

EXPLANATION OF MINERAL RESOURCE POTENTIAL

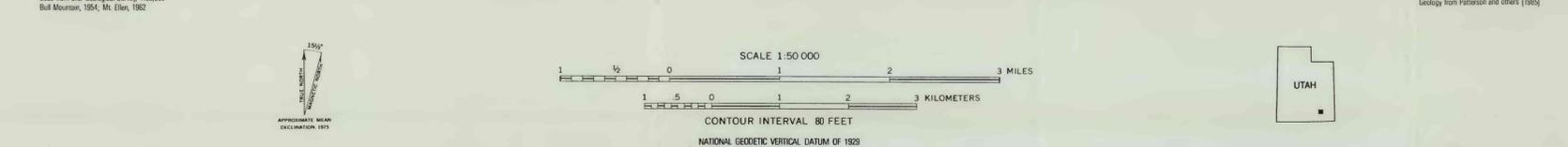
H/C	Geologic terrane having high mineral resource potential for gypsum, with certainty level C
H/B	Geologic terrane having high mineral resource potential for gypsum, with certainty level B
L/B	Geologic terrane having low mineral resource potential for uranium and vanadium, with certainty level B—Applies to entire study area
L/C	Geologic terrane having low mineral resource potential for copper, lead, zinc, molybdenum, silver, gold, coal, oil and gas, and geothermal energy, with certainty level C—Applies to entire study area

CORRELATION OF MAP UNITS

Qal	Qcl	Qg	Holocene	QUATERNARY
Unconformity			Pleistocene	
Tps	Tpl	Tpsh	Eocene	TERTIARY
Unconformity				
Kmm	Kme	Kmbg	Upper Cretaceous	CRETACEOUS
Unconformity				
Kmf	Kmt	Kd	Lower Cretaceous	
Unconformity				
Kcm	Jmb	Jms	Upper Jurassic	JURASSIC
Unconformity				
Js	Jcu	Jc	Middle Jurassic	
Unconformity				
Jen			JURASSIC AND TRIASSIC(?)	

