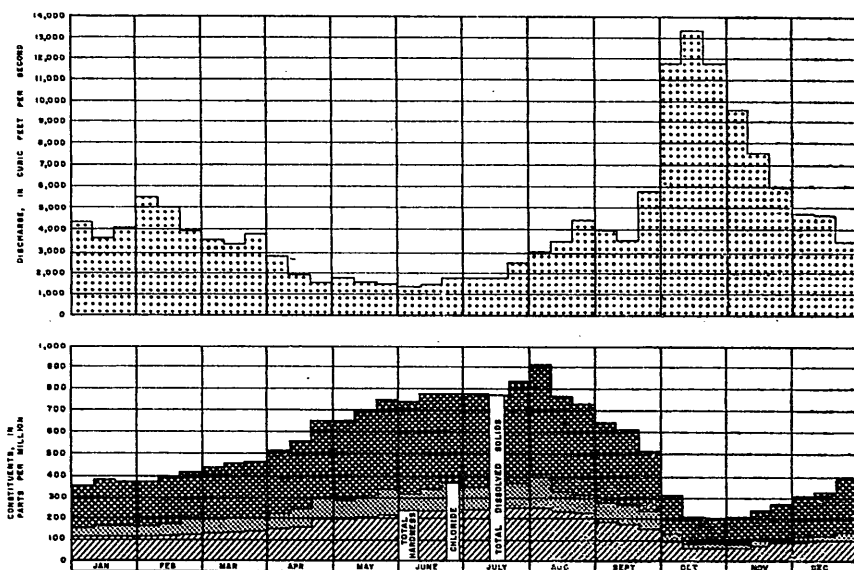


Figure 7. Relation of dissolved solids to discharge, St. Johns River near DeLand, Florida, 1948.

The ordinarily high concentrations that recur seasonally become even higher in times of drought. New lows in water levels and stream flows are coincident with new highs in chemical concentrations. These higher concentrations result from the greater influence on surface water by more highly mineralized ground water. As a result of evaporation and transpiration in which water is lost but minerals are retained by the surface body, concentrations may become quite high.

STREAMS

Changes in the chemical quality of a stream may occur as a direct or an indirect effect of drought.

An example of the direct effect of drought on a stream is shown by records for Kissimmee River near Okeechobee. Dissolved solids at this location were twice as high in 1956 as they were during 1940 and 1953. Figure 8 shows how dissolved solids increased almost in proportion to cumulative rainfall deficiency and decreasing discharge. Even so, the concentrations that were observed in 1956 were still within acceptable limits for most water uses. Had it not been for maximum flooding that occurred in the fall of 1953, the concentrations could have exceeded acceptable limits.

Indirect effects of drought on the chemical character of water have been illustrated by incidents that have occurred in Florida. One effect is that of salt-water intrusion. In some coastal regions a natural balance between fresh water and salt water prevents salt-water intrusion. Disruption of this balance has occurred in several areas in which the amounts of fresh water needed to preserve the balance have been depleted. Where drought has increased this depletion, serious consequences result. Miami was confronted with this problem in 1939 and 1945. Overdrainage combined with drought conditions allowed salt water to enter the several canals in the Miami area and the municipal well field was endangered by intrusion in Miami Canal. Installations and operation of salinity controls by Dade County since that time have prevented a repetition of salt-water intrusion. Shown below are values for dissolved solids on a number of samples collected from Miami Canal at Water Plant, Hialeah, during periods of low discharge.

<i>Date</i>	<i>Discharge (cfs)</i>	<i>Dissolved solids (ppm)</i>
May 21-31, 1941	459	270
May 31, 1944	206	274
May 7, 1945	e 5	1,670
May 23, 1946	e350	296
Mar. 27, 1951	e 35	272
Mar. 13, 1953	701	280
June 12, 1953	e 70	283
May 21, 1954	722	266
Apr. 21, 1955	569	278
May 24, 1956	e 60	259
e Estimated		

The relative stability of concentrations since 1945 may be attributed to the operation of the salinity control structures.

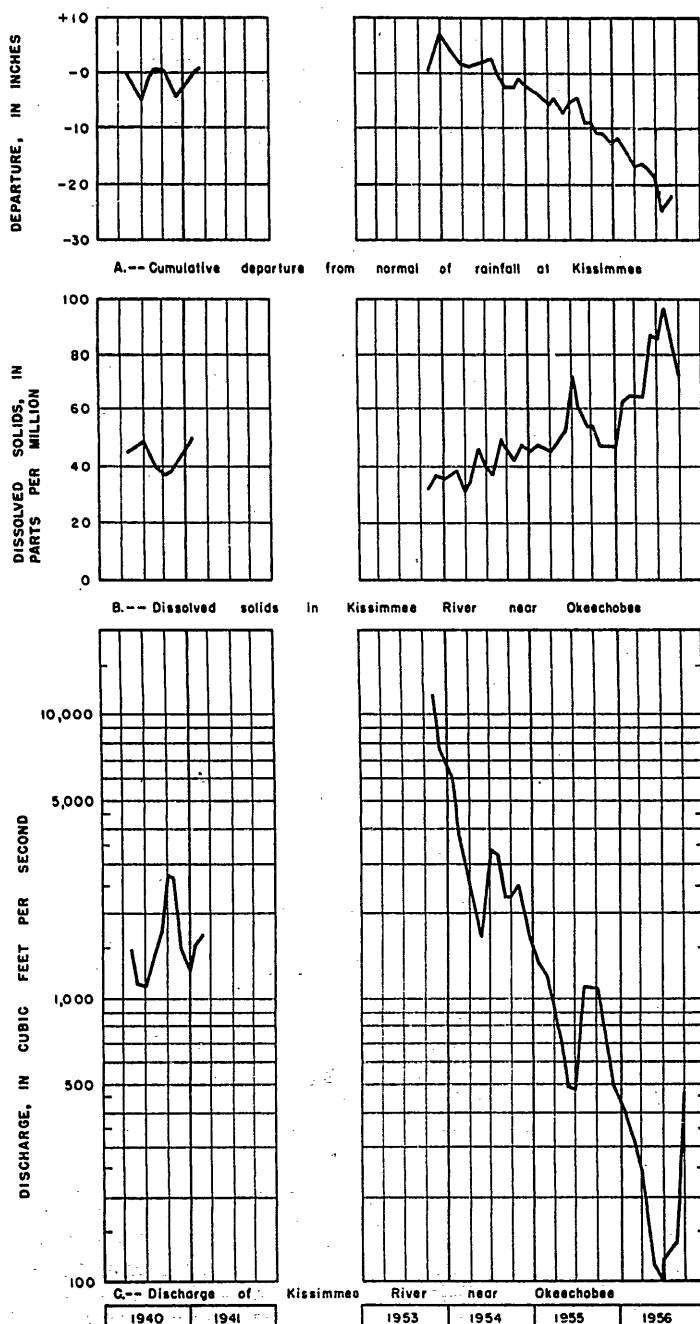


Figure 8. Comparison of rainfall departure from normal at Kissimmee with discharge and dissolved solids concentration of Kissimmee River near Okeechobee, Florida.

Another indirect effect of the 1956 drought occurred in Brevard County. Highly mineralized artesian water is used in this county for irrigation, and the water eventually reaches the St. Johns River. This results in high concentrations of dissolved solids in the river during periods of low flow. Because of the drought, greater amounts of artesian water than usual were used for irrigation, resulting in unusually high concentrations of dissolved solids in the river.

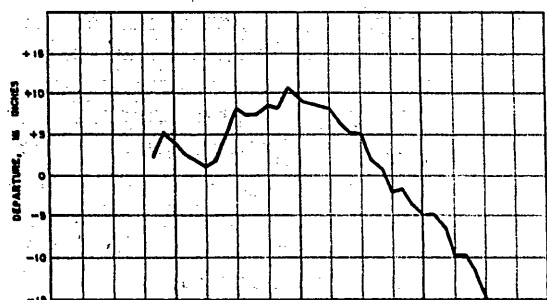
Rainfall data for Merritt Island were used to show cumulative departure from normal rainfall. The station at Merritt Island, unlike the Kissimmee station, did not show a cumulative deficiency of rainfall until September 1955. Figure 9 shows the relationships between cumulative rainfall departure at Merritt Island and discharge and dissolved solids of St. Johns River near Cocoa from October 1953 to September 1956.

The most significant feature of these relationships is the great increase in dissolved solids. During the period of record prior to 1956, the chemical quality of the water from the St. Johns River near Cocoa was suitable for municipal use. Chloride concentration was below 250 ppm (parts per million) and dissolved solids were below 500 ppm, the limits recommended by the U. S. Public Health Service for potable water. In 1956 these values were exceeded. Long-term records at this site are not available to show the relative effect that this drought had on the chemical quality.

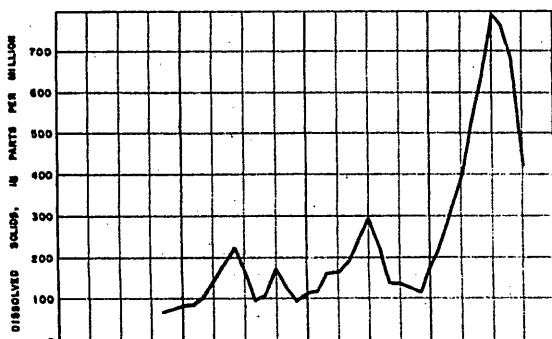
Comparative data on chemical quality for other locations in Florida are meager. In most instances the only available information is that obtained in 1956. Although the available information has value in establishing the chemical characteristics of the water at the time of collection, the effect of the drought cannot be adequately defined at many locations because of the lack of information on normal conditions. Information on chemical quality is most deficient for streams in northwestern Florida—the area of greatest rainfall deficiency in 1954. Antecedent data are available for only two sites on streams in this area: Pine Barren Creek near Barth, and Escambia River near Century.

Dissolved solids in Pine Barren Creek are quite low, usually no more than 20 ppm. The drought had no effect on the quality of this water since ground water in this area is equally low in dissolved mineral content.

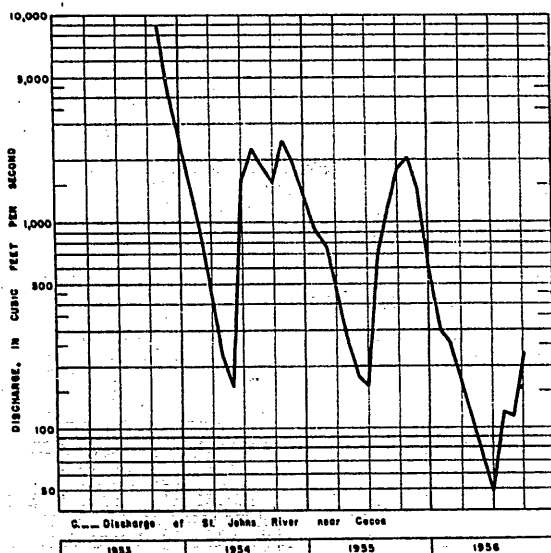
Dissolved solids of Escambia River near Century are usually less than 100 ppm. Comparison of records for Escambia River



A.—Cumulative departure from normal of rainfall at Merritt Island



B.—Dissolved solids in St Johns River near Cocoa



C.—Discharge of St Johns River near Cocoa

Figure 9. A comparison of rainfall departure from normal at Merritt Island with discharge and dissolved solids concentration of St. Johns River near Cocoa, Florida.

near Century do not disclose any significant changes in chemical quality of the water as a result of the drought.

Records of analyses for Suwannee River at Branford show the effect of the drought. Deficiencies of rainfall and runoff in the Suwannee River basin were greater in 1955 than in 1956 and higher concentrations of dissolved solids occurred at the Branford station in May 1955 (180 ppm) than in May 1956 (148 ppm).

Records of analyses for Withlacoochee River near Holder do not disclose any significant changes in the chemical character of the water during the drought.

SPRINGS

Analyses of samples collected in 1946 and 1956 from selected springs are shown in table 5. The data collected in 1946 were included in a report: Springs of Florida, Bulletin 31, Florida Geological Survey. The two sets of analyses indicate only minor differences in the chemical character of the water from most of the springs. Significant increases in dissolved solids occurred in Chassahowitzka Spring near Homosassa and Rainbow Springs near Dunnellon. The increase in concentrations of Chassahowitzka Spring indicates contamination by sea water from the Gulf of Mexico. Calcium, bicarbonate, and sulfate were the only ions that increased in Rainbow Springs. This indicates increased solution activity that may have been a direct result of the drought.

Significant decreases were noted in dissolved solids for Ponce de Leon Springs near DeLand and Salt Springs near Eureka. These springs normally produce water that contains proportionate amounts of minerals indicative of contamination by residual saline waters of ancient seas. Flushing of these residues is a continual process. The three analyses, covering a 33-year span for Ponce de Leon Springs, indicate that the flushing is continuing at this station. Although Salt Springs shows some decrease in concentrations of dissolved solids, the records are not sufficient to show whether this is a result of a trend or of differences in sampling.

ECONOMIC EFFECTS OF THE DROUGHT

The economic losses resulting from the drought amounted to millions of dollars. The yield, as well as the quality, of citrus fruits and other crops was lowered by the lack of soil moisture. Irrigation systems were installed in many groves, vegetable farms, and in

pastures where adequate nearby sources of water were available. These systems, installed at great expense, helped to alleviate the effects of the drought over limited areas during the growing season. The public water supplies of several small communities dropped below their normal levels and the available supply was restricted to necessary uses. The rural areas of the State were probably more severely affected by the drought. In many areas stock ponds went dry and the water level in farm wells dropped below the pump intakes. Water for household use and stock consumption was hauled to many rural areas in tank trucks.

There were forest fires in timber lands in the northern part of the State and more than 300,000 acres were burned over between January and May 1955. The peaty muck soils of the Everglades dried out during the prolonged period of deficient rainfall and thousands of acres caught fire and the topsoil burned away. At times, the smoke from these smoldering fires carried into the urban area along the east coast and caused considerable discomfort.

At many of the shallow lakes the situation became critical. Thousands of fish, isolated in small pools as the lakes receded, died as these pools dried up. Fish camps were isolated from several lakes by receding shorelines and many fish camps ceased operating, some permanently and some for the duration of the drought. Boat docks, diving piers, and other waterfront structures were left exposed at many popular resorts.

Serious competition developed for the use of the available water supply in some areas. The pumpage of water from the dwindling supply in some shallow lakes for irrigation of citrus groves and agricultural lands was restricted by agreement of the riparian owners, or, in some cases, by court injunction.

SUMMARY

The drought of 1954-56 caused a serious decline of water levels and streamflow in Florida. New record-low stages and flows were recorded at most gaging stations, several of which have records of nearly 30 years duration.

In the northern and western parts of the State, the drought was most severe during 1954 and 1955. The central and southern parts of the Florida Peninsula were most severely affected during the early part of 1956. Statewide, the drought was ended by the latter part of 1956 although the flow of streams in some areas and some lake levels did not return to normal until 1958.

The data on quality of water indicate characteristics that may be expected during severe droughts. Although information on normal quality characteristics is available at only a few places, comparison of these records with the drought data indicates that increased dissolved solids resulted from the drought and seriously impaired the suitability of the water for many uses. The quality of streams in northwestern Florida was hardly affected by the drought.

Water shortages occurred in many parts of the State and the economic losses amounted to millions of dollars.

