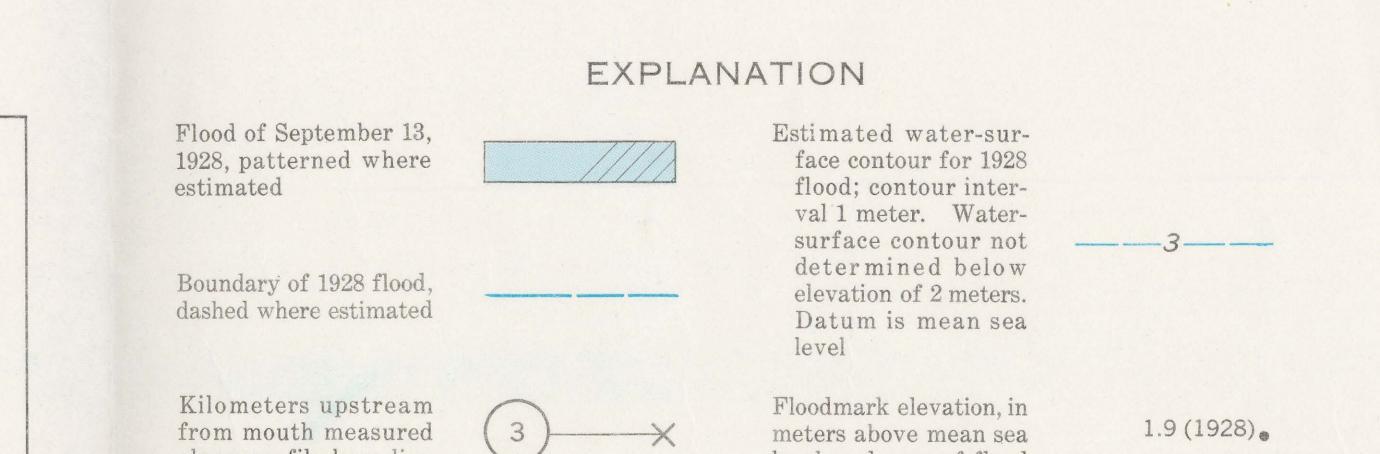


FLOODS IN THE GUAYANILLA-YAUCO AREA, PUERTO RICO

By
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1971Base from U.S. Geological Survey,
Puerto Rico and Yauro, 19582,000 meter grid based on
Puerto Rico coordinate systemFLOODS IN THE GUAYANILLA-YAUCO AREA,
PUERTO RICO

This report is a compilation of data pertaining to floods in Rio Guayanilla and Yauro and is based principally upon information obtained from residents in the study area. This information is used to determine the magnitude of floods for planning decisions.

The two streams are Yauro basins in the southwestern part of Puerto Rico. They flow southward from the rugged Cordillera Central and empty into Bahia de Guayanilla.

The lower basins are devoted principally to the production of sugar cane, and the streams are used for irrigation, pertaining to basin features, flood frequency, flood profiles, and inundated areas as discussed by individual basins. All elevations are given in meters above mean sea level.

There is no means of predicting the date a flood of a given magnitude will occur. If a long-enough record of floods is available, however, the average recurrence interval of such a flood can be determined, and the probability of its occurrence can be computed.

The recurrence interval, or frequency, of a flood of specific magnitude is the average length of time during which such a flood will occur. For example, if a flood of magnitude greater than the 10-year flood, the reciprocal of the recurrence interval is virtually the probability of occurrence in a year.

For example, if a 10-year flood has a recurrence interval of 10 years, the probability of occurrence in a year is 1/10, or 10 percent.

At the upstream bridge on Highway PR-2, a flood elevation of 20 meters has an indicated 10-year recurrence interval.

However, the 20-meter elevation was exceeded 3 times during the 10-year period. The 10-year recurrence interval is the average of the number of years in which floods of a specific magnitude have been equal to or exceeded the 10-year flood.

Flood profiles.—Flood elevations referenced to the arbitrary base line shown on the topographic map in Figure 6. The flood profiles and flood lines are well defined and have an elevation of 1 meter.

The 1928 flood profile is poorly defined and has been drawn on the basis of the shape of the other flood profiles. The 1928 flood profile is estimated in the reach from 0.4 to 1.8 kilometers above the mouth.

Inundated areas.—The area inundated by the 1928 flood has been estimated from the large topographic map. The area inundated by the 1932 and 1954 floods at Guayanilla is shown in Figure 8. The 1928 flood was selected to be shown on the large map because it is known to have been associated with Rio Yauro and has been used to determine the Rio Yauro drainage area of 1928. The inundated area in the vicinity of El Poblado and Punta de Lajas has not been defined and has been estimated.

The effect of the abandonment of railroad embankments upon the height of the water could not be defined from the available floodmarks.

Flood stages and discharge.—Flood stages and discharge define the relation shown in Figure 9.

Flood stages.—Flood stages were collected at the Highway PR-335 bridge about 50 meters east of the bridge. These elevations have been transferred to the scale bar as a common point on the basis of the indicated water-surface slope.

Flood stage and discharge define the relation shown in Figure 9.

FIGURE 9.—Flood stage-discharge relation of Rio Yauro at Escuela Arturo Llerena.

FIGURE 10.—Flood stage-discharge relation of Rio Yauro at Escuela Arturo Llerena.

FIGURE 11.—Flood stage-discharge relation of Rio Yauro at Escuela Arturo Llerena.

FIGURE 12.—Flood stage-discharge relation of Rio Yauro at Escuela Arturo Llerena.

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FIGURE 105.—Flood stage-discharge relation of Rio Yauro at Escuela Arturo Llerena.

FIGURE 106.—Flood stage-discharge relation of Rio Yauro at Escuela Arturo Llerena.

FIGURE 10