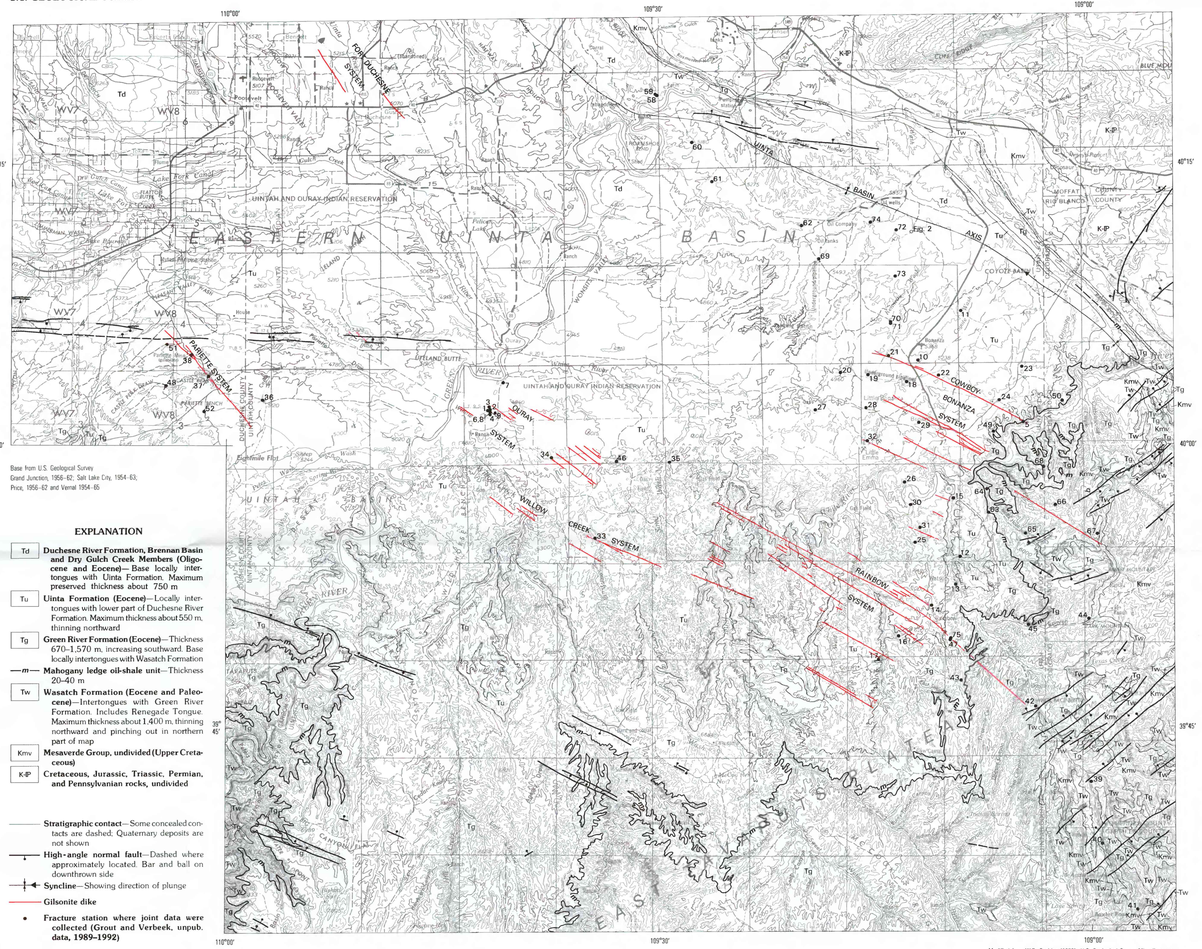


EXPLANATION

- Td — **Duchesne River Formation, Brennan Basin and Dry Gulch Creek Members (Oligocene and Eocene)**— Base locally intertongues with Uinta Formation. Maximum preserved thickness about 750 m
- Tu — **Uinta Formation (Eocene)**—Locally intertongues with lower part of Duchesne River Formation. Maximum thickness about 550 m, thinning northward
- Tg — **Green River Formation (Eocene)**—Thickness 670–1,570 m, increasing southward. Base locally intertongues with Wasatch Formation
- —m— **Mahogany ledge oil-shale unit**—Thickness 20–40 m
- Tw — **Wasatch Formation (Eocene and Paleocene)**—Intertongues with Green River Formation. Includes Renegade Tongue. Maximum thickness about 1,400 m, thinning northward and pinching out in northern part of map
- Kmv — **Mesaverde Group, undivided (Upper Cretaceous)**
- K-P — **Cretaceous, Jurassic, Triassic, Permian, and Pennsylvanian rocks, undivided**

Stratigraphic contact—Some concealed contacts are dashed; Quaternary deposits are not shown

High-angle normal fault—Dashed where approximately located. Bar and ball on downthrown side

