Monthly Streamflow and Ground-Water Conditions in the United States and Southern Canada, Water Years 1945–85

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Monthly Streamflow and Ground-Water Conditions in the United States and Southern Canada, Water Years 1945–85

By SANDRA L. HOLMES

U.S. GEOLOGICAL SURVEY WATER-SUPPLY PAPER 2314
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Monthly Streamflow and Ground-Water Conditions in the United States and Southern Canada, Water Years 1945–85

By Sandra L. Holmes

Abstract

The Water Resources Division of the U.S. Geological Survey has been measuring streamflow since 1888 and collecting ground-water data since 1894. The monthly publication Water Resources Review (now National Water Conditions) was established in water year 1945 to provide information quickly to the public on the status of surface- and ground-water resources of the Nation. Each monthly issue contains a map depicting the status of water conditions relative to normal for that month.

This report presents these maps and a synopsis of surface and ground-water conditions for each month of the last 41 water years (1945–85); a water year begins October 1 and ends September 30 of the following year.

INTRODUCTION

Legislation establishing the Irrigation Survey on October 2, 1888, forerunner of the Water Resources Division, U.S. Geological Survey, provided for the study of the availability of water for irrigation, sites for reservoirs, and artesian areas of the arid and semiarid lands of the United States. By 1894, the Survey’s authorization was expanded to include the investigation of ground water. Thus the measurement of streamflow and collection of ground-water data became an integral function of the Water Resources Division that continues to the present time.

The monthly publication Water Resources Review (now National Water Conditions) was established in water year 1945 to provide information quickly to the public on the status of surface- and ground-water resources of the United States and southern Canada. (Water resources are not influenced by political boundaries.) Through July 1966, each monthly issue contained a map that presented both streamflow and ground-water conditions relative to normal for the month. Beginning with the August 1966 issue, only streamflow data have been displayed, although ground-water data continued to be discussed in the synopsis accompanying the map and in the text. Since May 1982, ground-water data have been discussed only in the text.

This report presents these maps and a synopsis of surface- and ground-water conditions for each month of the last 41 water years (1945–85); a water year begins October 1 and ends September 30 of the following year.

Graphic presentation of surface- and ground-water data provides a clearer picture of conditions than the presentation of the data alone in tabular form. For instance, the maps and synopses shown in figures 5–151 in this report clearly illustrate the 1942–56 drought in the Southwest, as well as other droughts: the 1952–57 drought in the Midcontinent (see figs. 98–154); the 1961–67 drought in the Northeastern States (see figs. 206–277); and the 1976–77 drought nationwide (see figs. 380–403). Figure 485 shows the extent of drought conditions early in water year 1985 in the Delaware River basin, which supplies water for New York City and Pennsylvania. The Delaware River Basin Commission declared a drought emergency for the area on May 13, 1985, when the New York City reservoir system reached critically low levels and water supplies failed to improve.

During the period covered by this report, floods were numerous, even during drought periods. Many floods were localized due to intense rainfall from thunderstorms or stalled low-pressure centers. Other floods were the result of hurricanes, such as Camille in August 1969 and Agnes in June 1972. Occasionally floods resulted from failures of man-made structures, such as the collapses of the dam on Buffalo Creek in West Virginia in February 1972, the Teton Dam in Idaho in June 1976, and the Kelly Barnes Dam near Toccoa, Georgia, in November 1977.

SEASONS OF HIGH AND LOW FLOWS

Highest and lowest streamflows occur during certain seasons, even though deviations from the norm happen from time to time, as shown on figures 1–4. On these
graphs, the outline bar represents the median streamflow for each month for a 30-year base period. The solid bar represents the mean discharge for the given month. In the South and in regions of low altitude, spring is the season of high soil moisture and favorable conditions for high streamflow from rainfall. The time of seasonal high flow in streams in the North and those draining mountainous areas, however, is associated primarily with melting of the accumulated snowpack, and this snowmelt reaches its maximum with the arrival of warm weather. For example, snowmelt in the Southwestern United States occurs in April and May but does not peak in Canada until July.

Topography influences high streamflow in the West during various times of the year. Seasonal peak flows occur earlier in many valley streams than in high-altitude snow-fed streams. For instance, tributaries draining the relatively low Coast Range in California generally peak during January and February (see fig. 1), whereas tributaries draining the Sierra Nevada or the Rocky Mountains generally do not peak until May or June (see fig. 2). Along the Pacific coast, midwinter peaks of flow are common and are a result of the high rainfall and little accumulation of snow.

The south to north progression of increasing rainfall in the Midwest and East generally brings high flows
in January, February, and March in the Gulf Coast States, in March and April in the central part of the country (see fig. 3), and usually in April and May in the eastern Provinces of Canada. Florida is an exception because the rainy season extends from June to October; therefore, streamflow reaches the seasonal high during late summer and early fall, and October generally has the highest flow.

In the East and along the west coast, low streamflow occurs in late summer and fall. In the Northeast, winter is the season of low streamflow, but occasional thaws generally maintain higher streamflow than that of late summer and fall (see fig. 4). Low winter streamflow in the Great Plains is due to a lack of rainfall in the area.

In the mountainous regions and Canada, winter streamflow is low because available moisture is being stored in the snowpack until snowmelt occurs in the spring.

EXPLANATION OF DATA

The maps (figs. 5-496) show the generalized streamflow patterns nationwide from October 1944 through September 1985 and typical ground-water levels from October 1944 through July 1966. This information is based on selected key index stations in Canada and the United States.
Streamflow for each month is compared with median flow for the same month in the 30-year reference period. From October 1944 through September 1960, the reference period is water years 1921-45; from October 1960 through September 1971, the reference period is water years 1931-60; from October 1971 through November 1976, the reference period is water years 1931-60 or 1941-70; from December 1976 through September 1981, the reference period is water years 1941-70; and from October 1981 through September 1985, the reference period is water years 1951-80.

Streamflow is considered to be below normal if it is within the range of low flows that have occurred 25 percent of the time (lower quartile) during the reference period, and streamflow is considered to be above normal if it is within the range of high flows that have occurred 25 percent of the time (upper quartile) during the reference period. Flows higher than the lower quartile but lower than the upper quartile are considered to be within the normal range and are expected to occur 50 percent of the time. As depicted on the maps, the median flow is obtained by ranking the daily flows for each month of the reference period in order of magnitude: the highest daily flow is number 1, the lowest flow is number 30, and the average of the 15th and 16th flows is the median. In other words, one-half of the time the daily flows for the month are expected to be below the median, and one-half of the time they are expected to be above the median.

Ground-water levels refer to water-level conditions near the end of the month. The water level in each key index well (selected wellsites in various parts of the country) is compared with its average level for the end of the same month. The average level is determined from a 30-year reference period, or it is determined from the entire past record for that well, if only limited records are available.

NATIONAL WATER CONDITIONS MONTHLY PUBLICATION

Subscription to the monthly publication entitled “National Water Conditions” (the publication used to compile the maps for this report), is available free on application to the National Water Conditions, U.S. Geological Survey, 419 National Center, Reston, VA 22092.

REFERENCES

The general pattern of water supplies during October was marked by sharp contrasts in the East and moderately below-normal streamflow in the West. Streamflow was in the normal to above-normal range in the New England States except for northern New Jersey where streamflow has been below normal for almost a year. In the Atlantic Coastal States, the third hurricane of the season brought heavy rainfall to coastal North Carolina and the Roanoke and James River basins in Virginia October 20, resulting in moderately high flood stages in the upper Roanoke River basin. Streamflow in the Southeastern States continued the generally deficient pattern developed during the preceding 3 months, with a small area of above-normal streamflow persisting in northern Florida. In the Middle West, streamflow in States north of the Ohio River continued to be below normal (since July), while flow declined seasonally from Iowa to Manitoba and abnormally deficient streamflow developed during the month in Arkansas, contrasting sharply with above-normal streamflow in the adjoining part of Kansas. Streamflow in the West was in the normal to low range.

In areas unaffected by pumping, ground-water levels ranged from normal to above normal along the Atlantic seaboard and the North Central States, and were below normal in southern Ohio and Indiana and in western Pennsylvania. Conditions elsewhere were variable, but levels were reported to have begun their seasonal rise in the West, although water levels in Arizona reached new lows for the period of record.
The general pattern of streamflow and ground-water conditions that prevailed during October and November continued without substantial change. Streamflow in States north of the Ohio River has been intermittently deficient for the past year. During December, this area of drought conditions extended from Arkansas to southern Ontario where streamflow declined still further. In contrast, streamflow in eastern and southern Texas increased markedly to 1½ times the December normal. In Kansas, heavy rains December 4-5, in combination with frozen ground and continued high base flow, produced floods that were extraordinarily high for December, many stations recording record-high flow for December for the period of record. Streamflow declined seasonally in the West, with sharp decreases reported for central and southern California, western Oregon, and eastern Washington where discharge is reported abnormally deficient. Elsewhere streamflow was in the normal range.

In general, water levels in key wells in areas unaffected by pumping showed little change during December in the Dakotas and parts of Nebraska and Kansas, water levels were at high stages at monthend; in the Pacific Northwest, water levels were abnormally low; along the north Atlantic seaboard, water levels were normal to above normal; and conditions were variable elsewhere. Water levels continued to be low in areas of pumping for public and industrial use in the Southwest, but were reflecting the usual seasonal rise.

In contrast to the New England and Mid-Atlantic areas of normal to above normal streamflow and ground-water levels, drought conditions persist in a band from Arkansas to southern Ontario, some 300,000 square miles. Flow of some streams in Ohio and Indiana were reported lowest of record for January and storage reservoir supplies for domestic and industrial use in Columbus and Lima, Ohio, were exhausted. Streamflow continued to be below normal in Georgia and Alabama, increased into the normal range in Washington, and was normal elsewhere.

At monthend, ground-water levels in most key wells were in the normal range, but a number of wells in the Atlantic and Gulf Coast States, the Central West, and Utah were above normal for January. Only a few scattered wells in Illinois, Indiana, Nebraska, and western Washington and Oregon were reported to be below normal for this time of year.
Weather patterns during the first half of February in the West to the second half of the month in the East that produced above-normal rainfall and warm temperatures generally boosted streamflow and accumulation of ground water across the Nation. Flooding was reported on the Ohio River in Ohio, the Susquehanna River in Pennsylvania, and many streams in other Mid-Atlantic and Ohio Valley States, California, Nevada, and Oregon. Excessive discharge occurred in the West Central States from Texas north to North Dakota, with substantial increases in streamflow in the Pacific Coast States and in Nevada. In contrast, below-normal streamflow occurred in southern Ontario, the eastern and western Great Lakes States, South Carolina, parts of western Montana, Wyoming, Utah, Colorado, Arizona, and extreme southern California, and drought conditions were reported for southern Florida, including the Everglades, central Georgia, and southeastern Alabama.

Ground-water levels in general were normal or above normal in the Atlantic Coast States, at record-high levels in North Dakota, South Dakota, and northeastern Nebraska, and were well above normal from Pennsylvania through southern Indiana.

The early thaw and breakup in the East dominated March events. Rainfall and snowmelt sent the Ohio River to near-record levels early in the month and the early breakup raised the upper Mississippi River to flood stages. These floods, combining below Cairo, Illinois, were joined later in the month by floods from excessive rainfall over the Arkansas and Red River basins. The early thaw and relatively dry weather removed the flood threat presented by unusually heavy midwinter snow cover in the eastern Province and Northeastern States. Discharge volumes were excessive for March, but generally were below average spring flood rates. Streamflow in the West generally decreased seasonally, and water supplies continued to be deficient in the Southeast, particularly in southern Florida, central Georgia, and northeastern Alabama.

Ground-water levels generally increased during March and, at the end of the month, were in the normal range over much of the country except in the Central West, where levels were generally above normal, and in Florida, where levels were generally below normal for this time of year.
Floods on streams in Missouri, Kansas, Arkansas, eastern Oklahoma, Louisiana, and east Texas, caused by heavy rainfall on sodden ground in an area of high base flow, exceeded many long-time records. Property damage was widespread and several deaths were reported. A decline in streamflow to below normal occurred throughout the Atlantic Coast States from New Hampshire to Virginia and below-normal streamflow continued for South Carolina, central Georgia, southern Florida, and southeastern Alabama. Expected seasonal increases failed to materialize due to below-normal temperatures, most noticeably in the Columbia River basin and in Alberta, Montana, and Utah.

Ground water continued at high levels throughout North Dakota, South Dakota, Nebraska, and most of Kansas during April. Along the Atlantic seaboard, conditions varied from slightly above normal in the Carolinas to slightly below normal in New England. Elsewhere ground-water levels were variable, especially in areas influenced locally by pumping.

Streamflow for May was above normal generally over most of the Nation, with localized flooding in northern Nevada, southwest Arkansas, Iowa, Michigan, and West Virginia. Increase in streamflow exceeded seasonal expectations in the West in Utah, Idaho, Oregon, Washington, northern New Mexico, and British Columbia. Streamflow continued to be excessive in the West Central States of Iowa, Missouri, Nebraska, and Kansas. Streamflow generally increased into the above-normal range throughout the East, notably in the Ohio River basin, the Northeastern States, and the Maritime Provinces. Below-normal streamflow continued, however, in parts of Utah, Colorado, Wyoming, eastern British Columbia, Alberta, and the South Atlantic Coast States, particularly in southern Florida where water levels in the Everglades and adjoining coastal areas were lowest since observations began in 1939. Streamflow in the western part of Texas and in Oklahoma was well below normal, and surface and subsoil were very dry. The Cimarron River north of Boise City, Oklahoma, which normally has substantial flow in April and May, has been dry since April.

At the end of May, ground-water levels were at above-normal stages in the Northwestern States and in a belt extending northeastward from Oklahoma through Missouri to Wisconsin. Water levels were also above normal in West Virginia and New York. Elsewhere water levels in areas not affected by pumping declined generally.
Continuing the generally wet pattern since February, persistent rainfall has kept streamflow in most areas of the Nation in the above-normal range. A number of local flash floods were reported in widely separated areas (central New England, Michigan, Indiana, West Virginia, Missouri, Kansas, Arkansas, Oklahoma, and Wyoming), causing considerable damage. Discharge was excessive over a broad area extending from eastern Oklahoma to southern Ontario and through New England and the southern Maritime Provinces. In the West, seasonal increases in streamflow were above normal in the central and northern intermountain area, with particular improvements in eastern Montana, Wyoming, and northern Utah. Below-normal streamflow occurred in the Southeast, particularly in the Everglades in southern Florida, in Georgia and South Carolina where discharge from some representative streams were lowest of record for June, and in southern New Mexico and Arizona in the West.

At the end of June, ground-water levels in areas not affected by pumping were above normal over most of the country. Record high ground-water levels were reached in key wells in Maryland, Wisconsin, and Utah. Water levels were below normal generally only along the southern Atlantic coast from Florida to North Carolina and in parts of Arizona and New Mexico.

Streamflow during July was generally above normal Nationwide. Floods in the Northeastern States continued excessive discharge in the West Central States, and improvement in streamflows in the Southeast and in the West, were predominant during June. Conversely, stored reserves in South Carolina were about exhausted as a result of 7 months of below-normal streamflow. Significant streamflow deficiencies were reported only in the Columbia River basin and in parts of southern California, southern Arizona, and northern New Mexico.

Unusually high ground-water levels for this time of year prevailed over two sizable areas of the country at the end of July, in spite of the seasonal decline over large parts of these areas. One area extended from Virginia northward along the Atlantic coast to Maine. The other reached from Oklahoma northward across eastern Kansas and Nebraska into Iowa, and included parts of North Dakota, Minnesota, and Wisconsin. Water levels continued to decline in areas where ground water is used for irrigation in New Mexico, Arizona, and California. Elsewhere ground-water levels stood at generally normal levels for July, except for parts of the Southeastern States from Mississippi to Florida.

Figure 13. Streamflow and Ground Water in Relation to Normal, June 1945.

Figure 14. Streamflow and Ground Water in Relation to Normal, July 1945.
Nationwide, August has been conspicuous by the absence of any major or widespread extremes in streamflow or ground-water levels. Streamflow in the East decreased seasonally, punctuated only by substantial increases in flow in North Carolina, South Carolina, and Florida due to coastal storms. In the west-central region, streamflow decreased seasonally or more than seasonally. The region experienced a flood in western Iowa from August 6-8, following a localized 10-inch downpour, and record-breaking floods in Texas August 25-28, after a hurricane. In the West, streamflow was in the normal range, with no excesses or deficiencies reported. Discharge in the Columbia River basin and contiguous parts of Washington, British Columbia, and Alberta continued to be below normal, but reservoir storage continued to be ample.

Ground-water levels declined seasonally in a band along the Atlantic coast from North Carolina to Maine, and in an area from Texas northward through eastern Oklahoma and Kansas, eastern Nebraska and western Iowa, into Wisconsin, Minnesota, and across northern North Dakota, but remained much above average for the period of record.

Widespread and marked increase in streamflow in the East dominated the month of September. Excessive discharge was reported over a broad area extending from Florida into southern Ontario and Quebec. The flow at representative stations in Florida, South Carolina, and West Virginia was greatest of record for September. Except in eastern North and South Carolina, however, where record flood stages were broken, rainfall was favorably distributed so that extreme flood stages were not general. Record-breaking volume of streamflow for September also occurred in Arkansas, Oklahoma, and Missouri. In contrast, sharply decreasing streamflow ranging between 30 and 60 percent of normal was reported in an area extending from western Kentucky southward to Mississippi. In the West, decreased streamflow dominated with below-normal flows in Utah, Colorado, Arizona, and New Mexico. The flow of the Verde River in Arizona set a new record low for September for the period of record.

Two areas of above-normal ground-water levels noted at the end of July persisted through September: the Atlantic Coastal States from North Carolina northward through New England maintained well above-normal levels except in Connecticut, and in the Oklahoma-to-Minnesota area water levels remained above normal. A third notable area of above-normal ground-water levels appeared in western Utah and eastern Nevada. In New Mexico, Arizona, and California, where ground water is used for irrigation, water levels declined generally or were below average for the period of record by the end of September.
Streamflow was above normal in 61 percent of the United States and Canada during October. Broad regions of excessive discharge covered nearly 800,000 square miles extending from east Texas through Illinois and Michigan to the Maritime Provinces, along the Atlantic coast from Florida to South Carolina, and in California. Ten representative stations reported discharge greatest of record for October. The dominant pattern of above-normal streamflow contrasted with the generally below-normal rainfall for October reported by the U.S. Weather Bureau. Streamflow in many places representing carryover from precipitation/recharge of previous months. Only three small areas of below-normal streamflow were noted: one in western Kentucky, the second in northeastern Arizona, and the third on Vancouver Island. Notable increases in streamflows occurred in central and northern California and in parts of Arizona and New Mexico due to above-average rainfall. Streamflow in the Pacific Northwest generally decreased, but no deficiencies were reported.

The overall ground-water picture changed only slightly during October: the area of above-normal ground-water levels reaching northward from Texas to Minnesota extended across the Midwest and merged with the "high" area on the Atlantic coast. Ground-water levels were abnormally low in an isolated area in Connecticut. Elsewhere along the Atlantic coast, ground-water levels were above normal. In southern California, ground-water levels rose generally during October, and remained above normal at the end of the month in an area extending northeastward into Utah.

Streamflow continued predominantly above normal, being reported as excessive over broad areas covering a large part of the Eastern States and the major part of California, Nevada, and Oregon. Discharge at three representative stations was greatest of record for November. Nationwide, storage reserves continue to be above average for the season.

Increases in streamflow to above-normal rates were reported in an area from Alabama to western Kentucky, where streamflow had been below normal for some months. Discharge and ground-water levels continue high in southern Florida. Further increases in streamflow occurred in northern California, Oregon, and Washington. Streamflow in New Mexico is again below normal, and streams in the region from eastern Texas to Manitoba decreased from the excessive rates prevalent in that region for some months.

Ground-water levels at the end of November were above normal over most of the country. Unusually high levels were reached in New York and Pennsylvania. In Connecticut and the Pacific Northwest, ground-water levels were below normal. The only other sizable area of low ground-water levels was one covering most of Arizona, New Mexico, and Colorado, which has persisted for several months.
Above-normal streamflow and ground-water levels continue, with well above normal streamflows on the east and west coasts continuing the pattern that began in October. Above-normal streamflow and above-average ground-water levels reached seasonal highs from northern Florida to a narrow coastal fringe in New England. Flow of four representative streams in the East set new record highs for December, although no major flood stages were reported. Reservoirs were at high levels, with some spillage at small reservoirs in the East and Southeast. Excessive streamflow in California and Oregon was accompanied by damaging floods with record high peaks reported on several streams in the upper Willamette River basin. Only three small areas of below-normal streamflow were reported in eastern Arizona, Arkansas, and British Columbia.

Normal or above-normal ground-water levels occurred generally Nationwide in December with one notable exception, a persistent area in Arizona and New Mexico. Scattered key wells in other parts of the country also showed below-normal levels at monthend. Unusually high ground-water levels were noted along the Atlantic coast from North Carolina to Pennsylvania.

Continuing above-normal streamflow and ground-water levels were prevalent Nationwide. Broad regions of excessive runoff covered over 900,000 square miles during January, including most of the Southern and Central States. Discharge of seven representative stations was greatest of record for January. No significantly below-normal streamflow was reported anywhere in the United States or Canada. Record high and damaging floods occurred January 8-10 in the Southern States, centering in Kentucky, Tennessee, and Georgia, and the largest winter floods of record were reported in Iowa and adjoining parts of Wisconsin and Minnesota. Streamflow in much of the West continues to be above normal, with flows increasing in the Columbia River basin. A moderate increase in streamflow in the Gila River basin in Arizona was reported after seven months of below-normal flow.

The overall ground-water conditions Nationwide were favorable, except for significantly low ground-water levels in Arizona and New Mexico where storage reserves are also below average.
Floods in the Southern States, accompanied by excessive discharge over a 300,000-square-mile area in the South Central States, dominated the month of February. Streamflow was excessive in parts of the West Central States from Arkansas and eastern Oklahoma to Minnesota, with discharge of the Elkhorn River in eastern Nebraska highest of record for February.

Snow cover in northern New England and New York is greatly above normal, although less than the abnormal amount on the ground one year ago. No flood damage is anticipated from this source unless high temperatures accompany heavy rainfall.

Streamflow in the West decreased seasonally. Snow surveys indicate favorable prospects for normal to above-normal runoff this spring, except in southern Colorado, New Mexico, and Arizona. Increases in streamflow usually expected at this time in Arizona have failed to materialize and flow has decreased from near-normal amounts in January to rates ranging between 29 and 62 percent of normal for February.

Drought in Arizona and New Mexico, an early breakup and thaw in the Northern States and eastern Canada, floods in Florida, Georgia, and Michigan, and increasing streamflows in the Pacific Northwest were major events in March.

Streamflow in Arizona during March averaged only about 30 percent of normal. This low flow, when considered in combination with Arizona's depleted reservoirs and unfavorable outlook for runoff from snowmelt, presents an adverse picture of water supply this season in Arizona. In New Mexico, below-normal streamflow is widespread, with the discharge of the San Juan River in northwestern New Mexico lowest for March in 32 years of record. Ground-water levels for both Arizona and New Mexico are declining.

In the Northern States from Minnesota to Maine and in the eastern Provinces, an early thaw along with generally deficient spring precipitation permitted, for the second consecutive year, a heavy snow cover to melt gradually with only minor flooding.

In western Georgia, northwestern Florida, and the Lower Peninsula of Michigan, moderate flood stages were recorded on several streams. Streamflow continued in the normal to above-normal range in the area from Texas to Manitoba, and increased seasonally in the West to more than seasonally in the Pacific Northwest.
Streamflow during April in the region from Michigan and southern Ontario to Maine and south as far as Kentucky and Maryland was less than 50 percent of normal, reflecting the early thaw in March and deficient precipitation during April. Discharge at ten representative stations set new record lows for April. In the Southeast, streamflow was in the normal range except in the Tennessee River basin and in Mississippi, where discharge on streams in that State was below normal for the first month since October 1945.

Streamflow decreased seasonally in the Central States and southern Manitoba, and increased seasonally in the West and Pacific Northwest. In northern Utah, unseasonally high temperatures caused premature melting of the snowpack creating flood conditions on tributaries in the Bear River basin. In contrast, the southern portion of the State faces a drought condition, with streamflow at some locations less than 20 percent of average for April. Water content of accumulated snow in the extreme southern portion of the mountains is unusually low. Below-normal streamflow persists in Arizona, New Mexico, and the adjoining parts of Colorado.

Ground-water levels generally reflect conditions similar to streamflow in the East during April. Ground-water levels declined generally in the New England States and southern Florida, with drought conditions developing in the Everglades. Below-normal ground-water conditions persist in Arizona, New Mexico, and adjoining regions, and the drought continues unabated.

Flooding approaching or exceeding record magnitudes in eastern Pennsylvania and southern New York, excessive runoff in the Southern States and Pacific Northwest, and the continuing drought in the Southwest were of major interest for May.

In Pennsylvania and New York, record-high floods during May on the Chemung River, Pine Creek, Lycoming Creek, and Tioga River contrast with the near-drought streamflow levels in April. In the Southern States, although runoff was excessive, precipitation was evenly distributed and no damaging floods occurred on major streams. In the Pacific Northwest, runoff in the Columbia River basin continued above normal due to the early melting of an above-normal snowpack. Contents of storage reservoirs nationwide continue at favorable levels except in the drought-stricken areas of the Southwest.

The drought area of the Southwest continues to be centered in Arizona and New Mexico, but streamflow in southern Utah and western Colorado is also adversely affected due to subnormal winter snowfall and continued precipitation deficits. For example, flow of the San Juan River near Bluff, Utah, was 29 percent of normal and lowest of record for May.
Continued high runoff in the East and South, local floods in Iowa, Wisconsin, and Wyoming and the long-continued drought in the Southwest were the month's major items of interest to water users.

Floods in the Eastern and Southern States were unreported but runoff continued excessive for the second successive month. Storage reserves continue at high seasonal levels despite considerable withdrawals during the month.

Floods over relatively small areas in southern Iowa, northern Wisconsin, and northern Wyoming resulted from intense local storms. New maximum peak flows were recorded for several gaging stations, but peak rates of flow were not of unusual magnitudes.

The drought area of the Southwest has now spread to include more of Utah and Colorado. Water supplies are critically short, and precipitation during June did little to alleviate the situation.

Scattered flash floods, deficient runoff in the Great Lakes-Nova Scotia region, continued high streamflow in the South, and a slight improvement in parts of the Southwest drought area were the notable features of the water-supply inventory of the month.

Local flash floods on small streams, which resulted in loss of life and damage to property in many sections, were so dispersed that the flow of major rivers was not greatly affected.

Runoff of streams in the eastern Provinces of Canada ranged from subnormal to deficient. In contrast, excessive runoff was recorded on Vancouver Island and near-normal flow from the Coast Range of British Columbia to Manitoba.

In the gulf region excessive runoff persisted during July. For many streams cumulative runoff since the beginning of the water year is considerably above normal.

The drought in parts of the Southwest was alleviated somewhat during the month, but supplies of water remain critical in a large part of the region. Although runoff of some streams was above normal, their contribution to the total storage reserves was small.

Runoff in the West during the April-July period was deficient in the southern part and, except in Oregon, above normal in the northern part. Preseason forecasts of ample supplies in the Northwest and shortages in the Southwest are substantially verified by tabulations of runoff at index gaging stations.
The August water-supply picture was featured by marked contrasts of deficient runoff in several widely separated regions and floods and excessive runoff in other areas. Although several index streams, mainly in New England, set high records for August, no new low-flow records were established.

In the Maritime Provinces below-normal flow persisted, with heavy drafts on storage reserves. Streamflow in Alberta was also reported subnormal. Runoff was generally deficient on the western slope of the Appalachians from northern Georgia to West Virginia and in the Great Lakes region from Wisconsin to eastern Ontario.

Local floods caused considerable damage in the St. Louis area and in southern Maine. Flow of major rivers was generally unaffected.

A complete reversal of water-supply conditions occurred in central and eastern Texas. Drought during most of August was followed by major month-end floods on many rivers.

In the southwest drought area, conditions improved for the second successive month but water supplies remain far below normal in many areas. Over most of the United States ground-water conditions changed little during August. Over the Eastern States water levels were normal or above, but in southern Arizona and New Mexico levels continued abnormally low with little or no improvement noted.

Drought in the St. Lawrence and upper Ohio River basins, a record flood on San Antonio River, and marked improvement in the Southwest drought were the foremost items of interest during September.

Several small widely separated areas of deficient runoff noted in August have spread and merged into one large region of below-normal streamflow extending from Michigan and eastern Tennessee to the Maritime Provinces. Except locally, water shortages are not acute, and storage reserves are favorable.

The San Antonio flood was of major proportions. Damage to the metropolitan area was considerable. The peak stage at San Antonio was lower than in 1819 and 1921, but at Falls City the 1913 record stage was exceeded.

Surface water-supplies in Arizona showed further improvement in September. Although surface and ground-water storage reserves remain far from abundant, the outlook in this area has brightened considerably.
Less than any percentage previously recorded during October.

Contrasting regions of excessive and deficient runoff featured the November water-supply picture.

Runoff was excessive for the season over broad regions including many of the Western States, and throughout the region from western Ontario to the Gulf of Mexico. Eleven representative stations west of the Mississippi River set new high records for November runoff. The excessive volumes of runoff, which occurred without major floods, reflect high precipitation as well as carryover effects of antecedent precipitation.

Streamflow in the East was dominantly subnormal with critical deficiencies continuing in Nova Scotia. An area of deficient streamflow also extended from southern Ontario to West Virginia and New York.

Record-low flows were again reported in central British Columbia.
Streamflow continued excessive in the West and the Midwest. Damaging floods in the Pacific Northwest States and alleviation of the drought in the Maritime Provinces were other major features in the December water-supply review.

Streamflow continued well above normal over the Intermountain region. First reports indicate snow depths generally above normal, and the early season outlook for water supplies for irrigation and power generation is dominantly favorable. Mid-month floods in the Northwest established new records on three Oregon streams, and superposed a rise on the usual decline in flow of major rivers.

Runoff continued excessive, from western Ontario to the Gulf of Mexico owing mostly to carryover from previous months. Floods in Arkansas and Red River basins in Oklahoma and Arkansas resulted from excessive precipitation over a large area.

The drought in the Maritime Provinces has been broken. Storage reserves for power increased notably during the month. Runoff was deficient in the Atlantic coastal region, but supplies remain ample.

Excessive runoff dominated the area extending from eastern Texas to North Carolina. Exceptional concentrations of rainfall produced floods of record or near-record magnitudes in Georgia, Alabama, and Mississippi. Record-high volumes of runoff for January were recorded at five representative stations.

Streamflow in the West receded as a result of subnormal temperatures and precipitation. The outlook for water supplies next season continues favorable, except possibly in central and northern California where shortages can be averted only by above-normal precipitation during the next few months. Only one representative station recorded a record-low runoff for January.

Excessive runoff persisted in the west-central area from Kansas to western Ontario owing chiefly to carryover from previous months.

River and ground-water levels in the west central part of the southern Michigan Peninsula are at low levels. The outlook for favorable inland lake levels next summer is dependent on future precipitation.
Excessive runoff in Canada and the Northern States contrasted with widespread deficiencies in the Southern States.

Streamflow continued excessive in the Pacific Northwest States and the northern Great Plains, chiefly as a result of above-normal temperatures.

In the Eastern Provinces and northern New England runoff was record high for February at four key gaging stations. Flow generally declined after early-month rises.

Deficient runoff and a below-normal snowpack in Arizona make the present outlook for irrigation water supplies during the coming season unsatisfactory.

February streamflow was deficient throughout the South from eastern Kansas and Oklahoma to the Atlantic coast. Carryover from January floods which occurred over much of the same region was a major factor in maintaining February flows generally above record low.

Floods with severe ice jams in upper Missouri River and its tributaries were in sharp contrast to continued critically low runoff from southern California to New Mexico during March.

In the plains region of eastern Montana and the western Dakotas flooding was severe. Ice jams caused unprecedented stages on many streams, and new records of peak discharge were established at some gaging stations. Damage to highways, bridges, and to rural and urban property was extensive.

Runoff continued excessive in the upper Columbia basin as a result of above-normal temperatures. British Columbia streamflow was generally above normal for the first time since July. The outlook for water supplies during the coming irrigation season is favorable in this region.

The anticipated seasonal increase in storage reserves in Arizona failed to materialize. The present outlook is for short irrigation supplies.

Runoff was deficient over the region from Oklahoma to Michigan. Water supplies remain ample, however, except in a few localities needing additional soil moisture.
Floods in the Great Lakes region, excessive runoff from North Dakota to the Gulf States, and continued drought in Arizona and New Mexico were the dominant water-supply features of the month.

Damage floods in the region from northern Illinois to western New York resulted from heavy precipitation over an area partly covered with snow. In the Southern Peninsula of Michigan the flood was the worst since 1904.

Runoff was excessive over a broad region extending from North Dakota and Minnesota to Louisiana and Alabama. Stages were generally below the maxima of record, but new records of April runoff were established at 3 key gaging stations.

The water-supply situation in Arizona remains critical, with no prospective alleviation. Storage reserves in some areas are notably deficient.

Floods and excessive runoff were recorded in May over the region extending from the Great Lakes to the Maritime Provinces. Peak flow on upper Ottawa River in late May and early June was the greatest of record.

Runoff was again deficient in southern Arizona and California, with no improvement anticipated. Storage reserves in two Arizona reservoirs are completely exhausted.

Streamflow continued excessive in the Fraser and Upper Columbia River basins. Above-normal temperatures resulted in early snow melt, and spring flood peaks occurred well before the usual season.

Floods in Oklahoma and western Arkansas approached the maximum known as a result of heavy mid-month rains. Damage to highways and bridges was considerable.

Failure of a small dam resulted in heavy damage at Rutland, Vermont. In early June. Peak flows in this region were generally greatest in Vermont, and main river stages were not excessively high.
Major floods in the Central States dominated the streamflow picture for June. Floods in the lower Missouri River and in the central Mississippi River were generally the worst in over 100 years. Peak stages and discharges on many tributaries established new records. Flood damage was tremendous. Since 1942 streamflow has generally been above normal throughout this region, and frequent flooding has occurred.

Runoff was excessive throughout the region from the Ohio River to the Maritime Provinces. New records for June flow were established at many index gaging stations.

The drought in southern parts of Arizona, New Mexico, and California has not been alleviated. Water supplies remain critically short in some localities.

Droughts are reported in the Southwest, including Arizona, New Mexico, Texas, and Arkansas, with record-low flow in several index stations.

Streamflow in the West was chiefly marked by quickened snowmelt in the Northern Rocky Mountain area and drought in the Southwest. This season also appears to be a dry one in California with substantial drafts on reservoir storage and ground-water reported in many places. Except in the drought area, storage reserves in the West are reported in favorable condition.

Discharge measurements on the Mississippi River at St. Louis show that the peak flow of water during the June-July flood of this year was less than in 1943 and 1944, even though stages were higher.

Spotty rains, characteristic of the season in the Northeastern States and eastern Provinces produced moderate rises in streams generally receding from the unusually high flows during June. Destructive floods on small ungaged streams were reported in Indiana, Ohio, New York, and Virginia.
Streamflow in the West increased generally, relative to seasonal normal. Although runoff in Arizona and New Mexico showed considerable improvement over preceding months, the situation remains critical. Storage reserves for irrigation and power are generally much below a year ago.

Deficient runoff was noted over many of the Southern States. No shortage of water supplies is yet evident, except in parts of Oklahoma and Arkansas, where crops and range land have suffered from the drought.

Runoff was excessive in streams tributary to Lake Winnipeg. Scattered summer storms caused local floods in Ohio and Virginia. Floods in the Little River basin in Oklahoma and Arkansas were associated with a tropical storm which moved north through Texas in late August.

Streamflow was exceptionally low in Nova Scotia. Storage reserves for power are still favorable, however.

Runoff continued deficient in British Columbia, the Northeast, and in the Central and Southern States. Serious water shortages have not developed in these areas, but replenishment is needed. If subnormal precipitation continues, October flows may be the lowest of record at many gaging stations.

Minor floods occurred in Ohio and Minnesota, and a tropical storm caused excessive runoff in Florida and along the Gulf coast. Streamflow in the lower Great Lakes region continued excessive.

In the West, little change was noted over a month ago. Some curtailment in hydroelectric power production in California was necessitated by continuing low flows. April-September runoff at Grand Canyon was 103 percent of normal, 70 percent more than a year ago. The runoff of Columbia River during the same period was 112 percent of normal, slightly less than last year.

Figure 39. Streamflow and Ground Water in Relation to Normal, August 1947.

Figure 40. Streamflow and Ground Water in Relation to Normal, September 1947.
The major hydrologic events of October were the flood in Florida and the drought in the northeastern Provinces and States. The southern Florida flood was of exceptional severity, considering damages inflicted on rural and urban property, transportation facilities, and public utility installations. Stream channel and canal capacities were insufficient to allow rapid drainage of the excessive precipitation accompanying the September and October hurricanes, and much of southern Florida became a vast lake. The stage of Lake Okeechobee reached a new record high. Peak stages on the canals were reached at mid-October, and recession is slow.

The drought in the Northeast reached its greatest severity in Maine and New Brunswick, where hydroelectric power production, seriously curtailed, resulted in power rationing. Failures of water supplies in municipal use have not been reported, but water is being hauled for domestic use in many rural areas. Monsoon rains in some localities alleviated the forest fire danger somewhat, but water supplies remain critically low.

Streamflow in the West increased greatly and was dominantly above normal, but the drought in southern California, Arizona, New Mexico and western Texas continues.

The month was marked by excessive runoff in the Southern States and by drought in New England, Quebec, and the Maritime Provinces.

Record high November runoff was observed at eight index gaging stations in the Southern States. Record floods occurred in Northern Florida while southern Florida was slowly emerging from the great October flood.

Water supplies for power generation and domestic use are reported short in Maine, New Brunswick, and Nova Scotia, where streamflow has continued deficient for the past three months. The outlook for replenishment of storage reserves this winter is adverse.
Scattered areas of deficient streamflow noted in previous months have
spread and merged to cover a broad region extending from northwestern Arkansas
and southern Oregon to Nova Scotia. The drought continues to be severe in Maine and the Maritime
Provinces, where available storage supplies are critically low in some areas.

Runoff was excessive in the coastal regions of the Southeastern States.
Although high for the season, flood peaks were below the maximum of record.

Many Arkansas streams were in flood on January 1. Advance information
indicates that peak discharges approached or exceeded record-breaking
magnitudes.

The general pattern of streamflow in the West changed little during
December. Serious water shortages are reported in parts of southern
California, and the drought in southern Arizona—western Texas has shown little
improvement.

The drought in central and southern California and the southern
intermountains region continued unalleviated. Storage reserves for municipal
use and power are critically low in some areas. Preliminary reports of the
snowpack in the Sierra are disappointing.

Below-normal runoff persisted in the East over a broad region extending
from northern Mississippi to the Maritime Provinces. Snow depths are
generally much above normal, and low temperatures in January were the
principal reason for deficient streamflow. The outlook is for greatly
increased runoff when thawing occurs.

Floods of moderate intensity in western Oregon during the period January
6-9 produced peak discharges in the Willamette River basin that were generally
about two-thirds as great as during the December 1947 flood.

Runoff continued excessive in Florida. Flow at two index gaging stations
was the highest of record for January.
Floods over a broad region from Ohio to the Gulf of Mexico were of record-breaking magnitudes on many streams. In the Duck River basin in Tennessee, the flood exceeded that of 1902. Peak discharges in the Cumberland and Tennessee River basins in Kentucky and Tennessee approached or exceeded the maximum of record. Flood damage was considerable.

In California and Arizona the drought continues to be critical. Hydroelectric power shortages are acute. The outlook for irrigation water supplies in Arizona was improved by early March storms, but remains far from satisfactory.

The drought in the Northeast decreased in areal extent during February, but runoff continued seriously deficient in Quebec, northern New England, and New Brunswick. Storage reserves are at critically low levels in parts of southern Quebec and Maine.

The ice breakup in the western North Central States was followed by moderate rains later in the month over part of the area, causing minor floods in many localities. Peak discharges were generally not excessive, but crest stages on some streams were increased by ice jams.

Spring floods prevailed over a broad region extending from the eastern Great Plains to the Atlantic coast. The floods were most severe in the Great Lakes area, where record-breaking peak flows were observed. Major floods on large rivers did not occur. Monthly runoff was the maximum of record at five index gaging stations in the region.

Runoff continued deficient in California, Nevada, and part of Arizona. Conditions in northern California improved slightly during the last half of March, but in the southern part of the State, water supplies remain critically short. The outlook for irrigation water supplies in Nevada during the coming season is not favorable.

Streamflow continued above normal in the Southern States. New records of peak discharge were established in Louisiana, Georgia, and Florida.
Floods of unusual severity in three widely separated regions established many new records of peak discharge. Floods in the Red River of the North basin were generally the worst in 40 years. In the Ohio River basin, peak flows of noteworthy magnitude were recorded in the Licking and upper Green River basins in Kentucky. In the Georgia-Florida region, the floods were of greatest intensity in the Suwannee and Ochlockonee River basins.

In Nevada and Northern California, the outlook for water supplies during the coming season improved considerably. Texas streamflow was generally deficient, and storage reserves are reported unsatisfactory in two areas in the State.

The disastrous floods in the Pacific Northwest States and British Columbia resulted in great loss of life and property damage probably in excess of 100 million dollars. The present floods in the Columbia and Fraser River basins were exceeded within the last 100 years only by the historic flood of 1894.

Streamflow was excessive on the Atlantic coast from Nova Scotia to Virginia. Except for scattered flash floods on small streams, peak discharges were generally not of noteworthy magnitude.

Floods in North Dakota and Manitoba resulted in considerable damage to farm lands, particularly in the Assiniboine and Saskatchewan River basins. Runoff was notably deficient in the Louisiana-Tennessee region, but minimum flows were generally above record-low levels.
The disastrous floods in the Skeena, Fraser, and Columbia River basins reached almost unprecedented heights in late May and early June. Recession was generally steady thereafter, and some streams were approaching near-normal levels at the end of the month. East of the Continental Divide in Alberta and Montana, heavy rains augmented by melting snow in some areas, produced record-breaking runoff.

Floods in Nebraska and Oklahoma resulted from heavy local rains, but major floods on large rivers did not occur. In southern Texas the lower Rio Grande and tributaries reached near-record heights.

Runoff was deficient over a broad region extending from Iowa to eastern Quebec, but water-supply shortages are as yet unreported.

Ground-water levels are at seasonally record-high levels in index wells in southern New England and on Long Island. The outlook is for continuing above-normal runoff in this area.

Floods in widely separated regions of Kansas, Oklahoma, and Texas were of record-breaking magnitude in some streams, particularly in Neosho River in southeastern Kansas. Devils River in southern Texas, which was in flood during June, again rose to near-record heights.

Streamflow was deficient in the northern Great Lakes region. Production of hydroelectric power has been curtailed in the Northern Peninsula of Michigan.

The drought in the rice growing areas of Texas has reached serious proportions, and rationing of water has been necessary. In Louisiana some improvement was noted, but streamflow continued below normal.

Local flash floods caused considerable damage in Tucson, Arizona, and Lancaster, Ohio. Peak discharges were of noteworthy magnitude.

In the eastern Provinces and States runoff was seasonably variable. Flow was excessive in the West Virginia-Massachusetts region and in the Eastern Gulf States. Small areas of deficient flow were noted in New Hampshire and northern New Brunswick.
Streamflow during August followed the typical summer pattern, with both excessive and deficient runoff reported within relatively small geographic areas.

Of major importance is the continuing drought in the Northern Peninsula of Michigan. Hydroelectric power production has been seriously curtailed as storage reserves have become nearly exhausted. Ground-water levels are record low. In northern Wisconsin, reservoir contents are below normal.

Streamflow continued below normal in Louisiana and most of southern Texas. Ground-water levels continued to decline in certain areas of California, Arizona, and New Mexico.

Runoff was excessive over most of the Pacific Northwest, in the northern Great Plains region, and in parts of the Southeast. Flood peaks were not of noteworthy magnitude.

Runoff was predominately below normal during September over most of the United States and eastern Canada. Streamflow was greatly deficient over a wide region extending from Wisconsin to the Maritime Provinces, and in the southern California-Texas region. Ground-water levels continue below those of previous years in Arizona and New Mexico, and are particularly low in some sections of New England.

Hurricane floods again caused considerable damage in southern Florida, but September flood heights remained below those of October 1947.

Runoff was generally excessive in the Pacific Northwest and in small areas in Texas and the eastern Plains region.
October runoff was predominantly below normal in the United States and Canada. Streamflow was deficient over a broad region extending from the Mississippi River to the Maritime Provinces, and ground-water levels are subnormal in many areas. Shortages of water for power are particularly acute in Minnesota and upper Michigan. Ground-water supplies for domestic use are critically short in some parts of Minnesota and New York, and ground-water levels in upper Michigan are reported to be the lowest in 25 years. In the northern part of the region heavy rains are needed for reservoir replenishment before the onset of winter snows. In some areas, at least partial relief has been afforded by moderate to heavy rains early in November.

Runoff was also deficient in the Oklahoma-Western Gulf of Mexico region and in the southern California-Arizona region. Flow of Salt and Gila Rivers in Arizona continued record low, and ground-water levels remain below normal.

Runoff was excessive in the coastal regions of the Southeastern States and in scattered areas in the West and the northern Great Plains. In southern Florida, a September hurricane was again followed by another in October, as in 1947, but the 1948 flood, although severe, was not as damaging as that of a year ago.

Floods in the Southern States in late November and early December were of exceptional severity for the season. In Mississippi, Alabama, and Georgia, peak discharges were of record-breaking magnitude at a number of gaging stations. Peak flow of Ocmulgee River at Macon, Georgia, was 80,000 cfs, exceeding all floods since the record began in 1893. Maximum discharge of Alabama River during the present flood exceeded that of March 1929.

The drought in the Great Lakes-Maritime Province region was alleviated in many areas but streamflow continued deficient in Iowa, Minnesota, northern Wisconsin and Michigan, and in Quebec. Serious shortages still exist in eastern Quebec and in the western part of the Upper Peninsula of Michigan.

The safe yield of ground-water reservoirs in the Leona River Valley in Texas is being exceeded. The concentration of boron in irrigation water, which, if excessive, has been recently found to be damaging to citrus trees, has been investigated in the lower Rio Grande Valley in Texas.

Streamflow generally remained slightly below normal in the West. Storage reserves in certain areas of Nevada and Colorado are low, and heavy winter precipitation is needed for replenishment.
Floods of record-breaking magnitude in late December and early January followed heavy rains in eastern New York and western New England. Peak discharges exceeded those of 1913 and 1938 in the upper reaches of Hudson, Naugatuck, and Housatonic Rivers. Damage to both rural and urban property was extensive.

Runoff continued excessive in the Southern States following the floods of late November and early December. Monthly runoff of Virginia streams was generally the greatest for December since records began in 1895.

