

High Plains Region					
Period	Phase	Stratigraphic Unit		Hydrogeologic Unit	
Quaternary	Modern	Valley-fill alluvium		High Plains Aquifer	
		Eolian sand			
	Glaciation	Loess			
		Unconsolidated terrace alluvium			
Neogene	Extension	Ogallala Formation			
		Arikaree Group			
Paleogene	Transition	White River Group	Brule Formation		White River Aquifer
			Chadron Formation		Chadron confining unit
Cretaceous and older	Earlier	Depending on location underlying unit may be one of many regional or Laramide Basin hydrogeologic units; in northern High Plains the underlying units may be regional units or Laramide Cheyenne Basin units; in Eastern High Plains the underlying units may be Cretaceous regional units; in Southern High Plains the underlying units may be Cretaceous and older regional units		Variable	

**Table 11a-02-01. High Plains region stratigraphic chart.**

High Plains Region							
Period	Phase	Stratigraphic Unit		Unit Thickness (ft)	Physical Characteristics	Hydrogeologic Unit	Hydrologic Characteristics
Quaternary	Modern	Valley-fill alluvium		0-60	Deposits of gravel, sand, silt, clay along present streams associated with the most recent cycle of erosion and deposition	High Plains Aquifer	Shallow water table aquifer(s)
		Eolian sand		0-300	Fine to medium sand with small amounts of clay, silt, and coarse sand deposited by the wind; typically formed into hills and ridges		Typically lies above the water table; has a high infiltration rate and is important for groundwater recharge
	Glaciation	Loess		0-250	Silt with lesser amounts of very fine sand and clay deposited as windblown dust		Lies above the water table and does not yield water; serves for minor recharge
		Unconsolidated terrace alluvium		0-550	Older stream deposits of gravel, sand, silt, clay locally cemented by calcium carbonate into caliche or mortar beds; often on terraces above the present streams		Primary portion of the High Plains aquifer; mostly unconfined
Neogene	Extension	Ogallala Formation		0-700	Poorly sorted clay, silt, sand, and gravel generally unconsolidated; forms caliche layers or mortar beds when cemented by calcium carbonate; Ogallala comprises large part of High Plains aquifer	Can be confined; moderately permeable	
		Arikaree Group		0-1,000	Predominantly massive very fine to fine-grained sandstone with localized beds of volcanic ash, silty sand, siltstone, claystone, sandy clay, limestone, marl, and mortar beds. Part of the High Plains aquifer		
Paleogene	Transition	White River Group	Brule Formation	0-700	Predominantly massive sandstone containing sandstone beds and channel deposits	White River Aquifer	Considered a separate aquifer in the northern High Plains region; typically confined, except at outcrop
			Chadron Formation		Mainly consists of varicolored, bentonitic, loosely to moderately cemented clay and silt	Chadron confining unit	
Cretaceous and older	Earlier		Depending on location underlying unit may be one of many regional or Laramide Basin hydrogeologic units; in northern High Plains the underlying units may be regional units or Laramide Cheyenne Basin units; in Eastern High Plains the underlying units may be Cretaceous regional units; in Southern High Plains the underlying units may be Cretaceous and older regional units		Variable		

**Table 11a-02-01. High Plains region stratigraphic chart, detailed. Colorado Geological Survey ON-010 Colorado Groundwater Atlas.**

**Sources:** Gutentag and others (1984); Cederstrand and Becker (1998); Litke (2001); Raynolds and Hagadorn (2017)