STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
UTAH GEOLOGICAL AND MINERAL SURVEY

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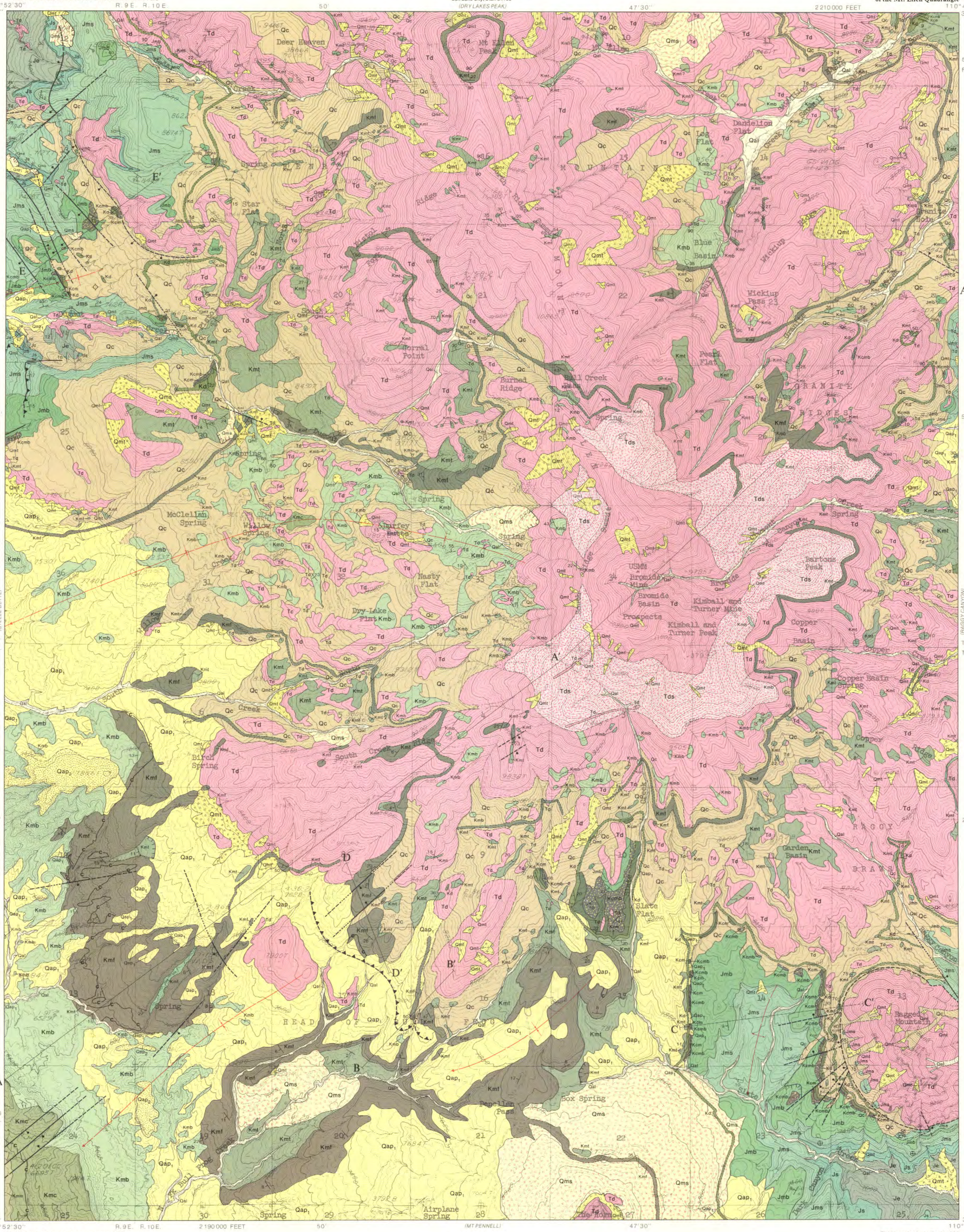


Base from U.S. Geological Survey: advance sheet
Mt. Ellen 3 SE, 1962

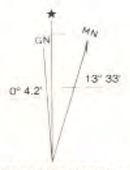
SCALE 1:24 000

CONTOUR INTERVAL 40 FEET

Field mapping by author in 1982
Thesis advisors: J. Keith Rigby, L. F. Hintze, B.J. Kowallis, Brigham Young University
Patricia H. Speranza, Cartographer

