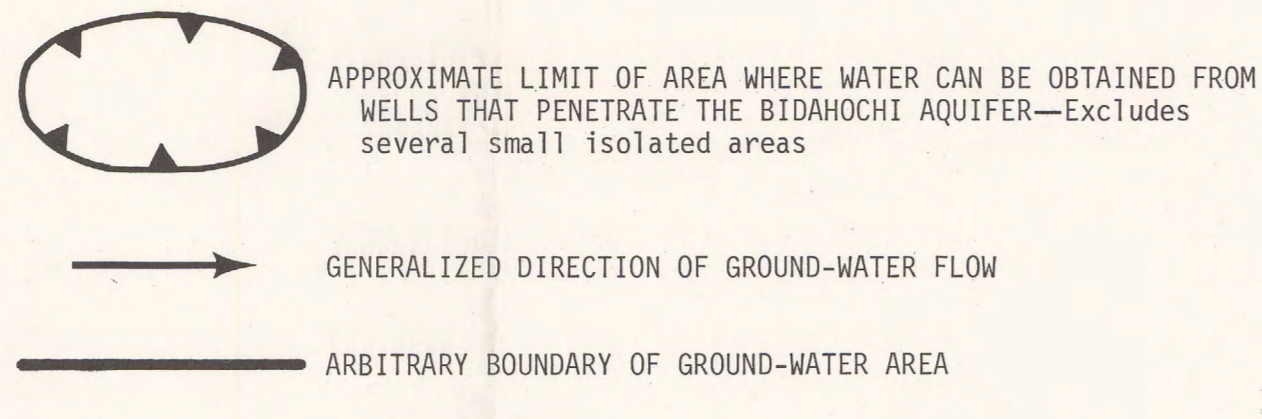


EXPLANATION

- 6000 — POTENTIOMETRIC CONTOUR—Shows approximate altitude at which water level would have stood in tightly cased well that penetrates the Bidahochi aquifer, 1975. Contour interval 50 feet. Datum is mean sea level
- 5964
5808
210
0.2
WELL THAT PENETRATES THE BIDAHOCHI AQUIFER AND IN WHICH THE DEPTH TO WATER WAS MEASURED IN 1975-76—Figure, 2, indicates number of wells at this location. Upper number, 5964, is altitude of the water level in feet above mean sea level. Second number, 210, is depth to water in feet below land surface (R, depth to water reported; M, depth to water was measured prior to 1975-76). Third number, 210, is dissolved-solids concentration in milligrams per liter (K, dissolved-solids concentration estimated on the basis of field determination of specific conductance). Lower number, 0.2, is fluoride concentration in milligrams per liter
- 5803
1110
9.1
WELL THAT PENETRATES THE ALLUVIUM AND IN WHICH THE DEPTH TO WATER WAS MEASURED IN 1975-76—Figure, 2, indicates number of wells at this location. Upper number, 5803, is altitude of the water level in feet above mean sea level. Second number, 42, is depth to water in feet below land surface (R, depth to water reported; M, depth to water was measured prior to 1975-76). Third number, 1110, is dissolved-solids concentration in milligrams per liter (K, dissolved-solids concentration estimated on the basis of field determination of specific conductance). Lower number, 9.1, is fluoride concentration in milligrams per liter
- 5672
523
1.1
SPRING THAT ISSUES FROM THE BIDAHOCHI AQUIFER AND FOR WHICH DATA WERE COLLECTED IN 1975-76—Upper number, 5672, is altitude of land surface in feet above mean sea level; middle number, 523, is dissolved-solids concentration in milligrams per liter; lower number, 1.1, is fluoride concentration in milligrams per liter



