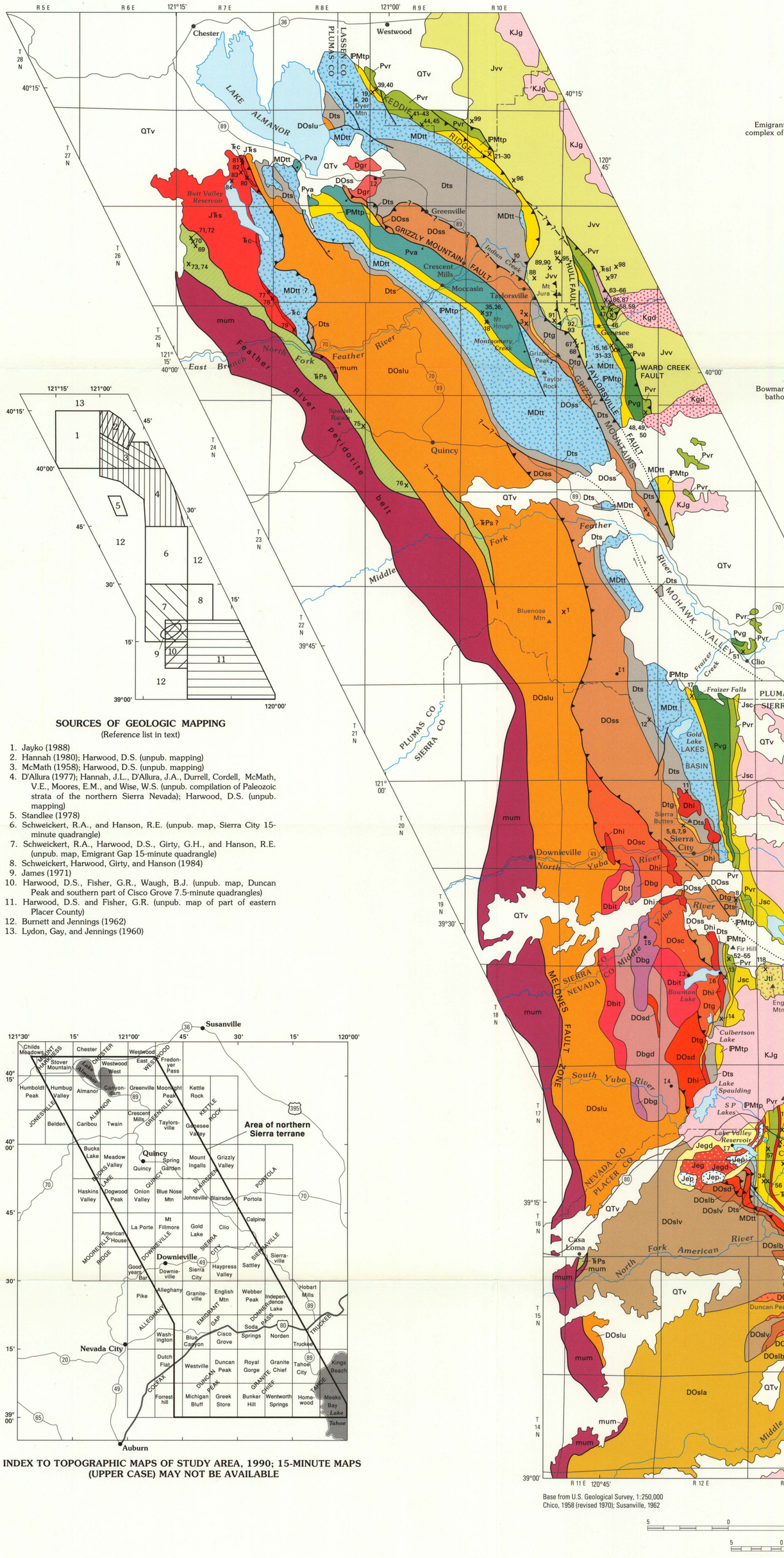
U.S. DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

BULLETIN 1957
PLATE 1



SOURCES OF GEOLOGIC MAPPING

(Reference list in text)

1. Jayko (1988)
2. Hannah (1980); Harwood, D.S. (unpub. mapping)
3. McMath (1958); Harwood, D.S. (unpub. mapping)
4. D'Allura (1977); Hannah, J.L., D'Allura, J.A., Durrell, Cordell, McMath, V.E., Moores, E.M., and Wise, W.S. (unpub. compilation of Paleozoic strata of the northern Sierra Nevada); Harwood, D.S. (unpub. mapping)
5. Standlee (1978)
6. Schweickert, R.A., and Hanson, R.E. (unpub. map, Sierra City 15-minute quadrangle)
7. Schweickert, R.A., Harwood, D.S., Girty, G.H., and Hanson, R.E. (unpub. map, Emigrant Gap 15-minute quadrangle)
8. Schweickert, Harwood, Girty, and Hanson (1984)
9. James (1971)
10. Harwood, D.S., Fisher, G.R., Waugh, B.J. (unpub. map, Duncan Peak and southern part of Cisco Grove 7.5-minute quadrangles)
11. Harwood, D.S. and Fisher, G.R. (unpub. map of part of eastern Placer County)
12. Burnett and Jennings (1962)
13. Lydon, Gay, and Jennings (1960)

