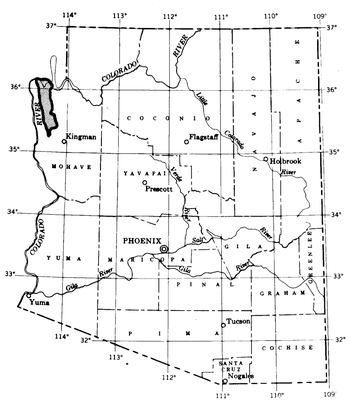
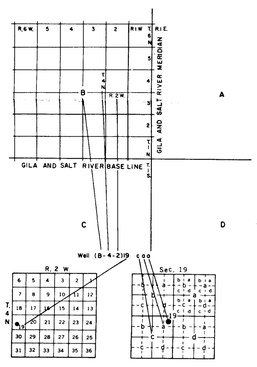
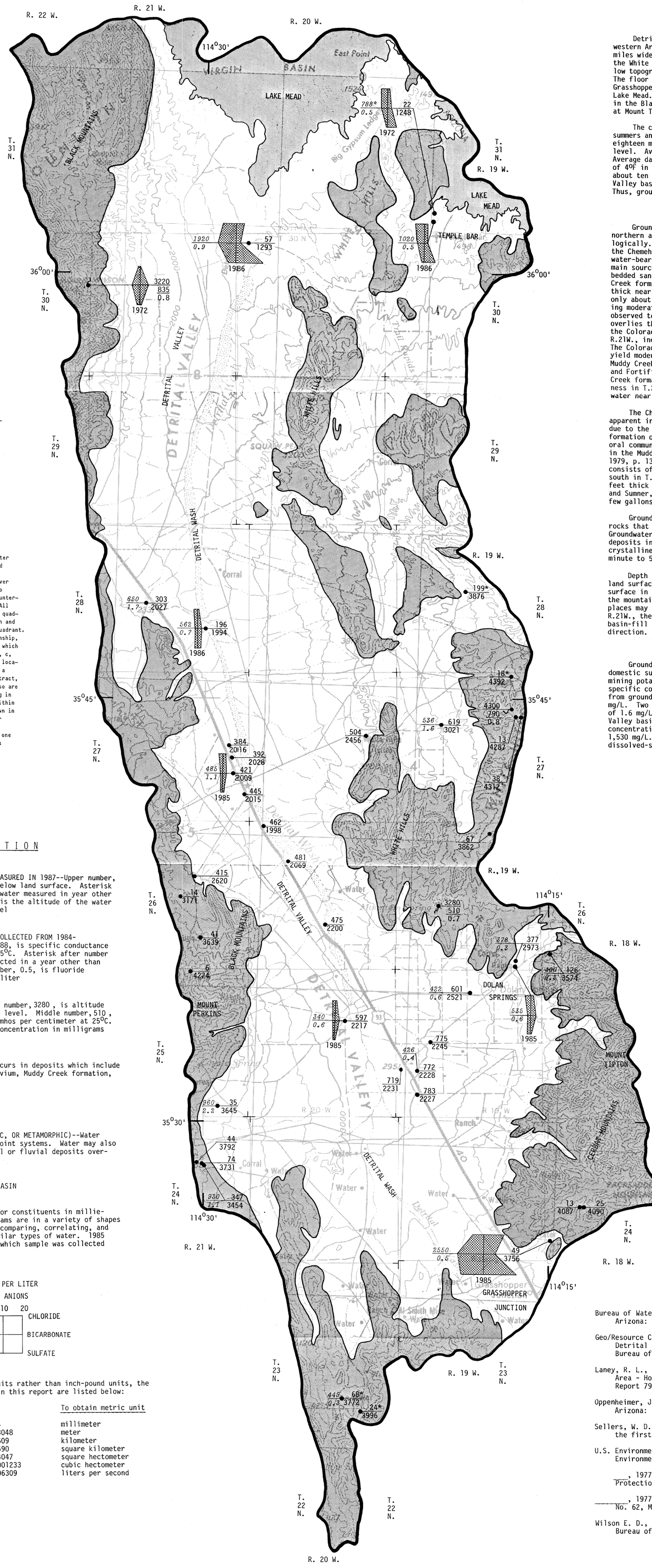


