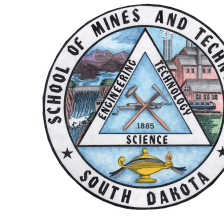
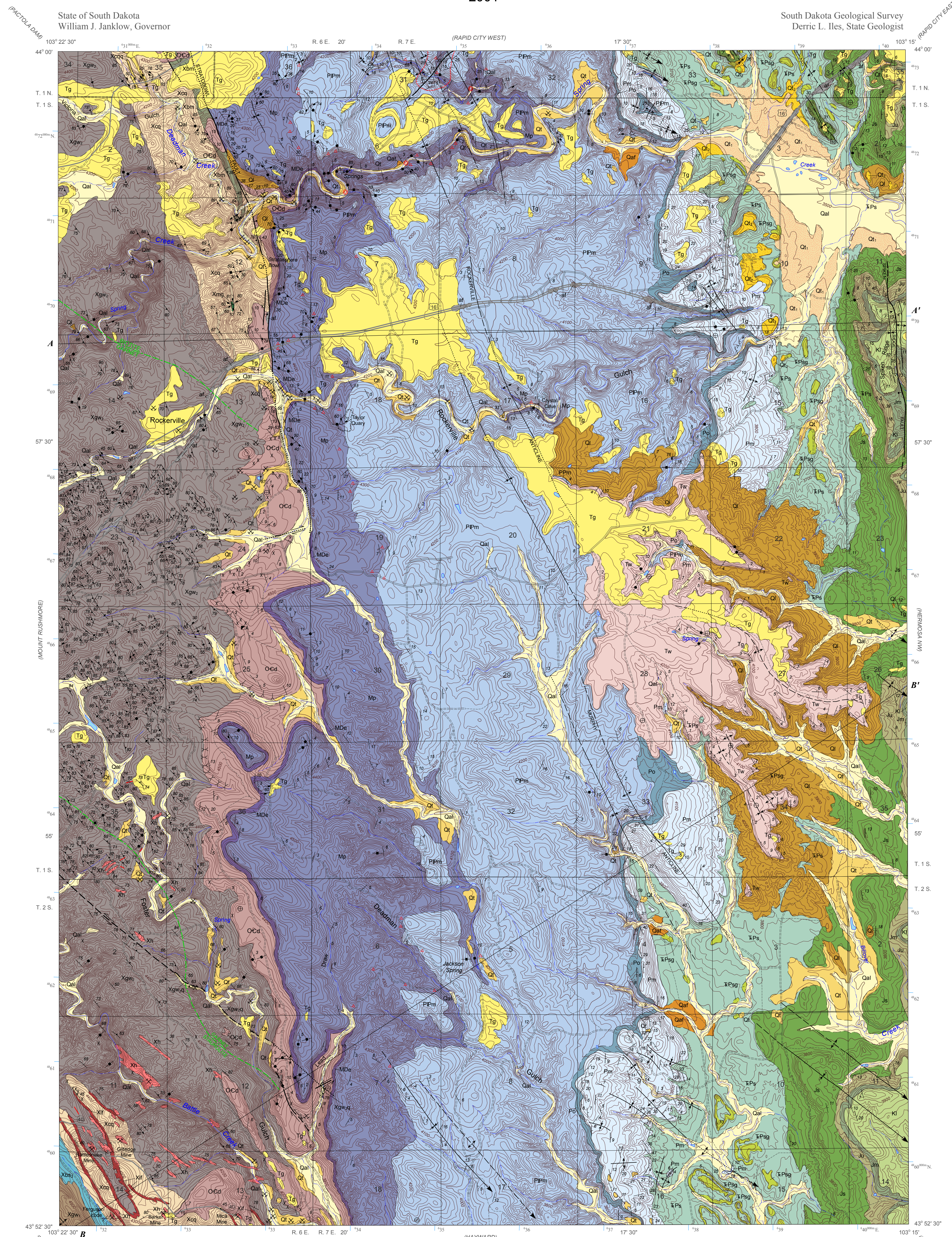


