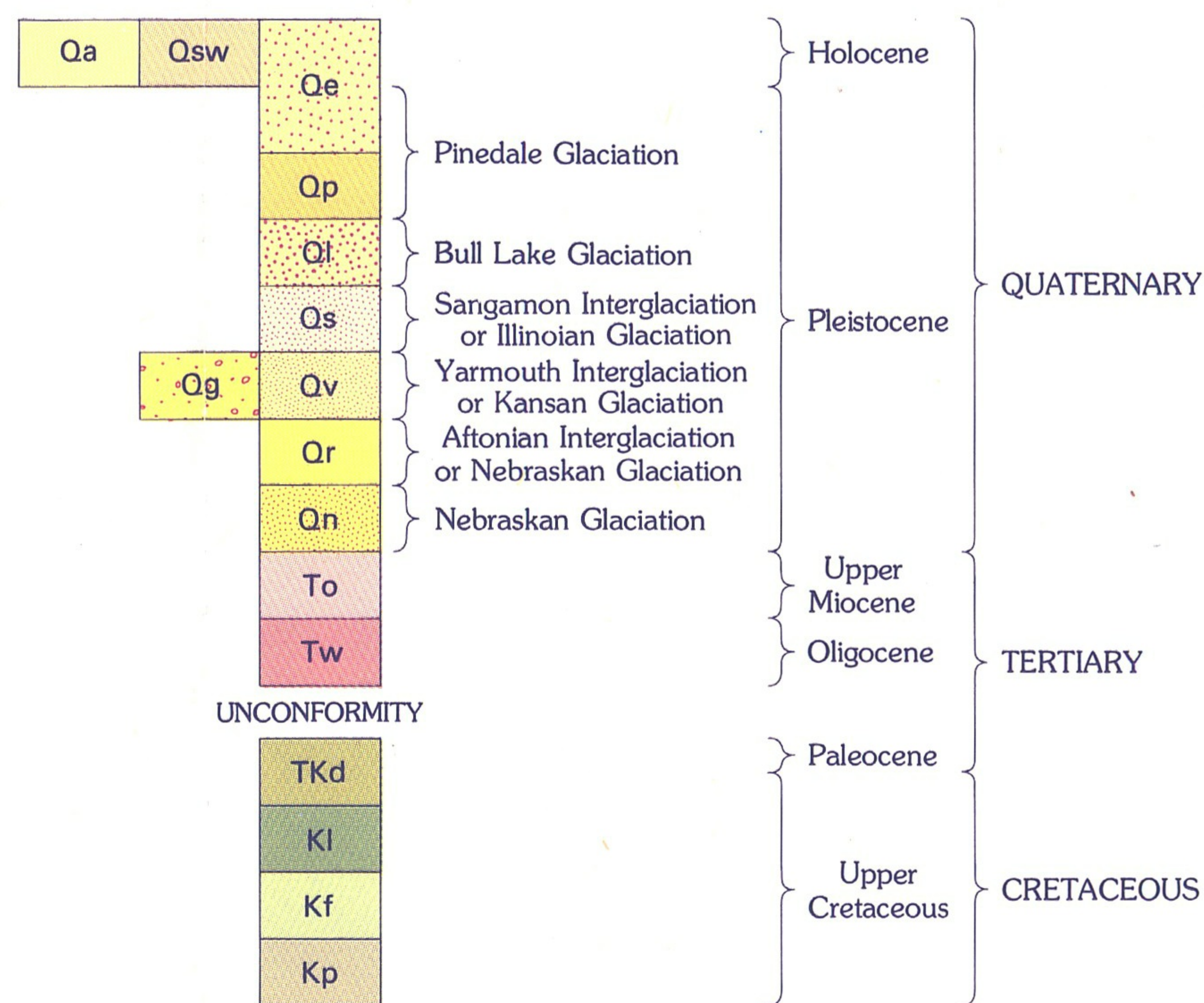


CORRELATION OF MAP UNITS



DESCRIPTION OF MAP UNITS

- Qa** ALLUVIUM (HOLOCENE)—Silt, sand and gravel of modern flood plains and stream beds, dark yellowish gray to yellowish-tan, crossbedded, unconsolidated. Equivalent to Piney Creek Alluvium and post-Piney Creek alluvium. Thickness 0–13 m (0–43 ft)
- Qsw** SLOPE WASH (HOLOCENE)—Regolith deposited on slopes by sheetwash and ephemeral rills; mostly sandy silt but, in places, includes gravel or fragments of limestone or shale where such rocks are available upslope from the place of deposition. Thickness as much as 5 m (15 ft)
- Qe** EOLIAN SAND (HOLOCENE AND PLEISTOCENE)—Yellowish-brown very fine to medium-grained silty quartz sand; generally more silty toward top. Thickness 0–30 m (0–100 ft)
- Qp** PEORIA LOESS (PLEISTOCENE)—Brown silt, sandy silt, and very fine sand; mostly equivalent to Peoria Loess of Kansas and Nebraska but includes some Holocene windblown silt. In places may include equivalents of Bignell Loess (Holocene and Pleistocene) and Loveland Loess (Pleistocene) of Kansas and Nebraska. Thickness as much as 37 m (120 ft)
- Ql** LOUVIERS ALLUVIUM (PLEISTOCENE)—Brownish-yellow to reddish-brown silty to sandy gravel; in terraces 8–11 m (25–35 ft) above the stream bed of Deer Trail Creek. Thickness about 3–6 m (10–20 ft)
- Qs** SLOCUM ALLUVIUM (PLEISTOCENE)—Cobbly gravel and silty sand; in terraces 12–15 m (40–50 ft) above the flood plain of Big Sandy Creek. Thickness about 5–6 m (15–20 ft)
- Qg** GRAND ISLAND FORMATION (PLEISTOCENE)—Reddish-brown pebbly sand and gravel exposed along streams in High Plains. Overlain by Peoria Loess and underlain by Ogallala Formation. Thickness locally as much as 15 m (50 ft)
