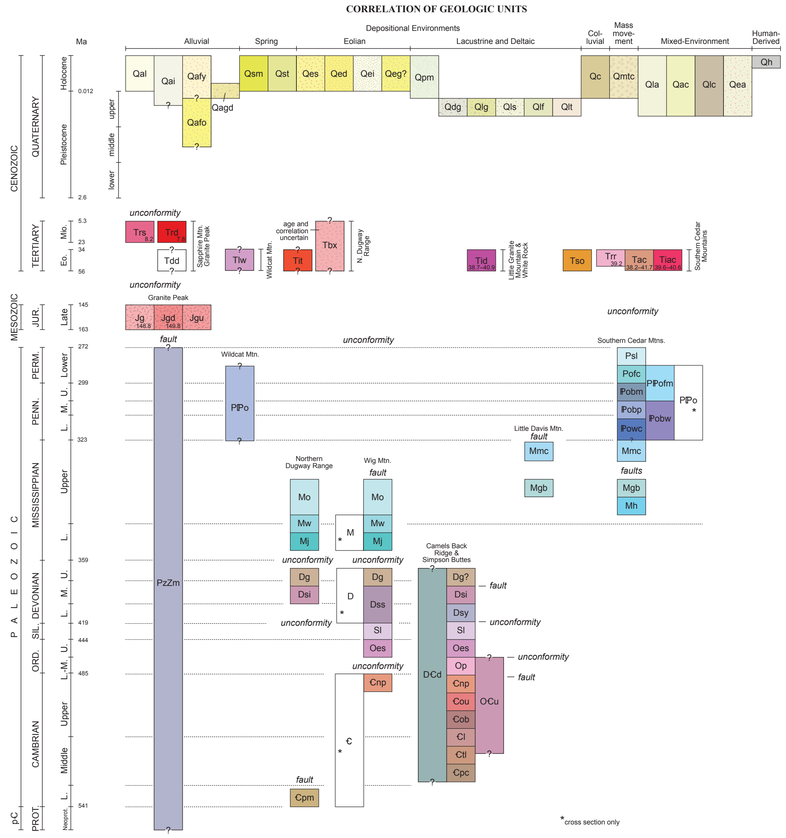
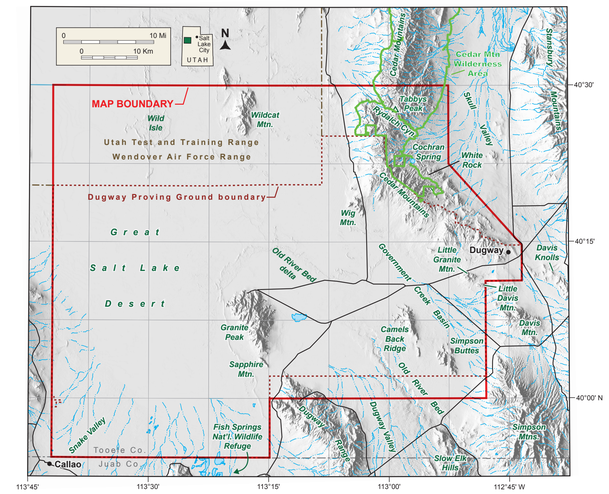
CORRELATION OF GEOLOGIC UNITS

