



EXPLANATION

- Colored areas indicate rocks receiving recharge
- Volcanic rocks
- Chuska Sandstone and upper member of the Blahochi Formation
- Ojo Alamo Sandstone, Pictured Cliffs Sandstone, and Cliff House Sandstone
- Mesaverde Group
- Toreva Formation and Yale Point Sandstone in Black Mesa; Gallup Sandstone and Point Lookout Sandstone in San Juan basin
- Rocks of the D multiple-aquifer system
- Dakota Sandstone, Cow Springs Sandstone, and Westwater Canyon Member of the Morrison Formation; and the Entrada Sandstone in the southern and central parts of the reservations
- Salt Wash and Westwater Canyon Members of the Morrison Formation, Summerville Formation, and Bluff Sandstone in the northeastern part of the reservations; Salt Wash Member of the Morrison Formation, Summerville Formation, Bluff Sandstone, and Entrada Sandstone in the northwestern and central parts of the reservations
- Rocks of the N multiple-aquifer system
- Navajo Sandstone, sandy facies of the Kayenta Formation, and Luskachoki Member of the Wingate Sandstone
- Shinarump Member of the Chinle Formation, Moenkopi Formation, and De Chelly Sandstone Member of the Cutler Formation in Monument Valley; Solsela Sandstone Bed of the Petrified Forest Member and Shinarump Member of the Chinle Formation, Moenkopi Formation, and De Chelly Sandstone on the Defiance Plateau; Shinarump Member and Solsela Sandstone Bed of the Petrified Forest Member of the Chinle Formation in the Zuni Mountains; Shinarump Member in western part of the reservations
- Kaibab Limestone, Torowap Formation, and Cocconino Sandstone
- Cedar Mesa Sandstone Member of the Cutler Formation
- Rocks receiving little or no recharge
- 510 Pdc
- 1.0
- Coefficient of transmissibility (upper number, gallons per day per foot) and permeability (lower number, gallons per day per square foot) computed from pumping test
- 4.7 KmV
- Coefficient of permeability (gallons per day per square foot) reported by John (1962, table 31)
- 0.7-4 Kd
- Coefficient of permeability (gallons per day per square foot) determined by U.S. Geological Survey hydrologic laboratory
- Kmv, sandstone units of the Mesaverde Group; Kw, Wepo Formation; Kt, Toreva Formation; Kd, Dakota Sandstone; JmV, Westwater Canyon Member; Jm, Recapture Member, and Jms, Salt Wash Member of the Jm, Morrison Formation; Jsu, upper sandy member, and Jsl, lower sandy member of the Je, Entrada Sandstone; Jcs, Cow Springs and Bluff Sandstone; Jn, Navajo Sandstone; Kw, Kayenta Formation; Tw, Luskachoki Member, and Twr, Rock Point Member of Tw, Wingate Sandstone; Tcm, Monitor Butte Member, and Tcs, Shinarump Member of Tw, Chinle Formation; Tm, Moenkopi Formation; P, red beds above De Chelly Sandstone near Fort Defiance; Pdc, De Chelly Sandstone; Pcc, De Chelly Sandstone Member of the Cutler Formation; Pco, Cocconino Sandstone; and Pgl, Gloria Sandstone
- General direction of ground-water movement in aquifers that lie generally near the land surface
- Direction of ground-water movement in the C multiple-aquifer system
- Rocks of the C multiple-aquifer system consist of the De Chelly Sandstone Member of the Cutler Formation in Monument Valley, De Chelly Sandstone and Shinarump Member of the Chinle Formation in the Defiance Plateau, and the Cocconino Sandstone, Kaibab Limestone, and Supai Formation in the valley of the Little Colorado River
- Direction of ground-water movement in the D multiple-aquifer system in Black Mesa
- Water-level contours of the C multiple-aquifer system, 1955
- Contour interval 100 and 200 feet
- Datum is mean sea level
- 5800
- Water-level contours of the N multiple-aquifer system, 1955
- Contour interval 200 feet
- Datum is mean sea level
- Water-level contours in southwestern and south-central parts of reservations are generally more than 200 feet below the land surface and are influenced in only a few places by the stream pattern
- Structural divide between the hydrologic basins
- Spring

Base compiled from uncontrolled aerial photograph mosaics by the Bureau of Indian Affairs, during the 1930's. Later modification by the U.S. Geological Survey

Outcrops of sedimentary rocks from plate 1: water-level contours of N multiple-aquifer system by G. E. Davis and W. F. Harst, 1955, and M. E. Cooley, 1962; water-level contours of C multiple-aquifer system by M. E. Cooley, 1966

MAP SHOWING WATER-LEVEL CONTOURS, DIRECTION OF WATER MOVEMENT, AND AREAS OF RECHARGE AND DISCHARGE OF AQUIFERS IN THE NAVAJO AND HOPI INDIAN RESERVATIONS, ARIZONA, NEW MEXICO, AND UTAH