BIDAHOCHI AQUIFER

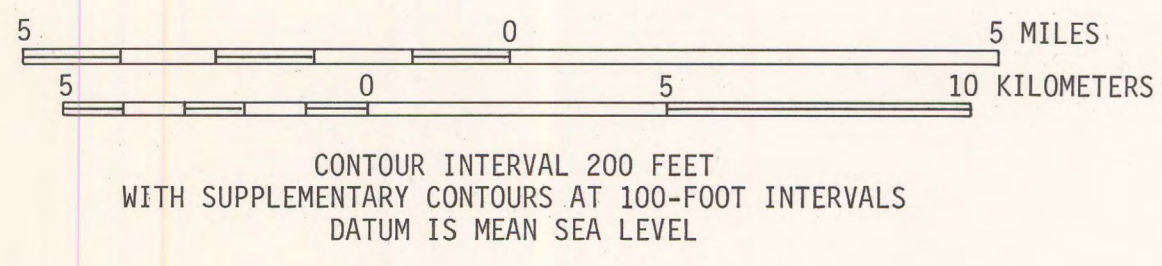
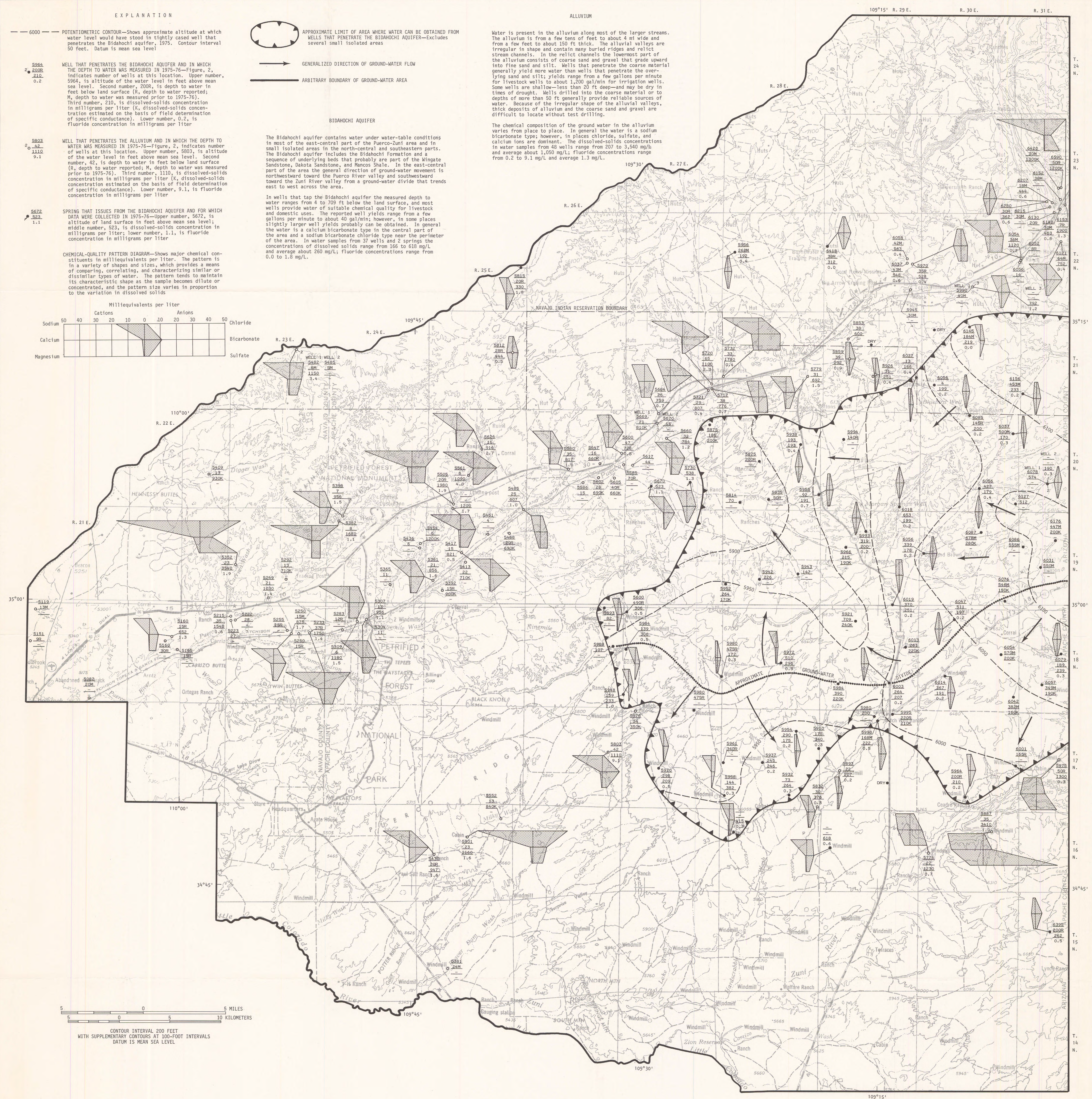
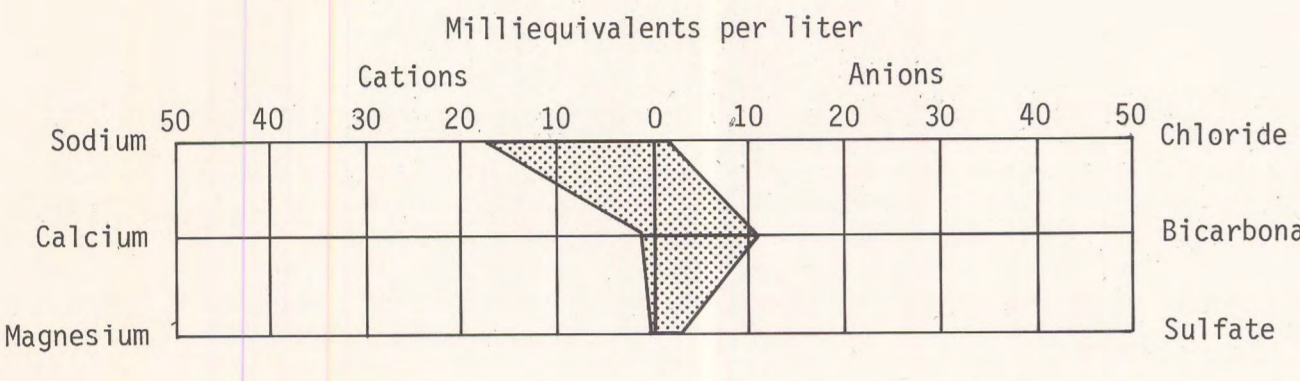
The Bidahochi aquifer contains water under water-table conditions in most of the east-central part of the Puerco-Zuni area and in small isolated areas in the north-central and southeastern parts. The Bidahochi aquifer includes the Bidahochi Formation and a sequence of underlying beds that probably are part of the Wingate Sandstone, Dakota Sandstone, and Mancos Shale. In the east-central part of the area the general direction of ground-water movement is northward toward the Puerco River valley and southward toward the Zuni River valley from a ground-water divide that trends east to west across the area.