INDEX TO TOPOGRAPHIC MAPS OF STUDY AREA, 1990; 15-MINUTE MAPS (UPPER CASE) MAY NOT BE AVAILABLE

CORRELATION OF MAP UNITS

QTv	QUATERNARY AND TERTIARY
Kgd	CRETACEOUS
KJg	CRETACEOUS AND JURASSIC

ROCKS WEST OF TALBOT FAULT ZONE

Emigrant Gap mafic complex of James (1971)	Jegd, Jeg, Jep	JURASSIC
	Jvv, Jtl, Jsc	JURASSIC
	JTRs	JURASSIC AND TRIASSIC
	TRsl	TRIASSIC
	TRc	TRIASSIC
	TRPs	TRIASSIC AND PERMIAN
Permian volcanic sequence	Pvr, Pvg, Pva	PERMIAN
Taylorsville sequence	PMtp	PENNSYLVANIAN AND MISSISSIPPIAN
	MDtt, Dts, Dtg	MISSISSIPPIAN AND (OR) DEVONIAN
	Dhi, Dgr	DEVONIAN
Bowman Lake batholith	Dbg, Dbgd, Dbt, Dbit	DEVONIAN
Shoo Fly Complex	DOss, DOsc, DOsd, DOslu, DOsls, DOslb, DOslv, DOsla	DEVONIAN(?) TO ORDOVICIAN(?)
	mum	AGE UNCERTAIN

ROCKS EAST OF TALBOT FAULT ZONE

Lake Tahoe sequence: Jlp, Jle, Jlb	JURASSIC
Mlo	MISSISSIPPIAN(?) AND YOUNGER(?)
Mls	MISSISSIPPIAN OR YOUNGER
MDlp, ls	MISSISSIPPIAN AND DEVONIAN
DOslu	DEVONIAN(?) TO ORDOVICIAN(?)

DESCRIPTION OF MAP UNITS

QTv — **Volcanic rocks, alluvium, and till (Quaternary and Tertiary)**

Kgd — **Granodiorite (Cretaceous)**

KJg — **Granodiorite and related plutonic rocks (Cretaceous and Jurassic)**

ROCKS WEST OF TALBOT FAULT ZONE

Emigrant Gap mafic complex of James (1971) (Jurassic)—Consists of:

Jegd — **Granodiorite and diorite**

Jeg — **Gabbro**

Jep — **Peridotite and related ultramafic rocks**

Jvv — **Volcanic and volcaniclastic rocks (Jurassic)**

Jtl — **Tuttle Lake Formation (Jurassic)**—Andesitic tuff breccia, tuff, and minor volcaniclastic sandstone

Jsc — **Sailor Canyon Formation (Jurassic)**—Black slate, volcaniclastic sandstone, tuff, and minor limestone

JTRs — **Slate, volcaniclastic sandstone, polymict conglomerate, and minor limestone (Jurassic and Triassic)**

TRsl — **Slate, limestone, and tuff (Triassic)**—The undivided Pit Formation, Hosselkus Limestone, and Swearinger Slate

TRc — **Conglomerate and limestone (Triassic)**

TRPs — **Slate, sandstone, conglomerate, and limestone (Triassic and Permian)**

Permian volcanic sequence—Consists of :

Pvr — **Robinson Formation of McMath (1958, 1966) and Reeve Formation, undivided (Permian)**—Andesitic tuff, tuff breccia, hypabyssal intrusive rocks (all plagioclase phyric), and interbedded volcaniclastic sediments (Reeve Formation); andesitic debris-flow deposits and volcaniclastic sandstone, shale, and minor limestone (Robinson Formation)

Pvg — **Goodhue Formation (Permian)**—Basaltic pillow lava, tuff breccia, and tuff

Pva — **Arlington Formation (Permian)**—Chert-rich pebbly mudstone, breccia, and conglomerate, volcaniclastic sandstone and slate, and minor tuff breccia

Taylorsville sequence—Consists of:

PMtp — **Peale Formation (Pennsylvanian and Mississippian)**—Black, red, green, gray, and white radiolarian chert and minor siliceous argillite (chert member); green, gray, and purple alkali-feldspar phyric tuff, tuff breccia, and flows; tuffaceous siltstone, sandstone, and minor bioclastic limestone (lower member). Age of chert member is Pennsylvanian and Mississippian; age of lower member is Mississippian

MDtt — **Taylor Formation (Mississippian and (or) Devonian)**—Andesitic flows, tuff breccia, tuff, and tuffaceous turbidites

Dts — **Sierra Buttes Formation (Devonian)**—Quartz-rich felsic tuff, tuff breccia, and rhyolitic intrusive rocks; andesitic hyaloclastite, tuff breccia, and intrusive rocks

