

EXPLANATION

SEE TABLE 1 FOR DESCRIPTION OF GEOLOGIC UNITS
SHADED AREAS ARE INDIAN LANDS, UNSHADED AREAS
ARE PRIVATE LANDS

- INTRUSIVE ROCKS AND DIKES OF TERTIARY AGE. - Not described in table 1.
- CONTACT. - Dashed where approximately located
- FAULT. - Ball on downthrown side
- AREA WHERE SELENIUM CONCENTRATIONS IN WATER USUALLY EXCEED 10 MICROGRAMS PER LITER
- WELL
- SPRING
- AS ABBREVIATION FOR CHEMICAL CONSTITUENT THAT EXCEEDS U.S. PUBLIC HEALTH SERVICE (1962) RECOMMENDED LIMITS FOR DRINKING WATER. -- Shown by well and spring symbols only where individual constituent exceeds limit
- As = Arsenic
- Cl = Chloride
- DS = Dissolved Solids
- Fl = Fluoride
- Fe = Iron
- Mn = Manganese
- N = Nitrate plus nitrite as N or dissolved nitrate as NO3
- Se = Selenium
- SO4 = Sulfate

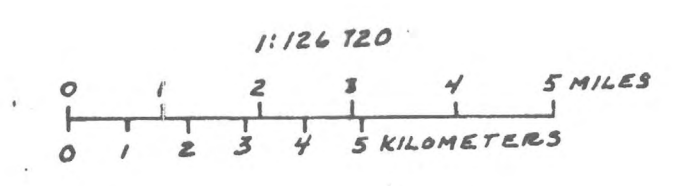


Figure 2.-- Geohydrologic map of the Southern Ute Indian Reservation, southwestern Colorado

Table 1.--Description of geologic units and their hydrologic properties

System	Series	Geologic unit	Symbol	Maximum thickness (feet)	Physical characteristics	Hydrologic characteristics
QUATERNARY	Holocene	Alluvium	Qal	50	Clay, silt, sand, gravel, and boulders. Generally poorly sorted and confined to present-day stream valleys.	Reported well yields are as much as 25 gal/min, but average 10 gal/min. Water quality is variable, depending on underlying rock and source of alluvial material. Dissolved-solids concentrations range from 148 to 5,387 mg/l. Alluvium is absent or thin in the Animas River and La Plata River valleys. Water may contain concentrations of iron, selenium, and sulfate in excess of U.S. Public Health Service (1962) standards for drinking water.
	Pleistocene					
TERTIARY	Pliocene(?)	Terrace deposits	Qt	100	Clay, silt, sand, gravel, and boulders. Sediments are poorly sorted with coarser materials being well rounded. Remnants of alluvial fans and higher level stream valleys.	Same as alluvium.
	Eocene	San Jose Formation	Tsj	2,500	Sandstone, shale, and conglomerate. Sandstones are arkosic and massive and are interbedded with red, maroon, and gray shales. Sandstones and shales are fractured.	Reported well yields are as much as 75 gal/min; yields of 1 to 10 gal/min are more common. Dissolved-solids concentrations range from 70 to 2,910 mg/l, but average 802 mg/l. Concentrations of arsenic, chloride, fluoride, iron, nitrate, selenium, sulfate, and dissolved solids can occur in excess of U.S. Public Health Service (1962) standards for drinking water.
	Paleocene	Animas Formation	TKa	1,400	Varicolored shale, with interbedded breccia, conglomerate, and tuffaceous sandstone. The sandstone varies from light to rusty brown, and contains abundant silicified wood and clay balls. Exposed in area between the Animas River and the La Plata-Archuleta county line south of Durango. Locally contains the Macmillan Formation in the western part of the area.	Reported well yields are as much as 75 gal/min, but yields of 1 to 10 gal/min are more common. Dissolved-solids concentrations range from 115 to 3,450 mg/l, but average 586 mg/l. Arsenic, chloride, fluoride, iron, manganese, nitrate, selenium, sulfate, and dissolved solids can occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water. Flowing wells may be developed in areas where sandstones are overlain by impermeable shales.
	Kirtland Shale		Kk	1,200	Interbedded sandstone, shale, and siltstone. The shales are olive to medium gray with varying amounts of silicified wood and thin lenses of silty clay and friable sandstone. The middle unit, the Farmington Sandstone Member, is thick to massive, with crossbedding being characteristic.	Reported well yields are as much as 5 gal/min. Dissolved-solids concentrations range from 1,120 to 4,450 mg/l. Arsenic, chloride, iron, manganese, and dissolved solids can occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water.
	Fruitland Formation	Kfp	Kf	300	Varying proportions of interbedded sandstone, shale, and coal. The fine- to medium-grained sandstone beds, which are gray, brown, and olive in color, grade laterally and vertically into shales and siltstones. The upper sandstone beds are well indurated and form resistant ledges.	No information available. Sandstones may be an aquifer near area of outcrop. Well yields are estimated to be less than 5 gal/min.