In wells that tap the Bidahochi aquifer the measured depth to water ranges from 4 to 709 ft below the land surface, and most wells provide water of suitable chemical quality for livestock and domestic uses. The reported well yields range from a few gallons per minute to about 40 gal/min; however, in some places slightly larger well yields probably can be obtained. In general the water is a calcium bicarbonate type in the central part of the area and a sodium bicarbonate-chloride type near the perimeter of the area. In water samples from 37 wells and 2 springs the concentrations of dissolved solids range from 166 to 618 mg/L and average about 260 mg/L; fluoride concentrations range from 0.0 to 1.8 mg/L.

Water is present in the alluvium along most of the larger streams. The alluvium is from a few tens of feet to about 4 mi wide and from a few feet to about 150 ft thick. The alluvial valleys are irregular in shape and contain many buried ridges and relict stream channels. In the relict channels the lowermost part of the alluvium consists of coarse sand and gravel that grade upward into fine sand and silt. Wells that penetrate the coarse material generally yield more water than wells that penetrate the overlying sand and silt; yields range from a few gallons per minute for livestock wells to about 1,200 gal/min for irrigation wells. Some wells are shallow—less than 20 ft deep—and may be dry in times of drought. Wells drilled into the coarse material or to depths of more than 50 ft generally provide reliable sources of water. Because of the irregular shape of the alluvial valleys, thick deposits of alluvium and the coarse sand and gravel are difficult to locate without test drilling.

The chemical composition of the ground water in the alluvium varies from place to place. In general the water is a sodium bicarbonate type; however, in places chloride, sulfate, and calcium ions are dominant. The dissolved-solids concentrations in water samples from 48 wells range from 207 to 3,540 mg/L and average about 1,050 mg/L; fluoride concentrations range from 0.2 to 9.1 mg/L and average 1.3 mg/L.

CHEMICAL-QUALITY PATTERN DIAGRAM—Shows major chemical constituents in milliequivalents per liter. The pattern is in a variety of shapes and sizes, which provides a means of comparing, correlating, and characterizing similar or dissimilar types of water. The pattern tends to maintain its characteristic shape as the sample becomes dilute or concentrated, and the pattern size varies in proportion to the variation in dissolved solids

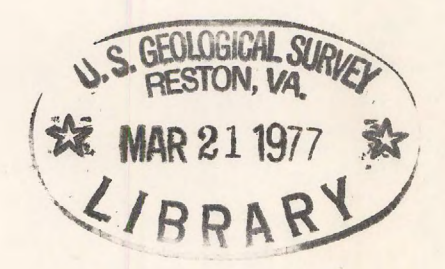


BASE FROM U.S. GEOLOGICAL SURVEY
FLAGSTAFF 1:250,000, 1954-62,
GALLUP 1:250,000, 1954-62,
HELENSBURG 1:250,000, 1954-65,
AND ST. JOHNS 1:250,000, 1954-62

GROUND-WATER CONDITIONS IN THE BIDAHOCHI AQUIFER AND IN THE ALLUVIUM

MAPS SHOWING GROUND-WATER CONDITIONS IN THE PUERCO-ZUNI AREA,
APACHE AND NAVAJO COUNTIES, ARIZONA—1975

By
Larry J. Mann



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