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TABLE 1. Departure from Normal Annual Rainfall in Florida, 1954-56

Location	Departure, in inches		
	1954	1955	1956
Apalachicola	-17.39	-21.96	-9.95
Arcadia	+5.15	-19.41	-19.29
Avon Park	+2.33	-17.36	-6.83
Bartow	-4.12	-13.90	-7.78
Belle Glade	+1.34	-1.44	-18.23
Blountstown	-20.70	-7.58	+1.70
Bradenton	+2.08	-5.90	-11.18
Brooksville	-18.30	-17.68	-15.34
Carrabelle	-18.59	-19.00	-
Caryville	-28.31	-7.38	-3.60
Cedar Key	-20.75	-11.91	-18.05
Clermont 6 S	-13.92	-9.31	-0.37
Coconut Grove	+5.35	-10.49	-22.08
Crescent City	-12.77	-3.10	-10.77
Daytona Beach Airport	-17.11	-12.27	-19.82

TABLE 1. (Continued)

Location	Departure, in inches		
	1954	1955	1956
DeFuniak Springs	-27.90	-12.56	+2.06
DeLand	-11.24	-8.50	-6.08
Eustis	-10.06	-3.47	-6.69
Everglades	+12.95	-0.92	-13.86
Federal Point	-16.79	-8.44	-11.04
Fellsmere	+2.26	-0.51	+1.46
Fernandina Beach	-4.14	-7.00	-8.52
Fort Lauderdale	+20.61	-23.99	-20.08
Fort Myers	-3.54	-9.31	-13.49
Fort Pierce	+20.16	-1.22	-15.19
Gainesville	-12.66	-4.51	-2.23
Glen St. Mary	-16.01	-5.34	-8.23
Homestead	+5.16	-10.01	-18.24
Hypoluxo	+11.50	-20.44	-18.63
Inverness	-6.91	-7.51	-18.68
Isleworth	-13.23	-6.16	-3.73
Jacksonville Airport	-15.25	-8.75	-1.10
Jacksonville City	-20.54	-6.09	-
Key West	+17.33	-15.41	-19.11
Kissimmee	-8.46	-9.68	+1.72
LaBelle	+9.53	+4.76	-10.73
Lake Alfred	-14.71	-17.32	-7.07
Lake City	-13.22	-17.91	+0.59
Lakeland	-15.13	-7.35	-6.40
Madison	-23.56	-10.60	-7.91
Marianna Ind. School	-18.66	-13.93	-2.56
Merritt Island	+5.12	-11.47	-
Miami Beach	+7.69	-7.88	-16.32
Miami Beach Airport	+5.85	-15.06	-19.48
Miami Airport	+8.44	-6.86	-13.51
Monticello	-26.68	-16.27	+0.43
Moore Haven	+11.13	-5.37	-18.61
Mountain Lake	-4.52	-6.59	-11.35
Mount Pleasant	-20.56	-20.11	+3.93
New Smyrna Beach	-9.30	-12.02	-10.74
Niceville	-27.84	-13.58	-11.19
Ocala	-2.69	-9.05	-10.59
Orlando Airport	-3.26	-8.97	-7.40
Palatka	-22.54	-8.01	-9.70
Panama City	-15.42	-17.15	-7.50
Pensacola	-32.94	-4.22	+4.62
Plant City	+0.92	-1.94	-17.31
Punta Gorda	-1.43	-15.69	-11.29
Quincy	-26.00	-15.12	-5.02
Raiford	-12.35	-8.36	-
St. Augustine	-14.11	-0.70	-19.45
St. Leo	-10.48	-14.13	-11.23
St. Petersburg	+16.88	+11.49	-18.85
Sanford	-4.91	+2.54	-10.41
Tallahassee	-25.68	-12.55	-2.89
Tampa	-6.74	-1.13	-21.15
Tarpon Springs	-7.43	-10.34	-19.56
Titusville	-4.12	+2.83	-11.72
West Palm Beach	+8.71	-26.29	-19.44
West Palm Beach Airport	+11.49	-24.41	-23.40

Data from U. S. Weather Bureau

TABLE 2. Minimum Flow, in Cubic Feet Per Second, of Florida Streams

Map No.	Gaging Station	Period of Record	Drainage area (sq. mi.)	Minimum Flow			
				Period of record		1954-56 drought	
				Flow	Date	Flow	Date
ST. MARYS RIVER BASIN							
1	North Prong St. Marys River at Moniac, Ga.	1921-23; 1927-30; 1932-34; 1950-58	a, c 100	0	Many days	0	Many days
2	Middle Prong St. Marys River at Taylor, Fla.	1955-58	b 127	d 0.1	Aug. 24-31; Sept. 12-18, 23, 1956	d 0.1	Aug. 24-31, Sept. 12-18, 23, 1956
4	South Prong St. Marys River near Sanderson, Fla.	1955-58	b 58	0	Many days in most years	0	Many days
5	Turkey Creek at Macclenny, Fla.	1955-58	20.9	0.2	Apr. 21-24, 1956	0.2	Apr. 21-24, 1956
6	South Prong St. Marys River at Glen St. Mary, Fla.	1950-58	b 150	0.4	May 23, 1950	1.1	June 15, 1955
7	St. Marys River near Macclenny, Fla.	1926-58	b 720	12.0	May 22, 1932	16	June 21, 22, 23, 25, 26, 1955
ST. JOHNS RIVER BASIN							
26	Jane Green Creek near Deer Park, Fla.	1953-58	248	0	Many days in 1955 and 1956	0	Many days in 1955 and 1956
27	St. Johns River near Melbourne, Fla.	1939-58	874	e 0	Many days	e 0	Many days in 1955 and 1956
29	Wolf Creek near Deer Park, Fla.	1956-58	26.3	0	Many days in 1956 and 1958	0	Many days in 1956
33	St. Johns River near Christmas, Fla.	1933-58	1,418	0	Mar. 22-27, Apr. 19, June 12, 13, 1939	23	June 20, 1956
36	Econlockhatchee River near Chuluota, Fla.	1935-58	b 260	6.7	June 11-13, 15, 1945	13	July 29, 1956
46	Wekiva River near Sanford, Fla.	f 1931-35 1935-58		105	June 5, 13, 1939	177	Apr. 21, 1956

49	St. Johns River near DeLand, Fla.	1934-58	b 2,960	g 0	At times	g 0	At times
59	Palatlahaha Creek at Cherry Lake Outlet near Groveland, Fla.	f 1956-57, 1957-58	b 120	0	Several days in 1956, 1957	0	Several days in 1956, 1957
60	Palatlahaha Creek near Mascotte, Fla.	1945-56	b 160	0.2	June 18, 19, 1945	0.7	June 15, 16, 1955
64	Haines Creek near Lisbon, Fla.	1942-58	b 640	h 0	Sept. 21 to Dec. 22, 1956	h 0	Sept. 21 to Dec. 22, 1956
65	Oklawaha River at Moss Bluff, Fla.	1943-55	b 910	i 24	June 27, 29, 30, July 7, 8, 12-14, 1955	i 24	June 27, 29, 30, July 7, 8, 12-14, 1955
67	Oklawaha River near Ocala, Fla.	1930-58	b 1,100	i 12.0	Mar. 4, 1957	i 20	Apr. 24, 1956
68	Silver Springs near Ocala, Fla.	1933-58		d 539	May 7, 1957	d 541	June 23, 1956
75	Orange Lake Outlet near Citra, Fla.	1947-55		0	May 7 to Sept. 30, 1955	0	May 7, 1955 to September 1957
76	Lochloosa Lake Outlet near Lochloosa, Fla.	1947-55		0	Many days	0	Many days
77	Orange Creek at Orange Springs, Fla.	f 1941-42 1942-52; 1955-58	431	d 2.0	May 31, June 1, 3-5, 9-14, 1956	d 2.0	May 31, June 1, 3-5, 9-14, 1956
81	Oklawaha River at Riverside Landing near Orange Springs, Fla.	1943-58	b 2,100	697	Apr. 28, 29, 1957	720	June 15, 16, 1956
89	Little Haw Creek near Seville, Fla.	1951-58	b 120	0.2	July 31, Aug. 1, 2, 1952	0.6	June 23, 24, 1956
101	South Fork Black Creek near Penney Farms, Fla.	1939-58	134	a 9.4	June 24, 1955	a 9.4	June 24, 1955
104	North Fork Black Creek near Middleburg, Fla.	1931-58	174	3.6	June 8, 1935	3.9	Aug. 18, 19, 1954

MOULTRIE CREEK BASIN

108	Moultrie Creek near St. Augustine, Fla.	1939-58	23.3	0.1	June 6, 7, 1958	0.2	May 22, 1956
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TABLE 2. (Continued)

Map No.	Gaging Station	Period of Record	Drainage area (sq. mi.)	Minimum Flow			
				Period of record		1954-58 drought	
				Flow	Date	Flow	Date
SPRUCE CREEK BASIN							
112	Spruce Creek near Samsula, Fla.	1951-58	b 32	0.1	Several days in 1951 and 1952	0.2	Aug. 19, 1954
INDIAN RIVER BASIN							
115	Elbow Creek near Eau Gallie, Fla.	1955-57	2.69	d 0.2	June 16-22, 24, 1957	0.3	Several days in May, June 1956
116	Crane Creek at Melbourne, Fla.	1951-58	12.6	1.8	June 25, 26, 27, 28, 1951	3.0	June 16, 1955
117	Turkey Creek near Palm Bay, Fla.	f 1954-55 1951 and 1952	95.5 0.2	22	July 16, 1958	25	Mar. 30, 1956
120.1	Fellsmere Canal near Fellsmere, Fla.	1955-58	78.4	24	May 22, 27, 1956	24	May 22, 27, 1956
121	North Canal near Vero Beach, Fla.	1950-58		d 3.0	July 1, 2, 1952, Mar. 9-12, 15, 17, 20, 1956	d 3.0	Mar. 9-12, 15, 17, 20, 1956
122	Main Canal at Vero Beach, Fla.	1950-58		2.6	Sept. 6, 1954	2.6	Sept. 6, 1954
123	South Canal near Vero Beach, Fla.	1950-58		d 2.0	Aug. 14-16, 1956	d 2.0	Aug. 14-16, 1954
LAKE OKEECHOBEE AND THE EVERGLADES							
126	Fisheating Creek near Venus, Fla.	1955-58	b 195	0	Many days in most years	0	Many days in 1955, 1956
127	Fisheating Creek at Palm-dale, Fla.	1931-58	b 435	0	Many days in most years	0	Many days

133	Myrtle-Mary Jane Canal near Narcoossee, Fla.	1949-58	j 111	0	At times	0	At times
138	East Tohopekaliga-Tohopekaliga Canal near St. Cloud, Fla.	1942-58	300	0	Many days in 1955, 1956	0	Many days in 1955, 1956
141	Cypress Creek at Vineland, Fla.	1945-58	30.3	0	Many days in most years	0	Many days
142	Tohopekaliga-Cypress Canal near St. Cloud, Fla.	1942-58	b k 540	0	At times	0	At times
143	Canoe Creek near St. Cloud, Fla.	1949-58	l 86.5	0	Many days in 1950, 1956	0	Many days in 1956
144	Reedy Creek near Loughman, Fla.	1939-58	b k 115	2.4	June 15, 1956	2.4	June 15, 1956
145	Catfish Creek near Lake Wales, Fla.	1947-58	58.9	7.6	Apr. 10, 1956	7.6	Apr. 10, 1956
146	Hatchineha-Kissimmee Canal near Lake Wales, Fla.	1942-58	m 1,185	d 27	July 28, 1956	d 27	July 28, 1956
149	Kissimmee River below Lake Kissimmee, Fla.	1933-58	n 1.609	d 52	July 24, 1956	d 52	July 24, 1956
150	Reedy Creek near Frostproof, Fla.	1946-58	62.2	d 0.1	Mar. 21-23, 29, Apr. 22, 1956	d 0.1	Mar. 21-23, 29, Apr. 22, 1956
151	Carter Creek near Sebring, Fla.	1954-58	38.8	d 4.6	May 27, 1956	d 4.6	May 27, 1956
152	Arbuckle Creek near De Soto City, Fla.	1939-58	p 385	4.3	May 19, 27, 28, 1956	4.3	May 19, 27, 28, 1956
153	Stearns Creek near Lake Placid, Fla.	1955-58	44.0	0	At times in most years	0	On several days
154	Josephine Creek near De Soto City, Fla.	1946-58	q 109	0.3	May 22, 1956	0.3	May 22, 1956
155	Istokpoga Canal near Cornwell, Fla.	1934-58	624	0	At times in several years	0	February to June 1956
156	Kissimmee River near Okeechobee, Fla.	1930-58	2.886	d 68	May 29 to June 5, 1956	d 68	May 29 to June 5, 1956
157	Taylor Creek near Basinger, Fla.	1955-58	15.7	0	Some days in most years	0	Some days in most years

TABLE 2. (Continued)

Map No.	Gaging Station	Period of Record	Drainage area (sq. mi.)	Minimum Flow			
				Period of record		1954-56 drought	
				Flow	Date	Flow	Date
158	Taylor Creek above Okeechobee, Fla.	1955-58	98.7	0	At times in some years	0	At times in 1955, 1956
161	St. Lucie Canal at lock near Stuart, Fla.	1952-58	---	(r)	Several periods each year	(r)	Several periods each year
162	West Palm Beach Canal at HGS-5 at Canal Point, Fla.	1939-58	---	s 1,760	June 15, 1942	s 1,110	July 14, 1954
164	West Palm Beach Canal at West Palm Beach, Fla.	1939-58	---	t 30	Dec. 1956, Jan. 1957	t 30	Dec. 1956, Jan. 1957
165	Hillsboro Canal at Belle Glade, Fla.	1940-50 1954-57	---	s 1,500	June 22, 1957	s 526	Oct. 16, 1956
167	Hillsboro Canal near Deerfield Beach, Fla.	1939-58	---	0	Dec. 16, 1939, Apr. 11, June 18, 1940, Sept. 21-23, 28, 1958	a 15	December and January 1956
168	North New River Canal at South Bay, Fla.	1942-57	---	s 2,900	Jan. 22, 1957	s 552	Oct. 5, 1956
170	North New River Canal near Fort Lauderdale, Fla.	1939-58	---	d 2.4	May 21, 22, 1947	d 20	November and December 1956
173	Miami Canal at Water Plant, Hialeah, Fla.	1940-58	---	g 390	June 23, 1943	a 35	Some days in Mar. 1956
175	Tamiami Canal Outlets, Miami to Monroe, Fla.	1939-58	---	0	Many days in most years	0	Many days in 1955, 1956
179	Barron River Canal near Everglades, Fla.	1952-58	---	0	May 17, 18, 1952	0.1	Many days in 1956
180	Imperial River near Bonita Springs, Fla.	1940-54	---	0	June 28, July 3, 1940	(u)	
182	Caloosahatchee Canal at Moore Haven, Fla.	1938-58	---	(r)	Several periods in each year	(r)	Several periods in each year

PEACE RIVER BASIN

185	Peace Creek Drainage Canal near Dundee, Fla.	1946-58	b 50	0	At times in some years	0	Some periods in 1955, 1956
186	Peace Creek Drainage Canal near Alturas, Fla.	1947-58	b 150	2.4	Aug. 12, 1956	2.4	Aug. 12, 1956
187	Lake Lulu Outlet near Eloise, Fla.	1946-58	b 26	0	Several days Mar., Apr., 1951, Aug., Sept. 1956	0	Several days Aug., Sept. 1956
188	Peace River at Bartow, Fla.	1939-58	b 390	1.4	June 2, 1945	28	May 15, June 11, 1955, Mar. 28, Apr. 3-6, 1956
193	Peace River at Zolfo Springs, Fla.	1933-58	b 840	40	Apr. 24, 26, 1956	40	Apr. 24, 26, 1956
194	Little Charley Bowlegs Creek near Sebring, Fla.	1952-58	32.4	0	Many days	0	Many days
196	Charlie Creek near Gardner, Fla.	1950-58	b 330	0.3	Aug. 6-8, 1950	0.8	Apr. 3, 1956
197	Peace River at Arcadia, Fla.	1931-58	b 1,370	37	May 28, 1949	43	Apr. 25, 27, 1956
199	Joshua Creek at Nocatee, Fla.	1950-58	b 115	0	Nov. 18-20, 22-24, 1953	0.1	June 27, 28, 1956
202	Horse Creek near Arcadia, Fla.	1950-58	b 205	0	June 7-9, 15, 25-30, July 2, Aug. 7, 1956; Feb. 16-18, 1957	0	June 7-9, 15, 25-30, July 2, Aug. 7, 1956

