WYOMING STATE GEOLOGICAL SURVEY
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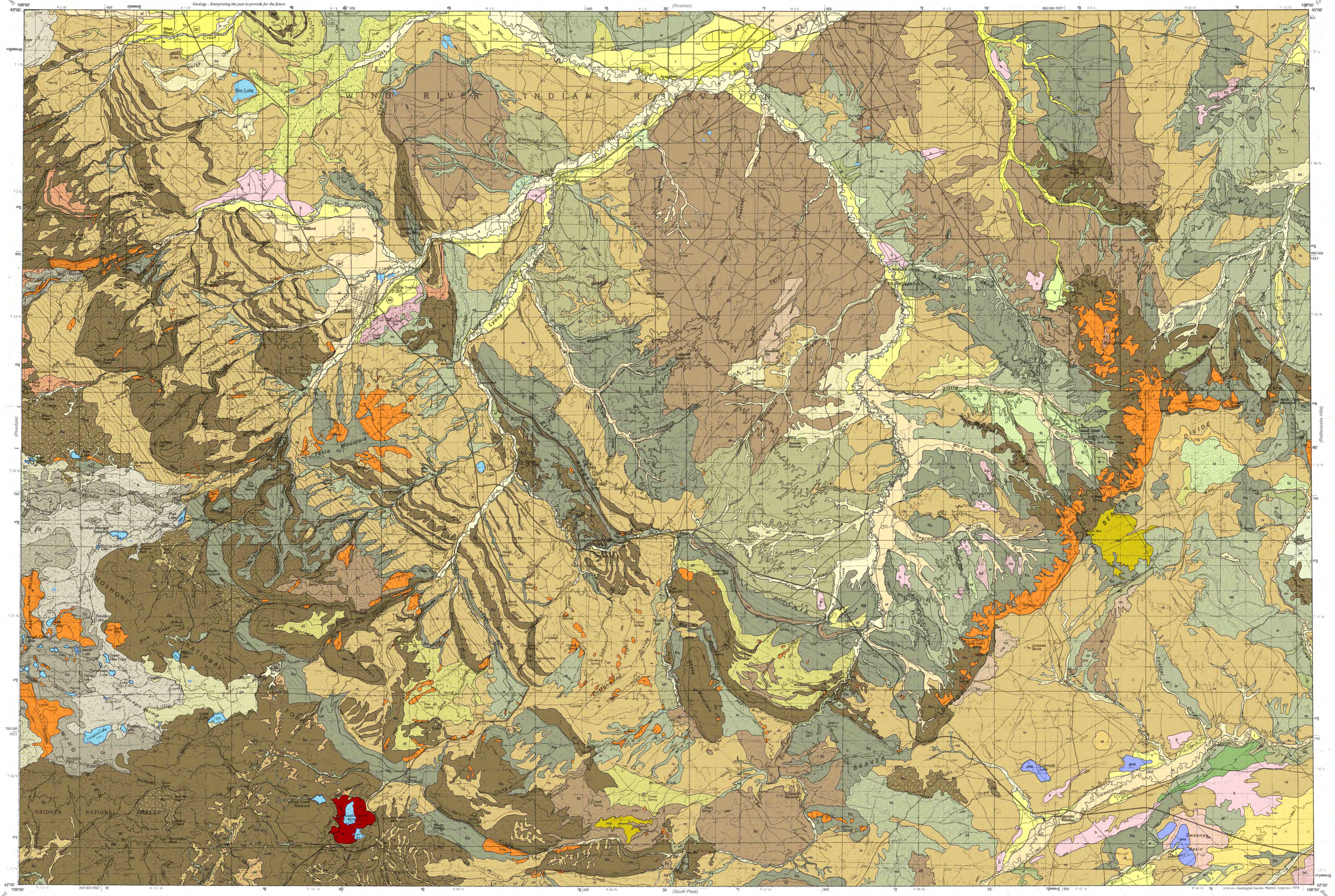
Laramie, Wyoming

Geology - Interpreting the past to provide for the future

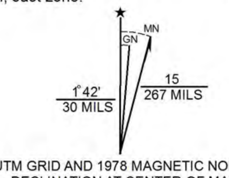
Prepared in cooperation with the
U.S. GEOLOGICAL SURVEY

MAP SERIES 88
Lander 1:100,000 - scale
Surficial Geologic Map
Version 1.0 July 2009

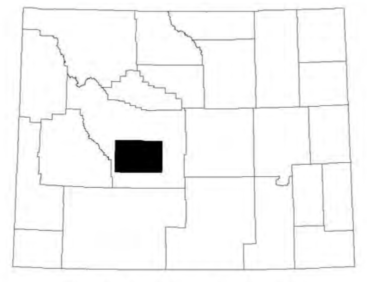


Base map from U.S. Geological Survey 1:100,000-scale metric topographic map of the Lander, Wyoming Quadrangle, 1978.

