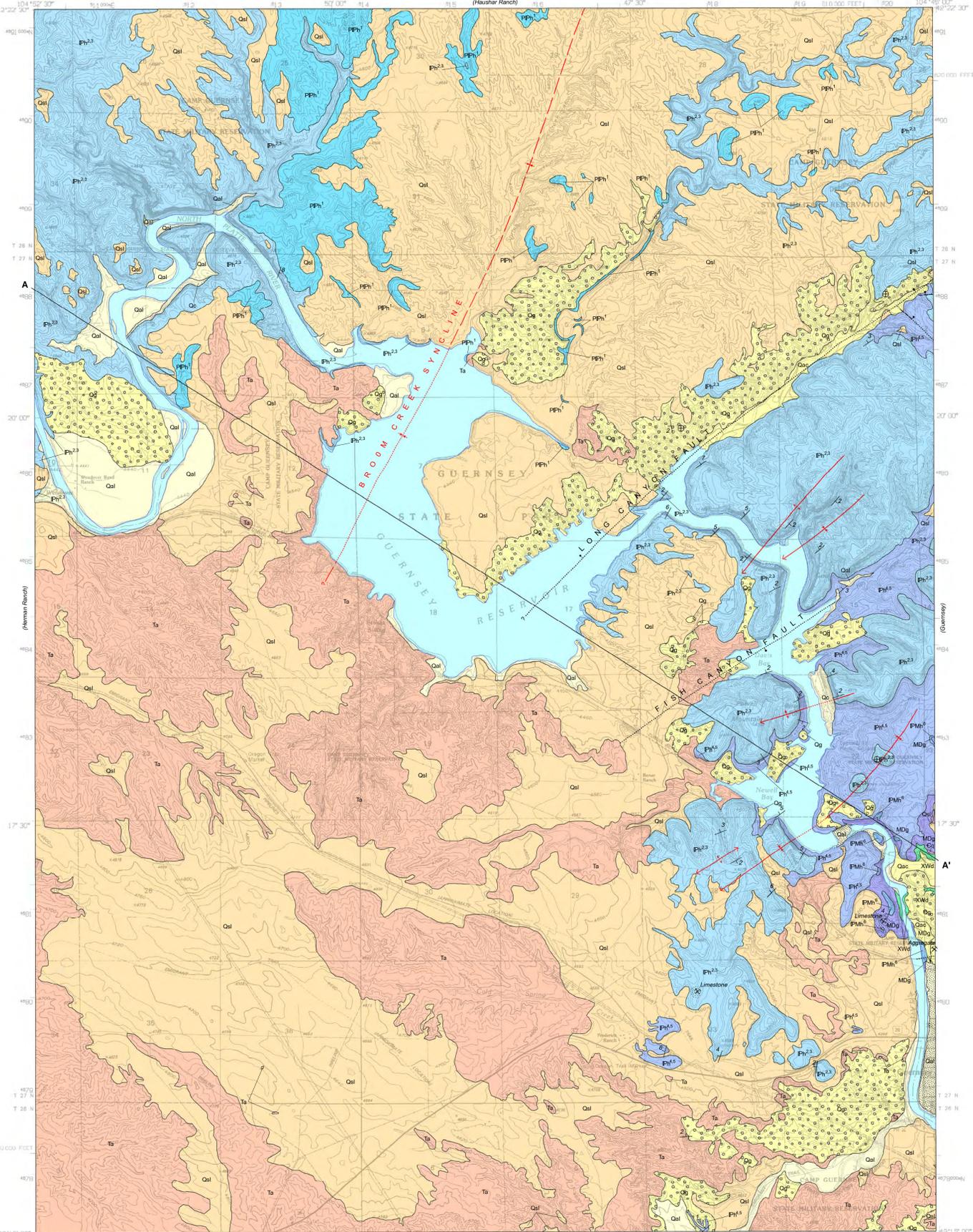


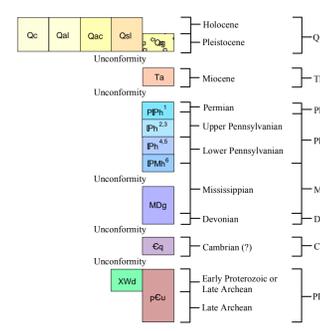


Geology - Interpreting the past to provide for the future



EXPLANATION

CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- Qc** Colluvium (Holocene/Pleistocene)—Talus and block slide deposits at the base of cliffs and steep slopes
- Qal** Alluvial deposits (Holocene/Pleistocene)—Sand, gravel, and clay deposited mainly along the North Platte River and smaller intermittent streams; includes alluvial terraces and adjoining colluvial deposits not mapped separately
- Qac** Alluvial and colluvial deposits (Holocene/Pleistocene)—Gravel, sand and silt deposited along intermittent streams tributary to the North Platte River; may include slopewash and small alluvial fan deposits
- Qsl** Silty loess (Holocene/Pleistocene)—Brown to dark brown deposits of windblown silt with minor clay and very fine sand; includes reworked deposits of loess may fill valleys partially or completely and often caps some of the higher parts of the quadrangle. Thickness may exceed 9 m (30 feet) in valley deposits in Whalen Canyon and other areas. Locally called "blow dirt"
- Qgl** Gravel deposits (Pleistocene)—Boulder to pebble conglomerate deposited in a fluvial environment by the ancestral North Platte River. Contains fluvial cross-bedded sand zones. The boulders include many types of crystalline, metamorphic, and sedimentary rocks including but not limited to granite, monzonite, amphibolite, schist, quartzite, marble, limestone, and sandstone. A fragment of black jade was found on the Guernsey Quadrangle to the east (Harris, 1997). Includes clasts from the Hartville uplift as well as clasts from the Laramie Mountains and farther west. Found mostly in the eastern part of the map area, along the North Platte River. The gravel deposits attain local thicknesses in excess of 46 m (150 feet)
- Ta** Arikaree Formation (Miocene)—Light gray buffaceous sandstone containing occasional limy concretions, vertebrate fossils are common in some areas; forms bluffs and narrow canyons with local areas of badland topography. Only the upper part of the Arikaree Formation (McGrew, 1963), occurs in the area
- PPh** Hartville Formation (Permian/Pennsylvanian/Mississippian)—Limestone, siltstone, sandstone, claystone, black shale and maroon to red to white orthoquartzite. Subdivided into six informal divisions in the Glendo area (Love and others, 1949) north and west of this quadrangle (Denson and Botinelly, 1949), but because of facies changes where some of the divisions could not be distinguished as mappable units, only four units in the Hartville Formation are designated on this quadrangle, combining several of the divisions