- Qv** VERDOS ALLUVIUM (PLEISTOCENE)—Cobbly gravel and silty sand; in terraces 18–24 m (60–80 ft) above the flood plain of Big Sandy Creek. Thickness about 5–6 m (15–20 ft)
- Qr** ROCKY FLATS ALLUVIUM (PLEISTOCENE)—Cobbly gravel and silty sand; in terraces 30–46 m (100–150 ft) above the flood plain of Big Sandy Creek and Beaver Creek. Thickness about 5–6 m (15–20 ft)
- Qn** NUSSBAUM ALLUVIUM (PLEISTOCENE)—Cobbly and pebbly gravel and silty sand. Occurs as remnants of a broad alluvial fan that formerly covered an area southwest of the High Plains escarpment. Remnants of this fan north of Big Sandy Creek were probably derived in part from the Ogallala Formation and contain coarse cobbly gravel and silty sand. South of Big Sandy Creek, where the deposit may be as much as 15 m (100 ft) thick, a single large loess-covered remnant of the now-dissected fan contains a lesser proportion of cobbles in pebbly gravel and silty sand
- To** OGALLALA FORMATION (UPPER MIOCENE)—Chiefly cobbly gravel well-cemented with sandy caliche where best exposed in quarry at Cedar Point. Grades eastward to 80 percent sand and calcareous sandstone, 13 percent fine gravel, calcareous in part, and minor limestone and clay at Burlington, Colorado where it is as much as 96 m (315 ft) thick. Grades northeastward from Cedar Point to 44 percent sand and calcareous sandstone, 42 percent fine gravel and conglomerate, calcareous in part, and minor limestone, marl, and clay near Cope, Colorado; and thence to 65 percent marl and clay, 32 percent fine gravel, calcareous in part, and minor limestone near northeast corner of quadrangle. In places capped by hard, dense, yellowish-white to very pale orange, slightly to abundantly sandy limestone (calcrete) as much as 4 m (12 ft) thick. Thickness of formation ranges from 5 to 107 m (17–350 ft)