Projection: Universal Transverse Mercator (UTM), zone 12
North American Datum of 1927 (NAD 27)
10,000-meter grid: UTM, zone 12
50,000-foot grid ticks: Wyoming State Plane Coordinate System, east zone.



UTM GRID AND 1978 MAGNETIC NORTH DECLINATION AT CENTER OF MAP



WYOMING QUADRANGLE LOCATION

SCALE 1:100,000
Contour Interval 20 meters

SURFICIAL GEOLOGIC MAP OF THE LANDER 30' x 60' QUADRANGLE, FREMONT COUNTY, WYOMING

by

Seth J. Wittke

2009

Digital cartography by Thomas E. Ver Ploeg

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A digital version of this map is also available on CD - ROM.

EXPLANATION

DESCRIPTION OF MAP UNITS

Alluvium—Unconsolidated detrital material deposited during comparatively recent geologic time by a stream or other body of running water, as a sorted or semisorted sediment in the bed of a stream or on its floodplain or delta, or as a cone or fan at the base of a mountain slope; stream and river deposits. Does not include subaqueous deposits in seas, estuaries, lakes, and ponds

- a — Alluvium
- af — Alluvium and alluvial fan deposits
- as — Alluvium and slopewash with minor components of residuum and terrace deposits
- at — Alluvium and terrace deposits with minor components of slopewash and residuum
- au — Alluvium and grus with minor components of slopewash

Bench deposits—Material deposited on a strip of relatively level earth or rock, raised and capped with gravel or other coarse-grained materials

- b — Bench deposits
- be — Bench and eolian deposits
- bd — Dissected bench deposits
- bs — Bench deposits and slopewash

Terrace deposits—Relict alluvial deposits on relatively flat, horizontal, or gently inclined surfaces which are bounded by a steeper ascending slope on one side and a steeper descending slope on the opposite side

- t — Terrace deposits
- ta — Terrace deposits and alluvium
- td — Dissected terrace deposits with minor components of slopewash
- ts — Terrace deposits and slopewash

Alluvial fan deposits—A fan-shaped deposit made by a stream or debris flow where they have run out into a level (or nearly level) plain

- f — Alluvial fan deposits
- fb — Alluvial fan and bench deposits
- fd — Dissected alluvial fan deposits with minor components of terrace deposits and residuum
- fs — Alluvial fan deposits and slopewash
- ft — Alluvial fan and terrace deposits

Eolian deposits—Wind-blown materials, including sand, silt, and clay that have been transported and deposited by the wind

- er — Eolian deposits and residuum with minor components of slopewash

Playa lake deposits—Materials deposited from broad, shallow sheets of water which quickly gather and evaporate, leaving mud flats or evaporite deposits (depending on chemical composition of the waters and degree of evaporation)

- pea — Playa lake and eolian deposits with minor components of alluvium and residuum

Lake (lacustrine) deposits—Sedimentary deposits laid down conformably on the floor of a lake, usually of fluvial or glacial origin mixed with fresh water or terrestrial organic matter; may be a chemical precipitate such as freshwater limestone or a seasonal layered deposit as in a varve or varved clays; includes subaqueous deposits (such as deltas) in oceans, lakes, ponds, and other standing water bodies

- w — Lake and pond deposits
- wu — Lake and pond deposits and grus

Landslide deposits—Soil and rock material that has moved downslope, usually en masse, under gravitational influence; earth and rock which become loosened from a hillside and slides, flows, or falls down the slope

- l — Landslide deposits

Glaciated bedrock—In-place material (bedrock) that has been scoured and carved out by glacial action

- Gc — Glaciated bedrock and colluvium
- Gu — Glaciated bedrock and grus

Glacial deposits—Unconsolidated, unsorted materials that have been formed by glacial action, such as till and moraine

- g — Glacial deposits
- ga — Glacial deposits and alluvium
- gs — Glacial deposits and slopewash with minor components of alluvium
- gu — Glacial deposits and grus

Residuum—A residual deposit remaining in place after the decomposition of rocks. Residue is an accumulation of rock debris formed by weathering and remaining essentially in place after all but the least soluble constituents have been removed, usually forming a comparatively thin surface layer concealing the unweathered or partially altered rock below

