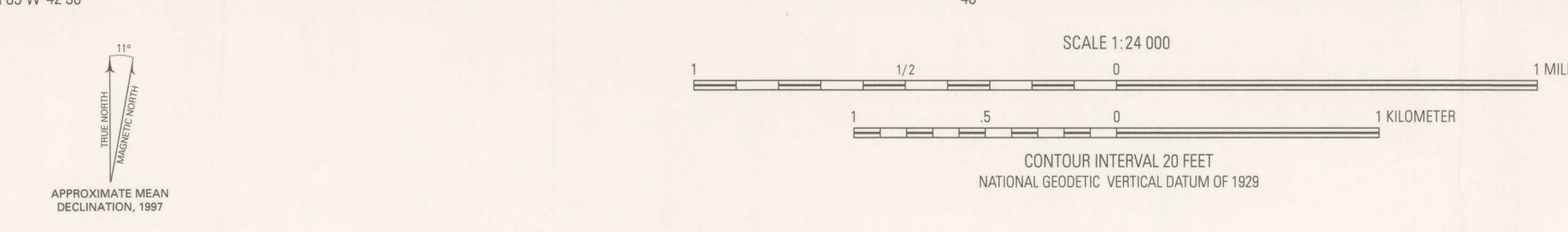


- DESCRIPTION OF MAP UNITS**
- QTu** Quaternary sediments and Tertiary sedimentary rocks, undivided—Predominantly Tertiary Arkarie Formation but includes Quaternary surficial deposits
  - Pu** Paleozoic rocks, undivided—Includes Fremont Canyon Formation (Upper Devonian), Guernsey Limestone (Mississippian), and Hartville Formation (Mississippian and Pennsylvanian)
  - Ym** Metadiabase—Dark-green, medium-grained diabase; marginal chill zones; cuts Haystack Range Granite (Xh) in sec. 14, T. 27 N., R. 65 W.
  - Xp** Pegmatite related to Haystack Range Granite—White to gray, coarse-grained, zoned to unzoned felspar-quartz-muscovite-ferromagnesian granitic dikes; contains accessory biotite, garnet, and beryl. Most abundant in unit Xwb on north side of Haystack Range Granite (Xh) dome. Estimated thickness 100–150 m
  - Xh** Haystack Range Granite—Pink, coarse- to medium-grained, massive to foliated, inequigranular biotite-granite and lesser fine-grained granite. Fine-grained phase dikes into or forms dikes in the coarse-grained facies. Constitutes a granite dome in the Haystack Range, the type area of the granite. Rb-Sr whole-rock age 1.72 Ga (Snyder and Peterman, 1982)
  - Xt** Twin Hills Diorite—Dark-gray, medium-grained, homogeneous hornblende-biotite monzonite to mafic diorite locally containing clinopyroxene and orthoclase. Type area is Twin Hills, 3 km north of Casebier Hill quadrangle. Locally cut by dikes of Haystack Range Granite (Xh) or included within the granite. U-Pb discordia intercept age 1.74 Ga (Snyder and Peterman, 1982)
  - Xmd** Metadiabase—Dark-greenish-black, medium-grained hornblende-plagioclase-quartz metadiabase; granular amphibolite east of Hartville fault. Dikes strike north-northeast except on north side of Haystack Range Granite (Xh) dome. Age approximately 2.0 Ga, based on (1) mafic dikes in the Laramie Mountains being younger than a 2.05 Ga granulite body and (2) dikes in the Hartville split being older than the 1.98-Ga granite of Flattop Butte (Snyder, 1993)
  - Xgb** Metagabbro—Dark-grayish-green, variably fine- to coarse-grained, weakly layered, and weakly to strongly foliated metagabbro containing hornblende and chlorite in sec. 18, T. 27 N., R. 65 W., and sec. 13, T. 27 N., R. 66 W. Foliation more distinct along border zones. Gabbro is older than D<sub>2</sub> deformation
- EARLY PROTEROZOIC OR LATE ARCHEAN**
- XWm** Metabasalt—Dark-green, fine-grained actinolite-biotite-chlorite schist. Flow are locally pillowed. Estimated thickness 100–150 m
  - XWmc** Calc-silicate rock—White to light-green pods, commonly 10–15 cm in diameter, form 30–50 percent of rock, and contain actinolite, diopside, talc, and epidote
  - XWd** Metadolomite—Gray, pink, white, and yellow, medium-grained dolomite and marble, tremolite dolomite, siliceous dolomite, and local limestone. Tremolite occurs as radiating blades resembling turkey tracks. Contains radiating tremolite, locally layered algal stromatolitic mounds. Estimated thickness 300–350 m
  - XWda** Quartzite—Common near stratigraphic top of unit Xwd in area north of Chicago mine
  - XWsp** Metapelite—Thin, gray to brown plagioclase-quartz-biotite-muscovite schist, interpreted as pelite; occurs near base of unit Xwd in Graves Ranch anticline
  - XWf** Ferruginous schist—Includes biotite-chlorite schist, phyllite, and ferromagnesian quartzite
  - XWvh** Hematite bodies—Hematite bodies at top of unit Xwf were mined at the Good Fortune, Sunrise, and Chicago mines and consist of specularite and associated colloform hematite (Ebbett, 1956)
  - XWvi** Banded iron-formation of Lake Superior type
  - XWb** Quartzofeldspathic schist—East of Hartville fault; contains garnet, sillimanite, and rare andalusite and pyrite. Graded beds common
  - XWv** Quartzofeldspathic schist—West of Hartville fault; gray, medium to fine grained; locally contains chlorite and garnet. Estimated thickness 1,000 m
- LATE ARCHEAN (3,000–2,500 Ma)**
- Wgg** Granite gneiss—Pink, medium-grained, mylonitic granitic gneiss presumed correlative with granite of Rawhide Buttes of Snyder (1980), which has Rb-Sr whole-rock isochron age of 2.58 Ga