- Ph2.1** Hartville Formation, division 1 (Permian/Pennsylvanian)—Sandstone, shale, dolomite, and breccia beds, contains some Early Permian (Wolfcampian) fossils. Upper third is soft yellow-weathering, porous sandstone, middle third is reddish sandy limestone or lime sandstone with conspicuous bright red soft limestone at base; and lower third is breccia of purplish-red limestone and red sandstone. Total thickness of division 1 about 75 m (250 feet)
- Ph2.2** Hartville Formation, divisions 2 and 3 (Pennsylvanian)—Interbedded gray limestone, buff to chalky white limestone and dolomite, pink dolomite, buff aeolian sandstone (Tom Ahlbrandt, U.S. Geological Survey, personal communication, 1995), gray, red, and maroon silt and claystones, and thin black shales. Divisions 2 and 3 are combined and mapped together following Denson and Botinelly (1949) because the dolomites in division 2 grade laterally into massive limestone like those in division 3. Brachiopods are common in limestone and dolomite layers. And fusulinids are reported in fine-grained clastic layers (Denson and Botinelly, 1949). Forms ledged slopes and cliffs commonly covered with Mountain Mahogany. About 90 m (300 feet) thick in the area
- Ph2.4** Hartville Formation, divisions 4 and 5 (Pennsylvanian)—Interbedded maroon, red, pink, and gray siltstones and claystones; gray, brown, and buff limestone, pink dolomite, and thin gray sandstones. Divisions 4 and 5 are combined and mapped together following Denson and Botinelly, 1949. Forms smooth slopes with limestone outcrops; about 75 m (250 feet) thick in the area
- Ph2.6** Hartville Formation, division 6 (Pennsylvanian/Mississippian)—Well-indurated maroon to red to locally white orthoquartzite; forms cliffs and rocky knolls, deposited on a well-developed karst surface, and fills sinkholes and caverns in the underlying Guernsey Limestone; thickness 0 to 37 m (0 to 120 feet)
- MDg** Guernsey Formation Limestone (Mississippian/Devonian)—Gray limestone with local beds and zones of chert, brachiopods common, thickness 0 to 55 m (0 to 180 feet). Forms smooth to ledged slopes commonly covered with Mountain Mahogany. Sands and Sandberg (1987) considered all except the lowermost part of this unit equivalent to members of the Madison Limestone and rejected the use of the name Guernsey Formation as being superfluous
- Cq** Quartzite of Devonian or Cambrian age—Gray to red to cream-colored, coarse-grained cross-bedded orthoquartzite found in lenses locally throughout the area. Possibly equivalent to the Deadwood Quartzite (Cambrian) or the lowermost part of the Englewood Formation and the Fremont Canyon Sandstone (Devonian), based on work by Sands and Sandberg (1987)
- XWd** Metadolomite (Early Proterozoic or Late Archean)—Gray, pink, white, and yellow, medium-grained dolomite and marble, tremolite dolomite, siliceous dolomite, and limestone. Tremolite occurs as radiating blades resembling turkey tracks. Contains abundant concentrically layered algal stromatolitic mounds. Only exposed locally in the easternmost part of the quadrangle
- pCu** Undifferentiated Precambrian rocks (only in cross section)

