

Interpreting the past, providing for the future



EXPLANATION

CORRELATION OF MAP UNITS

Qal	Qc	Qls	Holocene	Quaternary	CENOZOIC
Unconformity			Pleistocene		
Tw(?)	TPge		Oligocene	Tertiary	MESOZOIC
Unconformity			Lower Triassic	Triassic	
PI	PMa		Upper Pennsylvanian	Pennsylvanian	PALEOZOIC
Unconformity			Middle Pennsylvanian	Mississippian	
Unconformity			Upper Mississippian		PALEOZOIC
Ob			Lower Mississippian		
Unconformity			Upper Ordovician	Ordovician	PALEOZOIC
OCg			Lower Ordovician	Ordovician	
OCg			Upper Cambrian	Cambrian	PALEOZOIC
OCg			Middle Cambrian	Cambrian	
Unconformity			Early Proterozoic	Precambrian	PRECAMBRIAN
Ugn			Archean	Precambrian	

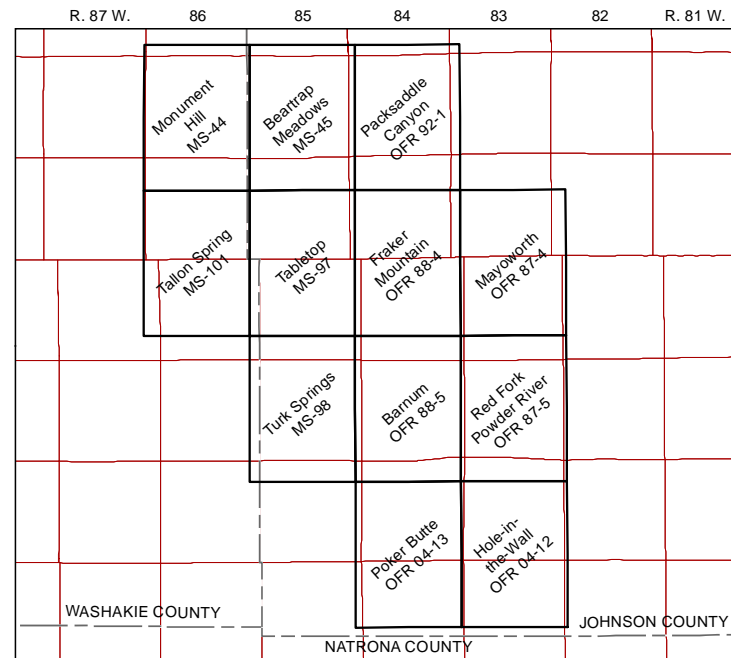
MAP SYMBOLS

Definitions: Certain—Location known <25 m; Approximate—Estimated location 25–100 m

- Formation contact—Continuous where certain, long dash where approximately located
- Fault—Continuous where certain, long dash where approximately located; dotted where concealed; queried where identity or existence questionable; arrows indicate relative direction of oblique slip motion on northeast-trending faults; ball and bar on downthrown block
- - Denotes motion away and ○ - denotes motion toward viewer on cross section
- Anticline—Trace of axial plane and direction of plunge; continuous where certain, long dash where approximately located; short arrow indicates steeper dipping limb of asymmetrical anticline, positioned using measured dips and photo interpretation
- Monocline—Trace of axial plane and direction of plunge; continuous where certain, long dash where approximately located; short arrow indicates steeper dipping limb, positioned using measured dips and photo interpretation
- Line of cross section
- Strike and dip of inclined bedding
- Approximate strike and dip direction of beds—Estimated from photo interpretation
- Horizontal bedding
- Arrow showing inferred direction of landslide movement

