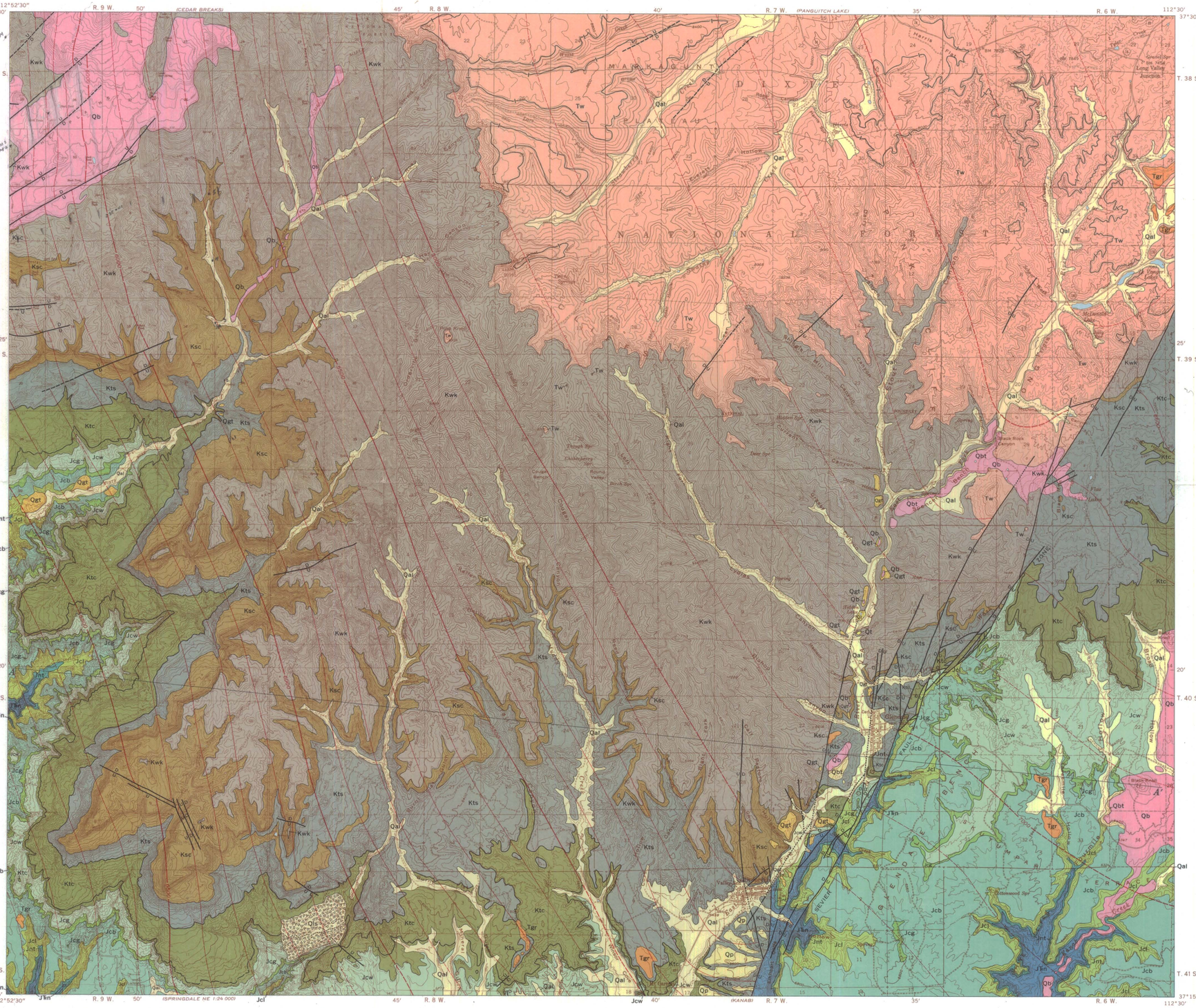

Base from U.S. Geological Survey topographic quadrangles: Orderville, 1:62,500, 1958; Orderville Canyon NE, 1:24,000, preliminary edition; Orderville Canyon SE, 1:24,000, preliminary edition

APPROXIMATE MEAN DECLINATION, 1967

SCALE 1:62 500

CONTOUR INTERVAL 40 AND 80 FEET
DATUM IS MEAN SEA LEVEL

INDEX MAP OF UTAH SHOWING LOCATION OF MAPPED AREA

Geology by W. B. Cashion assisted by C. T. Sumsion, 1953, H. J. Hyden and J. F. Vergara, 1954, V. P. Roque, Jr., 1960, and W. E. Yeend, 1961

EXPLANATION

Recent

Landslide deposit (Qls)
Shale and sandstone of the Tropic Formation that have moved downslope near Meadow Creek

Alluvium (Qal)
Clay, silt, sand and gravel in channel, flood-plain, and alluvial fan deposits

Pleistocene and Recent(?)