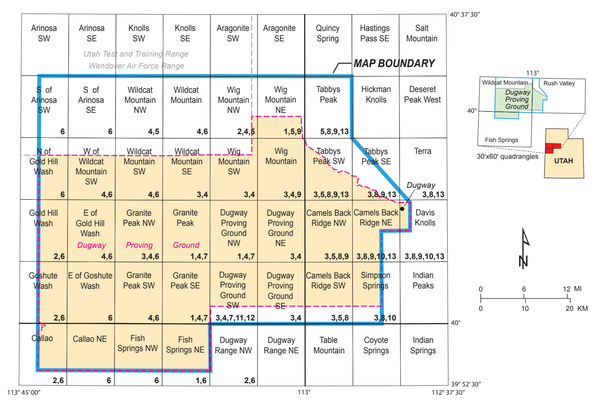


GEOLOGIC SYMBOLS

- Contact
- Normal fault, concealed – Inferred principally from gravity data; bar and ball on down-thrown side
- High-angle fault – Dashed where approximately located, dotted where concealed; bar and ball and/or arrows indicate relative displacement if known
- Fault of unknown geometry or sense of displacement – Dashed where approximately located, dotted where concealed
- Thrust fault – Dashed where approximately located, dotted where concealed; teeth on upper plate
- Low-angle normal fault – Dotted where concealed; teeth on upper plate
- Lineament – From aerial photo interpretation
- Igneous dike
- Igneous dike
- Axial trace of anticline – Dashed where approximately located, dotted where concealed; arrow shows plunge
- Axial trace of syncline – Dashed where approximately located, dotted where concealed; arrow shows plunge
- Shorelines of the Bonneville lake cycle –
  - Bonneville shoreline
  - Provo shoreline
  - Stansbury shoreline
  - Other regressive shoreline
- Channel systems of the Old River Bed delta (see text p. 4) –
  - Exposed (eroded) – Center line, map unit Qasd
  - Buried (uneroded) – Center line, map unit Qasd
  - Gravel – Channel extent, map unit Qagd
- Old River Bed delta ridge crest and beach ridge crest
- Strike and dip of bedding (refer to index map for prior mapping sources) –
  - Inclined
  - Inclined approximate, approximate dip included where known
  - Inclined, photo-interpreted
- Strike and dip of mineral foliation
- Strike of steeply dipping joint from aerial photo interpretation
- Sand and gravel pit
- Adit
- Shaft
- Spring
- Rock sample location and number for age and geochemical analyses (see tables 3 and 4, also Clark, 2015)
- Rock sample location and number for geochemical analysis (see Clark, 2015)
- Fossil age sample location and number for age evaluation (see table 5)
- Qed/Qlf – Indicates thin cover of the first unit overlying the second unit
- A——A' – Line of cross section



Primary geographic features and boundaries associated with Dugway Proving Ground and adjacent areas.



Index map showing primary sources of geologic mapping, 7.5' quadrangles, and 30' x 60' quadrangles.

1. Oviatt, C.G. (Kansas State University), 2006–2007, field and photogeologic mapping.

2. Oviatt, C.G. (Kansas State University), 2006–2007, photogeologic mapping.

3. Oviatt, C.G. (Kansas State University), and Clark, D.L. (Utah Geological Survey), 2006–2007, field and photogeologic mapping.

4. Page, D. (Desert Research Institute), 2006–2007, field and photogeologic mapping of Old River Bed delta channel systems.

5. Clark, D.L. (Utah Geological Survey), 2007–2008, field and photogeologic mapping.

6. Clark, D.L. (Utah Geological Survey), 2007–2008, photogeologic mapping.

7. Clark, D.L., Biek, R.F., Willis, G.C., Brown, K.D., Kuehne, P.A., Ehler, J.B., and Ege, C.L., 2009, Geologic map of the Granite Peak and Sapphire Mountain area, U.S. Army Dugway Proving Ground, Tooele County, Utah: Utah Geological Survey Map 238, scale 1:24,000, CD.

8. Clark, D.L., Kirby, S.M., and Oviatt, C.G., in review, Geologic map of the Rush Valley 30' x 60' quadrangle, Tooele, Utah and Salt Lake Counties, Utah: Utah Geological Survey Map, scale 1:62,500.

9. Maurer, R.E., 1970, Geology of the Cedar Mountains, Tooele County, Utah: Salt Lake City, University of Utah, Ph.D. dissertation, 184 p., 10 plates, scale 1:43,700.

10. Moore, W.J., and Sorensen, M.L., 1977, Reconnaissance geologic map of northern Simpson Mountains, Davis Mountain, and adjacent areas, Tooele County, Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-905, 1 plate, scale 1:48,000.

