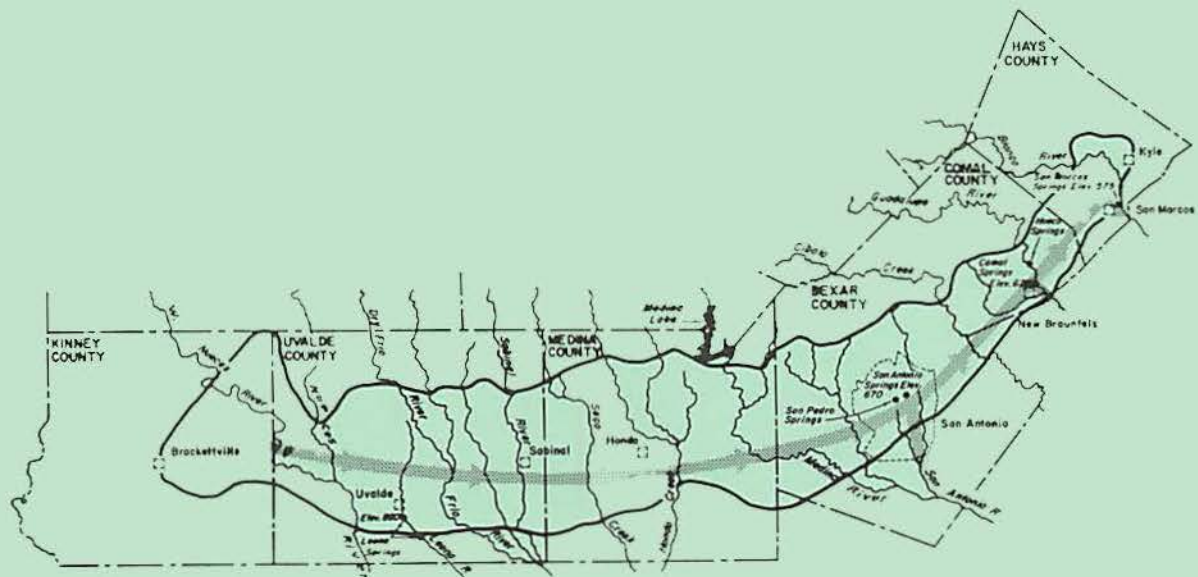


# Ground-Water Discharge from the Edwards and Associated Limestones, San Antonio Area, Texas, 1975

## Bulletin 35

Edwards Underground Water District  
San Antonio, Texas



Prepared in cooperation with the U.S. Geological Survey and the Texas Water Development Board

**EDWARDS UNDERGROUND WATER DISTRICT**

**2603 Tower Life Building  
San Antonio, Texas 78205**

**BULLETIN 35**

**GROUND-WATER DISCHARGE FROM THE EDWARDS AND ASSOCIATED  
LIMESTONES, SAN ANTONIO AREA, TEXAS, 1975**

**Compiled by**

**R. A. Rappmund  
U.S. Geological Survey**

**Prepared by the U.S. Geological Survey  
in cooperation with the  
Edwards Underground Water District and the  
Texas Water Development Board**

**July 1976**

CONTENTS

	Page
Abstract . . . . .	3
Introduction . . . . .	3
Methods of investigation . . . . .	4
Ground-water discharge . . . . .	4
References . . . . .	6

TABLE

Table 1. Estimated discharge from the Edwards and associated limestones in the San Antonio area, 1975 . . . . .	5
--	---

GROUND-WATER DISCHARGE FROM THE EDWARDS AND ASSOCIATED  
LIMESTONES, SAN ANTONIO AREA, TEXAS, 1975

Compiled by

R. A. Rappmund

U. S. Geological Survey

ABSTRACT

The estimated total discharge from wells and springs in the Edwards and associated limestones in the San Antonio area during 1975 was 868,200 acre-feet, which is the record high for the period 1934-75. The total discharge from wells and springs in 1975 was about 2 percent more than in 1974 and about 55 percent more than the average for 1934-74.

About 38 percent of the total discharge was from wells, and approximately two-thirds of this amount was from wells in Bexar County. The discharge from wells in 1975 was 10 percent less than in 1974; springflow increased by about 12 percent.

INTRODUCTION

Records of ground-water discharge from the Edwards and associated limestones in the San Antonio area during 1975 are summarized in this report. The compilation of these basic records is part of a continuing hydrologic investigation by the U.S. Geological Survey in cooperation with the Edwards Underground Water District and the Texas Water Development Board. Previous reports on discharge are given in the list of references.