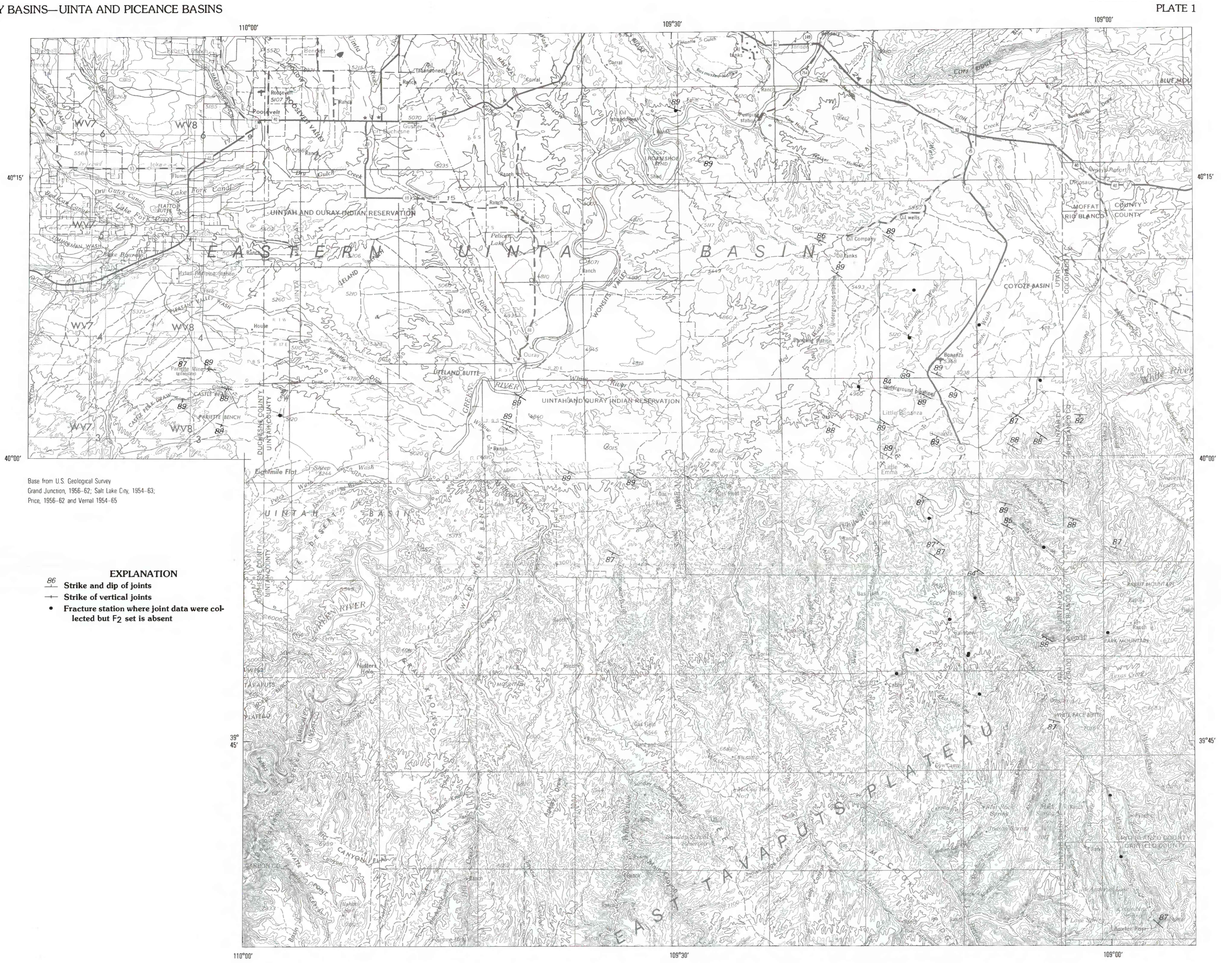
Syncline—Showing direction of plunge

Gilsonite dike

• **Fracture station where joint data were collected (Grout and Verbeek, unpub. data, 1989–1992)**

Modified from W.B. Cashion [1973], U.S. Geological Survey Miscellaneous Investigations Map I–736; P.D. Rowley and others [1985], U.S. Geological Survey Miscellaneous Investigations Map I–1526; Bruce Bryant [1992], U.S. Geological Survey Miscellaneous Investigations Map I–1997; and R.C. Pruitt, Jr. [1981], Utah Geological and Mineralogical Survey Bulletin 71.

