| Cheyenne Basin | | | | |
|---|---|---|---|---|
| **Geologic Period** | **Phase** | **Stratigraphic Unit** | | **Hydrogeologic Unit** |
| Quaternary | Modern-Glaciation | Alluvium associated with present rivers | | Alluvial Aquifers |
| Neogene | Extension | High Plains regional aquifer overlies portions of the Cheyenne Basin | | High Plains Aquifer |
| Paleogene | Transition | | | |
| Cretaceous | Laramide | No strata | | |
| | | Laramie Formation | | Upper Laramie Aquifer |
| | | Fox Hills Sandstone | | Laramie-Fox Hills Aquifer |
| | Interior Seaway | Pierre Shale | Upper member | Pierre confining unit |
| | | | Upper Pierre sand | Upper Pierre Aquifer |
| | | | Main body | Pierre confining unit |
| | | Regional Cretaceous Seaway shale-dominated formations form multiple hydrogeologic units, most are confining units | | Colorado Piedmont Regional and Ancestral Denver Basin hydrogeologic units |
| Jurassic | Mesozoic Sandstones | Multiple sedimentary units deposited in the stable continent interior may be present that may form aquifers | | |
| Triassic | | | | |
| Permian | Ancestral Rocky Mountains | Ancestral Rocky Mountains event marine and non-marine sedimentary formations form multiple hydrogeologic units in the Ancesral Denver Basin and may be present, depending on location | | |
| Pennsylvanian | | | | |
| Mississippian | Paleozoic Carbonates | Lower Paleozoic sedimentary formations that are dominantly limestone and dolomite form multiple aquifers preserved in the Ancestral Denver Basin may be present depending on location | | |
| Devonian | | | | |
| Silurian | | | | |
| Ordovician | | | | |
| Cambrian | | | | |
| Precambrian | Precambrian | Crystalline rocks of igneous and metamorphic origin in mountainous region | | Crystalline bedrock |

**Table 11b-02-02-01. Cheyenne Basin stratigraphic chart.**

| Cheyenne Basin | | | | | | |
|---|---|---|---|---|---|---|
| **Geologic Period** | **Phase** | **Stratigraphic Unit** | **Unit Thickness (ft)** | **Physical Characteristics** | **Hydrogeologic Unit** | **Hydrologic Characteristics** |
| Quaternary | Modern-Glaciation | Alluvium associated with present rivers | | | Alluvial Aquifers | |
| Neogene | Extension | High Plains regional aquifer overlies portions of the Cheyenne Basin | | | High Plains Aquifer | |
| Paleogene | Transition | | | | | |
| Cretaceous | Laramide | No strata | | | | |
| | | Laramie Formation | up to 1,800 | Sandstone interbedded with shale and coal; sandstone beds are lenticular and up to 125 feet thick | Upper Laramie Aquifer | |
| | | | | | Laramie shale | confining unit |
| | | Fox Hills Sandstone | 200-450 | Upper part often has beds of massive, blocky sandstone; lower part is sandstone interbedded with shale and claystone | Laramie-Fox Hills Aquifer | Localized Keota sandstone at the top of the Fox Hills Sandstone is a prolific aquifer that yields 20 to 100 gpm |
| | Interior Seaway | Pierre Shale: Upper member | 3,000-8,000 | | Pierre confining unit | |
| | | Pierre Shale: Upper Pierre sand | | Interbedded fine-grained sand, siltstone and shale | Upper Pierre Aquifer | Sandstone layers might yield limited water |
| | | Pierre Shale: Main body | | Black to dark gray shale, claystone and siltstone with occasional sections of sandstone | Pierre confining unit | |
| | | Regional Cretaceous Seaway shale-dominated formations form multiple hydrogeologic units, most are confining units | | | Colorado Piedmont Regional and Ancestral Denver Basin hydrogeologic units | |
| Jurassic | Mesozoic Sandstones | Multiple sedimentary units deposited in the stable continent interior may be present that may form aquifers | | | | |
| Triassic | | | | | | |
| Permian | Ancestral Rocky Mountains | Ancestral Rocky Mountains event marine and non-marine sedimentary formations form multiple hydrogeologic units in the Ancesral Denver Basin and may be present, depending on location | | | | |
| Pennsylvanian | | | | | | |
| Mississippian | Paleozoic Carbonates | Lower Paleozoic sedimentary formations that are dominantly limestone and dolomite form multiple aquifers preserved in the Ancestral Denver Basin may be present depending on location | | | | |
| Devonian | | | | | | |
| Silurian | | | | | | |
| Ordovician | | | | | | |
| Cambrian | | | | | | |
| Precambrian | Precambrian | Crystalline rocks of igneous and metamorphic origin in mountainous region | | | Crystalline bedrock | |

**Table 11b-02-02-01. Cheyenne Basin stratigraphic chart, detailed. Colorado Geological Survey ON-010 Colorado Groundwater Atlas.**

**Sources:** Kiteley (1978); Kirkham and others (1980); Kirkham and Rold (1986); Robson and Banta (1987); Wilson and others (2010); Jehn-Dellaport and Renninger (2017); Topper and others (2017); Raynolds and Hagadorn (2017)