PROVISIONAL GEOLOGIC AND COAL RESOURCE MAP OF THE MT. ELLEN QUADRANGLE, GARFIELD COUNTY, UTAH

by
Loren B. Morton



1986 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

QUADRANGLE LOCATION

1986

90

CONTACT
Dashed where location inferred; dip indicated

INFERRED OUTCROP
Indicated by surficial evidence

FAULTS
Dashed where location inferred; dotted where covered

Normal fault
Bar and ball on downthrown side

Strike-slip fault
Arrows show relative movement

Low-angle reverse fault
Sawteeth on upper plate

Gravity slide block

TRACE OF AXIAL SURFACE OF FOLD
Arrows show direction of plunge; dotted where covered

Anticline

Syncline

STRIKE AND DIP OF BEDDING

29
Inclined

Vertical

Horizontal

34
Overturned

— c — c —
COAL OUTCROP

Dry hole

DESCRIPTION OF MAP UNITS

QUATERNARY

Qal | Qmt | Qms | Qc | Qap_1 | Qap_2

Quaternary—Alluvium talus, landslide debris, colluvium, pediment gravels.

TERTIARY

Td | Tds

Tertiary—*Diorite porphyry of Mt. Ellen stock, light grey with abundant oligoclase phenocrysts, weathers to dark brown. Associated minor basalt sills, contact metamorphics, and shatter zone.*

UPPER CRETACEOUS — Mancos Shale

Kmm — Masuk Shale Member—*Irregularly bedded, sandy grey shale, sandy carbonaceous shale and sandstone.*

Kmc — Muley Canyon Sandstone Member—*(Upper) Interbedded sandstone, siltstone, carbonaceous mudstone, shale, and coal. (Lower) Sandstone, thick-bedded, cliff-forming unit.*

Kmb — Blue Gate Shale Member—*(Upper) Interbedded yellowish-grey, very thin bedded to laminated, very fine grained, calcareous, quartzose sandstone and medium grey, gypsiferous shale. (Lower) Dark grey, calcareous shale, upper portion bentonitic.*

Unconformity

Kmf — Ferron Sandstone—*(Upper) Lenticular carbonaceous shale; coal; olive-grey marine shale; light-grey, fine-grained, quartzose sandstone. (Middle) Grayish-orange, fine- to medium-grained, quartzose sandstone with minor coaly and carbonaceous horizons. (Lower) Very thin-bedded, greyish-orange, calcareous, kaolinitic siltstone, sandstone, and shale; coarsening upward.*

Kmt — Tununk Shale Member—*Medium bluish-grey, thinly laminated to laminated, silty, calcareous, gypsiferous shale; minor thin beds of very fine-grained, quartzose sandstone.*

Kd — Dakota Sandstone Formation—*Pale-orange to greyish-yellow, calcareous, very thin to medium grained; with minor interbeds of siltstone; ledge forming.*

Unconformity

LOWER CRETACEOUS — Cedar Mtn. Fm.

Kcm — Upper Unnamed Member—*Interbedded, light-grey to brownish-grey, carbonaceous, laminated shale and siltstone with minor laminations of sandstone; coarsens upward.*

Kcmb — Buckhorn Conglomerate Member—*Brownish-grey to yellowish-brown sandstone and conglomerate. (Upper) Thin-bedded, fine-grained, cross-laminated sandstone. (Lower) Massive-bedded conglomerate.*

Unconformity

UPPER JURASSIC — Morrison Fm.

Jmb — Brushy Basin Member—*(Upper) Pale-greenish-yellow with minor, thin-bedded, fine-grained sandstone; mudstone; claystone. (Lower) Moderate-red mudstone and claystone.*

Jms — Salt Wash Member—*Light-grey to brownish-grey, very fine- to granular-grained sandstone with subordinate reddish and greenish bentonitic mudstone. General upward coarsening in sandstone.*

Unconformity

Js — Summerville Formation—*Pale-reddish-brown to light-brownish-grey siltstone, mudstone, and shale interbedded with occasional hematitic gypsum.*

