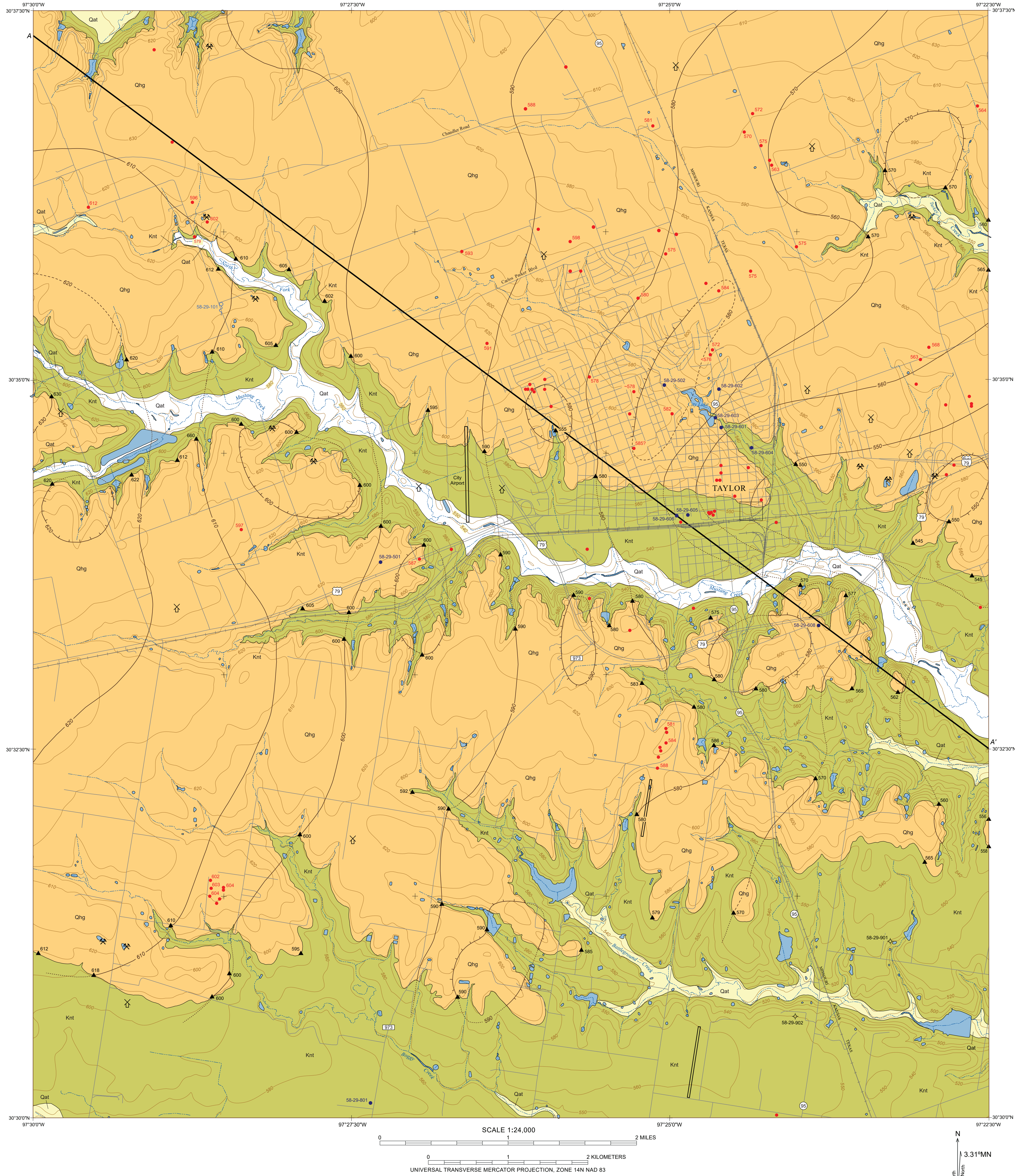




GEOLOGIC MAP OF THE TAYLOR QUADRANGLE, TEXAS

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Explanation

QUATERNARY

- Qat—Combined Quaternary alluvium and terrace:** Includes stream channels, floodplains, and adjacent unconsolidated alluvial terrace deposits that consist mostly of clay admixed with gravel clasts. Clay is mainly a locally derived weathering product of claystone substrates; clasts consist of well-rounded chert and quartz pebbles and some cobbles eroded from nearby uplands. The ultimate sources of these gravels are areas west of the Balcones Escarpment. Thicknesses typically range from 4 to 8 ft, locally as much as 10 to 12 ft.
- Qhg—Quaternary high gravel:** Gravel, sand, and clay, poorly sorted and mostly unconsolidated. Clasts are locally cemented by caliche and consist of chert, quartz, and limestone pebbles and cobbles. These deposits are contained within a low-gradient (slopes range: 0.15–0.17 percent) alluvial plain that probably represents a remnant of ancient deposits from combined Brushy Creek/San Gabriel River drainage basins and adjacent watersheds that included crystalline-rock terranes of the Llano Uplift. The gravel deposits are seldom exposed; these substrates are typically covered by dark, chocolate-brown clay to clay-loam soils roughly 6 ft thick with scattered gravel lag deposits. Surface soils commonly overlie caliche-like subsoil 3–8 ft thick. These thick, fertile soils are prime agricultural land that occupies an extensive, gently sloping upland surface. The underlying gravel deposits range from 8 to 20 ft thick and compose an important local, low-capacity perched aquifer. The dissected edges of these deposits have been the sites of gravel pits, but none of these are known to be still active.

CRETACEOUS

- Knt—Navarro and Taylor Groups, undivided:** Claystone consisting mainly of montmorillonite with variable calcareous content, as well as marl, local chalky intervals (more likely limy marl), and thin siltstone partings. These comprise up to 700 ft of several formations (Cossicana and Kemp Formations of the Navarro Group and Sprinkle, Pecan Gap, and Bergstrom Formations of the Taylor Group, based on stratigraphic nomenclature of Young (1977)). Nomenclature varies according to vintage of mapping; these names presented here are generally consistent with those used on adjacent geologic maps by Collins (1997 and 