



CORRELATION OF MAP UNITS

Qal	Qc	Qf	Qla	Holocene and Pleistocene	QUATERNARY
Qg					
Tgr					
Tw					
TKe				Eocene	TERTIARY
Keh				Paleocene	
Kav					
Kal				Upper Cretaceous	CRETACEOUS
Kh					
Kc					
Kf	Kfu				
Kbr				Lower Cretaceous	JURASSIC
Kg					
Jt				Middle Jurassic	JURASSIC (?) AND TRIASSIC (?)
Jbn					
Ja				Upper Triassic	TRIASSIC
It					
Iw					
Id					
Ppu				Permian	PERMIAN, PENNSYLVANIAN, AND MISSISSIPPIAN
Ppm					
PPMw					

DESCRIPTION OF MAP UNITS

SURFICIAL DEPOSITS (HOLOCENE)

Qal Alluvium

Qc Colluvium

Qf Alluvial fan deposits

Qla Landslide deposits and mudflows

Qg GRAVEL (HOLOCENE AND PLEISTOCENE)—Cobble-gravel to silt-size particles in lag concentrates overlying parts of Hilliard Shale and Adaville Formation; derived predominantly from Hams Fork Conglomerate Member of Evanstone Formation

Tgr GREEN RIVER FORMATION (EOCENE)—White-weathering sandstone, calcareous siltstone, and claystone. 400+ ft thick

Tw WASATCH FORMATION (EOCENE AND PALEOCENE)—Red, maroon, yellow, and gray mudstone, and yellow, brown, and gray fine- to coarse-grained sandstone. Sequence contains some stream-channel conglomerate beds containing boulders, cobbles, and pebbles of quartzite, chert, and limestone. As much as 2,000 ft thick

TKe EVANSTONE FORMATION (PALEOCENE AND UPPER CRETACEOUS)—Gray siltstone, carbonaceous claystone, shaly mudstone, quartzitic siltstone, gray carbonaceous sandstone, and some dark-brown concretionary ironstone. 200+ ft thick

Keh Hams Fork Conglomerate Member (Upper Cretaceous)—Boulder-conglomerate beds containing small boulders, cobbles, and pebbles of well-rounded quartzite, chert, limestone, and interbedded white to brown calcareous sandstone. As much as 1,000 ft thick

Kav ADAVILLE FORMATION (UPPER CRETACEOUS)—Predominantly a gray-brown-weathering carbonaceous shale and mudstone that contains beds of yellowish-brown to reddish-brown sandstone and siltstone; contains minable coal beds in lower part. 2,000+ ft thick

Kal Lazart Sandstone Member—Light-gray to white fine- to coarse-grained sandstone; basal part of formation. 200-400 ft thick

Kh HILLIARD SHALE (UPPER CRETACEOUS)—Dark-gray to dark-brown marine shale, siltstone, and sandy shale; contains a few conspicuous light-gray to light-tan fine-grained resistant sandstone beds in upper part. About 6,000 ft thick

Kc CONGLOMERATE (UPPER CRETACEOUS)—Conglomeratic sequence that contains a massive conglomerate in middle part, grading into mudstone, shale, and buff-weathering sandstone above and below; shales in upper part contain marine microfossils. 2,000+ ft thick

Kf FRONTIER FORMATION UNDIVIDED (UPPER CRETACEOUS)

Kfu Upper unit—Middle part consists of a prominent hogback of white to light-gray-weathering, oyster-bearing sandstone (Oyster Ridge Sandstone Member) overlain by shale and thin beds of gray sandstone that contain Kemmerer coal zone; underlain by a thick shale interval that contains Willow Creek coal zone in Kemmerer area. About 1,200 ft thick

Kbr Lower unit—Dark-gray shale, tan siltstone, and brown sandstone; sandstone beds less resistant than those in upper unit; contains Spring Valley coal zone in lower part. About 1,000 ft thick

DESCRIPTION OF MAP UNITS (continued)

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Qc Colluvium

Qf Alluvial fan deposits

Qla Landslide deposits and mudflows

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BEAR RIVER FORMATION (LOWER CRETACEOUS)—Black to dark-gray fissile shale and olive- to tan weathering fine-grained sandstone; contains a few thin fossiliferous limestone beds. 500-600 ft thick

GANNETT GROUP (LOWER CRETACEOUS)—Predominantly red to purplish-red shale and siltstone; contains a few brownish-gray sandstone and quartzite beds; upper part is light-gray fine-grained white-weathering limestone, possibly correlative with Draney Limestone, Bechler Formation, and Peterson Limestone; at base a massive coarse-grained sandstone probably correlative with Ephraim Conglomerate. About 500 ft thick

