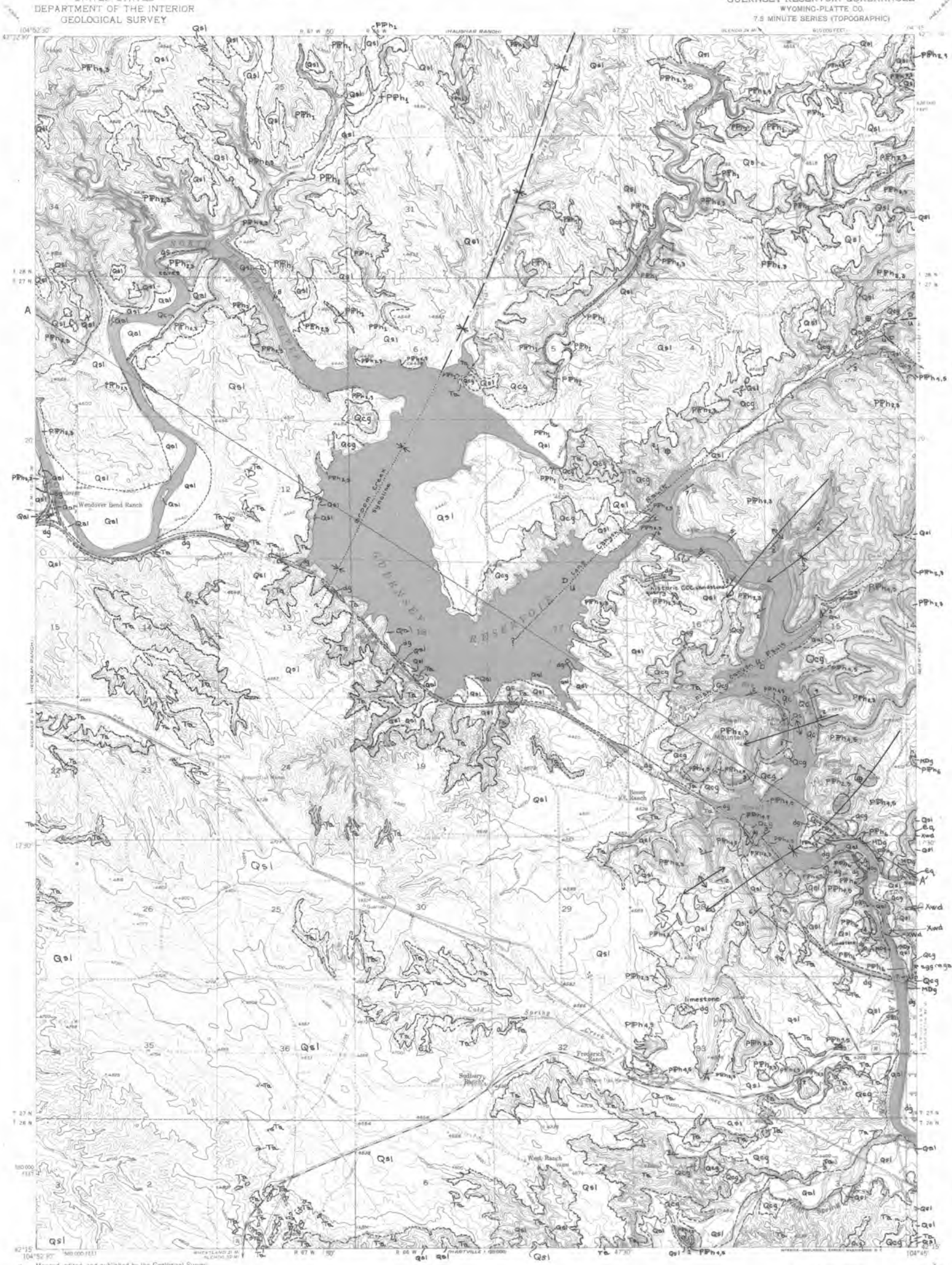
WYOMING STATE GEOLOGICAL SURVEY
UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

GUERNSEY RESERVOIR QUADRANGLE
WYOMING-PLATTE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

PRELIMINARY GEOLOGIC MAP 98-3
Guernsey Reservoir Quadrangle
Platte County, Wyoming



EXPLANATION

CORRELATION OF MAP UNITS

Qc	Qal	Qsl	dg	HOLOCENE	CENOZOIC
			HIATUS Qcg	PLEISTOCENE	CENOZOIC
			HIATUS Ta	MIOCENE	CENOZOIC
			HIATUS PPh1	PERMIAN	PALEOZOIC
			PPh2,3	PENNSYLVANIAN	PALEOZOIC
			PPh4,5	PENNSYLVANIAN	PALEOZOIC
			PPh6	PENNSYLVANIAN	PALEOZOIC
			HIATUS MDg	MISSISSIPPIAN / DEVONIAN	PALEOZOIC
			HIATUS Єq	CAMBRIAN	PALEOZOIC
WHALEN GROUP	XWd		HIATUS p Єu	EARLY PROTEROZOIC (PROTEROZOIC X)	PRECAMBRIAN

DESCRIPTION OF MAP UNITS

dg **disturbed ground** - areas covered by urban or industrial development.