A. Map showing generalized geology, distribution of gilsonite dikes, and fracture station locations

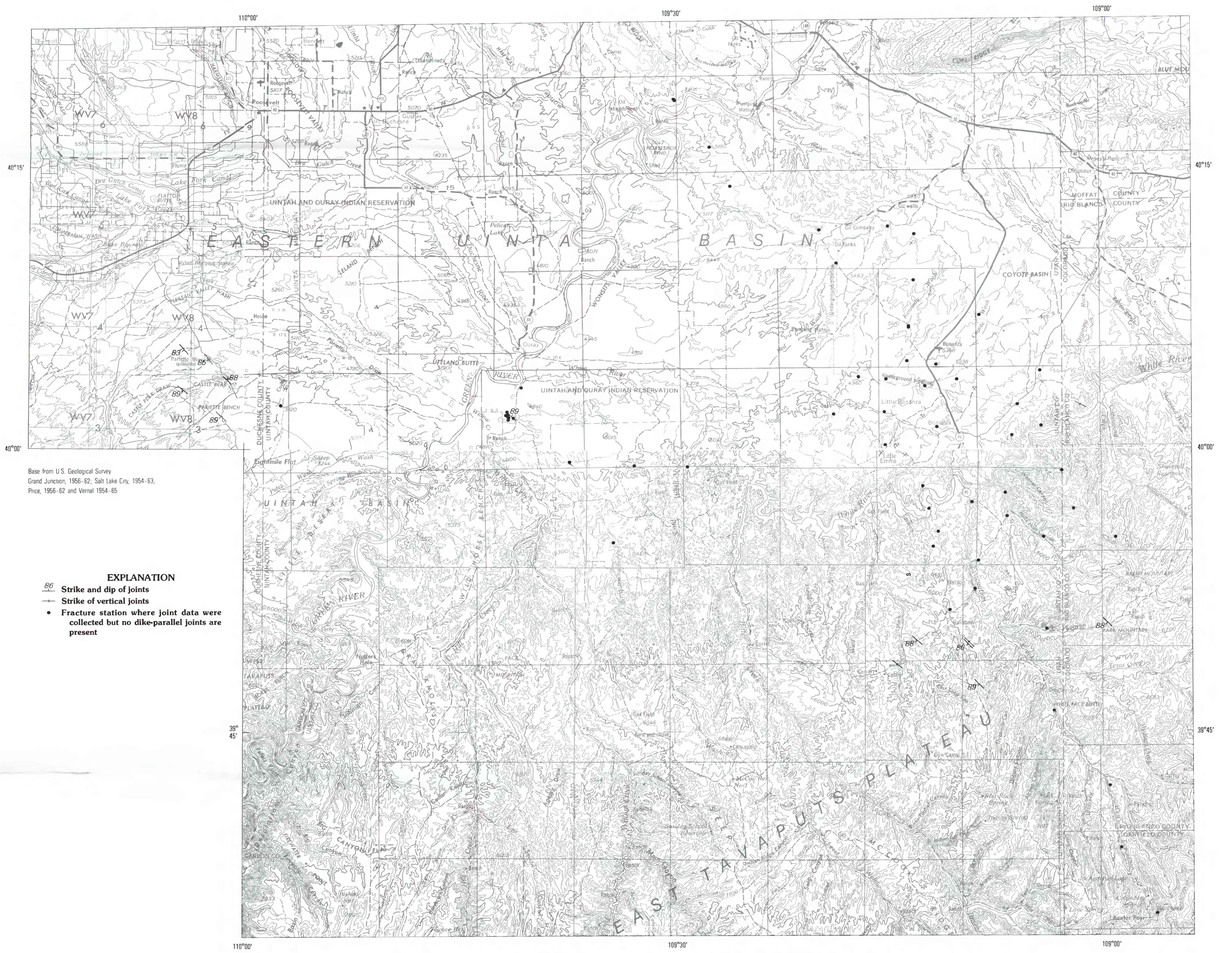


EXPLANATION

- 86 — **Strike and dip of joints**
- — **Strike of vertical joints**
- • **Fracture station where joint data were collected but F_2 set is absent**

B. Map showing average orientation of joints of F_2 regional fracture set at 47 locations

[NOTE: Some stations south of Ouray are too closely spaced to show individually; for these a collective average is shown. Joints of the F_2 set in many areas are subparallel to gilsonite dikes, but the angular difference between them generally increases westward due to gradual change of joints to more westerly strikes and of dikes to more northerly trends (compare map *A*)]



EXPLANATION

- 86 — **Strike and dip of joints**
- — **Strike of vertical joints**
- • **Fracture station where joint data were collected but no dike-parallel joints are present**

C. Map showing average orientations of dike-parallel joints at 13 locations

[NOTE: Dike-parallel joints in some areas are almost parallel to joints of F_2 set (compare map *B*) but in many places have more northerly strikes, as along dikes at southeast end of Rainbow system near the Utah-Colorado State line and especially along dikes of Pariette system farther west (see map *A*)]

APPROXIMATE MEAN DECLINATION, 1993

SCALE 1:250 000

5 0 5 10 15 MILES

5 0 5 10 15 KILOMETERS

CONTOUR INTERVAL 200 FEET
NATIONAL GEODETIC VERTICAL DATUM OF 1929

MAP LOCATION

MAPS SHOWING GEOLOGY, DISTRIBUTION OF GILSONITE DIKES, FRACTURE STATION LOCATIONS, ORIENTATIONS OF JOINTS OF THE F_2 REGIONAL FRACTURE SET, AND ORIENTATIONS OF DIKE-PARALLEL JOINTS IN THE EASTERN PART OF THE UINTA BASIN, UTAH AND COLORADO

By
Earl R. Verbeek and Marilyn A. Grout

1993