The drought continued in certain areas of the Great Lakes region and in Quebec. Surface water supplies remain notably deficient in Oklahoma and eastern Texas. Flow of most eastern Texas streams is less than 10 percent of average.

Streamflow in Arizona increased considerably as a result of late December storms. Contents of Sierra Nevada reservoirs serving the Central Valley of California is about 90 percent of normal. Ground-water levels continue far below normal in the main coastal basin in Los Angeles and Orange Counties. The snowpack in the Pacific Northwest is generally above normal for this time of year and in some areas the accumulation is exceptionally great.

The dominant feature of the water-supply picture for January is the snow cover in the Great Plains and intermountain areas of the West. A vital prerequisite for disastrous spring floods, the accumulated water content of snow, is present, but whether the floods will materialize depends on temperature and to some extent on precipitation during the next 2 months.

Streamflow was excessive in January over most of Eastern United States and Canada. Floods were general in the region extending from Missouri, Illinois, and Indiana to the Gulf of Mexico. Ground-water levels rose appreciably in most areas of Eastern United States during January. Water-supply conditions improved greatly in Arizona.

In contrast, flow of streams along the Pacific coast was notably deficient, with shortages of water for power reported in British Columbia and Washington where January was dry and cold. The mountain snowpack is normal or above, however, and supplies for irrigation and power during the coming season are expected to be satisfactory.

The use of ground water for public and industrial use in the Houston area has increased markedly, and withdrawals for irrigation and other uses in the western plains region of Texas are also much greater than in past years.
The major development during February was the decreasing of the flood threat in the northern Great Plains and in the West. In the Missouri River basin the spring thaw has commenced and local flooding has occurred, with rainfall, snowmelt, and ice jams as contributing causes. However, serious as local floods may be to areas concerned, a major Missouri River flood has not yet developed, principally because the thaw thus far has proceeded in an orderly south to north direction, and excessive rainfall has not greatly aggravated the situation. A continuation of the past weather trend will result in minimum flood damages. Of inestimable benefit to the entire region is the enormous amount of moisture that has seeped into the ground.

In the West the flood hazard has also greatly decreased during the past month. Much of the snow at lower elevations has melted or evaporated, with little effect on runoff, but ground-water storage has greatly increased. The above-normal snow at high altitudes assures favorable prospects for adequate replenishment of storage reserves for irrigation and power. Streamflow during February was notably deficient in British Columbia, and in parts of Nevada and California. Streamflow was generally well above normal from southern Ontario to the Gulf of Mexico.
Severe flooding occurred during April in the Souris and Pembina Rivers in North Dakota and Manitoba as the spring thaw moved north. Runoff and ground-water levels continue above normal in the central Great Plains States. Peak stage of Missouri River was record high at two downstream gaging stations, but maximum discharge was less than that previously known.

Surface- and ground-water supplies continue deficient in northern Wisconsin and the Upper Peninsula of Michigan. Above-normal precipitation is needed in the Upper Peninsula to avert a possible serious shortage of hydroelectric power during the coming summer.

In the West, flow of snow-fed streams was generally well above normal, and the spring rise is underway. The outlook for water supplies continues good. The flood potential in the Columbia River basin has diminished but cannot yet be completely disregarded.

In the West excessive runoff prevailed throughout the Columbia and Fraser River basins; seasonal peaks occurred May 16-18 but no damaging floods were reported. Subnormal flow of Colorado River reflected the deficiencies centering in the Rocky Mountains in Colorado.

Deficient ground-water levels and streamflow were reported in northern New York, New England, southern Quebec and in the Maritime Provinces. Storage reserves (except in southern Quebec) are in good condition and no shortages are imminent.

Ground-water levels showed sharp declines with the beginning of seasonal pumping for irrigation, air conditioning and industrial processes. In many heavily pumped areas as in New Mexico, southern California, the High Plains of Texas, and the Louisville, Kentucky, area, the pumping season began with levels lower than in past years.

Record-high floods, with great property damage, occurred on May 17-20 on the Washita and Cimarron River basins in Oklahoma and in the Trinity and Brazos River basins in Texas.
Widely scattered minor floods resulted from local heavy storms. In mid-June, floods that exceeded those of August 1910 were recorded in some Tennessee River basin headwater streams. The floods were particularly severe in northwestern Virginia and in the South Branch Potomac River basin in West Virginia.

Floods in Arkansas River in western Kansas were of noteworthy magnitude. Local floods also occurred in Iowa, Idaho, Indiana, and Texas. Runoff was well below normal in the Eastern States and Provinces, but only in southwestern Ontario were shortages particularly acute. Water supplies elsewhere in the region remain generally favorable.

In the West, flow of Colorado River and Rio Grande were well above normal. Runoff in Alberta was record low for June. Reservoir supplies are generally satisfactory for this year, but short carryovers appear probable in Montana and Nevada.

The drought in the Northeast continued unabated in July. Although streamflow was the lowest of record for July at many index gaging stations, daily discharges were well above the minimum flows of record. Ground-water levels are generally far below normal.

Runoff was excessive in the Southeastern and Gulf States. Major floods did not occur, but many small streams exceeded bank-full stages as a result of heavy local showers.

Ground-water levels declined markedly in Louisville, Lansing, and Milwaukee, where ground water is used extensively for air-conditioning and municipal purposes.

In the West, flow of Colorado River continued excessive. In contrast, Columbia River receded much more rapidly than usual following the spring rise. Favorable precipitation and surface water supplies temporarily reduced the draft on ground-water storage in New Mexico, and the decline in the water table in the areas of heavy pumping was generally less than usual for July.
Ground-water levels and streamflow in the West generally receded by more than seasonal amounts. The flow of Colorado and Columbia Rivers was subnormal.

Development of ground water in the Yonna Valley near Klamath Falls, Oregon, began in 1942, has yielded supplies for irrigation farming in this valley formerly usable only for dry farming and grazing.

The drought in the Northeast continued unabated in August. Ground-water levels and streamflows were reported lowest of record for August at several locations. Storage reserves were heavily drawn upon to supplement streamflow for power generator and municipal supplies.

Excessive streamflow occurred in the Southeastern States, in part as a result of a tropical hurricane that crossed the coastal States on August 26-28. No major floods were reported.

The general trend in water supplies was toward normal during September. Major floods did not occur, and the lingering drought in the Northeast was at least partially ameliorated in some areas.

In the Southeastern States runoff continued excessive, mostly owing to carryover from the hurricane of late August. Ground-water levels were generally high.

The drought area in the Northeast diminished in areal extent during September. Some improvement in surface-water supplies was noted, but ground-water levels in many areas are far below normal—shortages of water supplies were not reported.

Water supplies in the West averaged somewhat below normal. Flow of Columbia and Colorado Rivers was substantially below normal. Ground-water levels in areas of heavy pumping generally rose as the demand decreased with the end of the irrigation season.
Streamflow throughout Canada, New England, and the Southwest was generally below normal. Elsewhere streamflow was generally above normal with excessive runoff in the Great Plains and in the South, where local floods occurred.

Record-breaking floods occurred in streams in and around Houston, Texas, and local floods in North and South Carolina were the highest since at least 1940.

In the Northeast, drought conditions continued unabated with prospect of improvement dependent upon above-normal precipitation.

Deficient runoff in southern Alberta, southwestern British Columbia, and southern California continued with little change.

Runoff was below normal over a broad belt extending from Quebec and Maine to Texas and California. Many areas of deficient runoff were reported. The two drought areas in the Northeast and Great Lakes region have spread and merged. The outlook is for continued drought in the Northeast unless rainfall or snowmelt is well above normal for December.

Shortages of water reported in the New York City metropolitan area appear to be caused by increased use of water rather than severe drought. In Massachusetts where runoff dropped to new lows for November, metropolitan areas with adequate storage capacity are not encountering any difficulty.

Serious floods occurred at Vancouver and in surrounding areas of British Columbia and Washington.

Above normal runoff in the Southeast occurred largely as a result of excessive October precipitation.
The serious New York City water supply situation was not alleviated during December. A great increase in water use during recent years combined with a moderate drought to produce a severe shortage in the Nation's largest city.

Deficient streamflow persisted in the coastal region from Massachusetts to New Jersey, and ground-water levels on eastern Long Island continued to decline.

Streamflow increased generally over a broad area from the Maritime Provinces through New England to the Great Lakes region. Some areas of below-normal runoff persisted, but excessive runoff was widespread in other areas as a result of moderate rains and high temperatures that produced some snowmelt.

In the West, streamflow was mostly near or below normal. Storage reserves are generally satisfactory except in Nevada.

Reservoirs in the New York City system have benefited from the above-normal runoff that was quite general throughout the Northeast.

Streamflow was below normal along the coast from Massachusetts to Alabama with deficient runoff in several small areas.

High water and floods prevailed from the Great Lakes area to the Gulf of Mexico. New maximum flood discharges were recorded in Indiana, Illinois, Mississippi, and Alabama. Most of the larger rivers, including Ohio and Mississippi Rivers, were high but did not approach previous maximum stages.

In the West streamflow and snow cover were reported near normal or above, except in Canada, southern California, and Arizona where streamflow was deficient.
Floods and high water prevailed generally from the Great Lakes region to the Gulf of Mexico. Record-breaking floods occurred in small areas in Ohio, Indiana, Missouri, and Louisiana. Monthly runoff of many streams was record high for February.

Runoff was deficient from Wisconsin and Iowa to Montana. In the eastern part of that region runoff has been below normal since last summer.

Throughout the West streamflow was generally well above normal except in parts of Canada and Southwestern United States.

Streamflow was deficient in the Southeast with a new record-low February discharge in Alabama.

Ground-water levels in New York and Connecticut continued the rise that started in December 1949. The outlook for normal spring runoff in the Northeast has improved greatly over a month ago.

The spring breakup started in the North Central States. Storms in late March increased the flow, and moderate floods resulted in eastern North Dakota, southern Minnesota, and Michigan. Prospects are that spring runoff will be well above normal throughout the region, for a good snowpack remains in most areas. Ground-water levels are generally favorable, and if snowmelt is gradual, substantial accretions to ground-water storage may be expected.

Floods and high water persisted in parts of the eastern Texas-Alabama region, in contrast to the continued deficient runoff in the southern Atlantic Coastal Plain.

The New York City water-supply situation improved substantially and moderate floods occurred in upstate New York. Ground-water supplies in northern New England have improved, and are now near normal.

In the West, flow of Columbia River continued excessive--streamflow in the coastal areas of British Columbia, Washington, and Oregon was well above normal. Colorado River was above normal, but surface-water supplies in central and southern California and Arizona and New Mexico were notably deficient.
Major floods occurred in the North Central States, Manitoba, and Ontario. Red River of the North at the international boundary was reported to have reached the highest stage since 1826. Peak discharge of Missouri River at Sioux City was greater than in 1943.

An above-normal snowpack and delayed melting are causing great concern in the Pacific Northwest lest sudden warm weather cause damaging floods.

With only minor exceptions, runoff was below normal throughout the Southern States.

New record-breaking floods following close after those in April occurred in the North Central States and Manitoba. The crest of the flood in Red River of the North reached Winnipeg May 19. Mississippi River in Minnesota also reached new highs.

Spring runoff is very late in the Northwestern States and western provinces. Warm days and cool nights during May have caused some snowmelt without large floods, but the amount of snow remaining and the lateness of the season makes large damaging floods still possible.

Streamflow continues deficient in the Southwest, with runoff in Gila River basin the lowest for May in more than 10 years.

The New York City water-supply situation was apparently somewhat improved with reported reservoir storage at 93 percent of capacity.
Streamflow in the Pacific Northwest was sustained at high levels during June, but extraordinary floods did not occur. Apparently most streams have passed their seasonal peaks and insufficient snow remains to cause concern for large floods from that source.

Winnipeg River reached a record-high stage and runoff continued high in the Minnesota region as most streams receded slowly from the record floods of April and May. Local floods of record-breaking size occurred in small drainage basins from Pennsylvania to Nebraska. The flood of West Fork River in West Virginia exceeded the 1988 maximum.

Although runoff for June was well above normal along much of the Atlantic slope, end-of-month flows were generally below normal. Deficient runoff continued in Nova Scotia with a new record for June in St. Mary River.

Drought conditions continue in the Southwest.

Ground-water levels declined seasonally where there was heavy pumping for air conditioning.

Runoff was excessive over a broad area from Hudson Bay to the Gulf of Mexico. No major floods occurred in any large stream but severe flash floods hit many local areas particularly in Wisconsin, Iowa, and Nebraska. Winnipeg River and Red River of the North remain high following the spring floods.

Streamflow was excessive in the Pacific Northwest and much of Utah and Arizona; in southern California and New Mexico it remains deficient.

Runoff was deficient from southern Maine to eastern Ontario and ground-water levels were also generally below normal. Wells in northern New York were so low that hauling of water for livestock was reported. The outlook for August is that streamflow in central New England will not be more than half of normal unless there is above normal precipitation.

In the South, streamflow was generally near normal or above, except in eastern Georgia, and in southern Florida where ground-water levels in the Everglades area were the second lowest of record and the lowest since 1945.
Runoff was excessive over a broad region extending from Nebraska, Missouri, and Kentucky to the Gulf of Mexico. Streamflow was record high for August at 7 key gaging stations. Few notable floods were reported, however, and discharges were generally much less than those often occurring at other seasons.

The drought in the Southwest has returned in greater intensity. Reservoir contents are seriously low in some areas. Colorado River water was being used for irrigation and ground-water replenishment in lower Santa Ana River basin in California. Ground-water levels continued to decline in some areas of New Mexico.

Excessive runoff in the Pacific Northwest and in Red River of the North basin showed the effect of late spring floods. Storage in Stave Lake in British Columbia is greatly above average.

Runoff was deficient in South Carolina, Georgia, and Florida, reaching drought proportions in Georgia, but in some areas conditions were greatly improved by monthend rains.

Runoff in the United States east of the Rockies was generally very high for September. Streamflow at 12 key gaging stations was the highest ever recorded for September, although quite low compared with the high flows that normally occur at other seasons. Noteworthy local floods were reported in New York, Maryland, Virginia, North Carolina, and Kentucky. In the rice-growing area of Louisiana, ground-water levels recovered as much as 8 feet during the month.

In contrast, streamflow at three key gaging stations in Quebec was record-low for September, although not particularly low compared with normal late-winter discharges. Flow of Kissimmee River in southern Florida was also record low; the usual September hurricanes were lacking this year.

The drought persists with little change in the Southwest. In Santa Barbara County, California, ground-water levels are reported record low. In the Pacific Northwest runoff remained above normal, except in British Columbia and Alberta where it was slightly subnormal.
Runoff was deficient in most of the eastern Provinces, southern New England, and New Jersey, and was below normal generally in the Northeast and much of the Great Lakes region, but no shortages of water have been reported. Ground-water levels were also well below normal in many places.

In the West, the contrast between excessive and deficient runoff increased. Floods occurred in western Oregon and northern California and flow at several gaging stations in Arizona reached new lows for October. Ground-water levels continued to decline in Santa Barbara and Los Angeles Counties, California.

Runoff over most of the Central and Southern States was excessive, but only in comparison with normally low October streamflow.

Floods and high water occurred in the East and in the West. In Pennsylvania and New York floods reached new maximums in many areas but in New England and the Maritime Provinces they were smaller than previous floods. In California and Nevada outstanding damaging floods occurred on the slopes of the Sierra Nevada. From Yuba River south to Kern River on the west and in Walker, Carson, and Truckee River basins on the east they were generally greater than any previously recorded. The city of Reno, Nevada, was hard hit with damage estimated at $4 million.

In response to the rains and floods, ground-water levels in the Northeast generally rose, but in Nevada no rise has been reported.

The drought in the Southwest continues with little change.

Runoff in Canada was above normal except for small parts of Ontario and Alberta.
December was a month of extremes but dominated by excessive runoff; at 12 key gaging stations it was the highest ever recorded in December and at 7 stations it was the lowest. Runoff was above normal at all but two of the key gaging stations in Canada. Scattered floods occurred in the Northeast, Ohio Valley, and the Northwest, with maximum or near-maximum flows in Maine, Virginia, Tennessee, and Nevada. Ground-water levels were also above average in northern New England and New York.

The drought in the Southwest remains critical. Storage reserves in San Carlos Reservoir on the Gila River are exhausted, runoff of most streams was seriously deficient, and ground-water levels in some areas were record low for December.

The drought in the Southwest continues with the area of deficient runoff increasing in upper Colorado River basin. Runoff and ground-water levels were record low for the month at several stations.

Runoff was near normal or above throughout Canada, except for a small area of deficient runoff in central Ontario.

Runoff was generally excessive in the Northwest and in Ohio River Valley; large floods occurred in the smaller streams of western Kentucky.

Runoff and ground-water levels were well below normal along most of the south Atlantic slope and Gulf of Mexico; drought conditions were reported in southern Texas.
Notable floods occurred in many streams in western Washington, and new record highs for February occurred at several key observation wells and stream-gaging stations in the Northwestern States and British Columbia where runoff and ground-water levels were excessive generally.

The drought in the Southwest continues to grow more serious as another month of new seasonal low runoff and ground-water levels is added to the record.

Runoff and ground-water levels were generally excessive from eastern Canada to the Ohio basin, much of the water coming from melting snow cover; Nova Scotia was practically clear of snow.

Drought conditions and deficient runoff and ground-water levels also occurred in Texas and in the Southeastern States.

Record-breaking local floods occurred in Iowa and several Eastern and Southern States. As the floods came at end of month the map showing total runoff for the month does not show the effect of these flood flows. Peak discharges were not outstanding but many were new highs in long records.

The drought in the Southwest continues unabated and the area of excessive runoff in the Northwest is considerably less than in previous months; in parts of Alberta and British Columbia the runoff was deficient.

Ground-water levels were generally above average in Northern States with record-high water levels in several observation wells. In Southern States, ground-water levels were quite low with record-low levels reported for many key observation wells.
Major floods occurred in Minnesota and upper Mississippi Rivers. Runoff and ground-water levels were generally well above normal throughout the Great Lakes States and New England.

Runoff in Canada was mostly above normal with record-high flows for April at four key gaging stations. Outstanding exceptions were the areas of deficient runoff in Nova Scotia and northwestern British Columbia.

High runoff from early melting of snow cover in Columbia River basin has reduced the flood potential there. Ground-water levels ranged from near normal to record high.

The drought in Texas and the Southwest persists. Ground-water levels at key observation wells and runoff at key gaging stations were record-low for April in many places. Flow of Colorado River at Grand Canyon dropped to 41 percent of normal.

Floods of record-breaking size occurred in Oklahoma and Kansas and ground-water levels and runoff generally were high over much of the midcontinent area.

Runoff was generally excessive in western Canada and in Columbia River basin in the Northwestern States; peak flow, however, of Columbia River at The Dalles was below normal, thus dispelling fears of a disastrous flood.

The drought in the Southwest was relieved slightly in Arizona by light rains, but reservoir storage there remains deficient.

Drought conditions prevailed in the Southeast as streamflow dropped off rapidly during the month owing to deficient rainfall.
Record-breaking floods and high ground-water levels occurred throughout much of the midcontinent area. Missouri River was above flood stage below Kansas City reaching a new high stage at Waverly, Missouri. Peak discharges of floods in the Smoky Hill River basin of Kansas were about double previous maximums at some places.

There was no excessive runoff in the West except in northern British Columbia. The drought in the Southwest continued with little change; levels in most wells were seasonally record low.

Runoff and ground-water levels continued low in the South with levels in several key observation wells record low for June.

Runoff in the Northeast was mostly below normal, the principal exception being eastern Nova Scotia. Storage in New York City reservoirs is below average.

The flood in Kansas and Missouri Rivers was the greatest in more than a century; Smoky Hill and Osage Rivers were the important contributors. Peak discharge of Neosho River at Parsons, Kansas, was exceptional considering the size of the drainage basin. Ground-water levels were generally quite high with many key wells record high for July.

Local floods occurred in the States bordering the western end of the Great Lakes, and runoff was excessive throughout most of the United States. Runoff in Canada was about normal, but there were some small areas of excessive and deficient runoff.

A serious drought was developing in Texas, and the drought in the Southwest showed little change. Deficient runoff continued in the Southwest.
The drought in the Southern United States spread in the East, became more intense in Texas, and continued with little change in the West, except for some relief in parts of central Arizona. Water resources were well above normal in the Northeast, northern midcontinent area, and in parts of the Northwest. Streamflow became deficient in much of British Columbia and continued deficient in parts of Quebec.

Runoff was deficient in most of British Columbia but elsewhere in the Northwest it ranged from about normal to excessive and ground-water levels were generally above normal. There was little change in the serious drought of the Southwest. In the Southeast the drought was relieved somewhat in the southern part of the area but became more serious in North Carolina. Streamflow and ground-water levels were low from Indiana to southern New Jersey and runoff was deficient in Quebec.

Runoff was excessive in the Maritime Provinces, New England, and the northern midcontinent States with ground-water levels following the same pattern.
Runoff and ground-water levels were generally high for the season in the Northwest and in the northern midcontinent and Great Lakes regions; new maximums for October occurred at five key gaging stations and 14 key observation wells.

Streamflow in Canada was well above normal except in parts of the Maritime Provinces, Quebec, and British Columbia. The drought in the Southwest continued, with some relief in southern Arizona; Texas remained drought stricken; and the drought in the Southeast moved northward to Pennsylvania and Ohio.

Runoff was predominantly above normal throughout most of the United States and Canada and ground-water levels in the United States were also generally above normal.

The drought in Texas continued with little change but there are indications that the drought in the Southwest is becoming less severe. The drought in the Southeast is now confined to the Carolinas. The high flows and high ground-water levels in the western part of the midcontinent area were mostly a carry-over from the summer floods, but in the eastern part they came from melting snows and rain.
High runoff in central Arizona and southern California indicates a break in the drought in those areas insofar as runoff is concerned. Reservoir storage remains critical in the Southwest except in parts of Arizona.

The drought in Texas showed little change.

Runoff was excessive in most of the Eastern United States and Canada with flow at many key gaging stations record high for December. No significant flood flows were reported, but a damaging flood occurred near Montreal as a result of backwater from ice. Ground-water levels also were mostly above normal with many new record-high levels for December.

Medium floods occurred in many areas, particularly in Nova Scotia, Pennsylvania, Ohio, Kentucky, Indiana, and Missouri.

Extensive damage in California resulted from overloaded drainage facilities and mudflows from steep hillsides, rather than from flooded streams.

Reservoir storage was increased by substantial amounts in major Arizona reservoirs that had been depleted by the drought. Heavy snow cover is reported in the high mountains of the Pacific Coast States.

The drought in Texas continued without relief and again reached into Louisiana.

Ground-water levels were mostly near normal or above outside the southern tier of States, and many were record high for January.
The drought in Texas continued with some relief along the coast. Deficient runoff of Fraser River in British Columbia also persisted.

Excessive runoff prevailed over much of Canada and Northern United States east of the Great Plains. Ground-water levels were also seasonally low.

In other areas, particularly the Southeastern States, runoff and ground-water levels were mostly in the normal range, an unusual event for such large areas.

Record-breaking floods occurred in scattered areas throughout the United States. In eastern Oregon they were the highest floods in about 40 years and in the Tennessee River basin in Georgia they were the highest since 1898.

Runoff in Canada was mostly near normal or above, except in Fraser River basin, where it was deficient for the eighth consecutive month, and on Vancouver Island.

The drought continued in Texas and returned in Louisiana. Ground-water levels were at or near record lows for March from Louisiana to southern California.

In the Great Lakes region, runoff was below normal over a substantial area for the first time in about a year.
Flooding and high water covered the United States to an unusual extent. The flood in Missouri River through South Dakota and Nebraska was the largest known to white man and was mostly the result of ice breakup in North Dakota and large inflow from melting snow in North and South Dakota. The flood in Milk River basin was a separate event of exceptional magnitude. The flood in Mississippi River above Keokuk, Iowa, was the highest on record and came from snowmelt in central and southern Minnesota. Outstanding floods occurred in the Salt Lake City area and noteworthy floods occurred in other parts of the Great basin and Snake River basin.

Runoff in Canada was about normal or above, but outstanding floods were reported only in Saskatchewan. In the Great Lakes area, ground water was at or near record-high levels in the upper part. Runoff was generally excessive, and Lake Erie was at its high mean stage since 1860, the beginning of the record. The drought persisted in only part of Texas, but ground-water levels remain low from Louisiana to California.

Runoff was excessive throughout most of the West and damaging floods were reported in Utah. Runoff was below normal only in northern Alberta. Ground-water levels in the Southwest remained low showing little recovery from the drought.

Local floods occurred in many parts of the midcontinent area, particularly in South Dakota and Texas. They also occurred in Maryland and Nova Scotia.

Runoff was in the normal range in the Southeast, an unusual occurrence for such a large area.
Drought in Texas and Oklahoma, with cities restricting use of water, was the outstanding hydrologic event during a month that lacked the usual number of extremes; there was only one new maximum and one new minimum monthly flow for June at a key gaging station. The number of new high and low ground-water levels was about the same as usual, however.

There was a record-breaking flood in a tributary of lower Hudson River, scattered minor local floods in Central States and a significant flood in north Saskatchewan River, Alberta.

Runoff of Colorado River at Grand Canyon was the highest in the 30-year record, but far below the flood of 1921. Runoff of Columbia and Fraser Rivers was normal.

Ground-water levels were generally below average throughout Southern United States and above average in the Great Lakes and northern Rocky Mountain region.

Water supplies in New England and the Southeastern States have not yet been hit by drought, although lack of rain and high temperatures have caused extensive agricultural losses. Runoff was predominantly deficient in those areas, but minimum flows were generally well above minimums previously recorded. Ground-water levels were mostly in the normal range and reservoir storage was not critically low.

The drought in Texas continued.

Runoff in Canada was mostly above normal.
The drought in Texas continued and spread into Oklahoma where shortages of water were reported in many sections of the State. Ground-water levels were generally below average in the southern midcontinent area, the Southeast, and northern New England.

Scattered floods in small streams and moderate rises generally followed in the wake of a hurricane that swept the Atlantic coast from South Carolina to Pennsylvania.

Runoff in Canada was above normal with few exceptions.

Extraordinary floods occurred in Colorado and Guadalupe River basins in Texas. Inflow to Lake Travis reached 840,000 cfs. Drought continued in other parts of Texas and Oklahoma.

Moderate floods along the Atlantic coast followed the hurricane of August 31-September 1. Runoff was record low for September at four key stations in the United States and one in Canada; at no station was runoff record high. Flow of Fraser and Columbia Rivers was below normal.

Ground-water levels were about average or below except in Northern States west of the Great Lakes.
The large part of the United States and Canada in which runoff was deficient and ground-water levels were below average was outstanding. The drought in Texas continued and spread. Water shortages were reported in many parts of the Southeast. For most of the area, however, the deficiency was not of drought proportion.

Minor floods occurred in southern Florida. There was some excessive runoff in both Canada and the United States but no new highs.

Runoff for the month was far below normal over most of United States and Canada. Slight increases in streamflow the latter part of the month were reported from many areas, but the increases were not enough to do much more than halt the receding flows of early November. Below-normal runoff in the Pacific Northwest caused some reduction in power generation.

Serious shortages of water were reported only in the drought areas of Texas and Oklahoma, in New Mexico and southern Arizona. Moderate floods occurred from New Jersey to North Carolina and in Arkansas.

Except for parts of the Northwest and a relatively small area along the central Atlantic coast, ground-water levels generally were below average.
Near record-low flow of Columbia River near The Dalles—less than 7 percent above the minimum December flow of 1936—would have occurred had it not been for the large releases of water stored for power use that provided for near-normal flow. Power storage in Columbia River basin is now low, but irrigation storage is mostly above average.

Flow of Fraser River at Hope, British Columbia, was record low for December. Runoff was also far below normal over much of Southern United States.

There are many other areas of excessive and deficient runoff shown on the map, but few outstanding flows occurred. There was no new maximum for December and only three new minimums.

Ground-water levels generally were average or above along the east coast from Virginia north, over most of the Great Lakes area and the northern part of the Rocky Mountain region. Levels generally were below average over most of the southern tier of States, the Ohio Valley, and parts of the Northwest.

Streamflow was above normal over more of the States and Provinces than it has been in many months. Major floods occurred in the coastal streams of northern California and Oregon. Record-high runoff for January occurred there and in Nova Scotia.

In the Southeast, there were substantial increases in streamflow. Deficient runoff continued in southern Arizona and the southern midcontinent region; runoff in eastern Quebec and central British Columbia was also deficient.

Ground-water levels were high in the Northeast and low over most of the South and southern midcontinent area.
The droughts in Arizona, Oklahoma, and Texas continued with little change.

In the eastern provinces and Northeastern States, runoff was generally excessive with flow at four key stations record high for February.

Some flooding was reported in Iowa and North Carolina.

Ground-water levels were generally above average along the east coast and in the northern Rocky Mountain region. Levels were below normal in large parts of the midcontinent region and the Southwest.

Floods occurred in the eastern States and Provinces; in Maine they were about as large as in 1936. Record-high ground-water levels also occurred in the Northeastern States.

Continued low runoff and ground-water levels in Ohio are causing concern. The spring breakup in the northern Great Plains is about over and practically no floods have occurred. There was some relief in the drought areas of Kansas, Oklahoma, and Texas.

The West was normal, except in parts of British Columbia and in the southern part where runoff was deficient and ground-water levels were record low.
Runoff was deficient at every key gauging station in Colorado River basin and flow at Grand Canyon was only 41 percent of normal. Flow of Columbia River was also well below normal. Excessive runoff occurred mostly in eastern Canada. Floods were reported in the Southeastern States but they came too late in the month to have much effect on the monthly flow. There was some relief in the drought areas of Oklahoma and Texas. Ground-water levels were mostly below normal outside the Great Lakes region and the Northeast.

Major widespread floods occurred in the Gulf States. Hardest hit was Louisiana where the flood is believed to be second only to the great Mississippi River flood of 1927. Local floods occurred also in New York, Pennsylvania, Virginia, Kansas, Montana, Oregon, and other States. Runoff was deficient in Colorado River basin with flow of Colorado River at Grand Canyon record low for May. Parts of Texas and Oklahoma remained drought stricken, and runoff was low in Quebec and Nova Scotia. Ground-water levels in key wells with few exceptions were below average in the southern half of the United States and above average in the northern half.
Outstanding floods occurred in the Northern States from Mississippi River to the Continental Divide, and in the adjacent Provinces of Canada. Some flood peaks in Montana and Alberta were the highest since 1908.

The drought in Oklahoma and Texas continued with little change. Some streams were at or near record-low flows for June. In the Southwest, the area of deficient runoff was less than a month ago, but San Carlos Reservoir in Arizona was practically empty.

The pattern of ground-water levels in relation to average, as shown by key wells, closely followed that of streamflow.

Record-breaking floods occurred in a relatively small area along the Michigan-Wisconsin line and the intensity and extent of the drought in the Southwest and southern midcontinent area diminished appreciably. Elsewhere there were few significant hydrologic events. There was only one new record-low flow at a key station for July and one new record high.

Runoff in Canada was mostly below normal in the east and above normal in the west.

Ground-water levels generally were above average in the Northwest, northern midcontinent, and Great Lakes regions and were at or near record-low levels in parts of the South, southern midcontinent, and Southwest.
Deficient runoff in the Southeast caused restrictions on water use in some communities using surface-water supplies, but ground-water levels were mostly about normal or above. Runoff was also markedly deficient in eastern Canada and northern Maine.

At 12 key stations there were new extremes of runoff for August, 4 in Canada and 8 in the United States, but greater extremes have occurred at all stations in other months.

The drought in Texas was relieved appreciably and local floods occurred in several States.

Ground-water levels in the southern midcontinent region and in the Southwest were generally low.

Extreme dryness covered most of the United States and eastern Canada. At 16 key stations runoff was record low for September. Serious water shortages were reported only for a few scattered areas, particularly North Carolina and Ohio. Ground-water levels generally did not indicate the dryness that streamflow did.

Floods occurred in Florida as a result of hurricane storms, some effects of which extended north along the Atlantic coast.
Dryness continued to cover most of the United States and eastern Canada although relieved somewhat by rains late in October. At 10 key stations runoff was record low for October, and at most key wells ground-water levels were far below average. Conditions were critical mostly in the southern Appalachians and in the Southwest.

The drought appeared broken in much of Texas and Oklahoma as minor floods followed heavy rains. Floods in Florida exceeded previous high stages in St. John River basin.

Damaging floods occurred in southwestern Oregon and northern California; some peak discharges were the highest in 10 to 15 years. A record-breaking local flood occurred at El Reno, Oklahoma. Excessive runoff also occurred in Florida, New England, the northern midcontinent region, and in western Canada.

The drought continued in most areas. Insufficient water for domestic use was reported for Illinois and North Carolina.

Ground-water levels generally were considerably below average except for the Northwest, eastern Maine, southern Florida, and the upper Great Lakes area.
The drought in the Southwest continued with the possibility of spreading northward in California. In the Central States the drought appeared somewhat worse. In North Carolina normal use of water by municipalities was again possible.

Runoff in Canada was normal to excessive with few exceptions. The area of excessive runoff was somewhat larger than last month, but no outstanding floods occurred.

Moderate floods occurred in most of the Southeastern States and in northern California and western Oregon. Serious damage was reported in California.

The drought area in Central United States and in Arizona showed little improvement.

Runoff in Canada was normal to excessive except in parts of Ontario and Quebec.

Ground-water levels remained well below average in the Southwest and Central United States. In the Southeast, water levels generally rose but were somewhat below average.
The drought became more severe from Ohio to Oklahoma and ground-water levels and streamflow were below normal over most of the United States. Runoff in Canada was mostly excessive and in States near the boundary ground-water levels and streamflow were well above normal.

Runoff was above normal throughout Canada and excessive in most areas. Drought was the predominating story in the United States where streamflow and ground-water levels in the midcontinent region continued to set new record lows for the season.

A respite from the drought occurred in the Southwest, particularly in southern Arizona.
Some relief from the drought occurred from Oklahoma to Illinois. Record-breaking floods occurred in parts of Montana and Wisconsin. Runoff in western Canada was below normal—for the first time in a year in Manitoba. Ground-water levels were generally well below average, except in the Northeast and in some parts of the northern midcontinent region and the Northwest.

Relief from the drought in the midcontinent area continued with only a few scattered communities still short of water. Runoff in Colorado River basin became more deficient. Spring flood runoff in Kootenai and Flathead River basins was unusually high with peak flows in many places approaching or exceeding the peaks of 1948. In Canada, levels were high in Lake of the Woods basin and there were some reports of flood damage.

Ground-water levels generally were well below average except in northern New England, southern Florida, and parts of the northern midcontinent region, where they were high.
Record-breaking floods occurred in Iowa and Texas and outstanding local floods occurred in New York.

Runoff in western Canada and in Columbia River basin in the United States was mostly excessive but cool weather prevented new peak flows in Columbia River basin.

Deficient runoff occurred over much of Southern United States. Ground-water levels generally were near average or continued well below average except in northern New England, southern Florida, and parts of the Great Lakes and Pacific Northwest regions where they were high.

The drought covered most of the central and southern parts of the United States east of the Rocky Mountains, where deficient runoff and low ground-water levels were widespread. Water supplies were critical in only a few scattered areas.

A damaging flash flood occurred in West Virginia and record-high flows occurred in international streams on both sides of the continent—in Saint John and Columbia River basins.

Runoff in Canada was deficient only in eastern Nova Scotia.
The drought in Central and Southern United States east of Rocky Mountains continued as its areal extent decreased and its intensity increased. Water supplies were still critical in scattered areas.

Runoff in Canada ranged from normal to greatly excessive with runoff record high for August at five key stations. Only moderate rises in streams occurred in the Northeast following the damaging hurricane storm of late August.

Ground-water levels generally were well below average except in parts of the Northeast, northern Great Lakes region, and the Northwest.

The drought in the Southern and Central States reached major proportions in the Southeast from Mississippi to North Carolina. Many communities were short of water and some utilities and industries were affected also.

Moderate floods occurred in the Northeast as a result of the passage of Hurricane Edna. Runoff was mostly excessive in western Canada. Ground-water levels generally were at or near record-low levels throughout the southern two-thirds of the United States but were high in New England and the northern Great Lakes region.
Disastrous floods occurred in the Toronto and Chicago areas and in the Pecos River basin of New Mexico. Record-breaking floods occurred in upper Ohio River basin as well as in the Great Lakes States.

The drought in the Southeast continued, with increased severity in some spots but with some relief around the edges.

Ground-water levels generally were high in New England and the Great Lakes region but remained well below average over most of the southern two-thirds of the United States.

Runoff in Canada continued far above normal. Runoff in Southern United States continued far below normal, but water shortages were few and some streams in the Southeast that were dry during the summer have started flowing.

Ground-water levels were again at or near record-low stages throughout most of the southern two-thirds of the United States, but remained high in New England and the Great Lakes region.
Runoff continued deficient and ground-water levels were at or near record lows for the season over the southern half of the United States. Few water-supply shortages were reported, however, possibly because of greatly reduced demands for agriculture and cooling in winter. Of greater significance is the lack of replenishment of surface- and ground-water storage for use next summer.

Runoff in Canada was all above normal and excessive in many areas.

To an unusual extent there was little change in streamflow and ground-water levels during the month; the principal change was the occurrence of some below normal runoff in Canada. In Southern United States some increase from seriously deficient runoff occurred in scattered areas, particularly Kansas and Illinois.
High water and minor floods in parts of the Southeast have done much to relieve the drought, but in other parts of the Southeast the drought continued.

Subnormal runoff prevailed throughout the West except in western Canada where runoff was mostly excessive. Runoff was deficient throughout Colorado River basin and flow of Colorado River near Grand Canyon was record low for February.

Except for New England and the Great Lakes area, ground-water levels generally were below average and were at or near record-low levels at many places in the South and Southwest.

Record-breaking floods extended from West Virginia to northern Mississippi while in other parts of the Southeast runoff was critically low. The area of deficient runoff in the West continued to expand.

Ground-water levels were not significantly above average except in the New England to Great Lakes region. Runoff in Canada was mostly above average but dropped to a record low for March on Vancouver Island.
Nearly all of the West had deficient runoff, and many streams had record-low or next to record-low runoff for April; the part in Canada was closer to normal than in the United States. The situation was partly the result of a cold April and delayed snowmelt and there were some additions to the snowpack during the month.

Local floods occurred from extreme northwestern Florida to southern Louisiana.

Ground-water levels remained below average over most of the United States; only in the Great Lakes to New England region were the levels significantly above average.

Runoff and ground-water levels were much below normal in most of the United States and Canada. There were only ten key gaging stations where runoff was record low for May, but none where runoff was record high. In more than 85 percent of the key wells, the water levels were below average and in many of them the levels were at or near record-low stages for May. Water shortages were reported in only a few scattered areas.

Record-breaking or outstanding floods occurred in Saskatchewan, Manitoba, Colorado, Oklahoma, and Louisiana. Severe local floods occurred in Arkansas and Alabama.
Runoff was deficient in about one-third of the United States and above normal in about one-third. There were six key gaging stations where runoff was record low for June and two key gaging stations where runoff was record high for June.

Ground-water levels generally declined seasonally and remained below average over most of the United States.

Local floods occurred in many States, but few caused extensive damage and only in Kentucky were they record breaking. There was excessive runoff in the Northwest, Arizona, western Texas, and in a relatively narrow north-south belt centered on Mississippi River. In the remainder of the United States and Canada runoff was mostly well below normal, but few shortages of water were reported. Ground-water levels generally were below average in the United States except in parts of the North Central and Northwestern States.
The floods following the passage of hurricane storms Connie and Diane were record-breaking and destructive; many peak flows were double previous flood flows and in a few instances were 3 to 5 times previous floods in 30 or more years of record. The intensely flooded area extended from southern New England to northeastern Pennsylvania. Large rises in ground-water levels also occurred as a result of these storms.

General high water with one record-breaking flood occurred in Arizona, but elsewhere in the West there were no significant departures from normal runoff except in Canada.

Drought was developing in the extreme Southeast and central midcontinent areas, and runoff was deficient in most of eastern Canada.

Streamflow and ground-water levels were mostly about normal or below. Runoff was record low for September at some key gaging stations, but nowhere was it record high. Continued drought was reported only in parts of Florida and Texas.

High floods occurred in coastal areas of the Carolinas, in parts of Texas, and in a few local areas.
Destructive floods in Connecticut and New York hit almost the same area as the floods in August. Record-breaking floods occurred also in Oklahoma and Texas. Local floods hit Washington, Kansas, and Illinois. Ground-water levels were high in the central Atlantic coast region and in southern and central New England.

Deficient runoff was widespread in the Southwest, northern New England, and the Maritime Provinces, and drought was reported in Texas, Oklahoma, South Dakota, and Florida. Ground-water levels were below average over most of the West and South and in Maine.

Record-breaking floods in some Washington streams and moderate floods in Indiana were the outstanding hydrologic events in a month when outstanding events occurred rarely. Runoff was excessive in southern New England and the Middle Atlantic States, but mostly because of high previous flows.

In the southern half of the United States, runoff was almost entirely below normal with indications of a growing drought in the southern midcontinent region. Runoff was deficient also in eastern Canada. Ground-water levels were high in most parts of the Northeast, Ohio Valley, and the Northwest but were well below average in most of the South, the Southwest, and the midcontinent region.
Record-breaking disastrous floods hit California, western Nevada and Oregon, and central Idaho. Peak discharges were far higher than for previous floods, with some occurring on streams for which records go back more than 50 years. Ground-water levels in that area were also very high.

East of the Rocky Mountains runoff was below normal, except for a few small areas and in central Canada and nearby States, and was generally deficient. Runoff was record low for December at 15 key gaging stations. Ground-water levels were also predominantly below average.

Runoff was deficient and ground-water levels were far below average over most of the United States east of the Rocky Mountains except for New England; new record lows for January occurred at 15 key gaging stations and 24 key observation wells. Shortages of water, however, were reported only in a few small areas.

Record-breaking floods, up to three times the previous maximum, occurred in Nova Scotia. The floods in California were not particularly high, but runoff was excessive generally in Columbia River basin and south to the Los Angeles area.
Extensive floods occurred in California and local floods occurred in Oregon, Washington, Arkansas, Tennessee, and Kentucky. There were substantial increases in streamflow in the Southeast and adjacent areas. On the whole, however, there were few extremes of runoff.

Runoff in Canada was mostly in the normal range, but from Iowa to Texas and in Florida it was still greatly deficient.

Ground-water levels generally were below average throughout the South, Southwest, and midcontinent areas; above average in the Northwest and parts of the Ohio Valley and Atlantic coastal areas; and about average elsewhere.

Record-breaking floods occurred in western New York and northern Pennsylvania and also in central Idaho and eastern Washington. The drought continued in the southern midcontinent region and in the Southwest.

Runoff in Canada was almost entirely in the median range.

Ground-water levels rose to record-high stages in parts of the Northwest and declined to record-low stages in Maine; they remained well below average throughout most of the South, Southwest, and midcontinent areas and about average elsewhere.
The drought continued in the Southwest, Florida, and in the lower midcontinent region, although end-of-month floods in Texas may produce some relief there.

Other outstanding floods were reported only in Wisconsin and in Manitoba where damage was caused mostly by ice jams. Heavy runoff has started from the large snowpack in Columbia River basin.

Ground-water levels remained well below average over most of the South, Southwest, and midcontinent areas; they were above average in the Northwest and in most of the Northeast.

Snowmelt runoff in Columbia River basin produced floods that in some streams were the largest of record. Principal damage to date appeared to be the inundation of 30,000 acres of rich farmland by Kootenai River in Idaho. Smaller floods occurred in Manitoba, Ohio, Indiana, Illinois, and Texas, and local floods occurred in several other States.

The drought continued in Florida, southern Texas, and the Southwest. Ground-water levels remained well below average over most of the South, Southwest, and midcontinent areas; they were above average in the Northeast and well above average in the Northwest.
The drought continued in many parts of Southern United States. The peak of the flood in Columbia River near The Dalles, Oregon, was reached June 2; thereafter flood flows diminished steadily in most streams throughout the basin. Elsewhere there were no floods other than those of local extent from thunderstorms.

Runoff in Canada was above median almost everywhere except in northern British Columbia and the western prairies.

Ground-water levels continued substantially below average throughout the South and midcontinent areas. They were generally near average in the Northeast and Great Lakes areas and considerably above average in the Northwest.

The drought in the midcontinent region grew worse in Texas and Oklahoma but was relieved in Kansas and Missouri. There was little significant change in Colorado, New Mexico, Arizona, and California. The only deficient runoff in Canada was in western Nova Scotia.

Record-breaking local floods occurred in North Carolina, Maryland, and Iowa, and other outstanding floods occurred in Oregon and Alabama.

Ground-water levels remained well below average over most of the South, Southwest, and midcontinent areas, above average in the Northwest, and about average elsewhere.
Serious drought increased in the southern midcontinent region, and in the Southwest. It increased in southern Utah.

Floods were limited to widely scattered local areas.

The only deficient runoff in Canada was in northwest Alberta.

Ground-water levels remained well below average over most of the South, Southwest, and midcontinent areas, and were average or above elsewhere.

Drought grew to major proportions in the southern midcontinent area and in the Southwest. Record-low runoff and ground-water levels were widespread. Shortages of water were reported for many areas, particularly in Texas. Quality of water also declined; the chloride content of the Dallas, Texas, supply reached 1,100 ppm.

There were only moderate increases in streamflow and ground-water level in the East as a result of the passage of Hurricane Flossy.

Deficient runoff in Canada occurred only in streams draining the Rocky Mountains.
Drought covered most of the midcontinent region except in North Dakota and Canada. The most serious situation is the expected low stage of Mississippi River at St. Louis. The floods in central Texas had only local effect on the drought.

Record-breaking floods in east-central Florida caused damage but also brought relief from the drought. The only extensive area of excessive runoff was in the Northwestern States and northern California.

Except in the Northwest and scattered areas over the rest of the United States, ground-water levels were well below average.

The drought in Southern United States continued with little change. Steps were taken to meet the critical situation in Mississippi River at St. Louis. Shortages were increasing in Kansas and Oklahoma. The only excessive runoff in Canada was in Manitoba, and excessive runoff in Northern United States occurred to a much more limited extent than in recent months.

Localized floods that were record breaking at a few gaging stations occurred in eastern Maryland, Delaware, and Pennsylvania.

Except in the Northwest, Maine, and scattered areas over the rest of the United States, ground-water levels were well below average.
The drought from Illinois to southern California persists. It has been serious since 1942 in Arizona and New Mexico, 1945 in southern Utah, 1946 in southern California, about 1949 in upper Colorado River basin, since 1950 in Texas and somewhat later as it spread northeastward. Shortages in water supply were reported from scattered localities throughout the drought area. Runoff in Canada was practically normal, and the few departures from median runoff had little significance.

There were record-breaking floods in small streams in southwestern Oregon.

