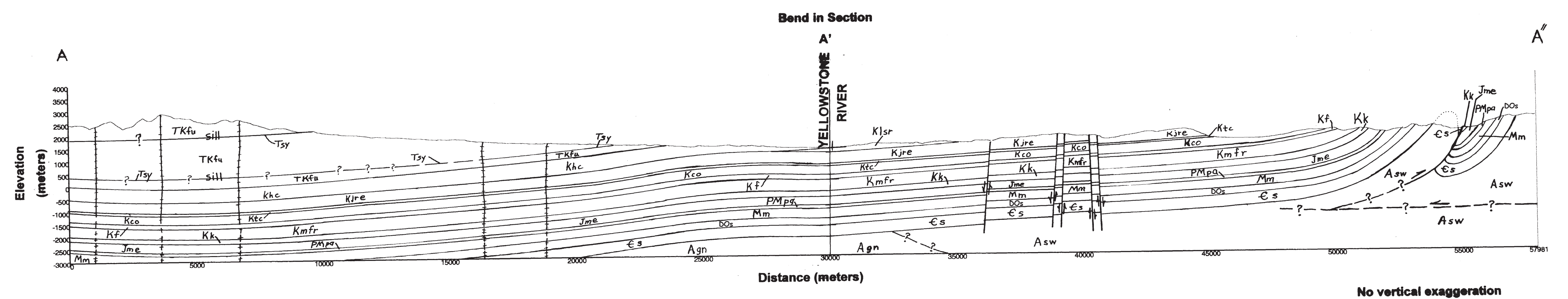
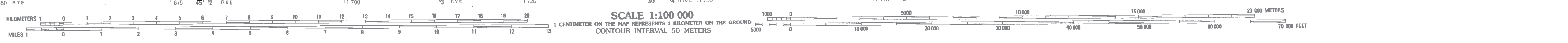


- MAP UNITS**
- Ca Alluvium of modern channels and flood plains
 - Co Coluvium
 - Ca2 Alluvium and coluvium, undivided
 - Ca1 Alluvial fan deposit
 - Qk Lake deposit
 - Qta Talus deposit
 - Ql Landslide deposit
 - Qp Pediment gravel deposit
 - Qg Glacial deposit, undivided
 - Ca1 Alluvium of alluvial terrace
 - Ca11 Alluvium of youngest alluvial terrace
 - Ca2 Alluvium of second youngest alluvial terrace
 - Ca3 Alluvium of third youngest alluvial terrace
 - Ca4 Alluvium of fourth youngest alluvial terrace
 - Ca5 Alluvium of fifth youngest alluvial terrace, oldest
 - Qw Alluvium, older, undivided
 - Qf Alluvial fan deposit
 - Ts Sediment or sedimentary rocks, undivided
 - Tsc Sediment or sedimentary rock, upper Tertiary coarse-grained
 - Tbn Basalt, hypabyssal
 - Ti Alkalic Intrusive
 - Tdi Diorite
 - Tsy Syenite
 - Tav Absaroka Volcanics
 - Tfu Tongue River Member of Fort Union Formation
 - Tfo Lobo Member of Fort Union Formation
 - Ttl Tulok Member of Fort Union Formation
 - Tku Fort Union Formation, undivided
 - Khc Hill Creek Formation
 - Ds Diorite
 - Kls Slickrock Mtn. Frm. informal of Livingston Group
 - Kfo Hoppers Formation
 - Kbc Bismarck Formation
 - Km Miner Creek Formation
 - Kcl Coladair Formation
 - Ksd Sedan Formation
 - Lns Lanes Sandstone Member, of Sedan Formation
 - Mst Mudstone member, informal of Sedan Formation
 - Msd Middle sandstone member, informal of Sedan Formation
 - Ash Ash-flow tuff member, informal of Sedan Formation
 - Lsd Lower sandstone member, informal of Sedan Formation
 - Kjr Judith River through Eagle Formations, undivided
 - Ke Eagle Formation
 - Tee Eagle and Telegraph Creek Formations, undivided
 - Kt Telegraph Creek Formation
 - Ki Nibrona Formation
 - Kco Cody Shale
 - Kou Upper shale member, informal of Cody Shale
 - Kca Eldridge Creek Member of Cody Shale
 - Kol Lower shale member, informal of Cody Shale
 - Ksl Lower shale member, informal of Cody Shale and Frontier Formation, undivided
 - Kod Cody Shale and Frontier Formation, undivided
 - Kf Frontier Formation
 - Km1 Mowry through Fall River Formations, undivided
 - Ks Kootenai Formation
 - Jms Morrison Formation and Ellis Group, undivided
 - Jm Morrison Formation
 - El Ellis Group, undivided
 - Pms Phosphoria, Quadrant, and Anasazi Formations, undivided
 - Pmsa Quadrant and Anasazi Formations, undivided
 - Fs Quadrant Formation
 - Pms Anasazi Formation
 - Msr Snowcrest Range Group
 - Mm Madison Group, undivided
 - Mms Mission Canyon Limestone
 - ML Lodgepole Limestone
 - MDm Three Forks Formation, Jefferson Dolomite and Maywood Formation
 - DR Sedimentary rocks, undivided
 - DR1 Snowy Range Formation and Pinyon Limestone
 - DR2 Sedimentary rocks, undivided
 - GR Grove Creek and Snowy Range Formations, undivided
 - PL Pinyon Limestone
 - CP Park through Flathead Formations, undivided
 - CS Park Shale
 - CM Meagher Limestone
 - CS Wolsey Shale
 - CI Flathead Formation
 - YL Labood Formation
 - ASW Stillwater Complex
 - ASW1 Upper zones - Stillwater Complex
 - ASW2 Middle anorthosite zone - Stillwater Complex
 - ASW3 Lower and middle zones - Stillwater Complex
 - ASW4 Lower anorthosite zone - Stillwater Complex
 - ASW5 North and lower gabbro zones - Stillwater Complex
 - AG Amphibolite and gneiss
 - AGn Gneissic rocks
 - QA Quartzite and amphibolite
 - AGp Quartzofelspathic gneiss
 - AS Biotite schist
 - AM Sillimanite-garnet-biotite gneiss and marble
 - AN Nepe core complex

