







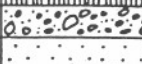


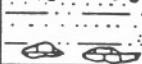

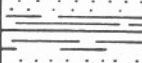
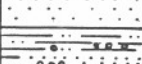
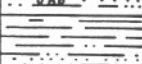


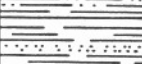
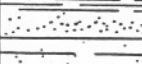
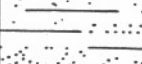
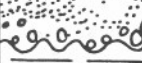



THREE FORKS BASIN STRATIGRAPHIC COLUMN

ERA	PERIOD	EPOCH	UNIT NAME	LITHOLOGY	DESCRIPTION	
CENOZOIC		HOLOCENE	ALLUVIUM COLLUVIUM NEOGLACIATION		Immature silt, sand and gravel; chaotic debris, till in cirques (0-100').	
		PLEISTOCENE	PINEDALE, BULL LAKE & PRE-BULL LAKE GLACIATION		Lacustrine silt; fresh, weathered, and deeply weathered till (0-200').	
			HUCKLEBERRY RIDGE		Welded phenocryst-rich rhyolitic ash-flow tuff (2 my B.P.) (0-200').	
			UNNAMED GRAVEL		Unconsolidated stream gravel (0-100').	
		MIOCENE	BOZEMAN GROUP		Light-colored alternating biosparite, tuffaceous biomicrite, tuffaceous silty shale, vitric ash, and conglomerate, with cross-bedded sandstone in upper part (0-5,000').	
		OLIGOCENE			Light to dark grayish-brown andesite and basalt flows, breccia, agglomerate, and tuff (0-6,000').	
		EOCENE	GALLATIN ABSAROKA VOLCANICS		Conglomerate consisting of Precambrian and later boulders and cobbles (0-50').	
			CONGLOMERATE & SILTSTONE		Light brown to dark gray sandstone and basal conglomerate (0-600').	
		PALEOCENE	FORT UNION		Light and dark grayish-green andesitic or tuffaceous siltstone, sandstone, and conglomerate with some fresh-water limestone lenses in the lower part (0-7,000').	
		MESOZOIC	CRETACEOUS	UPPER	LIVINGSTON GROUP	
EAGLE					Medium gray, thin-bedded siltstone containing calcareous concretions and some resistant sandstone beds (0-250').	
LOWER	COLORADO GROUP			TELEGRAPH CREEK		Medium to dark gray and brown thin-bedded shale with some beds of siltstone and sandstone, especially in middle part. Locally fossiliferous (50-600').
				CODY SHALE		Buff to medium gray thin- to medium-bedded, fine- to coarse-grained arkosic sandstone, locally silty (50-200').
				FRONTIER		Grayish-brown and green shale and siltstone with some sandstone beds. Locally carbonaceous (25-400').
				MOWRY		Medium gray to black shale with numerous fine- to medium-grained gray sandstone beds. Locally arkosic, glauconitic, or carbonaceous. Lower resistant sandstone.
				THERMOPOLIS SHALE		Buff to light gray, medium- to thick-bedded shale and sandstone with cross-bedded basal conglomerate. Locally contains fresh-water limestone nodules and beds near top (100-490').
				KOOTENAI		Variegated red and green, thin- to medium-bedded shale and siltstone with intercalated yellowish-brown calcareous siltstone and sandstone. Upper part locally contains carbonaceous shale (110-444').
JURASSIC	DISCONF			MORRISON		Yellowish-brown, medium-bedded, fine-grained, calcareous sandstone. Basal chert conglomerate (100').
				SWIFT		Upper massive gray, resistant oolitic limestone. Lower variegated and mostly dark gray limestone with interbedded siltstone and shale. Chert pebbles in lower part (200').
		RIERDON- SAWTOOTH		Pale yellowish-brown, calcareous sandstone with chert nodules & breccias (0-26').		
		PHOSPHORIA		White to pinkish-gray, medium- to thick-bedded (locally cross-bedded), subrounded, fine- to medium-grained orthoquartzite; dolomitic in lower part (135-250').		
PALEOZOIC	PENNSYLVANIAN	DISCONF	QUADRANT		Pale yellow to reddish-brown, medium- to thick-bedded siltstone with some dolomite and impure fossiliferous limestone beds (11-189').	
			AMSDEN			