Record-breaking floods at end of January hit the southern Appalachian Mountains from West Virginia to Alabama. Peak discharges in small streams exceeded previous maximums in 30 years of record; floods in January in the larger streams were not extreme.

The drought in the midcontinent region changed little, and there were again few departures from median runoff in Canada. There was increased runoff in the Southwest.

Ground-water levels generally remained low in the South, midcontinent, and Southwest regions and were in the average range elsewhere.
In the Northwestern States record-breaking floods hit small streams and runoff increased generally. In the southern Appalachian Mountains end-of-January floods reached their peaks in some streams in early February, and runoff was generally excessive.

The runoff pattern in Canada continued almost without change. The drought in the midcontinent region grew worse in Kansas where many towns were facing serious problems.

Ground-water levels generally remained low over most of the South, midcontinent, and Southwest and were in the average range elsewhere.

Runoff in March was mostly uninteresting. The critical water-supply shortage in eastern Kansas was alleviated, and there were some moderate flood flows in parts of Texas. The areas of deficient runoff increased, but there was only one key station where runoff was record low for March, and none where runoff was record high. The departures from median runoff in Canada decreased.

Ground-water levels generally were below average except in the Northwest, extreme northern midcontinent, and parts of the Atlantic coast regions.
Floods and high water were scattered throughout a broad region from the Gulf of Mexico to the Great Lakes. Few peak discharges were record breaking or even outstanding. The greatest effect was the filling of reservoirs in the drought area, particularly in Texas and Oklahoma. Ground-water levels rose in many parts of the region, but in the drought area few rose above record-low levels for April.

An area of greatly deficient runoff developed in New England, Quebec, and southwestern New Brunswick. Ground-water levels were also very low in New England.

Floods that extended from Texas to the Great Lakes were record breaking mostly in Oklahoma and Kansas. Local floods also occurred in the Southeast and in Northwestern States. Ground-water levels rose in the southern midcontinent region but few rose much above record-low stages for May.

Deficient runoff covered most of New England and eastern Canada. In the Southwest the areas of deficient runoff decreased.
Record-breaking floods occurred in scattered areas at different times in Indiana, Illinois, Minnesota, South Dakota, Nebraska, Kansas, and Idaho. Damage was particularly high in Indiana, Illinois, and Minnesota.

Deficient runoff was confined mostly to the Northeast, particularly the New England States and Maritime Provinces.

Ground-water levels generally were below average except in parts of the Ohio Valley, the Northwest, and northern midcontinent region.

An outstanding flood occurred in the Chicago area and other record-breaking floods and high water occurred in scattered areas at different times in Central States and Canada. Greatly deficient runoff and very low ground-water levels occurred in Atlantic seaboard States from Massachusetts to Georgia.

Ground-water levels were below average over most of the southern half of the United States. They were at or near record-high stages in parts of Nevada and Michigan.
The area of deficient runoff increased along the Atlantic seaboard and in the Southeast, and new areas appeared in the southern midcontinent region. The areas of deficient runoff in Columbia River basin in Canada and in southern California showed little change.

Runoff was excessive in the upper parts of Colorado River and Rio Grande basins. Local floods occurred in eastern Quebec, in New York, and in New Mexico.

Ground-water levels remained below average over most of the United States except in parts of the Northwest, western Great Lakes, and northern midcontinent regions.

An area of deficient runoff along the Atlantic seaboard continued but was considerably narrowed by an area of excessive runoff extending from Louisiana into Canada. The areas of deficient runoff in the central midcontinent region, in the Columbia River basin in Canada, and in southern California continued and spread to adjacent areas.

Runoff was excessive in upper Colorado River basin and western British Columbia and local floods occurred in many States.

Ground-water levels remained below average over most of the United States and were record low in parts of the Northwest and Southwest.
Floods occurred in Texas where some streams reached the highest level since September 1936. The drought continued in southern California and in the Northeast; water supplies for municipal use were critically short in northern New Jersey.

Runoff in most of the United States and Canada, however, was either in the median range or the departure therefrom held little significance.

Ground-water levels generally were at or near record-low stages in the Northeast and Southwest, above average in parts of the Northwest and northern midcontinent region, and below average elsewhere.

Floods in small streams occurred throughout the Southeast and in the bootheel of Missouri; they were record breaking in Kentucky and Tennessee. Runoff was excessive throughout most of the Southeast and southern midcontinent region; it was record high for November at all key stations in Tennessee, Mississippi, and Louisiana. Runoff was above median throughout Canada except in southern Quebec, eastern Ontario, and southern British Columbia.

Some drought remained in the Northeast and water supplies were still short in northern New Jersey.

Ground-water levels in the United States generally rose seasonally except in the Northwest; however, levels in the Southwest and most of the Northeast remained well below average.
Excessive runoff predominated in the United States and Canada as a result of warm weather and high precipitation. Water shortages in New Jersey and Maine were alleviated, and runoff was record high for December at many key stations in the Northeast. Rivers reached flood stages in scattered areas in many States and in Quebec, but no serious damage was reported. Deficient runoff continued in parts of Arizona, Missouri, and Massachusetts.

Ground-water levels rose seasonally over most of the United States except in parts of the Northwest, northwestern Great Lakes region and northern Florida. Significant recharge occurred in New England, along the middle Atlantic coast, and in parts of the Ohio Valley and northern midcontinent region. In the Southwest, water levels remained below average.

Streamflow in the United States and Canada was mostly above median but at only four key stations was it record high for January and serious flooding occurred only in the coastal areas of southern Texas. The only large area of deficient runoff was in Arizona. Ground-water levels generally rose where there was any significant change from last month. On the whole, the month was relatively uneventful hydrologically.
High water and floods occurred in Oregon, California, Texas, and in smaller areas or amounts in several other States. Melting of snow cover appeared to be an important factor in producing most of the excessive runoff.

The only large area of deficient runoff was in the northern part of the Ohio River basin and extending west to Missouri. The only area of deficient runoff in Canada was in northern Ontario.

Ground-water levels, in general, showed little change from last month.

March was relatively devoid of important hydrologic events. High runoff occurred in the southern midcontinent region from Texas to Missouri and eastern Kansas; damaging floods occurred in the Missouri bootheel. High local floods occurred in central Alabama.

Runoff in Canada was about median or greater except in parts of Ontario, Quebec, and New Brunswick.

Ground-water levels showed only local changes from the general pattern of last month.
Record-breaking floods occurred on small streams in Maine, Louisiana, Arkansas, Texas, and California, and runoff was excessive in most of Eastern United States and Canada.

Deficient flow persisted in the western Great Lakes region and cold weather delayed snowmelt runoff from the Rocky Mountains in Northern United States and in Canada.

No significant changes in ground-water levels occurred.

Excessive runoff was general in the coastal and adjacent States and western Provinces. Records or near-record floods occurred in small streams of eastern Texas, Arkansas, Louisiana, and Mississippi. Runoff was record high for May at eight key gaging stations in the East. Snowmelt peaks occurred early in the West as a result of high temperatures.

Runoff was mostly deficient in the western Great Lakes region where it was record low for May at 4 key stations, 3 of which are in Ontario. Ground-water levels remained well above average along the Atlantic and gulf coasts but were generally well below average elsewhere.
Extensive flooding occurred in Texas, Indiana, and Ohio and scattered local floods occurred in several other States. Deficient runoff continued in Wisconsin, Michigan, Ontario, Quebec, and Vancouver Island.

Ground-water levels throughout most of the East were near or above average with record or near-record highs for June observed in Maine, Connecticut, Virginia, and North Carolina. Elsewhere with few exceptions levels were generally near or below average.

Noteworthy floods in small streams caused excessive damage in Missouri, Iowa, southern Illinois, and western Pennsylvania. Severe local floods occurred in Texas and Puerto Rico.

Flow was deficient in a large area of the West and in a small area in the Great Lakes region.

Ground-water levels generally rose in most areas where floods occurred but elsewhere showed little change other than seasonal.
Scattered local floods occurred in many areas but large areas of deficient flow remained, particularly in British Columbia, and in the Columbia and Colorado River basins.

The general pattern of runoff and ground-water levels was about the same as last month.

Floods occurred across southern Texas and Louisiana, and scattered local floods occurred in many other areas. Deficient runoff was significant in the belt from Michigan to the Dakotas. Departures from median were not outstanding in Canada.

East of Mississippi River ground-water levels generally were average or above except in parts of Wisconsin, Michigan, Georgia, and southern Florida. West of Mississippi River the levels generally were below average except in parts of Nebraska and Texas.

Flooding in Rio Grande in Texas and significantly deficient runoff from Ontario to the Dakotas were the outstanding events in a month when there were few events of hydrologic significance. Local floods occurred at Fort Worth, Texas, and near Topeka, Kansas.

Ground-water levels generally were above average in the Northeast, the Ohio Valley, and parts of Texas, far below average over most of the West and northern midcontinent area, and about average elsewhere.

Some streams rose above flood stages in Missouri and Kansas but there were few events of hydrologic significance in either the United States or Canada. Deficient runoff appeared to be dominant in the Southeast. Ground-water levels changed little from last month except in parts of Michigan where substantial rises occurred.
Runoff in most of the United States and part of Canada was below median or deficient but was excessive in the Northwest and at scattered areas elsewhere. Ground-water levels generally were above the average range in the Northwest, below in the Southwest and northern midcontinent, and in the average range elsewhere.

Severe floods occurred in Indiana, Ohio, and Pennsylvania. Floods also occurred in New York, Illinois, North Carolina, and Washington. Streamflow over most of the remainder of the United States and Canada was near median with large areas of deficient runoff.

Ground-water levels generally were well above average in the flood areas, were below average over most of the Southwest and parts of the midcontinent and Southeast, and about average elsewhere.
Severe floods again occurred in much the same areas of Indiana and Ohio that were damaged in February, but the flooded area shifted westward to include Illinois. Large areas of deficient flow remained. Ground-water levels generally were above average in the flood areas, in the Edwards Limestone area in Texas, and in parts of the Northwest, and were average or below elsewhere.

Floods occurred in northwestern Illinois at month's end, but below median or deficient flow prevailed over most of the United States and part of Canada. Significant rises in ground-water levels occurred in parts of Maine, Florida, and Iowa; elsewhere the levels changed little from last month.
Deficient flow continued in the Southwest, where flow of the Colorado River near Grand Canyon, Arizona, was the lowest for April in the 37-year record. Floods occurred in Wisconsin, Illinois, Indiana, and Michigan. Ground-water levels changed little except in parts of Michigan, Missouri, Maine, Pennsylvania, and North Carolina, where sharp rises occurred.

Runoff continued deficient in the Southwest and became deficient in the Northeast. Local flooding occurred at scattered areas in many States. Ground-water levels changed little during the month.
Runoff continued deficient in the Southwest and in part of the Northwest. Local flooding occurred at scattered areas. Runoff was excessive in large areas in the Northwest and Southeast, particularly in Florida. Ground-water levels generally changed little relative to average except in the extreme Northeast where record highs for June were observed in Maine.

Scattered local floods occurred, and large areas of deficient flow continued. In general the runoff pattern was similar to that in June. Ground-water levels were average or above in the central midcontinent area, along the southern Atlantic coast, and in parts of Texas and New England, but were below average elsewhere.
The earthquake in southwestern Montana blocked the flow of the Madison River and caused fluctuation in water levels as far away as Florida. Scattered local floods occurred, and some areas of deficient flow continued. Levels were below average over most of the United States, and the Atlantic coastal area was the highest above average during the standard period 1921-45. In September, ground-water levels changed little.

Scattered local floods occurred, and runoff was excessive in several areas. However, some areas of deficient flow occurred. Ground-water levels in coastal areas and in parts of the Northwest were above average.

Hydrologic effects of Montana earthquake continued into September.
In Canada runoff was deficient only on Vancouver Island. Excessive runoff occurred in British Columbia, Alberta, Ontario, and Nova Scotia. Runoff was generally above normal elsewhere.

In the United States runoff was excessive in parts or all of the three-quarters of the States and was record high for the month at seven key stations in five States. Some local flooding occurred in the Southeast and in the southern midcontinent region. Deficient runoff persisted in southern California but otherwise was limited to small scattered areas.

Significant ground-water recharge occurred in the States along the Canadian Border from Maine to Wisconsin and in parts of Florida, Texas, and the Northwest. Elsewhere levels changed little since last month.

Record-breaking floods occurred in Washington. Excessive runoff occurred in many areas, and seven key stations in six States or Provinces were record high for the month.

Runoff continued deficient in California and in small areas elsewhere. Ground-water levels were record high in Maine; above average over most of the Atlantic coastal region, parts of the western Great Lakes region, the Northwest, and Texas; but remained below average over most of the West and midcontinent areas.
Runoff was generally above median or excessive. The notable exception was California and adjacent areas where flow was deficient. Flood damage was severe along the New England coast as a result of a storm and high tides. Ground-water levels changed little from last month.

Runoff was generally above median or excessive, but deficient flow continued in California and adjacent areas. Runoff conditions have not changed significantly from December. Ground-water levels were record high for January in parts of Texas, Iowa, and Nebraska but elsewhere changed little.
Rain on melting snow at end of month caused local flooding in many parts of North Central and Northeastern United States. Central Florida experienced unusually high mid-March floods.

Runoff was above median or excessive in western Canada and near median or deficient in the East.

Ground-water levels rose in central Florida, western Pennsylvania, and parts of Iowa and Missouri, declined in upstate New York and New England, and changed little elsewhere.

The mild winter has resulted in above normal or excessive runoff in Canada.

Runoff was generally above median or excessive in Eastern United States. Heavy rains relieved the drought in northern California.

Ground-water levels generally rose in the Atlantic Coast States and were above average. Elsewhere no significant changes occurred.
Rain on melting snow caused excessive streamflow and flooding in many sections of Canada and the United States. Flooding was extensive in Iowa, eastern Nebraska, and northern Missouri, but in general previous peak discharges were not exceeded. In contrast large areas experienced deficient streamflow.

No significant changes in ground-water levels occurred.

Seismic waves from Chilean earthquake hit Hawaii on May 23.

Local flooding occurred in western Arkansas, eastern Oklahoma, north-central Kansas, central Iowa, Minnesota, Wisconsin, Upper Peninsula of Michigan, Ontario, and Quebec. Streamflow was generally below median or deficient in the West and in Texas. Elsewhere it ranged from deficient to excessive.

No significant changes in ground-water levels occurred.
Streamflow was deficient in much of the West and in Oklahoma, Texas, Louisiana, and Mississippi, but was generally excessive in the States and Provinces bordering the Great Lakes. Local flooding occurred in many places in the midcontinent, Great Lakes, and northeast areas. Except for substantial rises in levels in parts of the Ohio River Valley, ground-water levels changed little from last month.

Streamflow again was deficient in much of the West and the Maritime Provinces; areas of deficient flow in the Southeast have increased in size. Precipitation from tropical storm Brenda, near month end, caused rises on many streams along the Atlantic coast from Massachusetts southward to Florida, where severe flooding occurred in the Orlando-Tampa area. Ground-water levels generally declined seasonally except in parts of Florida, New Jersey, and Texas where the levels rose.
Streamflow again was deficient in much of Western United States and the Maritime Provinces; the area of deficient flow in Southeastern United States decreased in size this month. Level of Great Salt Lake was at a new all-time low since record began in 1851. The lowest flows of record for August were observed at many index stations in Arizona and California. August flow of the Colorado River near Grand Canyon was lower only in 1934.

Ground-water levels changed little; levels were below average over most of the West and record-low stages were reached in a number of key wells.

Hurricane Donna, during the second week of the month, caused excessive streamflow in Puerto Rico and along much of the east coast. Millions of dollars of flood damage occurred in Puerto Rico and Florida. Limited flood damage occurred elsewhere. The drought, aggravated by saltcedar growth in some areas, continued in the Southwest.

Substantial rises in ground-water levels occurred in parts of the Southeast and Northeast as a result of tropical storms. The levels were above average over parts of the western Great Lakes, central Texas, northern Idaho, and Washington, and were below average over most of the midcontinent and the West.
Drought continued in much of the West, but rain or snow in Arizona, Colorado, New Mexico, and Utah eased the condition slightly. Floods in south-central Texas drowned 12 persons and damaged crops and property. Ground-water levels declined seasonally in many parts of the United States. Levels remained at or above average along the Atlantic coast, most of the western Great Lakes region, and in the Edwards Limestone of Texas. Levels were below average in the Ohio Valley and in most parts of the midcontinent and the West.

Starting this month streamflow medians used in the Water Resources Review are for the reference period 1931-40 instead of the base period 1921-45 used previously.

Beginning with this issue the reporting of streamflow in the State of Hawaii will be a regular feature of the Water Resource Review.

Floods occurred in Oregon in the Willamette Valley and along coastal streams. The drought situation was relieved somewhat in many parts of the West. Deficient flow continued in most of Nova Scotia and in an area in southeastern Ontario, western New York, eastern Ohio, and central and western Pennsylvania.

Ground-water levels changed little except in the Edwards Limestone in Texas where levels rose to record- or near-record-high stages.
Floods occurred in scattered areas in Puerto Rico and in Hawaii on the island of Oahu. There were large areas of deficient flow in both the West and the East.

Ground-water levels were at or near record-high stages in parts of Texas, Oklahoma, Wisconsin, Michigan, and Florida. Levels remained below average over most of the West, northern midcontinent, and the Ohio Valley.

Streamflow was deficient in large areas in the West and the East and in smaller areas in the Midwest. Floods in British Columbia along the south coast caused 2 deaths, damage estimated at 2.5 million dollars, and severed 3 main railroads and the trans-Canada Highway.

Record-low stages for January were established in many of the Western States. Levels remained slightly to well-below average over most of the remainder of the United States. Ground-water levels were above average in north-central Florida, central Texas, the northern midcontinent and northern Great Lakes region.
Streamflow was excessive in the States along the gulf coast, in the Middle Atlantic States, and in the Pacific Northwest and continued to be deficient in the Southwest and in the Maritime Provinces. There were floods in eastern Louisiana, Mississippi, northern Georgia, Alabama, and Oregon--particularly severe in the last two States.

Ground-water levels were at record-low stages for February in places in the southern part of the Western States and generally below average in the remainder of the United States. Levels were above average in the Southeast, the Middle Atlantic States, parts of New England, and the northern Great Lakes region.

Severe floods occurred in western Alabama and Mississippi, and parts of 2 counties in western Wisconsin were declared flood disaster areas. Deficient streamflow persisted in a large area in the Southwest including Arizona, Utah, Nevada, and much of California.

Ground-water levels were at record-low stages for March in places in the Southwestern and Western States and generally were below average in the remainder of the United States. However, levels were above average in the Pacific Northwest, the Southeast, the Middle Atlantic States, and the northern Great Lakes region and were about average in New England.
Severe drought conditions persisted in the far West, with deficient streamflows being experienced in much of the Upper Rockies and northern Plains extending to lower Canada. Streamflow in most of the remainder of the United States ranged from about median in much of the Southwest to excessive throughout most of the East. The Maritime Provinces and much of lower Quebec and Ontario experienced deficient flows.

Ground-water levels were at or near record-low stages for April in much of the Southwestern and Western States. Levels generally were below average except in northern Washington and Idaho, the northern midcontinent and western Great Lakes region, parts of Texas, and most of the Eastern States, where levels were average or above.

Severe floods occurred in Illinois, Indiana, Kentucky, Ohio, Missouri, Kansas, Oklahoma, Arkansas, Maine, and New Brunswick. Several large areas in Kentucky and Illinois were declared disaster areas. The drought persisted in the far West, with deficient streamflows extending from Mississippi through the Southwest to California and northeasterward through the Upper Rockies to Saskatchewan and Manitoba.

Ground-water levels in key wells generally were above average in the East, parts of the western Great Lakes region, the midcontinent, and Texas, and northern Washington and Idaho. Levels generally were below average in the remainder of the United States.
The drought persisted from the far West northeastward through the Rockies and northern Great Plains to Saskatchewan and Manitoba, with the entire State of North Dakota being declared a disaster area. Streamflow was excessive in parts of the Northeast, Southeast, and western Canada. Ground-water levels in key wells generally were average or above in the East, the central part of the Midwest, and the Northwest; in the remainder of the United States levels generally were below average.

Figure 205. Streamflow and Ground Water Indexes June 1961.

The drought persisted in a large area of the West. Flash floods on several small streams in Charleston, West Virginia, caused the loss of 22 lives and extensive property damage. Local floods in Kentucky and Texas also caused loss of life and considerable property damage. Ground-water levels generally were above average in part of the western Great Lakes region. Levels in the East were average or slightly above. In the remainder of the United States, levels generally were below average.

Figure 206. Streamflow and Ground Water Indexes July 1961.
A local flood on the Little Sioux River in Iowa caused severe flooding and the loss of 2 lives. One in Tucson, Arizona, resulted in several deaths and considerable property damage. The level of Great Salt Lake was at a new all-time minimum. The drought continued in a large area of the West but improved in the Southwest.

Ground-water levels generally were above average in part of the western Great Lakes region and the East except for parts of New England and Florida, where, as in the rest of the United States, levels generally were below average.

Hurricane Carla caused record high tides on the Texas and Louisiana coasts but only local flooding in Oklahoma, Kansas, Missouri, Illinois, and Iowa. Flash floods in Utah caused loss of six lives. Blue River at Kansas City, Missouri, caused damage estimated at $9.5 million. Level of Great Salt Lake was at a new all-time minimum. The drought continued in some areas of the West, but rain alleviated it in many places.

Ground-water levels generally were above average only in parts of the northern Great Lakes region and parts of the Midwest. Levels generally were average to slightly above in the Middle Atlantic States and below average in the remainder of the United States.
Local flooding occurred on all the islands of Hawaii, with one death reported on Molokai, and damage to roads and residential areas throughout the State. Level of Great Salt Lake was at a new all-time low. The drought continued in some areas of the West and Southern Florida.

Ground-water levels generally declined seasonally and were above average only in parts of the northern Great Lakes region and parts of the Midwest. Levels generally were average to slightly below in the East and below average in the remainder of the United States.

Local flooding occurred on all islands of Hawaii except Kauai. Drought continued in Southern Florida and, although alleviated some in the Southwest, persisted in parts of that region. Level of Great Salt Lake increased slightly but was at a record low for November.

Ground-water levels generally rose, except in parts of the Southeast, where they declined. Levels generally were below average, however, except in parts of the Northeast and in the Western Great Lakes region, where they were above average.
The drought continued in southern Florida and in western Utah, Nevada, and southern California. Local floods occurred in many of the Gulf States. Level of Great Salt Lake increased slightly but was at a record low for December.

Ground-water levels in key wells generally declined except in the West and Southeast, where they rose, and were below average except in the western Great Lakes region, where they were above average.

The drought was alleviated some in southern California but continued in central California, Nevada, western Utah, and southern Florida. Level of Great Salt Lake increased slightly but was at a record low for January.

Ground-water levels in key wells generally rose but were below average except in the Northeast, where they were above average.
The drought was alleviated in the Southwest but continued in southern Florida. Ice jams and high water caused flood damage in many Western States. Heavy rains caused outstanding floods at month-end in Kentucky and Tennessee. Level of Great Salt Lake rose but was record low for February.

Ground-water levels generally rose except in the midcontinent and West where there was little fluctuation and in the Northeast where they declined and were below average.

Coastlines of many Eastern States were severely damaged by the great Atlantic coast storm early in March. At least 40 deaths were reported and damage was estimated at $200 million. As a result of the storm many shallow wells in the coastal area showed a substantial increase in the chloride content.

Ice jams and high water caused flood damage in many midcontinent and Southeastern States and in Quebec. Level of Great Salt Lake rose but was record low for March.

Ground-water levels in key wells generally rose and in general were above average except in the West where they declined.
The drought continued in southern Florida. Local floods occurred in South Dakota, Louisiana, New Brunswick, Nova Scotia, and several States in the Southeast. Two deaths due to drowning were reported in Nova Scotia. Level of Great Salt Lake increased slightly but was record low for April.

Ground-water levels were below average and in general fell except in the Northwest.

The drought continued in southern Florida. Abnormally low precipitation caused deficient streamflow in many of the Eastern and South Central States. Local floods occurred in Montana, North Dakota, Minnesota, Wisconsin, Nebraska, Kansas, Colorado, Wyoming, West Virginia, and Alaska. Ground-water levels in key wells in general fell except in the West, the northern parts of the midcontinent and western Great Lakes regions where they rose. For the most part a decline was accompanied by below average water levels.
The drought in southern Florida was broken. Streamflow was deficient in a large area in the Northeast. There were scattered local floods in North Carolina, Minnesota, Kansas, Iowa, Nebraska, Montana, Wyoming, Idaho, Colorado, Alaska, and Alberta. Storage of water for irrigation increased and generally supplies are adequate.

In most areas ground-water levels declined and were below average and in areas of heavy pumping were near record lows. An exception was southern Florida where they rose to above average levels.

Streamflow was deficient in a large area of the Northeast with some counties in New York being declared disaster areas. Record-breaking floods occurred along the coast of North Carolina. Local floods occurred in Illinois, Tennessee, Wyoming, Montana, and Colorado.

In most areas ground-water levels declined and were below average with a number of new lows for the period of record. An exception was the northern part of the midcontinent where the levels rose and were above or close to average.
Streamflow was deficient in large areas in the Southwest, Southeast and the Northeast but the drought was alleviated in the Northeast.

Ground-water levels in general declined and were below average or registered new monthly lows.

Heavy rains caused floods in scattered areas of central Texas and near Tucson, Arizona, with considerable damage reported. Floods also occurred on the west coast of Florida and Tennessee. Ground-water levels in general declined except in limited areas where they rose because of local recharge due to precipitation or decrease in pumping. They were below average in most areas with a number of new all-time lows, occurring in New Mexico and Texas.
A major Pacific coast storm caused widespread damage from San Francisco to British Columbia with over 46 deaths reported and damage estimated in the millions. Heavy rains near mid-month caused 5 deaths and local damage in south-central New York.

Ground-water levels followed a varied pattern ranging from rises in a few areas that had heavy rains to slow declines in most of the country with levels in many observation wells at near record low. Many deep aquifers that are heavily pumped had rises in water level—notably in southern California, the Portland, Oregon, area, southern Nevada, parts of New Mexico, central Kansas, the Milwaukee and Twin Cities areas, and southern Alabama.

Atlantic coast storms on November 3 and November 20-27 caused extensive beach erosion from Florida to Delaware. Heavy rains caused flood stages in southwestern Washington on November 30.

Ground-water levels in general rose except in the western Great Lakes area, Florida, western Massachusetts, southeastern New Mexico, and Wyoming, where they fell. They were below average except in the Northeast and midcontinent areas, Wisconsin, and isolated areas in New Jersey, North Carolina, Oregon, and Utah, where they were above average.
Heavy rainfall near mid-month caused minor flooding in southeastern Alaska.

Ground-water levels in general declined throughout the country with several new lows occurring. Exceptions were the Pacific Coastal States, southern Arizona, and southwestern New Mexico, where they rose. They were below average except in limited areas where local recharge brought them above average.

Record-low tides occurred in the Delaware estuary December 31 and January 1 when persistent downstream winds swept the river water out to sea. Water from a distant storm pounded the north coast of Puerto Rico on January 1. Severe floods were in progress in central California and much of Nevada at month end.

Ground-water levels generally declined except in limited areas of local recharge. They were below average except in limited areas in the Northwest, western Great Lakes area, and the Atlantic coastal area.
Major floods at the beginning of the month occurred in California, Nevada, Idaho, Oregon, Washington, and Montana. Seven western counties in Nevada were declared disaster areas by the President. Lake Superior was frozen over except for a few small areas--this is the only time that complete ice cover is known to have occurred. Lake Michigan also was mostly ice covered--the first time since 1936.

Destructive floods occurred in West Virginia, Virginia, Tennessee, Kentucky, and lesser floods in bordering States. Parts of West Virginia, Virginia, and Kentucky were declared disaster areas by the President. At least 17 persons lost their lives and damages were estimated in the tens of millions.

Ground-water levels rose in most of the country.
Runoff was deficient over much of the West, the southern midcontinent, the Southeast, and in other scattered areas. Minor flooding occurred in southwestern Quebec, Texas, Kansas, North Carolina, and Alabama. The level of Great Salt Lake was the lowest for April since records began in 1851. Ground-water levels rose in two-thirds of the observation wells and declined in the others but did not follow definite patterns.

Runoff continued deficient in a large area from southern California to Alabama, and along the Middle Atlantic coast, but at monthend rains on the Atlantic coast helped to alleviate a potential agricultural drought. Scattered local flooding occurred in Iowa, Kansas, Missouri, Alabama, Georgia, and North Carolina as a result of heavy showers. The level of Great Salt Lake was the lowest for May since records began in 1851. Ground-water levels generally declined and were below average.
Drought persisted in a strip from Alabama to southern California; agricultural damage may total hundreds of millions of dollars. Runoff was excessive in scattered areas. Flash floods occurred in areas where average runoff for the month was median or below. Flash floods took 5 lives in Nebraska, Utah, and Wyoming. Flooding was particularly severe in southeast Nebraska. A hailstorm deposited as much as 4 feet of hail in Denver, Colorado.

Ground-water levels generally declined and were below average.

Streamflow was deficient in much of the East and Southwest, and median in most of the north midcontinent, the Northwest, and the Pacific coast. Scattered areas of excessive streamflow resulted from severe thunderstorms. Notable local floods occurred at Hartsville, Alabama; Buffalo, New York; Hot Springs, Arkansas; and Gypsum, Kansas. Elevation of Great Salt Lake was 4,192.15 feet above mean sea level, record low for July since records began in 1851.

Ground-water levels declined and were below average. In many areas of heavy pumping they were lowest of record for July.
Streamflow was deficient in most of the southern half of the midcontinent area and in much of the western Great Lakes area and the Northeast; the Southwest where a pattern of deficient flow had persisted for many months experienced above median and even excessive flows in August. Level of the Great Salt Lake was lowest for August since records began in 1851 and was near the all-time low reached in 1951. Scattered rains helped alleviate drought in many areas without contributing to streamflow. Buffalo had the most severe flood in its history.

Ground-water levels declined in most areas, with Florida and Maine being notable exceptions, and in many areas of heavy pumping were lowest of record for August.

Runoff was mostly excessive or above median in the West, the north midcontinent, and parts of Canada, and either deficient or below median elsewhere. Extensive flooding occurred in the Beaumont-Port Arthur area in Texas as a result of torrential rains associated with Hurricane Cindy, and some local flooding occurred in Arizona. Level of Great Salt Lake was the lowest for any month since records began in 1851.

Ground-water levels rose in northern Oregon, eastern Idaho, Utah, Nebraska, Iowa, Wisconsin, and most of Georgia and Florida in response to general rains or seasonal decrease in pumping and declined in most other areas. Ground-water levels were mostly near or below average. Water-level data for Alberta has been added to the Review.
Runoff was deficient in a continuous area extending from the southern midcontinent to the Province of Quebec, including part of the Southeast and most of the western Great Lakes and Northeast. Median runoff was predominant in the West and much of the Southeast. Runoff was excessive in northern California and a few small scattered areas in the West. Although streamflow in many areas was low, it was generally appreciably more than the minimums of record established in previous droughts. Storage in reservoirs was well above minimum levels.

Ground-water levels declined in two-thirds of the observation wells and rose in one-third, and were below average except in a few scattered areas. In many places they were near the minimum level of record for October and in some cases were near the low for all months. Most observation-well records, however, are relatively short—having started after the droughts of the thirties and some not until the late forties or early fifties.

There was no striking change in the streamflow pattern from that of October. The area of deficient streamflow from Texas to New York and the Great Lakes persisted, with some modification, but in general the extremely dry conditions in fields and forests were alleviated somewhat by rains even though the rainfall was not enough to produce significant runoff. The largest areas of excessive streamflow were in California and the extreme Northeast. Storage in reservoirs was well above minimum levels.

Water levels declined in approximately one-half of the observation wells, rose in the other half, and were below average in about three-fourths of the wells.
Streamflow was deficient in a continuous area from the Southwest to New York and into eastern Ontario, and was record low for the month at a number of index stations. It was excessive in New Brunswick and Maine, and in several smaller areas in the Southeast and the far West. The month was abnormally cold over much of the country east of the Rocky Mountains. More than 4 inches of snow fell in New Orleans and vicinity on the 31st, the heaviest snowfall of the century for that area.

Water levels rose in the Northwest and declined in the Northeast and Southeast following no discernable pattern; they were generally below average.

Streamflow was excessive in South Carolina and most of Georgia, Alabama, and Florida, in western Oregon, and other smaller areas in the Northeast and far West. It was deficient in a large area in the Southwest, in a continuous area from Texas to Michigan and Ohio, and in several smaller scattered areas. Minor flooding occurred in some streams in western Oregon and in the Southeast.

Ground-water levels declined in the West and rose in the East. Ground-water levels ranged from near average to well below average except in the Northeast where they were near or above average.
The principal feature of the streamflow pattern was the growth of the two large areas of deficient flow—the area in the Southwest and the area extending from Texas to the Great Lakes. Streamflow was deficient in several smaller areas in the Northeast and the Northwest. It was excessive on the north coast of British Columbia and, as in January, was excessive in eastern Massachusetts and in the extreme Southeast. Minor flooding occurred in South Carolina. In the northern midcontinent and in the western Great Lakes States most of the ice cover on streams has melted; consequently, there will not be much of a spring breakup with the accompanying ice jams and rises.

Ground-water levels rose along the Atlantic seaboard south of Massachusetts, in most of the Southeastern States, and in Utah and Washington in the West. In the remainder of the country the pattern of fluctuation varied randomly but with two-thirds of the observation wells showing declines. Water levels were below average in most of the country except in the Southeast where observation wells were equally divided between below average and above average levels.

Streamflow was excessive in a continuous area from the Gulf of Mexico to New York, and deficient in a continuous area from California to the Great Lakes. It was deficient on Long Island and in small areas in southern Louisiana, eastern Ontario, and in the Maritime Provinces, and excessive in Quebec on the south shore of the St. Lawrence. Floods occurred in Quebec, New York, Pennsylvania and along the Ohio River, and damaging ice jams occurred in northern Vermont. The Alaska earthquake on the 27th caused loss of life and property damage along the Pacific coast as far south as California; it produced surges as high as 1.5 feet on some lakes in Arkansas.

Ground-water levels rose in most of the East and Midwest, except southern Florida where they declined. In most of the West they declined except in Washington and parts of Utah and Colorado where they rose. Water levels in half of the observation wells in the Northeast were below average and half above average. In the Southeast water levels in about two-thirds of the observation wells were below average, and in the western Great Lakes, the midcontinent and the West there was a preponderance of below average levels. Following the Alaska earthquake, water levels in Tennessee fluctuated over 2 feet and 10 feet in Alabama.
The pattern was exceedingly spotty, with many scattered areas of excessive or deficient streamflow. The deficient areas were predominantly in the West, the southern midcontinent, and areas adjacent to the Great Lakes. The largest excessive areas were in the Cochita-Jamestown Bay area in Ontario, the southern Great Lakes States, and in the Southeast. Flooding occurred in Indiana, southern Arkansas, an area in central Texas, and all the Southeastern States except Florida.

Ground-water levels declined and were below average in a majority of the observation wells in the West. Water levels rose in the northern half of the midcontinent area and most were below average. In the western Great Lakes region water levels rose but generally was below average. In the Northeast levels rose in about half of the observation wells but were generally close to or below average in most wells. In the Southeast water levels declined in about half of the wells and were below average in about the same proportion.

Streamflow was excessive in western Ontario and northern Minnesota and Wisconsin, in eastern Quebec and on Cape Breton Island, in a large area in the Southeast, and in several scattered areas in the West. It was deficient in British Columbia, in all of New England except Vermont, in southeastern Ontario, in a large area across Texas and New Mexico, and the other scattered areas. Precipitation was generally below normal. Local heavy rains in eastern Colorado caused high stages on the upper Arkansas River and some flooding in western Kansas. Some flooding occurred in east-central Nebraska from 2 inches of rain on the 25th, and Beaver Creek reached the maximum discharge of record.

Ground-water levels declined and were below average in a preponderance of observation wells in the Northeast and Southeast, except in Florida where they rose and were above average. In the northern part of western Great Lakes and midcontinent areas water levels rose and in the southern parts declined with a preponderance of levels being below average. In the West water levels in a majority of the observation wells declined and were below average.
Streamflow was excessive in much of the Northwest and north midcontinent, and in parts of Ontario, Quebec, and the Maritime Provinces, southern Texas, and the Southeast. It was deficient in much of the Southwest, in Wisconsin and Michigan, and most of the Northeast. In Montana floods estimated to have 100 years recurrence interval took many lives and caused damage estimated at $62 million. Severe drought is imminent in an area from Maryland to New York unless July rainfall is ample; several counties in Maryland have already asked to be considered drought disaster areas. The drought area was broken in most of Puerto Rico, and flash floods caused $250,000 damage at Guaynabo.

Ground-water levels in most observation wells declined and were below average, except in southern Florida where they rose and levels were above average and in Kansas, Nebraska, Wyoming, Idaho, Oregon, and Washington, where they rose and levels were near average. In many areas of heavy local pumping, particularly in Arizona and New Mexico, ground-water levels were at or near record lows.

Streamflow was excessive in many areas in the Northwest, the Southeast, in western and northern Ontario, and in the northern parts of the Maritime Provinces. It was deficient in a broad discontinuous band crossing the country from southwest to northwest. Severe drought conditions prevailed in parts of Texas, Oklahoma, and New York. At least 8 lives were lost in Arizona, Wisconsin, and South Carolina as a result of flash floods.

Ground-water levels in general fell except in: north-central Florida, Georgia, Alabama, and Mississippi; Wyoming and Idaho; and in scattered areas in southern Arizona, where they rose. They were generally below average except in Wyoming where they were above average, and in Washington, Oregon, Idaho, and North Dakota where they were near average. In most areas of heavy pumping in the mid-South and Southwest ground-water levels were at or near record lows.
Streamflow was excessive in large and small scattered areas. It was
deficient in a large area in the south midcontinent and in a continuous band
from eastern Montana to the Atlantic Ocean. Flows were record high for the
month at some index stations and record low at some others. Rainfall
associated with Hurricane Cleo caused flooding in Virginia, North Carolina,
South Carolina, Georgia, and Florida; wind damage in Florida was estimated to
be as high as $200 million.

Ground-water levels fell except in Florida, Georgia, West Virginia,
Arkansas, Kansas, North Dakota, Idaho, and north-central Alberta where they
rose. They were generally below average except in Wyoming, North Dakota,
Iowa, and South Carolina, Alabama, most of Florida, and part of Alberta where they
were above average. In several areas in the Southwest ground-water levels
reached record lows.

Great Lakes levels are at critical lows as Lake Michigan-Huron reached
lowest August levels in 104 years of record.

Streamflow continued excessive in the Southeast, sustained by rainfall
associated with two hurricanes. Floods occurred in central and southern
Texas, and water flowed in the West Nueces River near Bracketville, Texas, for
the first time in 3 years. Floods in southeastern Arizona caused $10 million
damage to the cotton crops. Deficient streamflow persisted from the Atlantic
coast between Delaware and southern Maine westward to the Mississippi River.

Ground-water levels declined except in Wisconsin, Minnesota, Iowa,
Missouri, Nebraska, North Dakota, and in scattered areas in other States, but
showing no definite pattern. Ground-water levels were generally below average
and in many areas of heavy pumping were near or at record lows.
Streamflow was excessive in the Southeast as a combined result of large carryover and rains associated with Hurricanes Hilda and Isabell and in the far western Canadian Provinces. Floods occurred in North Carolina, South Carolina, Georgia, and Mississippi. Streamflow was deficient in an irregular but continuous band from southern California to central New England and Quebec. Many new maxima and minima of record were established.

Ground-water levels fell in a majority of key observation wells except in Florida, Texas, New Mexico, Utah and Wisconsin. They were generally above average except in scattered areas following no definite pattern and in areas of heavy pumpage or low precipitation such as northern New Mexico, northern Texas, California and Utah. In several areas in the Northwest, levels reached record lows.

Drought continued in the Northeast and in parts of the East Central States, although rains late in November brought some relief. Crop damage in Illinois due to the drought was estimated at $95 million. Largest areas of excessive streamflow were in the Canadian Provinces and in central California and in the Southeast. Heavy rains caused local flooding in the vicinities of Cape Kennedy, Florida; Wichita, Kansas; and on the south coast of British Columbia.

Ground-water levels declined in most of the key observation wells throughout the country, except in scattered areas; southern California, Texas, Utah, part of Florida and Maine where they rose, due in part to local precipitation or decrease in pumpage. Levels were generally below average. Many levels were at new record lows for November, and some were lowest for any month since records began, particularly in the Northeast. There were also some new lows in Utah, Arizona, New Mexico and in the western Great Lakes region.
Northern California and western Oregon were devastated by record-breaking floods in late December. Loss of life was not definitely known but damage was estimated at hundreds of millions of dollars. The floods in California were in the same areas struck by the great flood of December 1955; the present flood equaled or exceeded that of 1955 in many places. New reservoirs reduced damage in some areas flooded in 1955. Streamflow was excessive in much of the Far West, and in parts of the Southeast, Northeast, and Canadian Provinces. Streamflow continued deficient in large areas, but drought was somewhat alleviated by rains.

Ground-water levels declined in a majority of the key observation wells in the Southeast and midcontinent areas, rose in the Northeast and western Great Lakes areas and followed no perceptible pattern in the West. They were in general below average, with many new December lows, particularly in the West and midcontinent areas.

Flood discharge occurred in Oregon, Washington, and Idaho as a result of warm weather and rain at high altitudes. In Oregon the floods on some streams were more severe than those of December 1964. Streamflow was excessive in most of the Northwest; elsewhere there were scattered areas of excessive and deficient streamflow. Drought conditions persisted in most of New York and New Jersey. Numerous landslides blocked highways and railroads in British Columbia and took at least 11 lives.

Ground-water levels generally rose in the Northeast, Southeast, midcontinent, and the West, and declined in the western Great Lakes region, but there were many exceptions to this pattern. Water levels for the most part were below average except in the Southeast where they were near or above average. Levels in many wells, particularly in the Southwest, but also in Connecticut, were at or near record lows for January. There were some levels that were record high for January in observation wells in Oregon, Idaho, Wyoming, and Alabama.

Levels of the lakes declined to their annual seasonal lows in the months of January-March. Superior declined seasonally but remained near the January average. Michigan-Huron declined slightly, reaching a new low for January but was slightly above the record low set in the spring of 1964. Erie had a sharp contraseasonal rise and although it was below average it was well above the lowest of record for January. Level of Ontario declined slightly to a new January low but was 0.3 foot above the record low reached in November 1964.
Streamflow was excessive in much of the Northwest and extreme Southeast, and in smaller scattered areas—mainly in the vicinity of the Great Lakes. Areas of deficient flow were mostly small and scattered from coast to coast. Blizzards were responsible for the loss of several lives in Illinois. Severe flooding occurred in the Sulphur River basin in Texas, and ice jams caused some flooding in Nebraska.

Ground-water levels generally rose in the Northeast, Southeast, western Great Lakes region and the Pacific Northwest, declined in the Southwest and showed no significant trend in changes in the midcontinent area. They were below average except in parts of the Southeast and the Pacific Northwest where they were above average. They were at or near record lows in many heavily pumped areas in Texas and the Southwest.

There were large scattered areas of excessive and deficient streamflow this month. Drought conditions persisted in Puerto Rico, and New Jersey, and grew worse in New York. In the Tennessee River basin floods damaged secondary roads in Haywood, Madison, and Swain Counties, North Carolina; and Pigeon River forced 200 people to evacuate their homes at Sevierville, Tennessee, and flooded the business district. Rain and ice jams, in some places the two combined, caused floods in southern Minnesota, Iowa, eastern Kansas and Nebraska, and northern Missouri.

Ground-water levels generally rose except in the West where some rose and some declined without any significant pattern. Ground-water levels were below average in the Northeast, western Great Lakes, the Southwest, and in scattered sections of the Southwest, and were above average in most of the Northwest, and part of the Southeast. Levels in many wells in the Northeast and in heavily pumped areas in many parts of the country were at record lows for March.
Streamflow was excessive in the Pacific Northwest east of the Cascade Range, in the northern midcontinent and Great Lakes regions, and in a smaller area in the Southeast. It was deficient in scattered areas, the largest of which comprised Quebec, most of the Maritime Provinces, and the New England States. The upper Mississippi River was in flood the entire month, reaching the highest stages since at least 1828. Along the Iowa border stages were as much as 5 feet above previous maxima. Flood damage was extensive. In Minnesota alone flood damage was estimated at $80-100 million. Owing to the effectiveness of the flood-warning system, loss of life was small.

Ground-water levels generally rose in the Northeast, Southeast, western Great Lakes and midcontinent regions and showed no significant patterns in the West. Levels were in general below average in the Northeast, the heavily pumped areas of the midcontinent and the West and were above average in the western Great Lakes and the Southeast.

The streamflow pattern was very irregular; it was excessive in a large area from Montana to the Great Lakes, and was deficient in a band from the western Gulf of Mexico to New Brunswick. Drought persisted in the Northeast. Local flooding occurred in Minnesota, North Carolina, Texas, Colorado, South Dakota, Iowa, and Nebraska. Record floods on windward Oahu caused damage estimated at several million dollars. Drought was broken in Puerto Rico and to a lesser extent in the U.S. Virgin Islands.

Ground-water levels declined in the Northeast, Southeast, and much of the western Great Lakes and midcontinent areas and showed no defined pattern of change in the West. Levels were generally below average in the Northwest, Southeast, and western Great Lakes but in the midcontinent and West showed no particular pattern except that in most areas of heavy pumping they were well below average.
Streamflow was excessive in large areas of the West, and was deficient in most of the Northeastern States. Record-breaking floods occurred in Colorado on the South Platte and Arkansas Rivers as a result of torrential rains; 18 lives were lost and flood damage was estimated to exceed $200 million. The Arkansas River flood extended into Kansas, where it was the greatest flood of record on the upper Arkansas River; 3 lives were reported lost, and flood damage was estimated at $25 million. Many streams in the Northeast were at or near record-low flows for June, and drought conditions were becoming critical in Pennsylvania, New Jersey, New York, and Massachusetts.

Ground-water levels declined in the Northeast, parts of the Southeast and midcontinent areas, rose in much of the Western Great Lakes area, and showed no definite pattern of change in the West. Levels were below average in the Northeast and in many parts of the area were at record lows for June. Elsewhere they were generally below average except for a band extending from Michigan west to Wyoming and Montana where they were above average.

The drought in the Northeast continued and streamflow was deficient in a large area including all of the Northeast and extending south to Virginia and West Virginia and westward through Ohio, northern Indiana, northern Illinois, the Lower Peninsula of Michigan, and southern Wisconsin. In the parts of Indiana, Illinois, Wisconsin, and Michigan where flow was not deficient, it was well below median. There was a large area of excessive flow in the midcontinent and West. Thunderstorms brought local floods in many States. Rains in northwestern and north-central Missouri of about 10 inches, and up to 21 inches at Rockport, caused record-breaking floods.