DESCRIPTION OF MAP UNITS

Qal	Alluvium (Holocene)—Poorly sorted deposits of clay, silt, sand, and gravel deposited in and along stream courses
Qcl	Colluvium (Holocene)—Talus, landslide debris, boulders, and sorted deposits of boulders, gravel, sand, and mud; thickness 0-100 ft or more
Qg	Gravel deposits (Holocene and Pleistocene)—Poorly sorted mud, sand, and gravel on pediment and terrace surfaces; thickness 0-50 ft
Tps	Porphyritic intrusive rocks of the Mt. Ellen stock (Eocene)—Light-gray diorite porphyry
Tpl	Diorite porphyry (Eocene)—Lacoliths, byssaloliths, and minor intrusive masses; radiometric ages of 44 and 48 m.y. (million years) (Armstrong, 1969) and fission-track ages of 21.2-29.2 m.y. (Sullivan, 1987)
Tpsh	Diorite porphyry (Eocene)—Irregularly intruded into shattered sedimentary rock in a zone surrounding the Mt. Ellen stock
Kmm	Mancos Shale (Upper Cretaceous)—Vertically alternating marine and nonmarine units aggregating 3,200-3,600 ft in thickness
Kme	Masuk Member—Yellowish-green to yellowish-gray, slightly bentonitic mudstone and local black, carbonaceous mudstone interbedded with yellowish-gray, very fine grained to fine-grained, crossbedded sandstone; forms slope; mostly alluvial-plain deposits but may include some brackish-water estuarine deposits (Peterson and others, 1980b); approximate thickness 600-685 ft
Kmbg	Emery Sandstone Member—Light to dark-brown, fine to medium-grained sandstone; upper part interbedded with greenish-gray, laminated to thinly bedded mudstone, black, carbonaceous mudstone, and coal seams; sandstone often thinly bedded or cross-stratified; generally forms alternating slopes and cliffs; marginal marine, lagoonal-paludal, and alluvial-plain deposits. Corresponds to Muley Canyon Sandstone Member of Smith (1984); approximate thickness 300-445 ft
Kmf	Blue Gate Member—Gray to dark-gray bentonitic marine shale; horizontally laminated and/or ripple cross-laminated; locally interbedded with very fine grained sandstone; forms broad slope; offshore marine deposits; approximate thickness 1,100-1,500 ft
Kmt	Ferron Sandstone Member—Yellowish-gray to light-brown, fine to medium-grained, laminated, crossbedded sandstone; upper part interbedded with black, carbonaceous mudstone and coal beds; forms alternating slopes and cliffs; marginal marine, lagoonal-paludal, and alluvial-plain deposits; approximate thickness 200-385 ft
Kd	Tununk Member—Gray to bluish-gray bentonitic mudstone and silty shale locally interbedded with yellowish-gray, very fine grained to fine-grained, laminated to thin-bedded, calcareous sandstone; forms a broad bench; offshore marine deposits; approximate thickness 530-720 ft
Kcm	Dakota Sandstone (Upper Cretaceous)—Light-gray to light-brown, fine to medium-grained sandstone and locally conglomeratic sandstone; sandstone moderately to well cemented, horizontally laminated and/or crossbedded, and interbedded in lower part with black, carbonaceous mudstone and thin, sub-economic coal seams; forms cliffs and slopes; fluvial, lagoonal-paludal, and marginal-marine deposits; thickness ranges from 0 to 90 ft or more
Jmb	Cedar Mountain Formation (Lower Cretaceous)—Light-gray to gray, medium- to coarse-grained pebbly sandstone interbedded with yellowish-gray to light-green slightly bentonitic mudstone; may contain a basal conglomerate bed; alluvial-plain deposits; thickness ranges from 0 to 170 ft
Jms	Morrison Formation (Upper Jurassic)—Continental deposits 265-655 ft thick
Jcu	Brushy Basin Member—Light-gray to gray-green and reddish-brown to purple bentonitic mudstone containing several lenses of chert-pebble conglomerate; slope former; alluvial plain, mudflat, and probable lacustrine deposits; approximate thickness 100-250 ft
Jen	Salt Wash Member—Light-gray to light-brown, fine to medium-grained, crossbedded or laminated sandstone, conglomeratic sandstone, and conglomerate; interstratified with grayish-green to reddish-brown siltstone and mudstone; locally a major uranium-bearing unit; forms cliffs; alluvial plain, mudflat, and lacustrine deposits; approximate thickness 100-500 ft. Tidwell Member contains gypsum and is mapped with the Salt Wash; lacustrine deposits; approximate thickness 30 ft
Jc	Summerville Formation (Middle Jurassic)—Moderate-reddish-brown, laminated to very thin bedded mudstone and siltstone; locally containing light-gray to grayish-green gypsum lenses 0-3 ft thick; forms broad slopes with prominent cliff at top; shallow-water, restricted-marine and, locally, evaporite deposits; approximate thickness 130-250 ft
Jcu	Curtis Formation (Middle Jurassic)—Light-gray to grayish-green, fine to medium-grained, glauconitic sandstone and silty shale, limestone, chert, or shale pebble conglomerate locally present at base; shallow-water marine deposits; thickness ranges from 0-175 ft
Je	Entrada Sandstone (Middle Jurassic)—Reddish-orange to reddish-brown, very fine grained to fine-grained sandstone and silty sandstone; very thin to thick-bedded; generally forms slope; eolian and sabkha deposits; approximate thickness 300-700 ft
Jc	Carmel Formation (Middle Jurassic)—Yellowish-orange to moderate reddish-brown, very fine grained to fine-grained sandstone and dark-reddish-brown mudstone; locally contains gray to greenish-gray limestone and coarsely crystalline white gypsum, marine, tidal flat, and sabkha deposits; approximate thickness 100-625 ft
Jen	Navajo Sandstone (Jurassic and Triassic(?))—Light-gray to light-orange, fine to medium-grained, well-sorted sandstone; thickly crossbedded; locally contains lenses of mudstone, cherty limestone, or dolomite, cliff former; eolian and minor playa deposits; approximate thickness 500-820 ft



LEVEL OF RESOURCE POTENTIAL	U/A	H/B	H/C	H/D
	UNKNOWN	MODERATE POTENTIAL	MODERATE POTENTIAL	MODERATE POTENTIAL
	POTENTIAL	LOW POTENTIAL	LOW POTENTIAL	LOW POTENTIAL
		NO POTENTIAL	NO POTENTIAL	NO POTENTIAL
	A	B	C	D
	LEVEL OF CERTAINTY →			

LEVELS OF RESOURCE POTENTIAL

H High mineral resource potential

M Moderate mineral resource potential

L Low mineral resource potential

U Unknown mineral resource potential

N No known mineral resource potential

LEVELS OF CERTAINTY

A Available data not adequate

B Data indicate geologic environment and suggest level of resource potential

C Data indicate geologic environment, give good indication of level of resource potential, but do not establish activity of resource-forming processes

D Data clearly define geologic environment and level of resource potential and indicate activity of resource-forming processes in all or part of the area

Diagram showing relationships between levels of mineral resource potential and levels of certainty. Shading shows levels that apply to this study area

— Contact—Dashed where approximately located; dotted where concealed

—U— Normal fault—Dashed where approximately located; U, upthrown side; D, downthrown side

— Strike and dip of beds

—6— Apparent

—17— Inclined

—90— Vertical

MAP SHOWING MINERAL RESOURCE POTENTIAL AND GEOLOGY OF THE BULL MOUNTAIN WILDERNESS STUDY AREA, GARFIELD AND WAYNE COUNTIES, UTAH