2000) and measured sections by Young (1977). Mapping by Barnes (1974) includes units typical of areas to the north (Waco vicinity). All these map units are poorly exposed except where fresh roadcuts or other excavations occur. Both the Navarro and Taylor Groups contain strata representing Upper Cretaceous open-marine environments that received long-term influx of volcanic ash. This ash rapidly weathered to form the predominantly montmorillonite species of clay minerals. These substrates and their weathered surface soils are notorious for engineering problems (e.g., low strength, high shrink-swell, low permeability, and high corrosion potential). The soils make up prime agricultural land typical of the Blackland Prairies of Central Texas.

Map Symbols

- Water well (confirmed TWDB location with State Well Number (SWN))
- Spring location (with SWN)
- Oil/gas well location (from TWDB with SWN)
- Water well (unconfirmed location from TWDB data-base (no SWN), estimated subsurface elevation at base Qhg in feet above mean sea level (msl) based on drillers' logs from TWDB)
- Surface elevation of mapped contact at base Qhg (feet above msl)
- Contoured elevation on base Qhg
Contour interval = 10 ft
- Inferred elevation of base Qhg
- Reconstructed elevation of base Qhg (removed by erosion)
- USGS topographic contour showing elevation (feet above msl). Contour interval = 10 ft
- Geologic contact
- Cross-section line
- Windmill
- Gravel pit (abandoned)
- Road
- Railroad
- Airstrip
- Intermittent stream
- Water body (lake/pond)

Acknowledgments

The mapping of this quadrangle entailed analysis of aerial photographs, review of existing mapping, and fieldwork. The topographic base was created from digital files of the Texas Natural Resources Information System (TNRIS) for the U.S. Geological Survey, Taylor, Texas, 7.5-minute topographic quadrangle map. Digital files of roads, county boundaries, drainage, and lakeshores were also obtained from TNRIS. Locations of water wells and a few petroleum-exploration wells were obtained from online databases of the Texas Water Development Board (TWDB). Information pertaining to the depth and thickness of Quaternary high gravels was obtained from drillers' logs contained within those same TWDB databases. These well-log data and surface map contacts were used to delineate contours on the base of that high gravel deposit.

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