- Tw** WHITE RIVER FORMATION (OLIGOCENE)—Medium to coarse grayish-white to gray cross bedded channel sandstone where exposed in quadrangle. Contains fine gravel in places. Cemented with silica; silicified bone fragments common. Very resistant and difficult to break with hammer. Outcrops consist of large sandstone blocks as much as 3 m (10 ft) across. Drill-hole data show that the formation consists primarily of silty clay with local deposits of sand and gravel. Thickness as much as 45 m (149 ft)
- TKd** DENVER FORMATION (PALEOCENE AND UPPER CRETACEOUS)—Arkosic sandstone, lenticular conglomerate beds locally; gray shale, sandy in part; and dark-gray to nearly black carbonaceous shale. Contains lignite. Crossbedded yellow arkosic sandstone bed at base. Total thickness of the formation more than 610 m (2,000 ft). About the lower 122 m (400 ft) present in the quadrangle
- KI** LARAMIE FORMATION (UPPER CRETACEOUS)—Brown to black carbonaceous shale, sandy in part; gray sandy shale; thin beds of yellow or gray to tan fine- to medium-grained sandstone, and coal. Thickness approximately 91–107 m (300–350 ft)
- Kf** FOX HILLS SANDSTONE (UPPER CRETACEOUS)—Friable fine- to medium-grained massive white or, less commonly, yellowish quartz sandstone. Thickness 61–76 m (200–250 ft)
- Kp** PIERRE SHALE (UPPER CRETACEOUS)—Mostly silty and sandy shale with soft sandstone interbeds dominant in approximately the upper 122 m (400 ft). Exposed part consists of unconsolidated and poorly consolidated fine- to medium-grained white, buff, or brown sandstone containing thin beds of brownish-gray to dark-gray sandy and silty shale; grades downward to dark-gray sandy and silty shale containing decreasing amounts of soft sandstone; grades down to dark-gray sandy and silty shale containing silty to sandy yellow-weathering calcareous concretions. Total thickness approximately 1,280 m (4,200 ft)