Ground-water levels declined in the Northeast and continued much below average. The lowest levels for July for the period of record were measured in many observation wells in Maine, central New England, and Connecticut. Levels in other regions generally declined seasonally with local exceptions due to heavy precipitation, such as Kansas-Nebraska and Alberta. Levels were generally below average except in an area extending west from the Upper Peninsula of Michigan to Wyoming and south from Minnesota to Kansas.
Streamflow was excessive in a large area in the West, and in other smaller areas. It was deficient in a large area to the Northeast, although drought was abated somewhat by rains in New York and Pennsylvania. Minor flooding was reported in Oregon, Idaho, Wyoming, Colorado, Utah, and Florida. Flow of the Delaware River at Trenton was the lowest for August since records began in 1912.

Ground-water levels declined slightly in most of the country, but rises occurred in upstate New York, in artesian wells along the north shore of Long Island, in the Brunswick area of Georgia, in parts of Florida, central Indiana, Utah, Montana, and in shallow aquifers in Ohio. They were generally below average but with many exceptions. In many parts of the Northeast and the West they were at record lows. Areas where they were near or above average were North Carolina, the Piedmont area of Georgia, Alabama, parts of Florida and Kentucky, North and South Dakota, in shallow aquifers in Iowa, in parts of Kansas and Nebraska where there was not heavy pumping, Montana, and much of Wyoming.

Streamflow was excessive in a large area including most of the Rocky Mountains, in another large area including most of the midcontinent and western Great Lakes regions and in Quebec and most of Ontario. There were scattered areas of deficient streamflow, but the area of deficient flow in the Northeast decreased in size compared with previous months. The drought in the Northeast was eased somewhat, but streamflow and storage did not in general increase. Hurricane Betsy crossed the southern tip of Florida causing some damage and then hit eastern Louisiana severely. In the Louisiana coastal areas and New Orleans, 80 lives were lost and flood damage was estimated to be in excess of a billion dollars.

Ground-water levels declined in most of the Northeast except in scattered areas where precipitation was near or above normal. In southeast Florida levels rose in response to rain from Hurricane Betsy. In the northern western Great Lakes and northern midcontinent regions levels generally rose and were above average. In the southern midcontinent region levels fell and were below average. Levels rose and were above average in Alberta, Montana, Wyoming, and part of Utah. In southern California, Nevada, Arizona, and New Mexico levels fell and reached new all-time lows in several observation wells.
Streamflow was excessive in a large continuous area from the Rocky Mountains to the eastern Great Lakes and Quebec and as far south as northern Texas and New Mexico, partly as a result of carryover from a wet September. Drought conditions were relieved somewhat in New York and Pennsylvania but remained critical in the Delaware River basin. Drought continued from Delaware to southeastern New York and western Massachusetts; streamflow in southern New Jersey was near record low.

Ground-water levels rose significantly in upstate New York and artesian aquifers on Long Island and slightly in some other parts of the Northeast; they remained far below average except in parts of Pennsylvania and upstate New York. In most of the Southeast levels declined seasonally but heavy local rains in southeast Florida caused levels to rise as much as 4 feet above average. Levels generally rose in the western Great Lakes region and were above or near average except in parts of Michigan and southern Indiana. In the northern midcontinent region levels were above average. In the South levels declined and were mostly below average. Levels were generally below average in the West except in central Alberta, parts of Montana, Wyoming, and parts of Nevada.

The drought in the East continued and was particularly severe in an area extending from Maryland and Delaware northward through eastern Pennsylvania, New Jersey, Long Island, and southeastern New York, Connecticut, Rhode Island, and Massachusetts. Precipitation in much of the area has been far below normal for the first 11 months of 1965. There were large areas of excessive flow in the midcontinent region and the West. High flows in the midcontinent region came mostly as carryover from previous months. Southern California had the most rain since 1900.

Ground-water levels declined generally in the Northeast and were below average. In much of the Southeast levels declined and were below average. In the western Great Lakes and midcontinent region, levels generally declined except in areas where pumping for irrigation has stopped, and were generally below average. Levels in the West rose; they were generally below average in New Mexico, Arizona, Nevada, California, and central and northern Utah and ranged from below to above average without any definite pattern in the rest of the region.
Streamflow was deficient in an area extending from Massachusetts, Rhode Island and Connecticut, south and west through Pennsylvania, West Virginia, Virginia, North Carolina, Kentucky, Tennessee, the northern parts of Georgia, Alabama, Mississippi, Arkansas, and central Texas. The drought intensified in much of the Northeast. Flow of the Potomac River and many streams in New Jersey and Massachusetts was record low for December. Streamflow was excessive in much of the West, the northern part of the midcontinent region, and the western Great Lakes. There were damaging floods in Tucson, Phoenix, and other parts of southern Arizona, in the Gila River basin of southwestern New Mexico, and in the Los Angeles-Ventura Counties area of southern California. There was also flooding in the Chicago area, minor floods in northern Indiana, and many ice jams in Wisconsin. A local flood on Oahu, Hawaii, caused one death.

In the Northeast ground-water levels were generally below average. In many observation wells in Rhode Island, southern Massachusetts, Connecticut, and New Jersey the levels were at or near the lowest of record for December. Levels rose in about half the observation wells and declined in the other half with no definite pattern. In the Southeast levels declined except in scattered areas and were generally below average. In the western Great Lakes levels rose and were near or above average except in southern Michigan, Indiana, and Ohio. In the midcontinent levels were above average in the north and below average in the south, and declined in most of the region. In the West levels rose or were unchanged and were above average in the north, and fell and were below average in most areas in the south.

Streamflow was deficient in an area extending across central Texas northeast to North Carolina and north through the Eastern States to the Maritime Provinces. At the end of January snow on the ground in Eastern and Northern States held appreciable amounts of water in storage. In northern Virginia water content of the snow was about 2 inches and in Maine as much as 8 inches. Streamflow was excessive in areas extending from Arizona and New Mexico north along the Rockies into Canada and northeast through the Central States to Ontario. Northeastern Arkansas experienced some of the worst flooding since 1927. Record low temperatures were observed in Alabama and North Carolina.

Rises and declines in water levels occurred in about equal numbers in the key observation wells throughout the country without any definite pattern, except that in many areas of heavy pumping for irrigation, levels rose because this is the off season. Water levels in the Northeast and much of the Southwest were well below average and were at record January lows in many observation wells. In the rest of the country water levels followed a random pattern of being below or above average but with a slight predominance of above average from the Great Lakes westward to the Pacific Northwest.
Streamflow was excessive in most of Canada and in an area extending southwest from the western Great Lakes region through parts of Iowa, Nebraska, and Kansas, into Wyoming, Colorado, and New Mexico. Streamflow was also excessive in much of the Southeast. Flooding occurred throughout many of the North Central States due to unreasonably warm temperatures and rain on snow. An ice jam 10 miles long on the Mississippi River at Davenport, Iowa, forced 1,000 people from the area. Streamflow was deficient in most of Washington and Oregon, in parts of California, and along most of the east coast from Delaware to Nova Scotia. Drought conditions persisted in parts of Massachusetts, Rhode Island, and the upper Delaware River basin.

Ground-water levels rose generally except in the northern parts of the midcontinent and western Great Lakes regions where levels declined in many key observation wells. Water levels were below average except in the southern part of the western Great Lakes region where they were above average. In many areas of heavy pumping, particularly in New Mexico, Arizona, Nevada, and California they were near February record lows.

Streamflow was excessive in a band across much of Canada and northern United States, in the Piedmont and Coastal Plain of the Southeast, and in part of the Southwest. Several counties in Georgia were classified as flood disaster areas due to floods caused by rains early in March. Record high flows occurred in Minnesota, and ice jams caused some flooding in Nebraska. Blizzards in the North Central States resulted in loss of livestock and damage to buildings and powerlines. Twenty-one persons lost their lives in Nebraska as a result of a storm on March 22nd. Deficient runoff occurred from central Texas northeast to the coast of New Jersey and Virginia. Drought conditions eased slightly in the Northeast coastal areas, but still persisted in Maryland and southern New Jersey. Eighty counties in Virginia were eligible for agricultural drought aid. Precipitation was below normal in most of the country.

Ground-water levels rose in the Northeast and western Great Lakes regions and showed a random pattern of rises or declines in the Southeast, midcontinent, and the West. Water levels in many areas of heavy pumping in the midcontinent and West continued at or near record lows.
Streamflow was excessive in most of the Provinces from the Pacific coast through Ontario. Scattered areas of excessive flow also occurred throughout the midcontinent region and the West. Streamflow was deficient along most of the Atlantic coast from Nova Scotia to North Carolina. Other areas of deficient flow occurred across the country. Record April low flows were observed on several streams in the Northeast and Southeast. Drought grew worse in Rhode Island, Massachusetts, Maryland, and Delaware. Torrential rains in north and central Texas caused major flooding and many deaths. Record flood flows also occurred in northern Minnesota. Precipitation was generally below average with rainfall occurring late in the month in most areas.

Ground-water levels declined in the Northeast and much of the West, rose in the Southeast and western Great Lakes region, and had a random pattern of rises or declines in the midcontinent region. Water levels were well below average and were at April record lows in much of the Northeast, were below average in the midcontinent region, and in the Southeast, western Great Lakes region and the West ranged from below to above average in a random pattern. In the West, water levels in many heavily pumped areas were at record lows and in many areas where there was little pumping, levels were at record highs.

Streamflow was deficient in the Northwest, in a large area of the central part of the continent, along the Atlantic coast between Massachusetts and New Jersey, and in small areas of the Southeast. Streamflow was excessive in an area extending from Ontario south through Minnesota into Iowa, and in an area extending from northeastern Texas east to North Carolina and West Virginia. Severe drought continued in Rhode Island and Massachusetts. Drought conditions were also reported in Nebraska and Kansas and near drought threatened parts of Oregon and Idaho. Some flooding occurred in Georgia, Louisiana, Nebraska, and South Dakota.

Ground-water levels rose in much of the Northeast, Southeast, and western Great Lakes regions and had a random pattern of rises or declines in the midcontinent and West. Ground-water levels were below average in much of the Northeast, midcontinent and West, were generally above average in the western Great Lakes region and had a scattered pattern ranging from below average to above average in the Southeast.
Streamflow was deficient throughout most of the West and in a wide band extending through the central part of the midcontinent region, to the East. Streamflow was excessive in parts of British Columbia, Ontario, North Dakota, Wisconsin, Iowa, South Carolina, and Georgia. Drought conditions affected agriculture in many States including Oregon, Wyoming, South Dakota, and Nebraska. Serious drought existed in Rhode Island, Massachusetts, Connecticut, New Jersey, on Long Island, and Pennsylvania. Hurricane Alma moved north from the gulf June 8-10 causing heavy rains and flooding through much of the Southeast. Local flooding from isolated storms occurred in several States in the midcontinent region.

Ground-water levels in most of the country declined seasonally and were below average. Water levels were at or near June record lows in many observation wells in Massachusetts, Rhode Island, Connecticut, New Jersey, Texas, New Mexico, and Arizona.

Streamflow was deficient or well below normal throughout much of the country. Only in the Northwest, in Ontario, in the Southeast and in small areas of Montana, Iowa, Ohio and Maine was streamflow either excessive or well above normal. Drought conditions prevailed in many areas across the country including Wyoming, southern California, Missouri, Michigan, Massachusetts, Rhode Island, Delaware, North Carolina, and Tennessee. Scattered rain showers during July prevented extreme drought conditions from developing in many areas.

Ground-water levels declined seasonally and were below average. In many observation wells in Massachusetts, Rhode Island, New Jersey, and central and western Maryland water levels were lowest of record for this time of the year and in some areas of heavy pumping in Texas, New Mexico, and Arizona levels were lowest for any month since records began.
Streamflow was deficient or well below normal throughout much of the West, in scattered areas of the Midwest, and along the Atlantic coast from Massachusetts south through Pennsylvania to northern Virginia. Streamflow was excessive in western British Columbia, eastern Ontario, all of Quebec, much of North Dakota, Minnesota, Texas, and Kentucky, and in small areas throughout the country. Record low and near-record low flows occurred in much of the deficient area of the Northeast. Heavy rains occurred in scattered areas throughout the country causing flooding in Colorado, New Mexico, Iowa, Nebraska, Arkansas, Kansas, and Texas.

Ground-water levels declined seasonally and were below average in much of the country. In Connecticut, on Long Island, and in parts of Maryland, water levels were at or near record August lows, and in many of the heavily pumped areas of Texas and the Southwest, levels were lowest for any month since records began.

Streamflow was deficient in scattered areas of the Northeast, extreme Southeast, and in much of the West. Streamflow was excessive in scattered areas across the country including most of West Virginia, large parts of Texas and Arkansas, and the coast of British Columbia. Drought continued in Rhode Island, Massachusetts, West Virginia, and Oregon. Record or near-record low flows occurred early in September in New Jersey, Maryland, and Virginia. Flooding followed general rainstorms at mid-month in Virginia and West Virginia. Local storms caused flooding in Washington, Oregon, Nevada, Wyoming, and Arizona.

Ground-water levels declined in the western Great Lakes region and most of the midcontinent region and had a random pattern of rises or declines elsewhere. Water levels were generally below average and were at or near record lows in some areas of heavy pumping in Arkansas, Oklahoma, Texas, Arizona, and Nevada.
Significant areas of excessive streamflow occurred in Alberta, eastern Ontario, northwestern Minnesota, the Upper Peninsula of Michigan, northeastern Nebraska, and in a narrow band extending from Arkansas eastward through Kentucky, West Virginia, Maryland, and Delaware. Areas of significant deficient flow occurred in western Ontario, northeastern California, most of Nevada, southern Utah and Colorado, most of Kansas, and parts of Illinois, Indiana, and Ohio. Drought conditions eased considerably in both the West and the East. Above-normal rainfall is needed in the Northeast, however, to eliminate the continuing threat of drought in Massachusetts, Rhode Island, and Connecticut, and parts of New York, Pennsylvania, and New Jersey. Contents of reservoirs throughout the country were generally below average.

Ground-water levels rose slightly in much of the Northeast and Southeast and declined in the other regions. Water levels were generally below average except in the Southeast, where they were near average.

Excessive streamflow occurred in Quebec, eastern Ontario, and a large area including southern Ohio, Kentucky, Tennessee, and northern Georgia. Smaller areas of significant excessive flow occurred in Maine, Minnesota, North Dakota, California, Oregon, and Alberta. Deficient flow occurred in western Ontario and in a large area of the southern midcontinent region including Kansas, Oklahoma, Arkansas, and Louisiana. Other areas of significant deficient flow were in Nova Scotia, New York, Pennsylvania, North Carolina, Florida, Texas, Arizona, and Colorado. Heavy rains have temporarily relieved drought conditions in Massachusetts, Rhode Island, and Virginia, while near-drought conditions prevail over most of Kansas. Serious flooding in northeastern Quebec caused three deaths and damage to roads, and record peak flows occurred on several streams in Maine. In Los Angeles, California, the greatest 24-hour precipitation of record for November caused flooding that resulted in an estimated $1 million in damage.

Ground-water levels rose in much of the Northeast and the Southeast and the southern part of the western Great Lakes region and in the midcontinent region. In the West water levels rose in some areas and declined in others without a defined pattern. Water levels were generally near or below average except in the northern western Great Lakes region, where they were above average. Very low ground-water levels persisted in north-central Connecticut. In some observation wells in New York, levels were far below average.
Streamflow was excessive in parts of the Northwest, most of the Southwest, most of North Dakota, and in a large area extending from Quebec south through the Great Lakes to Kentucky and western Tennessee. Streamflow was deficient in western Ontario, in most of the south-central part of the country, and in scattered areas along the eastern coast from New Brunswick to Florida. Drought conditions continued in Rhode Island and Massachusetts. Heavy rains early in December caused damaging floods and record peak flows on Vancouver Island and in central and southern California. Extensive flooding also occurred in Nevada, Utah, Arizona, Ontario, Ohio, and Illinois, while minor flooding occurred in Tennessee. Snow fell over most of the northern midcontinent region, the Northeast, and northern part of the Southeast during late December.

Ground-water levels declined except in the Southeast and much of the Northeast and Northwest where they rose. Ground-water levels ranged in a random pattern from being slightly above average in some areas to record low in other areas. In the Northeast water levels were extremely low in north-central Connecticut and southeastern New York and in the midcontinent region were at or near record lows in parts of Oklahoma, Arkansas, Kansas, and Texas.

Streamflow was excessive in most of Quebec, parts of Michigan, Wisconsin, the Dakotas, Georgia, and all of California and a large area of the Pacific Northwest. Scattered areas of deficient flow occurred in the Atlantic Coast States and the south-central part of the country. Significantly large areas of deficient or near-deficient flow occurred in the New England States and in an area extending from western Tennessee to eastern Arizona. Rains and snowmelt caused flooding in Quebec, Ontario, Wisconsin, and Minnesota, and heavy rains caused extensive flooding in urban areas in California. Chicago recorded snowfall of 2 feet in less than 48 hours, and the Twin Cities area of Minnesota recorded the greatest snowfall for January and the second greatest for any month. Drought conditions continued in Rhode Island and Massachusetts.

Ground-water levels were above average in scattered areas in all regions. They were generally below average in the Northeast and the Southeast. In the western Great Lakes areas were near or above average except in southern Michigan, parts of Indiana, and heavily pumped metropolitan areas. In the midcontinent levels were mostly below average and new low levels for January were recorded for key observation wells in Kansas, Texas, and Oklahoma. Levels were mostly above average in Washington, western Oregon, Wyoming, Montana, and southern California; elsewhere in the West levels were below average.
Streamflow was predominantly deficient or well below normal in the northeastern and southern part of the United States and excessive in scattered areas of southern Canada and the northern half of the United States. Areas of significantly deficient flow include the Atlantic coast area from Nova Scotia south to Long Island, New York, most of the South Central and Southwestern States, including all of Mississippi, Arkansas, Louisiana, and Oklahoma and most of Texas, Arizona, and western Oregon. Areas of significantly excessive flow include parts of British Columbia, Ontario, Quebec, Michigan, northern Florida, and southern Georgia and Alabama. Drought conditions continued in Rhode Island and Massachusetts. Precipitation was below normal in much of the United States. The equivalent water content of snow was above normal in Idaho and Montana and near normal in Wyoming. Maximum equivalent water contents of snow cover were 6 inches in Minnesota and Wisconsin and 11 inches in Maine.

Ground-water levels were near or below average in most States, although above-average levels were reported in parts of each region. Levels were near or below average in the Northeast, Southeast, and western Great Lakes regions except for above-average levels in northern and western New York, Michigan, and parts of Kentucky, Alabama, Georgia, and Florida. Below-average levels were characteristic of the midcontinent region except for parts of North Dakota, Iowa, and Nebraska. In the West below-average levels occurred in all States except Washington, Montana, Wyoming, and parts of southern California. New monthly or all-time low levels were recorded for key observation wells in Arizona, Colorado, Arkansas, Texas, and Oklahoma.

Streamflow was excessive in Alberta, the Sierra Nevada in California and Nevada, the Dakotas, western Quebec, New Jersey, and in a large area including most of Ohio, West Virginia, and Kentucky. Streamflow was deficient over most of the South from Arizona to Alabama, in parts of Florida, North Carolina, and Virginia, and in a large area extending from Connecticut north through the New England States to New Brunswick, Nova Scotia, and Quebec. Record low flows for March were observed in New Brunswick, Nova Scotia and Oklahoma and near record lows were recorded in Alabama. Much of the southern half of the midcontinent region had near drought conditions; however, late March rains helped to improve soil moisture in the Southeast. Severe flooding and record peak flows occurred in West Virginia and Pennsylvania while minor flooding occurred in Virginia, Kentucky, and Tennessee. Large amounts of snow fell at high elevations in the West resulting in an above-average snowpack.

Ground-water levels in the Northeast rose seasonally and were average to above average except in Maine, eastern New York, and central New England, where they were below average. In northern Virginia, West Virginia, and Kentucky levels rose sharply because of recharge from precipitation and high river flows. Elsewhere in the Southeast levels fell or were unchanged and were generally below average. Levels in the western Great Lakes region rose because of recharge from snowmelt and in many areas were above average. In the midcontinent region levels were below average in the South due to lack of precipitation and in some areas were at or near record lows for March. In the West levels were above average in Wyoming and Montana and far below average in northeastern Oregon. Elsewhere in the region levels rose and fell in no discernible pattern.
Streamflow was deficient or nearly deficient in the Maritime Provinces, in most of the Southeast, in the western and southern parts of the midcontinent region, and in most of the West. Streamflow was excessive in the northern half of the western Great Lakes region and in small areas of southern Louisiana and central Oklahoma. Elsewhere streamflow was generally near or below normal. The deficient flow in the Northeast and Northwest was due mainly to below-normal temperatures causing a delay in snowmelt runoff. Record low flows for April were observed in New Brunswick, Nova Scotia, North Carolina, Georgia, and Alabama. Near record low flows for April were observed in Virginia, Tennessee, and Idaho. Serious drought conditions prevail in central Florida, much of Alabama, and northern Louisiana. Precipitation eased drought conditions in some northern and eastern parts of the midcontinent region. For the first time in recent years streamflow was above normal in Connecticut and parts of the central New England States. A record 12 inches of rain in 1 day caused flooding in Baton Rouge, Louisiana. Flooding also occurred in northern Wisconsin, the northern part of the Michigan Lower Peninsula, and in southwestern Mississippi. An above-average snowpack covered much of the Northwest, the Sierra Nevada, and the Continental Divide in Montana, where record-high water equivalent of snow was measured for this time of year.

Ground-water levels rose in much of the north half of the country except in parts of the Middle Atlantic States, Ohio, and the Northwest. Levels fell in most of the South and the Southwest. Levels were below average in most of the South and Southwest and also in southern California, eastern Washington and Oregon, South Dakota, Nebraska, Ohio, southeastern Massachusetts, and parts of the Middle Atlantic States. Elsewhere, levels were generally above near average. Water levels declined and were below average in most heavily pumped areas.

Runoff from snowmelt in the West and moderate to heavy precipitation in many parts of the United States and southeastern Canada resulted in substantially improved water-supply conditions during May in contrast to the predominantly deficient conditions of April. For the first time in several years streamflow was excessive or above normal in nearly all of the Northeast; ground-water levels were also above average. Severe flooding occurred in Tennessee and local damage was caused by floods in Kansas, Louisiana, and Alabama. Drought conditions continued to prevail in Florida and were becoming serious in New Mexico. Streamflow was below normal or deficient in most of the central and southern Plains region despite some improvements in soil-moisture conditions. Ground-water levels declined and were below average in most of the southern half of the United States.
Unusually great rains caused major flood damage in the central part of the midcontinent region during June, principally in the Missouri River basin. Concentrated rains along with mountain snowmelt caused flooding in scattered parts of the West. Streamflow was excessive in most of the West, including the western Provinces of Canada; but fortunately moderate temperatures and lack of widespread areas of heavy rainfall spared the region from extensive flooding. Storms caused local floods in several parts of the Southeast and brought relief from drought conditions in southern Florida. Streamflow continued to be deficient in much of Alabama, Texas, eastern New Mexico, and on Long Island, New York. Streamflow in most of the Northeast continued in the normal range for the second consecutive month in contrast to deficient conditions of many previous months. Ground-water levels in water-table wells continued seasonal declines in most of the United States except where recharged by extensive rains.

Water supply conditions were favorable in most areas, including the Northeast. However, drought conditions prevailed in much of North Dakota and Texas. Streamflow was deficient for July in coastal Oregon and Washington, in southwestern Oklahoma, much of Indiana and Ohio, and a few other areas. Streamflow on Long Island, New York, was above the deficient range for the first time since May 1964. Streamflow continued to be excessive in many parts of the Western United States and in southern British Columbia where mountain snowmelt occurred later in the season than usual. Local flooding occurred in Montana and New Mexico. Excessive runoff also continued in a wide band across the central part of the western Great Lakes region. Heavy rains in much of the Southeast caused excessive flows in Tennessee and parts of adjoining States. Minor flooding occurred in several basins in North Carolina, in eastern Tennessee, and in northern Georgia. On the island of Hawaii the streamflow at the index gaging station Waikakea Stream near Mountain View was the highest for July in 36 years of record.

Ground-water levels declined seasonally in most areas. However, levels in Kentucky rose as a result of an unusually wet July. Levels in water-table wells were near or above average in most of the Northeast, the western Great Lakes, the central and southern part of the midcontinent, and some parts of the west. Water levels in much of the Southeast were below average.
Drought conditions continued in much of Texas, Oklahoma, and North Dakota. Streamflow in central Oklahoma was the lowest for any August since 1956. Abnormally hot and dry weather brought drought conditions also to western Oregon, where streamflow continued deficient from July. Streamflow in western Washington was also deficient. At the other extreme, major storms in early and mid-August caused floods in the Fairbanks area, Alaska, in the Washington, D.C., metropolitan area, and in several of the Southwestern States (see flood table). The water-supply situation continued to improve in much of New Mexico and in the Northeast following moderate to heavy precipitation. Both areas had above normal or excessive streamflow in August in contrast to drought or near-drought conditions only a few months ago. Excessive streamflow occurred also in large parts of British Columbia, California, Nevada, and Utah. Streamflow continued deficient in Indiana for the third consecutive month. The greatest flow for a day in August since records began in 1910 was observed on Honopuu Stream near Waialua, Oahu, Hawaii.

Ground-water levels continued to decline seasonally in many areas but rose in much of the Southeast and in parts of Idaho. Levels were generally near or below average. However, levels rose and were above average in most of Pennsylvania, New Jersey, and Rhode Island. Also, levels were above average in parts of Iowa and record high for the month in central and eastern Nebraska. Water-levels continued far below average in most heavily pumped areas.

Record-breaking floods in southern Texas resulted from heavy rains associated with Hurricane Beulah in late September. Rain and wind damage was severe and widespread. In central Kansas torrential rains caused flooding on the lower Solomon River. Minor floods occurred near and south of Anchorage, Alaska, in southeastern Arizona, in southwestern Utah, in part of southern California, along the gulf coast in Mississippi, and in coastal areas in Virginia. Streamflow was excessive in much of the West; it was excessive in areas draining the Sierra Nevada and in southern British Columbia for the fourth consecutive month.

Drought conditions in North Dakota were relieved by above-average precipitation. However, drought conditions persisted in Oregon. Streamflow was deficient in most of Indiana for the third consecutive month.

Ground-water levels in water-table wells continued seasonal decline and were near average in many areas. Levels rose in some areas of unusually heavy rainfall, such as Arkansas and central Kansas. High ground-water levels in Fairbanks, Alaska, the result of August flooding, continued to plague residents attempting to dewater basements.
Excessive streamflow replaced deficient streamflow in much of Quebec because of unusually great precipitation during October. Flows at two long-term index stream-gaging stations in Quebec (combined drainage areas 23,430 square miles) were the highest of record for October. Streamflow conditions also changed from deficient to excessive in parts of Washington and Oregon.

Streamflow continued excessive in several parts of the Northeast and West. Streamflow conditions in parts of Manitoba and Saskatchewan and became deficient in large parts of Arizona, Texas, and New Mexico. Precipitation in Indiana caused streamflow to be in the normal range; flow had been deficient in the preceding three months.

Ground-water levels began to rise in many areas or remained about the same as at the end of September. Levels were generally below average in the Southeast and West and near or above average in the Northeast.

Streamflow continued deficient in large parts of Arizona, Texas, Manitoba, and Saskatchewan and became deficient in Louisiana and parts of several other States. Parts of southern Texas were still inundated from the hurricane rains of September, but the flow of most streams was below normal or was deficient. Streamflow was within the normal range in some parts of Alberta, Alabama, Georgia, Illinois, and New Mexico where flow during October had been deficient.

Streamflow was excessive in the West in most of the same areas as in October and also continued excessive in large parts of Michigan, Missouri, Pennsylvania, Tennessee, Ontario, Quebec, and the Maritime Provinces. Mean monthly flows were the maximum of record for November on the Saugeen River near Port Elgin, Ontario, on the St. Maurice River at Grand Mère, Quebec, and on the Sturgeon River near Sidnaw, Michigan. Streamflow was excessive at the four index gaging stations on the Hawaiian Islands.

Ground-water levels generally rose or remained about the same, except in the Southeast where levels generally declined. Levels were near or below average in most areas. Exceptions included unusually high levels for November in western New York.
Heavy precipitation and above-normal temperatures resulted in excessive streamflow in much of the Eastern United States and caused local floods in the Southeast and in Indiana. Storms in the West caused flooding in parts of Arizona and Washington. Streamflow conditions in Arizona changed from deficient in November to excessive in December. Streamflow remained excessive in parts of southeastern and southwestern Canada.

Local flooding occurred on the island of Oahu, Hawaii, on December 18. The north coast of Puerto Rico was battered by a severe Atlantic storm in early December.

Deficient streamflow conditions continued mainly in much of Texas, in southern Oklahoma, and on Long Island, New York. Streamflow became deficient in west-central Alberta, southern Ontario, and parts of California and Idaho.

Ground-water levels rose and were generally above average in the East. Levels were below average in most of the midcontinent, in the Northwest, and in New Mexico and Utah.

Streamflow was predominantly normal, but there were a few notable exceptions. Excessive streamflow continued in British Columbia, Arizona, and the northern parts of Georgia, Alabama, and Mississippi. Floods in western British Columbia resulted from near-record precipitation coupled with snowmelt caused by unseasonally high temperatures. Heavy rains produced flooding in central and southern Texas. Excessive streamflow in Arizona was caused by melting of the record December snowpack and by light rains.

Deficient streamflow continued in western Texas. Streamflow became deficient in the central part of the Northeast, mainly the result of below-average precipitation. Much of the ice and snow which had accumulated during extreme cold weather early in the month had melted by monthend.

Ground-water levels were generally above average in the Southeast and near average in most other areas. Levels in southern Puerto Rico were record low reflecting continued drought on the island.
Widespread flooding in southwestern Ontario at the beginning of the month was caused by a combination of heavy rainfall and melt water from a 5- to 10-inch snow cover. At the other extreme, a severe and worsening drought gripped Puerto Rico. Elsewhere, seasonally low or high streamflows occurred in many areas but were not so critical as to cause water shortages or major floods.

Deficient streamflow characterized most of the Southeast following some months of normal and excessive flows—a consequence of far below average precipitation during February.

Excessive streamflow persisted in parts of British Columbia, Quebec, Arizona, and Texas, and flow became excessive in larger parts of the West and in a large area of the western Great Lakes region. Much of the sustained or increased streamflow in the West was a result of snowmelt caused by unseasonably warm temperatures.

Ground-water levels generally rose in the West, remained about the same in the midcontinent, and declined in the Southeast and western Great Lakes region. Levels were near average in the Northeast and remained near or above average in the Southeast despite below-average precipitation during February in both regions.

Streamflow increased seasonally in much of the United States and southern Canada, but was below normal in many areas other than Nova Scotia, New England, southeastern Arizona, and parts of the southern midcontinent and the Northwest.

Record-high flows and severe flooding occurred in streams in Massachusetts and Rhode Island following heavy rains March 17-18. Northeastern Texas experienced moderate floods late in the month.

Excessive streamflow continued in southeastern Arizona and large parts of the Northwest. Much of the high runoff in the Northwest was early snowmelt resulting from above-average temperatures.

Deficient streamflow continued in much of the southern part of the Southeast. Streamflow was also deficient in much of Oregon and Pennsylvania, in western Colorado and south-central Quebec, and in a large multi-State area centered at Iowa. The drought continued in Puerto Rico and the Virgin Islands.

Ground-water levels generally rose seasonally in water-table wells except in major areas of deficient streamflow.
Deficient streamflow predominated in the United States and in much of the Provinces of Alberta and Nova Scotia. However, the situation was not critical at the end of April except in Puerto Rico where drought persisted. In most regions of the United States and southern Canada, April is part of the high-flow or moderate-flow season; therefore, deficient streamflows in April are often significantly higher than normal flows of summer and early fall when water-supply shortages are most likely to occur. Areas where streamflow was most deficient in April included parts of Alabama, Florida, Georgia, Idaho, Iowa, Kansas, Oregon, and Texas.

Excessive streamflow characterized much of New Brunswick, Ontario, and Quebec, and eastern Texas and northwestern Louisiana. Local flooding during the month occurred in Hawaii, Louisiana, Maine, and Tennessee.

Ground-water levels generally declined. However, levels rose in much of the midcontinent and in Alaska, Arizona, Wyoming, Wisconsin, Kentucky, western Maine, and the Piedmont areas of Georgia and North Carolina.

Streamflow became excessive in large parts of the Ohio, Tennessee, and lower Mississippi River basins. Flooding occurred in mid-May in Arkansas in the lower Arkansas-Red-White River basins. Some streamflows exceeded those likely to occur on an average of once in 50 years. Streams in southern Indiana and Ohio, northern New Jersey, and southeastern New York flooded during the last week of the month.

Streamflow continued deficient in large parts of the West and midcontinent regions. Below-normal temperatures retarded snowmelt runoff in the northern Rocky Mountains. Flow changed from excessive to deficient in much of eastern Canada and in northern Maine, largely a result of below-normal precipitation following the early spring runoff of previous months. Drought continued in Puerto Rico, with only partial relief from intermittent rains.

Changes in ground-water levels varied widely. In the Northeast, levels declined seasonally in most of New England but rose in much of New York and Pennsylvania.
An unusual checkerboard pattern of seasonally deficient and excessive flow characterized June streamflow in the United States and southern Canada. There were 5 major areas of seasonally deficient flow and 5 major areas of excessive flow.

Excessive streamflow in eastern and central areas resulted from spring and summer storms. Rains and melted snow in the central Rockies brought very high flows to Wyoming and adjacent States; snowmelt had been delayed by below-average temperatures. Moderate floods occurred in Wisconsin, southern Michigan, and southeastern British Columbia; other areas experienced local flooding.

Deficient streamflow persisted in Oregon and California, eastern Canada, part of the Deep South, and a large area in the Central Plains States.

Ground-water levels declined in most of the United States and in Alberta, but rose in New Jersey, Wisconsin, Wyoming, southern Florida, and some other areas. Levels were below average in Oregon, the Central Plains States, and southern Alabama and adjacent areas; levels were above average in much of the Northeast and western Great Lakes regions.

June's checkerboard pattern of deficient and excessive streamflow persisted during July.

Excessive streamflow continued in the southern part of the Northeast, in southern Florida, in northern Wisconsin, in eastern Texas, and in much of Utah, Wyoming, and British Columbia. Flow became excessive in large parts of Michigan, Minnesota, and Ontario. Severe local flooding occurred in the Keweenaw Bay area of Michigan's Upper Peninsula. Local floods also hit northeastern Nebraska, eastern Kansas, north-central and southeastern New Mexico, northeastern Mississippi, western Puerto Rico, and an area 200 miles northeast of Anchorage, Alaska.

Streamflow remained deficient in parts of 4 of the 5 major regions. Deficient flows have persisted for some months in most of Oregon (excluding the Columbia River), northern Florida, and in southern Alabama, Georgia, and Mississippi.

Contents of major reservoirs were generally above average for this time of year except in some parts of the West.

Ground-water levels declined seasonally in most of the United States. However, levels rose in Wisconsin and in parts of Michigan, Minnesota, Texas, Arizona, New Mexico, Wyoming, and Puerto Rico.
Streamflow increased contraseasonally in many parts of the West, midcontinent, and western Great Lakes region as a result of above-normal precipitation. Excessive streamflow characterized much of the West and western Great Lakes region and occurred in two large areas in the midcontinent region. Nearly all the areas that had been deficient in these regions in July were excessive or in the normal range in August. For the first time in 5 months, streamflow in California was in the normal range. Local floods occurred in Colorado, Florida, Idaho, Kansas, Nevada, North Dakota, Oklahoma, and Utah. Deficient streamflow persisted along much of the Gulf Coast. Flows were deficient also in the Northeast and along the Atlantic coast from Delaware to Georgia. Ground-water levels continued to decline seasonally in most of the United States. However, levels rose in many wells in Indiana and Utah.

Streamflow remained deficient in much of the Southeast and flows were lowest of record in parts of Alabama and Florida. Water shortages were reported in many places in eastern and central North Carolina. Deficient streamflow continued also in a large area of New Brunswick, Nova Scotia, and northern Maine, and in southeastern South Dakota. Flows became deficient in a large part of the Southwest. Water supply approached a critical shortage in San Angelo in west-central Texas.

Excessive streamflow predominated in the western Great Lakes region and in the northern half of the West. In that part of the West, the high flows were caused by above-normal carryover flows from August together with widespread precipitation during September and included some snowmelt from early-season snowfall. Contents of major reservoirs in most areas decreased seasonally but were above average for end of September.

Ground-water levels declined in most of the East but elsewhere exhibited a mixed pattern of rises and declines.
Streamflow continued deficient in large areas of the Atlantic Provinces, New England, coastal parts of Virginia and North Carolina, southern Alabama, Georgia, and Mississippi, and the Florida Panhandle. However, rains of Hurricane Gladys partially relieved the severe hydrologic drought in eastern and central North Carolina. In northern Maine, streamflow was lowest of record for October, raising the possibility of water shortages should adverse climatic conditions prevail in the coming months.

Streamflow continued excessive in much of the West and western Great Lakes regions. Rainfall in part of the Central Plains changed streamflow conditions in that area from deficient to excessive.

Flooding was widespread in southern Minnesota in the Minnesota River basin near mid-month. Local floods during the month also occurred in Roanoke, Virginia, in the Catawba and Yadkin Rivers in North Carolina, in north-central and southeastern Arkansas, in the Kailua-Kona area on the island of Hawaii, and Mayaguez on the west coast of Puerto Rico.

Ground-water levels generally declined in the East and rose in the northern Great Lakes and Central Plains areas. Elsewhere, there was a mixed pattern of rising and falling water levels.

Excessive streamflow was predominant during November, a result partly of above-normal precipitation during the month and partly a carryover of high flows from the preceding month. These higher-than-normal flows for late autumn were an especial asset to the water-supply situation because they were not so high as to cause damaging floods. Streamflow generally increased in the Northeast and Southeast, resulting in several large areas of excessive flow in contrast to the deficient flows that characterized much of these regions during October.

Deficient streamflow was limited to Quebec, northern New England, central Tennessee, southeastern Alabama, north-central Florida, southwestern Texas, southeastern Nevada, and much of Alaska. No critical shortages were reported.

Ground-water levels began or continued seasonal rises in many parts of the United States. Unfrozen ground in many areas permitted substantial recharge of aquifers by above-normal precipitation.
Figure 295. Streamflow During December 1968.

Excessive streamflow persisted in several large areas of Central and Western United States and in British Columbia and Ontario; flows became excessive in Nova Scotia. Late-month rains on saturated ground in Indiana caused rises above flood stage along the Wabash and White Rivers. Flows were record high for December in northern Michigan. Streamflow in Mississippi was 5 to 10 times greater than that of November, and in the southern part of the State monthly flows were above median for the first time in almost a year.

Deficient streamflow continued in Quebec but record December snowfall indicated a substantial potential runoff. Deficient streamflow characterized several areas where flows have often been far below normal during 1968--parts of Alabama, Florida, Georgia, North Carolina, and Virginia.

Floods at the end of November caused extensive damage and loss of life in northern and western Puerto Rico.

Ground-water levels continued seasonal rises in much of Northeastern United States and were above average in a large part of the region.

Figure 296. Streamflow During January 1969.

Record-breaking floods near end of month caused loss of many lives and severe property damage in southern California. Indiana also suffered extensive flooding, and at monthend, floods were occurring in scattered areas in Missouri and southwestern Arkansas. Other States experiencing minor floods during January were Alaska, Montana, Nevada, Oregon, and Washington.

Excessive streamflow characterized part of the West and much of the western Great Lakes region.

Deficient streamflow occurred in southern New Brunswick and in many States along the Atlantic and Gulf coasts, as well as in southwestern Texas and Vancouver Island, British Columbia. No water shortages were reported. Streamflow in Quebec--deficient in November and December--was in the normal range in January.

Ground-water levels generally rose, but levels declined in parts of Florida, Louisiana, Minnesota, New Hampshire, New Jersey, New York, Pennsylvania, Texas, Vermont, West Virginia, and Wyoming.
Major floods struck southern California for the second consecutive month, again causing loss of life and severe property damage. Peak flood flows of some streams were greater than those of the record-breaking floods of January. Elsewhere, major floods early in February struck Arkansas and the island of Oahu, Hawaii.

Excessive streamflow persisted in much of the West and in the northern part of the western Great Lakes region.

Deficient flows again characterized several areas on or near the Atlantic and Gulf coasts, as well as southwestern Texas.

Ground-water levels generally rose in Delaware, Maryland, Rhode Island, Alabama, Georgia, North Carolina, Indiana, Kansas, Nebraska, Oklahoma, Utah, Wyoming, and southern California, and remained about the same in Mississippi, Michigan, North Dakota, Iowa, and southern Arizona. Levels declined in northern New England, Florida, Iowa, Minnesota, Wisconsin, Montana, and southern New Mexico.

Excessive streamflow again characterized large parts of British Columbia, Ontario, California, Nevada, and Oklahoma. Minor flooding occurred in southeastern New York, southeastern Nebraska, central and southeastern Montana, southeastern Utah, and a few other areas. Major snowmelt floods did not materialize in the north because temperatures generally remained low and rainfall was moderate or below normal. However, the flood threat still remains in many northern and western areas because of the above-normal snowpack that still covered the ground in or upstream from those areas at month end.

Deficient streamflow marked a large area of the Northeast, Southeast, and western Great Lakes regions. Higher flows will occur soon in at least the northern part of this area, including northern New England and the Adirondacks of New York, as a result of snowmelt runoff from the above-normal snow cover.

Ground-water levels generally rose in the Northeast, the Northern Plains States, the Deep South, Oklahoma, and southern California. Levels fell in West Virginia, Michigan, Wisconsin, Montana, Washington, and much of Wyoming.
Major spring floods from snowmelt runoff struck large parts of the northern Midwestern States and adjacent southern Canada. Peak discharges on some streams exceeded the 50-year flood—that is, the maximum flow likely to occur on the average of once in 50 years. Had substantial rainfall accompanied the snowmelt, the floods throughout the upper Mississippi River basin would probably have exceeded the record-breaking spring floods of 1965. Heavy rains caused floods in British Columbia, Mississippi, and other scattered areas. The Northeast escaped major flooding from snowmelt.

Excessive streamflow characterized much of the United States and Canada. Deficient streamflow was limited mainly to Quebec, east-central coastal areas of the United States, and southeastern Alabama.

Streamflow was excessive along the international boundary in the Northeast region and along the eastern Great Lakes; in Minnesota and parts of adjacent States and Provinces; in the West, where mountain snowpeaks continued to contribute meltwater; in Colorado, due to heavy rains; in northeastern and central Texas, and in northern Alabama, Georgia, and South Carolina. Flooding occurred in Colorado, Texas, Maine, and New Hampshire.

Deficient streamflow was confined to Virginia and parts of adjacent States, and to Arkansas and southern Missouri.
Streamflow was normal in most of the United States and southern Canada. At monthend, contents of most major reservoirs were above average for this time of year. Deficient streamflow was limited to scattered areas, mainly centered on western parts of South Dakota, Colorado, and Texas; southeastern Arizona, southern Alabama, and Mississippi; southern New Brunswick, central Massachusetts, New Jersey, Long Island, New York, and the Potomac River basin in Maryland, Virginia, and West Virginia; and south-central Alaska and the island of Kauai, Hawaii. Flows of major rivers were not critically low. However, the flow of the Potomac River at the end of the month was close to the all-time low June flows of 1930 and 1966. Locally severe floods occurred during the month in parts of Ontario (Province), New York, Kentucky, Tennessee, North Carolina, Wisconsin, Kansas, and Missouri.

Geographic variations in streamflow increased in contrast during July. Flows became deficient in British Columbia and Quebec and in many parts of the Southern and Southwestern States. Flows remained excessive in California and became excessive in parts of many States from the east to west coast and in Ontario and Alberta. In southern California where the snowpack was heaviest of record, the monthly flow of Kings River above North Fork was five times the July normal. Widespread floods occurred in Missouri and Ohio and locally damaging floods in many other States. Peak discharges on some streams in Missouri, Ohio, and Iowa were higher than those likely to occur on the average only once in 50 years. Heavy rains substantially increased flows in the Potomac River and its tributaries, including local floods in Alexandria, Virginia. This contrasted with record low Potomac flows near the end of June.
Major flooding of streams in Virginia in the upper and middle James River basin and in the York River basin resulted from torrential rains of August 19 and 20 bred by the remnants of Hurricane Camille. The death toll of more than 100 persons was centered along streams draining the eastern slopes of the Blue Ridge Mountains in the west-central part of the State. Peak discharges at some gaging stations on the James River and its tributaries exceeded those likely to occur only once in intervals of time averaging more than 100 years. Streams in Alabama and Mississippi were less affected by Hurricane Camille because precipitation was less than that in Virginia, except along the immediate Gulf coast; extremely high winds and tides were the main causes of death and destruction there.

Excessive streamflow occurred mainly in large parts of the Northeast and western Great Lakes regions, in southern Manitoba and Saskatchewan, and in much of Virginia, Georgia, Colorado, Utah, and California. Deficient streamflow was limited largely to Louisiana, Oklahoma, and parts of Arizona, New Mexico, and south-central Alaska.

The overall picture was one of streamflow in or above the normal range as flows decreased seasonally in most areas. Streamflow was deficient in relatively few areas. Few water shortages were reported; shortages continued at San Angelo, Texas, and streamflow below the normal range persisted in northwestern Arkansas for the fifth consecutive month.

Severe flooding occurred only in and near the Ochlockonee River basin in north-central Florida—the result of a tropical storm on September 21-22. In south-central Nebraska, lowland flooding occurred in the Little Blue River basin as the month began.
Streamflow remained normal or above normal in the western Great Lakes region, the northern part of the midcontinent, much of the Southeast, and most of the West. Severe flooding occurred on the 12th and 13th in central and northeastern Missouri, peak discharges of some streams exceeding those of a 50-year flood.

New areas of deficient flow appeared in the Southwest and Northeast as a result of below-normal precipitation. Monthly mean discharge of the Susquehanna River at Harrisburg, Pennsylvania (drainage area 24,100 square miles), decreased to 4,290 cfs, 47 percent of normal (median) for October and 9th lowest for the month in the 79 years of record.

Streamflow was again above the normal range in many parts of the United States and southern Canada, and was below the normal range in only a few areas in the Southeast, midcontinent, and West. Local floods occurred in northeastern Florida at the beginning of the month and in Puerto Rico on the 9th.

Streamflow increased to, or above, the normal range throughout the Northeast, including substantial increases in flow in the Susquehanna, Delaware, and Potomac River basins. Flows were record high for November in St. Mary's River in Nova Scotia.
Figure 307. Streamflow During December 1969.

Streamflow was excessive in several large areas of the United States and southern Canada as a result of carryover of high flows from November and above-normal precipitation during December. Moderate or local floods occurred in Maine and many parts of the Southeast; flooding was severe in central Tennessee. Monthly mean discharges at index stream-gaging stations were the highest of record in parts of Nova Scotia, Maine, Massachusetts, New Jersey, and British Columbia.