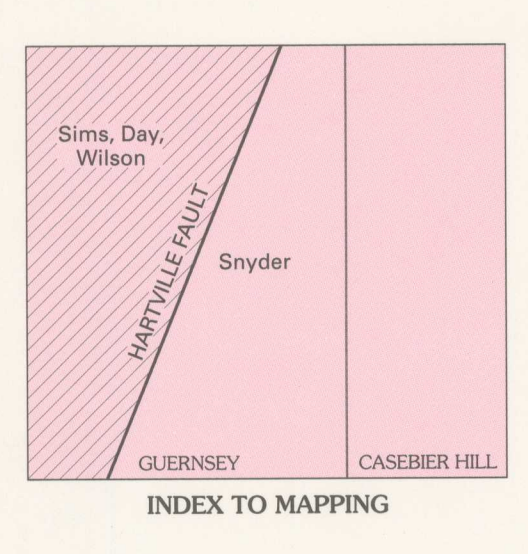
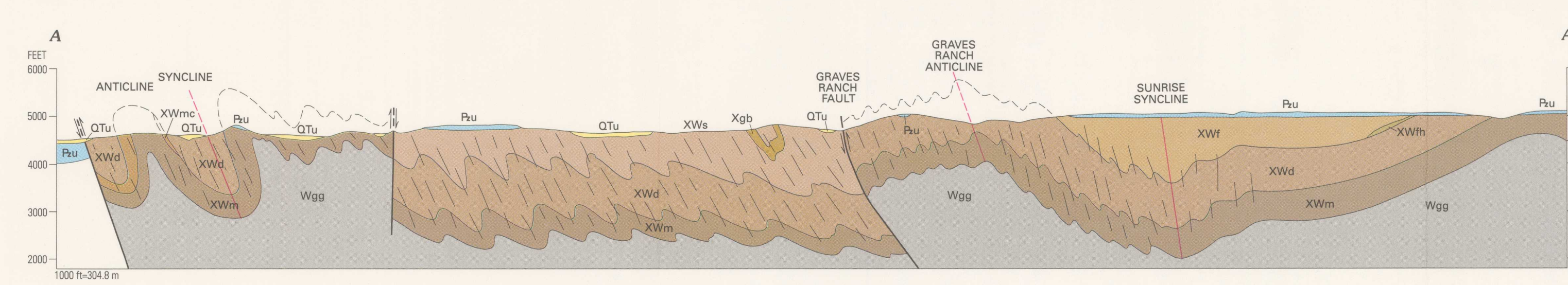
- Contact—Dashed where covered or inferred; queried where uncertain
  - High-angle fault—Dashed where covered or inferred
  - High-angle fault of Laramide age—Dashed where covered or inferred. U, upthrown side; D, downthrown side
  - High-angle reverse fault of Laramide age—Showing dip. Dashed where covered or inferred. U, upthrown side; D, downthrown side
  - Thrust fault of Early Proterozoic age—Dashed where covered or inferred. Sawtooth on upper plate. Opposed arrows show relative horizontal movement on fault with oblique slip
  - Asymmetrical, downward-facing anticline—Showing bearing and plunge of axis. Dashed where covered or inferred
  - Downward-facing syncline—Showing plunge of axis. Dashed where covered or inferred
  - Asymmetrical, downward-facing syncline—Showing bearing and plunge of axis
- Bedding**
- Inclined—Stratigraphic top direction; not determined
  - Upright
  - Overturned
  - Vertical—Top of beds known
  - Vertical—Stratigraphic top direction; not determined
- Foliation**
- Inclined
  - Vertical
- Bearing and plunge of lineation**—May be combined with foliation or bedding symbols
- Bearing and plunge of symmetrical fold
  - Bearing and plunge of asymmetrical fold
- Drill hole—Approximately located. Hartville Limestone (Pensylvanian age) lies between Tertiary and Precambrian in area of drill holes elsewhere in valley. Precambrian lies directly below Tertiary
  - Shaft or prospect pit
  - Chicago ore body
  - Good Fortune ore body
  - Sunrise ore body
  - Foliation trajectory—Shown on cross section only

Base from U.S. Geological Survey  
Casebier Hill, 1950; Guernsey, 1950, photorevised 1978.  
Polyconic projection. 1927 North American datum



Geology of Paleozoic and Tertiary-Quaternary units of entire map area and of pre-Paleozoic units east of Hartville fault mapped in 1977–79 by G.L. Snyder; geology of pre-Paleozoic units west of Hartville fault mapped in 1993–94 by P.K. Sims, W.C. Day, and A.B. Wilson

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**CONVERSION FACTORS**

Multiply	By	To obtain
centimeters (cm)	0.3937	inches (in.)
meters (m)	3.281	feet (ft)
kilometers (km)	0.6214	miles (mi)

## GEOLOGIC MAP OF PRECAMBRIAN ROCKS ALONG PART OF THE HARTVILLE UPLIFT, GUERNSEY AND CASEBIER HILL QUADRANGLES, PLATTE AND GOSHEN COUNTIES, WYOMING

By  
P.K. Sims, W.C. Day, G.L. Snyder, and A.B. Wilson, with a section on  
Geochronology of post-tectonic intrusive rocks by Zell E. Peterman  
1997

