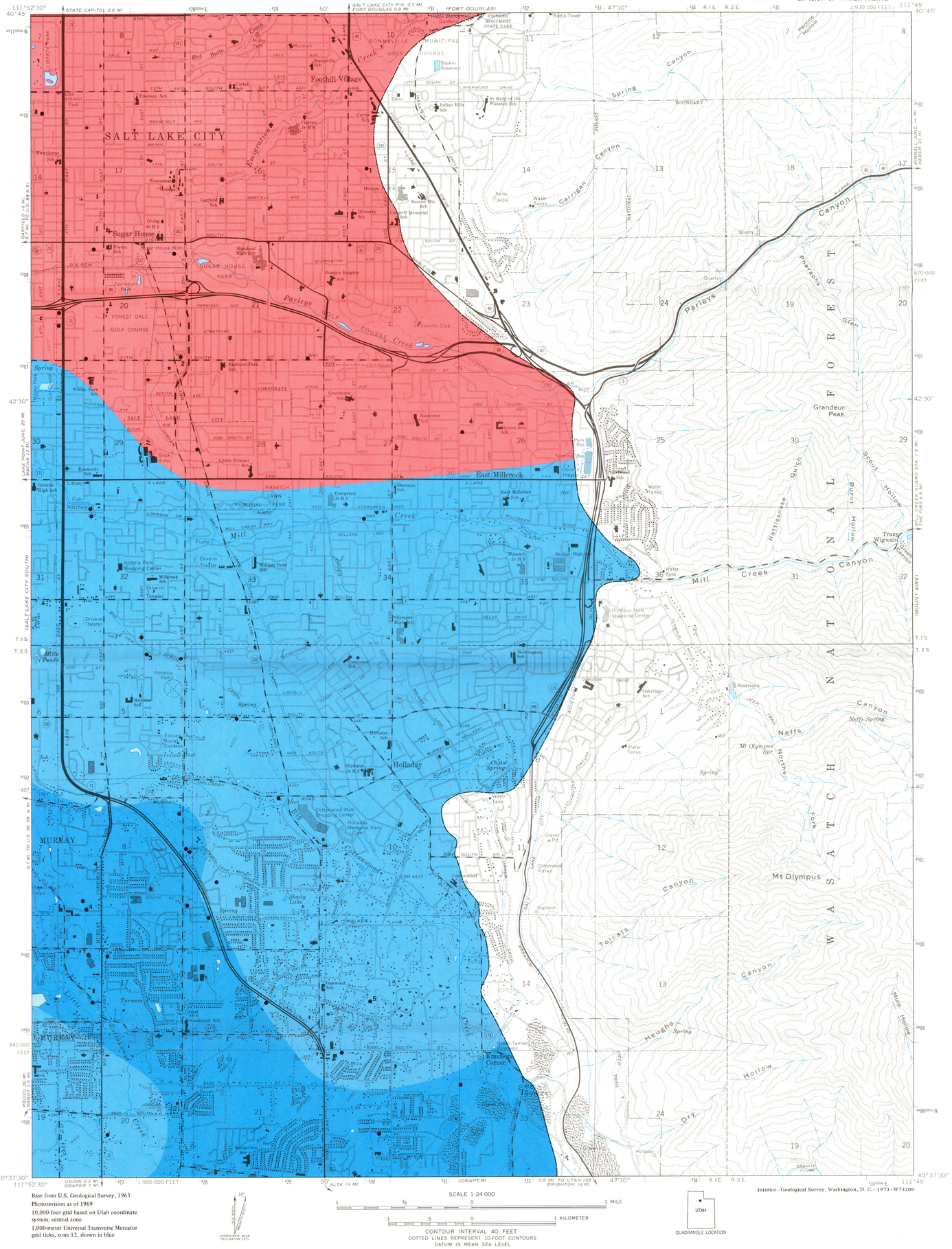
DEPARTMENT OF THE INTERIOR
UNITED STATES GEOLOGICAL SURVEY

PREPARED IN COOPERATION WITH THE
UTAH DEPARTMENT OF NATURAL RESOURCES
DIVISION OF WATER RIGHTS

FOLIO OF THE
SUGAR HOUSE QUADRANGLE, UTAH
MAP I-766-K



Base from U.S. Geological Survey, 1963
Photorevision as of 1969
10,000-foot grid based on Utah coordinate system, central zone
1,000-meter Universal Transverse Mercator grid ticks, zone 12, shown in blue

SCALE 1:24 000
1 ½ 0 1 MILE
1 .5 0 1 KILOMETER
CONTOUR INTERVAL 40 FEET
DOTTED LINES REPRESENT 10-FOOT CONTOURS
DATUM IS MEAN SEA LEVEL

APPROXIMATE MEAN DECLINATION 1973

UTAH
QUADRANGLE LOCATION

Interior—Geological Survey, Washington, D. C.—1973—W73209

MAP SHOWING CONCENTRATION OF DISSOLVED SOLIDS IN WATER FROM THE PRINCIPAL AQUIFER, SUGAR HOUSE QUADRANGLE, SALT LAKE COUNTY, UTAH

By
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1973

EXPLANATION

Concentration of dissolved solids in water from principal aquifer, milligrams per liter

- 100-250
- 250-500
- 500-800

●1 Well whose water was analyzed to determine concentration of dissolved solids in the principal aquifer. Number indicates analysis in table

——— Approximate eastern limit of principal aquifer

DISCUSSION

The concentration of dissolved solids in water from the principal aquifer ranges from about 100 mg/l (milligrams per liter) to as much as 800 mg/l. Water containing the least dissolved solids occurs in an arcuate, mile-wide band along the southern border of the Sugar House quadrangle. Water containing the most dissolved solids occurs in a 3½-mile-wide band in the northern part, as shown by the map.

