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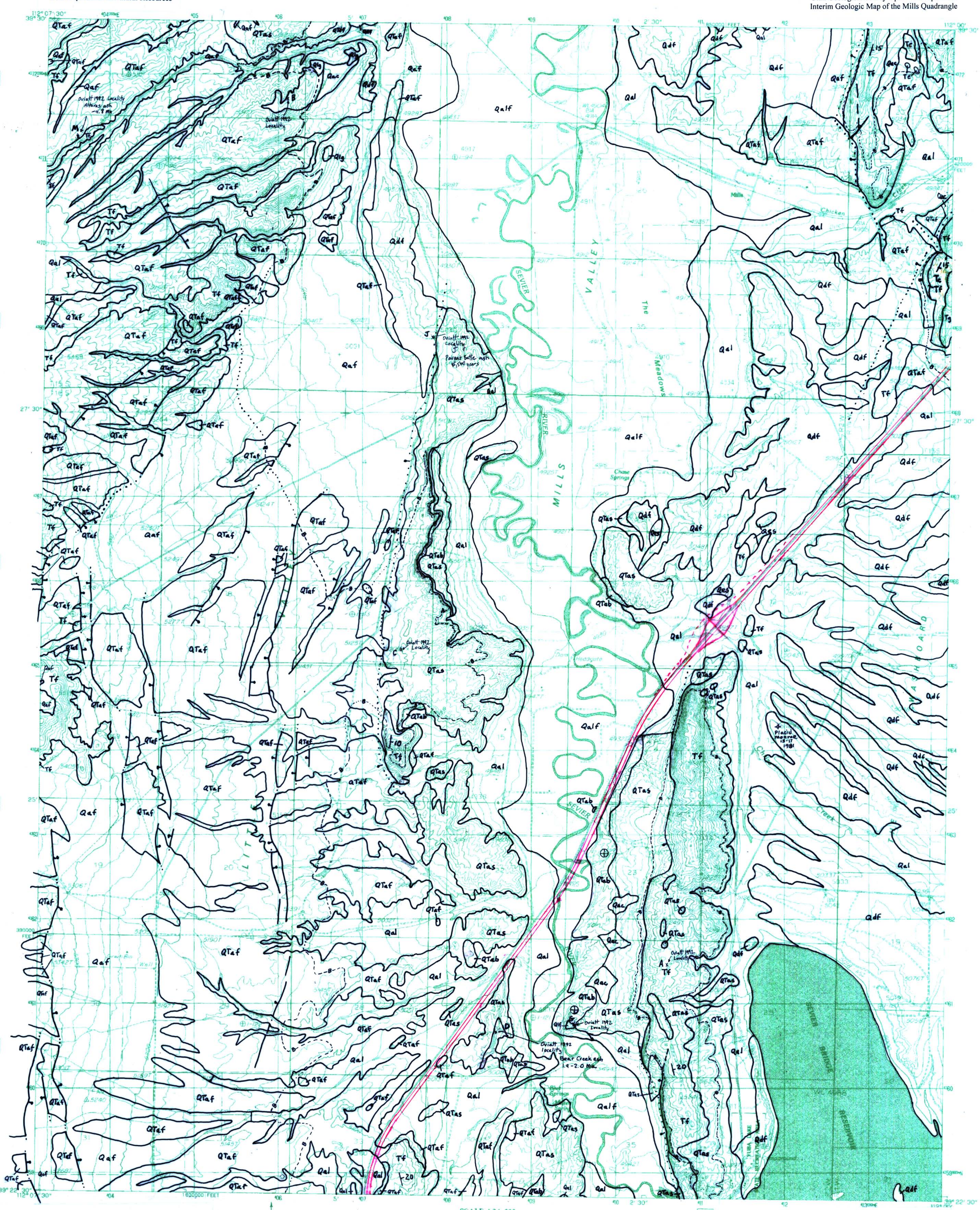