MYAKKA RIVER BASIN

206	Myakka River near Sarasota, Fla.	1936-58	b 235	0	Many days in some years	0	Many days in 1955, 1956
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MANATEE RIVER BASIN

214	Manatee River near Bradenton, Fla.	1939-58	b 90	0.6	May 7, 1939	3.0	Apr. 23, 24, 26, 27, 1956
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TABLE 2. (Continued)

Map No.	Gaging Station	Period of Record	Drainage area (sq. mi.)	Minimum Flow			
				Period of record		1954-56 drought	
				Flow	Date	Flow	Date
LITTLE MANATEE RIVER BASIN							
215	Little Manatee River near Wimauma, Fla.	1939-58	b 145	1.2	June 6, 7, 1945	d 4.5	May 18, 1955
BULLFROG CREEK BASIN							
216	Bullfrog Creek near Wimauma, Fla.	1956-58	29.1	0	Oct. 21-23, 1957, June 4, 5, 7, 10, 21, 1958	0	At times
ALAFIA RIVER BASIN							
218	North Prong Alafia River at Keyaville, Fla.	1950-58	b 175	3.6	May 17, 1952	12	June 11, 1955
221	Alafia River near Lithia, Fla.	1938-58	b 335	6.6	June 5, 6, 1945	27	Apr. 23-25, 1956
PALM RIVER BASIN							
225	Sixmile Creek at Tampa, Fla.	1956-58	b 28	d 14	Dec. 21-23, 1956	d 14	Dec. 21-23, 1956
HILLSBOROUGH RIVER BASIN							
227	Blackwater Creek near Knights, Fla.	1951-58	b 110	0.7	May 28, 1952	d 2.7	Dec. 14, 1956
228	Hillsborough River near Zephyrhills, Fla.	1939-58	b 220	48	June 11-17, 1945	60	June 7, 9, 1955, May 28, June 3, 1956
229	Pemberton Creek near Dover, Fla.	1956-58	b 24	1.1	Oct. 18, 1958	(v)	
230	Flint Creek near Thonotosassa, Fla.	1956-58	b 60	0	June 7-24, 1958	(v)	

232	Hillsborough River near Tampa, Fla.	1938-58	650	0	Nov. 30 to Dec. 2, 1945	d 6.4	June 15, 1956
233	Drainage Ditch at Bearss Ave., Sulphur Springs, Fla.	1946-56	b 12	0	Many days in most years	0	Many days

SWEETWATER CREEK BASIN

237	Sweetwater Creek near Sulphur Springs, Fla.	1951-58	b 6.4	0	Many days	0	Many days in each year
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ROCKY CREEK BASIN

238	Rocky Creek near Sulphur Springs, Fla.	1953-58	b 35	0.4	May 12, 16, June 9, 10, 1955	0.4	May 12, 16, June 9, 10, 1955
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ALLIGATOR CREEK BASIN

239	Alligator Creek at Safety Harbor, Fla.	1949-58	b 9.0	0	Many days in most years	0	Many days in each year
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LONG BAYOU BASIN

240	Seminole Lake Outlet near Largo, Fla.	1950-58	b 14	0	Many days in each year	0	Many days in each year
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LAKE TARPON BASIN

240.1	Brooker Creek near Odessa, Fla.	1946-56	b 10	0	Many days	0	Many days
240.2	Brooker Creek near Tarpon Springs, Fla.	1950-58	b 30	0	At times each year	0	At times each year

ANCLOTE RIVER BASIN

240.5	Anclote River near Elfers, Fla.	1946-58	72.5	a w 0.4	May 19, 1956	a w 0.4	May 19, 1956
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TABLE 2. (Continued)

Map No.	Gaging Station	Period of Record	Drainage area (sq. mi.)	Minimum Flow			
				Period of record		1954-56 drought	
				Flow	Date	Flow	Date
WITHLACOOCHEE RIVER BASIN							
249	Withlacoochee River at Trilby, Fla.	1928-29, 1930-58	b 650	8.6	June 9-17, 1945	9.5	July 22, 1956
250	Withlacoochee River at Croom, Fla.	1939-58	b 900	16	July 24-25, 1956	16	July 24-25, 1956
254	Withlacoochee River near Holder, Fla.	1928-29, 1931-58	b 1,710	112	June 18, 1956	112	June 18, 1956
SUWANNEE RIVER BASIN							
261	Suwannee River at White Springs, Fla.	1906-08, 1927-58	c 1,990	4.8	Nov. 15, 1931	7.5	June 24-26, 1955
265	Withlacoochee River near Pinetta, Fla.	1931-58	b 2,220	70	Aug. 23, 1955	70	Aug. 23, 1955
267	Suwannee River at Ellaville, Fla.	1927-58	b 6,580	882	July 17, 1955	882	July 17, 1955
271	Suwannee River at Branford, Fla.	1931-58	b 7,090	1,530	July 1, 2, 1955	1,530	July 1, 2, 1955
277	New River near Lake Butler, Fla.	1950-58	212	0.2	Several days in June 1955	0.2	Several days in June 1955
278	Santa Fe River at Worthington, Fla.	1931-58	b 630	0.5	June 24, 1955	0.5	June 24, 1955
279	Santa Fe River near High Springs, Fla.	1931-58	b 950	31	Apr. 28 to May 5, 1956	31	Apr. 28 to May 5, 1956
281	Santa Fe River near Fort White, Fla.	1927-30, 1932-58	b 1,080	609	May 22, 1957	625	July 1, 1956
285	Suwannee River near Bell, Fla.	1932-56	b 9,260	2,460	Jan. 10, 11, 1956	2,460	Jan. 10, 11, 1956
287	Suwannee River near Wilcox, Fla.	1930-31, 1951-58	a 9,500	(x)		d 3,340	Dec. 7, 1955; Jan. 6, 1956

STEINHATCHEE RIVER BASIN

293	Steinhatchee River near Cross City, Fla.	1950-58	b 360	3.4	June 27, 28, 1950	3.6	Jan. 16, 1956
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FENHOLLOWAY RIVER BASIN

295	Fenholloway River near Foley, Fla.	1955-58	a 70	1.9	June 9, 1956	1.9	June 9, 1956
298	Fenholloway River at Foley, Fla.	1946-58	a 80	5.1	Oct. 15, 1951	9.2	Dec. 26, 1955

ECONFINA RIVER BASIN

302	Econfina River near Perry, Fla.	1950-58	b 230	2.3	July 8, 1955	2.3	July 8, 1955
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AUCILLA RIVER BASIN

308	Aucilla River at Lamont, Fla.	1950-58	b 680	0	Many days in 1955, 1957	0	Many days in 1955
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ST. MARKS RIVER BASIN

317	St. Marks River near Newport, Fla.	1956-58	b 220	325	Mar. 17, 1957	(v)	—
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OCHLOCKONEE RIVER BASIN

320	Ochlockonee River near Havana, Fla.	1926-58	b 1,020	17	Oct. 23-28, Nov. 1, 1954	17	Oct. 23-28, Nov. 1, 1954
322	Little River near Quincy, Fla.	1950-58	b 250	6.8	June 9, 1956	6.8	June 9, 1956
324	Ochlockonee River near Bloxham, Fla.	1926-58	b 1,660	(z)		39	Nov. 28, 1955
325	Telogia Creek near Bristol, Fla.	1950-58	b 130	28	Sept. 14, Oct. 26, 27, 1954	28	Sept. 14, Oct. 26, 27, 1954

TABLE 2. (Continued)

Map No.	Gaging Station	Period of Record	Drainage area (sq. mi.)	Minimum Flow			
				Period of record		1954-56 drought	
				Flow	Date	Flow	Date
APALACHICOLA RIVER BASIN							
327	Apalachicola River at Chattahoochee, Fla.	1928-58	b 17,100	4,950	Oct. 27, 1954	4,950	Oct. 27, 1954
329	Chinola River near Altha, Fla.	1912-13; 1921-27; 1929-31; 1943-58	781	356	Nov. 17, 18, 19, 1955	356	Nov. 17, 18, 19, 1955
BEAR CREEK BASIN							
330	Econfina Creek near Bennett, Fla.	1935-58	182	307	Jan. 9, 1956	307	Jan. 9, 1956
CHOCTAWHATCHEE RIVER BASIN							
331	Choctawhatchee River at Caryville, Fla.	1929-58	3,499	752	Sept. 4, 1957	775	Sept. 19, 1956
332	Holmes Creek at Vernon, Fla.	1950-58	386	234	July 8, 1955	234	July 8, 1955
333	Choctawhatchee River near Bruce, Fla.	1930-58	4,384	1,480	Oct. 9, 1954	1,480	Oct. 9, 1954
ALAUQUA CREEK BASIN							
334	Alauqua Creek near DeFuniak Springs, Fla.	1951-58	65.6	27	June 9, 21, 22, 30, July 1, 1955	27	June 9, 21, 22, 30, July 1, 1955
YELLOW RIVER BASIN							
335	Yellow River at Milligan, Fla.	1938-58	624	143	Oct. 25, 1954	143	Oct. 25, 1954
336	Shoal River near Mossy Head, Fla.	1951-58	123	42	June 9, 1956	42	June 9, 1956

337	Shoal River near Crestview, Fla.	1938-58	474	263	May 13. 14. 1955	263	May 13. 14. 1955
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BLACKWATER RIVER BASIN

338	Blackwater River near Baker, Fla.	1950-58	205	60	Sept. 7. 8. 1954	60	Sept. 7. 8. 1954
339	Big Coldwater Creek near Milton, Fla.	1938-58	237	156	June 10. 11. 1956	156	June 10. 11. 1956

ESCAMBIA RIVER BASIN

340	Escambia River near Century, Fla.	1934-58	3,817	600	Sept. 15, Oct. 20, 21, 1954	600	Sept. 15, Oct. 20, 21. 1954
341	Pine Barren Creek near Barth, Fla.	1952-58	75.3	51	June 8. 9. 1956	51	June 8. 9. 1956

PERDIDO RIVER BASIN

342	Perdido River at Barrineau Park, Fla.	1941-58	394	207	Sept. 15, 1954	207	Sept. 15, 1954
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- a About.
 b Approximately.
 c Includes part of watershed in Okeefenokee Swamp which is indeterminate.
 d Daily.
 e Flow occasionally reversed by wind.
 f Discharge measurements only.
 g Flow occasionally reversed by high tide during periods of low flow.
 h Caused by placement of a coffer dam upstream.
 i Regulated by Moss Bluff dam.
 j Excludes area drained by Brick Lake.
 k Includes part of watershed in Reedy Creek Swamp which is indeterminate.
 l Includes area drained by Brick Lake.
 m Includes Cypress-Kissimmee overflow.

- n Includes area drained by Lakes Weohyakapka and Marian.
 p Excludes area drained by Lake Weohyakapka and includes area drained by Lake Sebring.
 q Excludes area drained by Lake Sebring.
 r No flow except leakage through closed locks; estimated to be less than 10 cfs.
 s Maximum daily flow toward Lake Okeechobee; normal direction of flow is away from Lake Okeechobee.
 t Estimated.
 u Not determined; station discontinued in November 1954.
 v Not determined; station established in August 1956.
 w Slight regulation by pumpage above station.
 x Fragmentary records; low-water records not computed.
 y Not determined; station established in October 1956.
 z Indeterminate prior to 1954.

TABLE 3. Low-Flow Measurements Made at Partial-Record Gaging Stations During the 1956 Drought

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Dis-charge (cfs)
ST. MARYS RIVER BASIN						
3	Cedar Creek	St. Marys River	in NW $\frac{1}{4}$ sec. 10, T. 2 S., R. 21 E., at bridge on State Highway 125, 5 miles northwest of Glen St. Mary	61	Apr. 18	2.71
8	St. Marys River	Atlantic Ocean	in SW $\frac{1}{4}$ sec. 4, T. 1 N., R. 23 E., at bridge on county road, 2 miles east of St. George	920	Apr. 18	38.5
9	Little St. Marys River	St. Marys River	in middle of sec. 2, T. 3 N., R. 25 E., at bridge on county road at Lessie, 1 $\frac{1}{2}$ miles above Wilder Creek, and 8 $\frac{1}{2}$ miles east of Hilliard.	39.6	Apr. 19	0
10	Wilder Creek	Little St. Marys River	in S $\frac{1}{2}$ sec. 35, T. 4 N., R. 25 E., at bridge on county road at Lessie, 1 $\frac{1}{4}$ miles above mouth, and 8 $\frac{1}{2}$ miles east of Hilliard.	7.32	Apr. 19	0
NASSAU RIVER BASIN						
11	Su-No-Wa Spring	Thomas Creek	in SE $\frac{1}{4}$ sec. 3, T. 1 S., R. 24 E., 3 $\frac{1}{2}$ miles east of Verdie and 5 miles south of Crawford.		Apr. 19	< .01
12	Thomas Creek	Nassau River	in NE $\frac{1}{4}$ sec. 15, T. 1 N., R. 25 E., at bridge on U. S. Highway 1, 5 miles southeast of Callahan.	46.1	Apr. 18	0
ST. JOHNS RIVER BASIN						
13	Fort Drum Creek	St. Johns Marsh	in SW $\frac{1}{4}$ sec. 14, T. 34 S., R. 35 E., at bridge on U. S. Highway 441, 1.0 mile south of Fort Drum.		May 1	0
14	Unnamed tributary	Fort Drum Creek	in NW $\frac{1}{4}$ sec. 14, T. 34 S., R. 35 E., at bridge on U. S. Highway 441, 0.6 mile south of Fort Drum.		May 1	0

15	Unnamed tributary	Fort Drum Creek	in NW¼ sec. 23, T. 34 S., R. 35 E., at bridge on U. S. Highway 441, 1.4 miles south of Fort Drum.		May 1	0
16	Fort Drum Creek	St. Johns Marsh	in NE¼ sec. 14, T. 34 S., R. 35 E., at bridge on county road, 0.6 mile southeast of Fort Drum.		May 1	0
17	Unnamed tributary	Fort Drum Creek	in NE¼ sec. 10, T. 34 S., R. 35 E., at bridge on U. S. Highway 441, 0.6 mile north of Fort Drum.		May 1	0
18	Fort Drum Creek	St. Johns Marsh	in sec. 2, T. 34 S., R. 35 E., at Bear Island fords on private road, 1.5 miles north of Fort Drum.		May 1	0
19	Sweetwater Branch	Fort Drum Creek	in SW¼ sec. 28, T. 33 S., R. 35 E., at bridge on U. S. Highway 441, 3.4 miles northwest of Fort Drum.		May 1	0
20	Sweetwater Branch	Fort Drum Creek	in NW¼ sec. 34, T. 33 S., R. 35 E., at bridge on private road, 2.8 miles north of Fort Drum.		May 1	.44
21	Boggy Branch	Sweetwater Branch	in NW¼ sec. 3, T. 34 S., R. 35 E., at bridge on U. S. Highway 441, 1.8 miles northwest of Fort Drum.		May 1	0
22	Jim Green Creek	Fort Drum Creek	in SE¼ sec. 22, T. 33 S., R. 35 E., at ford on private road, 4.3 miles north of Fort Drum.		May 1	0
23	Padgett Branch	Blue Cypress Lake	in NW¼ sec. 26, T. 32 S., R. 35 E., at bridge on State Highway 60, 6.7 miles southeast of Yeehaw Junction.		Apr. 24	0
24	Blue Cypress Creek	Blue Cypress Lake	in NW¼ sec. 36, T. 31 S., R. 34 E., at Big Lolly Bridge on county road, 3.3 miles north of Yeehaw Junction.		Apr. 24	0
25	Cow Log Branch	Blue Cypress Creek	in SE¼ sec. 13, T. 32 S., R. 34 E., at bridge on State Highway 60, 1.6 miles southeast of Yeehaw Junction.		Apr. 24	0