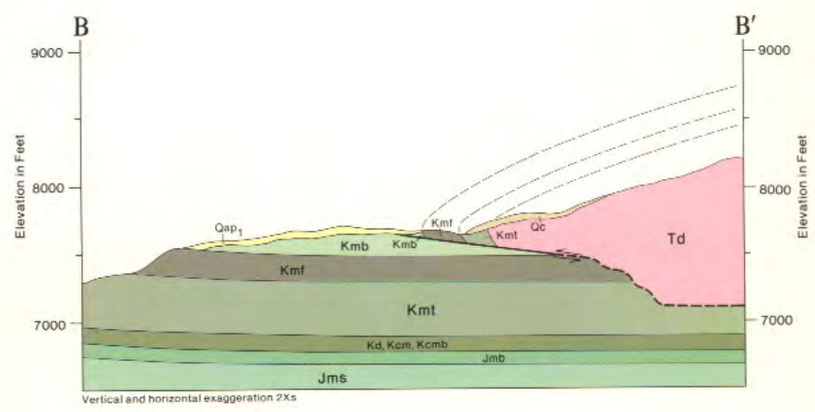
Jc — Curtis Formation—*Light-greenish-grey, glauconitic, calcareous siltstone, with minor greyish-purple shale.*

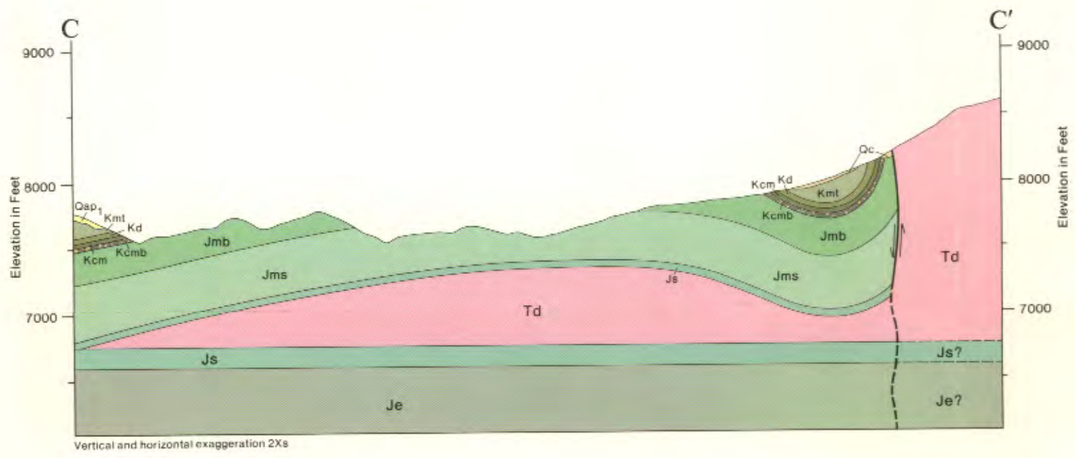
Unconformity

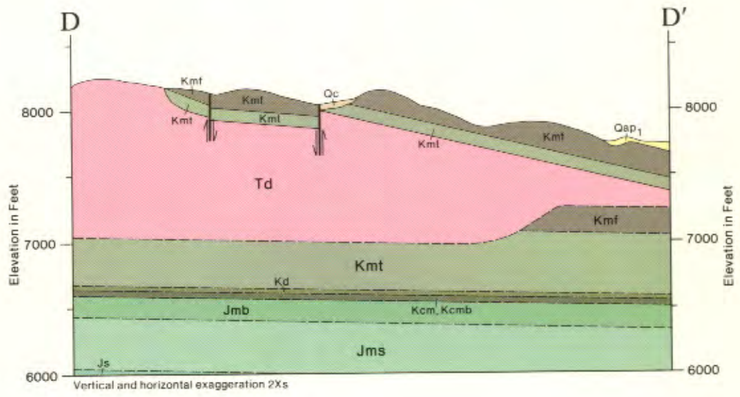
Je — Entrada Sandstone—*Pale-red to pale-orange, very fine grained, thin-bedded to massive, calcite-cemented, sandstone and minor siltstone; minor gypsum. Weathers to ledges with minor slopes and low, resistant, rounded outcrops.*