Qc **Colluvium** - Talus and block slide deposits at the base of cliffs and steep slopes.

Qal **Alluvial deposits** - Sand, silt, gravel, and clay deposited mainly along the North Platte River and smaller intermittent streams; includes alluvial terraces and adjoining colluvial deposits.

UNCONFORMITY

Qsl **Silty loess** - Brown to dark brown deposits of windblown silt with minor clay and very fine sand; includes reworked deposits of loess. The thickness may exceed 80 feet. Locally called "blow dirt."

UNCONFORMITY

Qcg **Gravel deposits** - 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. Includes clasts from the Hartville uplift as well as clasts from the Laramie Mountains and farther west. Concentrated near faults, gravel deposits attain local thicknesses in excess of 150 feet.

UNCONFORMITY

Ta **Arikaree Formation** - Light gray tuffaceous sandstone containing occasional limy concretions. Vertebrate fossils are common in some areas. Only the upper part of the Arikaree Formation (McGrew, 1963), is found in the area. Forms bluffs and narrow canyons with local areas of badland topography.

UNCONFORMITY

PPh1 **Hartville Formation, division 1** - Red silty shale and siltstone, red aeolian sandstone, limestone. Forms ledges and slopes. Approximately 300' thick where completely exposed. Permian (Wolfcampian) in age (Denson and Botinelly, 1949).

PPh2,3 **Hartville Formation, divisions 2 and 3** - Interbedded gray limestone, buff to chalky white limestone and dolomite, pink dolomite, buff aeolian (Tom Ahlbrandt, U.S. Geological Survey, personal communication, 1995) sandstone, grey, red, and maroon silt and claystones, and thin black shales. Brachiopods are common in limestone and dolomite layers. Fusulinids reported in fine-grained clastic layers (Denson and Botinelly, 1949). Forms ledged slopes and cliffs commonly covered with Mountain Mahogany. About 300 feet thick in the area.

PPh4,5 **Hartville Formation, divisions 4 and 5** - Interbedded maroon, red, pink, and grey siltstones and claystones, grey, brown, and buff limestone, pink dolomite, and thin grey sandstones. Forms smooth slopes with limestone ledges. About 250 feet thick in the area.

UNCONFORMITY

PPh6 **Hartville Formation, division 6** - Well-indurated maroon to red 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 - 120 feet.

UNCONFORMITY

MDg **Guernsey Limestone** - Gray limestone with local beds and zones of chert. Brachiopods common. Thickness 0 to 180 feet. Forms smooth to ledged slopes commonly covered with Mountain Mahogany.

UNCONFORMITY

Єq **Quartzite of probable Cambrian age** - Grey to red to cream-colored coarse grained cross-bedded orthoquartzite found in lenses along the North Platte River below Guernsey Dam. Probably equivalent to the Deadwood Quartzite.

UNCONFORMITY

XWd **Metadolomite** - 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. Estimated thickness, 300-350 m.

pЄu **Undifferentiated Precambrian rocks** (only on cross section).

REFERENCES

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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.

SYMBOLS

Contact - dashed where covered or inferred, dotted where concealed.

High-angle fault - dashed where covered or inferred, dotted where concealed; bar and ball on downthrown side.

Anticline, showing plunge of axis.

Syncline, showing plunge of axis.

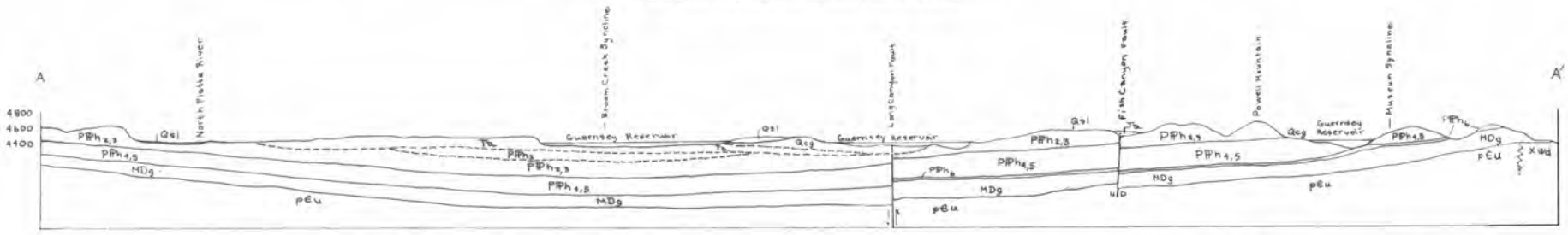
Inclined bedding showing dip.

Horizontal bedding.

Mine, prospect, or mineral occurrence.

This map has not been edited for conformity with the editorial standards of the Wyoming State Geological Survey. This map was funded from the Wyoming State Geological Survey general operating budget and by the U.S. Geological Survey, Department of Interior, under assistance Award No. 1434-HQ-97-AG-01181. The views and conclusions expressed on this map are those of the author and should not be interpreted as necessarily representing official policies, either expressed or implied, of the U.S. Government.

Cartography by Cynthia S. Boyd



Preliminary Geologic Map of the Guernsey Reservoir Quadrangle, Platte County, Wyoming

by Ray E. Harris

1998