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Discharge (cfs)
28	Pennywash Creek	St. Johns River	in NW $\frac{1}{4}$ sec. 35, T. 26 S., R. 34 E., at bridge on county road, 6 $\frac{1}{4}$ miles north of Deer Park.	17.2	Apr. 26	†.06
30	St. Johns River	Atlantic Ocean	in NE $\frac{1}{4}$ sec. 25, T. 24 S., R. 34 E., at bridge on State Highway 520, at outlet of Lake Poinsett, and 10 $\frac{1}{2}$ miles west of Cocoa.	1,237	Apr. 24	*98.3
31	Taylor Creek	St. Johns River	in SW $\frac{1}{4}$ sec. 33, T. 24 S., R. 34 E., at bridge on county road, 3 $\frac{1}{2}$ miles above mouth and 10 $\frac{1}{4}$ miles west of Cocoa.	52.2	Apr. 23	0
32	Jim Creek	St. Johns River	in SE $\frac{1}{4}$ sec. 36, T. 23 S., R. 33 E., at bridge on county road, 7 $\frac{1}{4}$ miles southeast of Christmas.	23.0	Apr. 23	0
34	Econlockhatchee River	St. Johns River	in NE $\frac{1}{4}$ sec. 13, T. 22 S., R. 31 E., at bridge on State Highway 420, 9 $\frac{1}{2}$ miles northwest of Christmas.		Apr. 25	†.15
35	Little Econlockhatchee River	Econlockhatchee River	in NW $\frac{1}{4}$ sec. 4, T. 22 S., R. 31 E., at bridge on Iron Bridge Road, 4 miles south of Oviedo and 10 miles east of Orlando		Apr. 27	13.7
37	St. Johns River	Atlantic Ocean	in NE $\frac{1}{4}$ sec. 32, T. 20 S., R. 33 E., at bridge on State Highway 46, 1 mile above Lake Harney, and 5 $\frac{1}{2}$ miles southeast of Geneva.	1,910	June 6	*72.0
38	Deep Creek Canal	St. Johns River	on line between sec. 12 and 13, T. 19 S., R. 32 E., at bridge on State Highway 410 5 $\frac{1}{4}$ miles east of Osteen.		Apr. 25	.38
39	Cow Creek	Deep Creek	in SW $\frac{1}{4}$ sec. 16, T. 19 S., R. 33 E., at bridge on county road, 2 miles above mouth and 8 miles east of Osteen.		Apr. 25	0
40	Little Canal	St. Johns River	at corner of sec. 10, 11, 14, 15, T. 19 S., R. 32 E., at bridge on State Highway 410, 3 $\frac{1}{4}$ miles east of Osteen.		Apr. 25	†.3

41	St. Johns River	Atlantic Ocean	in sec. 16, T. 19 S., R. 30 E., at bridge on U. S. Highways 17 and 92, near downstream end of Lake Monroe, and 4 miles northwest of Sanford.	2,420	June 6	*0
42	Wekiwa Springs	Wekiva River	at corner of sec. 25, 36, 30, 31, T. 20 S., R. 28 and 29 E., at headwater of Wekiva River, 3½ miles northeast of Apopka.		Apr. 27	62.0
43	Rock Springs	Rock Springs Run	on line between sec. 10 and 15, T. 20 S., R. 28 E., 8 miles above Wekiva River, and 6 miles north of Apopka.		Apr. 26	54.7
44	Sanlando Springs	Little Wekiva River	on line between sec. 2 and 3, T. 21 S., R. 29 E., on east bank of Little Wekiva River, 3¼ miles west of Longwood.		Apr. 27	13.9
45	Palm Springs	Little Wekiva River	on line between sec. 2 and 3, T. 21 S., R. 29 E., on east bank of Little Wekiva River, 3 miles west of Longwood.		Apr. 27	8.91
47	Blackwater Creek	St. Johns River	in SW¼ sec. 35, T. 18 S., R. 28 E., at bridge on State Highway 44, 1½ miles southwest of Cassia.		Apr. 26	5.94
48	Blue Spring	St. Johns River	in sec. 8, T. 18 S., R. 30 E., 800 feet upstream from St. Johns River, a quarter of a mile downstream from head of spring, and 2½ miles west of Orange City.		Nov. 29	*125
50	Alexander Springs	Alexander Spring Creek	in Levy Land Grant, T. 16 S., R. 27 E., 1½ miles above bridge on State Highway 445, and 6 miles southwest of Astor.		Apr. 23	136
51	Ponce de Leon Springs	Spring Garden Lake	in sec. 2, T. 16 S., R. 29 E., ¼ mile west of De Leon Springs, and 8½ miles northwest of DeLand.		Apr. 18	23.4
52	Juniper Springs	Juniper Creek	in sec. 17, T. 15 S., R. 26 E., 10 miles west of Astor, and 27 miles east of Ocala.		Apr. 23	9.66
53	The Aquarium	Juniper Creek	in sec. 17, T. 15 S., R. 26 E., 10 miles west of Astor, and 27 miles east of Ocala.		Apr. 23	11.6

*Minimum of measured discharges at monthly intervals.

†Field estimate.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Dis-charge (cfs)
54	Silver Glen Springs	Lake George	in SE $\frac{1}{4}$ sec. 25, T. 15 S., R. 27 E., 9 miles northwest of Astor.		Apr. 24	108
55	Salt Springs	Salt Spring Creek	in Jos. Hernandez Grant, T. 13 S., R. 26 E., near town of Lake Kerr, 28 miles northeast of Ocala.		Apr. 24	79.9
56	Big Creek	Lake Louisa	in NW $\frac{1}{4}$ sec. 32, T. 23 S., R. 26 E., 1 mile above Lake Louisa, and 7 $\frac{1}{2}$ miles south of Clermont.	67	May 4	5.05
57	Little Creek	Lake Louisa	in NE $\frac{1}{4}$ sec. 25, T. 23 S., R. 25 E., at bridge on county road $\frac{1}{4}$ mile above Lake Louisa, and 6 $\frac{1}{2}$ miles south of Clermont.	15	May 4	0
61	Palatlahaha Creek	Lake Harris	in sec. 26, T. 20 S., R. 24 E., at bridge 2 miles southeast of Okahumpka, and 4 miles above mouth.		Sept. 4	*.01
62	Bugg Spring	Lake Markham	on line between sec. 10 and 15, T. 20 S., R. 24 E., at Okahumpka.		Apr. 26	10.3
63	Unnamed Spring	Lake Harris	in SW $\frac{1}{4}$ sec. 16, T. 20 S., R. 25 E., at south edge of Lake Harris, and $\frac{1}{4}$ mile north of Yalaha.		Apr. 30	3.59
65	Oklawaha River	St. Johns River	in sec. 22 or 23, T. 16 S., R. 24 E., at bridge on State Highway 464, and 0.4 miles southwest of Moss Bluff.	910	Apr. 26	17.8
69	Hatchet Creek	Newnans Lake	in SW $\frac{1}{4}$ sec. 22, T. 9 S., R. 21 E., at bridge on State Highway 26, 8 miles northeast of Gainesville.	57	Apr. 24	.54
70	Little Hatchet Creek	Newnans Lake	in SW $\frac{1}{4}$ sec. 29, T. 9 S., R. 21 E., at bridge on State Highway 26, 6 miles northeast of Gainesville.	10.9	Apr. 24	0
71	Prairie Creek	Camps Canal	in NW $\frac{1}{4}$ sec. 19, T. 10 S., R. 21 E., at bridge on State Highway 20, 5 $\frac{1}{2}$ miles southeast of Gainesville.	111	Apr. 23	.37

73	Lochloosa Creek	Lake Lochloosa	in NE¼ sec. 30, T. 10 S., R. 22 E., at bridge on State Highway 20, 1 mile east of Grove Park.	34.7	Apr. 23	0
74	Magnesia Springs	Lochloosa Creek	in NW¼ sec. 31, T. 10 S., R. 22 E., 3½ miles west of Hawthorne.		Apr. 23	.02
78	Little Orange Creek	Orange Creek	in NW¼ sec. 19, T. 11 S., R. 24 E., at bridge on State Highway 315, 1¼ miles north of Orange Springs.	78.9	Apr. 24	3.77
79	Bruntbridge Brook	Oklawaha River	in SE¼ sec. 15, T. 11 S., R. 24 E., at bridge on State Highway 315, 4 miles northeast of Orange Springs.	4.63	Apr. 24	0
80	Deep Creek	Oklawaha River	in NW¼ sec. 18, T. 11 S., R. 25 E., at bridge on State Highway 310, 7 miles northeast of Orange Springs.	54.3	Apr. 24	40.3
82	Nashua Spring	St. Johns River	in NE¼ sec. 28, T. 11 S., R. 26 E., on east bank of St. Johns River at Nashua, 2½ miles south of Satsuma.		Apr. 19	0
83	Unnamed Spring	St. Johns River	in SE¼ sec. 21, T. 11 S., R. 26 E., on east bank of St. Johns River at Nashua 2½ miles south of Satsuma.		Apr. 19	2.49
84	Black Branch	Haw Creek	in NE¼ sec. 21, T. 12 S., R. 30 E., at bridge on State Highway 11, 1¾ miles southwest of Bunnell.		Apr. 18	0
85	Sweetwater Branch	Haw Creek	in NW¼ sec. 32, T. 12 S., R. 30 E., at bridge on State Highway 11, 4 miles southwest of Bunnell.		Apr. 18	0
86	Haw Creek	Crescent Lake	on line between sec. 2 and 3, T. 13 S., R. 29 E., at bridge on State Highway 305, 7¼ miles southwest of Bunnell.		Apr. 18	0
87	Middle Haw Creek	Haw Creek	in middle of sec. 19, T. 13 S., R. 30 E., at bridge on State Highway 11, 8 miles south of Bunnell.		Apr. 18	0

*Minimum of measured discharges at monthly intervals.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Discharge (cfs)
88	Middle Haw Creek	Haw Creek	on line between sec. 10 and 11, T. 13 S., R. 29 E., at bridge on State Highway 305, 8 miles southwest of Bunnell.		Apr. 18	0
90	Magnolia Lake Outlet	Lake Brooklyn	in sec. 8, T. 8 S., R. 23 E., 2 miles north of Keystone Heights.	14.8	Apr. 20	0
91	Etonia Creek	Rice Creek	in SE $\frac{1}{4}$ sec. 2, T. 9 S., R. 25 E., at bridge on county road, 1 $\frac{1}{2}$ miles east of Florahome.		Apr. 20	2.82
92	Etonia Creek	Rice Creek	in NW $\frac{1}{4}$ sec. 17, T. 9 S., R. 26 E., at bridge on State Highway 309, 6 $\frac{1}{2}$ miles northwest of Palatka.		Apr. 20	10.1
93	Simms Creek	Etonia Creek	on line between sec. 33, T. 7 S., and sec. 4, T. 8 S., R. 26 E., at bridge on State Highway 214, 1 $\frac{1}{4}$ miles east of Sun Garden, and 6 miles northwest of Bostwick.	6.39	Apr. 24	0
94	Unnamed Branch	Palmetto Branch	in SW $\frac{1}{4}$ sec. 15, T. 9 S., R. 25 E., at bridge on State Highway 100, $\frac{1}{4}$ mile northwest of Carraway and 10 miles northwest of Palatka.	1.81	Apr. 19	.25
95	Rice Creek	St. Johns River	in sec. 29, T. 9 S., R. 26 E., at bridge on State Highway 100, 3 miles southeast of Carraway, and 7 miles northwest of Palatka.	42.8	Apr. 19	2.53
96	Unnamed Branch	Rice Creek	in SE $\frac{1}{4}$ sec. 33, T. 9 S., R. 26 E., at bridge on State Highway 100, $\frac{1}{4}$ mile northwest of junction with State Highway 216, and 4 miles northwest of Palatka.	1.97	Apr. 19	0
97	Sixmile Creek	St. Johns River	in SW $\frac{1}{4}$ sec. 4, T. 7 S., R. 28 E., at bridge on State Highway 13A, at Bakersville, 10 $\frac{1}{2}$ miles west of St. Augustine.	45.7	May 23	.62

98	Green Cove Springs	St. Johns River	in sec. 38, T. 6 S., R. 26 E., at side of U. S. Highway 17 in Green Cove Springs.		Apr. 25	2.74
99	Governors Creek	St. Johns River	on line between sec. 9 and 16, T. 6 S., R. 26 E., at bridge on U. S. Highway 16, 1 mile west of Green Cove Springs.	10.5	May 23	2.29
100	South Fork Black Creek	Black Creek	on line between sec. 27 and 28, T. 6 S., R. 24 E., at bridge on State Highway 21, 6 miles southwest of Penney Farms.	34.8	Apr. 20	9.46
102	North Fork Black Creek	Black Creek	on line between sec. 11 and 14, T. 6 S., R. 23 E., at bridge on State Highway 16, 8½ miles southwest of Middleburg.	9.17	Apr. 20	.35
103	Yellow Water Creek	Black Creek	on line between sec. 32, T. 3 S., and sec. 5, T. 4 S., R. 24 E., on county road at Duval-Clay county line, 5½ miles east of Maxville.	61.2	Apr. 19	3.07
105	Durbin Creek	Julington Creek	in NE¼ sec. 6, T. 5 S., R. 28 E., at bridge on county road 5 miles northwest of Durbin.	26.9	May 23	0
106	Wadesboro Spring	Doctors Lake	in sec. 25, T. 4 S., R. 26 E., 0.9 miles southwest of Orange Park.		Apr. 20	.71
107	McGirts Creek	Ortega River	on line between sec. 10 and 15, T. 3 S., R. 25 E., at bridge on Jacksonville Heights Road, 5 miles southwest of Jacksonville.	27.8	Apr. 19	1.09

PELLICER CREEK BASIN

109	Pellicer Creek	Matanzas River	in sec. 47, T. 10 S., R. 30 E., at F.E.C. railroad bridge, at Flagler-St. Johns county line, and 10 miles north of Espanola.	34.4	May 24	2.19
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TOMOKA RIVER BASIN

110	Tomoka River	Halifax River	in SW¼ sec. 27, T. 15 S., R. 32 E., at bridge on U. S. Highway 92, 5½ miles west of Daytona Beach.		Apr. 18	0
111	Little Tomoka River	Tomoka River	in NW¼ sec. 34, T. 14 S., R. 31 E., at bridge on Tomoka Ave., 8 miles northwest of Daytona Beach.		Apr. 19	0

TABLE B. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Discharge (cfs)
INDIAN RIVER BASIN						
112.1	Ellis Canal	Indian River	in Delespine Grant, at bridge 1 mile above Indian River, and 1½ miles south of Indian River City.		June 4	*1.15
118	Goat Creek	Indian River	in NW¼ sec. 18, T. 29 S., R. 38 E., at bridge on county road, 1½ miles west of Val-karia, and 2 miles above Indian River.	12.0	June 6	*†.8
119	South Prong Sebastian Creek	Sebastian Creek	in SW¼ sec. 23, T. 31 S., R. 38 E., at bridge on State Highway 512, 4 miles southwest of Sebastian.		June 6	*9.36
120	North Prong Sebastian Creek	Sebastian Creek	in Fleming Grant, at bridge on county road, 2¼ miles southwest of Micco, and 2½ miles above Sebastian Creek.	56.0	Mar. 15	*6.44
LAKE OKEECHOBEE AND THE EVERGLADES						
180	Brick-Alligator Canal	Alligator Lake	in SW¼ sec. 34, T. 26 S., R. 31 E., at bridge on State Highway 534, 5 miles southeast of Ashton, and 7 miles southeast of St. Cloud.		Apr. 12	*†.3
182	Lizzie-Lost Canal	Lake Lost	in sec. 2, T. 26 S., R. 31 E., at bridge on north side of Lake Lizzie, 3½ miles northeast of Ashton, and 4 miles southeast of Narcoossee.	31.5	July 16	*0
133.1	Mary Jane-Hart Canal	Lake Hart	in sec. 23, T. 24 S., R. 31 E., at bridge just below Lake Mary Jane and 6½ miles northeast of Narcoossee.	124	May 22	*14.5
135	Ajay-East Tohopekaliga Canal	East Tohopekaliga Lake	in sec. 4, T. 25 S., R. 31 E., at bridge on State Highway 15, 3 miles north of Narcoossee.	171	May 21 July 6	*†2.8 *†2.8

