

FLOODS ON DES MOINES RIVER, RACCOON RIVER, WALNUT CREEK,
AND FOURMILE CREEK AT DES MOINES, IOWA, IN 1947, 1954, and 1960



PHOTOGRAPH BY DES MOINES REGISTER AND TRIBUNE
AERIAL VIEW OF DES MOINES IOWA
JUNE 26, 1947

The approximate areas inundated in the vicinity of Des Moines, Iowa, by the Des Moines River during the floods of June 29, 1947, and June 24, 1954; by the Raccoon River during the floods of June 13, 1947, and April 2, 1960; by Walnut Creek during the flood of June 12, 1947; and by Fourmile Creek during the floods of June 12, 1947, and June 24, 1954, are delineated on a topographic map base.

The flood of June 1954 on the Des Moines River was the highest since at least 1851 in the reach upstream from the Center Street dam, but the flood of May 31, 1960, was the highest in the reach downstream from the Scott Street dam (below the mouth of Raccoon River). Floods in 1851 and 1857 are reported to have been lower than the flood of 1903. Streets, railroads, commercial and urban developments, land fills, and levees, constructed since 1900, have encroached upon the flood plain, and have thereby affected the relation between flood height and rate of flow. A flood equal to that of 1903 would be higher now, than formerly, because of the present conditions of flood-plain encroachment. Along the Des Moines River below the mouth of Raccoon River, the flood of June 1954 reached a higher stage than the flood of June 1947, although the maximum discharge was 18 percent less in 1954. Protective works built after the flood of June 1947 prevented the occurrence of extensive damage by the higher flood of June 24, 1954, on the Des Moines River above the mouth of Raccoon River.

Greater floods are possible but no attempt has been made to show their probable overflow limits. Flood crests on the Des Moines River and Raccoon River comparable to those of June 1954 and June 1947 respectively, arriving simultaneously at the mouth of the Raccoon River, would produce a higher stage on the Des Moines River below Center Street dam than any flood previously recorded. Protective works can reduce the frequency of flooding but will not necessarily eliminate future flooding. New highways and other cultural changes may influence the inundation pattern of future floods.

Flood height.—The height of a flood at a gaging station is usually stated in terms of the gage height or stage, which is the elevation of the water surface above a selected datum plane. Gage heights or stages at gaging stations in Des Moines, Iowa, can be converted to elevations above mean sea level by adding the gage height to the appropriate datum of gage shown in the table below. Flood stage at a gaging station is the flood height at which a river begins to threaten or cause damage. Flood stages established by the U.S. Weather Bureau at gaging stations in Des Moines, Iowa, are also shown in the table. Elevations shown are in feet above mean sea level, datum of 1929.

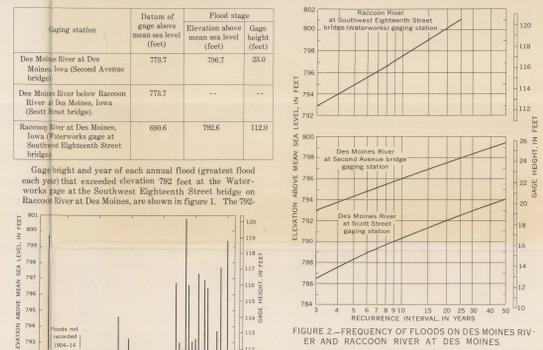


FIGURE 1.—ANNUAL FLOODS ABOVE ELEVATION 792 FEET 1903-1915-60, WATERWORKS GAGE AT SOUTH WEST EIGHTEENTH STREET BRIDGE ON RACCOON RIVER AT DES MOINES

It is emphasized that recurrence intervals are average figures that average number of years that will elapse between occurrences of floods that equal or exceed a certain flood height. Thus on Des Moines River, a flood that reaches 792-foot elevation at Second Avenue is said to have a 25-year recurrence interval. However, because of the erratic nature of flood occurrence, the 792-foot elevation may not be reached in any one 25-year period, or it may be reached more than once.