Streamflow decreased in the Northeast, western Great Lakes, northern midcontinent, and the adjoining eastern half of the West. Flows were below the normal range for January in many parts of the Northeast, a result of much below-normal precipitation and temperatures.

Streamflow became excessive in an increasingly large area of the West, partly the result of heavy rains and above-normal temperatures in and adjacent to the Pacific Northwestern States. Major flooding occurred in northern California, especially in the Sacramento River basin. Floods also occurred in Washington, Oregon, and Idaho.

Figure 308. Streamflow During January 1970.
The water picture was generally good in the United States and southern Canada at the end of February—above-average quantities of water in major reservoirs (except in Nova Scotia, Pennsylvania, Maryland, Wisconsin, and parts of Oklahoma, New Mexico, and the Southeast), and little or no potential flood threat from snowmelt runoff. Above-normal temperatures in the West caused substantial snowmelt runoff during the month. Precipitation was light or moderate in most of the United States except for heavy rains in parts of New England, Florida, Arkansas, Texas, and a few other scattered areas.

Excessive streamflows were not great enough to cause severe flooding. At the other extreme, deficient flows in several areas were not generally causing critical water-supply problems at this time of year. Lowest flows (zero at two stations) were reported in northeastern Arizona, west-central Texas, and southeastern Louisiana.

Streamflow decreased in most of the Northeast and generally increased in the midcontinent and western Great Lakes region. In the Southeast and West the patterns of increases and decreases were less uniform.

In the Northeast, excessive streamflow in February gave way to seasonally deficient streamflow in March, a result of moderate or below-normal March precipitation and below-normal snow cover in some areas at the end of February. Flows were also seasonally deficient in scattered parts of the other four regions. Streamflow was unusually low in the Lepreau River at Lepreau in southeastern New Brunswick, in Red River near Fort Pierre in central South Dakota, in North Concho near Carlsbad (no flow) in western Texas, in Little Colorado River near Cameron in northeastern Arizona, and in at least two small streams on the islands of Kauai and Maui, Hawaii.

Some flooding occurred in northern Alabama, Mississippi, and Georgia as a result of heavy rains during the period March 19-21. The flash floods on some small streams in Alabama exceeded those likely to occur on the average of only once in 50 years. In eastern Texas, minor flooding occurred in the upper Trinity and Sabine River basins.
Streamflow increased in most of the United States and southern Canada. However, flows were below normal in much of the West. April temperatures were much below normal, thus retarding spring snowmelt runoff in that region. The remaining snowpack was normal or above normal in many western mountain areas but was below normal in the Sierra Nevada.

Streamflow became excessive in many parts of Eastern United States as a result of heavy precipitation during April. Local flooding occurred in New Jersey, Virginia, Ohio, Indiana, and Kentucky, as well as in Missouri, Kansas, Arkansas, and Texas. Flows were below normal in some of these areas during the previous month.

Flows of most streams decreased east of the Mississippi River and increased west of the Mississippi. Streamflow was substantially below normal in much of the Southeast, in a large area of New Mexico, Oklahoma, and Texas, and in British Columbia. Elsewhere streamflow was generally in or above the normal range. High flows in the West resulted primarily from snowmelt runoff caused by moderating May temperatures following the below-normal temperatures of April.

Local floods occurred in parts of Virginia, Illinois, Kansas, Missouri, North Dakota, Texas, and Idaho. Peak discharge of some streams in eastern Iowa and northern Kansas exceeded those likely to occur on the average of once in 50 years. Runoff of a small stream in northeastern Kansas was greater than 4,000 cubic feet per second per square mile, exceeding any runoff intensity previously recorded in Kansas. In southeastern Texas, torrential rains caused major flooding on the San Marcos River.
Streamflow became excessive in large parts of Alabama, Georgia, and northern Florida and in much of the Great Lakes region—the flow of Aux Sables River north of Lake Huron on June 3 was the all-time highest daily discharge in the 56 years of record at Massey, Ontario. Heavy rains in the Southeast caused an abrupt reversal in streamflow conditions in southeastern Alabama, such as on the Conecuh River at Brantly—from about 100 cfs (cubic feet per second) on May 27 to more than 9,000 cfs on June 5—highest daily flow of record (1938-70) for the month.

Excessive flow of streams draining the northern Rockies resulted from a combination of above-normal precipitation and above-average snowmelt runoff. Heavy rains on snowpack in Wyoming produced severe flooding and record peaks on the tributaries to the North Platte River.

Streamflow was unusually low for June in parts of New Hampshire, Virginia, North Carolina, Louisiana, Oklahoma, Texas, and New Mexico. Water shortages were not reported to be imminent, however, except in west-central Texas; water rationing was expected in San Angelo unless runoff-producing rains were to occur in July.

Streamflow decreased seasonally in most of the United States and southern Canada.

Flows were below normal in large parts of the Southeast and the midcontinent, and an area comprising British Columbia, and western parts of Alberta, Washington, and Oregon. Minimum monthly or daily mean discharges were lowest of record for July on some streams, including Lynches River at Effingham in northeastern South Carolina, Pascagoula River at Merrill in southern Mississippi, Amite River near Denham Springs in southeastern Louisiana, and Chehalis River near Grand Mound in southwestern Washington. Water-use restrictions were imposed in San Angelo in west-central Texas.

Streamflow continued in the above-normal range in Ontario and southern Quebec and in a large part of the West centered on Idaho and Wyoming.
Streamflow during August 1970.

Below-normal streamflow conditions persisted in the southern half of the midcontinent region. Flows of a few streams receded to the lowest August levels in more than 30 years of record. Three large areas where streamflow was below the normal range were New England and southeastern Quebec, an area west of Lake Superior, and a northwestern area comprising British Columbia, western Alberta, and the parts of Washington and Oregon west of the Cascades. Streamflow remained above normal in a large area of the West centered in Wyoming.

Severe flooding occurred August 9 and 10 in western North Carolina on streams in the Pee Dee and Santee River basins. The flood had an average recurrence interval of about 20 years on the principally affected streams. Coastal areas of eastern Puerto Rico suffered major flood damages on the 8th and 20th of the month.

Severe flooding early in the month occurred in central Arizona, southeastern Utah, and southwestern Colorado. Peak discharges of at least seven streams in Arizona were higher than those likely to occur on the average of only once in 50 years.

Streamflow increased in many parts of the western Great Lakes, Northeast, and southern midcontinent regions as a result of above-normal rainfall during September, and a large area of above-normal streamflow persisted in the West. Increases were especially great in parts of Illinois, Missouri, and Oklahoma. Only in the Southeast did the areas of below-median streamflow become larger, chiefly in Virginia, eastern North Carolina, and southern Florida. Below-normal streamflow persisted in northeastern Washington, northern Idaho, northwestern Montana, and large parts of Alberta and British Columbia, as well as in western Texas, southern Louisiana, and on Long Island, New York. Flows on Long Island were nearly the lowest September discharges of record, second only to the Northeast drought flows of September 1965.
Streamflow increased and was above normal for October in much of the eastern half of the United States and southern Canada, a result of heavy precipitation and reduced evapotranspiration. Flows were especially high for this season in northern Maine, eastern Tennessee, central Mississippi, southern Louisiana, and southern Oklahoma. However, flooding was minimal in most areas. Flows in the West continued in the above-normal range in two large areas centered in Colorado and Idaho, respectively.

Principal areas where below-normal streamflow persisted were coastal Virginia and North Carolina, central Florida, northwestern Kansas, western Texas and southeastern New Mexico, and western Alberta.

Major floods struck the eastern two-thirds of Puerto Rico during the period October 5 to 10, following an extended period of heavy rains, reportedly totaling more than 30 inches in the interior highlands. Streamflow was characterized mainly by multiple peaks and record-breaking volumes rather than single record-breaking flood peaks.

Streamflow was in the above-normal range for November in a large part of the United States, mostly the result of above-normal precipitation and high carryover flows from October. Streamflow increased in most of the western Great Lakes region and showed a mixed pattern of increases and decreases elsewhere. Some of the highest flows for the month occurred in the Juniata River basin of central Pennsylvania; on the Green River in south-central Kentucky; Big Black River in central Mississippi; Crow River in central Minnesota; Little Beaver Creek in western Ohio; Grand River in northwestern Missouri; Buffalo River in north-central Arkansas; Salmon River in northwestern California; and on the Boise, Weiser, and Salmon Rivers in Idaho.

Streamflow in the below-normal range was limited principally to parts of Alberta, Arizona, New Mexico, Texas, Oklahoma, Kansas, Florida, and Vermont. Only in western Texas was a critical water-supply situation reported to exist, primarily a persistent shortage at San Angelo.
Above-normal streamflows in much of the West and western Great Lakes regions contrasted with persistent low-flow conditions in Arizona, west Texas, and central and southern Florida. The total geographic pattern of high and low flows in December generally resembled that of the previous month except for the appearance in December of a large area of below-normal flows in New England and the Atlantic Provinces. Precipitation was generally heavy in these areas but much of it occurred as snow and remained unmelted at month-end. Additional areas with streamflow in the below-normal range appeared in North Carolina, Alabama, Louisiana, and British Columbia.

In southern California, heavy snows in mountainous areas continued the potential for damaging runoff and mudflows from fire-denuded areas in the event that rains were to fall on the unmelted snow.

Flooding along the north coast of Puerto Rico followed heavy rains on December 9-10. Inundation of low-lying areas along Rio Cibao suffered the greatest damage.

Major flooding occurred in western Oregon during the period January 17-19, caused by runoff from snowmelt and heavy rains. Peak discharges of some streams were highest for January in more than 60 years of record, exceeded in other months by only the 1 or 2 highest peak discharges of December, principally in 1964. Elsewhere, peak discharges were also highest of record for January on some streams in northwestern California, southwestern Washington, northern Utah, and western Colorado. Streamflow remained in the above-normal range in much of the West, including parts of Idaho, Montana, Nevada, Utah, and Wyoming. Flows remained above normal also in a large area that included most of Minnesota and North Dakota.

Streamflow continued in the below-normal range in southern Florida, and in much of Kansas, Louisiana, and Texas, as well as in several southern and far northern parts of the West. In west Texas, water-short conditions persisted in the San Angelo area.

In the Northeast streamflow generally decreased and was in the below-normal range in many areas as a result of below-normal precipitation and predominantly sub-freezing temperatures. Streamflow decreased also in most of the western Great Lakes region and increased in most of the Southeast.
The area of above-normal streamflow increased substantially as a result of above-normal precipitation, and in some northern sections because of snowmelt runoff produced by thawing temperatures. Local ice-jam flooding occurred in many places, including parts of Nova Scotia, Pennsylvania, Illinois, Nebraska, Iowa, and Montana. The most severe flooding was in eastern Nebraska on February 19–20 in the North Fork Elkhorn River, Logan Creek, and lower Elkhorn and Platte River basins. Blizzard snows blanketed the region within two days after the flood peaks occurred.

Below-normal streamflows were limited largely to Arizona, southeastern New Mexico, Texas, Louisiana, southern Arkansas, and southern Florida. Water-shortage conditions persisted in the San Angelo area of west Texas.

Streamflow continued to be far below normal for this time of year in most of Arizona, Texas, southern Oklahoma, and southeastern Florida. Flows of some streams in Texas and southeastern Arizona were less than 20 percent of median flow for March. Water supplies remained critically short in the San Angelo area of west Texas.

Moderate to severe flooding occurred during the first week of the month in central Georgia and in a few areas in nearby States. Peak discharges were especially high in parts of Georgia and eastern South Carolina, equaling those likely to occur on the average once in 40 or more years.

Water equivalent of snowpack was reportedly above normal for end of March in northern New England; some upland areas of New York and Pennsylvania; northern Michigan and Wisconsin, northeastern Minnesota; and some western mountaion areas, including Montana and southern Idaho.
Streamflow was unusually low for early spring in Indiana, Ohio, southeastern Florida, northern Louisiana, southern Arkansas, southwestern Oklahoma, southwestern New Mexico, southeastern Arizona, and much of Texas. Flows were generally less than one third of median for April on many streams in these areas. In some instances, the flows were lowest of record for the month. Water restrictions were common in southern Florida. However, water-supply restrictions were not yet imposed in other areas experiencing below-normal precipitation and runoff.

The only municipal water supply to receive major relief from shortage was San Angelo in west Texas; rains at mid-month resulted in substantial inflow to Twin Buttes Reservoir.

Above-normal snowpacks at end of March in the Northeast and western Great Lakes regions were gradually reduced without major flooding because of favorable weather conditions.

Streamflow was normal or above in nearly all areas except the drought-affected parts of Texas, New Mexico, southern Oklahoma, eastern Arizona, and southern Florida. Rains in these areas brought only temporary relief and streamflow remained far below normal. However, greatest effects of the drought were related to soil-moisture deficiencies; no major shortages have been reported for municipal water supplies. Voluntary water-use restrictions remained in effect at Miami, Florida.

Some areas of unseasonal low streamflow during April moved into the normal range as a result of rainfall during May, including Indiana, Missouri, Ohio, West Virginia, and most of Arkansas, Louisiana, and Illinois.

Streamflow was unusually high in several northern areas largely as a result of runoff from heavy mountain snowpacks, including northern New York State and parts of Montana, Idaho, and Washington. Rains and snowmelt in Wyoming caused sustained high flows in the Platte and North Platte Rivers in Wyoming and Nebraska.
Major regional changes in streamflow were the areal expansion of high-flow conditions in the northern and central parts of the West and the reversal to low-flow conditions in the Northeast—a result of below-normal precipitation and above-normal temperatures. Abnormally low flows persisted in southern areas of the midcontinent and West, including parts of Arkansas, Louisiana, New Mexico, and Texas.

The high flows in the West were caused by various combinations of above-normal precipitation, thawing temperatures (increasing snowmelt runoff), and the unusually heavy winter snowpacks at high elevations. Record-high flows occurred in Idaho where the mean discharges for June of Snake River near Hine and Salmon River at White Bird were highest for any month in more than 60 years.

Streamflow decreased seasonally in most of the Provinces and States. Principal exceptions were above-normal precipitation and runoff in several parts of the Southeast and increased streamflows in Arizona. Principal regional streamflow characteristics resembled those of June, flows in the above-normal range in a multi-State area centered in Idaho and flows in the below-normal range in the Northeast and in a large area centered in Texas. End-of-month rains in the Northeast improved the water-supply situation in parts of that region.

Very low flows persisted in parts of Oklahoma, New Mexico, and Texas, although July rains did reduce the extent of the critical areas. Water-supply conditions improved also in southern Florida, although streamflows continued to be in the below-normal range.
The water picture brightened in August in terms of increased streamflows in many of the areas that had low flows in July and preceding months. Substantial rains in Arizona, parts of New Mexico, and in central Texas markedly improved the water situation in those areas. The flows of many streams in these states moved upward from the below-normal range in July to the above-normal range in August.

Streamflow and water-supply conditions continued to improve in Florida. The principal area of the United States where very low flows still persisted was southwestern Oklahoma and the adjacent Texas Panhandle. Streamflow was below median for August throughout the central part of the midcontinent region.

Hurricanes and associated summer storms caused flooding in several parts of the Northeast, especially in Nova Scotia, New Jersey, and Maryland. Flooding was also common in south-central Alaska. In the West, streamflow continued to be high for August in many areas, including parts of British Columbia, Idaho, Montana, Nevada, Oregon, and Washington—partly a carryover of high-flow conditions of the previous month and partly snowmelt runoff from high-altitude basins as a result of above-normal temperatures.

Streamflow decreased in New England (except in Connecticut), Pennsylvania, and the Maritime Provinces, and generally increased elsewhere in the Northeast. Seasonally diminishing flows were the predominating characteristic of the other four regions.

Streamflow was in or above the normal range in practically all areas of the United States and southern Canada except Alberta in the West, Kansas and Nebraska in the midcontinent, and Michigan in the western Great Lakes region. Flows were considerably above normal in much of the Southeast and in the high-altitude basins of the northern mountain States of the West.

Heavy rains near midmonth caused flooding in several coastal States in the Northeast, resulting in the highest flows of record on some streams. Hurricane rains also caused extensive local flooding in southern Texas and record flows in southeastern Louisiana.
Streamflow within the normal range characterized an increasingly large part of the United States and southern Canada. Several large areas with above-normal flow persisted and there were relatively few small areas with below-normal streamflow.

Flooding occurred in parts of Virginia, North Carolina, and Texas, resulting from recurring heavy rains in October preceded by high carryover flows from September. Streamflow was also especially high for this time of year in Minnesota and parts of North Dakota and Idaho. Streamflow increased markedly in central Arizona and western New Mexico.

Several large areas of above-normal streamflow persisted in the West and in the northern part of the midcontinent region, along with smaller areas in southeastern Texas, the Carolinas, and eastern parts of Maryland and Virginia. Flows became below normal in two major areas—one centered on Vermont and southern Quebec and the other astride the boundaries of the Southeast and midcontinent regions. Despite these wide variations in flow, relatively few new high- or low-flow records occurred during the month. Some of the above-normal flows were caused primarily by carryovers from substantially higher flows of the previous month.
Streamflow was above normal for December in many parts of the United States and southern Canada, including such major rivers as the Mississippi, Missouri, Ohio, and Susquehanna. Contributing to high stream discharges were high carryover flows from the preceding month as well as above-normal precipitation. In some northern parts of the East, runoff-producing rains were more common than delayed-runoff snowfall because of unusually mild temperatures.

Floods occurred in parts of the South and in California. Flooding during the period December 6-10 in Arkansas, Louisiana, Mississippi, North Carolina, and Oklahoma resulted from heavy rains early in the month, augmented by meltwater runoff from snow in some upland areas. Peak discharges of many streams exceeded those likely to occur only once in 25 years. In southern California, severe flooding occurred near Santa Barbara following rains of as much as 17 inches in the San Gabriel Mountains during the period December 22-28.

High carryover flows from December contributed to above-normal streamflow during January in several major areas, including North Dakota, Minnesota, Ontario, and Mississippi. Heavy rains were also a major factor causing high flows in Mississippi; flows increased there but decreased in the other three States. Intense rains and melting snows caused severe flooding in western Washington and Oregon. Peak discharges of some streams equaled those likely to occur on the average of only once in 50 years.

Flows in the below-normal range for the month were limited principally to Maine and northern New Brunswick in the Northeast and to western British Columbia in the West, somewhat similar to the situation that prevailed during December.
Large areas of above-normal streamflow persisted in the West and in the northern parts of the midcontinent and western Great Lakes regions. In the Southeast, above-normal flows continued in parts of Georgia and South Carolina and expanded into North Carolina and Florida.

Three major areas of below-normal streamflow developed within the West, midcontinent, Southeast, and western Great Lakes regions as a result of the seasonal decrease in streamflow and a month of below-normal precipitation. Major flooding was limited to that which followed the failure of a coal waste bank in southwestern West Virginia.

Streamflow increased and was far above normal in northern and central parts of the West as a result of record or near-record high March temperatures causing meltwater runoff from snowpacks, principally at low elevations in mountain areas. High carryover flows from February contributed to the high runoff in some areas such as in western Washington and Oregon. March rains also added runoff in some areas, especially in northern parts of the West. Heavy snowpacks remain at higher elevations, such as in Idaho.

Flows also increased and were above normal in several large areas of the Northeast, a result of above-average precipitation, and also (in the north) of snowmelt runoff. Water content of snow remained above average at month-end in some mountain areas of New York and northern New England.

Locally severe flooding occurred in southern Alabama on March 2, and in the Houston, Texas, area on March 20.

Below-normal streamflow persisted in Arkansas, Missouri, Arizona, southern California, and a few smaller areas.
Streamflow receding into the normal range characterized mountain-fed streams of the West as a result of the below-normal air temperatures of April and the premature snowmelt runoff from low elevations during the relatively high temperatures of the preceding month. However, at the end of April, heavy snowpacks still remained at high elevations in the West.

The largest areas with streamflow in the above-normal range were the southern and western parts of the western Great Lakes region. Heavy rains caused some flooding in Ohio and Indiana, and in the adjacent Southeast region, in Kentucky and Tennessee. Some streams in the flood areas had monthly discharges that were highest for April for periods of record of up to 50 years.

Contrasting with the high flows noted above, flows far below median persisted in many areas, including Arizona, southern California, and parts of five States in the southern part of the midcontinent.

Streamflow was above median for May in nearly the entire area comprising southern Canada and the northern half of the United States, as well as in the Carolinas and in a few smaller areas. Delayed snowmelt runoff contributed to high flows in some northern, mountain-fed streams. In the southern midcontinent, severe flooding in south-central Texas was caused by unusually heavy rains in early May along the Comal and Guadalupe Rivers. Flooding elsewhere in the United States was minor or moderate, caused in most cases by locally intense spring storms.

Dry conditions persisted in much of the southern area of the West and midcontinent regions. However, low streamflows did not yet have major impact on availability of water supplies in most parts of the affected area because of the substantial quantities of water still contained in reservoirs. Parts of southern Arizona and California, for example, had above-normal runoff and inflow to reservoirs during the winter, thus in part offsetting the receding flow conditions of recent months. Ground-water withdrawals were also being utilized in some areas that might otherwise soon be experiencing water shortages.
Two of the most destructive floods in the history of the United States occurred during June. The one on June 9 and 10 in the Rapid City area of southwestern South Dakota was particularly tragic in terms of lives lost—more than 200. The flood resulted from torrential rains in the Black Hills, causing Rapid Creek to flow at rates not likely to be exceeded more than once (on the average) in 200 or more years.

The most destructive in terms of property damage—estimated at more than one billion dollars in Pennsylvania alone—was caused by tropical storm Agnes and reached its height between June 21 and 24; this flood in the East was also one of the most widespread in history, affecting large parts of a 10-State area. Streams crested at their highest stages and discharges in more than one hundred years in parts of New York, Pennsylvania, Maryland, and Virginia. The Susquehanna River at Harrisburg reached a peak discharge on June 24 that was the highest in at least 185 years. More than 190 lives were lost. Cities suffering especially great damages included Harrisburg, Wilkes-Barre, and Pittsburgh, Pennsylvania; Corning, Elmira, and Wells, New York; and Richmond and Roanoke, Virginia.

Floods also struck many other areas in the United States and southern Canada, with streams flowing at new record-high rates for June in parts of Alberta, British Columbia, Washington, Idaho, Montana, and Wyoming. Flooding of two islands in the Sacramento-San Joaquin delta area of California on the 21st was caused by sudden rupture of a levee under repair. In south-central Arizona, widespread flooding occurred in residential sections of Scottsdale and Phoenix.

Streamflow decreased seasonally in southern Canada and in most of the United States. Principal exceptions were increased flows in Mississippi, Tennessee, and Kentucky in the Southeast; Arizona and New Mexico in the West; and in Hawaii.

Severe flooding occurred on streams in east-central Minnesota, the Iowa City, Iowa, area, and Gallup, New Mexico.

Areas of markedly below-normal streamflow were limited to the southern half of the United States. However, the only reports of municipal water-supply shortages were of some cities in the San Francisco Bay area of central California. Elsewhere, streamflow was far below normal for July in northwestern Kansas, southern Oklahoma, and central and southwestern Utah. Contrasting with these low flows were the relatively high flows in the Northeast, in part the result of carryover of remnants of the record-breaking flood flows of June, such as in Pennsylvania, New York, and Connecticut.
Streamflow increased in much of Michigan, Minnesota, Wisconsin, and south-central Ontario, and in Arizona and New Mexico, but generally decreased elsewhere in the United States and southern Canada. Flows were unusually low in parts of Alabama, Louisiana, Oklahoma, and Utah.

By contrast, flows were in the above-normal range in several extensive areas, including northern parts of the West and the western Great Lakes regions. Locally severe storms caused flooding in scattered areas, including the western part of Michigan's Upper Peninsula; urban areas of Chicago, Illinois, and Duluth, Minnesota; northeastern Iowa; west-central Texas; southern California; and southwestern New Mexico.

Streamflow decreased seasonally in most of southern Canada and in much of the United States. Principal exceptions were increased flows in the Maritime Provinces and southern Ontario in Canada, and in several parts of the western Great Lakes region, and in New Mexico and Texas. Locally intense summer storms caused a recurrence of severe flooding in Iowa and in the urban areas of Duluth, Minnesota, and Chicago, Illinois. Flooding occurred also in parts of Missouri, Kansas, Texas, New Mexico, Michigan, Ohio, Wisconsin, and Virginia.

Below-normal streamflow persisted in much of the southern one-third of the Southeast and in southeastern Oklahoma, western Arkansas, northern California, and central Arizona, as well as in parts of Oahu and Maui Islands in Hawaii. Contrasting with these low flows were large areas of above-normal streamflow across the northern half of the United States, and smaller areas scattered throughout the South and West.
Streamflow increased seasonally in most of the United States and southern Canada, but decreased in parts of Alaska, as well as in the northern part of the West, the central part of the midcontinent, and in Alabama, Florida, and southern Georgia. Moderate to severe flooding occurred in many areas, including Baranof and Chichagof Islands in southeastern Alaska; parts of Arizona, California, Colorado, and New Mexico in the West; parts of Texas, Oklahoma, Arkansas, and Louisiana in the midcontinent; and also in southern Virginia.

Large areas of above-normal streamflow persisted in southern Canada and the northern half of the United States, and expanded southward through the central part of the West, and into the northern part of the Southeast region. Above-normal flows occurred also in south-central Alaska. Below-normal flows continued in northwestern California, northwestern and central Florida, and in southern Alabama and Georgia.

Streamflow increased in most of the United States, but decreased in much of southern Canada, as well as in Alaska, and in a broad band from Montana through Arizona. Flooding occurred in California, accompanied by mud slides, and in Arkansas and Missouri. Lakeshore flooding, resulting from strong onshore winds and intense rains, occurred along portions of Lakes Erie and Huron in Ohio and Michigan.

Above-normal streamflow characterized the water-supply picture over most of Eastern and Central United States, and over a large area of the West, centered on southeastern Utah. Flows also were above normal in smaller areas in Alaska, and in the Atlantic Provinces of Canada. New maximum monthly or daily mean discharges for November were observed at index stations in Arizona, New Mexico, Indiana, Iowa, Missouri, Ohio, Virginia, and West Virginia.
Streamflow generally increased in eastern and western parts of conterminous United States, and decreased in Northern and Central States, in Alaska and Hawaii, and in southern Canada. Some flooding occurred in Tennessee, Virginia, West Virginia, and Idaho.

Large areas of above-normal streamflow persisted in the eastern and west-central sections of the United States. Flows also were above normal in smaller areas in the Provinces of Nova Scotia, Quebec, and Alberta, and in Kansas, Nebraska, and Washington. Below-normal streamflow continued in small areas of Texas and Quebec. Monthly mean discharge of Mississippi River near Vicksburg, Mississippi, representing runoff from about 40 percent of conterminous United States, was highest of record for December, as was the discharge of many smaller index streams in eleven States.

Streamflow increased in much of conterminous United States and decreased in Alaska, most of Hawaii, in parts of several Eastern and Western States, and in southern Canada. Flooding occurred in some coastal basins of California and in northern Illinois.

Above-normal streamflow conditions persisted in roughly one-half of the United States, but the areas of above-normal flows became larger in the midcontinent from December to January and lessened in the northeastern and southeastern regions. Higher than normal flows also continued in southeastern Quebec, and a new large area of above-normal flows occurred in southwestern Canada. New maximum monthly or daily mean discharges for January were observed at many index stream-gaging stations.
Streamflow generally increased in Quebec and the Atlantic Provinces of eastern Canada, and in parts of many East Coast, North Central, and Southwestern States, and Hawaii, and decreased in other areas, including Alaska.

Above-normal streamflow conditions continued in much of the United States, but the areas of above-normal flow became larger in the Northeast and Southeast from January to February and smaller in the midcontinent and the West. Flow of Mississippi River near Vicksburg, Mississippi, representing runoff from roughly 40 percent of conterminous United States, was 6 percent higher than during January and about 80 percent greater than the normal flow for the month. Moderate flooding occurred in North Carolina, early in February.

Below-normal flows occurred in small areas of Florida, Texas, Colorado, and Utah, and a new large area of below-normal flow occurred in western Oregon and adjacent parts of California and Washington.

Streamflow increased in much of conterminous United States and Hawaii, and in many stream basins of southern Canada. Severe flooding occurred in Alabama, Georgia, Mississippi, and Tennessee during the last half of the month, and at monthend, flood stages were developing along the lower reaches of Missouri River, and on the Mississippi River from Iowa to the mouth, and a flood threat existed over much of Kansas. Moderate flooding occurred in Arkansas and Louisiana, and in parts of Wisconsin, and minor flood stages occurred on some streams in Indiana and Michigan.

Large areas of above-normal streamflow occurred in Southeastern, Central, and Southwestern United States, and in southeastern Canada. Below-normal flows persisted in much of Washington and Oregon, and in smaller areas of northern Idaho, southern Florida, and southwestern Utah.
Some of the most extensive flooding in recent decades occurred along the main stem of the Mississippi River, from Iowa to the mouth, as a result of high carryover flow from March, augmented by extremely high rates of tributary inflow during April. At monthend, more than 11 million acres of land had been inundated and stages were rising again in some reaches. Severe flooding, resulting from record-high stages and discharges, occurred on some Mississippi River tributaries in Wisconsin, Iowa, and Missouri, and on streams in Maine, New Brunswick, and Florida. Lakeshore flooding, resulting from strong easterly winds, occurred along portions of Lake Erie in Ohio and Michigan.

Streamflow increased in much of contiguous United States and Alaska, and in some stream basins in southern Canada, but decreased from the high flows of March in parts of the Southeast, western Great Lakes, and midcontinent regions.

Large areas of above-normal flow persisted in the Southwestern, Central, and Southeastern parts of the United States. The large area of below-normal flow in the Northwestern States expanded into parts of Montana, Wyoming, and Utah during April.

Drought conditions intensified in much of Puerto Rico where streamflow was approaching the lowest flows recorded in the past 15 years. Water rationing was imposed on several communities.

Streamflow increased in southern Canada, in Alaska, and in much of the West, and generally decreased in the Eastern and Central States and in Hawaii.

Flooding continued throughout the month in the lower reaches of the Mississippi River and principal tributaries in Louisiana. Upstream, at Memphis, Tennessee, and St. Louis, Missouri, the Mississippi was above flood stage for periods of 63 and 78 days, respectively, ending May 25, breaking flood-stage longevity records established in 1872 and 1844 at those sites. Flow of Mississippi River at Vicksburg, Mississippi, representing runoff from roughly 40 percent of the contiguous United States, was double the normal flow for the month. Flooding occurred also in many Southeastern, Midwestern, and Western States.

Above-normal streamflow conditions occurred in much of Eastern and Southwestern United States and in parts of the Atlantic Provinces and Quebec in eastern Canada. A large area of below-normal flow persisted in the Northwestern States, and smaller areas of below-normal flow occurred in the Province of Manitoba, and in the Dakotas, Florida, Texas, and Hawaii.
Streamflow generally decreased in southern Canada, Hawaii, and in most parts of the conterminous United States, but increased in parts of Alberta and British Columbia, and in part of Alaska and in a few basins elsewhere in the United States.

Above-normal streamflow conditions occurred in much of Eastern and Southwestern United States, and in extreme southeastern and southwestern Canada. Below-normal flows persisted in many of the Northwestern States, and in small areas of Texas, Florida, and the Province of Ontario.

Flooding occurred in parts of Alaska, Texas, Louisiana, and many Eastern States, from South Carolina to Maine.

The Mississippi River at Vicksburg, Mississippi, receded to below flood stage June 20 for the first time in 89 days. The average flow at that site, March 3 to June 30, was 1,500,000 cfs, highest of record for a period of 120 consecutive days.

Streamflow generally decreased in southern Canada, Hawaii, and in most parts of the conterminous United States, but increased in southern New Brunswick, nearly all of New England, and in a few basins elsewhere in the United States.

Above-normal streamflow conditions again characterized large areas in the Eastern United States, and flows were in the above-normal range also in smaller areas in the Southeastern, Southern, and Central States, and in parts of southeastern Canada. Below-normal flows persisted in many of the Northwestern States, including western Montana, where agricultural drought conditions were reportedly the worst in 40 years. Below-normal flows occurred also in parts of California, Arizona, New Mexico, North Dakota, South Dakota, Alabama, and the Province of Quebec.

Moderate to severe flooding occurred in many areas, including Vermont, New Hampshire, Kentucky, North Carolina, and Virginia, in the East; and Iowa, Kansas, and Texas, in the midcontinent region.
Streamflow generally decreased in southern Canada, in Hawaii and south-central Alaska, and in most of the conterminous United States, but increased in parts of the Atlantic Provinces and Quebec, and in a few basins elsewhere in the United States.

Above-normal streamflow conditions occurred in large areas of southeastern Canada and Eastern United States, as well as in large parts of Texas, Colorado, and Utah. Below-normal flows persisted in Hawaii and in large parts of the four Northwestern States and adjacent northern California. In these areas, minimal precipitation during August intensified drought conditions, including lowest-of-record August flows on some streams. Flows were also below normal in smaller areas in Arizona, New Mexico, North Dakota, and Minnesota.

Flooding occurred in parts of Nebraska, Iowa, Indiana, and North Carolina.

Streamflow generally increased in central and northwestern parts of the United States, and decreased in the Eastern and Southwestern States, Alaska, parts of Hawaii, and in southern Canada.

Below-normal flows persisted in large areas in the Northwest and Southwest, and in parts of Alaska and Hawaii. Above-normal flows occurred in much of South Central United States, and in small areas in some Eastern and Western States and southern Canadian Provinces.

Flooding occurred in parts of Nebraska, Kansas, Missouri, and Texas near monthend.
Streamflow increased seasonally in most of the United States, but generally decreased in southern Canada, Alaska, the central part of the western region, and in smaller areas in the southeastern and northeastern regions.

Above-normal flows occurred in a broad band extending from Texas and Louisiana northward to Minnesota and North Dakota. Smaller areas of above-normal flow persisted in parts of the eastern Canadian Provinces and in some Eastern and Western States.

Flows remained in the below-normal range in two major areas in the West, and in parts of Alaska, Hawaii, Texas, and New York.

Moderate to severe flooding occurred in Texas, Oklahoma, Kansas, Nebraska, Iowa, and Missouri. Monthly mean flows were highest of record for October on many streams in those States.

Streamflow increased in most of the United States other than Alaska and the midcontinent region, and increased also in the Atlantic Provinces of Canada. Flows decreased elsewhere in southern Canada, and in Utah and the coastal Southeastern States.

Monthly mean flows remained above the normal range in a large part of Central United States, including much of the Mississippi and Ohio River basins. Monthly mean flow of Mississippi River at Vicksburg, Mississippi, has been in the above-normal range during 15 of the past 16 months. A second large area of above-normal flows developed in the eight-State area of the Northwest.

Flows were below the normal range in parts of western and southeastern Canada, and in several basins in Eastern and Southwestern United States and southern Alaska.

Moderate to severe local flooding occurred in parts of Arkansas, Oklahoma, Missouri, West Virginia, Tennessee, and Kentucky.
Streamflow generally increased in the Atlantic Provinces of Canada, in much of Eastern United States and parts of the West, and decreased in Alaska and Hawaii. Flow conditions were variable in other parts of southern Canada and the United States.

Above-normal flows persisted in large areas in the eastern, central, and northwestern parts of the United States, and flows remained below normal in small areas in British Columbia, Alaska, Arizona, New Mexico, and Florida. Moderate to severe flooding occurred in parts of New England, New Jersey, Virginia, West Virginia, North Carolina, Tennessee, Louisiana, and Missouri.

Streamflow increased in most parts of the United States but generally decreased in Alaska and Hawaii, and in the southern parts of the Canadian Provinces. Above-normal flows persisted for the third consecutive month in large areas in the eastern, central, and western parts of the United States. Flow of Mississippi River at Baton Rouge, Louisiana, was higher for January since records began in 1928. Flows were below normal in small areas of British Columbia, Quebec, Nova Scotia, Arizona, and Texas. Flooding occurred in parts of fourteen States, including North Carolina, Mississippi, and Tennessee, in the Southeast; Indiana, Michigan, and Ohio, in the western Great Lakes region; Kansas, Louisiana, and Missouri, in the midcontinent; and California, Idaho, Montana, Oregon, and Washington, in the West.
Streamflow decreased in most of the United States and southern Canada but generally increased in Hawaii, in some North Central and Southeastern States, and in parts of British Columbia and the Atlantic Provinces in Canada. Monthly mean flows remained above the normal range in large areas in North Central and Northwestern United States, including parts of Ontario and British Columbia in southern Canada. Monthly mean discharge of Mississippi River at Vicksburg, Mississippi, was more than twice the February median and above the normal range for the seventh consecutive month. Flows were below normal in a large area centered on east-central Arizona.

Flooding occurred in parts of Louisiana and North Carolina.

Streamflow generally decreased in the Central and Southeastern States and Alaska, and in much of southern Canada, but increased in most of the Western and Northeastern States and Hawaii, and in western British Columbia and the Atlantic Provinces in Canada.

Large areas of above-normal flow persisted in parts of Northeastern, Central and Western United States, and southern Canada. The combined flow of Mississippi, Columbia, and St. Lawrence Rivers, representing runoff from 1.7 million square miles in those areas, was about 40 percent greater than the normal flow for March.

Flows remained below normal in a large area in Arizona and western New Mexico, and in smaller areas in Texas and southeastern Alaska. Below-normal flows occurred also in parts of all the Southern and Southeastern States, from Louisiana to North Carolina.

Flooding occurred in parts of California, Oklahoma, and Texas.
Streamflow increased in most of the United States, including Alaska and Hawaii, and in southern Canada, but decreased in parts of some East Central, Central, and Southwestern States.

Above-normal flows persisted in parts of North Central and Western United States, and in southwestern Canada. The combined flow of the Columbia, Mississippi, and St. Lawrence Rivers, representing runoff from 1.7 million square miles in the two countries, was about 20 percent greater than the normal flow for April.

Monthly mean flows were below normal in large areas in southeastern Canada and Southwestern United States, and in smaller areas in some Eastern and Western States and Alaska.

Flooding occurred in parts of Alabama, Indiana, Kansas, Louisiana, Maine, Manitoba, Minnesota, Mississippi, North Carolina, North Dakota, and Hawaii.

Streamflow decreased seasonally in most of the United States, and increased seasonally in southern Canada, and in parts of several Central and Western States.

Above-normal flows persisted in large areas in the north-central and northwestern part of the United States and southwestern Canada.

Flows remained below the normal range in parts of Alaska, Arizona, Florida, New Mexico, and Texas.

The combined flow of the Columbia, Mississippi, and St. Lawrence Rivers, representing runoff from 1.7 million square miles in the two countries, was about average for this time of year, and 35 percent less than a year ago.

Flow of the Mississippi River near Vicksburg, Mississippi, was below median for the first month since June 1972.

Flooding occurred in New Brunswick, Ontario, and Quebec, in southern Canada, and in parts of Illinois, Indiana, Iowa, Louisiana, Maine, Michigan, Minnesota, Missouri, New York, North Dakota, and Oklahoma. At monthend, a critical flood potential existed in many high-altitude stream basins in Northwestern States because of above-average snowpacks and delayed snowmelt in those areas.
Streamflow decreased seasonally in much of southeastern Canada and the United States, but increased in parts of the central and western provinces and in several East Central and Northwestern States, and Alaska. Flows remained above the normal range in parts of the Central and Northwestern States and southern Canada. Monthly and daily mean discharges were highest of record at several index stations.

Extreme snowmelt flooding occurred in Idaho, Montana, and Washington, where some peak discharges exceeded those of the 200-year flood. Severe flooding occurred also in Arkansas, Louisiana, and Oklahoma, as a result of intense rains. Moderate to minor flooding occurred in Florida, Kentucky, and Tennessee, in the Southeast; Illinois, Indiana, Minnesota, Ohio, and Wisconsin, in the western Great Lakes region; and Iowa, Missouri, Nebraska, and Texas, in the midcontinent.

Monthly mean discharge of Mississippi River near Vicksburg, Mississippi, was more than twice the median flow for June, and about 40 percent greater than the flow during May, as a result of large tributary inflows from the Ohio River basin, and from Arkansas, Louisiana, Tennessee, and Mississippi.

Streamflow decreased seasonally in most areas of southern Canada and the United States. Flows remained above the normal range in parts of the Eastern, Central, and Northwestern States, and southern Canada. Monthly mean discharges were highest of record in parts of Washington.

Flows were below the normal range in a large area in Central United States, and in some smaller areas elsewhere, including parts of southern Canada. Although agricultural drought conditions affected many areas of the midcontinent, water supplies for cities and towns generally were adequate, especially where such supplies depended upon major aquifers (ground water) or upon streams whose flows are augmented seasonally by releases from large reservoirs. Monthly mean discharges of Ohio River at Louisville, Kentucky, and Missouri River at Hermann, Missouri, decreased about 60 percent from those of June, more than twice the normal seasonal decrease in flow of those two major rivers. Even at the end of July, however, the relatively low flows were much greater than the minimum flows of record.

Severe flooding in British Columbia caused extensive damage to the Alaska Highway. Flooding occurred also in parts of Florida, New York, Pennsylvania, Minnesota, and Wisconsin.

In Puerto Rico, drought conditions persisted in the northeast, where water supplies in the San Juan area were critically low at month's end, and along the south coast, where ground-water levels have declined as much as 11 feet during the past six months.
Streamflow decreased seasonally in most areas of southern Canada and the United States, but increased in some southwestern, midwestern, and eastern basins. Drought conditions in central and southern parts of the midcontinent were alleviated by thunderstorm rainfall. Flows remained above the normal range in parts of the Eastern, Central, and Northwestern States, and southern Canada. Daily mean discharges were highest for the month on some streams in British Columbia and Washington.

Flows generally were below the normal range in Hawaii and Alaska, in large areas in North Central and Southwestern United States, and in some smaller areas elsewhere.

Minor to moderate flooding occurred in parts of Indiana, Missouri, North Carolina, and Texas.

In Puerto Rico, drought conditions in the northeast were halted by rains, and water supplies in the San Juan area were normal at monthend. In the south-coastal area, drought conditions persisted, and water rationing was still in effect in some towns.

Streamflow generally increased in the Atlantic Provinces of Canada, in the East and South Central States, and in parts of Alaska and Hawaii, but decreased in the North Central and Western States, and in other parts of southern Canada.

Monthly mean discharges were lowest of record in parts of Colorado, Hawaii, and North Dakota, and highest of record in parts of Alaska and Kentucky.

A flash flood of exceptional magnitude occurred in a canyon in southern Nevada, flooding in southern Alaska resulted from the breakout of a glacial-dammed lake, and minor to moderate flooding occurred in parts of Alabama, Illinois, Indiana, Missouri, New Mexico, New York, North Carolina, Oklahoma, and Texas.
Streamflow decreased in much of the United States and southwestern Canada, but increased in parts of several Eastern, North Central, and Western States, and Alaska, and in the eastern Provinces of Canada.

Flows were highest of record for October in parts of northern British Columbia and southeastern Alaska, and lowest of record for the month in parts of Hawaii.

Monthly mean flows remained in the above-normal range in large areas of the Columbia and Ohio River basins, and in the below-normal range in a large area centered on southwestern Colorado and southeastern Utah.

Flash flooding occurred in parts of central Texas near monthend.

Streamflow increased seasonally in most of the United States other than Alaska, and in much of southern Ontario and Quebec. Flows generally decreased elsewhere in southern Canada and in parts of some Western and East Central States.

Monthly mean flows remained in the above-normal range in large areas of the Columbia and Ohio River basins and in smaller areas in southern Canada, and increased into that range in a broad band across the South Central and Southwestern States.

Flows were below the normal range in parts of the Atlantic Provinces, parts of some East Coastal, Central, and Western States, and in East Central Alaska.

Severe flash flooding occurred in parts of Kansas, Oklahoma, Texas, and Puerto Rico, and on St. Thomas and St. Croix, Virgin Islands.
Streamflow generally increased, and was greater than normal, in the Atlantic Provinces and on Vancouver Island in southern Canada; in the coastal States of Western and Eastern United States, except Florida, and in the Ohio and lower Mississippi River basins. Flows decreased seasonally elsewhere in southern Canada and in most northern basins of the United States, but generally decreased conversely in Arizona, Hawaii, and Texas.

Monthly mean flows remained in the above-normal range in parts of Manitoba and Ontario in south-central Canada, and in some Eastern and Central States.

Below-normal flows persisted in parts of Florida and several of the Western States.

The combined flow of the Columbia, Mississippi, and St. Lawrence Rivers, representing runoff from 1.7 million square miles in the two countries, was about 50 percent greater than normal for the month.

Streamflow decreased in southern Canada and Alaska, and in some Northern and Western States, but increased seasonally in Hawaii, Oregon, and Washington, and in most Eastern and Southern States. Along the Continental Divide, flows increased in some basins and decreased in others.

Monthly mean flows remained in the above-normal range in parts of Manitoba, Ontario, and Quebec in southern Canada, and in some Eastern and Southern States.

Below-normal flows persisted in southern Florida and in parts of several Central and Western States.

Flooding occurred in Illinois, North Carolina, and Tennessee.

The combined flow of the Columbia, Mississippi, and St. Lawrence Rivers, representing runoff during the month from 1.7 million square miles in the two countries, was about 50 percent greater than the normal flow of January.
Streamflow generally decreased in southern Canada and in Alaska, Hawaii, and some Northern States, but increased seasonally in most Southern and Coastal States except parts of Florida, North Carolina, and New England. Along the Continental Divide, flows increased in some streams and decreased in others.

Above-normal flows persisted in parts of Manitoba, Ontario, and Quebec in southern Canada, in many Eastern and Southern States, and in parts of Idaho and Wyoming.

Flows remained below the normal range in south-central Quebec, southern Florida, and in parts of several Central and Western States.

Flooding occurred in parts of Alabama, Georgia, Illinois, Indiana, Kentucky, Louisiana, Ohio, Pennsylvania, and Texas.

The combined flow of the Columbia, Mississippi, and St. Lawrence Rivers, representing runoff from 1.7 million square miles in the two countries, continued to be about 50 percent greater than normal.

Streamflow increased seasonally in much of the United States. However, it decreased in parts of several Eastern, Southern, and Northwestern States, and southern Canada other than the Atlantic Provinces and Vancouver Island.

Above-normal flows persisted in parts of Manitoba, Ontario, and Quebec in Canada, in many Eastern and Southern States, and in parts of Alaska, California, Nevada, and Oregon.

Flows remained below the normal range in parts of Quebec, Florida, and several Central and Western States.

Flooding occurred in all States except Florida in the Southeast region, in Illinois, Indiana, and Wisconsin in the western Great Lakes region, and in Arkansas, Iowa, and Louisiana in the midcontinent region. Some of the most severe flooding occurred on tributaries of the Mississippi River at month-end, stages along the lower reaches of that stream were above flood stage and rising. The National Weather Service prediction of flooding from snowmelt runoff in the upper Mississippi River basin continued in effect at month-end.