137	Boggy Creek	East Tohopekaliga Lake	on line between sec. 4 and 33, T. 24 S., R. 30 E., at bridge on State Highway 580, 6½ miles northeast of Kissimmee.	74.7	July 19	*.78
140	Shingle Creek	Lake Tohopekaliga	in SW¼ sec. 32, T. 25 S., R. 29 E., at bridge on State Highway 531, 2½ miles southwest of Kissimmee.	182	May 19	*†.02
147	Weohyakapka-Rosalie Canal	Lake Rosalie	in NW¼ sec. 14, T. 30 S., R. 29 E., at bridge on State Highway 60, 11.8 miles east of Lake Wales.	96.8	Apr. 24	12.5
148	Blue Jordan Swamp	Lake Arbuckle	in SE¼ sec. 20, T. 31 S., R. 29 E., at culverts on State Highway 680, 5.7 miles east of Frostproof.		Apr. 24	.07

IMPERIAL RIVER BASIN

180	Imperial River	Gulf of Mexico	in sec. 36, T. 47 S., R. 25 E., 1½ miles east of Bonita Springs.		Apr. 25	.92
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MULOCK CREEK BASIN

181	Line-A Canal	Mulock Creek	in sec. 6, T. 46 S., R. 25 E., ¼ mile above U. S. Highway 41 and 9 miles south of Fort Myers.		Apr. 24	0
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CALOOSAATCHEE RIVER BASIN

184	Orange River	Caloosahatchee River	in sec. 9, T. 44 S., R. 26 E., 1½ miles southeast of Buckingham and 8 miles northeast of Fort Myers.		Apr. 25	0
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PEACE RIVER BASIN

189	Kissengen Spring	Peace River	in sec. 28, T. 30 S., R. 25 E., 4¼ miles southeast of Bartow.		Jan. 18 to Dec. 12	*0
190	Bowlegs Creek	Peace River	in sec. 2, T. 32 S., R. 25 E., at bridge on county road, 2½ miles southeast of Fort Meade.		Apr. 25	3.63

*Minimum of measured discharges at monthly intervals.

†Field estimate.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Dis-charge (cfs)
191	Whidden Creek	Peace River	in sec. 10, T. 32 S., R. 25 E., at bridge on U. S. Highway 17, 3 miles south of Fort Meade.		Apr. 25	3.99
192	Paynes Creek	Peace River	in sec. 8, T. 33 S., R. 25 E., at bridge on U. S. Highway 17, 1½ miles south of Bowling Green.		Apr. 25	1.47
195	Charlie Creek	Peace River	in sec. 32, T. 33 S., R. 27 E., at bridge on State Highway 64, 8½ miles west of Avon Park.		Apr. 25	0
198	Joshua Creek	Peace River	in sec. 17, T. 38 S., R. 25 E., at bridge on State Highway 31, 3 miles southeast of Arcadia.		Apr. 25	0
200	Hawthorne Branch	Joshua Creek	in sec. 24, T. 38 S., R. 24 E., at bridge on State Highway 760, 1½ miles east of Nocatee.		Apr. 25	†.08
201	Horse Creek	Peace River	in sec. 20, T. 33 S., R. 23 E., at bridge on State Highway 62, 5½ miles west of Fort Green Springs.		Apr. 24	0
203	Prairie Creek	Peace River	in sec. 26, T. 39 S., R. 25 E., at bridge on State Highway 31, 9½ miles southeast of Nocatee.		Apr. 25	0

MYAKKA RIVER BASIN

204	Wingate Creek	Myakka River	in sec. 6, T. 35 S., R. 22 E., at bridge on State Highway 64, 8 miles north of Myakka City.		Apr. 24	†0.05
205	Myakka River	Upper Myakka Lake	in sec. 13, T. 36 S., R. 21 E., at bridge on State Highway 70, ½ mile east of Myakka City.		Apr. 24	0
208	Warm Salt Spring	Salt Creek	in sec. 24, T. 39 S., R. 20 E., at outlet, 8 miles northwest of Murdock.		Apr. 24	9.53

209	Little Salt Spring	Big Slough Canal	in sec. 20, T. 39 S., R. 21 E., at outlet 8 miles northwest of Murdock.	Apr. 24	1.22
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SHAKETT CREEK BASIN

210	Gum Slough	Cow Pen Slough	in sec. 24, T. 36 S., R. 19 E., at bridge on State Highway 780, 11½ miles east of Sarasota.	Apr. 24	0
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UNNAMED CREEK BASIN

211	Pinehurst Spring	Unnamed creek	in SW¼ sec. 21, T. 37 S., R. 18 E., at outlet 7 miles south of Sarasota.	Apr. 24	< .01
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MANATEE RIVER BASIN

212	Manatee River	Gulf of Mexico	in sec. 29, T. 33 S., R. 22 E., at bridge on State Highway 62, 11 miles west of Fort Green Springs.	Apr. 24	0
213	Manatee River	Gulf of Mexico	in sec. 4, T. 35 S., R. 21 E., at bridge on State Highway 64, 9 miles north of Myakka City.	Apr. 24	1.06

ALAFIA RIVER BASIN

217	Lake Drain	North Prong Alafia River	in SE¼ sec. 14, T. 29 S., R. 23 E., at culvert on county road 0.6 mile south of Medulla.	Apr. 25	0
219	South Prong Alafia River	Alafia River	in sec. 22, T. 31 S., R. 23 E., at bridge on State Highway 37, 2 miles south of Bradley Junction.	Apr. 25	†.05
220	South Prong Alafia River	Alafia River	in sec. 28, T. 30 S., R. 22 E., at bridge on county road, 2½ miles southwest of Keyville.	Apr. 25	2.93
222	Lithia Springs	Alafia River	in sec. 20, T. 30 S., R. 21 E., at outlet 3 miles west of Lithia.	Apr. 25	39.7

*Minimum of measured discharges at monthly intervals.

†Field estimate.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Dis-charge (cfs)
PALM RIVER BASIN						
224	Eureka Springs	Sixmile Creek	in sec. 31, T. 28 S., R. 20 E., 3 miles east of Tampa.		May 1	1.02
HILLSBOROUGH RIVER BASIN						
226	Crystal Springs	Hillsborough River	in sec. 35, T. 26 S., R. 21 E., $\frac{1}{4}$ mile downstream from Crystal Springs, $1\frac{1}{2}$ miles west of village of Crystal Springs and $3\frac{1}{2}$ miles south of Zephyrhills.		June 25	*44.0
231	Cypress Creek	Hillsborough River	in NE $\frac{1}{4}$ sec. 4, T. 28 S., R. 19 E., at bridge on Skipper Ave. Extension, $4\frac{1}{4}$ miles northeast of Sulphur Springs.		May 2 Aug. 28 Sept. 26	0 0 0
234	Purity Springs	Hillsborough River	in NW $\frac{1}{4}$ sec. 25, T. 28 S., R. 18 E., on the north bank of Hillsborough River at Tampa.		May 1	†1.2
235	Sulphur Springs	Hillsborough River	in NE $\frac{1}{4}$ sec. 25, T. 28 S., R. 18 E., at swimming pool 100 feet west of U. S. Highway 41 in Sulphur Springs and 500 feet upstream from Hillsborough River.		May 1	*34.6
236	Palma Ceia Springs	Hillsborough River	on line between sec. 27 and 34, T. 29 S., R. 18 E., at Tampa.		May 2	.49
HEALTH SPRINGS BASIN						
240.3	Health Springs	Gulf of Mexico	in SE $\frac{1}{4}$ sec. 26, T. 27 S., R. 15 E., at Wall Springs, 3 miles south of Tarpon Springs.		May 2	†1.5
ANCLOTE RIVER BASIN						
240.4	Seven Springs	Anclote River	in NW $\frac{1}{4}$ sec. 24, T. 26 S., R. 16 E., on south bank of Anclote River, near bridge on State Highway 54, $3\frac{1}{2}$ miles east of Elfers.		May 8	< .01

PITHLACHASCOTEE RIVER BASIN

241	Pithlachascotee River	Gulf of Mexico	in NW¼ sec. 1, T. 26 S., R. 16 E., 3½ miles east of New Port Richey.	149	May 8	.83
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WEEKIWACHEE RIVER BASIN

243	Weekiwachee Springs	Weekiwachee River	in sec. 2, T. 23 S., R. 17 E., at pool at head of Weekiwachee River, 12 miles southwest of Brooksville.		July 24	*101
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CHASSAHOWITZKA RIVER BASIN

244	Chassahowitzka Springs	Chassahowitzka River	in SW¼ sec. 26, T. 20 S., R. 17 E., at head of Chassahowitzka River, 6½ miles south of Homosassa.		May 1	112
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HOMOSASSA RIVER BASIN

245	Homosassa Springs	Homosassa River	in sec. 28, T. 19 S., R. 17 E., at head of Homosassa River at town of Homosassa Springs, 2 miles northeast of Homosassa.		May 1	144
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WITHLACOOCHEE RIVER BASIN

247	Withlacoochee River	Gulf of Mexico	on line between sec. 28 and 33, T. 24 S., R. 25 E., at bridge on State Highway 33, 2½ miles north of Eva, and 12½ miles north of Polk City.		May 1	.54
248	Withlacoochee River overflow channel	Gulf of Mexico	in NE¼ sec. 17, T. 24 S., R. 25 E., at culvert on State Highway 33, 2.7 miles north of main channel.		May 4	10.4
251	Fenney Springs	Panasoffkee River	on line between sec. 31 and 32, T. 19 S., R. 23 E., 2 miles east of Coleman.		Apr. 26	4.66

*Minimum of measured discharges at monthly intervals.

†Field estimate.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Discharge (cfs)
252	Panasoffkee River	Lake Panasoffke	in NW $\frac{1}{4}$ sec. 12, T. 20 S., R. 22 E., at bridge on U. S. Highway 301, 2 miles south of Coleman.		Apr. 26	10.1
253	Panasoffkee River	Withlacoochee River	at corner of sec. 25, 36, 30, and 31, T. 19 S., on line between R. 21 E. and R. 22 E., at bridge on State Highway 470, 5 miles west of Coleman.		Apr. 26	55.5
255	Rainbow Springs	Withlacoochee River	in sec. 12, T. 16 S., R. 18 E., 4 miles north-east of Dunnellon.		July 26	*504
WACCASASSA RIVER BASIN						
256	Glen Springs	Hogtown Creek	in SW $\frac{1}{4}$ sec. 30, T. 9 S., R. 20 E., 2 miles northwest of Gainesville.		Apr. 24	0.36
257	Waccasassa River	Waccasassa Bay	in sec. 17, T. 13 S., R. 16 E., at bridge on State Highway 24, 2 $\frac{1}{4}$ miles northeast of village of Otter Creek.		May 2	10.6
258	Wekiva Springs	Wekiva River	in SW $\frac{1}{4}$ sec. 7, T. 14 S., R. 17 E., 4 $\frac{1}{2}$ miles east of Gulf Hammock.		May 1	34.7
259	Otter Creek	Waccasassa River	in sec. 26, T. 13 S., R. 15 E., at bridge on State Highway 24, $\frac{1}{4}$ mile southwest of village of Otter Creek.		May 2	0
SUWANNEE RIVER BASIN						
260	Suwannee River	Gulf of Mexico	in NW $\frac{1}{4}$ sec. 10, T. 1 N., R. 16 E., at bridge on State Highway 6, 3 $\frac{1}{2}$ miles northwest of Benton.		Apr. 24	114
261.1	White Springs	Suwannee River	in sec. 7, T. 2 S., R. 16 E., on north bank of Suwannee River, at town of White Springs.		Apr. 25	7.61
262	Suwannee Springs	Suwannee River	in NE $\frac{1}{4}$ sec. 20, T. 1 S., R. 14 E., on south bank of Suwannee River at town of Suwannee Springs, 1 $\frac{1}{2}$ miles east of Suwannee.		Apr. 25	2.35

263	Suwannee River	Gulf of Mexico	in SE $\frac{1}{4}$ sec. 17, T. 1 S., R. 14 E., at bridge on U. S. Highway 129 at town of Suwannee Springs, 1 $\frac{1}{2}$ miles east of Suwannee.		Apr. 25	232
264	Alapaha River	Suwannee River	on line between sec. 5, T. 1 N., and sec. 32, T. 2 N., R. 13 E., at bridge on U. S. Highway 41, 5 $\frac{1}{4}$ miles west of Jasper.		Apr. 24	119
266	Blue Spring	Withlacoochee River	in sec. 20, T. 1 N., R. 11 E., on southwest bank of Withlacoochee River, 10 miles east of Madison.		Apr. 24	77.8
268	Falmouth Springs	Suwannee River	in NE $\frac{1}{4}$ sec. 32, T. 1 S., R. 12 E., at Falmouth, 10 miles northwest of Live Oak.		Apr. 24	0
269	Charles Spring	Suwannee River	in NW $\frac{1}{4}$ sec. 4, T. 4 S., R. 11 E., on northeast bank of Suwannee River near Luraville, 6 miles north of Mayo.		Apr. 25	7.97
270	Suwannee River	Gulf of Mexico	in SE $\frac{1}{4}$ sec. 25, T. 4 S., R. 11 E., at bridge on State Highway 51 at Luraville, 3 miles north of Mayo.		Apr. 26	2,520
272	Branford Springs	Suwannee River	on line between sec. 16 and 21, T. 6 S., R. 14 E., on east bank of Suwannee River at Branford.		Apr. 26	8.52
273	Santa Fe River	Suwannee River	in sec. 36, T. 7 S., R. 21 E., at bridge on U. S. Highway 301, 2 $\frac{1}{2}$ miles southwest of Hampton.	115	Apr. 24	0
274	Alligator Creek	Lake Rowell	in NW $\frac{1}{4}$ sec. 33, T. 6 S., R. 22 E., at bridge on U. S. Highway 301, $\frac{1}{2}$ mile south of Starke.	24.3	Apr. 24	1.65
275	Santa Fe River	Suwannee River	on line between sec. 18 and 19, T. 7 S., R. 20 E., at bridge on State Highway 235, $\frac{1}{4}$ mile south of Brooker.	245	Apr. 24	.59
276	Heilbronn Spring	Water Oak Creek	in NE $\frac{1}{4}$ sec. 36, T. 5 S., R. 21 E., on the south bank of Water Oak Creek, 6 miles northwest of Starke.		May 2	.03