- ra — Residuum and alluvium
- rc — Residuum and colluvium with minor components of bedrock and colluvium
- rm — Residuum and mesa deposits
- rR — Residuum and bedrock outcrops with minor components of slopewash and colluvium
- rs — Residuum and slopewash with minor components of colluvium and bedrock outcrops

Grus—An accumulation of angular, coarse-grained fragments resulting from the in-situ granular disintegration of crystalline rocks, usually granite or granitic rocks

- ua — Grus and alluvium
- uc — Grus and colluvium with minor components of bedrock outcrops and slopewash
- uR — Grus and bedrock outcrops with minor components of colluvium and slopewash
- ur — Grus and residuum with minor components of bedrock outcrops and colluvium
- us — Grus and slopewash with minor components of bedrock outcrops and colluvium
- uw — Grus and lake deposits

Bedrock outcrops

- Rc — Bedrock outcrops and colluvium with minor components of residuum and slopewash
- Rr — Bedrock outcrops and residuum with minor components of sloepwash and colluvium
- Rs — Bedrock outcrops and slopewash
- Ru — Bedrock outcrops and grus

Slopewash and colluvium: Slopewash—Soil and rock material that has moved down a slope by gravity assisted by running water. Colluvium—A loose, heterogeneous, and incoherent mass of soil material and/or rock fragments deposited by rainwash, sheetwash, or slow continuous downslope creep, usually at the foot of a cliff or on the surface of a slope, and there chiefly by gravity

- sa — Slopewash and alluvium with minor components of bedrock outcrops, residuum, and colluvium
- sf — Slopewash and alluvial fan deposits
- sR — Slopewash and bedrock outcrop with minor components of colluvium and residuum
- sr — Slopewash and residuum with minor components of bedrock outcrops and colluvium
- su — Slopewash and grus with minor components of bedrock outcrops and colluvium

Mesa—An isolated, nearly level landmass standing distinctly above the surrounding country, bounded by abrupt or steeply sloping erosion scarps on all sides, and capped by layers of resistant, nearly horizontal rock; a bedrock capped plateau or tableland

- md — Dissected mesa

Structural terrace—A terrace cut in bedrock that is mantled by a thin veneer of alluvium

- T — Structural terrace

Mined out/disrupted area—An area where original landforms/topography, or surficial deposits have been disturbed or obliterated by mining or other activities such that the original surgical forms/deposits cannot be determined

- M — Mined out/disrupted area

Water

- Water body

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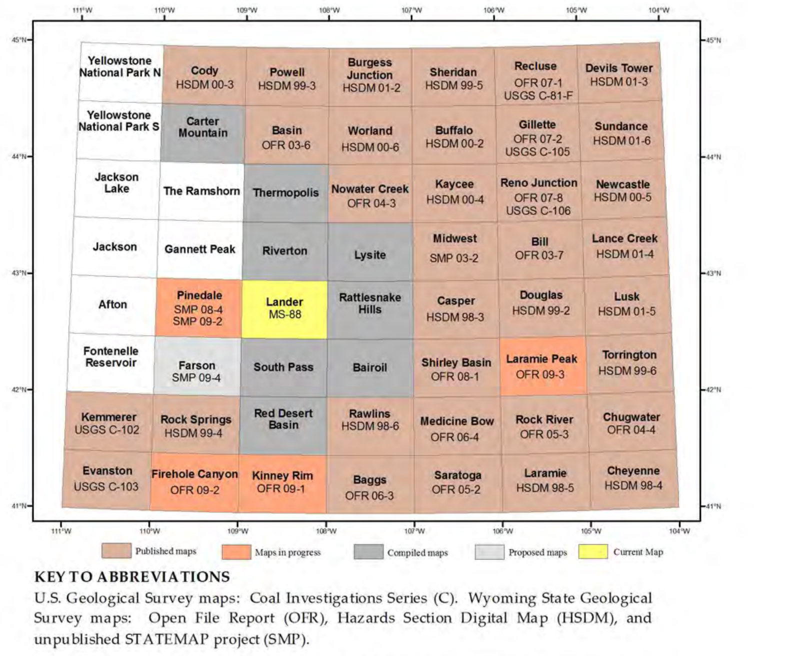

KEY TO ABBREVIATIONS
U.S. Geological Survey maps: Coal Investigations Series (C). Wyoming State Geological Survey maps: Open File Report (OFR), Hazards Section Digital Map (HSDM), and unpublished STATEMAP project (SMP).

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