MAP SYMBOLS

- Formation Contact**
- Fault**—Dashed where approximately located and dotted where concealed; bar and ball on downthrown block; no indication on fault trace indicates undetermined motion
- Anticline**—Trace of axial plane and direction of plunge compiled from source mapping or determined by field dip measurements and by photo interpretation; dashed where approximately located, dotted where inferred
- Syncline**—Trace of axial plane and direction of rise compiled from source mapping or determined by field rise measurements and photo interpretation
- Inclined bedding**—Showing dip
- Mine**
- Disturbed ground**—Areas covered by urban or industrial development

REFERENCES

Denson, N.M., and Botinelly, T., 1949, Geology of the Hartville uplift, eastern Wyoming. U.S. Geological Survey Oil and Gas Investigations Preliminary Map 102, scale 1:48,000.

Harris, R.E., 1997, Preliminary geologic map of the Guernsey Quadrangle, Platte and Goshen Counties, Wyoming. Wyoming State Geological Survey Preliminary Geologic Map 97-1, scale 1:24,000.

Harris, R.E., 1998, Preliminary geologic map of the Guernsey Reservoir Quadrangle, Platte County, Wyoming. Wyoming State Geological Survey Preliminary Geologic Map 98-3, scale 1:24,000.

Love, J.D., Denson, N.M., and Botinelly, T., 1949, Geology of the Glendo area, Wyoming. U.S. Geological Survey Oil and Gas Investigations Preliminary Map 92, 2 sheets.

McGrew, L.W., 1963, Geology of the Fort Laramie Area, Platte and Goshen Counties, Wyoming. U.S. Geological Survey Bulletin 1141-F, 39 p., map scale 1:31,680.