Dtg — **Grizzly Formation (Devonian)**—Conglomerate, sandstone, slate, and minor chert and limestone

Dhi — **Hypabyssal intrusive rocks (Devonian)**—Rhyolitic and andesitic dikes and sills

Dgr — **Granite (Devonian)**—Medium-grained biotite granite of the Wolf Creek stock (Saleeby and others, 1987)

Bowman Lake batholith—Consists of:

Dbg — **Granite (Devonian)**

Dbgd — **Granodiorite (Devonian)**

Dbt — **Trondhjemite (Devonian)**

Dbit — **Inclusion-rich trondhjemite (Devonian)**

Shoo Fly Complex (Devonian? to Ordovician?)—Consists of:

DOss — **Sierra City melange (Devonian? to Ordovician?)**—Disrupted quartzite-pelite matrix with blocks of serpentinite, gabbro, mafic volcanic rocks, limestone, and limestone breccia

DOsc — **Culbertson Lake allochthon (Devonian? to Ordovician?)**—Alkali basalt, chert, limestone, and quartz-rich and volcaniclastic sandstone

DOsd — **Duncan Peak allochthon (Devonian? to Ordovician?)**—Ribbon chert and siliceous argillite

DOslu — **Lang sequence, undivided (Devonian? to Ordovician?)**—Quartzite-pelite turbidites, minor interbedded chert and limestone. Locally, divided into:

DOsls — **Screwauger Breccia (Devonian? to Ordovician?)**—Chaotic matrix of disrupted quartzite and black pelite containing blocks of massive quartzite, chert, quartz-granule conglomerate, and chert breccia

DOslb — **Barney Cavanah Ridge Formation (Devonian? to Ordovician?)**—Purple and green pelite with interbedded quartzite; local zones of disrupted quartzite and pelite contain blocks of massive quartzite, chert, and quartz-granule conglomerate

DOslv — **Big Valley Bluff Formation (Devonian? to Ordovician?)**—Quartzite-pelite turbidites with minor interbeds of chert and limestone

DOsla — **Antoine Canyon Formation (Devonian? to Ordovician?)**—Thick-bedded, commonly amalgamated, parallel-laminated quartzite; local zones of ripple cross-laminated quartzite and intraformational slump folds

mum — **Mafic and ultramafic rocks of Feather River peridotite belt (age uncertain)**

ROCKS EAST OF TALBOT FAULT ZONE

Lake Tahoe sequence—Consists of:

Jlp — **Pelite unit (Jurassic)**—Hornfelsed black pelite with minor interbedded volcaniclastic sandstone; provisionally assigned a Jurassic age on basis of lithologic similarity to the Sailor Canyon Formation

Jle — **Ellis Peak Formation (Jurassic)**—Thin- to thick-bedded, fine-grained quartz arenite and calcareous pelite; quartz-arenite beds have locally erosive bases and hummocky cross-stratification

Jlb — **Blackwood Creek Formation (Jurassic)**—Variably metamorphosed black slate and interbedded gray limestone, sandy limestone, and volcaniclastic sandstone debris-flow beds

Mlo — **Onion Creek Formation (Mississippian? or younger?)**—Limestone, quartzite, and calc-silicate rock

Mls — **Serena Creek Formation (Mississippian or younger)**—Intensely recrystallized ribbon chert and minor interbeds and partings of black siliceous argillite

MDlp ls — **Picayune Valley Formation (Mississippian and Devonian)**—Black slate, quartzite, chert-rich conglomerate, and limestone (**ls**); fine-grained felsic tuff, felsic debris-flow beds, and andesitic tuff breccia in the lower part

Shoo Fly Complex (Devonian? to Ordovician?)—Consists of:

DOslu — **Lang sequence, undivided (Devonian? to Ordovician?)**—Quartzite-pelite turbidites, minor chert and chert breccia

Contact

Fault—Dashed where approximately located, queried where inferred, dotted where concealed; arrows show direction of inferred horizontal displacement

Normal fault—Dashed where approximately located; bar and ball on downthrown block

Thrust fault—Dashed where approximately located, queried where inferred, dotted where concealed; sawteeth on upper plate

x107 — **Fossil locality**—Number refers to "Catalog of fossil localities"

•I5 — **Isotopic-age sample site**—Number refers to table 1

Base from U.S. Geological Survey, 1:250,000
Chico, 1958 (revised 1970); Susanville, 1962

SCALE 1: 250 000

5 0 5 10 15 20 25 MILES

5 0 5 10 15 20 25 KILOMETERS

INTERIOR—GEOLOGICAL SURVEY, RESTON, VA—1992

GEOLOGIC MAP OF THE NORTHERN SIERRA TERRANE, CALIFORNIA, NORTH OF LATITUDE 39°N

By
David S. Harwood

1992

Harwood, D.S., 1992, Stratigraphy of the Paleozoic and lower Mesozoic rocks in the northern Sierra terrane, California: U.S. Geological Survey Bulletin 1957