INDEX MAP SHOWING AREA OF REPORT (SHADED)



The well numbers used by the Department of Water Resources are in accordance with the Bureau of Land Management's system of land subdivision. The land survey in Arizona is based on the Gila and Salt River meridian and base line, which divide the state into four quadrants. These quadrants are designated counter-clockwise by the capital letters A, B, C, and D. All land north and east of the point of origin is in A quadrant, that north and west in B quadrant, that south and west in C quadrant, and that south and east in D quadrant. The first digit of a well number indicates the township, the second the range, and the third the section in which the well is situated. The lowercase letters, a, b, c, and d, after the section number, indicate the well location within the section. The first letter denotes a particular 160-acre tract, the second the 40-acre tract, and the third the 10-acre tract. These letters also are assigned in a counterclockwise direction, beginning in the northeast quarter. If the location is known within the 10-acre tract, three lowercase letters are shown in the well number. In the example shown, well number (B-4-2)19caa designates the well as being in the NE¼NE¼SW¼ sec. 19, T. 4N., R. 2W. Where more than one well is within a 10-acre tract, consecutive numbers beginning with 1 are added as suffixes.



EXPLANATION

199* / 3876 — WELL IN WHICH DEPTH TO WATER WAS MEASURED IN 1987--Upper number, 199, is depth to water in feet below land surface. Asterisk after number indicates depth to water measured in year other than 1987. Lower number, 3876, is the altitude of the water level in feet above mean sea level

788* / 0.5 — WELL FOR WHICH A WATER SAMPLE WAS COLLECTED FROM 1984-1987--Upper italicized number, 788, is specific conductance in micromhos per centimeter at 25°C. Asterisk after number indicates water sample was collected in a year other than 1984-1987. Lower italicized number, 0.5, is fluoride concentration in milligrams per liter

3280 / 510 / 0.7 — SPRING FIELD CHECKED IN 1987--Upper number, 3280, is altitude of spring in feet above mean sea level. Middle number, 510, is specific conductance in micromhos per centimeter at 25°C. Lower number, 0.7, is fluoride concentration in milligrams per liter

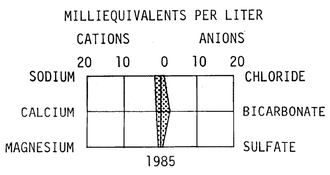
BASIN-FILL DEPOSITS--Groundwater occurs in deposits which include Chemehuevi formation, older alluvium, Muddy Creek formation, and conglomerate

LAKE MEAD

CRYSTALLINE ROCK (VOLCANIC, GRANITIC, OR METAMORPHIC)--Water may occur in fracture zones or joint systems. Water may also occur in thin veneers of alluvial or fluvial deposits overlying the crystalline rock

ARBITRARY BOUNDARY OF GROUNDWATER BASIN

CHEMICAL QUALITY DIAGRAM--Shows major constituents in milliequivalents per liter. The diagrams are in a variety of shapes and sizes, providing a means of comparing, correlating, and characterizing similar or dissimilar types of water. 1985 below diagram indicates year in which sample was collected



For readers who prefer to use metric units rather than inch-pound units, the conversion factors for the terms used in this report are listed below:

Multiply inch-pound unit	By	To obtain metric unit
inch	25.4	millimeter
foot	0.3048	meter
mile	1.609	kilometer
square mile	2.590	square kilometer
acre	0.4047	square hectometer
acre-foot	0.001233	cubic hectometer
gallons per minute	0.06309	liters per second

INTRODUCTION

Detrital Valley basin is located in the northern portion of Mohave County in northwestern Arizoma. The basin is approximately fifty miles long, north to south, fifteen miles wide, east to west, and encompasses about 750 square miles. The basin is bounded by the White Hills and Cerbat Mountains on the east, the Black Mountains on the west, and a low topographic rise on the south separates it from the adjacent Sacramento Valley basin. The floor of Detrital Valley slopes northward from 3,400 feet above mean sea level near Grasshopper Juntion to 1,223 feet above mean sea level where Detrital Wash drains into Lake Mead. Maximum altitudes vary from 5,456 feet above mean sea level at Mount Perkins in the Black Mountains on the west side of the basin, to 7,148 feet above mean sea level at Mount Tipton in the Cerbat Mountains on the east side of the basin.