McGrew, L.W., 1967, Geologic map of the Wheatland NE Quadrangle, Platte County, Wyoming. U.S. Geological Survey Geologic Quadrangle Map GQ-628, scale 1:24,000.

Sands, W.J., and Sandberg, C.A., 1987, New interpretations of Paleozoic stratigraphy and history in the northern Laramie Range and vicinity, Southeast Wyoming. U.S. Geological Survey Professional Paper 1450, 39 p.

Sims, P.K., Day, W.C., Snyder, G.L., and Wilson A.B., 1997, Geologic map of Precambrian rocks along part of the Hartville uplift, Guernsey and Casper Hill quadrangles, Platte and Goshen Counties, Wyoming. U.S. Geological Survey Miscellaneous Investigations Series Map 12567, map scale 1:24,000, and pamphlet, 18 p.

Snyder, G.L., 1993, Hartville uplift, in Houston, R.S. and others, editors, The Wyoming Province, in Reed, J.C., and others, editors, The Precambrian of the conterminous United States: Geological Society of America, Boulder, Colorado, The Geology of North America, vol. C2, p.147-149.

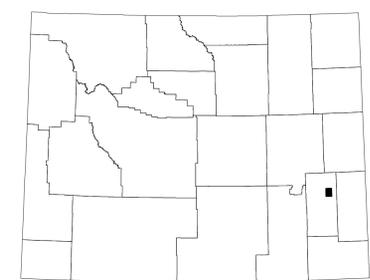
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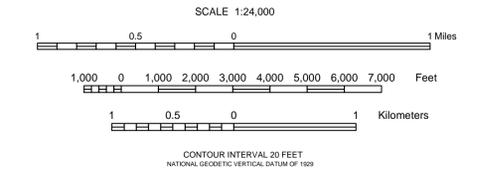
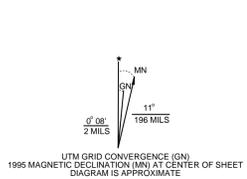
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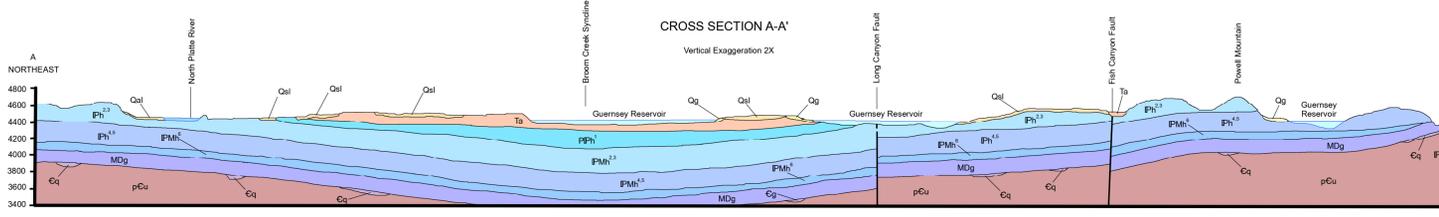


QUADRANGLE LOCATION

Base map from U.S. Geological Survey 1:24,000-scale topographic map of the Guernsey Reservoir Quadrangle, 1995.
Projection: Universal Transverse Mercator (UTM), zone 13 North American Datum of 1927 (NAD 27).
10,000-foot grid ticks: Wyoming State Plane Coordinate System, East zone.
A digital version of this map is also available on CD-ROM.
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Prepared in cooperation with and research supported by the U.S. Geological Survey, National Cooperative Geologic Mapping Program, USGS award Number 05HAG0002. The views and conclusions contained in this document are those of the authors and should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government.
Digital cartography by James E. Stafford and David W. Lucke, and J. Fred McLaughlin.
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GEOLOGIC MAP OF THE GUERNSEY RESERVOIR QUADRANGLE, PLATTE COUNTY, WYOMING

by
Ray E. Harris, J. Fred McLaughlin, and Richard W. Jones
2006

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