Base from U.S. Geological Survey
Livingston 30'x60' topographic quadrangle
Map date: 1992
Projection: UTM zone 12; 1927 NAD



No vertical exaggeration
Surficial deposits not shown

Montana Bureau of Mines and Geology
Open File 406

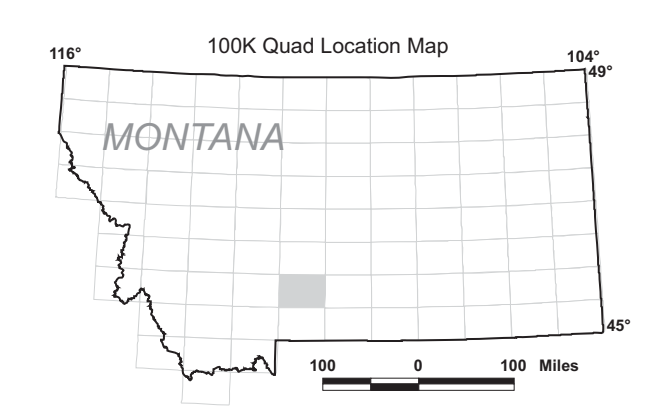
Geologic Map of the
Livingston 30' x 60' Quadrangle,
South-Central Montana

Richard B. Berg, David A. Lopez,
and Jeffrey D. Lonn

2000

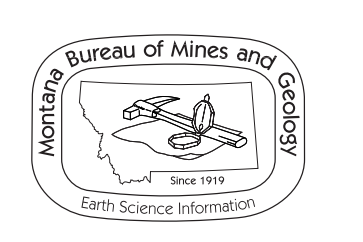
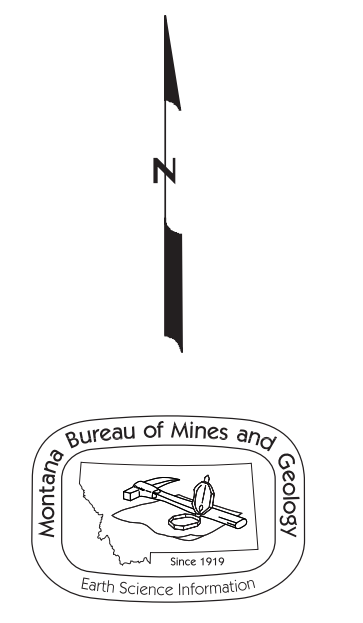
Revised	Date
Map	9/01
Map and text	12/02
Map and text	8/05

Partial support has been provided by the STATEMAP component of the National Cooperative Geologic Mapping Program of the U.S. Geological Survey under Contract Number 99-HQ-AG-0130.
GIS production: Ken Sandau and Paul Thale, MBMG. Map layout: Susan Smith, MBMG.



Quad Index

TOWNSHIP	R10N	R11N	R12N
SECTION	10	20	30
QUAD INDEX	1000	1100	1200



Maps may be obtained from
Montana Bureau of Mines and Geology
Publications Office
1100 West Park Street, Butte, Montana 59717-8997
Phone: (406) 496-4167 or (406) 496-4174
Fax: (406) 496-4451
http://www.mbmng.mtech.edu