The climate of Detrital Valley basin is typically semi-arid, characterized by hot summers and mild winters. The only available local climatological data are for Kingman, eighteen miles southeast of the study area at an elevation of 3,325 feet above mean sea level. Average daily maximum temperatures range from 54°F in January to 98°F in July. Average daily minimum temperatures range from 31°F in January to 70°F in July. Extremes of 4°F in January and 111°F in July have been recorded. Average annual precipitation is about ten inches (Sellers and others, 1985, pp. 89, 92, 101, 104). Streams in Detrital Valley basin are *generally* ephemeral, and flow only in direct response to precipitation. Thus, groundwater is the only dependable supply of water in the basin.

HYDROGEOLOGY

Groundwater occurs in the basin-fill deposits which underlie Detrital Valley. The northern and southern parts of the basin differ structurally, but are connected hydrologically. In the northern part of the basin, T.30N. and T.31N., R.19W. through R.21W., the Chemehuevi formation, older alluvium, and Muddy Creek formation comprise the main water-bearing units (Laney, 1979, pp. 9-25). The Chemehuevi formation, which is the main source of water for the community of Temple Bar, consists of a siltstone with interbedded sand and gravel, and unconformably overlies both the older alluvium and the Muddy Creek formation (Laney, 1979, pp. 4, 24). The Chemehuevi formation is about 250 feet thick near Temple Bar, but in the central portion of Detrital Valley its thickness is only about 125 feet (Laney, 1979, p. 22). The Chemehuevi formation is capable of yielding moderate quantities of water. In 1987, Temple Bar's main well, (B-31-19)32DAA, was observed to produce 300 gallons per minute. The older alluvium, which unconformably overlies the Muddy Creek formation, is divided into two units, a local gravel unit and the Colorado River deposits. Exploratory wells drilled in the northeastern part of T.29N., R.21W., indicate that the local gravel unit is about 185 feet thick (Laney, 1979, p. 19). The Colorado River deposits vary in thickness from 60 feet to 150 feet. Both units may yield moderate to large quantities of water near Lake Mead (Laney, 1979, pp. 20-21). The Muddy Creek formation consists of a conglomerate facies, mudstone facies, limestone facies and Fortification Basalt member. The thicknesses of the different units within the Muddy Creek formation vary considerably in the study area, and may exceed 1,000 feet in thickness in T.29N., R.21W. The Muddy Creek formation yields small to moderate quantities of water near Lake Mead from all but the mudstone facies (Laney, 1979, pp. 11, 16, 17)

The Chemehuevi formation, older alluvium, and Muddy Creek formation are not readily apparent in the southern part of the basin, south of T.29N., R.19W. through R.21W., partly due to the paucity of wells and associated drillers' logs. However, the Muddy Creek formation or it's lateral equivalent may extend as far south as Dolan Springs (R. Laney, oral commun., 1987). Drillers' logs in T.29N., R.21W., reveal the top of a halite body in the Muddy Creek formation at depths from 400 to 650 feet below land surface (Laney, 1979, p. 13). Further south, in T.27N., R.21E., drillers logs indicate the basin-fill consists of corglomerate with minimum thicknesses of at least 500 feet. Still further south in T.25N., R.19W., drillers' logs indicate the conglomerate to be at least 1,000 feet thick and basin-fill in this area may exceed 6,000 feet in total depth (Oppenheimer and Sumner, 1980). The conglomerate yields moderate quantities of water ranging from a few gallons per minute to 100 gallons per minute.

Groundwater also occurs in the mountains and fringes of the basin in crystalline rocks that have been sufficiently fractured and/or weathered to create pore space. Groundwater may also occur at shallow depths in the thin veneer of alluvial and fluvial deposits in and along mountain streams and washes. Wells drilled into the fractured crystalline rock reportedly yield quantities of water ranging from a few gallons per minute to 50 gallons per minute.

