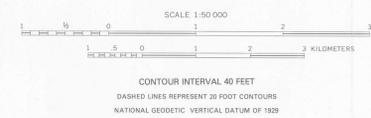


### MINERAL RESOURCE POTENTIAL MAP OF THE MT. ELLEN-BLUE HILLS WILDERNESS STUDY AREA AND BULL MOUNTAIN STUDY AREA, GARFIELD AND WAYNE COUNTIES, UTAH

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1985



Base from U.S. Geological Survey, 1:62,500 Bull Mountain and Fruita, 1954; Hanksville, 1963; Mt. Ellen, 1962.

**STUDIES RELATED TO WILDERNESS BUREAU OF LAND MANAGEMENT WILDERNESS STUDY AREAS**

The Federal Land Policy and Management Act (Public Law 94-479, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine the mineral values, if any, that may be present. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral survey of the Mt. Ellen-Blue Hills (UT-050-238) Wilderness Study Area, Garfield and Wayne Counties, Utah. This report also presents the results of a geologic survey of the Bull Mountain study area, Garfield and Wayne Counties, Utah, which was formerly designated as the Bull Mountain (UT-050-242) Wilderness Study Area.

**MINERAL RESOURCE POTENTIAL SUMMARY STATEMENT**

Field and laboratory studies of the Mt. Ellen-Blue Hills Wilderness Study Area and Bull Mountain study area in Garfield and Wayne Counties, Utah, were conducted to determine the resource potential of these lands. The studies indicate that the Mt. Ellen-Blue Hills Wilderness Study Area and Bull Mountain study area have low potential for coal, uranium, base metals, and oil and gas resources.

**REFERENCES**

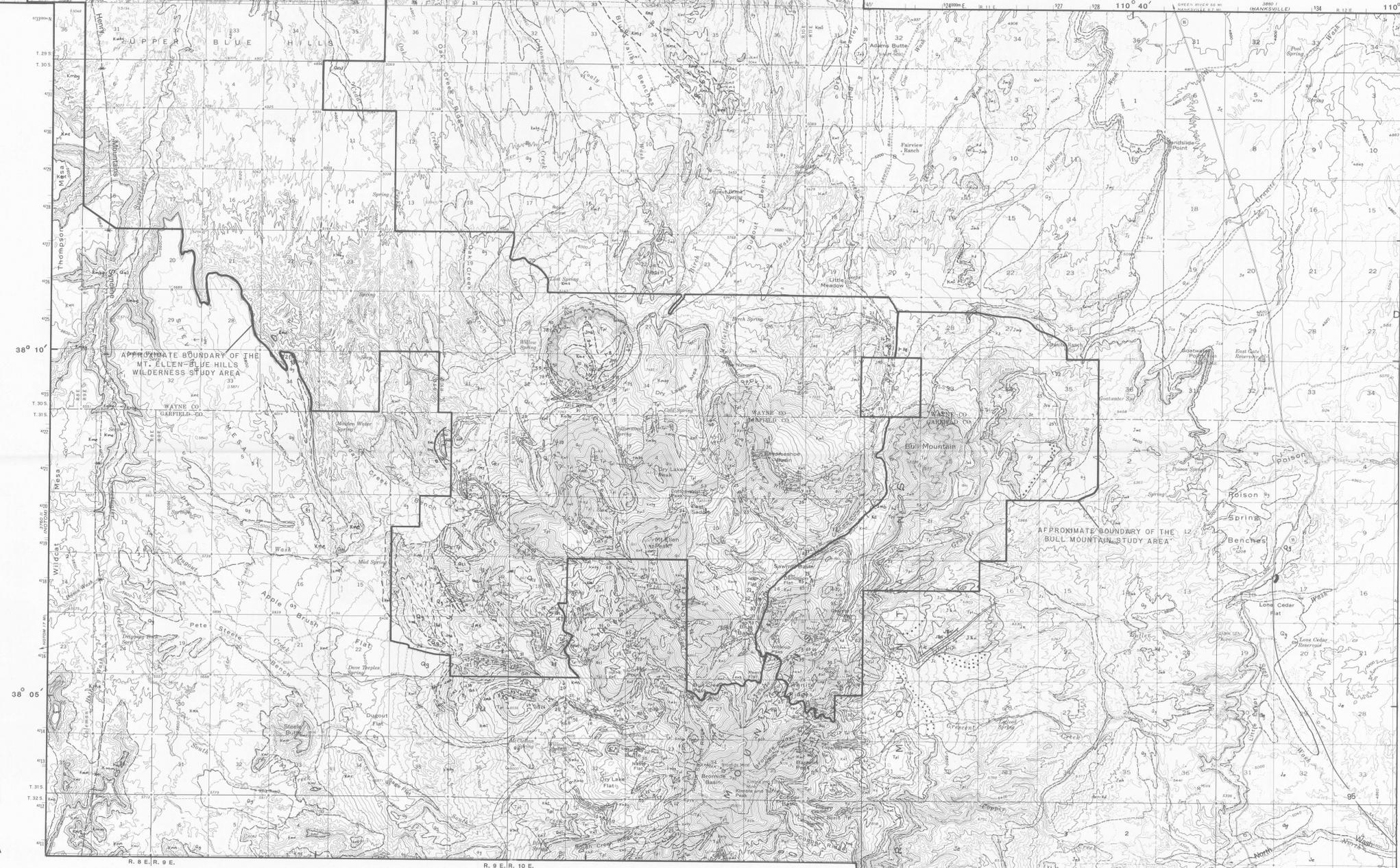
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**INDEX MAP SHOWING LOCATIONS OF THE MT. ELLEN-BLUE HILLS WILDERNESS STUDY AREAS AND THE BULL MOUNTAIN STUDY AREA**



**CORRELATION OF MAP UNITS**

Qal	Qc1	Qg	} QUATERNARY
Unconformity			
Tps	Tp1	Tps	} TERTIARY
Unconformity			
Kmv	Kem	Kmg	} UPPER CRETACEOUS
Kaf	Kat	Kd	
Unconformity			
Ecn	} LOWER CRETACEOUS		
Jms	Jns	} UPPER JURASSIC	
Js	} JURASSIC		
Je	Jc	} MIDDLE JURASSIC	
Jm	} JURASSIC AND TRIASSIC(?)		