The deposits comprising the principal aquifer consist of interbedded gravel, sand, silt, and clay. Individual beds range from a few inches to several tens of feet thick. The more permeable coarse-grained beds occur near the mountain front. The confined part of the principal aquifer is overlain by poorly permeable beds of blue clay, silt, and fine sand.

The principal aquifer supplied about 4 percent, or 9,000 acre-feet, of the municipal and industrial water used annually in Salt Lake County during 1964-68.

The chemical quality of water from the principal aquifer ranges from moderately hard, calcium bicarbonate type water in the area of least dissolved solids to very hard, calcium sulfate type water in the area of greatest dissolved solids. Chemical analyses of waters from selected wells in the principal aquifer are presented in the table below.

Analyses of many water samples from various depth zones within the principal aquifer show that vertical variations in chemical quality are insignificant as compared to lateral variation. Analyses of water samples from a particular zone in the principal aquifer from 1932-68 show no significant change in chemical quality with time.

The concentration of dissolved solids in water from the principal aquifer is within the limit of 500 mg/l recommended for drinking water by the U.S. Public Health Service (1962), except in the northern one-third of the quadrangle. The U.S. Public Health Service recommends that water containing more than 500 mg/l not be used for drinking water if other more suitable supplies are available.

The selected references contain other information about the chemical quality of water in this and adjacent parts of Jordan Valley. The data reports and releases contain, among other types of basic data, chemical analyses of water samples collected from numerous sources during 1932-68. The interpretive reports contain discussions of various aspects of the chemical quality of water. Ground-water terms used in this report have been defined by Lohman and others (1972), and water-quality terms are described by Swenson and Baldwin (1965).

SELECTED REFERENCES

Hely, A. G., Mower, R. W., and Harr, C. A., 1971a, Water resources of Salt Lake County, Utah: Utah Dept. Nat. Resources Tech. Pub. 31, 244 p., 5 pls.

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Swenson, H. A., and Baldwin, H. L., 1965, A primer on water quality: U.S. Geol. Survey, Spec. Pub., 27 p.

Taylor, G. H., and Leggette, R. M., 1949, Ground water in the Jordan Valley, Utah: U.S. Geol. Survey Water-Supply Paper 1029, 357 p. 14 pls.

U.S. Public Health Service, 1962, Drinking water standards: U.S. Public Health Service Pub. 956, 61 p.

Van Horn, Richard, 1972a, Surficial geologic map of the Sugar House quadrangle, Salt Lake County, Utah: U.S. Geol. Survey Misc. Geol. Inv. Map I-766-A.

_____1972b, Map showing relative age of faults in the Sugar House quadrangle, Salt Lake County, Utah: U.S. Geol. Survey Misc. Inv. Map I-766-B.

TABLE 1. — Chemical analyses of water from selected wells in the principal aquifer. Dissolved constituents reported in milligrams per liter

Well																			
Number on map	Identification number	Depth (feet)	Date of collection	Temperature (°C)	Silica (SiO_2)	Calcium (Ca)	Magnesium (Mg)	Sodium[1] (Na)	Bicarbonate (HCO_3)	Carbonate (CO_3)	Sulfate (SO_4)	Chloride (Cl)	Nitrate (NO_3)	Dissolved solids (residue on evaporation at 180°C)	Hardness as $CaCO_3$	Noncarbonate hardness as $CaCO_3$	Percent sodium	Sodium adsorption ratio	Specific conductance (micromhos/cm at 25°C)	pH
1	(D-1-1) 15bdc-1	200	7-14-65	-	22	77	38	47	290	0	116	60	9.3	512	348	110	23	1.1	842	7.6
2	20ddd-1	500	[2] 7-21-66	15.5	15	122	40	[3] 31	254	0	289	27	5.0	691	470	262	12	.6	936	7.7
3	(D-2-1) 5aba-2	247	2-23-65	8.5	5.3	45	21	13	146	0	85	14	.6	274	200	80	12	.4	423	7.7
4	8ccd-19	440	7- 8-64	11.5	9.4	24	9.7	12	108	0	17	14	.5	140	100	11	21	.5	235	7.9
5	15cac-1	171	9-11-67	11.5	8.4	63	20	14	204	0	61	26	1.3	301	237	70	12	.4	498	7.5

[1] Sodium (Na) and Potassium (K) values are calculated and reported as sodium.
[2] Analysis includes 2.9 mg/l potassium (K), 0.5 mg/l fluoride (F), and 0.09 mg/l boron (B).
[3] Sodium value determined.

For sale by U.S. Geological Survey, price 75 cents