DESCRIPTION OF MAP UNITS

- Quaternary surficial deposits**
- Qal **Alluvium (Holocene and Pleistocene)**—Unconsolidated deposits of clay, silt, sand, and gravel along stream valleys at or near present stream levels
- Qc **Colluvium (Holocene and Pleistocene)**—Unconsolidated masses of rock fragments and soil material deposited on relatively steep slopes with thickest accumulations occurring at the base of slopes. Most conspicuous and common constituents are cobbles, boulders, and large slabs of Flathead Sandstone. Located adjacent to and covering portions of the Big Trails fault system
- Qls **Landslide deposits (Holocene and Pleistocene)**—Blocks of bedrock or loose slope debris; arrows point in the inferred direction of movement
- Tertiary sedimentary rocks**
- Tw(?) **White River Formation (?) (Oligocene)**—Lenticular gravel and conglomerate beds interbedded, locally, with tan fine- to medium-grained sandstone. Gravel and conglomerate composed of igneous, metamorphic and Paleozoic sedimentary clasts. Locally petrified wood beds occur near Big Trails fault system (southwest corner section 2, T. 44 N., R. 86 W.). Formation deposited in pre-Oligocene valleys cut into Paleozoic rocks and Oligocene alluvial fan complexes. Thickness less than 100 feet (30 m)
- TPge **Goose Egg Formation (Lower Triassic and Permian)**—Mudstone, siltstone, gypsum, and carbonate rocks. Mudstone and siltstone—reddish-brown, laminated to thin-bedded, crumbly on weathered surfaces. Gypsum (mostly in upper half) — white, massive to banded. Carbonate rocks—chiefly dolomite, gray to pale orange, laminated to thin-bedded, algal laminations common. "Novood Member" occurs locally at base, composed of dolomite with subordinate sandstone, light-gray to pale-orange, abundant chert nodules; or a conglomerate with angular clasts of chert and carbonates. Thickness 250 to 350 feet (76 to 110 m)
- Paleozoic sedimentary rocks**
- PI **Tensleep Sandstone (Upper and Middle Pennsylvanian)**—Gray to buff to salmon-pink, fine-grained, massive to crossbedded sandstone; gray to pinkish-gray thin limestone and dolomite units common toward base. Thickness 300 to 400 feet (91 to 120 m)
- PMa **Ansdren Formation (Middle and Lower Pennsylvanian and Upper Mississippian)**—Includes three members. Ranchester Limestone Member is gray to purplish limestone and dolomite, interbedded with shale, siltstone, and sandstone. Horseshoe Shale Member is reddish-brown to maroon shale and siltstone with thin beds of sandstone and carbonates. Darwin Sandstone Member is buff, fine- to medium-grained, crossbedded sandstone, extremely variable in thickness ranging from 0 to 100 feet (30 m). Total formation thickness 200 to 300 feet (61 to 91 m)
- Mm **Madison Limestone (Upper and Lower Mississippian)**—Alternating units of light-tan to gray limestone and dolomite. Upper portion bluish-gray limestone with karst surface at the top. Lower portion mainly dolomite and dolomitic limestone. Entire formation is fossiliferous. Thickness 350 to 400 feet (110 to 120 m)
- Ob **Bighorn Dolomite (Upper and Middle Ordovician)**—Gray to yellowish-gray to pink dolomite and dolomitic limestone; dense with massive bedding, characteristically pitted on weathered surface, mottled on unweathered surface on(?) a reticulate pattern. Lower 15 to 30 feet (5 to 9 m) is quartz sandstone, mostly white to light-gray with dark-maroon mottling, very fine to coarse-grained, and friable to well-cemented. Locally, this unit contains primitive fish bones and plates and is referred to as the Harding Sandstone. Dolomite sequence forms characteristic prominent cliff. Total thickness varies from 150 feet (46 m) in the north to 30 feet (9 m) in the southern part of the quadrangle
- OCg **Gallatin Limestone (Lower Ordovician and Upper Cambrian) and Gros Ventre Formation (Middle Cambrian) undivided**—Uppermost unit (Gallatin Limestone) contains resistant grayish-red limestone and thin beds of flat-pebble conglomerate underlain by olive-green to yellowish-brown, glauconitic shale and siltstone. The middle unit (Gros Ventre Formation) includes light-gray limestone, silty and glauconitic, interbedded with soft grayish-green shale and beds of flat-pebble conglomerate. The basal unit (Gros Ventre Formation) consists of yellowish-brown to reddish-brown, friable, medium- to coarse-grained glauconitic sandstone. The two formations are not distinguishable in this area. Landslides are common in this unit. Total thickness 500 to 600 feet (150 to 180 m)
- Cf **Flathead Sandstone (Middle Cambrian)**—Tan, brown, and reddish-gray quartz sandstone; medium- to coarse-grained and crossbedded to planar bedded; thin interbeds of green, maroon, and tan siltstone, mainly in the upper part; arkosic conglomerate in lower part. Thickness 300 to 400 feet (91 to 120 m)
- Precambrian crystalline rocks**
- Ugn **Quartz diorite, mafic, and amphibolite dikes (Lower Proterozoic and Archean)**—Although not dated, they are probably in the age range of dikes immediately to the north—2,200 to 3,000 million years (Snyder and others, 1984)
- Ugn **Granitic gneiss (Archean)**—Layered granitic gneiss cropping out along or near the Big Trails fault system in the western part of map area; dates of metamorphism 3,000+ million years (Love and Christiansen, 1985)



