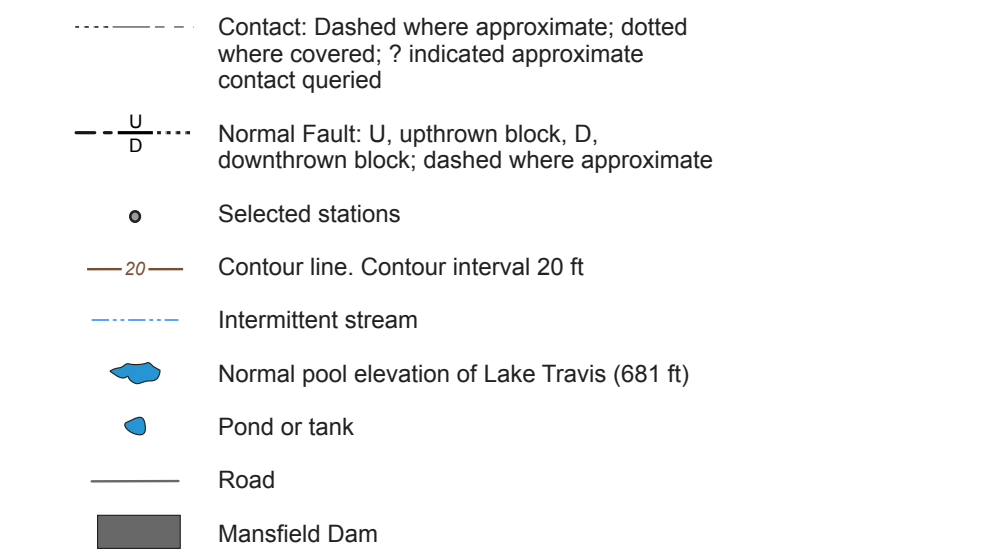




- QUATERNARY**
- Qat**—**Alluvial terrace deposits:** occurs along local margins of Lake Travis and along Lake Austin immediately below Mansfield Dam; areas characterized by thick soils and underlying substrate consisting of unconsolidated to weakly cemented sand, gravel, silt, and clay; thicknesses up to 20 ft.
- CRETACEOUS**
- Ked**—**Edwards Limestone:** resistant, massive carbonate strata at base of unit holding up edge of Post Oak Ridge, Jollyville Plateau, and correlative outliers of once more extensive Edwards Plateau, variable thicknesses of diverse carbonate rocks, including well-indurated limestone, vuggy burrowed rock, rusted boulders, friable dolomitic beds, and local pulverite (probably originating as dolomitic limestone leached by percolating groundwater); maximum thickness about 100 ft; minimum thickness of erosional outliers roughly 10 ft. Strata appear to be flat-lying in outcrop, but regional dip is inclined to the southeast at approximately 17 ft per mile. Edwards Limestone has local karst features, and on upland surface may recharge seasonal perched aquifer; many headwater reaches of drainage courses are fed by intermittent spring discharge from Edwards Limestone.
- KcpKwa**—**Comanche Peak Formation, Walnut Formation, undivided:** composite unit, occupying steep slopes commonly covered by soil and/or colluvium is approximately 80 ft thick, consisting of nodular, burrowed, locally vuggy, limestone strata with highly weathered interbeds (so-called "marly" intervals) containing abundant oysters and other fossils. Lower intervals consist mainly of Bee Cave Member of the Walnut Formation, although Bull Creek Limestone Member may also be present; Cedar Park Limestone Member also may occur as resistant limestone intervals near contact between Walnut and Comanche Peak (Moore, 1961). This map unit forms low-permeability zone, thus creating an aquitard beneath perched water table.
- Kgru**—**Glen Rose Limestone (upper member):** most areally extensive geologic unit on Mansfield Dam Quadrangle is approximately 300 ft thick and forms dissected stepped terrain beneath recessive units that underlie the high-standing, resistant Edwards Limestone. Glen Rose stair steps formed on interbedded carbonate rocks, with resistant limestone or silty dolomite beds forming caps of "risers" and floors of overlying "treads." In contrast, so-called "marly" intervals form recessive slopes (risers) beneath resistant ledges, most recessive strata not underlain by marl bedrock, but are weathered limestone interbeds having heterogeneous fabric with multiple irregular clay partings (Woodruff and Wilding, 2008); these recessive intervals may contain abundant fossils, including casts of bivalves, gastropods, and echinoids. The upper 80 to 100 ft of Upper Member of Glen Rose Limestone contain a significant number of dolomitic limestone and dolomite beds that are included in an informal map unit called upper dolomite interval (Kgrud). Inclusion of this informal unit follows conventions of Rodda and others (1970) and Stricklin and others (1971). Many of these dolomite beds are highly weathered, and the dolomite intervals appear as buff-colored, highly porous, friable material; interval commonly expressed on aerial photos as having relatively sparse vegetative cover.
- Kgrl**—**Glen Rose Limestone (lower member):** the lithostratigraphic contact between lower and upper Glen Rose is mapped at the top of a prominent stratigraphic interval comprising one or more thin-bedded commonly iron-stained and well-indurated limestone horizons, known as the "Corbula bed." This contact is consistent with interpretations by Secklin and others (1971). The Corbula bed consists of myriad fossils of tiny sunflower kernel-sized clams formerly classified as *Corbula* (see Verbeek, 1981), but current taxonomic name is *Carycorbula* (see Mollereau, personal communication, 2017). The Corbula interval forms locally prominent bench above recessive, weathered limestone containing diverse fossil casts of clams, gastropods, and echinoids (*Saenalia texana* interval). Thin, ledge-forming limestone over light-colored "tread" sequence forms cusplet that is widely recognized on aerial photographs and in field; interval mapped across hundreds of square miles of Glen Rose Limestone outcrop, although it is obscured in many places because of cover by surficial material, or because the Corbula fossils are locally absent. Contact interval marks top of 65- to 110-ft-thick sequence of stepped strata, largely dolomitic and containing horizons of silty dolomite and dolomitic limestone with vuggy porosity; also local rusted patch reefs. Lower Glen Rose Member composes upper part of middle Trinity aquifer, which includes Hensel Sand and Cow Creek Limestone (Brune and Duffin, 1983). At base, lower member of Glen Rose interfingers with underlying Hensel Sand; with gradational contacts between intervals of silty (locally sandy) dolomite strata.