The combined flow of the Columbia, Mississippi, and St. Lawrence Rivers, representing runoff from 1.7 million square miles in the two countries, increased seasonally and was about 50 percent greater than normal.
Streamflow increased seasonally in most of southern Canada and the Northern and Western States, decreased in many Eastern and Central States, and was variable elsewhere, including Alaska and Hawaii.

Below-normal flows persisted in parts of Alberta, British Columbia, and Quebec in Canada, in several Western States, and in parts of Alaska and Florida.

Record-low monthly and daily mean discharges occurred in several streams in mountainous areas of the Western States as a result of retarded snowmelt runoff, caused by below-normal temperatures.

Flooding occurred in Alabama, Florida, Georgia, Illinois, Indiana, Iowa, Louisiana, Michigan, Minnesota, Missouri, and Wisconsin.

Water supply conditions worsened in southern Florida, as supplies from wells and streams were exceeded by demands, resulting in some restrictions on water use for lawn and garden sprinkling. Ground-water levels in some areas approached or equalled the very low levels of 1971.

Streamflow increased in most of southern Canada and in some Eastern, Southern, and Western States, and Alaska, but generally decreased in the Central States and Hawaii.

Below-normal flows persisted in parts of Alberta, British Columbia, and Ontario in Canada, in several Western States, and in parts of Alaska and Florida.

Record-low monthly and daily mean discharges occurred on several streams in mountainous areas of the Western States as snowmelt runoff continued to be delayed by below-normal temperatures.

Flooding occurred in parts of Alaska, Illinois, Louisiana, North Carolina, Oklahoma, and Texas.

The monthly mean flow of 1,412,000 cfs in the lower Mississippi River system (Atchafalaya and Mississippi Rivers) was 40 percent greater than average and the 4th highest for May since the combined records began in 1935.
Streamflow generally decreased seasonally in southern Canada and the United States, except in those basins in which delayed snowmelt runoff caused increased flows during June.

Monthly mean flows remained in the above-normal range in parts of Manitoba, Ontario, and Quebec in southern Canada, and in many Southeastern, North Central, and Northwestern States.

Below-normal flows persisted in parts of Alberta, Ontario, Arkansas, and Florida.

Flooding occurred during mid-month in Illinois, Indiana, Iowa, Kansas, Louisiana, Montana, Oklahoma, and Texas, and was in progress at month-end in Minnesota, North Dakota, and South Dakota.

Great Salt Lake reached the highest level observed in 45 years, on June 15.

Streamflow generally decreased except in western areas experiencing continued snowmelt runoff from higher elevations and in some other areas having above-normal rainfall such as in parts of Alaska, Arizona, Alabama, and Minnesota.

Below-normal flows persisted in parts of Ontario, Arkansas, Florida, and Hawaii.

Flooding occurred in Alabama, Delaware, Florida, Illinois, Indiana, Maryland, Minnesota, Mississippi, New Jersey, North Carolina, North Dakota, Ohio, and Virginia.
Streamflow increased in some Eastern and Central States where intense rains occurred and in some Western States having continued snowmelt runoff from higher elevations; but generally decreased seasonally in other areas. Flows remained in the above-normal range in large areas in Southeastern and Northwestern United States, and in the below-normal range in smaller areas in eastern Canada, some Central States, and in parts of Hawaii. Monthly or daily mean discharges were highest of record in some streams in Florida, Louisiana, Montana, and Mississippi, and lowest of record in parts of Nova Scotia, Ontario, Hawaii, and New Mexico. Flooding occurred in Alabama, Florida, Illinois, Indiana, Mississippi, and Wisconsin.

Streamflow generally decreased seasonally in southern Canada; in many Central and Western States, and in Hawaii and parts of Alaska; but generally increased in Eastern and Southwestern States. Flows remained in the above-normal range in large areas in Southeastern and Northwestern United States, and in the below-normal range in smaller areas in eastern Canada, some North Central States, and in Hawaii. Monthly or daily mean discharges were highest of record in some streams in Arizona, Florida, Michigan, New Mexico, and Pennsylvania; and lowest of record on the island of Oahu, in Hawaii. Flooding occurred in Alabama, Kentucky, Maryland, Michigan, Missouri, New York, North Carolina, Ohio, Pennsylvania, Tennessee, Texas, Virginia, and Puerto Rico. Most of the flooding in the East and South resulted from rains associated with tropical storm Eloise.
Streamflow continued to decrease in parts of southern Canada, and in some Central and Southern States and Alaska, but generally increased in central Canada, and in many Eastern and Western States and Hawaii.

Flows remained above normal in large areas in Eastern and Northwestern United States and in smaller areas in central and western Canada, and below normal in some Central States and parts of eastern Canada.

Monthly or daily mean discharges were highest for October in some streams in Alabama, Florida, Kentucky, Mississippi, Ohio, Pennsylvania, and Tennessee.

Flooding occurred in Mississippi, North Carolina, and Ohio.

Streamflow generally increased in southern Canada and in many Northwestern, Central, and Western States, and Hawaii, but decreased in Alaska, and in parts of some Southeastern and West Central States.

Flows remained above normal in large areas in Eastern and Northwestern United States and in smaller areas in central Canada. Below-normal flows persisted in some North Central and Southwestern States, and parts of eastern Canada.

Monthly and daily mean discharges were highest of record and some flooding occurred on Vancouver Island, British Columbia.
Streamflow decreased in southern Canada except in parts of the Atlantic Provinces, Ontario, and Quebec where general increases occurred. Flows also decreased in many Eastern and Western States and Alaska, but increased in some Central and Western States and Hawaii.

Flows remained above normal in a large area in Northwestern United States and in smaller areas in the Eastern States and southern Canada. Below-normal flows persisted in parts of Alaska, Hawaii, and in some Central and Southwestern States.

Flooding occurred in parts of Montana and Washington, and monthly and daily mean discharges were highest for December on some streams in Montana.

Streamflow decreased in southern Canada (except in southwestern New Brunswick) and in many Central and Western States and Alaska. Flows decreased also in parts of Maine, New Hampshire, Vermont, and Florida, but generally increased in the Eastern States and in parts of Arizona, California, Hawaii, and Oregon.

Monthly mean flows remained above the normal range in a large area in Northwestern United States and the adjacent areas of Canada, and in smaller areas in eastern Canada and Eastern and Central United States. Below-normal flows persisted in parts of Hawaii and in some Central and Western States. Winter drought conditions at monthend in California were described as among the worst in the State's History.

Flooding occurred in Maryland, New York, Pennsylvania, and Vermont, and daily mean discharges were highest of record for January in parts of Maryland and New Brunswick.
Streamflow generally increased in the Atlantic Provinces and on Vancouver Island in southern Canada, and in many Northeastern, Central, and Western States and Hawaii. Flows generally decreased in central and western Canada, and in several Northwestern and Southwestern States, and Alaska.

Monthly mean flows remained above the normal range in a large area in Northwestern United States, and increased into that range in large areas in the Northeast, including the Atlantic Provinces, and in the Southwest. Below-normal flows persisted in a large area in California, and in smaller areas in southern Canada and some Central States.

Flooding occurred in Indiana, Ohio, and North Carolina, and monthly mean discharge was highest of record for the month in part of Pennsylvania.

Streamflow generally increased in the Central States and Ontario, and in parts of some Eastern, Southern, and Western States, and Hawaii. Flows generally decreased in the eastern and western Provinces, in southern Canada, and in the Eastern and Southwestern States and Alaska.

Monthly mean flows remained above the normal range in large areas in Northern United States, and in smaller areas in southern Canada. Below-normal flows persisted in large areas in California and the Central States, and in smaller areas in eastern Canada and in some Eastern and Western States.

Flooding occurred in Alabama, Georgia, Illinois, Indiana, Louisiana, Michigan, Minnesota, and Mississippi. At monthend, an unusually heavy snowpack in northern North Dakota represented a potential flood threat.
Streamflow generally increased seasonally in southern Canada, and in many Northern, Central, and Western States. Flows generally decreased in the Eastern States, in parts of some South Central, North Central, and West Coast States, and were variable in Alaska and Hawaii.

Monthly mean flows remained in the above-normal range in parts of Michigan, Wisconsin, the New England States, New Brunswick, and Quebec, and increased into that range in parts of Saskatchewan, Manitoba, and Ontario. Flows remained in the below-normal range in a large area in southern California, and in smaller areas in some Central and Southern States, and decreased into that range in many East Central States and part of Nova Scotia.

Floods occurred in Iowa, Kansas, Manitoba, Missouri, North Dakota, and Oklahoma. Monthly or daily mean discharges were lowest of record for the month in parts of Alaska, Arizona, California, North Carolina, and West Virginia, and highest of record for the month in parts of Maine. Daily mean flow of St. Lawrence River at La Salle, Quebec, was highest of record.

Streamflow generally decreased seasonally except in western areas and parts of southern Canada experiencing continued snowmelt runoff from higher elevations and in some areas having above normal rainfall such as parts of Georgia, Alabama, Florida, North Carolina, and Oklahoma.

Monthly mean flows remained in the above-normal range in parts of Wisconsin, Michigan, the New England States, Montana, Quebec, British Columbia, and increased into that range in parts of Idaho and Arizona. Flows were in the below-normal range in Minnesota and many East Central States. Drought conditions prevailed in California.

Floods occurred in Georgia, North Carolina, Texas, and Oklahoma. Monthly or daily mean discharges were lowest of record for the month in parts of South Dakota and highest of record for the month in parts of Montana and Alabama.
Streamflow generally increased in southwestern Canada and in many Southeastern States. Flows also increased in Arkansas, Wyoming, and parts of Colorado, but generally decreased seasonally in the remainder of the United States and southern Canada.

Flows remained in the above-normal range in large areas of the Southeast and increased into that range in parts of New York, Pennsylvania, and Arkansas. Below-normal flows persisted in some North Central States and Provinces and in drought-stricken California. Monthly and daily mean flows were highest of record in parts of Georgia and lowest of record in central California.

Flooding occurred in New York, North Carolina, Arkansas, South Dakota, Texas, and Idaho.

Flooding occurred in Colorado, Iowa, Kansas, Missouri, and Oklahoma. Many lives were lost in northern Colorado as a result of the local severe flood on the Big Thompson River.

Streamflow decreased seasonally in much of the United States but increased in southwestern Canada, as well as in Arizona, and parts of Texas, Oklahoma, Kansas, and some Southeastern States.

Below-normal flows persisted in California, Nevada, and Utah, and many Midwestern States. Flows remained in the above-normal range in large areas of the East and increased into that range in parts of Arizona, Ohio, and the New England States. Monthly and daily mean flows were lowest of record in parts of California, Michigan, Minnesota, and Alaska.
Streamflow decreased seasonally in most areas of southern Canada and the United States, but increased in parts of Quebec and in some northeastern and northwestern basins of the United States.

Flows remained in the above-normal range in large areas of the Northeast and Northwest. Below-normal flows persisted in the midcontinent region and adjacent parts of the western Great Lakes region, as well as in south-central Canada and in several Southeastern and Southwestern States.

Monthly and daily mean flows were lowest of record in parts of Michigan, Minnesota, Iowa, Kansas, and Nebraska, and highest of record in parts of Idaho, Vermont, Maine, and Quebec.

Flooding occurred in Vermont, Massachusetts, and Washington.

Streamflow generally decreased seasonally in southern Canada and in most areas of the United States but increased in some Southern and Western States.

Flows remained in the below-normal range in the northern part of the midcontinent region and adjacent parts of the western Great Lakes region, as well as in several Southeastern and Southwestern States and also Alaska and Hawaii. Flows remained above the normal range in large areas of the Northeast and Northwest and in several Southern States.

Monthly and daily mean flows were lowest of record in parts of Alaska, Iowa, Maryland, Michigan, and South Dakota.

Flooding occurred in Alaska and California. Most of the flooding in southern California resulted from rains associated with Hurricane Kathleen.
Streamflow generally increased seasonally in the Eastern States and was variable in the Central States and in many Western States and also Hawaii. Flows generally decreased in Alaska, Arizona, California, and Montana. Flooding occurred in Maryland, Pennsylvania, North Carolina, South Carolina, and Virginia. Monthly or daily mean discharges were highest of record for the month in parts of New York, West Virginia, Virginia, and lowest of record for the month in parts of Idaho, Michigan, Minnesota, Utah, and Wisconsin.

Monthly mean flows remained in the above-normal range in New York, several New England States, and parts of some Southern and Western States and increased into that range in the Atlantic Provinces, most of the remaining States in the northeast region, and large areas of Southeastern United States. Flows remained in the below-normal range in many of the North Central States and decreased into that range in parts of California, Montana, Oklahoma, and Washington.

Streamflow generally decreased in large areas of southern Canada, Alaska, Colorado, and most of the Eastern United States, but increased seasonally in several Southern and Western States. Flows in the below-normal range persisted in many North Central and Western States and decreased into that range in several New England States and parts of Florida, North Carolina, most of Oregon, as well as in Quebec and Alberta.

Above-normal flows prevailed in Georgia and parts of adjacent States as well as in parts of British Columbia, Colorado, Nevada, New York, Nova Scotia, Texas, Vermont, and West Virginia.

Monthly mean flows were lowest of record for November in parts of Iowa, Michigan, South Dakota, Utah, and Wisconsin.
Streamflow generally decreased in large areas of southern Canada, Alaska, Hawaii, and in most of the United States north and west of the Ohio River. It increased seasonally in many Eastern and South Central States. Flows remained in the below-normal range in many Central and Western States and also in parts of Alaska, Hawaii, several New England States, and also Ontario and Quebec. Above-normal flows occurred in several Southeastern States as well as in parts of Montana, Nova Scotia, and Texas. Monthly and daily mean flows were lowest of record in parts of Alaska, California, Hawaii, Michigan, Nebraska, Oregon, Utah, Washington, and Wisconsin. Record highs were observed in parts of Alaska.

Serious drought conditions prevail in many Northern and Western States where a far below-normal snowpack was reported. Streamflows in the below-normal range persisted in many North Central and Western States and decreased into that range in Kentucky, West Virginia, and most of the Northeastern United States. Streamflow generally decreased in southern Canada, Alaska, Hawaii, and most of the northern two-thirds of the United States but increased in many Southern States as well as in parts of California, Oregon, Washington, and Wisconsin.

Monthly and daily mean flows were lowest of record in the western Great Lakes region and in parts of the midcontinent and west regions and in Alaska and Hawaii.

Above-normal flows persisted in parts of several Southeastern States, Alaska, and Texas and increased into that range in British Columbia.
Serious drought conditions persisted in large areas of the United States. Critical seasonal water shortages were occurring in northern California and Oregon and parts of adjacent States. Snowpack was far below normal throughout the Western United States. Some water-supply reservoirs in the far West were lowest of record. In Minnesota and Iowa and parts of adjacent States, streamflows below the normal range have persisted for at least the last 9 consecutive months.

Monthly and daily mean flows were lowest of record in parts of California, Oregon, Washington, Idaho, Colorado, Utah, South Dakota, Wisconsin, Michigan, and also Hawaii.

Above-normal flows persisted in parts of British Columbia, Alaska, Texas, and Florida.

Monthly mean discharge of Mississippi River near Vicksburg, Mississippi, was 61 percent below the February median flow.

Serious drought conditions persisted in most of the Western States as well as in Iowa, Nebraska, and North Dakota. Critical seasonal water shortages continued in northern California and Nevada. Some reservoirs used for water supply and power in the West were far below average, and snowpack remained below normal. Streamflows were deficient in large areas of the United States and south-central Canada.

Monthly and daily mean flows were lowest of record in parts of California, Oregon, Idaho, Nevada, Arizona, and Utah, and highest of record in parts of Alaska and Hawaii.

Above-normal flows persisted in parts of British Columbia, Texas, and Florida, and increased into that range in large areas in southeastern and northeastern United States and southeastern Canada.

Flooding occurred in Alabama, Arkansas, Georgia, Louisiana, Maine, Missouri, New York, North Carolina, Oklahoma, Pennsylvania, and Texas.

Ground-water levels rose in nearly the entire Northeast and rose widely in the Southeastern and Middle Western States. Except locally in the Northeast, below-average levels persisted generally. Levels recovered to nearly average in Wisconsin, but record lows occurred in Minnesota and northwestern Michigan. In the midcontinent region, levels rose somewhat but generally continued below average; a new record low occurred again in the Texas Panhandle. Levels declined, with several record lows, and were below average, in many areas in the Western States. However, there was slight recovery in some wells in Washington, Nevada, Arizona, and New Mexico.
Severe drought conditions persist in most Western States as well as in Kansas, Missouri, Iowa, Minnesota, and parts of Illinois, Wisconsin, and North and South Dakota. Seasonal water shortages were common in California with rationing plans in effect in most areas of the State. Reservoir storage remained below average in large areas of the West where snowpack continued below normal and was record low in many areas.

Monthly and daily mean flows were lowest of record in parts of California, Colorado, Idaho, and Utah, and highest of record in parts of Louisiana, Texas, Tennessee, Virginia, West Virginia, and Ontario.

Above-normal flows persisted in British Columbia, Ontario, Quebec, Alabama, Georgia, Maine, Mississippi, Tennessee, and Texas, and increased into that range in Louisiana, Michigan, and South Dakota.

Floods occurred in Georgia, Kentucky, Louisiana, Mississippi, Ohio, Pennsylvania, Tennessee, Texas, Virginia, and West Virginia.

Ground-water levels continued to rise in the northern parts of the Northeast region but were variable or began to decline elsewhere. Levels rose locally in the northern part of the Southeast region, but generally declined and were below average in the southern part with several new lows. Trends varied in the western Great Lakes region, but levels were generally below average. Levels rose in most of the midcontinent region except in the major artesian aquifers of Louisiana; levels were generally below average except in eastern Iowa. A new low and two new highs were recorded in Texas. In the West, levels rose in Washington and Nevada, but generally declined elsewhere in the region; levels were generally below average. A new high for April occurred in Nevada, and new end-of-month lows were recorded in Nevada, Utah, New Mexico, and Arizona, where two all-time lows also occurred.

Streamflow generally decreased seasonally except in parts of southern Canada and in some western areas experiencing snowmelt runoff. Severe drought conditions continued to grip large areas of the West and midcontinent. Below-normal streamflows prevailed in about 60 percent of the United States.

Monthly and daily mean flows were lowest of record in parts of California, Colorado, Idaho, Maryland, Michigan, Montana, New Jersey, New Mexico, North Carolina, Utah, and Wisconsin.

Above-normal flows persisted in parts of Quebec and Texas and flows increased into the above-normal range in parts of Texas, Arizona, California, New Brunswick, and Wyoming. Flooding occurred in Florida, North Carolina, and Oklahoma.

Ground-water levels generally declined seasonally in the Northeast and Midwest and showed varying trends in the West. Levels were near or below average in the Northeast, above and below average in the Southeast, near average or below average in the Midwest, and below average in the West except in Idaho and parts of Southern California. Mixed trends with both record highs and lows for May occurred in Nevada and Texas. New lows occurred also in Tennessee, Georgia, Mississippi, Minnesota, Ohio, Arkansas, Louisiana, Texas, Washington, and Arizona.

Figure 395. Streamflow during April 1977.

Figure 396. Streamflow during May 1977.
Streamflow generally decreased seasonally except in parts of Alaska, western Canada, and some Western States experiencing snowmelt runoff, and in eastern Canada and parts of a few Eastern, Central, and Southern States, where rainfall runoff occurred. Drought conditions and water shortages persisted in many areas, and streamflows remained in the below-normal range in about 70 percent of the United States. Flows were lowest of record for the month in parts of Arkansas, Colorado, Idaho, Iowa, Michigan, Missouri, Montana, New Jersey, New Mexico, North Carolina, Utah, and Wyoming.


Ground-water levels declined seasonally in most of the Northeast, Southeast, and Midwest; mixed trends occurred in the West. Levels rose and were above average in Maine. Record lows for June, or all-time lows, occurred in parts of Tennessee, Mississippi, Georgia, Minnesota, Michigan, North Dakota, Iowa, Kansas, Arkansas, Utah, Nevada, Arizona, New Mexico, and in the Texas Panhandle. In contrast, new highs were reported in some wells in Texas and Nevada. Some wells were reported dry in east-central Indiana.

Streamflow continued to decrease seasonally except in Arizona and New Mexico, and in parts of Alaska, Hawaii, and some Central and Southeastern States. Drought conditions and water shortages continued in many areas and monthly streamflows were below the normal range at 55 percent of the reporting stations in the United States. Flows were lowest of record in parts of California, Colorado, Florida, Idaho, Maryland, Montana, North Carolina, Utah, Virginia, and Quebec, and were highest of record in parts of Alaska and Pennsylvania.

Above-normal flows persisted in parts of the Atlantic Provinces, Texas, and Arizona, and flows increased into the above-normal range in parts of Arizona, Pennsylvania, and Missouri. Flooding occurred in parts of Iowa, Pennsylvania, Missouri, and Utah.

Ground-water levels continued to decline seasonally in the Northeast, Southeast, and in most of the Western States; mixed trends occurred in the western Great Lakes region. Levels were in the normal range in the Northeast, and generally below average elsewhere. Locally, however, levels were below average despite slight rises during July, as occurred in Alabama, Arkansas, Minnesota, western Montana, Ohio, Texas, and Utah. New monthly highs occurred in Nebraska, Nevada, and Texas. New monthly lows were reached in Iowa, in Mississippi, Montana, Nevada, North Dakota, Tennessee, Texas, Utah, and Washington; new all-time lows occurred in Arizona and the Texas Panhandle.
Streamflow generally decreased seasonally in southern Canada, many Northern and Western States and was variable elsewhere in the United States. Severe drought conditions continued to grip large areas of the West, but improvement was noted in the midcontinent. Below-normal streamflow prevailed in about one-third of the United States.

Above-normal flows persisted in Nova Scotia, and in parts of Pennsylvania, Arizona, and Texas and increased into that range in Indiana and parts of most Central and Eastern States. Flows were lowest of record in parts of California, Colorado, Iowa, North Carolina, and Utah, and highest of record in parts of Alaska, Kansas, Louisiana, Nebraska, and Pennsylvania. Flooding occurred in parts of California, Colorado, Indiana, Iowa, Minnesota, Nebraska, and Utah.

Ground-water levels continued to decline in much of the Northeast, Southeast, and western Great Lakes regions, but with many local rises. Mixed trends occurred in the midcontinent region; levels rose Statewide in Iowa, held steady in Kansas, and declined Statewide in North Dakota and nearly Statewide in Arkansas. Except for rises in southern Idaho, declines in water level generally prevailed in the West. Levels were near or above average in most of the Northeast, and below average, except locally, in much of the Southeast and in the western Great Lakes regions. Levels were above and below average in the midcontinent, and generally below average in the West. New monthly highs occurred in West Virginia, Iowa, and in Texas, where a new all-time high also was reached. New monthly lows occurred in Mississippi, Michigan, North Dakota, Washington, Montana, southern California, and Nevada; new all-time lows occurred in Tennessee, Kansas, Texas, and Arizona.

Streamflow generally decreased seasonally in southwestern Canada, several Western States and Hawaii, and was variable up or down elsewhere. Drought conditions persisted in most Western States, with monthly mean flows the lowest of record in parts of California, Colorado, and Utah. Monthly mean flows remained below the normal range in parts of each State in the West and also in parts of Iowa, Minnesota, North Dakota, and Virginia.

Monthly mean flows were above the normal range in large areas in Central and Eastern United States and in smaller areas in California, Idaho, Montana, Oregon, and Washington. Flows were highest of record in parts of Alaska, New York, South Dakota, and Louisiana. Flooding occurred in California, Illinois, Indiana, Kansas, Kentucky, Minnesota, Missouri, and North Carolina.

Ground-water levels declined along most of the central and southern parts of the Atlantic coastal areas (except for rises in southeastern Florida), and fell also in most of Michigan, West Virginia, Kentucky, Iowa, New Mexico, and southern Minnesota. Levels generally rose in New York State, Indiana, Alabama, Kansas, Nebraska, Utah, and northern Minnesota.
Serious drought conditions persisted in many western areas, most notably California, Nevada, Idaho, Utah, and Colorado, with monthly and daily mean flows the lowest of record in parts of California and Colorado. Contents of major reservoirs in northern California remained far below average.

Above-normal streamflow persisted in the Northeast and in many Central and Southwestern States and increased into that range in parts of Arizona, Arkansas, and South Dakota. Monthly and daily mean flows were highest of record in parts of Quebec, Alabama, Alaska, Arizona, New Hampshire, New York, North and South Dakota, and Maine. Flooding occurred in Arizona, Kansas, Louisiana, Missouri, North Carolina, Tennessee, Texas, and Virginia.

Ground-water levels rose and were above average with several October record high levels in the Northeast. Mixed trends prevailed in much of the Southeast, with a new high level in Alabama and a new low in Tennessee; levels declined in Virginia and Florida but rose in Georgia and Alabama. In the western Great Lakes region, levels rose in Minnesota, Wisconsin, and Indiana; declined in northwestern Illinois; and showed mixed trends in Michigan and Ohio. In the midcontinent and West, levels generally rose in North Dakota, Arkansas, Nebraska, Arizona, and New Mexico; declined in Idaho, Montana, and southern California; and were variable in other States.

Above-normal streamflow persisted in large areas of the Northeast and Southeast and in many Central States, and increased into that range in coastal areas of Oregon and Washington. Flooding occurred in Georgia, Kentucky, Louisiana, Missouri, New Jersey, New York, North Carolina, Tennessee, and Virginia. Monthly and daily mean discharges were highest of record in parts of Georgia, New York, North Carolina, South Dakota, Virginia, and West Virginia.

Drought conditions continued in several Western States where end-of-month contents in many major reservoirs remained far below average. In parts of California, Colorado, Idaho, and Utah, streamflows below the normal range have persisted for at least the last 10 consecutive months. Monthly and daily mean discharges were lowest of record in parts of Alberta, Alaska, Arizona, California, Colorado, Montana, New Mexico, and Utah.

Ground-water levels generally rose and were in the above-normal range in the Northeast, and rose in most of the Southeast except in parts of West Virginia, North Carolina, and Florida. Levels were above average in Kentucky and Alabama, and below average in Mississippi and Georgia. Mixed trends prevailed in the western Great Lakes region; levels rose in much of the midcontinent, but declined locally in four of the States. Mixed trends prevailed also in the West, but generally declined in Idaho and rose in southern Arizona.

New high levels occurred in Kentucky, and new lows were recorded in Tennessee, Kansas, Arkansas, Texas, Idaho, Montana, Utah, Arizona, and California.
Below-normal streamflow persisted in parts of British Columbia, Hawaii, Kansas, Nebraska, Oklahoma, Texas, and in most States in the West region. Monthly and daily mean discharges were lowest of record in parts of Arizona, Colorado, and Utah. Reservoir storage generally increased as a result of near-normal precipitation but remained far below average in parts of Arizona, California, Colorado, Idaho, New Mexico, and Nevada. Flows remained above the normal range in parts of Quebec, Arizona, California, Washington, in part of most States in the eastern half of the United States, and increased into that range in parts of Nova Scotia, Alaska, Idaho, Michigan, and Montana. Monthly and daily mean discharges were highest of record in parts of Alaska, Florida, Maryland, New York, Ohio, Pennsylvania, and South Dakota. Flooding occurred in Indiana, Ohio, Oregon, and Washington.

Ground-water levels rose and were above average in most of the Northeast, but showed mixed trends in most of the Southeast except for generally rising levels in Georgia, North Carolina, and Kentucky. Mixed trends prevailed in the western Great Lakes region except for rises in Ohio and slight declines in Indiana. In the midcontinent, levels held steady in North Dakota, rose in Nebraska and Arkansas, declined in Texas, but showed mixed trends elsewhere. Mixed trends also occurred in the West except for rising levels in Arizona and Washington and declining levels in Idaho and Montana. Several new December high levels occurred in the Northeast and Iowa, and new record highs occurred in Kentucky and Ohio. New lows were recorded in Arizona, Arkansas, Idaho, Kansas, Montana, New Mexico, and Texas.

Above-normal streamflow again characterized large parts of the Northeast and Southeast regions where monthly mean flows were highest of record for the month in many States. Flows remained above the normal range in Minnesota and parts of adjacent States and increased into that range in most of California where State officials declared the drought officially over. Snowpack was generally reported as average to above average throughout the West and far above average in the Ohio River valley and several Northeastern States where a potential flood threat exists in the event of a sudden thaw. Below-normal streamflow persisted in Colorado and Utah and parts of adjacent States and also in Hawaii where monthly mean flows were lowest of record. Flooding occurred in Alabama, Connecticut, Delaware, Florida, Georgia, Maine, Maryland, New York, North Carolina, and West Virginia. Ground-water levels showed mixed trends in the Northeast but continued above normal in most of the region. In the Southeast and western Great Lakes regions, trends were mixed overall, and levels were above and below average; a new January low occurred in Tennessee and a new high in Ohio. In the midcontinent and West there was likewise no general trend; levels were above and below average in the midcontinent and predominantly below average in the West. New January lows were reached in Arizona, Arkansas, Idaho, Nevada, Texas, and Utah; a new all-time low was measured in Arizona.
Streamflow generally decreased seasonally in southern Canada and in northern parts of the United States, decreased counterseasonally in central and eastern sections of the United States, and increased seasonally from Louisiana to California in the Southwest. Monthly mean flows remained above the normal range in many Northeastern, Southeastern, and Western States and also in parts of Minnesota and Wisconsin. Monthly or daily mean flows were highest of record for the month in parts of Quebec and Georgia. Floods and mudslides occurred in California. An above-average snowpack in parts of the Ohio and Mississippi River valleys and also the Northeast represents a potential flood threat in the event of a sudden thaw. Below-normal streamflow persisted in parts of Colorado, Hawaii, and Utah and decreased into that range in many Central and Eastern States. Monthly mean flows were lowest of record for the month in parts of Hawaii.

Ground-water levels generally declined in most of the Northeast, but continued above average. In the Southeast, they generally rose in Virginia, declined in Mississippi and Alabama, and showed mixed trends elsewhere; levels were above and below average. Levels generally declined in the western Great Lakes region, except in much of Wisconsin, and held steady in Indiana; levels were above and below average. In the midcontinent and West, trends were mixed regionally, although several States—Nebraska, Kansas, Nevada, and Washington—reported rising levels statewide, and others—North Dakota, Iowa, Texas, Idaho, and Montana—reported generally declining levels. Levels were above and below average in the midcontinent, and predominantly below average in the West. A new high level for February was recorded in Arizona, and new February lows occurred in Alaska. Two new alltime lows were recorded in Texas.

Streamflow generally increased seasonally in most of the United States but decreased in Alaska, southern Arkansas, Louisiana, Maine, New Hampshire, Texas, most of southern Canada, and also parts of California, Oregon, and Washington. Flows remained in the above-normal range in parts of Alaska, Arizona, California, and Florida, and increased into that range in a broad band across the United States extending from Oregon to the east coast. Monthly and/or daily mean discharges were highest of record in some streams in Arizona, Maryland, Ohio, and South Dakota. Flooding occurred in Arizona, California, New York, Illinois, Indiana, Iowa, Kansas, Louisiana, Missouri, Montana, Nebraska, North Carolina, North and South Dakota, and Ohio. Below-normal flows persisted in Hawaii and parts of Quebec, Nova Scotia, Colorado, Kansas, Oregon, and Washington, and decreased into that range in parts of Ontario, New Brunswick, Arkansas, California, Michigan, Louisiana, Texas, and Wisconsin.

Ground-water levels generally rose seasonally in the Northeast and Southeast regions, except in parts of Georgia and Florida. Levels were above average in the Northeast and in the Southeast, except locally in West Virginia and in several Southern States. Trends were mixed in the western Great Lakes region, declining with mostly below-average levels in the north and rising with above-average levels in the south. In the midcontinent region, levels rose in the North, declined in Texas, and showed mixed trends in Idaho, but were mixed elsewhere; below-average levels prevailed in most States. New high levels for March were recorded in Arizona, Nevada, and West Virginia, and new lows for March in Arizona, Arkansas, Georgia, Idaho, Nevada, New Mexico, and Tennessee. An alltime low level was reached in Idaho, and two alltime lows in Texas.
Streamflow increased seasonally in southern Canada and in most Northern and Western States, decreased in many Eastern and Central States, and was variable elsewhere, including Alaska and Hawaii. Severe flooding occurred in southern Virginia and in the Red River of the North basin in North Dakota and adjacent areas in Minnesota. Large areas of above-normal streamflow persisted in southwestern and north-central sections of the United States. Monthly and daily mean discharges were highest of record for the month in parts of Minnesota. Below-normal streamflow persisted in Louisiana and parts of adjacent States and also southeastern Canada and parts of Kansas, Michigan, and Oregon. Monthly and daily mean flows were lowest of record for April in parts of Louisiana.

Ground-water levels continued to rise in the mid-Northeast, declining elsewhere in the Northeast; levels continued near or above average. Mixed trends prevailed in the Southeast, and generally rose in the western Great Lakes region except in Ohio; levels were above and below average. In the midcontinent region, levels rose in the northern part, and were generally above average; levels declined in the south, where levels were generally below average. Trends were generally mixed in the West, with above- and below-average levels. New high levels for April were recorded in Iowa and Nebraska, and new lows in Arizona, Arkansas, Georgia, New Mexico, southern California, and Tennessee. New all-time lows occurred in Idaho, Louisiana, and Texas.

Streamflow generally decreased seasonally in most North Central and Northeastern States, was variable in the southwestern part of the conterminous 48 States, and generally increased elsewhere, including southern Canada, Alaska, and Hawaii. Severe flooding occurred along the Yellowstone River and its tributaries in southeastern Montana and northeastern Wyoming. Flooding was also reported in Indiana, Iowa, Kansas, Kentucky, Louisiana, Mississippi, Missouri, North Carolina, Oklahoma, Texas, Virginia, and Wisconsin. Above-normal streamflow persisted in southern Nevada and parts of adjacent States and increased into that range in the Southeast region, southeastern Canada, and in parts of many North Central and Northeastern States. Monthly and daily mean flows were highest of record for May in Quebec, Connecticut, Florida, Maryland, Mississippi, New York, North Carolina, and West Virginia.

Ground-water levels declined in the northern part of the Northeast region, but rose in the southern part. Although trends were regionally mixed in the Great Lakes region, levels generally rose and were above average in Kentucky, Virginia, North Carolina, and Indiana; declined and were below average in Mississippi; and declined but were above average in Ohio. Trends and conditions with respect to average were regionally mixed also in the midcontinent and in the West. New high levels for May were recorded in Arizona, Connecticut, and Pennsylvania, and new lows for May in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Mississippi, and Tennessee. New all-time highs were reached in California and Nevada, and new all-time lows occurred in Idaho and Texas.
Streamflow generally decreased seasonally in Arizona, New Mexico, and Oregon, and in most Eastern and Central States and Provinces; was variable in California, Hawaii, and Washington, and generally increased elsewhere, including Alberta, British Columbia, and Alaska. Flooding occurred in parts of Indiana, Minnesota, Missouri, Nebraska, Ohio, Texas, and Wyoming. Above-normal streamflow persisted in part of Quebec, and in parts of many Northeastern, Southerwestern, and North Central States, and in California and Oregon. Monthly mean flows were highest of record in part of Wyoming, and were highest for June in part of Hawaii. Flows remained below the normal range in parts of British Columbia, Saskatchewan, and in parts of Alberta, Texas, and Oregon. Monthly and daily mean discharges were lowest for June in part of Alaska.

Ground-water levels generally declined seasonally in the Northeast, but levels continued above average in much of the region. Levels declined in the Southeast, with mixed trends in some States; levels were above and below average in the region. Declining levels prevailed for the most part in the western Great Lakes and midcontinent regions; levels were mostly below average, but were above in Nebraska and most of Iowa and average in Ohio. Levels declined and were mostly below average in the West, with mixed trends in some States, but rose and were average in Montana. New June high levels occurred in southern California and Virginia. New lows for June were recorded in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Nevada, New Mexico, and Tennessee. A new all-time low was reached in Idaho, and two new all-time lows occurred in Texas.

Streamflow generally increased in Hawaii, Illinois, Indiana, Iowa, Kentucky, West Virginia, and Wisconsin; was variable in Alaska, Florida, Minnesota, and South Dakota; and generally decreased seasonally elsewhere. Record-breaking floods occurred in parts of Alabama, Minnesota, and Wisconsin. Flooding was also reported in parts of Indiana, Iowa, Maryland, Nebraska, and North Carolina. Above-normal streamflow persisted in parts of Ontario, Hawaii, Florida, and in many Western States, and increased into that range in several North Central and Eastern States. Flows remained below the normal range in parts of British Columbia, Saskatchewan, Nova Scotia, Alaska, Colorado, Louisiana, Michigan, Minnesota, and Texas. Drought conditions continued to spread in eastern Texas and many streams were dry at monthend in western Kansas and southwestern Nebraska. Monthly and/or daily mean discharges were lowest of record for July in parts of Alaska and Arizona.

Ground-water levels continued to decline seasonally, and were near or above average in most of the Northeast. Levels generally declined in the Southeast, with mixed trends in Florida and West Virginia; levels were above average in much of the northern part of the region, but commonly below average in the Southern States. Trends were mixed, and levels were above and below average in the western Great Lakes region. Declining levels prevailed for the most part in the midcontinent and in the West; levels were above average in Iowa and Nebraska, but were generally below average or mixed in other States in both regions. A new July high level occurred in Arizona. New lows for July were recorded in Arizona, Arkansas, Idaho, Louisiana, Mississippi, New Mexico, Tennessee, and Washington. New all-time lows were reached in Georgia, Idaho, Kansas, and Texas.
Streamflow generally increased in the Southeast region and in the southern half of the Northeast region, was variable in Alaska, Arizona, Hawaii, Kansas, Nebraska, and New Mexico, and generally decreased seasonally elsewhere. Above-normal streamflow persisted in parts of Florida, Hawaii, Maryland, New Jersey, Pennsylvania, most States in the western Great Lakes region, and several Western States. Flooding occurred in parts of Indiana, Kentucky, South Dakota, Texas, Virginia, and Wisconsin. Monthly or daily mean flows were highest of record for the month in parts of Louisiana and Michigan and lowest of record in central Maine. Flows remained below the normal range in parts of the Atlantic Provinces, Quebec, Alaska, Georgia, Maine, Michigan, Minnesota, New York, and several Southwestern States, and decreased into that range in parts of Alberta and Oklahoma.

Ground-water levels continued to decline seasonally in most of the Northeast region, and were near or above average except in Maine. In the Southeast region, levels generally declined seasonally in North Carolina, Mississippi, Alabama, and Georgia; mixed trends prevailed in most of the other States in the region. Levels were above average in Kentucky and Virginia, below average in Alabama and Georgia, and mixed elsewhere. In the western Great Lakes region, except for general seasonal declines in Wisconsin and Michigan, trends were mixed, as were levels with respect to average. In the midcontinent and West, trends were mixed except for general seasonal declines in Nebraska, Iowa, Kansas, Washington, Arizona, and New Mexico. Levels were below average in Arkansas, Texas, Idaho, Montana, Arizona, and New Mexico, and in most of Kansas and Utah; they were above and below average elsewhere.

A new August high level occurred in Arizona. New lows for August were recorded in Alabama, Arizona, Arkansas, Idaho, Louisiana, Montana, and Texas. New all-time lows occurred in Alabama, Arkansas, Idaho, Kansas, and Nevada.

Streamflow generally decreased seasonally in the Southeast and several Western States, and was variable elsewhere. Below-normal streamflow persisted in parts of the Atlantic Provinces, Quebec, Alaska, Maine, Minnesota, Vermont, and several Southwestern States, with monthly mean flows the lowest of record for September in parts of Kansas, Maine, and Nebraska. Monthly mean flows were above the normal range in most of California, in three large areas in and adjacent to Idaho, Ohio, and Wisconsin, and in smaller areas in Arkansas, Louisiana, Mississippi, New Mexico, New York, and North Carolina. Flows were highest of record for the month in parts of California, New Mexico, and Washington. Flooding occurred in Arkansas, California, Iowa, Kansas, Louisiana, New Jersey, North Carolina, Texas, and Virginia.

Ground-water levels generally continued to decline seasonally in the Northeast and Southeast regions. They were near average in the Northeast except for below-average levels in New England and above-average levels in southern New Jersey. In the Southeast, levels were at or above average in Alabama, Kentucky, and Virginia, below average in Mississippi, and mixed elsewhere.

Regionally mixed trends and levels with respect to average prevailed in the western Great Lakes, midcontinent, and West. However, levels rose in Indiana, Utah, and in much of Idaho and New Mexico, and declined in most of Louisiana. They were above average in Indiana and Iowa, and below average in Minnesota, Kansas, Arkansas, Louisiana, New Mexico, and in most of Idaho, Texas, and Utah.

New September high levels occurred in Kentucky and Michigan. New lows for September were recorded in Arkansas, Idaho, Louisiana, Mississippi, Montana, New Mexico, and Texas. New all-time lows occurred in Arizona, Idaho, Kansas, Nevada, and Tennessee.
Streamflow generally increased seasonally in the Northeast region, decreased seasonally in Alberta, Saskatchewan, Alabama, Florida, Georgia, Illinois, Indiana, Iowa, Mississippi, North and South Dakota, Oklahoma, and Wisconsin, decreased in contrast to the normal seasonal pattern of increasing flows in Idaho, North Carolina, Oregon, Virginia, Washington, and West Virginia, and was variable elsewhere. Below-normal streamflow has persisted for at least four consecutive months in parts of Nova Scotia, Colorado, Maine, Minnesota, New Mexico, and Texas, with monthly and/or daily mean flows the lowest of record for October in parts of Colorado, Kansas, and Maine. Flows remained in the above-normal range in parts of Alberta, California, Iowa, Montana, Nevada, New Mexico, New York, North Dakota, Texas, Utah, and Wyoming. Monthly mean discharges were highest of record for October in parts of Alaska and Alberta.

Ground-water levels generally continued to decline in the Northeast and Southeast regions. They were near average in most of New York and Pennsylvania, above average in eastern New York and southern New Jersey, but below average in most of northern New England. In the Southeast, levels were above average in most of Kentucky and much of North Carolina, but mostly below average in other States. Trends were mixed in the western Great Lakes region, but were generally above average. Levels declined in most of the midcontinent region, and levels were largely below average. In the West, level trends were mixed regionally, as were levels with respect to average. New October high levels occurred in Kentucky and Michigan for the second consecutive month. New lows for October were recorded in Arizona, Arkansas, Idaho, Louisiana, Mississippi, New Mexico, and Texas. New all-time lows occurred in Kansas, Maine, and Tennessee.

Streamflow generally decreased seasonally in southern Canada, central New England, Alaska, Montana, and South Dakota, and increased in Arizona, Hawaii, Maine, Nevada, New Hampshire, Oregon, Washington, several States in the central Mississippi River valley, and East Coast States from New Jersey to South Carolina. Elsewhere, flows were variable. Flows were below the normal range in large areas in and adjacent to Oregon, Georgia, Colorado, and central New England. Monthly mean flows were lowest of record for November in parts of Nova Scotia, Colorado, Kansas, Louisiana, and New Hampshire. Monthly mean flows were above the normal range in parts of Alberta and British Columbia, in large areas centered on Arizona and the Ohio River basins, and smaller areas in parts of several States west of the Mississippi River. Monthly and/or daily mean flows were highest of record for the month in parts of British Columbia, Arizona, and New Mexico. Flooding occurred in Hawaii.

Ground-water levels in the Northeast region continued to decline and were mostly below average. Trends were mixed regionwide in the Southeast and western Great Lakes. Levels were above and below average in most States, except for generally above-average levels in Kentucky and Michigan, and average in Ohio. Trends were mixed in the midcontinent region except for general declines in North Dakota and Iowa; levels were below average in Kansas, Arkansas, and Louisiana, near or above average in Nebraska and Iowa, and mixed elsewhere. In the West, trends were mostly mixed, and levels were below average in Washington, Idaho, Arizona, and New Mexico, and above and below average elsewhere. New November high levels occurred in Kentucky, southern California, and West Virginia. New lows for November were recorded in Alabama, Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Maine, Mississippi, Montana, Nevada, New Mexico, Tennessee, and Texas. A new all-time low occurred in Arizona.
Streamflow generally increased seasonally in Arizona, Oregon, and in most States in the eastern half of the United States, and decreased seasonally in southern Canada, Alaska, Colorado, Oklahoma, and North Central States from Montana to Michigan. Elsewhere, flows were variable. Below-normal streamflow persisted in large areas in and adjacent to Maine, Alabama, and western Kansas, and also in parts of several States in the Pacific Northwest. Monthly mean flows were lowest of record for December in parts of Maine, Nova Scotia, Colorado, and Kansas. Flows were in the above-normal range in large areas centered on Arizona, Kentucky, and southeastern Montana, and were highest of record for December in parts of Arizona, Kentucky, New Mexico, and North Dakota. Flooding occurred in Arizona, Kentucky, New Mexico, Ohio, and West Virginia.

Ground-water levels in the Northeast region generally rose, reversing the declining trends of November, but continued below average in the North. Trends were mixed in parts of the Southeast region, but generally rose in Kentucky, North Carolina, Alabama, and Georgia; levels were mixed regionally with respect to average. Mixed trends prevailed regionally in the western Great Lakes and midcontinent regions, but there were generally declines in Wisconsin and North Dakota and rises in Ohio and Nebraska. Levels were near or above average in the Western Great Lakes, and mixed above and below average in the midcontinent. Mixed trends and averages prevailed in the West. New low levels for December occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Maine, Nevada, Tennessee, Texas, and Washington; a new December high was reached in West Virginia. A new all-time low occurred in Arizona and a new all-time high was reached in Kentucky.

Streamflow generally increased seasonally in California, Nevada, in southern parts of the midcontinent, the Northeast, and western Great Lakes regions, and throughout most of the Southeast region. Above-normal streamflow occurred in large parts of the Northeast and Southeast regions where monthly mean flows were highest of record for the month in many States. Monthly mean flows generally decreased seasonally in Alaska, southern Canada, and in most Northern States of the midcontinent and West regions. Below-normal streamflow persisted in a large area in and adjacent to western Kansas, and also in parts of southeastern Canada, Georgia, Idaho, Minnesota, Montana, Oregon, Utah, and Washington. Flooding occurred in Connecticut, Indiana, Louisiana, Massachusetts, Mississippi, Nevada, New Jersey, North Carolina, Pennsylvania, Rhode Island, Virginia, and West Virginia as a result of above-normal precipitation.

