FLOOD OF JULY 17, 1972 IN GALLUP, NEW MEXICO

U. S. GEOLOGICAL SURVEY

Water-Resources Investigations 43-73

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October 1973

UNITED STATES DEPARTMENT OF THE INTERIOR

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CONTENTS

ILLUSTRATIONS

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ABSTRACT

On July 17, 1972 severe flooding occurred in Gallup, N. Mex. An isolated storm approximately 9 miles east of Gallup covering 20 of the 558 square miles drained by the Puerco River was responsible. Floodwaters reached a peak gage height of 15.3 feet and peak discharge of 12,000 cubic feet per second at the crest-stage gage located on the Puerco River in Gallup. Peak discharge was 1.8 times a 50-year flood.

Floodwaters damaged 120 residences, 48 businesses, and 11 public buildings and facilities. Total damages were estimated at $1,293,000. Gallup was declared a disaster area by Governor Bruce King on July 20, 1972 and by President Richard Nixon on August 1, 1972.

INTRODUCTION

An isolated thunderstorm on July 17, 1972 caused severe flooding within the town of Gallup, N. Mex. and resulted in widespread damage to buildings and facilities. The flood was the most devastating in 30 years and possibly the worst since Gallup was founded in 1889. Gallup was declared a disaster area by Governor Bruce King on July 20, 1972 and by President Richard Nixon on August 1, 1972.

Interviews of local residents indicated that the storm occurred approximately 9 miles east of Gallup and covered about 20 of the 558 square miles in the Puerco River drainage basin. Precipitation data of the flood-producing storm were not available as no rain gages were located within the storm area. Subsequent storms made a bucket survey impractical. Light showers associated with the storm were less than half an inch at the Gallup Airport.

Gallup, the county seat of McKinley County, is located in northwestern New Mexico along the Puerco River (fig. 1). Gallup's generally dry climate has a mean annual temperature of about 10°C (50°F) and a mean annual precipitation of about 10 inches. Topographic features near Gallup are young plateaus and rock terraces. Juniper, pinon, and oak populate intermediate slopes and mesas. Low brush occupies the valley floors.

The purpose of this report is to supplement, in a more detailed form, data of stage and discharge published in the annual surface-water records of the U.S. Geological Survey. This report includes: description of the flood, information on flood damage, and flood-frequency data.

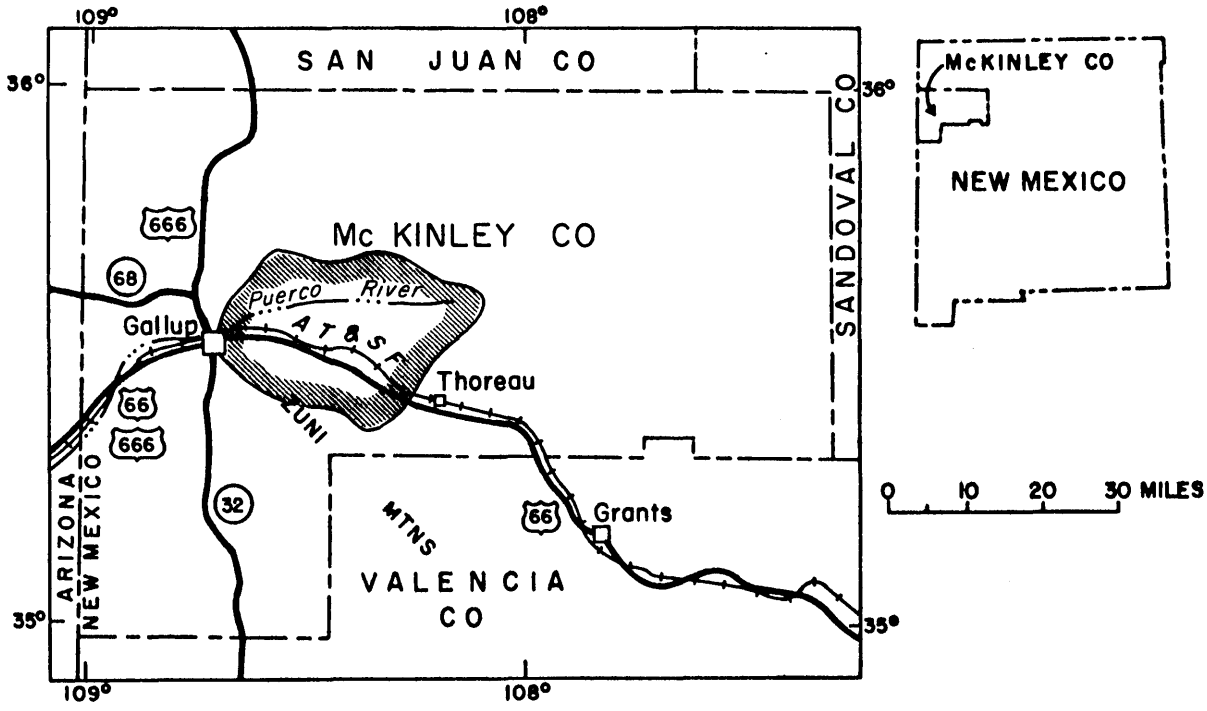

Figure 1.--Puerco River drainage basin (outlined in hachures) upstream from Gallup.