*Minimum of measured discharges at monthly intervals.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Dis-charge (cfs)
278.1	Swift Creek	Olustee Creek	near center of sec. 16, T. 5 S., R. 19 E., at bridge on State Highway 100, at Guilford, 5 miles northwest of town of Lake Butler.	27	May 2	1.82
278.2	Olustee Creek	Santa Fe River	in SW $\frac{1}{4}$ sec. 36, T. 5 S., R. 17 E., at bridge on State Highway 238, $\frac{3}{4}$ mile west of Providence and 10 miles northeast of Fort White.	88	May 2	0
280	Poe Springs	Santa Fe River	on line between sec. 5 and 6, T. 8 S., R. 17 E., on south bank of Santa Fe River, 3 miles west of High Springs.		May 2	39.2
282	Ichatucknee Springs	Santa Fe River	in sec. 23, T. 6 S., R. 15 E., on Ichatucknee River, at U. S. Highway 27, 1 mile east of Hildreth, 2 miles upstream from mouth, and 2 $\frac{1}{2}$ miles downstream from head of springs.		Jan. 28	*241
283	Santa Fe River	Suwannee River	on line between sec. 1 and 6, T. 7 S., R. 14 E., and R. 15 E., at bridge on State Highway 49, 3 miles above mouth and 4 $\frac{1}{2}$ miles southwest of Hildreth.	1,440	Apr. 27	1,020
284	Rock Bluff Spring	Suwannee River	in SW $\frac{1}{4}$ sec. 9, T. 8 S., R. 14 E., on left bank of Suwannee River, 5 miles northwest of Bell.		Apr. 19 Apr. 28	25.0 23.8
286	Hart Spring	Suwannee River	in NW $\frac{1}{4}$ sec. 30, T. 9 S., R. 14 E., near left bank of Suwannee River, 5 miles northwest of Wilcox.		Apr. 27	58.6
288	Fanning Spring	Suwannee River	in NW $\frac{1}{4}$ sec. 29, T. 10 S., R. 14 E., near left bank of Suwannee River, 2 miles southwest of Wilcox.		May 1	64.0
289	Manatee Spring	Suwannee River	in sec. 25, T. 11 S., R. 13 E., near left bank of Suwannee River, 7 miles west of Chief-land.		Apr. 27	110

STEINHATCHEE RIVER BASIN

290	Kettle Creek	Steinhatchee River	near center of sec. 27, T. 7 S., R. 10 E., at bridge on State Highway 51, 3½ miles north of Clara, and 16 miles southwest of Mayo.		Apr. 16 May 1	0 .57
291	Steinhatchee River	Gulf of Mexico	in SE¼ sec. 27, T. 7 S., R. 10 E., just above Steinhatchee Springs, 3 miles north of Clara, and 16½ miles southwest of Mayo.		May 28	1.45
292	Steinhatchee Spring	Steinhatchee River	in SE¼ sec. 27, T. 7 S., R. 10 E., near left bank of Steinhatchee River, 3 miles north of Clara, and 16½ miles southwest of Mayo.		May 28	.12

FENHOLLOWAY RIVER BASIN

294	Fenholloway River	Gulf of Mexico	in SW¼ sec. 29, T. 4 S., R. 9 E., 1 mile above U. S. Highway 27, and 5½ miles northeast of Foley.		Apr. 24	1.02
296	Fenholloway River	Gulf of Mexico	in NE¼ sec. 35, T. 4 S., R. 8 E., 1¼ miles above county road at Fenholloway, 3 miles northeast of Foley.		Apr. 24	3.69
297	Fenholloway River	Gulf of Mexico	near center of sec. 2, T. 5 S., R. 8 E., at bridge on county road at Fenholloway, 2½ miles east of Foley.		Apr. 24	4.06
299	Waldo Springs	Fenholloway River	in NE¼ sec. 16, T. 5 S., R. 7 E., 5 miles southwest of Perry.		May 1	0
300	Hampton Springs	Spring Creek	in NE¼ sec. 6, T. 5 S., R. 7 E., at town of Hampton Springs on left bank of Spring Creek, 5½ miles southwest of Perry.		May 3	.05
301	Spring Creek	Fenholloway River	in NE¼ sec. 6, T. 5 S., R. 7 E., just below Hampton Springs, ¼ mile below U. S. Highway 98, and 5½ miles southwest of Perry.	470	May 1	49.0

*Minimum of measured discharges at monthly intervals.

TABLE 3. (Continued)

Map No.	Stream	Tributary to	Location	Drainage area (sq. mi.)	Date	Discharge (cfs)
AUCILLA RIVER BASIN						
303	Gum Creek	Aucilla River	in SW $\frac{1}{4}$ sec. 21, T. 2 N., R. 7 E., at bridge on U. S. Highway 221, 6 $\frac{1}{4}$ miles north of Greenville.		May 2	0
304	Aucilla River	Gulf of Mexico	in NW $\frac{1}{4}$ sec. 16, T. 1 N., R. 6 E., at bridge on U. S. Highway 90, 1 $\frac{1}{2}$ miles northeast of Aucilla.		Mar. 9 May 2	1.62 .68
305	Pettis Spring	Aucilla River	on line between sec. 27 and 28, T. 1 N., R. 6 E., 5 miles west of Greenville.		May 2	0
306	Wolf Creek	Aucilla River	in SE $\frac{1}{4}$ sec. 19, T. 1 N., R. 6 E., at bridge on State Highway 257, $\frac{3}{4}$ mile south of Aucilla.		May 2	0
307	Beasleys Creek	Aucilla River	in SE $\frac{1}{4}$ sec. 15, T. 1 S., R. 5 E., at bridge on State Highway 257, 1 $\frac{1}{4}$ miles north of Lamont.		May 2	0
309	Aucilla River	Gulf of Mexico	in NW $\frac{1}{4}$ sec. 31, T. 2 S., R. 5 E., at bridge on State Highway 257, 7 $\frac{1}{2}$ miles south of Lamont.		Mar. 9	50.0
310	Aucilla River	Gulf of Mexico	at corner of sec. 21, 22, 27 and 28, T. 3 S., R. 4 E., at bridge on sand road, 5 miles north of Scanlon, and 11 $\frac{1}{2}$ miles south of Wacissa.		Mar. 9	58.1
311	Welaunee Creek	Wacissa River	in NW $\frac{1}{4}$ sec. 3, T. 2 S., R. 4 E., at bridge on county road, 4 miles east of Wacissa.		May 3	0
312	Aucilla River	Gulf of Mexico	in SW $\frac{1}{4}$ sec. 7, T. 4 S., R. 4 E., at bridge on U. S. Highway 98, 4 miles west of Scanlon, and 13 miles east of Newport.		May 2	48.6

LAKE MICCOSUKEE BASIN

313	North tributary	Lake Miccosukee	on line between sec. 20 and 29, T. 3 N., R. 3 E., at bridge on State Highway 59, 3 miles north of Miccosukee.		Apr. 23	0
314	Wards Creek	Lake Miccosukee	in NE¼ sec. 2, R. 4 E., T. 2 N., at bridge on county road, 4¼ miles north of Monticello.		Apr. 23	0
315	Lloyd Creek	Lake Miccosukee	in SE¼ sec. 15, R. 3 E., T. 1 N., at bridge on county road, ¾ mile east of Lloyd.		Apr. 23	0

ST. MARKS RIVER BASIN

316	River Sink	Wakulla River	in sec. 28, T. 2 S., R. 1 W., in area known as River Sink Precinct, 12 miles southwest of Tallahassee.		Apr. 25	102
318	Wakulla Spring	St. Marks River	in sec. 11, T. 3 S., R. 1 W., 6 miles northeast of Crawfordville, and 14 miles south of Tallahassee.		May 31	*109

SOPCHOPPY RIVER BASIN

319	Sopchoppy River	Ochlockonee Bay	in NW¼ sec. 24, T. 4 S., R. 3 W., at bridge on county road 4¼ miles north of Sopchoppy.	104	Apr. 23	2.51
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OCHLOCKONEE RIVER BASIN

321	Quincy Creek	Little River	in NW¼ sec. 8, R. 3 W., T. 2 N., at bridge on State Highway 12 at Quincy.		Apr. 26	11.8
323	Rocky Comfort Creek	Lake Talquin	in NE¼ sec. 42 in Forbes Purchase at bridge on State Highway 267, 7 miles south of Quincy.		Apr. 24	5.27

APALACHICOLA RIVER BASIN

328	Glen Julia Springs	South Mosquito Creek	in sec. 23, T. 3 N., R. 5 W., 1 mile southwest of Mount Pleasant.		Apr. 24	.54
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*Minimum of measured discharges at monthly intervals.

TABLE 4. Chemical Analysis of Surface Waters During the Drought in 1956
(Chemical analyses in parts per million)

Map number	Station	Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micromhos at 25°C)	pH	Color
																Calcium, magnesium	Non- carbonate			
		1956																		
3	Cedar Creek near Macclenny, Fla.	April 18...	2.71	3.9	0.03	11	4.0	5.6	0.6	52	1.0	8.0	0.0	0.3	60	44	2	110	6.6	25
8	St. Marys River near St. George, Ga.	April 18...	38.5	4.1	.27	9.6	4.1	6.1	.5	38	.5	11	.0	.0	55	41	10	106	6.4	55
11	Su-No-Wa Spring near Verdrie, Fla.	April 19...	<.01	7.1	.08	12	.5	3.5	.3	37	.5	6.0	.0	.1	48	32	2	70.8	6.0	5
13	Ft. Drum Creek at Ft. Drum, Fla.	May 1...	0	5.2	.03	47	1.6	13	2.5	149	11	16	.4	.3	170	124	2	294	7.9	20
20	Sweetwater Branch near Ft. Drum, Fla.	May 1...	.44	11	.06	15	.6	8.2	.6	45	8.5	10	.3	.4	77	40	3	112	7.5	75
27	St. Johns River near Melbourne, Fla.	April 26...	c 0	4.0	.01	24	2.9		28	36	2.0	71	.....	.3	18	72	42	311	6.8	55
28	Pennywash Creek near Deer Park, Fla.	April 26...	c .06	1.3	.03	9.6	1.9	7.4	1.3	22	6.5	12	.1	.6	52	32	14	109	6.8	45
30	St. Johns River near Cocos, Fla.	May 21-31	d 56	4.1	.06	78	16	156	3.5	74	74	330	.2	.7	e 845	260	200	1,320	7.3	45
33	St. Johns River near Christmas, Fla.	April 24...	d 75	.6	.01	62	21		155	62	73	320	.....	.5	603	241	190	1,260	7.2	55
34	Econlockhatchee River near Christmas, Fla.	April 25...	c .15	1.7	.04	24	2.9	3.6	.2	84	12	14	.1	.7	100	72	3	183	7.9	55
35	Little Econlockhatchee River near Union Park, Fla.	April 27...	13.7	13	.03	25	5.2	40	2.5	69	42	35	.5	35	209	84	27	362	7.1	45
36	Econlockhatchee River near Chuluota, Fla.	April 24...	d 18	7.5	.05	42	14		112	112	58	179	.....	.7	468	162	70	873	7.3	40
37	St. Johns River above Lake Harney near Geneva, Fla.	April 25...	.....	3.4	.05	106	36		388	104	163	710	.....	1.4	1,460	412	328	2,640	7.2	40
42	Wekiva Springs near Apopka, Fla.	April 27...	62.0	9.3	.00	28	10	4.8	.7	120	6.0	8.0	.2	.0	126	111	12	225	7.3	5
43	Rock Springs near Apopka, Fla.	April 26...	54.7	8.2	.00	28	9.7	3.9	.3	105	16	7.0	.2	.1	125	110	24	215	7.3	5
44	Sanlando Springs near Longwood, Fla.	April 27...	13.9	4.6	.00	30	8.3	5.1	.4	125	.0	9.0	.2	.1	120	109	6	229	7.3	5
45	Palm Springs near Longwood, Fla.	April 27...	8.91	5.8	.01	32	9.0	5.0	.4	123	12	8.5	.2	.0	134	117	16	243	7.8	5
47	Blackwater Creek near Cassia, Fla.	April 26...	5.94	6.3	.06	32	10	8.4	1.0	59	49	14	.1	.3	150	121	72	258	6.9	45

TABLE 4. (Continued)

50	Alexander Springs near Astor, Fla. (Main boil)	April 23...	136	9.4	.00	49	17	121	3.0	97	61	232	.1	.0	540	192	113	998	7.8	5
51	Ponce de Leon Spring at DeLeon Springs, Fla.	April 18...	23.4	5.6	.01	40	6.8	40	1.9	127	12	66	.2	.0	236	128	24	438	7.7	5
52	Juniper Springs near Astor, Fla.	April 23...	9.66	9.1	.00	14	6.1	2.8	.2	54	12	5.0	.1	.0	76	60	16	129	7.5	5
53	Spring Pool at Juniper Spring near Astor, Fla.	April 23...	11.6	9.3	0.1	14	4.1	2.8	.2	44	5.5	5.0	.1	.0	63	52	16	116	7.4	5
54	Silver Glen Springs near Astor Park, Fla.	April 24...	108	9.7	.00	86	46	346	9.5	82	202	638	.1	.2	1,380	404	336	2,460	7.7	5
55	Salt Springs near Lake Kerr, Fla.	April 24...	79.9	12	.00	154	98	878	24	67	375	1,600	.1	.3	3,170	787	732	5,520	7.6	5
56	Big Creek near Clermont, Fla.	May 4...	5.05	2.7	.05	3.2	1.5	7.5	.7	10	13	9.0	.1	.6	43	14	6	62.2	6.4	65
57	Little Creek near Clermont, Fla.	May 4...	0	.7	.18	4.0	.2	5.8	.3	5	.0	9.0	.1	.0	23	11	7	75.0	4.8	150
58	Lake Minnehaha at Clermont, Fla.	May 1.....	1.7	.12	2.8	1.0	5.8	.3	6	.0	8.5	.1	.0	23	11	6	58.7	5.9	100	
59	Palatlahaha Creek near Groveland, Fla..	May 1.....	3.6	.02	2.8	2.4	6.1	.5	6	7.5	12	.1	.6	39	17	12	60.1	6.0	45	
60	Palatlahaha Creek near Mascotte, Fla...	May 1.....	2.2	.03	3.2	1.2	6.0	.6	8	6.5	10	.2	1.3	35	13	6	66.1	5.7	25	
61	Palatlahaha Creek near Okahumpka, Fla.	April 30...	2.66	1.2	.35	4.4	1.7	10	1.2	16	.0	18	.1	.0	45	18	5	89.3	6.4	45
62	Bugg Spring at Okahumpka, Fla.	April 26...	10.3	9.8	.06	48	1.5	4.0	.3	150	.0	8.0	.1	.1	146	126	3	252	7.6	5
63	Unnamed spring at Yalaha, Fla.	April 30...	3.59	12	.00	32	5.8	3.7	.2	123	.5	7.0	.2	.0	122	104	3	215	7.3	5
64	Haines Creek at Lisbon, Fla.	April 30...	d 150	4.2	.09	32	7.3	9.0	.9	131	9.5	17	.2	1.0	141	110	2	267	7.0	30
65	Oklawaha River at Moss Bluff, Fla.	April 26...	17.8	2.9	.01	30	8.5	7.5	1.1	122	12	18	.0	.6	141	110	10	261	7.9	20
66	Lake Weir at Oklawaha, Fla.	April 30...	.....	.1	.02	4.8	4.4	16	.5	17	4.5	35	.1	.0	66	30	16	159	6.3	10
67	Oklawaha River near Ocala, Fla.	April 27...	d 30	1.9	.02	37	11	5.0	.6	119	38	18	.2	1.7	172	138	40	301	7.8	25
68	Silver Springs near Ocala, Fla.	May 2.....	d 556	11	.01	72	9.4	7.5	.5	222	45	12	.....	.6	267	218	36	425	7.6	8
69	Hatchett Creek near Gainesville, Fla....	April 24...	.54	1.0	.13	2.8	1.9	3.2	.2	15	.0	6.0	.1	.0	23	15	2	44.8	6.2	50
71	Prairie Creek near Gainesville, Fla.	April 23...	.37	.6	.12	25	3.8	12	.4	7	4.0	66	.1	.1	116	78	72	248	5.4	35
72	Orange Lake near Boardman (Mike's Camp), Fla.	May 4.....	.....	.0	.02	6.0	1.7	13	1.3	10	12	21	.4	5.0	65	22	14	114	6.2	30
72.1	Orange Lake at Orange Lake, Fla.	May 4.....	.....	5.6	.03	17	3.5	12	1.2	f 48	14	18	.2	10	106	67	18	173	9.5	45
74	Magnesia Springs near Hawthorne, Fla.	Apr. 23...	.02	25	.00	40	13	9.8	.5	177	.0	12	.2	.2	188	154	8	317	7.4	5
77	Orange Creek at Orange Springs, Fla....	April 24...	d 3.1	1.9	.03	14	2.7	3.6	.4	53	7.0	5.0	.2	.1	61	46	2	107	7.7	35

