EDWARDS UNDERGROUND WATER DISTRICT

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San Antonio, Texas

BULLETIN 18

RECORDS OF PRECIPITATION, AQUIFER HEAD, AND GROUND-WATER RECHARGE TO THE EDWARDS AND ASSOCIATED LIMESTONES SAN ANTONIO AREA, TEXAS, 1967

Compiled by

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Prepared in cooperation with the Geological Survey,
United States Department of the Interior,
and the Texas Water Development Board

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The Edwards and associated limestones, the principal aquifer in the San Antonio area, has been the subject of numerous geologic and hydrologic reports. Records of precipitation, water levels, and estimates of recharge to the aquifer during 1967 are summarized in this report, which is part of the basic-data collection published by the Edwards Underground Water District. The compilation of these basic records (and data) is part of the continuing hydrologic investigation by the U. S. Geological Survey in cooperation with the Edwards Underground Water District and the Texas Water Development Board.

The annual precipitation at selected stations throughout the San Antonio area for 1967 and the annual average for each of these stations are shown in table 1. Rainfall was generally deficient for the first eight months of 1967 and excessive during the remainder of the year.

Table 1.--Precipitation, in inches, at selected stations in the San Antonio area, Texas, 1967

Station	Precipitation	Long-term mean
Brackettville	21.95	20.34 (78 years)
Uvalde	20.10	23.74 (66 years)
Sabinal	23.89	25.00 (49 years)
Hondo	30.33	28.06 (64 years)
San Antonio	29.26	27.40 (91 years)
Boerne	26.75	31.78 (73 years)
New Braunfels	31.74	30.81 (74 years)
San Marcos	26.41	32.57 (67 years)

The recorded high and low water levels in five selected key wells during 1967 are shown in table 2. During the year, the water levels fluctuated near the midpoint between the record high and low levels which are also shown in table 2. Ground water storage and water levels in the Edwards limestone reached a lower point during August than had been experienced for several years.

Recharge to the Edwards and associated limestones is chiefly from streams which lose most of their base flow and a part of their floodflow as they cross the Balcones fault zone on the outcrop of the aquifer. The recharge is estimated from discharge records at gaging stations located above and below the infiltration areas on most of the streams. The monthly mean discharge at the gaging stations for October-December 1967 are shown in table 3. Streamflow records for January-September 1967 are being published by the U. S. Geological Survey (U. S. Department of the Interior, 1967).

Table 2.--Annual recorded high and low water levels (feet above mean sea level) in key wells tapping the Edwards and associated limestones, San Antonio area, Texas, 1967

Well	High	Low	Record High	Record Low	Period of Record
H-5-1 (Uvalde County)	867.4	856.5	878.5 (11-22-61)	811.0 (4-13-57)	1929-32, 1934-67
J-1-82 (Medina County)	679.4	645.1	710.3 (2-27-61)	622.3 (8-18-56)	1950-67
*J-17 (Bexar County)	659.7	624.9	** 685.5 (6-26-35)	** 612.5 (8-17-56)	***1932-67
G-49 (Comal County)	624.6	620.0	627.3 (2-19-61)	613.3 (8-21-56)	1948-67
H-23 (Hays County)	582.8	556.2	593.6 (5-12-58)	542.2 (7-12-56)	1937-67

* Replaces well 26 and reflects almost the same water level(feet above mean sea level). The water-level data shown is a composite record of wells 26 and J-17.

** Record high and low for well 26.

*** Composite record - wells 26 and J-17.

Table 3.--Monthly mean discharge, in cubic feet per second, at stream-gaging stations in the San Antonio area, October-December 1967.

(Figures rounded to nearest cubic foot per second)

Station	1967		
	Oct.	Nov.	Dec.
West Nueces River near Brackettville	2	5	1
Nueces River at Laguna	312	238	162
Nueces River below Uvalde	130	80	57
Dry Frio River near Reagan Wells	172	134	48
Frio River at Concan	275	302	162
Frio River below Dry Frio River near Uvalde	209	46	0
Sabinal River near Sabinal	201	224	104
Sabinal River at Sabinal	145	104	33
Seco Creek at Miller Ranch near Utopia	39	46	19
Seco Creek at Crook Ranch near D'Hanis	0	0	0
Hondo Creek near Tarpley	37	66	27
Hondo Creek at King Waterhole near Hondo	0	4	0
Medina River near Pipe Creek	199	204	109
Medina River near Riomedina	16	18	16
Salado Creek (upper station)at San Antonio	1	4	1
Cibolo Creek at Selma	0	1/	0
Guadalupe River at Comfort	214	169	103
Guadalupe River near Spring Branch	281	327	209
Guadalupe River above Comal River at New Braunfels	484	608	353
Comal River at New Braunfels	216	258	253
Blanco River at Wimberley	71	145	80
Blanco River near Kyle	43	161	55
San Marcos River spring flow at San Marcos	118	141	144

1/ less than 0.5

The recharge in each basin of the San Antonio area for 1967 and the average annual recharge for the period 1934-66 are shown in table 4. The basic methods employed by Petitt and George (1956) and by Garza (1962) were used for estimating the 1967 recharge, which was below the average annual.

In September 1967, the deficient rainfall pattern was broken by the rains that accompanied Hurricane Beulah. Seventy-five percent of the total recharge for 1967 occurred during the last four months of the year.

Table 4.--Estimated recharge, in thousands of acre-feet, to the Edwards and associated limestones, San Antonio area, Texas, 1967

Basin	1967	1934-66 Average
Nueces and West Nueces Rivers	82.2	94.6
Frio and Dry Frio Rivers	137.9	81.2
Sabinal River	30.4	31.2
Medina Lake	44.7	50.7
Cibolo and Dry Comal Creeks	57.3	89.8
Blanco River and adjacent area	19.0	31.8
Area between Sabinal and Medina Rivers	65.0	68.9
Area between Cibolo Creek and Medina River	30.2	56.6
TOTALS	466.7	504.8

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