ACKNOWLEDGMENTS

Records of discharge discussed in this report are collected as part of cooperative programs between the U.S. Geological Survey and the New Mexico State Highway Department. Much of the information used was contained in "Flood-Damage Report on Flood of July 1972, Puerco River at Gallup, New Mexico" by the U.S. Army Corps of Engineers. Local organizations furnished additional information. Data were collected and compiled by personnel of the U.S. Geological Survey in Santa Fe and Albuquerque, N. Mex., under the general supervision of W. E. Hale, District Chief.

DESCRIPTION OF THE FLOOD

Local residents reported flooding began in Gallup on July 17, at about 8:15 p.m., reached a peak at 9:30 p.m., and continued until about 11:30 p.m. The U.S. Army Corps of Engineers estimated floodwaters inundated approximately 170 acres extending along the river from 1st Street to 10th Street for a distance of about 0.9 mile (fig. 2).

A crest-stage gage on the Puerco River about 1,500 feet upstream from the 2nd Street Bridge (fig. 2) indicated a peak gage height of 15.3 feet. A peak discharge of 12,000 cfs (cubic feet per second) was estimated based on measurements made previously at the crest-stage gage. The previous maximum in 23 years of record was 9,280 cfs on August 6, 1959.

Flood frequency is expressed in terms of the recurrence interval defined as the average number of years a flood of a certain magnitude will be equaled or exceeded. In this report, floods with a magnitude greater than the 50-year flood are expressed as a ratio to the 50-year flood because extrapolation of data beyond the limits of the 50-year flood is not recommended.

Floodwaters in Gallup reached a magnitude 1.8 times the 50-year flood. Floodwaters of August 6, 1959 (previous peak of record) reached a magnitude 1.4 times the 50-year flood. Computations were based on data contained in U.S. Geological Survey Water-Supply Paper 1683, "Magnitude and frequency of floods in the United States--Part 9, Colorado River basin," by James L. Patterson and William P. Somers.

EXPLANATION

▲ Crest-stage gage

Flooded area

Figure 2.--Location of flooded area in Gallup.

FLOOD DAMAGES

Damages according to estimates made by the U.S. Army Corps of Engineers of the flooded area in Gallup total $1,293,000. Floodwaters damaged 120 residences, 48 business establishments, and 11 public buildings and facilities. Railroad operations were halted for 4 hours when floodwaters inundated railroad yards. The 2nd Street Bridge, one of two bridges crossing the Puerco River in Gallup, was severely damaged. Underground basements, common to most buildings in the area, were damaged substantially by the floodwaters. Damages are shown in the following table which was prepared by the U.S. Army Corps of Engineers.

Type of property	Physical damages	Emergency costs and business losses	Total
Residential[1/] (120 residences)	$390,000	$80,000	$470,000
Commercial buildings	430,000	40,000	470,000
Public buildings and facilities	100,000	25,000	125,000
Utilities	8,000	2,000	10,000
Streets, highways and bridges[2/]	70,000	8,000	78,000
Railroad	25,000	25,000	50,000
Drainage facilities[3/]	90,000	-	90,000

1/ Includes City cost for mosquito control, emergency traffic control, floodlighting, and pumping water from basements.

2/ Includes $40,000 for debris removal operations.

3/ Includes highway drain channel along U.S. Highway 66 and estimated restoration work on Puerco River.

Floodwaters reached depths of 5 feet north of the Puerco River in Gallup where most of the damage resulted. A drain overflowed along Highway 66 south of the Puerco River in Gallup, damaging several businesses.

Civil Defense, police, firemen, and other organizations evacuated an estimated 150 people from the flooded area. Evacuees were sheltered in temporary quarters where they were provided with food and clothing by the American Red Cross and by local residents. No fatalities occurred.

REFERENCES

Patterson, J. L., and Somers, W. P., 1966, Magnitude and frequency of floods in the United States--Part 9, Colorado River basin: U.S. Geol. Survey Water-Supply Paper 1683, 475 p.

U.S. Army Corps of Engineers, 1972, Flood-Damage Report on Flood of July 1972, Puerco River at Gallup, New Mexico: U.S. Army Corps of Enginers, 3 p.