Ground-water levels rose in most of the Northeast and Southeast regions, and above-average levels prevailed. Trends were mixed in the Western Great Lakes region, where levels were largely above average, and in the midcontinent region, where they were mostly below average. Trends were mixed in the West, and levels were both above and below average. Several new high ground-water levels for January occurred in Arizona, Arkansas, Idaho, Kansas, Louisiana, Montana, Nevada, New Mexico, Tennessee, and Texas. An all-time low level was reached in the Texas Panhandle.
Streamflow generally increased seasonally in California, Delaware, Illinois, Maryland, Missouri, and South Carolina, and generally decreased in southern Canada, Alaska, Michigan, South Dakota, Tennessee, and most States in the Northeast region. Elsewhere, flows were variable. Monthly mean flows remained in the above-normal range in large areas centered in Arizona, Louisiana, and Virginia, and were highest of record for the month in parts of Delaware, Kentucky, Maryland, New Mexico, and Virginia. Below-normal streamflow persisted in a large area in and adjacent to western Kansas. Flooding occurred in California, Delaware, Hawaii, Idaho, Illinois, Indiana, Kentucky, Louisiana, Maryland, North Carolina, Ohio, and Virginia. At monthend, an unusually heavy snowpack in eastern Iowa, northern Illinois, western Nebraska, and southern Wisconsin represented a potential flood threat.

Ground-water levels generally declined in the Northeast, except for rises in a few coastal areas; levels were mostly in the normal range. In the Southeast, levels generally rose and above-average levels continued in most parts of the region. Levels mostly declined in the western Great Lakes region but were mostly in the normal range. Trends were mixed regionally in the midcontinent: levels were below average in Kansas, Arkansas, and Louisiana. They were in the normal range or above and below average elsewhere in the region. In the West, trends were mixed except for general rises in Washington and southern California. Levels were below average in the Northern States and in New Mexico, but were generally mixed with respect to average in the midregion. New high ground-water levels for February occurred in southern California, Nevada, North Carolina, and Virginia, and a new all-time high was reached in Kentucky. New low levels of record for February occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Nevada, New Mexico, Tennessee, Texas, and Washington.

Streamflow generally increased seasonally in Idaho, Montana, Nevada, North and South Carolina, Saskatchewan, and throughout most of the Northeast, midcontinent, and western Great Lakes regions. Monthly mean flows generally decreased in Alberta, Manitoba, Kentucky, Louisiana, Maryland, and Virginia, and were variable elsewhere. Above-normal streamflow occurred in the Southwest, in a broad band along the east coast from Georgia to the Atlantic Provinces, and in a large area in and adjacent to Illinois in the Midwest. Below-normal streamflow persisted in parts of Utah and decreased into that range in small areas of southern Canada, Colorado, and Montana. Mean flows were highest of record for the month in parts of Connecticut, Iowa, Missouri, New Brunswick, Nova Scotia, Quebec, and Texas. Flooding occurred in Alabama, Connecticut, Georgia, Illinois, Indiana, Iowa, Louisiana, Maine, Mississippi, Missouri, Montana, Nebraska, New Hampshire, New York, North and South Carolina, Pennsylvania, South Dakota, Vermont, and Wisconsin.

Ground-water levels rose in the Northeast region, and were generally above average. In parts of Maine, some of the highest levels in more than 30 years of record were reached. In the Southeast region, trends were regionally mixed, and were above average in Kentucky, Virginia, and North Carolina, and above and below average elsewhere in the region. In the western Great Lakes and midcontinent regions, rising trends prevailed, and levels were mostly above average, but below average in Ohio. In the West, trends were mixed, and levels were below average in Washington, Idaho, and Montana, but above and below average elsewhere in the region. New high ground-water levels for March occurred in Maine and Nevada, and a new all-time high level was reached in Maine and also in Kentucky. New lows for March occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Nevada, New Mexico, Tennessee, Texas, and Washington. A new all-time low was reached in the Texas Panhandle.
Severe flooding occurred in Alabama and Mississippi as a result of torrential rains and peak discharges at many gaging stations in those States exceeded the 100-year flood. Also, rapid melting of above-normal snowpack in North Dakota and Minnesota produced a flood on the Red River of the North described as the worst of the century. Moderate to minor flooding occurred in Connecticut, Maine, and northern New York in the Northeast; Florida and Georgia in the Southeast; Ontario, Indiana, Illinois, and Wisconsin, in the western Great Lakes region; and Iowa, Louisiana, Mississippi, South Dakota, and Texas, in the midcontinent. Streamflow increased seasonally in southern Canada and most of the United States, but generally decreased in Hawaii, the Atlantic Coastal States, and in several Central and Western States. Flows remained above the normal range in large areas centered on Arizona, Iowa, and Maine. Monthly and/or daily mean flows were highest of record in parts of Alabama, Alaska, Arizona, Louisiana, Mississippi, and Maine.

Ground-water levels declined and were near average in most of the Northeast region. Trends were mixed in the Southeast, but rose in Kentucky and Mississippi; levels were above average in Kentucky, North Carolina, and Alabama and were above and below average elsewhere in the region. Levels generally rose and, except for Michigan, were mostly above average in the western Great Lakes region. In the midcontinent and West, levels rose in North Dakota, Iowa, Kansas, and Washington, and declined in Idaho and Montana. Trends were mixed in other States. In the midcontinent region, levels were above average in North Dakota, Nebraska, and Iowa, below average in Arkansas, and mixed with respect to average elsewhere. In the West, below-average levels prevailed in the southern California and Nevada, where they were mixed. New high ground-water levels for April occurred in Alabama, Iowa, Kentucky, and Virginia, and new all-time highs were reached in southern California and Nevada. New lows for April occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Nevada, New Mexico, Tennessee, and Washington. New all-time lows were reached in Idaho and Texas.

Streamflow generally increased seasonally in southern Canada, Alaska, Oklahoma, and most Western States, and decreased seasonally in Arizona, North and South Dakota, Louisiana, and throughout most of the Northeast, Southeast, and western Great Lakes regions. Elsewhere, flows were variable. Monthly mean flows remained in the above-normal range in parts of Connecticut, New York, Oregon, and Virginia, and in large areas centered on Arizona, Arkansas, and Minnesota. Mean flows increased in the above-normal range in parts of Ontario, Quebec, Florida, Idaho, New Jersey, North and South Carolina, Rhode Island, Washington, and West Virginia, and were highest of record for May in parts of Ontario, Quebec, Alaska, New York, and Tennessee. Flooding occurred in Florida, Louisiana, Missouri, New Mexico, Oklahoma, Tennessee, Utah, and West Virginia.

Ground-water levels in the Northeast region rose and were mostly above average in New England, and declined and were near average in the southern parts of the region. Trends were generally mixed in the Southeast, but declined in Virginia and Alabama; levels were above average in Kentucky, North Carolina, and Alabama, and were above and below average elsewhere. In the western Great Lakes region, levels rose in Wisconsin and Michigan, declined in Illinois, Indiana, and Ohio, and were mixed in Minnesota; levels were above and below average. In the midcontinent and West, levels declined in North Dakota and in most of Louisiana, southern California, and Utah, and rose in Montana and in most of Nebraska and Kansas; trends were mixed elsewhere. Levels were above average in Nebraska and Montana, and above and below average elsewhere in the two regions. New high ground-water levels for May occurred in Iowa and Nevada, and a new all-time high was reached in Kentucky. New lows for May occurred in Arizona, Arkansas, Idaho, Kansas, Nevada, New Mexico, Texas, and Washington. New all-time lows were reached in Nevada and Texas.
Streamflow increased seasonally in Alberta, British Columbia, Manitoba, Alaska, Colorado, and Wyoming, was variable in Florida, Hawaii, Indiana, Kansas, Maryland, Montana, New Mexico, North Carolina, Ohio, South Carolina, South Dakota, Utah, and Virginia, and generally decreased seasonally elsewhere. Monthly mean flows remained in the above-normal range in large areas centered on Arizona and Tennessee, and in smaller parts of Quebec, Illinois, New Jersey, New York, Michigan, Minnesota, Rhode Island, and Wisconsin. Below-normal streamflow persisted in parts of Alberta and South Dakota, and decreased into that range in significant parts of the Pacific Northwest. Flooding occurred in Indiana, Kansas, Montana, Nebraska, North Carolina, and Oklahoma. Mean flows were highest of record for the month in parts of New Mexico.

Ground-water levels in the Northeast region generally declined and were mostly in the normal range, but above average in southern New England, southern New Jersey, eastern Maryland, and in Delaware. Levels mostly declined also in the Southeast region, except for local rises in Virginia, North Carolina, and Florida; levels were generally above average. In the western Great Lakes region, levels rose in Wisconsin and Indiana, but trends were generally mixed elsewhere; levels were average or above average. In the midcontinent, levels mostly declined and were mixed with respect to average. Trends were mixed in the West, and above and below average. New high ground-water levels for June were reached in southern California, Kentucky, Michigan, Utah, and West Virginia. New lows for June occurred in Arizona, Arkansas, Idaho, Kansas, New Mexico, Tennessee, and Utah. New all-time lows were reached in Idaho, Louisiana, Nevada, and Texas.

Streamflow generally decreased seasonally in southern Canada, Arkansas, Nebraska, Oklahoma, Texas, West Virginia, Wisconsin, and in most Eastern and Western States, and increased in Indiana, Iowa, and Mississippi. Elsewhere, flows were variable. Monthly mean flows remained in the above-normal range in parts of Manitoba, Quebec, Louisiana, Maryland, Minnesota, New Jersey, Texas, Wisconsin, and in large areas centered on Tennessee and northwestern New Mexico. Below-normal streamflow persisted in parts of New Brunswick, Connecticut, Georgia, Kansas, Nebraska, New York, and most States in the Pacific Northwest. Flooding occurred in California, Indiana, Kansas, Kentucky, Tennessee, Texas, Virginia, and West Virginia. Most of the flooding in the Southeast resulted from rains associated with Hurricane Bob and tropical storm Claudette.

Ground-water levels in the Northeast region continued to decline seasonally, and were mostly in the normal range. Levels declined in most of the Southeast region, except for mixed trends in North Carolina, Georgia, and Florida; levels were above and below average. Levels declined in Michigan, but trends were mixed elsewhere in the western Great Lakes region; levels were mostly above average. In the midcontinent, levels declined in North Dakota, Iowa, and in most of Louisiana, rose in Kansas, and were mixed elsewhere. Levels were above average in Nebraska and in most of Iowa, but above and below average elsewhere. In the West, levels declined in Montana and southern California, but trends were mixed in other States. Levels were below average in Arizona, New Mexico, and Montana, largely below average in Idaho and Utah, and mixed with respect to average in southern California. New high ground-water levels for July were reached in southern California, Indiana, Michigan, and Minnesota, and new all-time highs occurred in Kentucky and Utah. New low levels for July were recorded in Mississippi, New Mexico, and Texas. New all-time lows were reached in Arizona, Idaho, Nevada, and Utah.
Streamflow generally decreased seasonally in southern Canada, Maine, Mississippi, New Hampshire, North and South Carolina, Tennessee, and in most States west of the Mississippi River. Mean flows increased in Arkansas, Nebraska, throughout most of the Ohio River basin, and in southern parts of the Northeast region. Elsewhere, flows were variable. Monthly mean flows remained in the above-normal range in parts of each State in and adjacent to Kentucky and Minnesota, and also in parts of Quebec, Alabama, Colorado, Georgia, New Mexico, Texas, and Wyoming. Below-normal streamflow persisted in parts of Arizona, Georgia, Hawaii, New Brunswick, New York, Ontario, and Quebec, and in most States in the Pacific Northwest. Monthly and daily mean discharges were highest of Indiana, Iowa, and Minnesota. Flooding occurred in California, Indiana, Iowa, Minnesota, New York, Ohio, and Virginia.

Ground-water levels continued to decline seasonally in the Northeast region; levels were generally about average, but above-average locally in southern New England. In the Southeast region, levels generally rose in Florida; levels declined or were below average in other States, and were mostly above or below average. Rising and above-average levels prevailed in most of the western Great Lakes region. In Michigan, however, levels mostly declined and were above and below average. In the midcontinent, levels declined in North Dakota, Kansas, and Arkansas, but trends were mixed elsewhere. Levels were above average in Iowa, below average in Arkansas, and mixed with respect to average elsewhere. Mixed trends prevailed in the West, and levels were above and below average. New high ground-water levels for August were recorded in southern California, Illinois, Indiana, Michigan, and Ohio, and new all-time highs occurred in Minnesota and Utah. New low levels for August were recorded in Mississippi, Montana, Nevada, and Texas. New all-time lows were reached in Arkansas, Idaho, and Utah.

Severe tidal flooding occurred along coastal areas of Alabama, Mississippi, and the Florida Panhandle as Hurricane Frederick moved inland early in the month. Flooding also occurred in Kentucky, Louisiana, Maryland, New York, North and South Carolina, Ohio, Puerto Rico, and the Virgin Islands. Tennessee, Texas, and Virginia. Monthly and/or daily mean flows were highest of record for the month in parts of 12 States. Streamflow generally increased in large areas west of the Mississippi River and remained in the above-normal range in parts of Alabama, Georgia, North and South Dakota, Texas, Virginia, several small areas in the Northeast region, and in all States that border the Mississippi and Ohio Rivers except Missouri. Monthly mean flows generally decreased seasonally west of the Mississippi River and remained below the normal range in parts of Alabama, Arizona, Hawaii, Minnesota, Utah, and in much of the Pacific Northwest.

Ground-water levels in the Northeast region continued to decline in the New England States, New Jersey, and Delaware. However, levels rose in New York, central Pennsylvania, and western Maryland. Levels were above average in the central and western parts of the region. In the Southeast region, levels generally rose and were above average in the northern parts, but declined and were below average in Mississippi; trends were mixed elsewhere. Levels were above average in Alabama, and above and below average in Georgia and Florida. In the western Great Lakes region, levels rose in Ohio, and declined in Michigan; trends were mixed elsewhere. Levels were mostly above average except in southeastern Michigan. In the midcontinent, trends were generally mixed, but declined in North Dakota. Levels were near or above average in the northern part, but above and below average in the remainder of the region. In the West, levels mostly rose in Idaho and Utah, and declined in Nevada; trends were mixed in other States. Levels were below average in New Mexico, and in most of Idaho, Utah, and Arizona, and above and below average elsewhere. New high ground-water levels for September were reached in Alabama, Arizona, southern California, Idaho, Pennsylvania, Utah, and Virginia. New all-time levels occurred in Kentucky and Ohio. New September low levels were recorded in Arizona, Arkansas, Idaho, Mississippi, Montana, Nevada, New Mexico, Texas, and Utah. A new all-time low was reached in Texas.
Streamflow increased seasonally in Nova Scotia, Michigan, Nevada, Oregon, Washington, West Virginia, and the central New England States, and decreased seasonally in Alberta, Manitoba, Oklahoma, North and South Dakota, and in most States that border the Mississippi River. Elsewhere, flows were variable. Below-normal streamflow persisted in parts of Hawaii, Kansas, Michigan, Minnesota, Ontario, and in large areas in and adjacent to northern Idaho and southern Arizona. In the Pacific Northwest, monthly mean flows remained in the below-normal range for at least five consecutive months at several index sites. Flows remained in the above-normal range in parts of Iowa, Louisiana, Minnesota, North and South Dakota, Texas, and most of Eastern United States and northeastern Canada. Monthly and/or daily mean flows were highest of record for the month in parts of Alaska, Maryland, Nova Scotia, and Ontario. Flooding occurred in Alaska, Kansas, and North Carolina.

In response to above-normal precipitation, ground-water levels continued above average in much of the Northeast region. Trends were mixed in the Southeast region except for generally rising levels in Kentucky and declining levels in Mississippi and Alabama; levels were largely above average or near average. Levels generally declined in the western Great Lakes region except in southern Minnesota; levels were mostly above average. In the midcontinent, levels declined slightly in the north, and trends were generally mixed in the south; levels were above and below average. In the West, levels rose in Washington, but mixed trends prevailed elsewhere in the region. Levels were below average in Arizona and Nevada, but were mixed with respect to average elsewhere. New high ground-water levels for October were reached in southern California, Kentucky, Ohio, Utah, Virginia, West Virginia, and Wisconsin. New all-time high levels occurred in Kentucky and Pennsylvania. New October lows were mixed in Arizona, Idaho, Mississippi, Nevada, New Mexico, Texas, and Utah.

Streamflow generally increased in most areas of the United States, but decreased in Alaska, Florida, several Southeastern States, and southwestern Canada. Flows were variable in southeastern Canada, most Rocky Mountain States, and several of the Mid-Atlantic States. Below-normal streamflow persisted in parts of Colorado, New Mexico, Utah, and in a large area in and adjacent to Idaho. In the Pacific Northwest, monthly mean flows remained in the below-normal range for at least six consecutive months at several index stations, and storage for power in the Columbia River basin was below average in several key reservoirs. Monthly mean flows remained in the above-normal range in parts of most States and Provinces in the Northeast, Southeast, and western Great Lakes regions. Monthly and/or daily mean flows were highest of record for the month in parts of Alaska, Indiana, Iowa, Michigan, Minnesota, Nebraska, North Carolina, South Dakota, and Tennessee. Flooding occurred in Hawaii, Indiana, Kansas, Louisiana, Mississippi, Missouri, New York, North Carolina, and Oklahoma.

Ground-water levels rose in Maine, Rhode Island, and in much of Connecticut, and locally in other parts of the Northeastern region. Declines occurred in New Jersey and southeastern Pennsylvania. Levels were mostly near average, but were above average in southern New England. In the Southeast region, levels declined but were above average in West Virginia, Kentucky, and Virginia. Levels declined in Florida but were mixed with respect to average. Trends were mixed elsewhere in the Southeast, and levels were above and below average. In the western Great Lakes region, trends were mostly mixed, and levels were generally above average. In the midcontinent, rising levels prevailed, but were mixed with respect to average. In the West, mixed trends prevailed, and levels were above and below average. New high ground-water levels for November occurred in southern California, Michigan, Ohio, Utah, Virginia, and West Virginia. A new all-time high was recorded in Kentucky. New November lows were noted in Arizona, Arkansas, Idaho, Nevada, New Mexico, Texas, and Utah. New all-time lows occurred in Arizona and Texas.
Streamflow increased seasonally in Alabama, Kentucky, Louisiana, Nevada, Oregon, Texas, and Washington; generally declined in southern Canada, Alaska, California, West Virginia, and North Central and Atlantic Coastal States; and was variable elsewhere. Flows remained above the normal range in parts of Ontario, Quebec, Alaska, Colorado, New York, New Mexico, most States in the Southeast, midcontinent, and western Great Lakes region, and increased into that range in parts of Washington and Wyoming. Flooding occurred in Illinois, Indiana, Kentucky, Louisiana, Mississippi, Ontario, Ohio, and Washington. Below-normal streamflow persisted in part of Alberta, British Columbia, Arizona, Idaho, Montana, Nebraska, New Mexico, Utah, and Washington.

Ground-water levels generally declined and were near average in the Northeast region. However, levels rose in parts of southern New England and in New York, and were above average locally in southern New England and in Maryland. In the Southeast region, levels were above average in Kentucky and North Carolina, and rose and were mostly above average in Mississippi. Levels declined but were above average in Virginia, and declined and were below average in Alabama. Trends were mixed elsewhere in the Southeast, and were above and below average. In the western Great Lakes region, levels declined in Wisconsin and Ohio, changed little in Indiana, and trends were mixed elsewhere. Above-average levels prevailed in the region. Rising levels prevailed in the midcontinent, although trends were mixed locally; levels were above average in North Dakota and Iowa, below average in Kansas and Arkansas, and were above and below average elsewhere. In the West, levels rose in Nevada and Arizona, and declined or were unchanged in southern California; trends were mixed elsewhere. Levels were below average in Idaho, Arizona, and New Mexico, and mixed with respect to average elsewhere. New high ground-water levels for December were recorded in southern California, Kentucky, Nebraska, North Carolina, Utah, and Virginia. A new all-time high was also reached in Kentucky. New December lows occurred in Arizona, Idaho, Nevada, New Mexico, Texas, and Utah.

Streamflow generally decreased seasonally in Alaska, southern Canada, and most Northern States of the continental 48 States, and generally increased elsewhere, including Hawaii. Below-normal streamflow persisted in parts of Arizona, British Columbia, Idaho, Montana, Nebraska, Utah, and Washington. Monthly mean flows were lowest of record in the month of May in parts of Utah. Levels were above-normal range in parts of Quebec, Alaska, Alabama, Colorado, Illinois, Indiana, Iowa, Kansas, Louisiana, Minnesota, Mississippi, Nebraska, North and South Dakota, South Carolina, Virginia, and Wisconsin, and increased into that range in parts of Arizona, California, Nevada, and Utah. Monthly or daily mean flows were highest of record for the month in parts of California, Iowa, Nevada, South Dakota, and Wyoming. Flooding occurred in California, Georgia, Hawaii, Minnesota, Mississippi, Nebraska, Nevada, North Carolina, and Texas.

Ground-water levels generally declined and were near average in the Northeast region. In the Southeast region, levels rose in Kentucky, Virginia, Mississippi, and Georgia; trends were mixed in other States. Levels were mostly above average. Levels declined in most of the western Great Lakes region, but were above average or average. In the midcontinent region, trends were mixed, and above and below average. In the West, levels rose in Nevada, declined in Washington and Idaho, and trends were mixed elsewhere. Levels were below average in Washington, Arizona, New Mexico, and most of Idaho, and above and below average in most other States. New high ground-water levels for January were recorded in southern California, Kentucky, and Utah. A new all-time high level was reached in Virginia. New January lows occurred in Arizona, Arkansas, Idaho, Nevada, New Mexico, Utah, and Washington.
Streamflow generally increased seasonally in Arizona, southern California, Idaho, and Montana, and in central parts of the midcontinent region. Monthly mean flows remained in the above-normal range in large areas in and adjacent to Arizona and Minnesota. Flooding occurred in Arizona, California, Colorado, Indiana, and Nebraska. Monthly mean discharges generally decreased in southern Canada, Hawaii, and in most States east of the Mississippi River.

Below-normal streamflow persisted in parts of the Pacific Northwest and decreased into that range in most of the Northeast region and parts of several States in the Southeast region. Monthly mean discharges were lowest of record for February in parts of the Atlantic Provinces, Quebec, Connecticut, Maine, Massachusetts, and Rhode Island.

Ground-water levels declined and were below average in nearly the entire Northeast region. In the Southeast region, levels rose in Kentucky, Mississippi, and Georgia, declined or held steady in Virginia, and declined in much of West Virginia; they showed little fluctuation in North Carolina, and trends were mixed in Alabama and Florida.

Levels were slightly below average in Alabama, but mostly were above average elsewhere in the Southeast. In the western Great Lakes region, declining levels prevailed except in Indiana, where they held steady. Levels were mostly above average except locally in Minnesota, Michigan, and Ohio. In the midcontinent region, levels declined and were slightly below average in North Dakota, and declined and were mostly at or above average in Iowa. Mixed trends prevailed in other States, and levels were mostly mixed with respect to average. In the West, levels rose in southern California and declined in Arizona, California, Nevada, and Utah, but below average in other States. New high ground-water levels for February occurred in southern California, Kentucky, and Utah and a new all-time high was reached in Kentucky. New low levels for February were recorded in Arizona, Arkansas, Idaho, Maine, Nevada, New Mexico, and Texas.

Streamflow generally increased seasonally in Hawaii, northern parts of the midcontinent region, and most States in the Northeast, Southeast, and western Great Lakes region. Flows decreased in Alaska, Arizona, Nevada, Oklahoma, and Texas, and were variable elsewhere. Monthly mean flow remained above the normal range in a large area in and adjacent to Arizona, and increased into that range in parts of Connecticut, Hawaii, Indiana, Massachusetts, Nebraska, Ohio, and in most of the Southeast region. Monthly mean discharges were highest of record for the month in parts of Alabama and Georgia. Flooding occurred in Alabama, Connecticut, Florida, Georgia, Hawaii, Indiana, Louisiana, Mississippi, Minnesota, Missouri, New Mexico, North Carolina, and South Carolina, and Tennessee. Below-normal streamflow persisted in parts of Arkansas, Alabama, Idaho, Maine, Montana, Oregon, Quebec, and Utah. Daily mean flows were lowest of record for March in parts of Connecticut and Massachusetts, and highest of record for the month in parts of Connecticut, Hawaii, and Louisiana.

Ground-water levels rose in most of the Northeast region. Levels were close to highest in the 30-year record for March in Connecticut, in contrast to the far-below-average levels in Maine. Elsewhere, levels were generally near average, but were below average locally in New Hampshire and east-central New York. In the Southeast region, rising trends and above-average levels prevailed except locally. In the western Great Lakes region, levels rose in Indiana and Ohio, and trends were mixed in other States; levels were average in Indiana, and above and below average elsewhere. In the midcontinent region, levels rose in North Dakota and Nebraska, but trends were mixed elsewhere. Levels were mostly below average. In the West, levels rose in Utah and generally declined in Montana and New Mexico; elsewhere trends were mixed. Levels were below average in Montana, Arizona, and New Mexico, and mostly below average in Idaho; levels were mixed with respect to average elsewhere. New high ground-water levels for March occurred in Alabama, Kentucky, Utah, and West Virginia, and new all-time highs were reached in southern California and Kentucky. New low levels for March were recorded in Arizona, Arkansas, Idaho, Kansas, Louisiana, Maine, Nevada, New Mexico, and new all-time low levels occurred in Idaho and Texas.

Figure 429. Streamflow During February 1980.

Figure 430. Streamflow During March 1980.
Streamflow increased seasonally in Alaska, southern Canada, northern States in the Northeast and western Great Lakes regions, and northern and central parts of the midcontinent and West regions. Monthly mean flows decreased seasonally in Kentucky, Ohio, Rhode Island, and Tennessee, and were variable elsewhere. Monthly mean flow remained above the normal range in parts of Alaska, Connecticut, Hawaii, Louisiana, Ohio, Wyoming, in parts of each State in the Southeast region except Kentucky, and in a large area in and adjacent to Arizona. Monthly mean discharges were highest of record for the month in parts of Alaska, Louisiana, and Nova Scotia, and highest of all months of record in parts of Mississippi. Flooding occurred in Alabama, Connecticut, Kansas, Louisiana, Minnesota, North Carolina, and Wyoming. Below-normal streamflow persisted in parts of Quebec, Oklahoma, and South Dakota, and decreased into that range in parts of Maine, Ontario, Texas, Vermont, and Washington.

Ground-water levels rose in most of the Northeast region. Levels continued above average in Connecticut, and below-average levels persisted in parts of northern New England. In the Southeast region, levels rose in Kentucky, Virginia, and Mississippi; trends were mixed in other States. Levels were above average in Kentucky, Virginia, and North Carolina, and mixed with respect to average elsewhere. In the western Great Lakes region, levels rose in Minnesota and Indiana, and mostly rose in Michigan; trends were mixed elsewhere. Levels were average or below average, except below average in northern Minnesota and southeastern Kansas, Arkansas, and Louisiana. Mixed trends prevailed in Texas. Levels were below average in North Dakota and Arkansas, mostly above average in Nebraska and mixed with respect to average elsewhere in the region. In the West, levels declined in Idaho, Montana, and Arizona; trends were generally mixed elsewhere in the region. Levels were below average in Montana and Arizona, and mostly below average in New Mexico; levels were above and below average elsewhere. New high-record water levels for April occurred in Connecticut, Nebraska, and Utah; all-time highs were reached in Kentucky and southern California. New low levels for April were recorded in Arizona, Idaho, New Mexico, Tennessee, and Utah.

Mount St. Helens Volcano erupted violently on Sunday, May 18. Ash, mud, and debris, carried by glacial meltwater, washed into the Cowlitz River, choking the river channel and increasing the flood potential. Unprecedented flooding occurred on the Toutle River, which drains the north and west slopes of the volcano before emptying into the Cowlitz River. Flooding was also reported in parts of Alabama, Colorado, Georgia, Louisiana, Nebraska, Oklahoma, and Texas. Streamflow increased seasonally in Alaska, Oklahoma, Texas, and in most Rocky Mountain States, generally decreased seasonally in Arizona, Hawaii, and most States in the eastern half of the United States, and was variable elsewhere. Monthly mean flow remained in the above-normal range in large areas in and adjacent to Arizona and Alabama, and were highest of record for the month in parts of Mississippi. A large area of below-normal streamflow developed in the upper Midwest. Monthly mean flows were lowest of record for the month in parts of Alaska and Maine.

Ground-water levels generally declined in the Northeast region. Levels continued above average in northern New England and below average in parts of Connecticut and Rhode Island. In the Southeast region, levels declined in Virginia, Alabama, and Georgia, but trends were mixed elsewhere; levels were mostly above average. In the western Great Lakes region, levels declined in Minnesota and held steady in Michigan, and levels were above and below average; elsewhere, trends were mixed and levels were about average. In the midcontinent region, levels mostly declined in North Dakota, Iowa, and Kansas; trends were mixed elsewhere. Levels were near or above average in Nebraska, above and below average in Texas, and mostly below average elsewhere. In the West, levels held steady or rose in Montana and Idaho; declining levels prevailed for the most part in southern California and Arizona. Trends were mixed elsewhere in the region. Levels were below average in Washington and Arizona, mostly below average in Idaho and New Mexico, and mixed with respect to average elsewhere in the region. New high ground-water levels for May occurred in Alabama, Georgia, Louisiana, Nevada, and Utah, and new all-time highs were reached in Kentucky and Louisiana. New low levels for May were recorded in Arizona, Arkansas, Idaho, Kansas, New Mexico, and Utah, and a new all-time low was reached in Idaho.
Streamflow generally decreased in southern Canada, in the Northeast and Southeast regions, and in the southern part of the Midcontinent region. Monthly mean flows generally increased in Alaska, Iowa, South Dakota, Utah, and Wisconsin, and were variable elsewhere. Monthly mean discharge remained in the above-normal range in a large area in and adjacent to Arizona, and in parts of Alabama, Alaska, Georgia, Hawaii, Mississippi, Tennessee, Virginia, and West Virginia. Mean flows increased into that range in parts of each State in the western Great Lakes region, and in parts of Pennsylvania, Oregon, and South Carolina. Monthly and/or daily mean flows were highest of record for the month in parts of Ohio and Utah. Flooding occurred in Illinois, Indiana, Iowa, Missouri, Nebraska, Ohio, Oklahoma, and Wisconsin. Monthly mean flows remained in the below-normal range in large areas in southern Canada and the upper Midwest, and decreased into that range in British Columbia, and in parts of the New England States, Florida, Kansas, Kentucky, Pennsylvania, South Carolina, Tennessee, and Texas. Monthly and/or daily mean discharges were lowest of record for the month in parts of Quebec and Minnesota.

Ground-water levels declined seasonally in the Northeast region. Levels were far below average in most of Maine, above average locally in Connecticut, western New York, and Pennsylvania, and were generally average elsewhere in the region. In the Southeast region, levels declined except in parts of Florida, North Carolina, and West Virginia, and were mostly above average except in parts of West Virginia and locally in Florida. In the western Great Lakes region, levels mostly declined or held steady, levels were below average in Michigan and northern Minnesota, and average or above average elsewhere. In the midcontinent region, levels rose in Iowa and North Dakota, and declined in Arkansas, Nebraska, and in most of Louisiana and Texas. Levels were mostly below average except in Iowa, where they were above average statewide. In the West, levels rose in Idaho and Montana, and generally declined in Arizona, New Mexico, Nevada, Utah, and southern California. Levels were below average in Arizona, Montana, and New Mexico. New high ground-water levels for June occurred in Alabama, Nevada, Ohio, and West Virginia, and new all-time highs were reached in Kentucky and Utah. New low levels for June were recorded in Arkansas, Georgia, Idaho, Kansas, Louisiana, New Mexico, and Utah, and new all-time lows were reached in Arizona, Louisiana, Maine, and Texas.

Streamflow generally decreased seasonally in Alberta, British Columbia, central New England, and southern States of the Northeast region, and in most parts of the midcontinent, West, and western Great Lakes regions. Elsewhere, flows were variable. Monthly mean discharge remained in the above-normal range in a large area in and adjacent to Nevada, and in parts of Colorado, Indiana, Louisiana, Mississippi, New Mexico, New York, North Carolina, Ohio, Oregon, Pennsylvania, Virginia, and West Virginia. Monthly and/or daily mean discharges were highest of record for the month in parts of Quebec, Alaska, New York, and Utah. Flooding occurred in Connecticut, Delaware, Michigan, and Mississippi. Drought conditions prevailed in Minnesota, eastern Montana, and in much of the midcontinent region as a result of a record-breaking heat wave. Monthly mean flows remained in the below-normal range in large areas of southern Canada and in parts of Kansas, Kentucky, Illinois, Minnesota, Missouri, Montana, North Carolina, North Dakota, Tennessee, Texas, Washington, and Wyoming. Monthly mean flows were lowest of record for the month in parts of Minnesota.

Ground-water levels continued to decline seasonally in most of the Northeast region, but levels were generally within the normal range. In the Southeast region, trends were mixed in West Virginia and Florida, and generally declined seasonally in other States; levels were above and below average. In the western Great Lakes region, levels generally declined and were mostly below average in the northern States in the region; they were average or above average in the southern States. In the midcontinent region, levels mostly declined except for mixed trends in Texas; levels were mostly below average. In the West, levels generally declined and were mostly below average except in southern California and Nevada. New high ground-water levels for July occurred in Kentucky and Nevada, and a new all-time high was reached in Utah. New low levels for July were recorded in Arizona, Arkansas, Idaho, Louisiana, Mississippi, Montana, New Mexico, North Dakota, and Texas, and new all-time low levels were reached in Arizona, Georgia, Idaho, several in Louisiana, and in Utah.
Streamflow generally decreased in southern Canada, in the Southeast and West regions, in central States of the Northeast region, and in northern and southern States of the midcontinent region. Monthly mean flows generally increased in New Brunswick, Iowa, Kansas, Ohio, and Wisconsin, and were variable elsewhere. Monthly mean discharge remained in the above-normal range in parts of southeast Canada, Alaska, California, Mississippi, Nevada, Tennessee, Utah, and in a large area in and adjacent to Ohio. Monthly mean flows were highest of record for August in parts of Iowa, Michigan, Ohio, Pennsylvania, and Utah. Flooding occurred in Indiana, Iowa, Kansas, Michigan, Ohio, Pennsylvania, Texas, and West Virginia. Drought conditions persisted in northern Minnesota and eastern Montana, and in parts of the Southeast and midcontinent regions where monthly mean flows were below the normal range in parts of each State except Mississippi and West Virginia. Water rationing was implemented in many towns in Nebraska, Oklahoma, South Dakota, and Texas, and low reservoir levels curtailed irrigation in parts of Nebraska. Monthly mean flows were lowest of record for August in parts of Minnesota.

Ground-water levels continued to decline seasonally in most areas in the Northeast region, and were generally near average for the end of August. In the Southeast region, levels declined seasonally except for general rises in West Virginia and mixed trends in Florida. Levels were above average in West Virginia and Kentucky, and mixed with respect to average in most other States. In the western Great Lakes region, levels generally declined seasonally except in Ohio, where they rose and were above average. In the midcontinent region, levels declined in Arkansas, but trends were mixed in other States. Levels were below average in North Dakota, Kansas, and Arkansas, but were above and below average elsewhere. In the West, levels in the northern and southern parts of the region declined and were generally below average. Elsewhere, trends were mixed, as were averages, except for below-average levels in Montana and New Mexico. New high ground-water levels for August occurred in Alabama, Arizona, California, Iowa, Nebraska, Nevada, Ohio, and West Virginia, and a new all-time high level was recorded in Kentucky. New lows for August were reached in Arkansas, Idaho, Montana, Nevada, New Mexico, North Dakota, Tennessee, Texas, and Utah. New all-time lows were measured in Arizona, Georgia, and Kansas.

Streamflow generally decreased in southwestern Canada, Nevada, Wyoming, most parts of the Ohio River valley and the midcontinent region, and throughout most of the Northeast and southeast regions. Monthly mean flows generally increased in Michigan, Missouri, New Hampshire, North Dakota, Ontario, Vermont, Washington, and Wisconsin, and were variable elsewhere. Monthly mean discharges remained in the above-normal range in parts of Nova Scotia, Quebec, California, Iowa, Maine, New York, Nevada, Tennessee, Texas, Utah, West Virginia, and most parts of the western Great Lakes region. Monthly and/or daily mean flows were highest of record for the month in parts of Alaska, Michigan, and Utah. Flooding occurred in Alabama, Minnesota, Texas, and Wisconsin. Below-normal streamflow persisted in parts of Arizona, Connecticut, Oregon, Utah, Vermont, and in parts of each State in the midcontinent and Southeast regions except Iowa, Kentucky, Missouri, and West Virginia. Monthly mean flows were lowest of record for September in parts of Louisiana. Water-use restrictions imposed by many cities and towns in Arkansas, Kansas, New Jersey, Oklahoma, and Texas continued in effect during September.

Ground-water levels continued to decline seasonally in the Northeast region; levels were again near normal in most of the region. In the Southeast region, declining levels prevailed, and levels were mixed with respect to average except in Virginia, where they were below average, and in Florida, where they were average or below average. In the western Great Lakes region, levels declined or held steady in Indiana, and declined in Ohio but continued above normal. Trends were mixed in other States and levels were above and below average. Mixed trends generally prevailed in the midcontinent region, and levels were above and below average except in Kansas and Arkansas, where they were below average. In the West, levels rose in Washington and in Utah, and mostly rose in Idaho; trends were mixed in other States. Levels were below average in Washington and Arizona, and above and below average elsewhere in the region. New high ground-water levels for September were recorded in southern California and Nevada, and a new all-time high level occurred in Kentucky. New September lows were noted in Arkansas, Idaho, Louisiana, Tennessee, and Texas, and a new all-time low was reached in Georgia.
Streamflow generally increased in southeastern Canada, Arkansas, Nebraska, Nevada, Oklahoma, Oregon, and most States in the Northeast and Southeast regions. Monthly mean flows generally decreased in Florida, Hawaii, Iowa, Missouri, New Mexico, Oregon, Wisconsin, southwestern Canada, and all States adjacent to the Ohio River. Elsewhere, flows were variable. Below-normal streamflow persisted in parts of Arizona, Connecticut, Florida, Georgia, Kansas, New Mexico, New York, North Carolina, North Dakota, Oklahoma, Oregon, Utah, and Virginia. Monthly and/or daily mean flows were lowest of record for October in parts of Connecticut, Florida, and Georgia. Water-use restrictions remained in effect in parts of New Jersey, New York, and Oklahoma, where contents of principal reservoirs remained much below average. Monthly mean discharges remained in the above-normal range in parts of several States in and adjacent to southern Nevada and Wisconsin, in parts of southeastern Canada, Alaska, Hawaii, New York, Montana, Ohio, Tennessee, and Texas, and increased into that range in parts of Alberta, North and South Dakota, and several States in and adjacent to Mississippi. Monthly mean flows were highest of record for October in parts of Quebec. Flooding occurred in Connecticut and Mississippi.

Ground-water levels continued to decline seasonally in the Northeast region. Except for Maine, levels were below average in most of New England, southeastern New York, eastern Pennsylvania, and northern New Jersey. In the Southeast region, levels generally declined in West Virginia and Kentucky, with slight rises in Mississippi; trends were mixed elsewhere in the region. Levels were above and below average. Trends were mixed in the western Great Lakes region, and were above and below average. In the midcontinent region, mixed trends prevailed except for general declines in North Dakota and Iowa. Levels were generally below average except locally in Iowa and Texas. In the West, levels rose in Washington and declined in Montana and Arizona; trends were mixed elsewhere in the region. Levels were below average in Washington, Idaho, Arizona, and New Mexico, and mixed with respect to average in other States. New high ground-water levels for October were recorded in southern California, Nevada, and Utah. New October lows occurred in Arizona, Arkansas, Idaho, Louisiana, New Mexico, and Utah, and three new all-time lows were reported in Arizona.

Streamflow increased seasonally in Arkansas, Arizona, Louisiana, Nebraska, Nevada, Ohio, Oregon, Washington, most States in the Northeast region, and northern and western States of the Southeast region. Monthly mean flows generally decreased in Alaska, southern Canada, Colorado, Illinois, Kansas, Michigan, and North and South Dakota, and were variable elsewhere. Water shortages prevailed in parts of the metropolitan Northeast as reservoir levels continued to drop. Monthly mean flows were below the normal range in large areas in and adjacent to Kansas and New Jersey, and in smaller areas located in the Southeast and West regions, including most of southern Florida and northern California. Monthly and daily mean flows were lowest of record for November in parts of Florida. Above-normal streamflow persisted in parts of Alabama, Alaska, Arizona, Arkansas, Louisiana, Mississippi, Nevada, New York, Nova Scotia, Quebec, Utah, and Wisconsin, and increased into that range in parts of British Columbia, Colorado, Ohio, Montana, Texas, and Washington. Ground-water levels generally rose in Maine, Maryland, and northern New York, and continued to decline in much of Connecticut and New Jersey. Levels remained below average in most of New England, except Maine, and in northern New Jersey. In the Southeast region, levels declined in Kentucky and Virginia and rose in most of West Virginia and Mississippi; trends were mixed elsewhere in the region. Levels were generally below average in Kentucky and West Virginia and most of Florida, and mixed with respect to average elsewhere. Trends were mixed in the western part of the western Great Lakes region, but levels generally declined in the eastern part. Levels were generally average or slightly below average. In the midcontinent region, levels rose in North Dakota and Texas, and trends were generally mixed elsewhere. Levels were mostly below average except for a few wells in Iowa and one well in Texas. In the West, levels rose in Arizona and New Mexico and declined in Montana; trends were mixed elsewhere in the region. Levels were below average in the northern and southern parts of the region, and above and below average elsewhere. New high ground-water levels for November were recorded in southern California, Nevada, and Utah. New November lows occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Nebraska, New Mexico, Texas, and Utah.
Streamflow decreased in Alaska, Alberta, Iowa, Minnesota, Mississippi, North Dakota, Utah, and southeastern parts of the Northeast region, and increased in New Brunswick, Saskatchewan, Nevada, Pacific Coastal States, and in a broad band across states from Maine through the Ohio Valley to New Mexico. Elsewhere, flows were variable. Flows remained in the above-normal range in parts of Arizona, Colorado, Montana, Nevada, New Mexico, New York, Texas, Utah, and Washington, and increased into the normal range in parts of British Columbia, Idaho, Missouri, Nova Scotia, and Quebec. Daily mean discharges were highest of record in some streams in British Columbia and Washington. Flooding occurred in British Columbia, Idaho, Illinois, Montana, Oregon, and Washington. Water shortages prevailed in parts of the Northeast region as reservoir levels remained low. Below-normal flows persisted in a large area in the metropolitan Northeast, parts of most States in the Southeast region, most of Nebraska and Kansas, and smaller areas located in Arizona, Arkansas, California, Colorado, Illinois, North Dakota, Saskatchewan, and Texas. Flow of the Mississippi River at Baton Rouge, Louisiana, was approaching critically low conditions at month's end.

Ground-water levels rose in most of the Northeast region. Below-average levels persisted in southern New England, northern New Jersey, and in parts of Delaware and Maryland. In the Southeast region, levels rose in Mississippi, declined in Virginia, North Carolina, and Alabama, and showed mixed trends in other States. Levels were below average in Virginia, Mississippi, and Alabama, and above and below average elsewhere. In the western Great Lakes region, levels generally rose in Michigan and in Illinois, and generally declined in other States. Levels were with respect to average. In the midcontinent region, levels declined in North Dakota, but trends were mixed in other States. In the West, levels rose in Nevada and declined in Idaho, Montana, and southern California. Trends were mixed in other States. Levels were generally below average in Washington, Idaho, Montana, and New Mexico, and above and below average elsewhere. New high ground-water levels for December were recorded in Arizona, southern California, Nevada, and Utah. New December lows occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Nebraska, New Mexico, Texas, and Utah, and a new all-time low was reported in Arizona.

Drought conditions continued in several Eastern States where end-of-month contents in many reservoirs remained far below average. Streamflow generally decreased in southern California and in most areas of the United States. Monthly mean flows were below the normal range in Hawaii, coastal areas of the Pacific Northwest, and in a broad band from New Brunswick to the Southeast region, and most of the southern half of the midcontinent region. Monthly and/or daily mean flows were lowest of record for January in parts of Connecticut, Hawaii, Louisiana, Massachusetts, New Jersey, New York, Pennsylvania, Rhode Island, and in parts of all States in the Southeast region except South Carolina and Virginia. Flows remained in the above-normal range in parts of British Columbia, Idaho, Montana, New Mexico, Texas, and Utah, and increased into that range in parts of Alberta, Alaska, and North Dakota. Monthly and daily mean flows were highest of record for the month in parts of Alaska.

Ground-water levels generally declined in the Northeast region. Levels were below average in most of the region, and were unusual low in parts of southern New England and northern New Jersey. In the Southeast region, levels held steady or rose in Alabama, trends were mixed in Mississippi and Georgia, and levels mostly declined elsewhere. Levels were generally above average in Kentucky, and mostly below average in other States. In the western Great Lakes region, levels held steady or rose in Indiana and Ohio, but generally declined elsewhere. Levels were near normal in Ohio, and mostly below normal elsewhere. In the midcontinent region, levels declined in North Dakota and Iowa, and rose in Arkansas; trends were mixed elsewhere in the region. Levels were about average in Iowa but generally below average in other States. In the West, levels rose in Washington and New Mexico, and declined in Montana and most of Idaho. Trends were mixed elsewhere. Levels were below average in Idaho, Montana, Arizona, and New Mexico, and above and below average in other States. New high ground-water levels for January were recorded in Nevada and Utah. New January lows occurred in parts of southern New England and northern New Jersey, in Arizona, Arkansas, Georgia, Idaho, Kansas, Minnesota, Mississippi, Montana, Nevada, Tennessee, and Texas. New all-time low levels were reached in Tennessee and Texas.
Streamflow generally increased in most areas of the United States east of the Rocky Mountains and in Nevada, Oregon, Washington, and Wyoming; generally decreased in Alaska, Alberta, British Columbia, Montana, Ontario, and Texas; and was variable elsewhere. Below-normal streamflow persisted in a large area in and adjacent to Oklahoma, parts of each State in the Southeast region except Kentucky and West Virginia, and smaller areas located in Arizona, Hawaii, Maryland, Minnesota, New Jersey, New York, Ontario, Oregon, and Wyoming. Monthly and/or daily mean discharges were lowest of record for the month in parts of Arizona and Georgia. Water conservation measures were in effect in parts of Arkansas and Kansas. Monthly mean flows remained in the above-normal range in parts of Alaska, Alberta, British Columbia, Idaho, Montana, New Mexico, and Texas, and increased into that range in most of the Northeast region, a large area in and adjacent to Michigan in the western Great Lakes region, and parts of Alabama, Florida, and Georgia. Monthly and/or daily mean flows were highest of record for the month in parts of Ontario, Quebec, Alaska, Connecticut, Maine, Massachusetts, Michigan, New Hampshire, New York, and Vermont, with flooding in Indiana, Maine, Michigan, Mississippi, New Hampshire, New York, Ohio, Vermont, and Wisconsin.