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NORTH

SCALE 1:24 000

MILES

FEET

KILOMETERS

METERS

CONTOUR INTERVAL 20 FEET
SUPPLEMENTAL CONTOUR INTERVAL 10 FEET

PROVISIONAL MAP
Produced from original manuscript drawings. Information shown as of date of field check. 2

UTAH

QUADRANGLE LOCATION

1	2	3
4		5
6	7	8

1 Champlin Peak
2 Sage Valley
3 Juab
4 Red Creek Peak
5 Skinner Peak
6 Williams Peak
7 Scipio North
8 Holly Kitchen Canyon SW

Project Manager: Donald L. Clark

Improved Road
Unimproved Road
Trail
Interstate Route
U.S. Route
State Route

MILLS, UTAH
PROVISIONAL EDITION 1985

Interim Geologic Map of the Mills Quadrangle, Juab County, Utah

by Charles G. Oviatt and Lehi F. Hintze

2005

Interim Geologic Map of the Mills Quadrangle, Juab County, Utah

by

Charles G. Oviatt[1] and Lehi F. Hintze[2]

2005

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This open-file report is a revision of Utah Geological Survey Open-File Report 226 (Hintze, 1991b). The Quaternary geology is from Utah Geological Survey Special Study 79 (Oviatt, 1992). L.F. Hintze mapped the Tertiary bedrock geology in 1990 based on limited field examination and aerial photograph interpretation. All contacts were redrawn by Hintze using better aerial photographs than were available to Oviatt. The present map was drafted by L. F. Hintze in July 2004, with minor modifications by UGS.

Open-File Report 445
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DESCRIPTION OF GEOLOGIC UNITS

Quaternary alluvial, colluvial, and eolian deposits

Qalf Flood plain deposits of the Sevier River – Fine-grained deposits of the Holocene Sevier River; total thickness unknown, but up to 10 feet (3 m) are exposed.

Qal Alluvium of low-order streams – Fine-grained, poorly sorted alluvium in ephemeral stream valleys; thickness variable and probably less than 20 feet (6 m) in most places.

Qaf Younger alluvial-fan deposits – Poorly sorted pebble to boulder gravel in alluvial fans on piedmont slopes; composed of locally derived rock types; up to hundreds of feet thick locally.

Qac Alluvium and colluvium, undivided – Soil and unconsolidated weathered detritus that conceals bedrock where erosion is slow or inactive; thickness generally less that 10 feet (3 m).

Qes Eolian sand – Well sorted sand in four small sand dune areas north of the Interstate 15 Yuba Dam exit; about 30 feet (10 m) thick

Pleistocene Lake Bonneville deposits

Qdf Deltaic fines – Fine sand, silt, and clay; thinly bedded to cross bedded; forms a fining upward sequence over 60 feet (20 m) thick; deposited in the Sevier River estuary of Lake Bonneville about 15,000 years ago; includes Pavant Butte ash (Oviatt, 1991).

Qlf Lacustrine fines – Calcareous mud containing ostracodes and mollusks; deposited in Lake Bonneville at its highest stage; one small outcrop about one mile (1.6 km) north of the bottom-central edge of the map; less than 20 feet (6 m) thick.

Qlg Lacustrine gravel – Sandy gravel composed of locally derived rock fragments deposited on beaches or spits in Lake Bonneville in the northwest corner of the map; less than 50 feet (15 m) thick.

Pliocene - middle Pleistocene alluvial deposits

QTas Old Sevier River sand and gravel (Mills Valley basin fill) – Well to moderately sorted sand and gravel deposited by the Sevier River within the past million years; gravel clasts are mostly pebbles of volcanic rocks, black chert, Flagstaff limestone, and volcanic rocks derived from upstream; thickness ranges from 0 to 250 feet (0-75 m); interfingers with QTab and QTaf.