- Khe**—**Hensel Sand:** at gradational contact with Glen Rose Limestone, silty dolomite strata are interbedded with fine-grained dolomitic sands. Lower in section, clastic fraction becomes more coarse-grained and more diverse—from quartz arenite, to subarkose, to granite, pebble, and cobble conglomerate; cementation predominantly calcite, from weak to moderately strong; festoon crossbedding locally, especially near base of formation. Hensel Sand is exposed along lakeshore in northwestern part of quadrangle; approximately 50 ft thick; unit forms sandy clay soils that support mesquite and post oak; uniform porosity and permeability allow infiltration into middle Trinity aquifer; contact with underlying Cow Creek Limestone is unconformable.
- Kcc**—**Cow Creek Limestone:** only the uppermost part of unit exposed at or below normal-pool lake level in northwestern part of quadrangle; includes oyster-reef deposits, shell coquinas, and cross-bedded shell-fragment beach rock, which includes local karst features, such as where joints are enlarged by dissolution; is the bottommost formation composing middle Trinity aquifer; entire unit is 40 to 65 ft thick, but only the uppermost few ft exposed in map area, although more extensive intervals are visible as lake level declines during dry periods.
- Khs**—**Hammitt Shale:** occurs entirely within the subsurface of Mansfield Dam Quadrangle. Nearby exposures on the Pace Bend Quadrangle show Hammitt Shale to be a diverse unit consisting of calcareous claystone and siltstone admixed with local lenses of sand and conglomerate; thickness ranges from 20 to 30 ft thick; contact with underlying Sycamore/Hosston Sand unconformable; Hammitt Shale forms aquitard between middle and lower Trinity aquifers.
- Ksk/Kho**—**Sycamore/Hosston Sand:** occurs entirely within the subsurface of Mansfield Dam Quadrangle. Sycamore is the unit name where exposed at the surface; Hosston Sand refers to subsurface extent of the same unit. Lakeshore exposures of Sycamore Sand within the northwest quadrant of the Pace Bend Quadrangle (Woodruff and Collins, 2015) show it to consist mostly of conglomerate (moderately well cemented) with local sand lenses and outcrops ranging from 30 to 75 ft thick, thickening eastward to approximately 100 ft. Component sediments range from silt-clay to cobble-boulder sizes; clasts typically well rounded, consisting mainly of assorted durable Paleozoic and Precambrian rocks of Llano Uplift. The Sycamore/Hosston Sand makes up the lower Trinity aquifer, which is an important groundwater source for the Central Texas Hill Country (Brune and Duffin, 1983). Also, it is the basal Cretaceous rock unit in Central Texas, and it overlies a complex assemblage of weakly metamorphic rocks of Upper Paleozoic age that make up part of the Ouachita System (Flawn and others, 1961).



Chronostratigraphic units		Time Ma	Map and cross-section units
Quaternary		1.8	Qat
		97.5	
Lower Cretaceous			Ked
			Kwa
			Kgru
			Kgrud
			Kgrl
			Khe
			Kcc
			Khs
Chronostratigraphic units adapted from Salvador and Quenzada Mufson (1989)		113	Ksk/Kho

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The mapping of this quadrangle is based on analyses of aerial photographs and extensive fieldwork. The topographic base was created from digital files of the Texas Natural Resources Information Services (TNRS) for the U.S. Geological Survey, Mansfield Dam, Texas, 7.5-minute topographic quadrangle map. Digital files of roads, county boundaries, drainage, and lake shores were also obtained from TNRS.

Part of the map is derived (and locally modified) from Woodruff (1973). Regional mapping by Barnes (1974) provided locally helpful stratigraphic information, and the extensive work by Moore (1959, 1961, 1964) provided helpful insights pertaining to the Walnut and Comanche Peak Formations. This map presents lithostratigraphic units. However, different workers have interpreted the presence of sequence stratigraphic boundaries. For example, Mancini and Scott (2008) place a sequence boundary at the base of the Corbula bed, whereas work by Kearns and Loucks (2002), Ward and Ward (2007), and Ward (2008) interpreted a regional sequence boundary well below the base of the Corbula bed.

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