**DESCRIPTION OF MAP UNITS**

Qal ALLUVIUM (HOLOCENE)--Poorly sorted deposits of gravel, sand, silt, and clay deposited in stream courses.

Qc1 COLLUVIUM (HOLOCENE)--Talus, landslide debris, torva blocks, and assorted boulders; gravel, sand, and mud; thickness 0-100 ft.

Qg GRAVEL DEPOSITS (HOLOCENE AND PLEISTOCENE)--Poorly sorted gravel, sand, and mud on pediment and terrace surfaces; thickness 0-50 ft.

Tps PORPHYRIC INTUSIVE ROCKS OF THE MT. ELLEN STOCK (EOCENE)--Light-gray dioritic porphyry.

Tp1 DIORITE PORPHYRY (EOCENE)--Laccoliths, dykelets, and minor intrusive masses; radiometric dates of 44 and 48 m.y. (Armstrong, 1969).

TpsH DIORITE PORPHYRY (EOCENE)--Irregularly intruded into shattered sedimentary rock in a zone surrounding the stock.

Kmv MESAEIC FORTIFICATION (UPPER CRETACEOUS)--Yellowish-tan to light-brown, fine-grained sandstone; locally conglomeratic with small pebbles of chert and quartzite; fluvial deposits; conspicuously crossbedded; forms cliffs; corresponds to Laramie Mesa Sandstone of Smith (1984); approximate thickness 295-395 ft.

Kmg MANDUS SHALE (UPPER CRETACEOUS)--Vertically alternating marine and nonmarine units aggregating 3,200-3,600 ft in thickness.

Kem Musk Member--Yellowish-green to yellowish-gray silty bentonitic mudstone and local black, carbonaceous mudstone, interbedded with yellowish-gray, very fine grained to fine-grained, crossbedded sandstone; forms slope; alluvial plain deposits, may include some brackish-water estuarine deposits (Peterson and others, 1980); approximate thickness 600-805 ft.

Kaf 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, lagoon-paludal, and alluvial plain deposits; corresponds to Muley Canyon Sandstone Member of Smith (1984); approximate thickness 300 ft.

Kat Blue Gate Member--Gray to dark-gray bentonitic marl shale, horizontally laminated and/or finely cross-laminated, locally interbedded with very fine grained sandstone; forms broad slope; offshore marine deposits; approximate thickness 1100 ft.

Kd Ferron Sandstone Member--Yellowish-gray to light-brown, fine to medium-grained, laminated, crossbedded sandstone; upper part interbedded with black carbonaceous mudstone and coal seams; marginal marine, lagoon-paludal, and alluvial plain deposits; approximate thickness 200-265 ft.

Kc Tunnet Member--Gray to bluish-gray bentonitic mudstone and siltstone; locally cross-bedded, calcareous sandstone; forms a broad bench; offshore marine deposits; approximate thickness 530-720 ft.

Kj 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 the lower part with black, carbonaceous mudstone and thin, subeconomic coal seams; forms cliff and slope; fluvial, lagoon-paludal, and marginal marine deposits; thickness ranges from 0-90 ft or more.

Ki CEDAR MOUNTAIN FORMATION (LOWER CRETACEOUS)--Light-gray to gray, fine to coarse-grained pebbly sandstone, interbedded with yellowish-gray to light-green silty bentonitic mudstones; may contain a basal conglomerate bed; alluvial plain deposits; thickness ranges from 0-100 ft.

Jms MORRISON FORMATION (UPPER JURASSIC)--Conical deposits 255-455 ft thick.

Jns Brushy Basin Member--Light-gray to gray-green, reddish-brown to purple bentonitic mudstone with several inches of chert pebble conglomerate; forms slope; alluvial plain, mudflat, and probably lacustrine deposits; approximate thickness 100-250 ft.

Js Sandstone and conglomerate; locally cross-bedded 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.

Jc SUMMERSVILLE FORMATION (MIDDLE JURASSIC)--Moderate to reddish-brown, laminated to very thin bedded, mudstone and siltstone; locally contains 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 130-200 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 ENTADA 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; often and sabba deposits; approximate thickness 300-700 ft.

Jc CARREL 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 silty marine, tidal flat, and sabba deposits; approximate thickness 100-625 ft.

Jn NAVALO SANDSTONE (JURASSIC AND TRIASSIC?)--Light-gray to light-orange, fine to medium-grained, well-sorted sandstone; thickly crossbedded; locally contains minor lenses of mudstone, and cherty limestone, or dolomite; cliff former; colluvium and minor playa deposits; approximate thickness 500-800 ft.

--- CONTACT--Dashed where approximately located; dotted where concealed.

U NORMAL FAULT--Dashed where approximately located; u, upthrown side; d, downthrown side.

↑ ANTICLINE--Showing approximate location of crestline.

↓ SYNCLINE--Showing approximate location of troughline.

|| STRIKE AND DIP OF BEDS

|| Apparent

↙↘ Inclined

⊥ Vertical