

Era	Period	Millions of Years Ago ¹⁾	Major Geologic Events (map color) ²⁾ Type of Deposits/Aquifer Type	Significant Features and Locations	
Cenozoic (Age of Mammals)	Quaternary	Present-2.6	Quaternary: glaciation, development of present topography and stream systems unconsolidated sand and gravel, silt, and clay/alluvial aquifers	Great Sand Dunes; South Platte River Valley	
	Tertiary	Neogene	2.6-23	Cenozoic Extension: Uplift, block faulting, and formation of deep basins semi-consolidated sand and gravel, mudstone and siltstone, basalt flows/bedrock sedimentary aquifers, local fractured bedrock aquifers	San Luis Valley, Glenwood Canyon, Grand Mesa
		Paleogene	23-66	Transition to extension: Widespread volcanism lava flows, volcanic breccias, welded tuff, ash beds, conglomerate, interbeds of sand and gravel/fractured crystalline rock and localized bedrock sedimentary aquifers	San Juan volcanic field, Creede Caldera, Mount Princeton Batholith
Mesozoic (Age of Reptiles)	Cretaceous	66-145	Laramide mountain building event: compressional tectonism, uplifting ranges and development of deep basins, K/P boundary and end of "Age of Dinosaurs", and beginning of "Age of Mammals" semi-consolidated interbedded sandstone, conglomerate, siltstone and mudstone with some coal/basin-centered bedrock sedimentary aquifers	Denver Basin, Front Range Uplift, Sawatch Uplift, Grand Hogback, Pikes Peak, South Park, Roan Cliffs, oil shale, coal	
			Interior Seaway: regional downwarp with flooding by shallow seas marine shale, limestone, offshore sandstone members, widespread delta and shoreline sandstone deposits with coal/regional bedrock sedimentary aquifers	Shale badlands, Mesa Verde National Park, ammonite fossils, Book Cliffs, oil and gas, coal	
	Jurassic	145-201	Mesozoic Sandstones: relatively stable continent with semi-arid and arid conditions sandstone, siltstone, mudstone with minor conglomerate and non-marine limestone/regional bedrock sedimentary aquifers	Dinosaur National Park, Colorado National Monument uranium deposits	
	Triassic	201-252			
Paleozoic (Age of Fishes)	Permian	252-299	Ancestral Rocky Mountains: uplifting ranges and development of basins with periods of marine flooding; restricted circulation and high evaporation sandstone, conglomerate, siltstone, and mudstone; marine shale, limestone, and thick accumulations of salt and gypsum/ basin-centered bedrock sedimentary aquifers, localized saline aquifers	Red Rocks Park, Flatirons, Paradox Valley, Maroon Bells, crinoids, gypsum beds in Eagle Valley, evaporite collapse features	
	Pennsylvanian	299-323			
	Mississippian	323-359	Paleozoic Carbonates: relatively stable continent with flooding by warm shallow seas marine and shoreline sandstone and quartzite; marine limestone and dolomite, marine shale/ regional bedrock sedimentary aquifers, localized groundwater flow in solution cavities and channels as well as fracture flow	Glenwood Canyon, proliferation of shelled invertebrates, evolution of vertebrates, Cave of the Winds, Glenwood Hot Springs	
	Devonian	359-419			
	Silurian	419-444			
	Ordovician	444-485			
	Cambrian	485-541			
Precambrian	Proterozoic Eon	541-2,500	Precambrian basement: continental expansion, deposition of sedimentary rocks, regional metamorphism, deformation, igneous intrusions Gneiss and schist with a variety of composition and texture, intrusive rocks of varying composition, localized quartzite /fractured crystalline rock aquifers	Front Range "core", Pikes Peak, Rocky Mountain National Park, soft-bodied marine organisms	
	Archeozoic Eon	2500-4,600			

1) Not scaled to time.

2) After Reynolds and Hagadorn (2017).

Table 13-01. Major geologic events in Colorado and their influence on groundwater. Colorado Geological Survey ON-010 Colorado Groundwater Atlas.