

Ancestral Denver Basin			
Geologic Period	Phase	Stratigraphic Unit	Hydrogeologic Unit
Quaternary	Modern-Glaciation	Alluvium	Alluvial Aquifers
Neogene	Extension Transition		
		High Plains regional aquifer	High Plains
Paleogene	Laramide	Laramide basin formations form multiple aquifers; include Denver, Cheyenne and Raton Basins	Multiple
Cretaceous	Interior Seaway	Sedimentary formations of marine and coastal environments make up a series of shale-dominated Colorado Piedmont regional hydrogeologic units	Multiple
Jurassic	Mesozoic Sandstones	Sedimentary formations of non-marine continental environments make up a series of sandstone and shale Colorado Piedmont regional hydrogeologic units	Multiple
Triassic			
Permian	Ancestral Rocky Mountains	Lyons-Cedar Hills-Stone Corral-Glorieta sandstones	Lyons Aquifer
		Fountain-Sangre de Cristo Formations	Fountain Aquifer
Pennsylvanian		Madera Group	Madera Aquifer
Mississippian	Paleozoic Carbonates		Mississippian-Ordovician carbonate aquifer
Devonian		Leadville Limestone-Williams Canyon Formation and equivalents	
Silurian			
Ordovician		Fremont-Harding Formations and equivalents	
		Manitou-Arbuckle Formations	
Cambrian		Sawatch Sandstone	Sawatch Aquifer
Precambrian	Precambrian	Crystalline rocks of igneous and metamorphic origin in mountainous region	Crystalline bedrock

Table 11b-01-03-01. Ancestral Denver Basin stratigraphic chart.

Ancestral Denver Basin						
Geologic Period	Phase	Stratigraphic Unit	Unit Thickness (ft)	Physical Characteristics	Hydrogeologic Unit	Hydrologic Characteristics
Quaternary	Modern-Glaciation	Alluvium			Alluvial Aquifers	
Neogene	Extension Transition	High Plains regional aquifer			High Plains	
Paleogene	Laramide	Laramide basin formations form multiple aquifers; include Denver, Cheyenne and Raton basins			Multiple	
Cretaceous	Interior Seaway	Sedimentary formations of marine and coastal environments make up a series of shale-dominated Colorado Piedmont regional hydrogeologic units			Multiple	
Jurassic	Mesozoic Sandstones	Sedimentary formations of non-marine continental environments make up a series of sandstone and shale Colorado Piedmont regional hydrogeologic units			Multiple	
Triassic						
Permian	Ancestral Rocky Mountains	Lyons-Cedar Hills-Stone Corral-Glorieta sandstones	0-370	Orange-pink to light brown, fine-to medium-grained well-sorted sandstone with minor silstone and conglomeratic sandstone	Lyons Aquifer	Aquifer is only used near its outcrops
Pennsylvanian		Fountain-Sangre de Cristo Formations	>4,000	Red, maroon, gray and pink arkose and arkosic conglomerate transitioning to marine shale and carbonates away from the uplifts	Fountain Aquifer	Forms an extensive regional aquifer used only near its outcrops
		Madera Group	>3,200	Limestone, arkosic sandstone, conglomerate, silstone and shale	Madera Aquifer	Heterogenous unit found only in Raton Basin where is may be an extension of the Eagle Basin-Central Colorado Trough
Mississippian	Paleozoic Carbonates	Leadville Limestone-Williams Canyon Formation and equivalents	270 - 440	Limestone and dolomite, sandy in parts, with lesser sandstone and shale; paleokarst in upper part	Mississipian-Ordovician carbonate aquifer	Forms the Manitou Springs aquifer in El Paso County that transmits water through fractures and dissolution cavities supplying over 40 wells and springs in the Manitous Springs area; can contain dissolved gas, mainly carbon dioxide
Devonian						
Silurian						
Ordovician		Fremont-Harding Formations and equivalents		Dolomite, dolomitic limestone, sandstone and conglomeratic sandstone		
		Manitou-Arbuckle Formations	Dark-red to maroon and pink dolomite, limestone, and conglomerate with claystone, siltstone and fine-grained sandstone			
Cambrian		Sawatch Sandstone	50-100	Quartzitic sandstone and dolomitic sandstone with arkosic conglomerate at base	Sawatch Aquifer	Porosity and permeability depend on cementation and fracturing; very limited extent
Precambrian	Precambrian	Crystalline rocks of igneous and metamorphic origin in mountainous region			Crystalline bedrock	

Table 11b-01-03-01. Ancestral Denver Basin stratigraphic chart, detailed. Colorado Geological Survey ON-010 Colorado Groundwater Atlas.

Sources: Robson and Banta (1987); Lindsey (1995); Baltz and others (1999); Keller and others (2004); Temple and others (2007); Thorson and others (2008); Shomaker and others (2011); Raynolds and Hagadorn (2017)