

SOURCE OF SUPPLY

And

Chemical Analysis

of Water Supplied

THE CITY OF

San Antonio

**“Till taught by pain
Men really know not what
good water’s worth”**

—Lord Byron

SOURCE OF SUPPLY

San Antonio is blessed with an abundance of good water. For human consumption there is none better. Falling from the clouds on the vast sparsely populated area to the northwest known as the Edward's Plateau, it is filtered and purified by Nature's own process as it finds its way through cracks and fissures in the Edward's Limestone rock. It does not see the light or come in contact with the surface air until it is drawn from the faucet in your home.

The water is obtained from thirty-one artesian wells varying in depth from 800 to 1400 feet. The static pressure of this stream of water in the Edward's Limestone crevasses is such that it would rise in a pipe to an elevation varying between 660 and 690 feet above sea level, depending upon the rainfall over the Edward's Plateau during the year or previous year. The elevation of the surface ground in San Antonio varies between 600 and 815 feet above sea level, so that in many sections the static pressure of the underground supply is sufficient to cause a flow above the surface of the ground without the aid of pumps, which is the cause of a number of very interesting and valuable springs within the City limits.

During the year of 1930, the residents of San Antonio consumed an average of a little more than 22,000,000 gallons daily. Many samples of water are

taken from various sections of the City every week and are sent to the State Health Department laboratories at Austin, Texas, for analysis, and without exception, the reports show this water to be pure and wholesome. Lime in proper quantity is an excellent purifying agent and in the small amount that it is present in San Antonio's water it is of great health value, being especially recommended by doctors for babies and young children.

CHEMICAL ANALYSIS

The following analysis of San Antonio's water was made by the School of Chemistry of the University of Texas, at Austin, Texas, in April 1911.

REPORT NO. 3970

Analysis of Water from the San Antonio Water Supply Company, sample supplied by Mr. C. H. Surkamp, Vice-Pres. and Gen. Mgr.

Ions Determined	Grams Per Liter	Grains Per U. S. Gallon
Potassium (K) -----	.0010	.058
Sodium (Na) -----	.0095	.554
Magnesium (Mg) -----	.0143	.869
Calcium (Ca) -----	.0612	3.569
Alumina (Al ₂ O ₃) -----	.0004	.023
Ferric Oxide (Fe ₂ O ₃) -----	.0001	.006
Chlorine (Cl) -----	.0163	.950
Sulphuric Acid (SO ₄) -----	.0128	.747
Carbonic Acid (HCO ₃) -----	.2403	14.014
Nitric Acid (NO ₃) -----	.0030	.175
Silica (SiO ₂) -----	.0150	.875
Total-----	.3745	21.840

Hypothetically Combined as Follows:

Potassium Chloride (KCl) --	.0019	.111
Sodium Nitrate (NaNO ₃) --	.0041	.239
Sodium Chloride (NaCl) ----	.0213	1.242
Magnesium Chloride (MgCl ₂)	.0034	.198
Magnesium Sulphate (MgSO ₄)	.0160	.933
Magnesium Bicarbonate (Mg(HCO ₃) ₂) -----	.0649	3.785
Calcium Bicarbonate Ca(HCO ₃) ₂ -----	.2474	14.428
Alumina (Al ₂ O ₃) -----	.0004	.023
Ferric Oxide (Fe ₂ O ₃) -----	.0001	.006
Silica (SiO ₂) -----	.0150	.875
Total -----	.3745	21.840

TOTAL SOLIDS (as determined by evaporating a sample of the water to dryness):

	Grams Per Liter	Grains Per U. S. Gallon
At 105 deg. Centigrade-----	.2554	14.894
At 180 deg. Centigrade-----	.2476	14.440
At dull red heat-----	.2200	12.830
GASES (number of cubic centimeters per liter at 0 deg. and 760 m.m. pressure):		
Carbon Dioxide (free) -----		1.34
Carbon Dioxide (from bicarbonates on evaporation)-----		45.10
Hydrogen Sulphide -----		None
HARDNESS (parts per 100,000 parts of water):		
Temporary -----		19.71
Permanent -----		1.69
Total -----		21.40

Respectfully submitted,
(Signed) J. R. BAILEY, Analyst

An analysis made by the University of Texas in 1931, gave practically the same results as shown in the foregoing analysis of 1911, and E. P. Schoch, Director of the Bureau of Industrial Chemistry, said in his report: "It is clearly seen that the contents of the soluble solids have practically not changed in the last 20 years. Seasonal variations occur; hence the reports are not expected to be exactly the same."

**ANALYSIS MADE FOR THE
U. S. GOVERNMENT**

In June 1931, the following analysis was made for the United States Department of Interior by L. A. Shinn, chemist.

	Parts Per Million
Silica (SiO ₂)	9.8
Iron (Fe)	.02
Calcium (Ca)	62.
Magnesium (Mg)	16.
Sodium (Na)	8.4
Potassium (K)	1.0
Carbonate (CO ₃)	0.
Bicarbonate (HCO ₃)	244.
Sulphate (SO ₄)	14.
Chloride (Cl)	10.
Nitrate (NO ₃)	3.6
Total dissolved solids	238.
Total hardness as (CaCO ₃) (Calculated)	221.

The water system of San Antonio was purchased by the City in 1925. It is governed by a Board known as the Water Works Board of Trustees, and consisting of A. W. Seeligson, Chairman; C. A. Goeth, Vice-Chairman; Gustav Giesecke, Trustee; James A. Gallagher, Trustee; and Mayor C. M. Chambers, Trustee.

The office of the Water Board is maintained at 106 West Market Street under the direction of W. D. Masterson, Manager; J. P. Newcomb, Secretary; J. W. Eckles, Superintendent; and A. C. Hagewood, Master Mechanic.