Geologic Map of the Rockerville Quadrangle, South Dakota

Joy L. Lester and Perry H. Rahn¹
2001

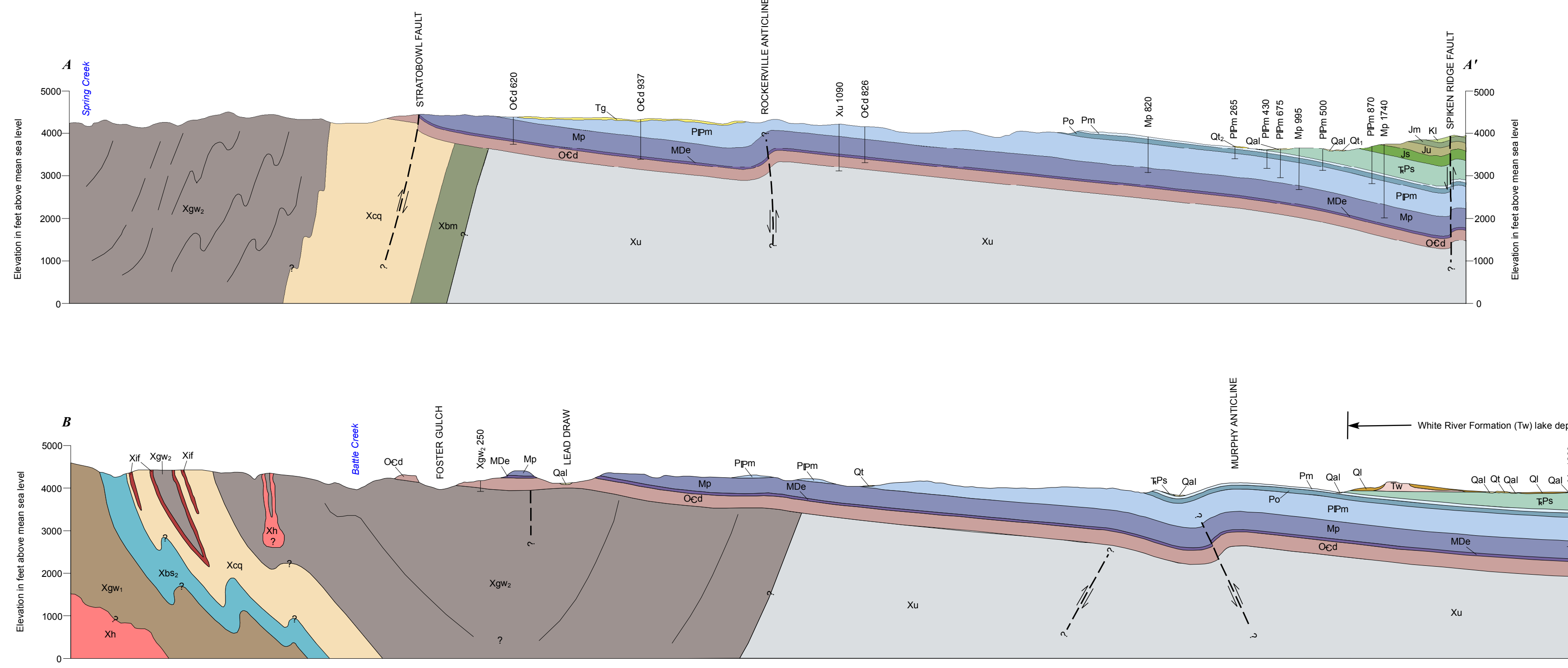
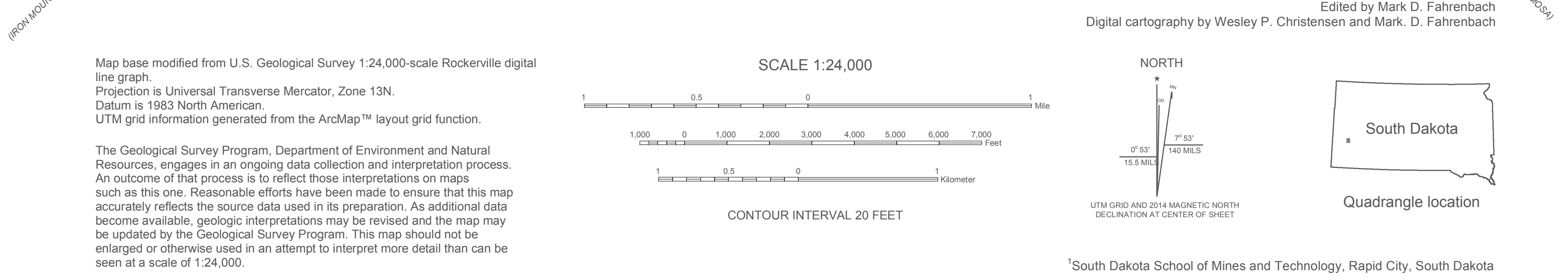