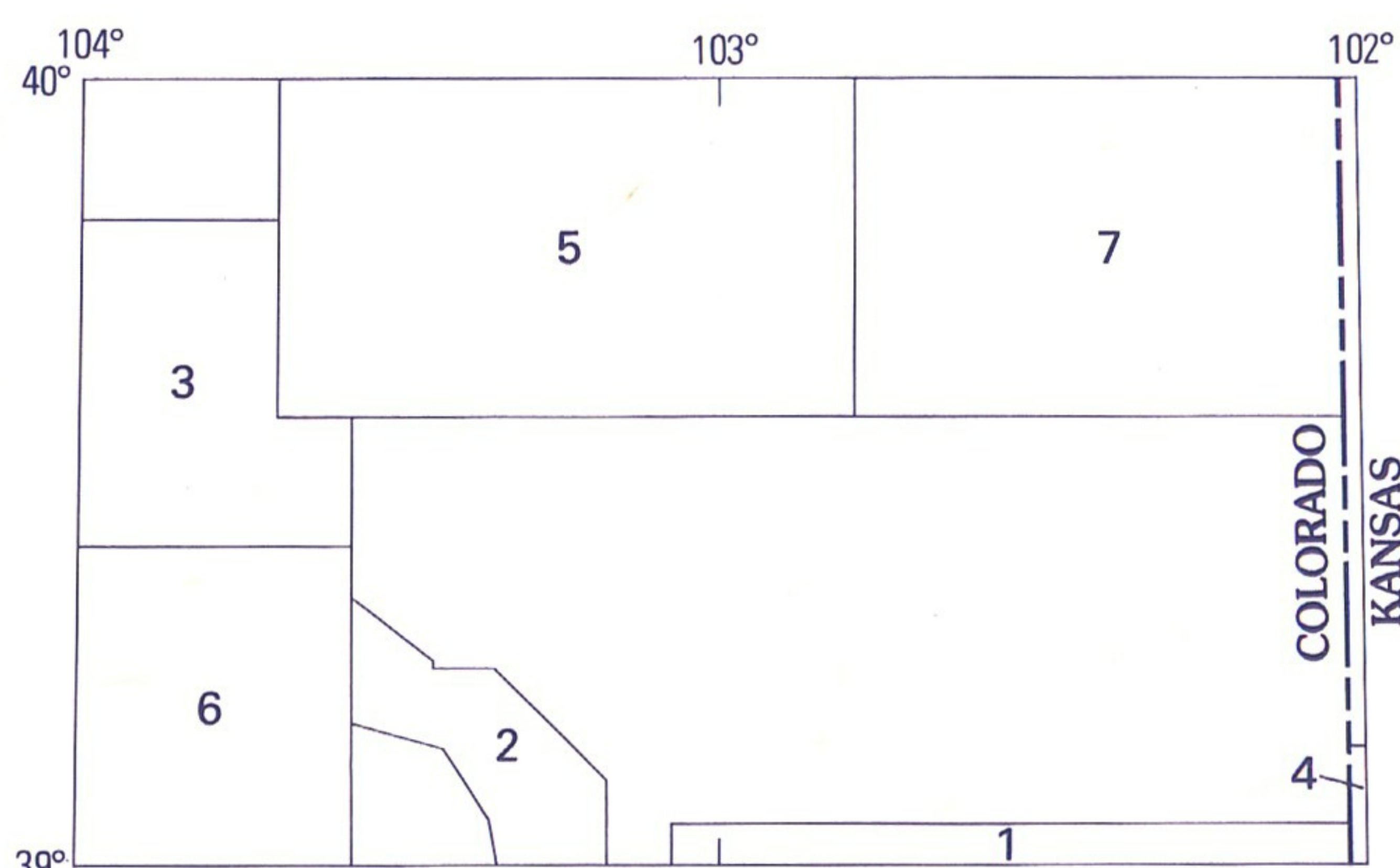
CONTACT—Dotted where concealed. Symbols in parentheses indicate concealed bedrock