Ground-water levels rose in nearly the entire Northeast region. Levels were above average in parts of Pennsylvania, New York, and most of northern New England, and continued below average in much of New Jersey, Delaware, and Maryland's Eastern Shore. In the Southeast region, levels rose in West Virginia and Georgia, held steady or rose in North Carolina, and mostly rose in Mississippi and Florida. Trends were mixed in Kentucky, Virginia, and Alabama. In the western Great Lakes region, levels rose and were about average in Ohio but below average in Indiana; trends were mixed elsewhere. In the midcontinent region, levels declined in North Dakota and Texas, rose in Nebraska, and in northern Iowa; trends were mixed elsewhere in the region. In the West, levels rose in New Mexico, but trends were mixed elsewhere in the region. High ground-water levels for February were reached in Maine, Utah, and West Virginia. New February lows occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Texas, and Utah.

Streamflow decreased in southwestern Canada, Indiana, Nebraska, Nevada, Ohio, Oregon, Washington, and in most parts of the Northeast and Southeast regions. Monthly mean flows increased in Colorado, North Dakota, Wyoming, and in the southern half of the midcontinent region, and were variable elsewhere. Monthly mean discharges were below the normal range in parts of every State except Alaska, Maine, New Hampshire, and Vermont, and were lowest of record for March in parts of Alabama, Connecticut, Georgia, Nebraska, New Jersey, New York, North Carolina, Washington, and West Virginia. Water conservation measures were in effect in parts of New Jersey, New York, and South Dakota. Flows remained in the above-normal range in parts of Alberta, British Columbia, New Brunswick, Nova Scotia, Quebec, Maine, Montana, New Mexico, Texas, and Alaska, and increased into that range in parts of Ontario. Mean flows were highest of record for the month in parts of Alaska.

Ground-water levels continued to rise in the southern part of the Northeast region but resumed a falling trend in most of the northern and western parts. Levels were far below average in some of the eastern parts. In the Southeast region, levels rose in Alabama, Mississippi, and North Carolina, declined in Kentucky, and showed mixed trends in other States. Levels were above average in Kentucky, below average in North Carolina and Alabama, and above and below average elsewhere. In the western Great Lakes region, levels declined in Indiana, Ohio, and Illinois. Trends were mixed in other States, and levels were mixed with respect to average. Levels in the midcontinent region rose slightly in Iowa, Nebraska, and Texas, declined in Kansas, and showed mixed trends elsewhere. Levels were generally below average. In the West, levels generally rose in southern California, Arizona, and Nevada, and generally declined in other States. Levels were below average in Arizona, Nevada, and Montana, and above and below average elsewhere. A new high ground-water level for March was reached in Utah. New March lows occurred in Arizona, Arkansas, Georgia, Idaho, Kansas, Louisiana, Nevada, Tennessee, and Virginia. A new all-time high was recorded in southern California and a new all-time low was reached in Idaho.
Streamflow generally increased in southern Canada, most northern areas of the conterminous United States, and also in Alabama, Georgia, Kentucky, Tennessee, and West Virginia. Monthly mean flows decreased in Kansas, Rhode Island, and South Carolina, and were variable elsewhere. Monthly mean flows remained in the below-normal range in parts of every State and Province except Alaska, Alberta, British Columbia, New Brunswick, Kentucky, Maine, Michigan, Minnesota, New Hampshire, Nova Scotia, Ohio, Oregon, Vermont, West Virginia, and Wisconsin, and were lowest of record for April in parts of Louisiana, Maine, Nebraska, New Mexico, North Carolina, Virginia, and Wyoming. Voluntary water-conservation measures were in effect in parts of Florida. Flows remained in the above-normal range in parts of the Atlantic Provinces, Ontario, Quebec, New Mexico, and Texas, and increased into that range in parts of Michigan, Ohio, Oregon, Tennessee, Utah, and Washington. Monthly mean flows were highest of record for the month in parts of Alaska. Flooding occurred in Illinois, Indiana, Ohio, and Texas.

Ground-water levels reversed a falling trend and rose in the northern and western parts of the Northeast region, but declined in the southern parts. Levels were far below average in most eastern parts of the region. In the Southeast region, levels rose in Kentucky, declined in Alabama and West Virginia, and showed mixed trends in other States. Levels were above average in Kentucky, below average in Alabama, North Carolina, Tennessee, Virginia, and West Virginia, and above and below average elsewhere. In the western Great Lakes region, ground-water levels were below average in Minnesota and Michigan and above average elsewhere. Levels were near or above average in Wisconsin, Illinois, Indiana, and Ohio, and below average in other States. Levels in the midcontinent region rose in North Dakota and Nebraska, declined in Kansas and Texas, and showed mixed trends elsewhere. Levels were generally below average. In the West, levels rose in Washington, declined in Arizona, and showed mixed trends in other States. Levels were below average in Idaho, Arizona, and above and below average elsewhere. A new high ground-water level for April was again reached in Utah. New April lows occurred in Arkansas, Kansas, Louisiana, Nebraska, Tennessee, Texas, Utah, and Virginia. New all-time highs were reached in parts of Arizona, California, and Illinois, and new all-time lows were reached in Arizona and Idaho.

Streamflow generally increased seasonally in southwestern Canada, the Rocky Mountain States, Kansas, Missouri, and Oklahoma, and decreased seasonally in Arizona, Michigan, Wisconsin, and in most States in the Southeast and Northeast regions. Drought restrictions were removed in New Jersey but were continued in central and southern Florida as below-normal streamflow persisted. In most southeastern States, parts of Connecticut, Hawaii, Maine, and New York, and in several large areas in and adjacent to California, Colorado, and South Dakota. Monthly and/or daily mean flows were lower than normal for the month in parts of Florida, Georgia, New York, North Carolina, Virginia, and Wyoming. Flows remained in the above-normal range in parts of Alaska, New Mexico, and Texas, and increased into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that range in parts of the Atlantic Provinces, Ontario, Quebec, and Washington, and into that 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Several large areas of below-normal streamflow persisted in the Southeast and in central and northern parts of the West and midcontinent regions, along with smaller areas in western Connecticut, eastern New York, southwestern Ontario, and southern Arizona. Monthly mean flows were lowest of record for June in parts of Alaska, Florida, Georgia, Hawaii, and Virginia. Streamflow was above the normal range in a large area encompassing the Ohio River basin and southern parts of the midcontinent region, along with smaller areas of above-normal flow located in the Northeast region and in parts of Arizona, Oregon, Washington, and Wisconsin. Monthly mean discharges were highest of record for the month in parts of Ohio and Texas. Flooding during the period June 9-15 in Illinois, Indiana, Iowa, Kansas, Louisiana, Missouri, Ohio, Texas, and Wyoming resulted from heavy rains early in the month, augmented by meltwater runoff from snow in northeastern Wyoming. Peak discharges of several streams exceeded those likely to occur only once in 100 years.

Ground-water levels declined in most of the Northeast region. Levels were slightly above and below average in most States, but were considerably above average in southwestern Pennsylvania and eastern Maine. Levels were below average in most other coastal parts of New England, and in central New Jersey and most of Delaware and Maryland. In the Southeast region, levels rose in Kentucky, and declined in Alabama, Mississippi, North Carolina, and Tennessee. Trends were mixed in Florida, Georgia, Virginia, and West Virginia. In the western Great Lakes region, levels rose in Illinois, and declined in Minnesota and Ohio. Trends were mixed in other States. In the midcontinent region, levels rose in Iowa, and declined in Arkansas, Kansas, Nebraska, and North Dakota. Trends were mixed in other States. Levels were below average in Arkansas, Kansas, Nebraska, and North Dakota. In the West, levels declined in Utah; trends were mixed in other States. Levels were below average in Arizona and Montana. New high ground-water levels for June were reached in West Virginia, Illinois, Ohio, and Utah. New June lows occurred in Mississippi, Tennessee, Virginia, Kansas, North Dakota, Arizona, Idaho, New Mexico, and Utah. New alltime highs were reached in Texas, Arizona, and Idaho, and a new alltime high was reached in Nevada.

Streamflow generally decreased seasonally throughout most of the United States and southern Canada, but increased in parts of Alberta, Saskatchewan, Alaska, Arizona, Massachusetts, New Hampshire, and North Dakota, and was variable in Connecticut, Hawaii, Iowa, Louisiana, Minnesota, Mississippi, and New Mexico. Monthly mean flows remained in the below-normal range in parts of 17 States and were lowest of record for July throughout Georgia and in parts of Alabama, Florida, and Hawaii. Water use restrictions were in effect in parts of Florida, Massachusetts, and Oregon. Flows remained in the above-normal range in parts of New Brunswick, Quebec, Alaska, New York, and in parts of several States in the lower Mississippi Valley extending from Ohio to Texas. Flooding occurred in Iowa, Colorado, Illinois, Indiana, Iowa, Kansas, Missouri, and Nebraska. Peak discharges on several streams in Iowa exceeded those likely to occur only once in 100 years.

Ground-water levels declined seasonally in most of the Northeast, and remained near average in most interior parts of the region. Below-average levels persisted in southeastern Massachusetts and most of New Jersey, Delaware, and eastern Maryland. In the Southeast region, ground-water levels fell in Alabama, Kentucky, and Florida, and were below average elsewhere. In the western Great Lakes region, ground-water levels fell in Indiana and fell in Ohio; trends were mixed in Minnesota. Levels were near or above average in Kentucky and West Virginia, and were below average elsewhere. In the western Great Lakes region, ground-water levels fell in Indiana and fell in Ohio; trends were mixed in Michigan and Minnesota. Levels were near or above average in Indiana and Ohio, and above and below average in Michigan and Minnesota. In the midcontinent region, ground-water levels fell in Nebraska; trends were mixed elsewhere in the region. Levels were below average in Arkansas, Kansas and North Dakota, and above and below average elsewhere. In the West, ground-water levels fell in California, Utah, and Washington; trends were mixed elsewhere in the region. Levels were below average in Arizona, Idaho, Montana, and Washington, and above and below average elsewhere. A new high ground-water level for July was reached in Iowa. New July lows occurred in Georgia, Mississippi, Tennessee, Virginia, Kansas, Louisiana, Nebraska, North Dakota, Arizona, California, Idaho, Montana, and New Mexico. New alltime highs for July were reached in Iowa and Nevada. New alltime lows were reached in Texas, Arizona, Idaho, and Utah.
Streamflow generally decreased seasonally in southern Canada, central parts of the midcontinent region, northern parts of the West region, and also in Georgia and South Carolina. Flows generally increased in Illinois, Massachusetts, Mississippi, New York, North Dakota, Ohio, Pennsylvania, Rhode Island, Vermont, and West Virginia, and were variable elsewhere. Below-normal streamflow persisted in parts of Ontario, Quebec, Kansas, and Virginia, and in large areas in and adjacent to Georgia and Idaho. Monthly mean flows were lowest of record for September in parts of Guam. Water-use restrictions remained in effect in parts of North Carolina. Monthly mean flows remained in the above-normal range in parts of Alberta, New Brunswick, Saskatchewan, Kentucky, North Dakota, Tennessee, Texas, and in parts of all States that border the Great Lakes, and increased into that range in parts of Louisiana, Mississippi, West Virginia, and Washington. Monthly and/or daily mean flows were highest of record for the month in parts of Alabama, Maine, and New York. Flooding occurred in Alaska, California, Michigan, and North Carolina.

In the Northeast region, ground-water levels continued to decline seasonally in most of New Jersey and Pennsylvania, and in much of New England. Levels remained above average in Maine, and below-average levels persisted in most of Maryland, Delaware, northern New Jersey, and southeastern Massachusetts. In the Southeast region, levels declined but were above average in Kentucky, and declined and were below average in Virginia and Alabama. Trends were mixed in other States. In the western Great Lakes region, water levels declined slightly in Ohio, and showed mixed trends in other States; levels were about average. In the midcontinent region, trends were mixed in all reporting States. Levels were above and below average in Iowa and Texas, about average in Nebraska, and mostly below average elsewhere. In the West, levels declined in Nevada, mostly declined in southern California, rose in New Mexico, and mostly rose in Idaho; trends were mixed elsewhere. Levels were below average in Washington and Arizona, mostly below average in Idaho, and above and below average elsewhere in the region. New low ground-water levels for September occurred in Alaska, California, Idaho, Maryland, New Jersey, North Dakota, Tennessee, Utah, and Virginia. New all-time low levels were recorded in Arizona, Idaho, Kansas, and Utah.
Streamflow increased in most of the West region, southeastern Canada, most northern States in the Northeast and western Great Lakes region, as well as in Texas, Oklahoma, and Missouri. Monthly mean flows generally decreased in the Southeast region, southwestern Canada, and in Alaska, Indiana, Iowa, Louisiana, and Ohio. Elsewhere flows were variable. Below-normal streamflow persisted in eastern Nebraska, parts of Ontario and Quebec, and in a large area in and adjacent to Georgia. Daily mean flows were lowest of record for the month in parts of Florida and Georgia. Water-use restrictions remained in effect in parts of North Carolina. Monthly mean flows remained in the above-normal range in parts of Texas and in a broad band across the northern tier of States extending from North Dakota to Maine. Monthly and/or daily mean flows were highest of record for the month in parts of Michigan and Maine.

Flooding occurred in Oklahoma and Texas where peak discharges on several streams exceeded those likely to occur only once in 100 years.

Ground-water levels in the Northeast region rose in most of New England and New York State. Levels generally declined in Maryland, Delaware, New Jersey, and Pennsylvania. Levels near the end of the month were above average in the northern parts of the region, and remained below average in Maryland, Delaware, northern New Jersey, and southeastern New York. In the Southeast region, levels declined in Kentucky, Virginia, North Carolina, Mississippi, and in parts of Georgia and Florida, and rose in Alabama. Trends were mixed in West Virginia. In the western Great Lakes region, water levels rose in Minnesota, but trends were mixed elsewhere in the region. In the midcontinent region, levels rose but were below average in Arkansas, and most daily and were below average in Kansas. Trends were generally mixed in other States in the region. In the West, levels rose in Washington and declined in Montana; trends were mixed in other States. Levels were below average in Washington, Montana, and Arizona, and in most of Idaho and Utah. New high ground-water levels for October were reached in Vermont and Maine. A new high level for October, reached a year ago in Nevada, was equalled this year in the same observation well. New low levels for October occurred in Arizona, Delaware, Idaho, Kansas, Louisiana, Maryland, New Mexico, Tennessee, Texas, and Utah. New alltime low levels were reached in Virginia and Arizona.

Streamflow increased seasonally in the Far Western States and also in the Atlantic Provinces, Arkansas, Indiana, Massachusetts, Nebraska, and Rhode Island. Monthly mean flows generally decreased in Alberta, Saskatchewan, Wyoming, Texas, Florida, and Virginia, and in the northern tier of States extending from North Dakota to Maine. Elsewhere flows were variable. Below-normal streamflow persisted in most of the Southeast region and also in parts of Iowa, Louisiana, Montana, Nebraska, New York, and Ontario. Monthly and/or daily mean discharges were lowest of record for the month in parts of Florida and Georgia. Voluntary restrictions on water use remained in effect in several towns in western North Carolina. Monthly mean discharge remained in the above-normal range in parts of southeastern Canada, California, Colorado, Illinois, Maine, Michigan, Minnesota, Montana, Nebraska, New York, and South Dakota; trends were mixed elsewhere in the region. Levels were above average in Kansas, and Texas; trends were mixed in other States. Levels were above average in Iowa, and below average in North Dakota and Arkansas; levels were mixed elsewhere in other States. Levels were above average in Iowa, and below average in North Dakota and Arkansas; levels were mixed elsewhere in the region. In the midcontinent region, levels rose in Nebraska, Kansas, and Texas; trends were mixed in other States. Levels were above average in Montana, Arizona, and in most of Idaho and Utah; levels were above and below average in other States. New low ground-water levels for November were reached in Arizona, Florida, Idaho, Kansas, Nevada, New Mexico, North Dakota, Tennessee, Texas, and Utah. New alltime high levels were reached in New York and Vermont, and new alltime lows were recorded in Arizona, Maryland, New Jersey, and Virginia.
Streamflow generally increased seasonally in the Southeast region and southern States of the Northeast, western Great Lakes, midcontinent, and West regions. Monthly mean flows generally decreased seasonally elsewhere in the conterminous United States and northern Canada. Flows were variable in Alaska and Hawaii. Monthly mean flows were in the normal range or above that range in most of the Southeast region, in sharp contrast to the pattern of below-normal streamflow that prevailed during most of 1981. Below-normal flows persisted in southern Florida and northern Virginia, however, and also remained in that range in parts of Arizona, Arkansas, Kansas, Louisiana, Maryland, Montana, Nebraska, New Jersey, and Ontario. Mean flows remained in the above-normal range in parts of Alaska, California, New Mexico, Texas, and Utah, and increased into that range in parts of Alabama, Arizona, Arkansas, Connecticut, Georgia, Hawaii, North and South Carolina, Ohio, Tennessee, and Virginia. Flooding occurred in Alabama, California, Indiana, New York, North and South Carolina, Oregon, and Washington.

Ground-water levels in the Northeast region continued to decline in the northern half and rose in most of the southern part. Levels near the end of the month were near average in most of the region. In the Southeast region, water levels rose in Kentucky, Virginia, North Carolina, Mississippi, and Alabama, and mostly rose in Georgia. Levels declined in Florida and in much of West Virginia. Levels were above and below average in most of the region. In the western Great Lakes region, water levels rose in Ohio, and declined in Wisconsin and Michigan; trends were mixed in Minnesota. Levels were slightly below average in Michigan, about average in Wisconsin and Ohio, and above and below average in Minnesota. In the midcontinent region, water levels showed mixed trends in all of the States. Levels were average or above average in Nebraska and Iowa, below average in North Dakota, Missouri, and Arkansas, and above and below average in Kansas and Texas. In the West, water levels declined in Montana and rose in Nevada; trends were mixed in other States. Levels were below average in Montana and Arizona, mostly below average in Idaho, Utah, and Nevada, and below and above average elsewhere. A new January high ground-water level was reached in Nevada. New low levels for January occurred in Arizona, Arkansas, Delaware, Florida, Idaho, Kansas, Louisiana, Maryland, North Dakota, Tennessee, Texas, and Virginia.
Streamflow generally decreased in southeastern Canada, Saskatchewan, Maine, Vermont, and South Carolina, increased in Georgia, Mississippi, Virginia, West Virginia, in most of the West and midcontinent regions, and in southern parts of the Northeast and western Great Lakes regions. Flows were variable elsewhere. Monthly mean flows remained in the above-normal range in parts of Alaska, California, Connecticut, Georgia, North and South Carolina, New Mexico, Ohio, Rhode Island, Tennessee, Texas, and Utah, and increased into that range in most Western States and in a broad band extending from Ohio westward to North Dakota. Monthly and/or daily mean flows were highest of record for the month in parts of California, Idaho, Illinois, Oregon, Rhode Island, and Washington. Flooding occurred in Georgia, Idaho, Illinois, Oregon, Nebraska, New York, North Carolina, and Oregon. Below-normal streamflow persisted in parts of Ontario, Quebec, Arizona, Florida, Kansas, Louisiana, Montana, and Nebraska.

Ground-water levels in the Northeast region generally continued the trend of the previous month—declining in northern areas and rising in several southern parts of the region. Levels were near average in most of the region; however, in Connecticut, Rhode Island, levels were unusually high in some observation wells. In the Southeast region, water levels rose in Virginia, North Carolina, Mississippi, and Alabama, and mostly rose in West Virginia and Kentucky. Trends were mixed in Georgia and Florida. Levels were below average in Virginia, and above and below average in other reporting States. In the western Great Lakes region, water levels declined in Minnesota, Wisconsin, and Michigan, and rose in Ohio. Levels were below average in Michigan, at or above average in Ohio, and above and below average in Minnesota. In the midcontinent region, levels rose in Kansas and Missouri; trends were mixed in other States. In the West, water levels rose in Washington, Nevada, and New Mexico; trends were mixed in other States. Levels were above average in Washington and Montana, and below average in Idaho, Utah, and New Mexico; they were above and below average in southern California and Nevada. New February high ground-water levels were reached in Connecticut, Idaho, Iowa, Nevada, and Rhode Island. New low levels for February occurred in Arizona, Arkansas, Florida, Idaho, Kansas, Louisiana, North Dakota, Tennessee, and Texas. New alltime low levels were recorded in Arizona and Idaho.

Severe flooding occurred in the Maumee River basin in Indiana and Ohio. Particularly hard hit was Allen County (Fort Wayne) in Indiana where the St. Joseph and St. Marys Rivers combine to form the Maumee River. Flood damages in Allen County alone were estimated at $20 million and 9,000 residents were forced to evacuate their homes. Peak discharges on many streams in northern Indiana, northwestern Ohio, and southern Michigan were at or close to the highest of record. Flooding also occurred in Illinois and Florida. Streamflow generally increased in Nevada, Utah, and in northern States of the Northeast and western Great Lakes regions, and decreased in Alaska and in most parts of the southeast region and south coastal States in the Northeast region. Flows were variable elsewhere. Monthly mean discharges were above the normal range in large areas in and adjacent to Nevada and Illinois. Monthly mean flows were highest of record for March in parts of Indiana and Ohio, and lowest of record in parts of Quebec. Below-normal streamflow persisted in parts of Quebec, Arizona, Florida, Louisiana, Nebraska, and Texas, and decreased into that range in several States in the Southeast region and south coastal States in the Northeast region. Ground-water levels rose in most of the Northeast region, but declined in Connecticut and Rhode Island and in northern Maine. Levels were generally near average, except for above-average levels along the New York-Vermont border, and below-average levels in northern New Jersey and adjacent southeastern New York State. In the Southeast region, levels rose in Virginia and Alabama, and mostly rose or held steady in Georgia. Trends were mixed in other States. In the western Great Lakes region, levels rose in Michigan, and generally declined in Wisconsin; trends were mixed in other States. In the midcontinent region, water levels rose except for some declines in Louisiana and Texas. In the West, water levels rose in Washington, declined or held steady in Arizona, and mostly declined in New Mexico; trends were mixed elsewhere in the region. New high ground-water levels for March were reached in Idaho, Montana, and West Virginia. Several alltime high levels were recorded in Indiana. New low levels for March occurred in Arizona, Florida, Idaho, Kansas, Louisiana, Tennessee, and Texas. New alltime low levels were reached in Arizona and Idaho.
Severe flooding occurred in northern parts of New York and Vermont as a result of rapid melting of the snowpack that contained a water equivalent of as much as 9 inches in some areas. Peak discharges on several streams in the area were at or close to the highest of record. Flooding also occurred in parts of Florida, New Hampshire, and Michigan. Streamflow generally increased in southern Canada, northern and western parts of the conterminous United States, and in parts of the Gulf Coast States. Flows generally decreased elsewhere in the Southeast region and in the southern States of the other regions. Monthly mean discharges remained in the above-normal range in parts of California, Hawaii, Idaho, Illinois, Minnesota, Nevada, North Dakota, and Nova Scotia, and were highest of record for April in parts of California and Nova Scotia. Below-normal streamflow persisted in parts of Ontario, Quebec, Alaska, Arizona, Colorado, Nebraska, North and South Carolina, and Wyoming, and was lowest of record for the month in parts of Colorado.

Ground-water levels in the Northeast region rose in northern New England and northeastern New York, as well as in the tristate area centered on northern New Jersey. Levels declined in south-central New York, southwestern Pennsylvania, and western Maryland. Levels near end of month were near seasonal averages in most of the region. In the Southeast region, levels rose in Alabama and Florida, and mostly rose or held steady in Mississippi and Georgia; trends were mixed elsewhere in the region. In the western Great Lakes region, levels rose in Wisconsin and Michigan, and in most areas in Minnesota. Levels were near or above average in Indiana, and above and below average in Ohio. In the midcontinent region, levels rose in North Dakota, declined in Iowa, and declined in most wells in Kansas and Texas; trends were mixed elsewhere in the region. In the West, water levels rose in Washington, declined in Montana and New Mexico, and mostly declined in Idaho. Trends were mixed elsewhere in the region. A high ground-water level for the month, set in Nevada in April 1979, was reached again. New low levels for April were recorded in Arizona, Arkansas, Idaho, Kansas, Ohio, Tennessee, and Texas; a low level for April, set in 1980, was reached again in Idaho. New all-time lows occurred in Arizona and Idaho.

Streamflow in the United States and southern Canada was generally in the normal range during May. Exceptions included a large area of below-normal streamflow that extended from Vermont southwest into the Ohio River basin and two large areas of above-normal streamflow that were centered on Iowa and Nevada.

Flooding occurred in a broad band extending from northern Texas northward into parts of Iowa and Nebraska.
Severe flooding, as a result of torrential rains in the southern New England States and in parts of Iowa, caused flow rates on several streams that are not likely to be exceeded more than once (on the average) in 100 years or more. Property damage was in excess of $276 million in Connecticut alone. Floods also struck many other areas of the United States, with streams flowing at record high rates for June in parts of Florida, Kansas, Missouri, Nebraska, North Carolina, and South Carolina.

Contents of major reservoirs were generally above average except in parts of Colorado, New Mexico, Quebec, Tennessee, Texas, and Wyoming.

Streamflow generally decreased seasonally and was in the normal range or above that range in most of the United States and southern Canada during July. Flood peak discharges on several streams in Iowa, Illinois, and Pennsylvania were highest of record and equaled or exceeded the 100-year flood at several locations.

Reservoir storage was near or above average except in parts of Colorado, New Hampshire, New Mexico, Quebec, Texas, and Wyoming.
Streamflow decreased seasonally in most of the United States and southern Canada during August. Severe flooding occurred in parts of Illinois, Missouri, and Tennessee, where several streams had peak discharges not likely to be exceeded more than once (on the average) in 100 years or more. Monthly mean flows were in the normal range or above that range at over 90 percent of the index stations during the month. Reservoir storage generally decreased but remained above the long-term average at most of the index reservoirs.

Streamflow in the United States and southern Canada was generally in the normal range or above that range during September. Monthly mean flows were below the normal range in parts of at least 12 States, and were lowest of record in parts of Louisiana. Flood peak discharges on several streams in northern Utah were highest of record and equaled or exceeded the 100-year flood at several locations. Reservoir storage generally decreased but was near or above average at most index reservoirs at month’s end.
Streamflow was in the normal range or above that range in most of the United States and southern Canada during October. A large area of below-normal flow developed in southeastern Canada and smaller areas in several States also experienced low flows.

Monthly mean flows were highest of record for the month in parts of a large area of above-normal streamflow that extended from south-central Ontario southwest to central California. Mean flows were lowest of record for the month in parts of Louisiana.

Streamflow in the United States and southern Canada was generally in the normal range or above that range during November. Exceptions included a large area of below-normal streamflow that centered on southeastern New York State. Declining reservoir levels in the Delaware River basin prompted local officials to issue a drought watch in the early part of the month.
Severe flooding during the period December 3-10 in Arkansas, Illinois, and Missouri resulted from heavy rains early in the month, and runoff from intense rains in Louisiana and Mississippi caused widespread flooding in those two States at month's end. Peak discharges of many streams exceeded those likely to occur only once in 100 years. Forty counties in Arkansas and 15 counties in Missouri were declared disaster areas as a result of flood and tornado damage. Streamflow was in the normal range or above that range in most of the United States and southern Canada during December, and monthly mean flows were highest of record for the month in parts of at least 14 States.

Streamflow remained in the normal range or above that range in most of the United States and southern Canada during January. Monthly mean flows were highest of record for the month in parts of Iowa, Minnesota, Wisconsin, and Quebec. Below-normal flows persisted in parts of Hawaii, Kansas, New Jersey, New York, and Texas, and decreased into that range in western Nebraska and in a large area centered in West Virginia in the east-central part of the United States.

Reservoir storage was near or above average at most index reservoirs at month's end.
Streamflow in the United States and southern Canada was generally in the normal range or above that range in February. Monthly mean flows were highest of record for the month in parts of California, Florida, Iowa, Louisiana, Minnesota, and Wisconsin.

Below-normal streamflow persisted in parts of Hawaii, New York, and New Jersey, however, and parts of Hawaii were declared in a state of drought emergency following 3 months of below-normal rainfall.

Reservoir storage was near or above average at most index reservoirs at the end of February.

Severe flooding, as a result of runoff from intense rains in southern California, caused flow rates on several streams that are not likely to be exceeded more than once (on the average) in 50 years. Property damage was in excess of $150 million. Flooding also occurred in Nevada, Mississippi, North Carolina, and New Jersey.

Drought conditions persisted in Hawaii and flows decreased to near record lows for the month in parts of the Ohio River basin. Elsewhere in the United States and southern Canada, monthly mean flows were generally in the normal range or above that range and were highest of record for March in parts of at least eight States.
Streamflow was in the normal range or above that range in most of the United States and southern Canada during April, and monthly mean flows were highest of record for the month in parts of at least 10 States. By contrast, flows approached record lows in parts of Hawaii, Texas, and Michigan.

Severe flooding occurred in southeastern Louisiana and southern Mississippi where peak discharges on most streams exceeded previous maximums. Flooding also occurred in Connecticut, Illinois, Indiana, Maine, New Jersey, New York, North Carolina, Oklahoma, Pennsylvania, Utah, and the Virgin Islands.

Streamflow remained in the normal range or above that range in most of the United States and southern Canada during May. Monthly and/or daily mean flows were highest of record for the month in parts of at least 14 States. Areas in Alabama, Mississippi, Louisiana, Texas, and Tennessee suffered severe flooding during the latter part of the month, and at month's end, floods and disastrous mudslides occurred in parts of Nevada and Utah.

Below-normal flows persisted in parts of Hawaii, central Texas, and southwestern Ontario, and decreased into that range in western Kansas, northwestern Colorado, central Alaska, northern Minnesota, parts of southeastern Canada, and a large area in the Pacific Northwest.
Streamflow remained in the above-normal range in parts of the lower Mississippi River basin, most Northeastern States, and in a broad band extending from Iowa westward to California. By contrast, parts of southwest Texas experienced severe drought conditions.

Severe floods occurred in the mountainous Western States when record-deep accumulations of snow, containing the equivalent of up to 40 inches of water, started melting as a result of late spring rains and sharply warmer temperatures.

Below-normal precipitation and above-normal temperatures contributed to the seasonal decline in streamflow in most of the United States and southern Canada during July. Flows remained in the normal range or above that range in most areas, however, because of high carryover flows from June. Monthly and/or daily mean flows were highest of record for the month in parts of eight States and one Province.

Contents of principal reservoirs generally decreased during the month but were near or well above average at most locations at month's end. Lakes and reservoirs in the Colorado River basin generally remained at record-high levels.
Streamflow remained in the normal range or above that range in most of the United States and southern Canada during August. Flows were below the normal range, however, in a large area in the Southeast and in several smaller areas extending from Texas and Arkansas northwest to Montana. Persistent heat and dry weather patterns caused drought conditions from the east coast to the Rocky Mountains. Monthly mean flows decreased seasonally in most of the Nation and were lowest of record in parts of Kansas, New Mexico, and South Dakota.

High carryover flows augmented by runoff from unusually heavy rains in the West during August held flows in that part of the Nation in the above-normal range. Flows were highest of record in most of California during August and parts of Nova Scotia, Louisiana, Utah, Wyoming, and Idaho also experienced record high flows for the month.

Contents of principal reservoirs generally decreased during September and were above long-term averages except in parts of Texas, Oklahoma, and several of the New England States.
Severe flooding, the result of runoff from intense rains in Arizona, New Mexico, and Oklahoma, caused peak flow rates on several streams that had recurrence intervals that were greater than 100 years. Drought-stricken areas in west Texas received substantial rains as the remnants of Hurricane Tico moved north out of Mexico. Moderate flooding was reported in parts of Texas, Missouri, and the lower Ohio River basin.

Streamflow was in the normal range or above that range in most of the Nation during October. Small pockets of below-normal streamflow persisted in Kansas, Montana, Texas, Arkansas, and in several East Coast States.

Streamflow was in the normal range or above that range in most of the United States and southern Canada during November. Below-normal streamflow persisted in parts of Ontario, Quebec, Arkansas, Kansas, Montana, North Carolina, and Texas. Monthly mean flows were highest of record for the month in parts of Alaska, Idaho, Missouri, Montana, Nevada, and Utah, and were lowest of record for November in western Kansas.

Severe flooding occurred in the southern part of the Kenai Peninsula in south-central Alaska at month's end. Flood stages, as designated by the National Weather Service, were exceeded on numerous rivers and streams in the eastern half of the Nation and in the Far West during November.
Streamflow was in the normal or above-normal range in most of the United States and south-central and southeastern Canada during December. Below-normal streamflow prevailed in southwestern Canada, Hawaii, Washington, Montana, northwestern Oregon, and in parts of Wyoming, South Dakota, Colorado, Nebraska, Kansas, Texas, and Puerto Rico. Moderate to severe flooding occurred in Alabama, Georgia, and Mississippi in early December, following heavy rains.

Contents of reservoirs continued near or above average at most index sites in the Nation during December, but remained below average in Nova Scotia, Canada.

Streamflow remained in the above-normal range in parts of most Western, Southeastern, and North Central States during January. Flows were in the below-normal range in a large area in and adjacent to West Virginia and in smaller areas in Arkansas, California, Hawaii, Kansas, Nebraska, Montana, Oregon, Puerto Rico, Texas, and southern Canada. Monthly and/or daily mean flows were highest of record for January in parts of Idaho, Montana, North Carolina, and Utah, and lowest of record for the month in parts of Kansas and Puerto Rico.

Minor lowland flooding was reported on numerous rivers and streams in the South Atlantic and Gulf Coast States and the Far West during the month. The elevation of Great Salt Lake in northern Utah rose to 4,206.30 feet above sea level on January 31, 1984, the highest elevation in almost 100 years.
Streamflow was in the normal range or above that range in most of the United States and southern Canada during February. Below-normal streamflow persisted in parts of Quebec, Hawaii, Kansas, Nebraska, Puerto Rico, Tennessee, and Texas. Monthly mean flows were highest of record for the month in parts of at least nine States.

Near- or above-average contents continued to characterize most reservoirs in the United States during February. The elevation of Great Salt Lake in northern Utah rose to 4,206.70 feet above sea level at end of February 1981, the highest elevation in almost 100 years.

Streamflow was in the normal range or above that range in most of the United States and southern Canada during March. Monthly mean flows were highest of record for the month in parts of Georgia and Utah. Moderate to severe flooding occurred in parts of Florida, Georgia, Indiana, New Jersey, North Carolina, South Carolina, and Virginia. The elevation of Great Salt Lake in northern Utah rose to 4,207.35 feet above sea level at end of March 1984, the highest elevation in almost 100 years.

Below-normal flows persisted in parts of Alabama, Alberta, Hawaii, Kansas, Nebraska, and Puerto Rico, and were lowest of record for the month in parts of Kansas and Puerto Rico.
Streamflow was in the normal range or above that range in most of the United States and southern Canada during April. Parts of Colorado, Idaho, Nevada, and Utah have experienced flows in the above-normal range for twelve or more consecutive months. Moderate to severe flooding occurred in parts of Florida, Idaho, Indiana, Iowa, Kentucky, Nevada, New Jersey, New York, and Oregon.

Flows remained in the below-normal range in parts of Arizona, Hawaii, Montana, and Puerto Rico, and were lowest of record for April in parts of Puerto Rico.

Streamflow was in the normal range or above that range in most of the United States and southern Canada during May. Flooding occurred in Colorado, Idaho, Kentucky, Nevada, North Carolina, Oklahoma, Oregon, Tennessee, Utah, Virginia, West Virginia, Wyoming, and in parts of most Northeastern States at month's end. Monthly mean flows were highest of record for May in parts of at least 10 States.


Contents of principal reservoirs were near or above average in most of the Nation, but were well below average in parts of Puerto Rico, Texas, Washington, and Oklahoma.
Streamflow was in the normal range or above that range in most of the United States and southern Canada during June. Below-normal flows persisted in two large areas, however, one in Texas and the other in and adjacent to British Columbia.

Severe flooding occurred in eastern Nebraska and parts of Iowa, Kansas, Missouri, and South Dakota, as a result of runoff from torrential rains that plagued the five-State area during the month. Storm and flood damage estimates ranged as high as one billion dollars in Iowa and the value of topsoil lost in Nebraska was estimated at $20 million. Monthly mean flows were highest of record for June in parts of at least six States. Flooding also occurred in parts of Idaho, Wisconsin, and several New England States.

Streamflow was in the normal range or above that range in most of the United States and southern Canada during July. Monthly mean flows were highest of record for the month in parts of Georgia, Maine, Minnesota, Nevada, New York, and Rhode Island. The elevation of Great Salt Lake in northern Utah reached a peak elevation of 4,209.25 feet above sea level in early July, the highest elevation since July 1, 1978.

Below-normal flows persisted in parts of Alabama, Alberta, Hawaii, Illinois, Kentucky, Michigan, Montana, Texas, and Nova Scotia, and were lowest of record for the month in parts of California, Hawaii, Illinois, Montana, Puerto Rico, and Texas.
Streamflow generally decreased seasonally but was in the normal range or above that range in most of the United States and southern Canada during August. Exceptions included most of Oklahoma and parts of adjacent States, Hawaii, Puerto Rico, most of Kentucky and Michigan, and smaller areas in Ontario, Illinois, Minnesota, and Montana, where flows were below the normal range. Flooding occurred in Pennsylvania, Maryland, Virginia, Indiana, and Nevada. Reservoir storage generally decreased but remained about the long-term average at most of the index reservoirs.

Streamflow decreased seasonally in most of the United States and southern Canada during September. Below-normal flows persisted in most of Texas and parts of adjacent States, in Hawaii, and in much of Kentucky, and decreased into that range in a large area in southeastern Canada. Monthly mean flows were highest of record for September in parts of Idaho and Nevada and lowest of record for the month in parts of Quebec, Florida, and Hawaii. Severe flooding occurred in parts of North Carolina and Texas. Reservoir contents generally declined seasonally, but were near or above average in most index reservoirs in the United States and southern Canada during September.
Streamflow was in the normal range or above that range in most of the United States and southern Canada during October. Below-normal flows persisted in southeastern Canada, Hawaii, and parts of Alabama, Connecticut, Florida, Maine, Montana, and Virginia. Monthly mean flows were lowest of record for October in parts of Florida and Hawaii, and were highest of record for the month in parts of Arkansas, Colorado, Idaho, Louisiana, Minnesota, and Oregon. Flooding occurred in Louisiana and Texas.

Contents of principal reservoirs were near or above average in most of the Nation, but were well below average in parts of Texas and Oklahoma.

Streamflow was in the normal range or above that range in most of the United States and southern Canada during November. Below-normal flows persisted in parts of Montana, Hawaii, and many States and Provinces along the east coast. Monthly mean flows were highest of record for November in parts of Colorado, Idaho, Utah, and Wyoming, and were lowest of record for the month in parts of Florida and the Atlantic Provinces.

Contents of selected reservoirs in the Northeast generally declined during November and were below average at many locations.
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Streamflow was in the normal range or above that range in most of the United States and southern Canada during December. Below-normal flows persisted in parts of Nova Scotia, the Atlantic Coastal States, Saskatchewan, British Columbia, and Hawaii. Flows decreased into the below-normal range in parts of southwestern Canada, Washington, Oregon, California, Wyoming, Nebraska, Virginia, the Carolinas, and Georgia.

Warm temperatures, melting snow, and heavy rains at the end of the month combined to cause floods with recurrence intervals of 75 years or greater in southwestern New Mexico and 100 years or greater just east of Lake Ontario in New York. Estimated property damage was $5 to $10 million in New Mexico and about 1,000 people were evacuated from their homes in Oswego County, New York.

Streamflow was in the normal range or above that range at about two-thirds of the index stations in the United States and southern Canada. Below-normal flows persisted in parts of Nova Scotia, New Brunswick, the Atlantic Coastal States, Nebraska, Wyoming, Montana, Washington, Oregon, California, Hawaii, Alberta, and British Columbia. Flows decreased into the below-normal range in parts of Washington, Montana, Oregon, Idaho, California, Louisiana, Mississippi, Georgia, Tennessee, Kentucky, West Virginia, Maryland, Pennsylvania, New Jersey, Maine, New Brunswick, Nova Scotia, Puerto Rico, Hawaii, and all of Alabama.

About 20 sinkholes developed in the Dover, Florida, area (15 miles east of Tampa) after heavy pumping for frost protection temporarily lowered ground-water levels 19 feet on January 22. Damages to highways, homes, and other structures were estimated to exceed $100,000 and wells for over 100 homes temporarily went dry as a result of the drop in water level.

Figure 487. Streamflow During December 1984.

Figure 488. Streamflow During January 1985.
Streamflow was in the normal range or above that range at 81 percent of the index stations in the United States and southern Canada. Below-normal flows persisted in Washington, and also in parts of Hawaii, California, Oregon, Idaho, Montana, British Columbia, Wyoming, Nebraska, Puerto Rico, Florida, Georgia, New Jersey, Pennsylvania, New York, Connecticut, Rhode Island, Massachusetts, Maine, and the Atlantic Provinces. Flows decreased into the below-normal range in parts of Florida, Georgia, Quebec, Oregon, and Hawaii.

Moderate to severe flooding occurred in a broad band extending from Oklahoma and Nebraska northeastward through the Great Lakes States. The most severe flooding occurred in Indiana, Michigan, Ohio, and New York. Rapid snowmelt and about 2 inches of rain combined to produce peak discharges with recurrence intervals in excess of 100 years in parts of Indiana. The Governor of New York declared six northwestern counties adjacent to Lake Erie a disaster area as a result of the flooding.

Streamflow was in the normal range or above that range at 65 percent of the index stations in the United States and southern Canada. Below-normal flows persisted in New Jersey and in parts of New Brunswick, Connecticut, New York, Pennsylvania, Florida, Georgia, Nebraska, Wyoming, Montana, Idaho, Washington, Oregon, and California. Streamflow decreased by an average of 71 percent at the nine index sites in Virginia and North Carolina, with flows in southeastern Virginia and eastern North Carolina going from above normal for February to below normal for March. In sharp contrast, flows increased by about 2,000 percent on the Hawaiian Islands of Maui and Hawaii, going from February's below-normal range into the above-normal range for March.

Usable contents of both the New York City reservoir system and the combined contents of the five reporting reservoir sites in Washington were well below the long-term March average, but 77 percent of the reporting reservoirs were close to or above their long-term March averages.

Flooding in northwestern Illinois washed away about 50 houses and damaged about 1,200 houses while peak discharges on the La Moine River at both Colmar and Ripley exceeded those for the 70-year recurrence interval.
Streamflow was in the normal range or above that range at 58 percent of the index stations in the United States and southern Canada, but Pennsylvania, New Jersey, and New York City declared drought emergencies affecting 21 million people. Delaware River basin streamflows and reservoir contents were at record April lows; below-normal flows spread northward into New York, northern New England, New Brunswick, and Quebec and southward into parts of Florida, Alabama, and Louisiana, because of below-average April precipitation in much of the area east of the Mississippi River and south of the Great Lakes. Record low flows for April occurred at 15 sites in this area of below-normal streamflow, and 19 of 35 selected reservoirs in the area had contents that were well below April averages.

In sharp contrast, the area of above-normal streamflow centered around Utah has been a persistent feature for many months and the Great Salt Lake rose 0.35 foot to 4,209.90 feet above mean sea level, the highest elevation in over 100 years and only 0.35 foot below the predicted 1985 high. Snowmelt floods occurred April 20-22 in Michigan's Upper Peninsula with recurrence intervals equaling or exceeding 100 years at 7 sites in the sparsely populated area.

Streamflow was in the normal range or above that range in most of southern Canada and in most areas of the United States west of the Mississippi River. Monthly mean flows were in the below-normal range in parts of most States east of the Mississippi River and were lowest of record for May in parts of New York State. Severe flooding occurred in Puerto Rico where two fatalities and over $50 million in property damages were reported. Drought emergencies remained in effect in the New York City area.

Great Salt Lake reached a peak elevation for the year of 4,209.95 feet above sea level on May 21, 1985, only 1.85 feet below the maximum elevation, since 1847, of 4,211.6 feet.
Streamflow was in the normal range or below that range at 84 percent of the index stations in the United States and southern Canada. Flows remained in the above-normal range in parts of Nova Scotia, Missouri, Minnesota, North Dakota, South Dakota, Arizona, Colorado, New Mexico, Utah, and Hawaii, and increased into that range in parts of Texas, Oklahoma, Pennsylvania, West Virginia, Ohio, the Atlantic Provinces, and in coastal areas of the Pacific Northwest.

Below-normal streamflow persisted in parts of most Northeastern, Southeastern, and Gulf Coastal States, and also in parts of Ontario, Nebraska, Missouri, Montana, South Dakota, Wyoming, and southern California. Monthly mean flows were lowest of record for the month in parts of North Carolina, Georgia, and Louisiana. Contents of the New York City reservoir system were 58 percent of capacity at month's end and drought warnings remained in effect in the area.

Streamflow decreased seasonally in most of the United States and southern Canada, but was variable in most Southeastern States during July. Monthly mean flows were in the normal range or below that range at over 80 percent of the index stations, with exceptionally large areas of below-normal flows persisting in northern Florida and parts of adjacent States and in the Pacific Northwest. Minor to moderate flooding occurred in South Carolina and Alabama as a result of runoff from rains associated with Hurricane Bob.

Contents of most reservoirs declined during the month with about a third of the selected reservoirs reporting much below-average contents for the end of July. Residents of New York City remained under a drought warning alert as contents of that city's reservoirs continued to decline and remained far below average.
Streamflow generally decreased seasonally in the Northeast and much of the West, but increased in the Southeast, some of the western Great Lakes States, Arizona, and also in Nebraska and adjacent States. Streamflow was in the normal range or above that range at 83 percent of the index stations, but record-low monthly mean discharges for August occurred at index sites near both coasts.

Severe flooding occurred in the Cheyenne, Wyoming, area on August 2, with 9 killed and 30 missing as heavy rains, tornadoes, and hailstorms swept through the area.

Water-use restrictions were still in effect in New York City and parts of the Delaware River basin even though streamflows in the basin were in the normal range for the third consecutive month.

Streamflow generally decreased in Hawaii, Alaska, southwestern Canada, North Dakota, Wyoming, Utah, Colorado, Illinois, Indiana, the Southeast, Quebec, and New Brunswick. Flows generally increased in the rest of the United States and Canada. Streamflow was in the normal range or above that range at 91 percent of the index stations.

Two hurricanes, Elena along the Gulf coast August 30 to September 3, and Gloria along the east coast September 26-28, forced the evacuation of over a million people in affected areas and caused damages estimated in the hundreds of millions of dollars. Both hurricanes caused small stream and coastal flooding but also ended, at least temporarily, persistently below-normal streamflows in central Florida and mainland New York.

Flood damages were estimated at $10 to $12 million in the Flint, Michigan, area after up to 12 inches of rain fell in an 8-hour period September 8-9. Peak discharges on two streams in the area had recurrence intervals of 25 years.

Contents of 67 percent of reporting reservoirs were at or above average for the end of September, but the New York City reservoir system and many reservoirs in Texas, Oklahoma, Wyoming, Montana, Idaho, and Washington were below average.