Depth to water in the Detrital Valley basin ranges from approximately 780 feet below land surface in the basin-fill in the southern part of the basin, to 20 feet below land surface in the Chemehuevi formation in the northern part of the basin. Depth to water in the mountains varies, and is commonly less than 100 feet below land surface, and in some places may be flowing at the surface as seeps or springs. However, one well in T.24N., R.21W., the depth to water is 347 feet below land surface. Groundwater elevations in the basin-fill deposits shown on the map suggest groundwater flow trends in a northerly direction.

GROUNDWATER QUALITY

Groundwater in Detrital Valley basin is of suitable quality for most uses, with domestic supply being the most important single use. Two important parameters for determining potability are the concentration of fluoride and the specific conductance. The specific conductance can be used to estimate dissolved solids. Fluoride concentrations from groundwater samples collected in Detrital Valley basin range from 0.3 mg/L to 2.2 mg/L. Two of the 20 samples analyzed exceed the maximum acceptable fluoride concentration of 1.6 mg/L.1/ Specific conductance values for groundwater samples collected in Detrital Valley basin range from 340 to 2,550 micromhos per centimeter at 25°C. Dissolved-solids concentrations estimated from the specific conductance values range from 227 mg/L to 1,530 mg/L. Five of the 20 samples analyzed exceed the maximum contaminant level for dissolved-solids.2/

NOTES

1/ The maximum acceptable concentration of fluoride in public water supplies depends upon the annual average of maximum daily air temperatures (U.S. Environmental Protection Agency, 1977a, p. 67). The annual average maximum daily air temperature in Detrital Valley basin is 76°F, and the maximum acceptable fluoride concentration is 1.6 mg/L.

2/ The dissolved-solics concentration may be approximated by multiplying the specific conductance value by 0.6. The maximum contaminant level allowable under National Secondary Drinking Water regulations is 500 mg/L (U.S. Environmental Protection Agency, 1977b, p. 17146).

5 0 5 MILES
5 0 5 10 KILOMETERS

CONTOUR INTERVAL 200 FEET
WITH SUPPLEMENTARY CONTOURS AT 100-FOOT INTERVALS
DATUM IS MEAN SEA LEVEL
SCALE 1:125,000

SELECTED REFERENCES

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Geo/Resource Consultants, Inc., 1982, Groundwater Resources and Water Quality of Detrital and Hualapai Basins, Mohave County, Arizona, report prepared for U.S. Bureau of Land Management, 84 p., 6 figs., 3 plates.

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Sellers, W. D., Hill, R. H., and Sanderson-Rae, Margaret, eds., 1985, Arizona climate, the first hundred years 1885-1985: Tucson, University of Arizona Press, 143 p.

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Wilson E. D., and Moore, R. T., 1959, Geologic Map of Mohave County, Arizona: Arizona Bureau of Mines, University of Arizona, scale 1:375,000.

BASE FROM U.S. GEOLOGICAL SURVEY
KINGMAN, ARIZONA; NEVADA; CALIFORNIA
1954, REV. 1969, 1:250,000
LAS VEGAS, NEVADA; ARIZONA; CALIFORNIA
1954, REV. 1962, 1:250,000

DEPTH TO WATER, ALTITUDE OF THE WATER LEVEL, AND CHEMICAL QUALITY OF WATER
MAP SHOWING GROUNDWATER CONDITIONS IN THE DETRITAL VALLEY BASIN, MOHAVE COUNTY, ARIZONA--1987
BY
R. A. DILLENBURG

These hydrologic maps are available upon request from the Department of Water Resources, Basic Data Unit, 2810 South 24th Street, Suite 122, Phoenix, Arizona, 85034. The hydrologic data on which these maps are based are available, for the most part, in computer-printout form and may be consulted at the Department of Water Resources and at the U.S. Geological Survey offices located at: Federal Building, 301 West Congress Street, Tucson, Arizona, and 3738 North 16th Street, Suite E, Phoenix, Arizona.