QTab Basin-fill mud, silt, and sand – Mostly tan calcareous mud and silt, poorly cemented, with thin interbeds of sand and pebbly gravel; in section 27, T. 16 S., R. 2 W. (Oviatt's Locality D), this unit includes the Bear Creek ash, 1.9 to 2.0 million years old; in the adjacent Scipio North quadrangle Oviatt (1992) reported that this unit includes the 740,000-year-old Bishop ash, and the 620,000-year-old Lava Creek B ash; unit QTab ranges from 0 to 200 feet (0-60 m) in thickness; interfingers with QTas and QTaf.

QTaf Older alluvial-fan deposits – Poorly sorted, coarse-grained alluvial-fan deposits of locally derived sedimentary rocks; interfingers with QTas and QTab; bears stage IV calcic soil on relict surfaces; Oviatt's (1992) locality M in the northwest corner of the map includes the Alturas ash, about 4.8 million years old, within this unit; total thickness unknown but more than 50 feet (15 m) are exposed in the fans on the west side of this quadrangle.

Eocene – Paleocene? sedimentary rocks

Tg Green River Formation – Lower portion of the formation exposed near Interstate 15; green mudstone and yellowish-gray limestone overlain by a clastic lithofacies (conglomerate, mudstone, sandstone) and interbedded greenish-yellow and gray mudstone and thin-bedded yellowish-gray limestone; about 900 feet (275 m) thick in adjoining quadrangles (Clark, 1990; Felger, 1991).

Tc Colton Formation – One outcrop area near Interstate 15; reddish-orange, brown, and pale-red mudstone, sandstone, conglomerate and mottled limestone; about 250 feet (75 m) in adjoining quadrangles (Clark, 1990; Felger, 1991).

Tf Flagstaff Formation – Interbedded, pinkish-weathering limestone, sandstone, siltstone, mudstone, and conglomerate; some limestone beds have a distinctive mottled yellow and purple coloration that is peculiar to the Flagstaff and Claron Formations in central and southwestern Utah; measured thickness of Flagstaff Formation along Interstate 15 just south of this quadrangle is 1,300 feet (395 m) as described by Hintze and Davis (2003).

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Table 1.
Localities discussed in Oviatt (1992) for the Mills quadrangle, and indicated on Plate 1.

Locality	Description	Significance	Latitude(N)/Longitude(W)
A	outcrops of QTas along the crest of Badeau Ridge	represent known upper limit of QTas deposition (probably uplifted by faulting)	39° 24'/112° 2.3'
B	high-level outcrops of QTas west of Mills	represent deposition near the upper limit of Mills basin deposition (probably uplifted by faulting	39° 29.5'/112° 5.5'
C	high-level outcrops of QTas SW of Mills	represent deposition near the upper limit of Mills basin deposition (probably uplifted by faulting)	39° 26'/112° 4.5'
D	exposure of QTab and QTas NW of Yuba Dam	good exposure of Mills basin-fill sediments, including the Bear Creek ash	39° 23.55'/112° 3.70'
G	exposure of QTab and Qlf NW of Yuba Dam	Mills basin-fill sediments and fine-grained Lake Bonneville sediments	39° 23.6'/112° 3.05'
J	gravel pit along west side of Mills Valley	exposure of Qdf containing Pavant Butte basaltic ash	39° 28'/112° 4.3'
M	outcrop near the crest of the Ridge north of Leamington Pass road west of Mills	exposure of Alturas ash in QTaf pediment gravel	39° 29.25'/112° 7.25'

MAP SYMBOLS

(Mills 7.5' Quadrangle)

Contact - Dashed where approximately located

Normal fault - Dashed where approximately located, dotted where concealed; bar and ball on downthrown side; no bar and ball indicates fault with unknown offset

10 Strike and dip of inclined bedding

Horizontal bedding

Oil exploration test hole - Dry hole, abandoned

B Lake Bonneville shoreline (Bonneville level) - Dashed where approximately located, dotted where inferred

A Locality of Oviatt (1992) - Refer to table 1 for explanation