Prepared in cooperation with the South Dakota School of Mines
and Technology, Rapid City, South Dakota



EXPLANATION

Quaternary	Qal Alluvium - Unconsolidated to loosely consolidated, clay to boulder-size clasts; deposited along present-day drainages. Estimated maximum thickness 30 ft (9 m)	Qd Terrace deposit (undifferentiated) - Unconsolidated clay to boulder-size clasts; typically occur along present-day drainages. Estimated maximum thickness 30 ft (9 m)	Qdt Terrace deposit - Unconsolidated clay to boulder-size clasts; deposited approximately 20 ft (6 m) above present stream beds	Qcl Terrace deposit - Clay to boulder-size clasts; deposited approximately 40 ft (12 m) above present stream beds	Qaf Alluvial fan - Unconsolidated, poorly sorted, clay to boulder-size clasts of locally derived material. Located proximal to present-day drainages	Ql Landslide - Unconsolidated debris includes randomly orientated blocks of locally derived material. Extensively associated with White River Group outcrops	U Unconformity	Tg Gravel deposit - Poorly consolidated, clay to boulder-size clasts; dominantly of Precambrian rocks but may include locally derived Paleozoic material. Estimated thickness up to 40 ft (12 m)	Tw White River Group - Brown siltstone, claystone, and white, waxy, finely-crystalline, thin-bedded, lacustrine limestone. Maximum thickness approximately 225 ft (69 m)	U Unconformity	Kl Lakota Formation - Brown, medium- to coarse-grained, siliceous sandstone. Exposed thickness 150 ft (45 m)	Jm Morrison Formation - Purple to green, fissile to platy, calcareous shale, thin limestone and sandstone beds. Typically forms covered slopes. Maximum thickness 280 ft (85 m)	Ju Unkappa Sandstone - Orange to white, rounded to well-rounded, fine-grained, calcareous, cross-bedded quartz sand. Lower portion is thin-bedded, upper portion is thick bedded; forms exfoliating cliffs. Thickness 40-100 ft (12-30 m)	Js Sundance Formation - Green, red, orange-brown, interbedded shale, sandstone, and limestone. Estimated total thickness 180 ft (54 m)	U Unconformity	TrPq Spearfish Formation - Red shale and siltstone. Gypsum (SPg) occurs as veins and beds as much as 20 ft (6 m) thick, typically in the upper half of the formation. Overall thickness 350-450 ft (107-137 m)	U Unconformity	Pm Minnekahta Limestone - White, pink, and purple, finely-crystalline, laminated to thin-bedded, locally petroliciferous limestone. Forms prominent dip slopes and cliffs. Maximum thickness 40 ft (12 m)	Po Opeche Shale - Red siltstone and shale. Upper 12 ft (4 m) is purple, calcareous siltstone. Thickness 60-100 ft (18-30 m)	U Unconformity	PpPm Minnelusa Formation - Variably colored, interbedded sandstone, limestone, dolomite, and shale. Outcrop thickness varies due to dissolution of evaporite beds and deposition on an irregular karst surface. Approximate thickness 530 ft (162 m)	Mp Pahasapa Limestone - Beige to gray, limestone and dolomite, contains thin chert lenses and beds. Solution breccia and caves occur locally. Forms prominent cliffs. Maximum thickness 420 ft (128 m)	MDe Englewood Limestone - Pink to lavender, finely-crystalline, thin-bedded, argillaceous dolomite and limestone. Forms covered slopes. Thickness 30-60 ft (9-18 m)	U Unconformity	Ocd Deadwood Formation - Purple, green, brown, sandstone, shale, conglomerate, limestone, and dolomite. Maximum thickness 245 ft (75 m)	U Unconformity	Xh Harney Peak Granite - S-type granite, pink to tan, finely-crystalline to pegmatitic. Occurs as sills and dikes to large bodies; some are zoned. Composed predominantly of oligoclase, quartz, microcline, and muscovite with accessory tourmaline, biotite, apatite, and garnet. Age 1.715 Ga (Redden and others, 1990)	Xgwa Metagaywacke unit 2 - Quartz-mica schist, phyllite, and quartzite. Tan, greenish-gray to gray, thick to thin-bedded. Contains primarily proximal Bouma A-C beds in the