Readers interested in using metric equivalents of the English units of measurement used in this report may convert to metric units by the following conversion factors:

From	Multiply by	To obtain
acres	0.4047	square hectometres
acre-feet	1,233	cubic metres
	.001233	cubic hectometres
million gallons per day	3.785	million litres per day

## METHODS OF INVESTIGATION

The discharge from springs was compiled from reports of gages operated by the U.S. Geological Survey at points of discharge. Pumpage for agriculture was estimated from records of power consumption and irrigated acreage. Records of the annual canvass of pumpage in the San Antonio area by the Texas Water Development Board were used to compile municipal, military and industrial usage.

## GROUND-WATER DISCHARGE

The estimated discharge from the Edwards and associated limestones during 1975 is given in table 1. The discharge from springs was from San Marcos Springs in Hays County, Comal Springs in Comal County, San Antonio and San Pedro Springs in Bexar County, and Leona River Springs in Uvalde County. The recorded discharge from Leona River Springs includes underflow through the gravel below the springs.

Major discharge by wells was from Bexar, Uvalde, and Medina Counties, while the major springflow was from Comal and Hays Counties. Many wells in Bexar County supplied water for municipal and military use. Other wells in Bexar County and most of the large wells in Uvalde and Medina Counties supplied the irrigation needs for an estimated 72,000 acres. The remaining discharge, principally from wells in Bexar County, was for industrial, domestic, stock, and miscellaneous purposes.

The estimated total discharge from wells and springs in 1975 was 868,200 acre-feet, which is the record high for the period 1934-75. About 38 percent of the total discharge was from wells, and approximately two-thirds of this amount was from wells in Bexar County. The discharge from wells in 1975 was 10 percent less than in 1974, while springflow increased by about 12 percent.

The total discharge from wells and springs was about 2 percent more than in 1974 and about 55 percent more than the average for 1934-74.

Table 1.---Estimated discharge from the Edwards and associated limestones in the San Antonio area, 1975 (million gallons per day)

County	Springs	Municipal and Military	Agriculture	Industry	Domestic stock and miscellaneous	Million gallons per day	Thousand acre-feet per year
Kinney	--	--	--	--	0.2	0.2	0.2
Uvalde	39.3	4.0	53.8	--	2.7	99.8	111.8
Medina	--	2.3	17.3	--	.6	20.2	22.6
Bexar	35.8	143.2	14.2	12.3	25.7	231.2	259.0
Comal	255.5	6.6	.2	1.4	.6	264.3	296.0
Hays	151.8	6.8	.6	--	.2	159.4	178.6
Total (million gallons per day)	482.4	162.9	86.1	13.7	30.0	775.1	
Total (thousand acre-feet per year)	540.4	182.5	96.4	15.3	33.6		868.2

## REFERENCES

- Garza, Sergio, 1962, Recharge, discharge, and changes in ground-water storage in the Edwards and associated limestones, San Antonio area, Texas, a progress report on studies, 1955-59: Texas Board Water Engineers Bull. 6201, 51 p.
- \_\_\_\_ 1963, Ground-water discharge from the Edwards and associated limestones, 1955-62, San Antonio area, Texas: Edwards Underground Water District Bull. 2, 4 p.
- \_\_\_\_ 1964, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1963: Edwards Underground Water District Bull. 5, 3 p.
- \_\_\_\_ 1966, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1965: Edwards Underground Water District Bull. 11, 4 p.
- \_\_\_\_ 1966, Ground-water resources of the San Antonio area, Texas a progress report on studies 1960-64: Texas Water Development Board rept. 34, 31 p.
- Puente, Celso, 1969, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1968: Edwards Underground Water District Bull. 20, 5 p.
- \_\_\_\_ 1970, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1969: Edwards Underground Water District Bull. 23, 7 p.
- \_\_\_\_ 1971, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1970: Edwards Underground Water District Bull. 26, 7 p.
- \_\_\_\_ 1972, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1971: Edwards Underground Water District Bull. 29, 8 p.
- \_\_\_\_ 1973, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1972: Edwards Underground Water District Bull. 31, 8 p.

REFERENCES--Continued

- Rappmund, R. A., 1974, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1973: Edwards Underground Water District Bull. 32, 9 p.
- \_\_\_\_\_ 1975, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1974: Edwards Underground Water District Bull. 34, 8 p.
- Rettman, Paul, 1965, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1964: Edwards Underground Water District Bull. 8, 4 p.
- \_\_\_\_\_ 1967, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1966: Edwards Underground Water District Bull. 14, 4 p.
- \_\_\_\_\_ 1968, Ground-water discharge from the Edwards and associated limestones, San Antonio area, Texas, 1967: Edwards Underground Water District Bull. 17, 4 p.