11. Staatz, M.H., 1972, Geologic map of the Dugway Proving Ground SW quadrangle, Tooele County, Utah: U.S. Geological Survey Map GQ-992, 1 plate, scale 1:24,000.

12. Kelley, D.L., and Yambrick, R.A., 1988, Map showing wallrock alteration and geology of the Dugway mining district, northern Dugway Range, Tooele County, Utah: U.S. Geological Survey Miscellaneous Field Studies Map MF-2045, 1 plate, scale 1:12,000.

13. Sack, D., 1993, Quaternary geologic map of Skull Valley, Tooele County, Utah: Utah Geological Survey Map 150, 16 p., 1 plate, scale 1:100,000.

LITHOLOGIC COLUMN
Wig Mountain

TIME-STRATI-GRAPHIC UNIT		GEOLOGIC UNIT	MAP SYMBOL	THICKNESS Feet (Meters)	LITHOLOGY
Wig Mountain thrust fault					
MISSISSIPPIAN	Upper	Ochre Mountain Limestone	Mo	600+ (180+)	
	Lower	Woodman Formation	Mw	1000 (300)	
		Joana Limestone	Mj	300 (90)	Unconformity
DEVONIAN	U	Guilmette Formation	Dg	400–800 (120–250)	Devonian strata thinned near Stansbury uplift
	L. M.	Simonson Dol. & Sevy Dol.	Dss	100 (30)	– Light colored Unconformity
SILURIAN		Laketown Dolomite	Sl	1800 (550)	– Thinner-bedded marker beds
ORD.	U	Ely Springs Dolomite	Oes	300 (90)	Unconformity-Tooele arch
CAMBRIAN	Upper	Notch Peak Formation	Cnp	1000+ (300+)	

LITHOLOGIC COLUMN
Camels Back Ridge and Simpson Buttes

TIME-STRATI-GRAPHIC UNIT		GEOLOGIC UNIT		MAP SYMBOL		THICKNESS Feet (Meters)	LITHOLOGY
DEVONIAN	M. & U.	Guilmette Formation?		Dg?	DCd	500+ (150+)	
Fault							
DEVONIAN	Middle	Simonson Dolomite		Dsi	DCd	500+ (150+)	Light, laminated dolomite
	Lower	Sevy Dolomite		Dsy		250 (75)	Unconformity
SILURIAN		Laketown Dolomite		Sl	DCd	500+ (150+)	Cherty
ORDOVICIAN	Upper	Ely Springs Dolomite		Oes		250 (75)	– Light dolomite - Floride Mbr.
	M. & L.	Pogonip Group		Op	OCu	150+ (45+)	Unconformity - Tooele arch
Fault							
CAMBRIAN	Upper	Notch Peak Formation		Cnp	OCu	500+ (150+)	Cliffs
		Orr Formation	upper part	Cou		200 (60)	
			Big Horse Limestone Member	Cob		425 (130)	
		Lamb Dolomite		Cl	DCd	900 (275)	Upper - less resistant, rusty and pink weathering
	Middle	Trippe Limestone		Ctl		700 (215)	Less resistant and ledgy
		Pierson Cove Formation		Cpc		800+ (245+)	Locally dolomitized

(2300 (700))