Flood profiles.—Profiles of the water surface along the Des Moines River for the floods of May 1960, June 1947, June 1954, and April 1960, and along the Raccoon River for the floods of June 24, 1947, June 29, 1947, and April 1960 are shown in figure 3. Profiles of floods corresponding to other flood heights can be plotted on this diagram generally parallel to those shown, except in the vicinity of the mouth of Raccoon River, where the Des Moines River and Raccoon River are each affected by variable amounts of backwater from the other river, at times.

The abrupt changes in the profile, shown at some street locations and dams, indicate the difference in water-surface elevations at the upstream and downstream sides of the structures. Base lines for the profiles are located along the main channels. River miles above the mouth of the Des Moines River, used for the profiles in figure 3, are also marked along the streams on the flood-inundation map.

Depth of flooding at any point can be estimated by subtracting the ground elevations (shown by contours on the map) from the water-surface elevation indicated by the profile in figure 3.

Additional data.—Other information pertaining to floods at Des Moines, Iowa, may be obtained at the office of the U.S. Geological Survey, 506 Hydraulic Laboratory, Iowa City, Iowa, and from the following publications:

Iowa Highway Research Board Bull. 1, 171
U.S. Geological Survey, 1939. Floods of June 1954 in Iowa: Schwab, H. H., 1953. Iowa Floods, magnitude and frequency: Iowa Highway Research Board Bull. 1, 171
U.S. Geological Survey, 1960. Floods of June 1954 in Iowa: U.S. Geol. Survey Water-Supply Paper, 1570-A, 106 p.
Cooperation and acknowledgment.—Flood height near Center Street on the Raccoon River at the Waterworks gaging station, floodmark elevations for floods of 1960, 1947, and 1954, and boundary information for floods of 1947 and 1954 were furnished by the City Engineer of Des Moines, Iowa.
Additional flood boundary information was furnished by Wolz Studio, Inc., and by the Iowa Power and Light Company.

The aerial photograph was furnished by the Des Moines Register and Tribune.

Recurrence interval (years)	Des Moines River at Des Moines (Second Avenue bridge)	Des Moines River below Raccoon River at Des Moines (Scott Street bridge, above dam)	Raccoon River at Des Moines (Southwest Eighteenth Street bridge)
50	795.4	794.3	792.9
25	797.9	792.5	801.0
10	796.0	796.3	797.5
5	798.0	798.4	799.9

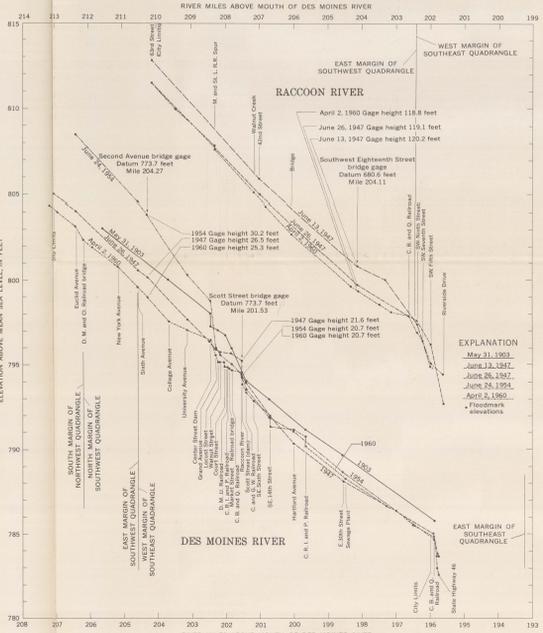


FIGURE 3.—PROFILES OF FLOODS ON DES MOINES RIVER AND RACCOON RIVER

EXPLANATION

- River miles measured upstream from mouth of the Des Moines River
- Floods of June 13 and June 26, 1947
- Flood of June 24, 1954
- Flood of April 2, 1960
- Flooded in 1947, but not flooded in 1954 or 1960
- Flooded in 1954, but not flooded in 1947 or 1960
- Flood inundated area

FLOODS AT DES MOINES, IOWA

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