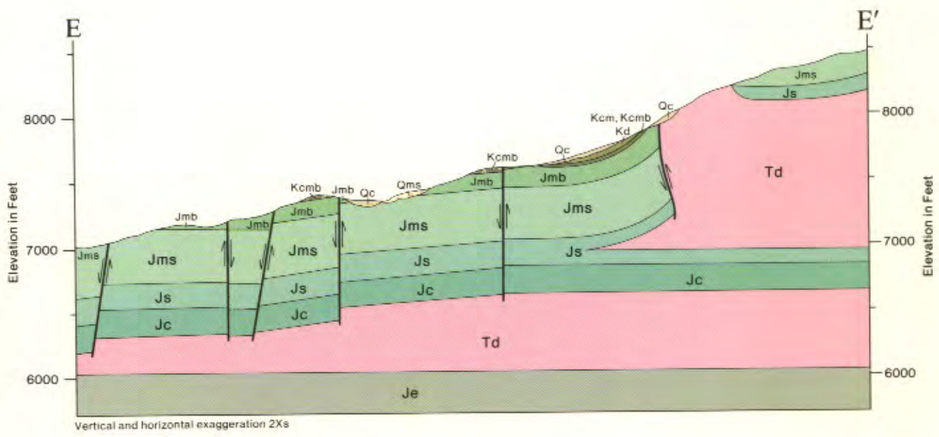
PERIOD	FORMATION		SYMBOL	THICKNESS feet (meters)	LITHOLOGY
QUATERNARY	Alluvium, talus landslide debris, colluvium pediment gravels		Qal Qmt Qms Qc Qap_1 Qap_2	0-50 (0-15)	
QUATERNARY	igneous intrusions		Td Tds		
TERTIARY	Mancos Shale	Masuk Shale Member (lowest unit of Whitlock, 1983)	Kmm	175 (53)	
UPPER CRETACEOUS	Mancos Shale	Muley Canyon Sandstone Member	Kmc	345-390 (105-119)	coal
UPPER CRETACEOUS	Mancos Shale	Blue Gate Shale Member	Kmb	1525 (465)	
UPPER CRETACEOUS	Mancos Shale	Ferron Sandstone	Kmf	195 (59)	coal
UPPER CRETACEOUS	Mancos Shale	Tununk Shale Member	Kmt	440 (134)	
UPPER CRETACEOUS	Dakota Sandstone		Kd	40 (12)	
LOWER CRETACEOUS	Cedar Mtn. Fm.	upper member	Kcm	25 (8)	
LOWER CRETACEOUS	Cedar Mtn. Fm.	Buckhorn Conglomerate Member	Kcmb	25-55 (7.5-16.5)	
LOWER CRETACEOUS	Morrison Fm.	Brushy Basin Member	Jmb	120 (37)	
UPPER JURASSIC	Morrison Fm.	Salt Wash Member	Jms	390 (118)	
UPPER JURASSIC	Summerville Formation		Js	190 (58)	
UPPER JURASSIC	Curtis Formation		Jc	30 (9)	
UPPER JURASSIC	Entrada Sandstone		Je	450 (137)	

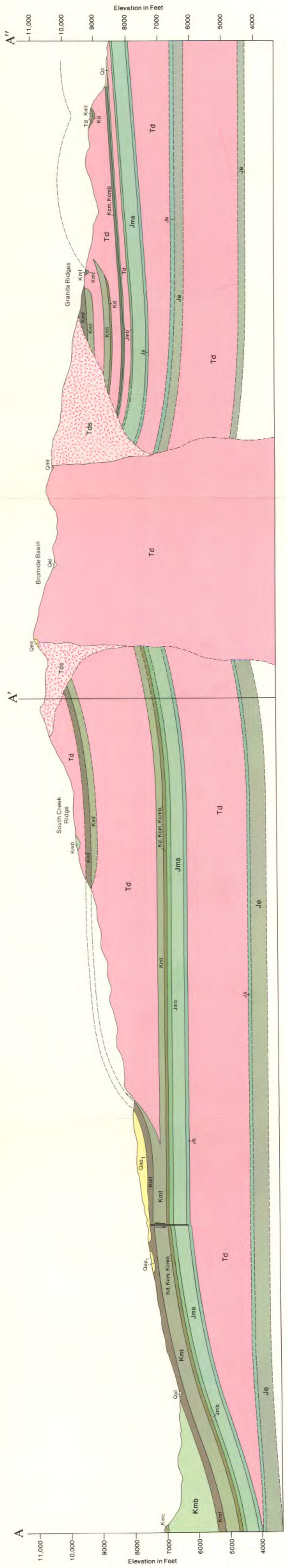
Arrows indicate preferred levels of intrusion











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Dashed where location inferred

FAULTS
Dashed where location inferred

Normal fault
Bar and ball on downthrown side

Strike-slip fault
Arrows show relative movement

Low-angle reverse fault
Sawteeth on upper plate

7800

STRUCTURE CONTOUR
Dashed where location inferred; interval 200 feet

Td
Diorite porphyry

Tds
Shatter zone

Data Point

UTAH
QUADRANGLE LOCATION

GN MN 0° 4.2' 13° 33'
1986 MAGNETIC NORTH
DECLINATION AT CENTER OF SHEET

STRUCTURE CONTOUR MAP OF THE FERRON SANDSTONE