LITHOLOGIC COLUMN
Southern Cedar Mountains

TIME-STRATI-GRAPHIC UNIT		GEOLOGIC UNIT		MAP SYMBOL		THICKNESS Feet (Meters)	LITHOLOGY
TERTIARY	Eocene	Volcanic and sedimentary rocks		see correlation chart		various	~38–42 Ma
		older Tertiary strata		Tso		12+ (4+)	Unconformity ?
PERMIAN	Lower	Permian sandstone, limestone, and dolomite		Psl		2000+ (600+)	Unconformity - not exposed
		Freeman Peak and Curry Peak Formations		Pofc	PPofm	3500 (1065)	*Parafusulina*
							Schwagerina
							"Worm trail" markings
							Unconformity?
PENNSYLVANIAN	Upper	Oquirrh Group	Bingham Mine Formation	Pobm		2700 (825)	*Triticites*
	Middle		Butterfield Peaks Formation	Pobp	Pobw	4150 (1265)	Cliffy near top
							Fusulina
							Beedeina
							Cyclic lithologic character
							Millerella
							Chaetetes
	Lower		West Canyon Limestone	Powc		500–800 (150–245)	
MISSISSIPPIAN	Upper	Manning Canyon Formation		Mmc		1500–2000 (450–600)	Interval of regional decollement
Faults							
MISSISSIPPIAN	Upper	Great Blue Limestone		Mgb		2440+ (745+)	
		Humbug Formation		Mh		1014+ (310+)	

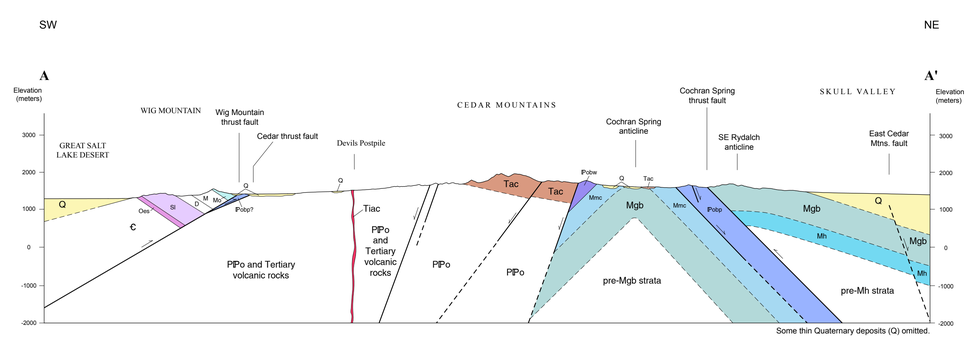
LITHOLOGIC COLUMN
Northern Dugway Range and Sapphire Mountain

TIME-STRATI-GRAPHIC UNIT		GEOLOGIC UNIT	SYMBOL	THICKNESS Feet (Meters)	LITHOLOGY
TERT.	Mio.	Rhyolite of Sapphire Mountain	Trs	450+ (140+)	8.2 Ma $^{40}Ar/^{39}Ar$
Not in contact					
MISSISSIPPIAN	Upper	Ochre Mountain Limestone	Mo	700+ (200+)	
	Lower	Woodman Formation	Mw	785 (240)	
		Joana Limestone	Mj	315 (95)	Unconformity
DEVONIAN	Upper	Guilmette Formation	Dg	2180+ (660+)	Hanauer Formation*
					Gilson Dolomite*
	Middle				Stromatoporoids
					Goshoot Formation*
		Simonson Dolomite	Dsi	1080+ (330+)	Engelmann Fm.*
Buckhorn fault					
CAMB.	Lower	Prospect Mountain Quartzite	Cpm	450+ (140+)	

*Local names of Staatz (1972) not used on this map.

LITHOLOGIC COLUMN
Little Davis Mountain

TIME-STRATI-GRAPHIC UNIT		GEOLOGIC UNIT	MAP SYMBOL	THICKNESS Feet (Meters)	LITHOLOGY
Onaqui fault					
		Manning Canyon Fm.	Mmc	20+ (6+)	
Fault					
MISSISSIPPIAN	Upper	Great Blue Limestone	Mgb	1200+ (370+)	

LITHOLOGIC COLUMN
Wildcat Mountain

TIME-STRATI-GRAPHIC UNIT		GEOLOGIC UNIT	MAP SYMBOL	THICKNESS Feet (Meters)	LITHOLOGY
Lower Penn. - Permian		Oquirrh Group, undivided	PIPo	1500+ (460+)