500 STRUCTURE CONTOURS—Drawn on top of Dakota Sandstone. Contour interval 30 m (100 ft). Vertical accuracy within 15 m (50 ft) in the area north of U.S. Route 36 and west of Colorado Route 63; within 30 m (100 ft) in the northern half of the mapped area west of Colorado Route 59; elsewhere may be greater than 30 m (100 ft). Data from selected well logs of Rocky Mountain Well Log Service

Baculites grandis APPROXIMATE POSITION OF FAUNAL ZONE IN PIERRE SHALE—Faunal zone is much wider than the line and, where fossil collections are sparse, the width of the zone is not known. The line is drawn through the principle collection localities of ammonites, and these are not, in all places, at the same horizon; therefore, the line may rise or fall within the zone. The line is terminated where the lack of diagnostic fossils precludes its extension

D6734 MESOZOIC INVERTEBRATE FOSSIL LOCALITY—Showing U.S.G.S. Denver catalog number. Fossils identified by W. A. Cobban. Fossil locations shown as accurately as possible from original description or map

15845 MESOZOIC INVERTEBRATE FOSSIL LOCALITY—Showing U.S.G.S. Washington catalog number. Fossil locations shown as accurately as possible from original description or map



INDEX SHOWING AREAS OF EARLIER GEOLOGIC MAPPING

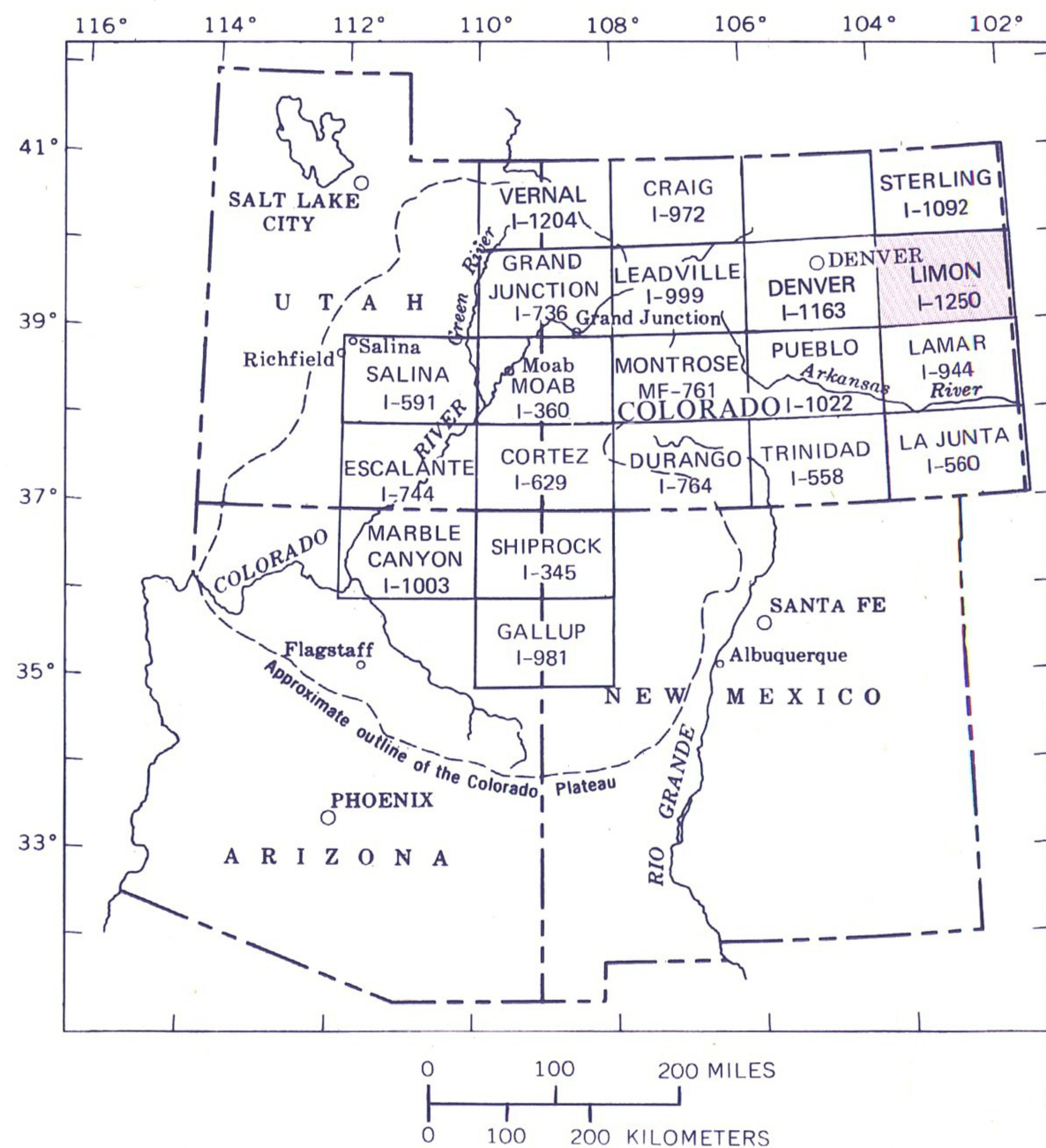
EARLIER GEOLOGIC MAPPING

All previous mapping modified in part by reconnaissance mapping by the author.

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- Soister, Paul E., 1978, Stratigraphy of uppermost Cretaceous and lower Tertiary rocks of the Denver basin, in Rocky Mountain Association of Geologists, Symposium on Energy Resources of the Denver basin, p. 223–229.



INDEX MAP SHOWING AREA OF LIMON QUADRANGLE AND OTHER PUBLISHED 1° x 2° QUADRANGLE MAPS