Basalt talus (Qbt)

Pleistocene and Recent(?)

Basic extrusive rocks (Qb)
Olivine basalt in volcanic cones and lava flows

Pleistocene(?)

Tufa (Qt)
Calcareous spring deposits, light- to dark-gray, near Hidden Lake in sec. 11, T. 40 S., R. 7 W. Maximum thickness 50± feet

Pediment deposits (Qp)
Sand and gravel on a westward-sloping surface at the base of Elkhart Cliffs

Terrace gravels (Qgt)
Sand, cobbles and boulders derived principally from Cretaceous sandstone and Tertiary limestone. Most deposits along East Fork Virgin River are cemented with lime

QUATERNARY

Pliocene(?)

Remnant gravels (Tgr)
Pebbles and cobbles of gray and red quartzite and gray silicified limestone containing Paleozoic (Permian?) fossils

Eocene

Wasatch Formation (Tw)
Limestone, pink, red and light-gray, medium-bedded to massive, argillaceous, sandy; and pink and red limy shale; weathers to colorful hoodoos. Contains basal conglomerate of pebbles and cobbles of limestone and quartzite. Upper part of formation is very sandy. Thickness 1000+ feet
l, *uppermost prominent light-gray ledge-forming limestone*

TERTIARY

UNCONFORMITY

Upper Cretaceous

Wahweap Sandstone and Kaiparowits Formation (Kwk)
Sandstone, gray and brown, fine- to medium-grained, interbedded with gray and some red shale; contains conglomerates composed of pebbles and cobbles of gray quartzite and limestone; basal part contains carbonaceous shale and thin noncommercial coal beds. Thickness 1660–2030 feet

Straight Cliffs Sandstone (Ksc)
Sandstone, brown and gray, very fine-grained, massive, cliff-forming; some gray shale

Tropic Formation (Kts, Ktc)
Kts, *shaly member: shale, gray, carbonaceous; some littoral marine sandstone, including "sugarledge sandstone" (shown only in restored section); few thin coal beds in western part of area*
Ktc, *coal-bearing member: sandstone, brown and gray, fine-grained, lenticular; and carbonaceous shale and coal. Upper coal zone shown by heavy line at top of coal-bearing member; lower coal zone shown by heavy line near base. Dakota(?) Sandstone[1], composed of conglomerate and sandstone, lies beneath coal-bearing member and is mapped with that member. Thickness, including Dakota(?) Sandstone, 220–405 feet*

CRETACEOUS

[1] The Dakota(?) Sandstone of this report conforms to descriptions given in earlier U.S. Geological Survey reports pertaining to this area (Gregory, 1950, p. 125, 130, 133; Gregory, 1951, p. 65; Cashion, 1961), but it is inconsistent with the first use of the name in southern Utah. Gregory and Moore (1931, p. 95) first applied the term Dakota(?) Sandstone on the Kaiparowits Plateau to the part of the Upper Cretaceous sequence that is below the lowest marine fossil-bearing beds. The Dakota-Tropic boundary, as thus defined, is difficult to determine with certainty and is not the optimum boundary of a rock-stratigraphic unit (Art. 4, Code of Stratigraphic Nomenclature). Van DeGraaff (1963), in a summary of the Upper Cretaceous stratigraphy of southern Utah, proposed that all of the rocks of fluvial, paludal, lagoonal, and near-shore origin in the basal part of the Cretaceous section be included in one unit called the Dakota Formation. On the basis of paleontologic and stratigraphic data gathered in a regional study of the Dakota and Tropic, Lawrence (1965) concluded that the Dakota(?) Sandstone and the coal-bearing member of the Tropic Formation should be considered one unit and called the Dakota Formation.

