

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY



EXPLANATION

AREA HAVING MODERATE POTENTIAL FOR URANIUM RESOURCES--Remaining map area has low potential for uranium resources

AREA HAVING HIGH POTENTIAL FOR TAR SAND RESOURCES--Remaining map area has unknown potential for tar sand resources

Entire map area has moderate potential for petroleum resources and low potential for both metallic and nonmetallic resources

(Note: The following correlation, description of map units, and symbols are for the geologic base map shown in gray.)

CORRELATION OF MAP UNITS

Qc1	Qc1	} Holocene	} QUATERNARY
Unconformity			
Je	Je	} Middle Jurassic	} JURASSIC
Jc	Jc		
Jp	Jp		
Unconformity			
Jn	Jn	} Upper Triassic(?)	} JURASSIC AND TRIASSIC(?)
Jk	Jk		
Unconformity		} Upper Triassic	} TRIASSIC
Jw	Jw		
Unconformity		} Middle(?) and Lower Triassic	}
Jm	Jm		
Unconformity		} Lower Permian	} PERMIAN
Pc	Pc		

DESCRIPTION OF MAP UNITS

Qa1 ALLUVIUM (HOLOCENE)--Poorly sorted gravel, sand, silt, and clay deposited in stream courses

Qc1 COLLUVIUM (HOLOCENE)--Boulders, gravel, sand, and mud in landslide deposits and in talus blocks; also eolian sand and silt; thickness 0-10 ft

Je ENTRADA SANDSTONE (MIDDLE JURASSIC)--Reddish-orange to reddish-brown, very fine grained to fine-grained sandstone and siltstone; sandstone very thin to thick bedded; generally forms slopes; largely eolian and sabkha deposits; approximate thickness 300-700 ft

Jc CARMA 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

Jp PAGE SANDSTONE (MIDDLE JURASSIC)--Reddish-orange to moderate reddish-brown, very fine grained to fine-grained, well-sorted sandstone; contains large-scale planar and trough crossbedding; eolian deposits; approximate thickness 15-70 ft

Jn NAVAJO 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; forms cliffs; eolian and minor playa deposits; approximate thickness 500-800 ft

Jk KAYENTA FORMATION (UPPER TRIASSIC?)--Reddish-orange to reddish-brown, fine- to medium-grained, crossbedded sandstone and laminated sandstone and siltstone; interbedded with minor limestone and mudstone; forms ledges and steep slopes; largely fluvial deposits; locally includes lacustrine, sabkha, and eolian deposits; approximate thickness 240-320 ft

Jw WINGATE SANDSTONE (UPPER TRIASSIC)--Reddish-pink to reddish-orange, very fine grained to fine-grained, crossbedded sandstone; forms cliffs; eolian deposits; approximate thickness 300 ft

Jm CHINLE FORMATION (UPPER TRIASSIC)--Divided into two parts, each containing several members. Upper part, undivided--Comprises Church Rock, Owl Rock, and Petrified Forest Members. Church Rock Member consists of reddish-brown to reddish-orange siltstone; regularly ripple laminated, thick bedded; interbedded with cross-stratified, fine- to coarse-grained sandstone. Locally contains thin- to thick-bedded conglomerate and arkosic sandstone. Fluvial and lacustrine deposits. Approximate thickness 80-200 ft. Owl Rock Member consists of pale-red to pale-reddish-brown siltstone and mudstone; thin to medium bedded; interbedded with pale-red to light-greenish-gray, thin- to medium-bedded, cherty limestone; locally contains limestone breccia; lacustrine deposits. Approximate thickness 120-200 ft.

Pc CUTLER FORMATION (LOWER PERMIAN)--Only the White Rim Sandstone Member is exposed in map area. White Rim Sandstone Member--Light-gray to white, very fine grained to fine-grained sandstone; laminated to very thin bedded, crossbedded. Forms cliffs. This eastward and pinches out eastward near Colorado River. Marginal marine and eolian deposits. Approximate thickness 35-230 ft.

CONTACTS AND STRUCTURES

CONTACT--Dashed where approximately located

NORMAL FAULT--Showing dip and displacement where known; if unknown, dip is downthrown side; dashed where approximately located; dotted where concealed

ANTICLINE--Showing approximate location of crestline

SYNCLINE--Showing approximate location of troughline

STRIKE AND DIP OF BEDS

Horizontal

Inclined

STRIKE AND DIP OF VERTICAL JOINT

STUDIES RELATED TO WILDERNESS

Bureau of Land Management Wilderness Study Areas

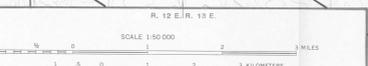
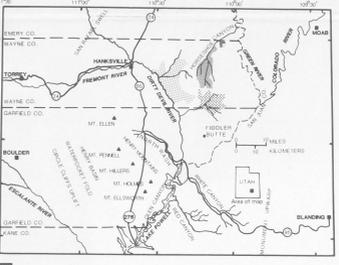
The Federal Land Policy and Management Act (Public Law 94-179, October 21, 1976) requires the U.S. Geological Survey and the U.S. Bureau of Mines to conduct mineral surveys on certain areas to determine the mineral values, if any, that may be present. Results must be made available to the public and be submitted to the President and the Congress. This report presents the results of a mineral survey of the Dirty Devil (UT-050-236), French Spring-Happy Canyon (UT-050-236B), and Horseshoe Canyon (UT-050-237) Wilderness Study Areas, Wayne and Garfield Counties, Utah.

MINERAL RESOURCE POTENTIAL SUMMARY STATEMENT

Field and laboratory studies of the Dirty Devil, French Spring-Happy Canyon, and Horseshoe Canyon Wilderness Study Areas in Wayne and Garfield Counties, Utah, were conducted to determine the resource potential of these lands. The studies indicate a moderate potential for uranium resources in the Dirty Devil Wilderness Study Area and in the extreme southwestern part of the French Spring-Happy Canyon Wilderness Study Area and a low potential for uranium resources in the northeastern part of the French Spring-Happy Canyon Wilderness Study Area and in the Horseshoe Canyon Wilderness Study Area. All three wilderness study areas have a moderate potential for petroleum resources. The French Spring-Happy Canyon Study Area has a high potential for tar sand resources. The potential for tar sand resources in the Dirty Devil and Horseshoe Canyon Wilderness Study Areas is unknown. The studies indicate a low potential for other metallic and nonmetallic resources in the study areas.

REFERENCE

Dubiel, R. F., Bromfield, C. S., Larson, M. J., Patterson, G. C., and Peterson, Fred, 1985, Geologic Map of the Dirty Devil, French Spring-Happy Canyon, and Horseshoe Canyon Wilderness Study Areas, Wayne and Garfield Counties, Utah, U.S. Geological Survey Miscellaneous Field Studies Map MF-1754-B, scale 1:50,000.



CONTOUR INTERVAL 40 FEET
DASHED LINES REPRESENT 20-FOOT INTERVALS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

Base from U.S. Geological Survey, 1:62,500
Bull Mountain, 1952; Fiddler Butte, 1953; Hanksville, 1963;
Orange Cliffs, 1953; Robbers Roost Canyon, 1963; The Spur,
1953

Geology from Dubiel and others (1985)

MINERAL RESOURCE POTENTIAL MAP OF THE DIRTY DEVIL, FRENCH SPRING-HAPPY CANYON, AND HORSESHOE CANYON WILDERNESS STUDY AREAS, WAYNE AND GARFIELD COUNTIES, UTAH

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