northern portion of the quadrangle. Calcareous and calc-silicate concretions occur locally in the quartz-rich Bouma A beds. Contains biotite, garnet, staurolite, or andalusite-sillimanite depending on metamorphic grade which increases from north to south. Lithologically identical to Xgws and similar to Xgws on the Hill City and Mount Rushmore quadrangles. Xgwa - Silicified, locally sulfide-rich fault zone. Protolith is proximal to medial graywacke deposits	Xgwb Metagabbro - Hornblende plagioclase amphibolite. Dark-green sill intruding Xgwa. Age inferred to be ~1.98 Ga, which is the Pb-Pb zircon age of a metagabbro sill in the Pactola Dam quadrangle, but may be equivalent to younger (~1.8 Ga) metagabbro sills (Redden and others, 1990) also in the Pactola Dam quadrangle. Protolith is gabbro	Xqz Metaconglomerate, quartzite, and metapelite - Xqz - Schist, quartzite, and metaconglomerate having clasts as much as 3 ft (1 m) across typically of quartzite, and rarely metasilicite, in a pelitic matrix. Gray, dark-gray, and tan, typically thin- to thick-bedded. Includes beds of metagaywacke which increase in abundance as metaconglomerate and quartzite decrease. Pelitic beds may be garniferous at higher metamorphic grade. May be equivalent to part of Xgwd in the Mount Rushmore quadrangle. Xqz - Carbonate facies iron-formation, non-silicified metachert, and carbonaceous phyllite. May contain cummingtonite-grenite depending on metamorphic grade. Protolith is debris flow deposits with associated thermal springs	Xqm Quartzite and schist - Interbedded quartzite, phyllite, and schist. Reddish-brown to gray. Equivalent to part of the Buck Mountain Quartzite. Protolith is sandstone with interbedded shale and siltstone	Xbs Biotite schist and phyllite - Biotite-rich schist, phyllite, or slate. Thin bedded, typically graphic. Areas of schist typically contain garnet-rich beds and thin metachert beds. Protolith is black shale and pelite	Xgw Metagaywacke unit 1 - Interbedded phyllite, quartzite, and quartz-mica schist. Tan, gray, to black, thick- to thin-bedded; fine- to very fine-grained. Lithologically similar to Xgws, but contains more distal Bouma B-E beds, with few Bouma A beds locally containing calc-silicate concretions. Protolith is proximal to medial graywacke deposits	Xu Early Proterozoic rocks (undifferentiated) - Shown only in cross section	C Contact Long dashed where approximately located	F Fault Long dashed where approximately located; dotted where concealed; queried where probable. Bar and tail on downthrown side. Arrows indicate lateral movement of direction and plunge of slickensides. Tick indicates dip direction and amount	A Anticline Showing crest line and direction of plunge. Long dashed where approximately located; dotted where concealed	S Syncline Showing trough line and direction of plunge. Long dashed where approximately located; dotted where concealed	SA Small anticline Showing bearing and plunge	I Inclined	V Vertical	H Horizontal	I Inclined	V Vertical	H Horizontal	D Dissolution feature Includes terra rosa soil (fill), breccia, and bowerk. Typically along the Minnelusa-Pahasapa contact and areas affected by Triassic weathering	SZ Stream loss zone	AC Area of collapse Due to dissolution of underlying beds	GARNET-STAUROLITE Metamorphic isograd	af Artificial fill Compacted earth, indicated only where extensive	DH Drill Hole Indicates bottom hole formation and total depth in feet. Shown only in cross sections	PM Open pit mine or glory hole	MA Mine adit or cave	TR Trench	XP Prospect pit	PL Placer pit	MS Abandoned mine shaft	OM Open pit mine or quarry
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Revision Date: June 30, 2016

Acknowledgements

Several unpublished field maps were generously made available by A.L. Lisenbee and J.A. Redden for the completion of this map.

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