CRETACEOUS	Upper Cretaceous	Pictured Cliffs Sandstone	Kkp	Kpc	300	Sandstone, light-olive-gray, to grayish-orange and orange, well-sorted. Fine-grained, medium- to thick-bedded, and cliff-forming. Interbedded with small amounts of shale and siltstone. Kkp - Kirtland, Fruitland, and Pictured Cliffs formations, undivided.	Reported well yields are as much as 5 gal/min. Dissolved-solids concentrations range from 222 to 1,830 mg/l. Sulfate and dissolved solids can occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water. Flowing wells may be developed in areas where sandstone is overlain by impermeable shales.
		Lewis Shale	Kl		1,800	Shale, light to dark-gray and black. Marine origin. Contains interbeds of light-gray sandstone, sandy to silty limestone, and several calcareous concretions.	Reported well yields are as much as 3 gal/min. Dissolved-solids concentrations range from 820 to 3,374 mg/l. Chloride, iron, selenium, sulfate, and dissolved solids can occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water.
	Mesaverde Group	Cliff House Sandstone	Kmvc		350	Gray, calcareous, marine sandstone, and silty shale; crossbedded and massive in places.	Reported well yields are as much as 5 gal/min. Dissolved-solids concentrations range from 372 to 2,179 mg/l. Fluoride, iron, manganese, sulfate, and dissolved solids can occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water. Flowing wells may be developed in areas where sandstone is overlain by impermeable shales.
		Menefee Formation	Kmv	Kmvn	350	Varying proportions of light-gray sandstone, siltstone, and shale with several interbedded coal seams.	Reported well yields are as much as 5 gal/min. Dissolved-solids concentrations range from 1,585 to 7,169 mg/l. Fluoride, iron, manganese, sulfate, and dissolved solids can occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water. Flowing wells may be developed in areas where sandstone is overlain by impermeable shales.
		Point Lookout Sandstone		Kmvp	400	Light-gray to brown marine sandstone, massive and cliff-forming. Contains interbedded siltstone and shale in the lower part.	No wells sampled; well yields and water quality may be similar to well yields and water quality from Cliff House Sandstone. Flowing wells may be developed in areas where sandstone is overlain by impermeable shales.
		Mancos Shale		Kn	1,900	Dark-gray, silty and sandy marine shale. Contains some interbedded sandstones and limestone. Lower 200 ft is calcareous and locally fossiliferous.	Only one sample collected; well yield reported as 1 gal/min. Dissolved-solids concentration is 1,250 mg/l. Iron, manganese, selenium, sulfate, and dissolved solids occur in concentrations in excess of U.S. Public Health Service (1962) standards for drinking water.
	Upper and Lower Cretaceous	Dakota Sandstone		Kdb	200	Sandstone, light-gray to yellowish-brown, with interbedded siltstone, black carbonaceous shale, and coal. Contains many conglomerate lenses near the base.	No wells sampled on the reservation. Data from wells immediately north of the reservation indicate well yields may be as much as 5 gal/min and dissolved-solids concentrations may range from 273 to 440 mg/l. Flowing wells may be developed in areas where sandstone is overlain by impermeable shales.
		Burro Canyon Formation			100	Interbedded conglomerate and grayish-green shale, with light-brown sandstone lenses.	No information available. Not considered an aquifer on the reservation.
	JURASSIC	Harrison and Wakahah Formations		Jw	1,100(?)	Interbedded claystone, siltstone, and sandstone.	No information available. Not considered an aquifer on the reservation.