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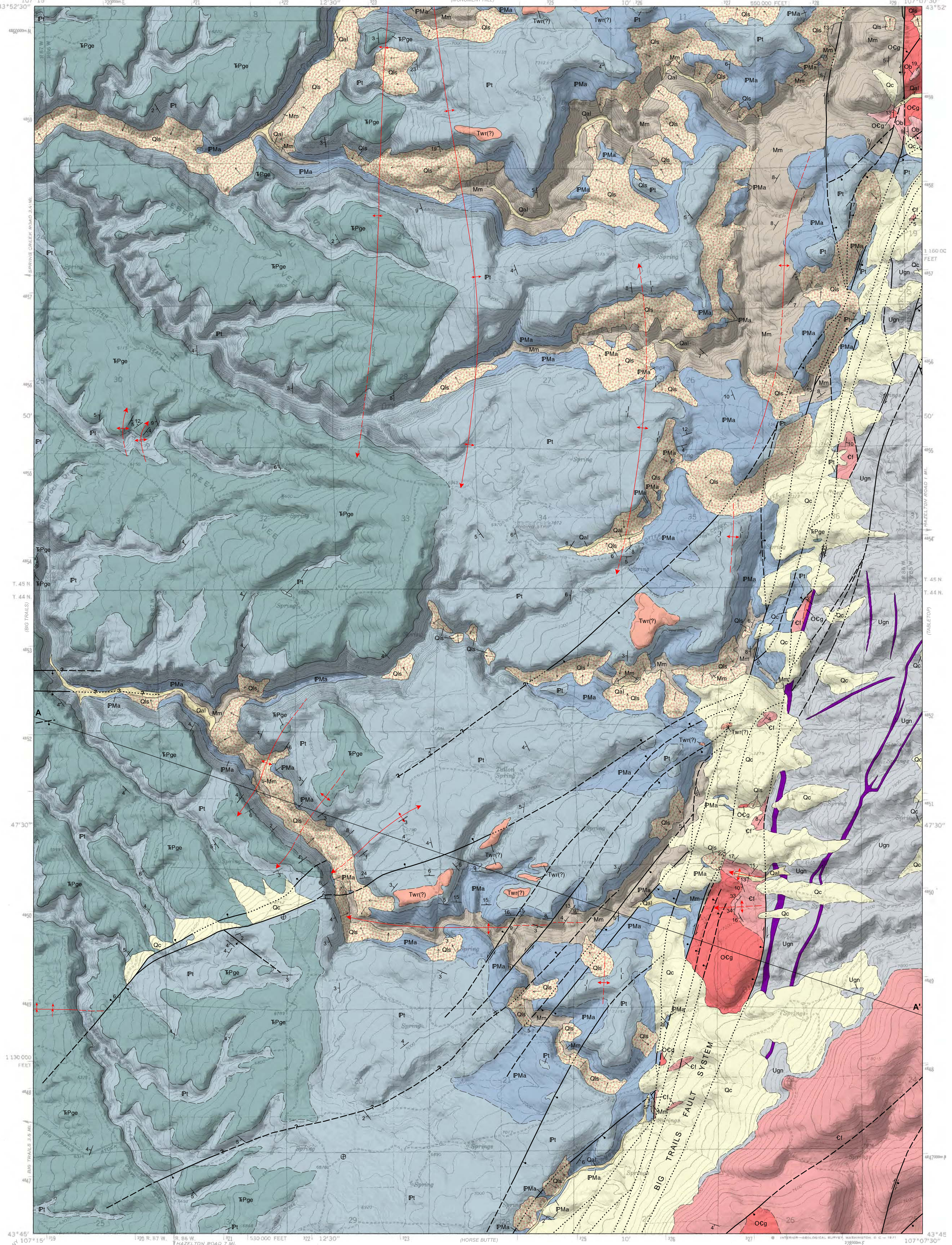
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Base map from U.S. Geological Survey 1:24,000-scale topographic map of the Tallon Spring, Wyoming Quadrangle, 1986