UNCONFORMITY

Middle and Upper Jurassic

Carmel Formation (Jcw, Jcg, Jcb, Jcl)
Jcw, *Winsor Member: sandstone, fine to very fine grained, friable; some thin beds of red shale in lower quarter; upper part light gray or yellowish gray, lower part red and pink. Thickness 180–400+ feet*
Jcg, *gypsiferous member: gypsum, very light gray, massive, ledge-forming; and gray and green gypsiferous limestone, sandstone, and shale; contains thin fossiliferous limestone at top. Thickness 55–95 feet*
Jcb, *banded member: sandstone and siltstone, thin- to medium-bedded, alternating bands of light gray and reddish brown, gypsiferous, very friable. Thickness 170–190 feet*
Jcl, *limestone member: gray and tan, silty, dense; contains thin gypsum beds near top and thin sandy red shale at base; in most of the area the limestone section is composed of upper and lower massive oolitic cliff-forming units separated by thin-bedded slope-forming unit. Thickness 230–340 feet*

JURASSIC

Navajo Sandstone (Jnt, JTRn)
Jnt, *Temple Cap Member: sandstone, light-gray to tan, fine-grained, crossbedded; contains red shaly siltstone at base. Thickness 90–130 feet*
JTRn, *upper part of main body: sandstone, light-gray, tan, and red, crossbedded, fine-grained, cliff-forming. 1000 feet exposed in map area*

TRIASSIC(?)

Coal zone in the Tropic Formation
Dashed where approximately located; dotted where concealed

Contact
Dashed where approximately located; dotted where concealed

Fault
Dashed where inferred; dotted where concealed. U, *upthrown side;* D, *downthrown side*

Structure contours
Drawn on top of lower coal zone in the Tropic Formation. Dashed where approximately located; short dashed where datum is eroded or control is sparse or inadequate. Contour intervals 100 or 200 feet. Datum is mean sea level

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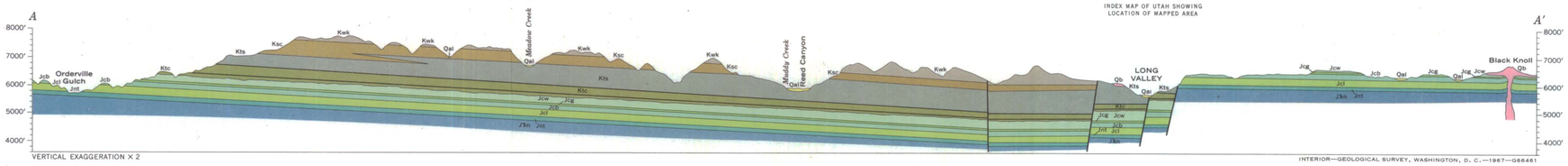
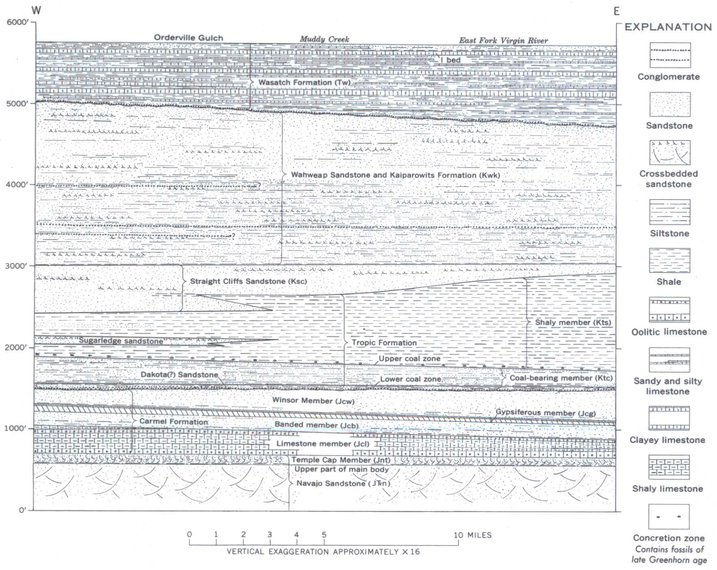
Lawrence, J. C., 1965, Stratigraphy of the Dakota and Tropic Formations of Cretaceous age in southern Utah, in Geology and resources of south-central Utah, resources for power, no. 19: Utah Geol. Soc. and Intermountain Assoc. Petroleum Geologists, p. 71–91.

Van DeGraaff, F. R., 1963, Upper Cretaceous stratigraphy of southwestern Utah, in Intermountain Assoc. Petroleum Geologists Guidebook 12th Ann. Field Conf., Geology of southwestern Utah: p. 65–70.





DIAGRAMMATIC RESTORED SECTION OF ROCKS IN THE MAPPED AREA

GEOLOGIC MAP OF THE SOUTH FLANK OF THE MARKAGUNT PLATEAU, NORTHWEST KANE COUNTY, UTAH

By
W. B. Cashion
1967

INTERIOR—GEOLOGICAL SURVEY, WASHINGTON, D. C.—1967—G66461

For sale by U.S. Geological Survey, price $1.00