TWIN CREEK LIMESTONE (MIDDLE JURASSIC)—Mainly light-gray shaly limestone that contains oyster beds in upper part; shaly limestone beds characteristically fracture into pencil-shaped fragments on dip slopes; basal red unit (Gypsum Spring Member). 700-800 ft thick, but may be tectonically thinned in eastern part of quadrangle

NUGGET SANDSTONE (JURASSIC? AND TRIASSIC?)—Light-tan to reddish-orange very fine grained ridge-forming quartz sandstone. 500-600 ft thick

ANKAREH SHALE (UPPER AND LOWER TRIASSIC)—Red to reddish-purple calcareous siltstone and shale and scattered interbeds of gray and pinkish-gray aphanitic limestone. About 500 ft thick

THAYNES FORMATION (LOWER TRIASSIC)—Interbedded greenish- to yellowish-gray-weathering fine-grained sandstone and siltstone, and light-gray to brownish-gray medium- to thick-bedded limestone. 1,000-1,200 ft thick

WOODSIDE FORMATION (LOWER TRIASSIC)—Reddish-brown shale, siltstone, and fine-grained sandstone; poorly exposed. About 400 ft thick

DINWOODY FORMATION (LOWER TRIASSIC)—Mainly brownish-gray to light-brown shale and siltstone with interbeds of bluish-gray silty limestone. 400-500 ft thick

PHOSPHORIA FORMATION AND EQUIVALENT UNITS (PERMIAN)

Upper part—Includes: Retort Phosphatic Shale Member of Phosphoria Formation, mainly dark-brownish-gray mudstone, shale, and siltstone, and a few beds of phosphorite; Franson Member of Park City Formation, light-gray aphanitic dolomite; Shedhorn Sandstone, brownish-gray fine-grained quartz sandstone. About 122 ft thick

Heads Peak Phosphatic Shale Member of Phosphoria Formation—Non-resistant thin-bedded dark unit of phosphorite, mudstone, and carbonate rock. About 54 ft thick

WELLS FORMATION AND ASSOCIATED ROCKS (PERMIAN, PENNSYLVANIAN, AND MISSISSIPPIAN)—Upper part: light-gray to buff well-sorted quartzitic sandstone and minor interbeds of limestone and dolomite; forms conspicuous cliffs and coarse talus; uppermost 10-20 ft is white aphanitic dolomite, in part correlative to Lower Permian Grandeur Member of Park City Formation. Lower part: thin-bedded gray limestone and cherty dolomite underlain by red shale, siltstone, and pink quartzite sandstone, in part correlative to Amnden Formation. Total thickness 800-1,000 ft

44.0

COAL BED—Dashed where approximately located. Thickness of coal, in feet, measured at triangle. Circled number refers to measured coal section

CONTACT—Dashed where approximately located; short dashed where inferred

FAULT—Dashed where approximately located; short dashed where inferred; dotted where concealed. U, upthrown side; D, downthrown side. Arrows show relative horizontal displacement

THRUST FAULT—Dashed where approximately located; short dashed where inferred; dotted where concealed. Sawteeth on upper plate

GRAVITY FAULT—Open sawteeth mark slip surface of large block of Frontier Formation; length and curvature of arrows indicate direction of greatest movement and rotation

SLUMP FAULT—Hachures on downthrown side

ANTICLINE—Showing trace of axial plane. Dashed where approximately located; short dashed where inferred

OVERTURNED ANTICLINE—Showing trace of axial plane. Dashed where approximately located; short dashed where inferred; dotted where concealed

SYNCLINE—Showing trace of axial plane. Dashed where approximately located; short dashed where inferred; dotted where concealed

OVERTURNED SYNCLINE—Showing trace of axial plane. Dashed where approximately located; short dashed where inferred; dotted where concealed

STRIKE AND DIP OF BEDS

65 Inclined

75 Vertical

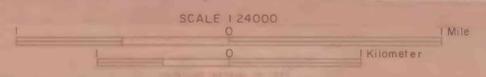
Overturned

PHOSPHATE TRENCH

ABANDONED OIL AND GAS TEST HOLE

1 foot = 0.3048 meters

Map and report published by the Geological Survey  
Scale 1:24,000



Geology mapped 1975-76.  
Coal beds mapped and measured  
by R. A. L. unceford

GEOLOGIC MAP AND COAL SECTIONS OF THE ELKOL SW. QUADRANGLE,  
LINCOLN AND UINTA COUNTIES, WYOMING

Marvin L. Schroeder  
1981