Base hillshade derived from United States Geological Survey (USGS) EROS Data Center 10-meter Digital Elevation Model (DEM), 2001, azimuth 315°, sun angle 45°, vertical exaggeration 1.4

Projection: Universal Transverse Mercator (UTM), zone 13 North American Datum of 1927 (NAD 27) 1,000-meter grid ticks; UTM, zone 13 10,000-foot grid ticks; Wyoming State Plane Coordinate System, east central zone

Wyoming State Geological Survey
P.O. Box 1347, Laramie, WY 82073-1347
Phone: 307-766-2286; Fax: 307-766-2605
Email: wsgs.sales@wyo.gov

UTM GRID AND 2015 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24,000

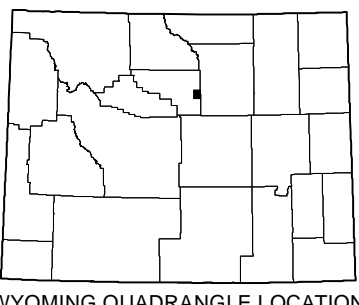
1 0.5 0 0.5 1 Mile

1,000 0 1,000 2,000 3,000 4,000 5,000 6,000 7,000 Feet

0.5 0 0.5 1 Kilometer

CONTOUR INTERVAL 40 FEET

DATUM IS MEAN SEA LEVEL

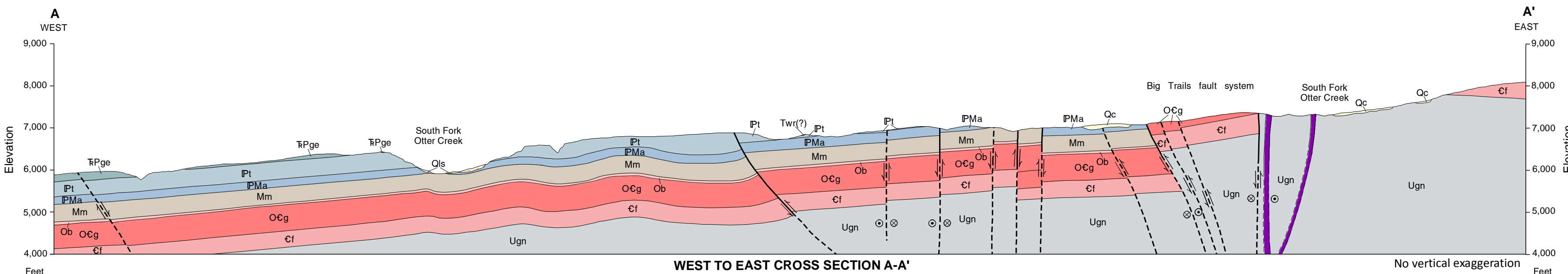


Digital cartography by Robin W. Lyons and Phyllis A. Ranz

Map edited by Suzanne C. Luhr

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WEST TO EAST CROSS SECTION A-A'

No vertical exaggeration

GEOLOGIC MAP OF THE TALLON SPRING QUADRANGLE, WASHAKIE AND JOHNSON COUNTIES, WYOMING