TABLE 4. (Continued)

Map number	Station	Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (microhms at 25°C)	pH	Color
																Calcium, magnesium	Non-carbonate			
78	Little Orange Creek near Orange Springs, Fla.	April 24...	3.77	5.8	0.01	9.6	2.2	3.2	0.4	40	4.5	5.0	0.2	0.1	51	33	0	82.5	7.8	10
80	Deep Creek near Rodman, Fla.	April 24...	40.3	8.2	.01	22	6.6	2.9	.3	101	.5	5.5	.2	.0	96	82	0	172	7.8	5
81	Oklawaha River at Riverside Landing near Orange Springs, Fla.	April 27...	d 855	8.9	.01	61	15	36	.3	148	64	80	.1	.0	322	214	92	617	8.0	10
83	Unnamed spring near Satsuma, Fla.	April 19...	2.49	8.5	.01	47	22	195	7.4	101	55	350	.2	.0	784	208	125	1,370	8.0	10
91	Etonia Creek near Florahome, Fla.	April 20...	2.82	1.0	.05	16	5.4	5.3	.2	80	12	9.0	.1	.9	80	62	13	145	6.8	35
92	Etonia Creek near Palatka, Fla.	April 20...	10.1	2.9	.05	8.4	2.7	5.0	.2	37	9.5	7.0	.2	.2	54	32	2	85.0	7.4	40
94	Unnamed branch near Palatka, Fla.	April 19...	.25	6.3	.04	3.2	.7	5.1	.1	12	1.0	9.5	.1	.1	32	11	1	50.8	6.9	.....
95	Rice Creek near Carraway, Fla.	April 19...	2.53	10	.03	27	8.9	22	1.0	90	17	43	.2	.0	173	104	30	315	7.6	30
98	Green Cove Springs at Green Cove Springs, Fla.	April 25...	2.74	13	.01	30	15	4.1	1.2	102	58	6.0	.4	.0	178	136	53	295	8.1	5
100	South Fork Black Creek near Penney Farms, Fla.	April 20...	9.46	2.2	.02	5.2	.2	3.1	.2	11	3.5	5.0	.0	.3	25	14	5	41.9	6.0	25
102	North Fork Black Creek near Middleburg, Fla.	April 20...	.35	4.5	.03	13	.6	4.2	.8	27	10	5.5	.0	.3	58	35	13	95.5	6.5	20
103	Yellow Water Creek near Maxville, Fla.	April 19...	3.07	8.2	.04	15	3.5	10	1.4	49	15	12	.1	1.5	91	52	12	151	6.5	35
106	Wadesboro Springs at Orange Park, Fla.	April 20...	.71	7.5	.01	30	5.1	4.8	.3	109	3.5	7.0	.1	.0	112	96	6	203	7.0	10
107	McClirta Creek near Jacksonville, Fla.	April 19...	1.09	8.0	.21	11	3.0	7.9	.6	45	.5	11	.0	.0	64	40	3	113	6.5	45
108	Moultrie Creek near St. Augustine, Fla.	April 11-20	d .8	19	.00	69	15	56	2.3	190	52	102	.2	.1	e 480	234	78	713	7.7	50
112.1	Ellis Canal near Indian River City, Fla.	April 23...	d 1.36	8.7	.04	198	32	307		264	229	590	.....	.4	1,490	620	404	2,570	7.5	35
118	Surface water slough near Cocoa, Fla.	April 25...	.....	2.4	.00	3.4	.4	9.8		0	3.0	20	.....	.1	39	10	10	93.9	4.4	400

TABLE 4. (Continued)

114	Clear Lake near Cocoa, Fla.....	April 25....		7.0	.02	104	58	418	94	139	840	.....	.6	1,610	498	421	2,970	7.2	40
116	Crane Creek at Melbourne, Fla.....	April 27....	d 8.3	11	.10	128	22	108	210	74	280	.....	.0	728	410	238	1,310	7.8	35
121	North Canal near Vero Beach, Fla.....	May 12....	d 6	6.3	.09	70	7.2	50	170	41	93	.....	.0	352	204	64	602	7.9	45
122	Main Canal at Vero Beach, Fla.....	May 12....	d 43	11	.01	106	22	102	204	76	200	.....	.0	647	355	138	1,150	7.9	50
123	South Canal near Vero Beach, Fla.....	May 12....	d 6	8.4	.01	72	6.9	54	170	40	103	.....	.0	368	208	68	653	7.8	65
124	North Fork St. Lucie River at White City, Fla.....	May 13....		13	.03	120	27	152	214	151	290	.....	.0	358	410	235	1,500	7.6	30
125	Rim Ditch (Diversion Canal) near White City, Fla.....	May 13....		7.5	.07	148	4.5	189	198	180	340	.....	.0	927	388	228	1,630	7.6	45
128	Harney Pond Canal near Moore Haven, Fla.....	April 30....		1.5	.05	52	11	62	228	29	118	.....	.0	418	250	62	779	7.6	95
129	Indian Prairie Canal near Okkechobee, Fla.....	April 30....	0	1.4	.07	29	14	21	114	38	31	.....	.0	190	130	36	355	8.0	65
131	Alligator Lake near Ashton, Fla.....	April 12....		1.2	.04	2.0	1.2	7.0	6	3.0	12	.....	.4	30	10	5	58.6	5.8	45
134	Hart Lake near Narcoossee, Fla.....	May 26....		1.1	.10	3.0	1.6	6.7	7	5.5	12	.....	.4	34	14	8	67.2	6.2	90
136	East Tohopekaliga Lake at St. Cloud, Fla.....	April 10....		5.5	.16	7.6	3.2	10	6	26	16	.....	.2	72	32	27	123	5.8	25
139	Tohopekaliga Lake at Kissimmee, Fla.....	April 11....		2.1	.11	9.6	2.9	9.7	30	8.0	17	.....	.1	65	36	11	118	6.5	50
147	Weohyakapka-Rosalie Canal near Lake Wales, Fla.....	April 24....	12.5	5.9	.01	5.6	2.7	4.1	22	3.5	9.0	.....	.1	42	25	7	79.5	7.2	15
148	Blue Jordan Swamp (at Hwy. 630) near Frostproof, Fla.....	April 24....	.07	1.9	.09	1.2	.0	1.7	7	1.5	3.0	.3	.2	13	3	0	20.8	6.2	30
155	Istokpoga Canal near Cornwell, Fla.....	May 1....	d 0	2.7	.01	19	4.0	25	80	8.8	31	.....	.2	130	64	0	238	7.8	25
156	Kissimmee River near Okkechobee, Fla.....	May 11-20	d 140	7.7	.08	18	1.4	13	38	13	22	.1	.6	e 138	51	20	167	7.0	65
160	St. Lucie Canal at Port Mayaca, Fla.....	May 10....		7.4	.01	61	12	25	194	36	42	.....	.1	280	202	42	496	7.5	38
161	St. Lucie Canal above lock near Stuart, Fla.....	May 13....		13	.01	100	30	213	278	82	370	.....	.1	945	378	145	1,750	7.8	33
162	West Palm Beach Canal at Canal Point, Fla.....	May 10....	d -273	13	.05	58	16	30	208	36	48	.....	.8	304	210	40	540	7.5	55
163	West Palm Beach Canal at Rangeline Road near Loxahatchee, Fla.....	May 13....		7.2	.03	82	9.6	75	239	30	102	.....	.2	424	244	48	757	7.8	60
165	Hillsboro Canal at Belle Glade, Fla.....	May 10....	d -138	6.2	.03	60	18	37	200	51	59	.....	3.9	334	224	60	590	8.0	65

TABLE 4. (Continued)

Map number	Station	Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (micro-mhos at 25°C)	pH	Other
																Calcium, magnesium	Non- carbonate			
166	Hillboro Canal at Rangeline Road near Deerfield Beach, Fla.	May 9...		10	0.10	67	17		81	262	33	116		0.1	453	237	22	822	7.8	50
168	North New River Canal at South Bay, Fla.	May 10...	d 494	7.6	.03	57	18		40	206	49	68		1.4	348	216	47	623	7.6	50
169	North New River Canal at Holloway Lateral near Ft. Lauderdale, Fla.	May 7...		7.9	.02	46	12		29	164	29	45		.1	250	164	30	453	7.4	45
171	South New River Canal at Davie, Fla.	May 7...		11	.07	77	7.8		24	255	17	35		.9	209	224	15	512	8.3	65
172	Miami Canal at Lake Harbor, Fla.	May 10...	g	3.0	.03	94	25		36	274	93	62		9.4	457	338	113	784	7.5	150
173	Miami Canal at water plant, Hialeah, Fla.	May 24...	d 60	3.0	.01	82	10		5.3	272	3.0	22		.1	259	246	22	487	7.7	65
174	Tamiami Canal at Bridge 45, 27 miles west of Miami, Fla.	May 15...	d 0	19	.03	99	1.7		22	320	5.0	23		1.6	329	254	0	545	8.1	60
176	Everglades Station 1-7 (Conservation Area No. 1)	May 17...		10	.03	20	2.5		20	58	6.0	36		.0	124	60	13	231	6.8	50
177	Everglades Station 1-9 (Conservation Area No. 1)	May 17...		10	.03	34	2.2		17	88	1.0	40		2.2	149	94	22	293	7.0	45
178	Everglades Station 2-17 (Conservation Area No. 2)	May 17...		11	.03	98	7.2		40	259	30	76		14	404	274	62	730	7.7	55
180	Imperial River near Bonita Springs, Fla.	April 25...	.92	6.3	.01	90	3.8	18	.8	h 282	6.0	26	.3	.3	292	240	9	506	8.4	30
181	Line "A" Canal near Fort Myers, Fla.	April 25...	0	12	.01	83	17	100	4.4	h 214	32	179	.6	.0	533	277	102	957	8.5	35
182	Caloosahatchee Canal at Moore Haven, Fla.	April 30...	0	.7	.01	39	12		40	140	42	54		.3	257	147	32	456	8.0	20
183	Caloosahatchee Canal at Ortona lock near LaBelle, Fla.	April 30...	0	5.5	.00	46	12		37	172	33	49		.1	268	164	24	468	7.4	25
184	Orange River near Fort Myers, Fla.	April 4...	0	4.1	.01	50	15		25	204	12	44		.0	251	186	19	455	7.8	25

TABLE 4. (Continued)

190	Bowlegs Creek near Fort Meade, Fla....	April 25...	3.63	11	.02	16	7.5	4.1	.4	87	4.5	4.5	.4	.1	92	71	0	153	8.1	10
191	Whidden Creek near Fort Meade, Fla....	April 25...	3.99	8.2	.01	46	12	16	.3	67	120	8.0	1.1	.0	255	164	110	394	7.7	10
192	Paynes Creek near Bowling Green, Fla....	April 25...	1.47	3.1	.02	8.8	3.4	5.9	.3	37	8.5	9.0	.5	.1	58	36	6	100	7.6	20
198	Joshua Creek near Arcadia, Fla. (at State Road 31).....	April 25...	0	12	.01	28	7.1	21	1.8	89	26	36	.6	.1	177	99	28	295	8.4	20
200	Hawthorne Branch near Nocatee, Fla....	April 25...	0.08	8.2	.01	73	9.2	21	.9	219	38	30	.6	.2	289	220	40	495	8.3	20
205	Myakka River at Myakka City, Fla....	April 24...	0	1.4	.02	2.8	1.7	3.3	.2	20	1.0	5.5	.3	.1	26	14	0	48.7	7.3	25
207	Big Slough Canal near Murdock, Fla....	April 24.....	7.7		.00	224	279	1,730	48	182	724	3,310	.4	.4	6,410	1,760	1,610	10,300	7.8	20
208	Warm Salt Spring near Murdock, Fla....	April 24...	9.53	17	.01	544	556	4,930	143	162	1,060	9,210	.6	4.4	17,200	3,640	3,510	24,100	7.8	7
209	Little Salt Spring near Murdock, Fla....	April 24...	1.22	21	.01	192	125	720	27	171	535	1,350	1.8	.4	3,180	903	853	4,890	8.2	5
211	Pinchurst Springs near Sarasota, Fla....	April 24...	<.01	12	.01	78	34	28	2.4	357	46	38	.7	.1	415	334	43	696	8.6	30
212	Manatee River near Fort Green Springs, Fla....	April 24...	0	2.7	.03	25	4.5	7.8	.3	99	6.0	9.0	.5	.3	105	81	0	183	7.8	50
213	Manatee River at State Road 64 near Myakka City, Fla....	April 24...	1.06	3.6	.03	8.8	4.4	4.3	.4	46	4.5	7.0	.6	.2	57	40	2	98.2	7.5	30
220	South Prong Alafia River near Keyville, Fla....	April 25...	2.93	4.1	.03	10	4.4	4.8	.3	35	15	8.0	1.5	.3	65	43	14	111	7.6	35
222	Lithia Springs near Lithia, Fla....	April 25...	39.7	1.0	.01	58	9.1	13	.7	133	75	18	.5	.0	241	182	73	410	8.2	5
223	Buckhorn Spring near Riverview, Fla....	April 26.....	1.9		.01	56	11	15	.7	135	66	24	.4	.0	242	184	74	414	8.3	5
224	Eureka Springs near Tampa, Fla....	May 1...	1.02	11	.01	60	6.9	4.9	.4	153	46	8.5	.3	.0	216	178	48	361	7.9	20
234	Purity Springs at Tampa, Fla....	May 1...	1.2	9.7	.01	55	3.6	14	.7	164	12	24	.....	4.5	205	152	18	407	7.4	10
235	Sulphur Springs at Sulphur Springs, Fla....	May 1...	34.6	8.5	.01	74	13	100	1.3	157	78	170	.....	.2	522	238	110	901	7.6	15
236	Palma Ceia Springs at Tampa, Fla....	May 2...	.49	15	.01	95	10	84	2.5	192	28	168	.2	.0	600	278	120	932	7.0	5
240.3	Health Springs at Wall Springs, Fla....	.....	1.5	6.8	.01	41	16	161	0.3	100	41	240	.2	2.1	563	109	27	1,020	7.4	5
240.4	Seven Springs near Elfers, Fla....	May 3...	<.01	13	.01	58	4.7	5.2	.5	204	2.0	8.5	.....	.1	192	104	0	318	7.7	15
241	Pithlachascotee River near New Port Richey, Fla....	May 3...	.93	4.8	.01	58	2.8	4.2	.4	175	10	7.5	.3	.0	174	156	12	312	7.9	10
242	Unnamed Springs at Hudson, Fla....	May 3.....	7.5		.01	199	393	3,290	106	170	357	6,030	.....	1.0	11,000	2,090	1,040	16,900	7.5	10
243	Weekiwachee Springs near Brooksville, Fla....	May 2...	130	9.7	.01	48	6.8	3.1	.4	166	6.0	5.0	.8	.0	101	148	12	263	7.9	5

TABLE 4. (Continued)