ERA	PERIOD	EPOCH	UNIT NAME	LITHOLOGY	DESCRIPTION
PALEOZOIC	MISSISSIPPIAN	DISCONF	BIG SNOWY GROUP		Upper dark-gray to black, cherty, fossiliferous shale and limestone. Middle, pink-buff, platy- to massive-bedded sandstone and siltstone. Lower pink- to buff dolomite and siltstone (0-263').
		DISCONF	MISSION CANYON		Light gray, massive or poorly bedded, resistant limestone with solution breccias at top. Locally contains chert nodules (430-950').
			LODGEPOLE		Dark gray thin- to medium-bedded fossiliferous, limestone. Lower medium to dark gray, thin-bedded, sparsely fossiliferous limestone with occasional chert nodules. Black shale at base (600-810').
	DEVONIAN	DISCONF	SAPPINGTON		Buff-brown, thin- to medium-bedded, fine-grained, calcareous siltstone and sandstone. Basal, black, conodont-bearing shale (46-100').
			THREE FORKS		Upper gray, thin-bedded silty limestone. Middle buff, medium to thick bedded, brecciated limestone. Basal, red-orange limonite-nodule shale, and siltstone (100-150').
			JEFFERSON		Light and dark-brown, medium- to thick-bedded, fine- to medium-grained, dolomite and limestone. Often petroliferous and containing stromatoporoids. Intercalated yellow-pale pink, dolomitic siltstone beds (400-620').
			MAYWOOD		Yellow to brown, thin-bedded calcareous siltstone with some dolomite. Trilobite-brachiopod fossil hash in lower part (39-92').
	UPPER	DISCONF	SAGE PEBBLE		Yellow-brown to olive, thin- to medium-bedded, fine- to course-grained, commonly glauconitic and fossiliferous limestone and limestone-pebble conglomerate (121-204').
			DRY CREEK SHALE		Gray-green shale with intercalated pale-orange to buff calcareous siltstone and sandstone (50-76').
			PILGRIM		Dark and light-gray mottled, medium-thick bedded, ledge-forming, oolitic limestone. Gray to yellow-brown, thin- to medium-bedded limestone with limestone-pebble conglomerate and interbedded green shale.
					Gray, massive oolitic, limestone (363-433').
			PARK		Gray-green and maroon shale with interbedded brown, very fine-grained quartz sandstone, arkosic limestone, and arkosic conglomerate (100-200').
	MIDDLE		MEAGHER		Light to dark-gray, thin-bedded, fine-grained, fossiliferous mottled limestone with some interbedded green shale. Dark-gray, massive, resistant limestone.
			WOLSEY		Gray, thin-bedded, fine-grained limestone with interbedded green shale. Blue & gold mottled (350-450').
			FLATHEAD		Green and maroon, micaceous shale with interbedded micaceous sandstone and siltstone. Locally contains glauconitic, arkosic limestone (152-210').
	UNCONF				White, buff, and orange, thin- to medium-bedded, fine- to coarse-grained quartz sandstone. Locally highly feldspathic, some glauconite and conglomerate (119-142').
			LAHOOD (BELT) AND CRYSTALLINE METAMORPHICS (PRE-BELT)		Dark grayish-green, coarse- to very coarse-grained, poorly bedded arkose and conglomeratic arkose. Interbedded dark-gray argillite and siliceous limestone beds in northern part of area. Thickens to north (0-10,000').
	PRECAMBRIAN				Gneiss, schist, metaquartzite, marble, injection gneiss, amphibolite, numerous pegmatite dikes and veins.