Map number	Station	Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (microhm/cm at 25 °C)	pH	Color
																Calcium, magnesium	Non- carbonate			
244	Chassahowitzka Springs near Homosassa, Fla.....	May 1...	112	8.6	0.00	59	37	209		184	62	380	.....	2.5	e 998	299	148	1,620	7.8	3
245	Homosassa Springs at Homosassa Springs, Fla. (Main boll).....	May 1...	87.1	8.1	.00	64	56	370		136	95	680	.....	.6	1,330	365	254	2,500	8.2	3
246	Homosassa Springs at Homosassa Springs, Fla. (Small spring).....	May 1...	56.7	8.2	.00	43	16	55		140	21	110	.....	.5	e 341	174	59	623	7.9	3
247	Withlacoochee River (Main branch) near Eva, Fla.....	May 2.....		2.4	.31	6.4	2.4	6.9	.5	21	.0	12	.1	.1	41	26	9	83.8	6.7	100
248	Withlacoochee River (Overflow branch) near Eva, Fla.....	May 4..	m 10.4	.2	.14	1.6	1.0	4.3	.3	6	.0	5.5	.1	.1	16	8	4	49.0	5.1	200
249	Withlacoochee River at Trilby, Fla.....	May 1...	d 48	9.2	.00	48	5.8	9.3	.9	172	7.0	11	.2	.1	176	144	3	309	7.9	25
250	Withlacoochee River at Croom, Fla.....	May 2...	d 60	4.3	.01	54	3.8	6.4	.4	178	6.5	9.0	.2	.1	173	150	4	310	8.0	5
251	Fenney Springs near Coleman, Fla.....	April 26...	4.66	9.5	.01	51	2.2	3.8	.3	161	.5	6.5	.1	.0	152	136	4	273	8.0	7
252	Panasofkee River at U. S. Hwy. 301 near Coleman, Fla.....	April 26...	10.1	7.5	.00	51	2.2	3.9	.3	162	1.0	6.5	.1	.0	152	136	3	275	7.9	10
253	Panasofkee River at State Hwy. 470 near Coleman, Fla.....	April 26...	55.5	3.5	.01	24	4.9	3.5	.1	60	32	11	.1	.0	109	80	31	265	7.7	5
254	Withlacoochee River near Holder, Fla...	May 2...	d 195	1.3	.01	44	7.0	5.7	.3	127	27	9.2	.2	.1	e 181	139	34	280	7.5	23
255	Rainbow Springs near Dunnellon, Fla...	May 2.....		6.2	.00	43	4.5	2.8	.1	139	18	5.5	.....	.2	148	126	12	253	7.4	13
256	Glen Springs near Gainesville, Fla.....	April 24...	.36	11	.00	18	0.1	2.8	.4	79	.5	5.5	.3	1.3	85	70	6	151	6.9	5
257	Waccasassa River near Otter Creek, Fla.	May 2...	10.0	8.5	.01	35	4.5	2.2	.2	130	3.0	3.5	.2	.0	121	106	0	212	8.1	7
258	Wekiwa Springs near Gulf Hammock, Fla.....	May 1...	34.7	8.7	.02	30	5.4	2.2	.2	105	5.0	3.5	.1	.0	107	97	11	186	7.7	3
260	Suwannee River near Benton, Fla. (Hwy. No. 6).....	April 21...	114	2.8	.21	2.8	1.9	5.4	.7	4	.0	9.0	.1	.1	25	15	12	80.2	4.9	226

TABLE 4. (Continued)

261.1	White Springs at White Springs, Fla....	April 25...	7.61	26	.00	50	21	9.1	.8	213	30	12	.3	.1	254	212	37	408	8.1	30
262	Suwannee Springs at Suwannee Springs, Fla.....	April 25...	2.35	17	.00	56	13	6.5	.4	190	29	7.5	.3	.1	224	193	38	369	9.1	10
263	Suwannee River at Suwannee Springs, Fla.....	April 25...	232	7.7	.09	20	5.6	5.7	.4	69	8.5	11	.1	.1	93	73	16	159	7.4	225
264	Alapaha River near Jasper, Fla.....	April 24...	119	6.5	.03	2.0	2.2	4.4	.7	8	.0	7.5	.1	.0	27	14	8	40.0	6.2	55
266	Blue Spring near Madison, Fla.....	April 24...	77.8	10	.00	40	8.0	2.8	.3	143	12	5.5	.2	.0	149	133	16	260	7.9	10
268	Falmouth Spring at Falmouth, Fla.....	April 24...	0	6.6	.00	62	12	2.4	.4	215	10	4.5	.2	.2	204	204	28	355	8.0	10
269	Charles Spring near Luraville, Fla.....	April 25...	7.97	7.2	.00	51	15	2.6	.3	194	20	5.5	.2	.1	198	188	30	341	8.0	10
270	Suwannee River at Luraville, Fla.....	April 26...	2,520	8.8	.03	28	6.3	5.8	.6	97	12	7.5	.2	.1	117	96	10	209	7.6	40
271	Suwannee River at Branford, Fla.....	April 11-20	d 2,795	8.9	.14	38	7.1	4.8	.5	128	14	8.0	.2	.2	145	124	19	252	7.8	55
272	Branford Springs at Branford, Fla.....	April 26...	8.82	6.3	.00	66	9.1	2.3	.2	211	11	5.0	.2	.1	204	202	29	366	7.9	10
274	Alligator Creek at Starke, Fla.....	April 24...	1.65	11	.02	38	5.1	26	1.2	27	130	9.0	.1	.2	234	116	104	369	6.8	10
275	Santa Fe River at Brooker, Fla.....	April 24...	.59	1.6	.04	22	10	5.2	.5	113	2.0	9.0	.2	.2	107	96	4	203	7.6	25
276	Heilbronn Springs near Starke, Fla.....	May 2...	.03	21	.01	36	17	10	.7	200	.0	13	.3	.4	197	100	0	342	8.2	5
278.1	Swift Creek at Guilford, Fla.....	May 2...	1.82	6.8	.09	12	7.5	7.4	.9	42	7.5	14	.0	.3	77	61	26	141	7.8	300
280	Poe Springs near High Springs, Fla.....	May 2...	39.2	13	.02	65	5.8	4.8	.4	n 211	18	7.0	.3	.0	218	186	13	367	8.4	5
281	Santa Fe River near Fort White, Fla....	April 27...	1,020	9.6	.01	59	9.0	4.2	.3	187	23	7.5	.1	.0	205	184	31	354	7.9	5
284	Rock Bluff Springs near Bell, Fla.....	April 26...	.....	5.3	.00	46	2.7	2.0	.2	141	7.0	4.0	.1	.3	137	126	10	250	7.5	5
286	Hart Springs near Wilcox, Fla.....	April 27...	58.6	6.3	.00	68	6.4	2.4	.1	206	10	5.0	.2	.0	199	196	27	353	7.9	10
288	Fanning Spring near Wilcox, Fla.....	April 27...	.....	6.0	.01	65	5.4	2.7	.1	200	4.0	4.5	.2	.0	187	184	20	342	7.9	5
		May 1...	64.0	6.3	.01	64	5.5	2.7	.1	212	12	4.5	.....	1.3	200	182	8	330	8.0	14
289	Manatee Spring near Chiefland, Fla....	April 27...	110	6.1	.00	74	7.7	3.1	.2	215	22	6.5	.2	.4	226	216	40	300	8.0	5
290	Kettle Creek at State Hwy. 51 near Clara, Fla.....	May 1...	.57	.0	.03	45	6.2	4.4	.3	141	9.0	11	.1	.0	145	138	22	263	7.9	80
294	Fenholloway River, 5½ miles NE of Foley, Fla.....	April 24...	1.02	6.6	.05	53	15	3.4	.2	210	6.5	8.0	.2	.0	201	194	14	352	7.5	20
297	Fenholloway River at Fenholloway, Fla.	April 24...	4.06	4.3	.08	52	15	3.5	.3	219	5.0	8.0	.1	.0	196	191	12	354	7.6	14
298	Fenholloway River at Foley, Fla.....	April 24...	2.42	6.0	.03	39	11	3.8	.3	153	4.0	8.5	.0	.0	148	142	17	258	7.2	27

TABLE 4. (Continued)

Map number	Station	Date of collection	Discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved solids	Hardness as CaCO ₃		Specific conductance (microhm/cm at 25°C)	pH	Color
																Calcium, magnesium	Non-carbonate			
309	Waldo Spring near Perry, Fla.	May 1...	0	6.1	0.00	35	18	2.4	0.2	172	8.0	4.5	.....	0.1	157	154	12	270	7.7	17
300	Hampton Springs near Perry, Fla.	May 1...		14	.01	214	08	7.5	1.6	282	605	10	.....	.4	1,180	037	706	1,440	8.0	35
301	Spring Creek near Perry, Fla.	May 1...	49.0	4.0	.00	50	18	4.8	.3	229	21	7.0	.....	.2	218	199	12	365	7.8	20
303	Gum Creek near Greenville, Fla.	May 3...	0	1.7	.51	2.4	1.7	5.2	.3	2	.0	7.0	.0	.0	20	13	12	67.4	4.8	280
304	Aucilla River near Aucilla, Fla.	May 2...	.03	.7	.34	3.2	1.9	0.2	1.2	6	3.5	9.5	.1	.0	30	16	11	74.0	5.3	150
307	Beasley's Creek near Lamont, Fla.	May 2...	0	2.2	.74	4.8	2.4	7.0	.3	p 0	5.5	12	.2	.8	36	22	22	170	3.8	300
311	Welaunce Creek near Wacissa, Fla.	May 3...	0	.7	1.5	3.2	1.7	4.9	1.1	0	.0	14	.0	1.4	28	15	15	72.1	4.4	500
312	Aucilla River near Scanlon, Fla.	May 2...	43.6	5.3	.02	59	10	2.8	.3	212	14	6.0	.2	.0	202	188	14	356	8.0	25
316	River Sink in River Sink Precinct near Tallahassee, Fla.	April 25...	102	11	.01	30	10	6.1	.2	112	14	9.5	.1	.0	136	116	24	230	7.4	5
317	St. Marks River near Newport, Fla.	April 28...		14	.01	42	7.5	3.5	.3	157	9.5	5.0	.2	.0	159	136	8	274	8.0	5
319	Sopchoppy River near Sopchoppy, Fla.	April 23...	2.51	5.0	.05	35	3.8	4.2	.2	116	.0	9.0	.2	.0	114	103	8	210	7.7	65
321	Quincy Creek at Quincy, Fla.	April 26...	11.8	4.3	.22	5.2	3.2	4.6	.4	24	.0	8.0	.1	.1	38	26	6	64.1	6.9	35
323	Rocky Comfort Creek near Quincy, Fla.	April 24...	5.27	8.9	.27	6.4	1.7	2.8	.3	23	.5	5.0	.1	.8	38	23	4	56.5	6.6	15
326	New River at Owens Bridge, Fla.	April 24...		5.2	.32	13	.9	3.3	.2	89	.5	6.0	.1	.1	49	36	5	82.0	6.7	150
328	Glen Julia Spring at Mount Pleasant, Fla.	Apr. 24....	.54	3.0	.01	2.8	1.5	2.7	.1	10	3.0	6.5	.1	.0	25	13	5	38.8	6.9	5
340	Escambia River near Century, Fla.	May 3... d	1,780	6.7	.30	12	1.1	4.5	.7	38	3.5	7.2	.3	.6	56	34	3	91.1	6.9	25
341	Pine Barren Creek near Barth, Fla.	May 4...	99	3.7	.12	.6	.1	2.3	.4	6	.0	2.8	.0	.0	13	2	0	16.5	6.2	15

a In solution when analyzed.

b Calculated from determined constituents, except as noted.

c Estimated.

d Mean discharge.

e Residue on evaporation at 180°C.

f Includes equivalent of 10 ppm of carbonate (CO₃).

g Negative.

h Includes equivalent of 4 ppm of carbonate (CO₃).i Includes equivalent of 1 ppm of carbonate (CO₃).k Includes equivalent of 11 ppm carbonate (CO₃).

m Includes discharge in Withlacoochee River main branch.

n Includes equivalent of 2 ppm of carbonate (CO₃).

p 0.64 ppm acidity (H+).

TABLE 5. Chemical Analyses of Springs in Florida, 1946 and 1956
(Chemical analyses in parts per million)

Map Number	Source and Location	Date of collection	Mean discharge (cfs)	Silica (SiO ₂)	Iron (Fe)	Calcium (Ca)	Magnesium (Mg)	Sodium (Na)	Potassium (K)	Bicarbonate (HCO ₃)	Sulfate (SO ₄)	Chloride (Cl)	Fluoride (F)	Nitrate (NO ₃)	Dissolved Solids	Hardness as CaCO ₃		Specific Conductance (Microhmhos at 25°C)	pH	Color
																Calcium magnesium	Non-carbonate			
44	Sanlando Springs near Longwood, Fla.	4-23-46 4-27-56	21.7 13.9	13 4.0	0.09 .00	29 30	7.9 8.3	5.8 5.1	0.0 .4	125 125	3.3 .0	7.8 9.0	0.2 .2	0.1 .1	123 120	105 109	 6	228 229	7.2 7.3	6 5
50	Alexander Springs near Astor, Fla.	4- 2-46 4-23-56	 130	8.8 9.4	.03 .00	41 49	18 17	103 121	2.3 3.0	98 97	56 61	192 232	.1 .1	.9 .0	508 540	176 192	 113	920 988	8.9 7.8	0 5
51	Ponce deLeon Spring at DeLeon Spring, Fla.	10-20-23 4-23-46 4-18-56	 41.8 23.4	19 8.6 5.6	.15 .06 .01	64 44 40	44 17 6.8	 124 40	332 4.0 1.9	30 122 127	93 85 12	622 281 60	0 .2	1.1 .8 .0	1,256 541 236	340 180 128	 24	 1,030 438	 7.4 7.7	 0 5
54	Silver Glen Springs near Astor Park, Fla.	4- 1-46 4-24-56	 108	9.0 9.7	.08 .07	87 80	46 46	334 346	10 9.5	85 82	205 202	610 638	.0 .1	.8 .2	1,400 1,380	406 404	 336	2,480 2,460	7.4 7.7	0 5
55	Salt Springs near Eureka, Fla.	4- 4-46 4-24-56	 79.0	11 12	.10 .00	240 154	167 98	1,540 878	38 24	87 67	613 375	2,800 1,600	.0 .1	 3.3	5,850 3,170	1,290 787	 732	9,330 5,620	7.1 7.0	0 5
68	Silver Springs near Ocala, Fla.	10-21-46 5- 2-56	 556	9.2 11	.04 .01	68 72	9.6 9.4	4.0 7.5	1.1 .5	201 222	34 45	7.8 12	.1	1.3 .0	237 207	209 218	 30	401 425	7.8 7.6	4 5
243	Weekiwachee Springs near Brooksville, Fla.	7- 5-46 5- 2-56	 130	8.9 9.7	.05 .01	48 48	5.8 6.8	4.0 3.1	.7 .4	168 166	6.4 6.0	4.8 5.0	.1 .3	.0 .0	161 161	144 148	 12	287 283	7.7 7.0	13 5
244	Chassahowitzka Spring, near Homosassa, Fla.	7-25-46 5- 1-56	80.9 112	8.0 8.5	.04 .00	49 59	13 37	20 200	1.5	178 184	13 62	53 380	.1	.3 2.5	261 849	176 299	 148	470 1,620	7.5 7.8	8 3
246	Homosassa Springs at Homosassa Springs, Fla.	4- 3-46 5- 1-56	 87.1	9.0 8.1	.12 .00	50 54	45 56	308 370	9.6	136 130	87 95	570 680	.0	.9 .0	1,200 1,330	310 365	 254	2,240 2,590	7.4 8.2	0 3
255	Rainbow Springs near Dunnellon, Fla.	6-18-46 5- 2-56	..... .....	7.7 6.2	.08 .00	21 43	4.0 4.5	2.9 2.8	.4 .1	78 139	4.7 18	3.5 5.5	.0	.8 .2	81 148	69 126	 12	145 253	7.9 7.4	2 13
260	Blue Springs, 10 mi. E. of Madison, Fla.	7-23-46 4-24-56	145 77.8	9.2 10	.04 .00	39 40	8.7 8.0	2.4 2.8	.7 .3	148 143	10 12	3.6 5.5	.1 .2	1.5 .0	147 149	134 133	 16	262 260	7.0 7.9	0 10

a Values for samples collected in 1956 are calculated from determined constituents.



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