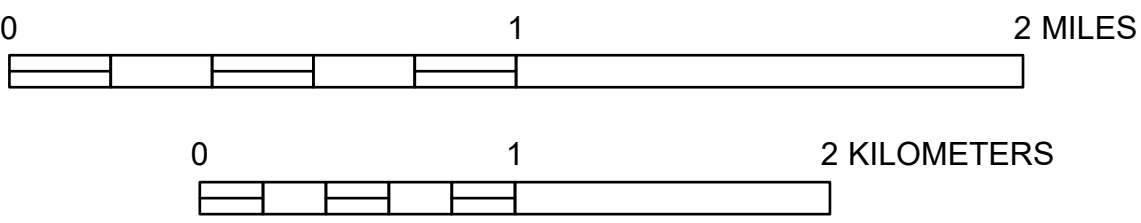
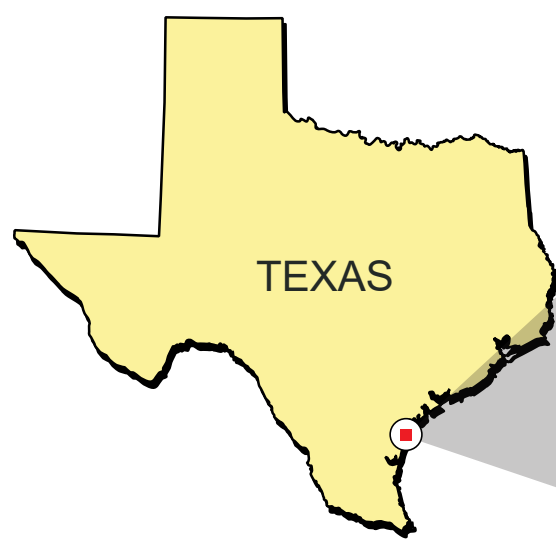


N
0.84°GN
2.83°MN
Approximate 2025 Magnetic North
(MN) declination

SCALE 1:24,000



UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 14N NAD83 (2011)



Explanation

HOLOCENE Matagorda Formation

- Qm-sd** **Qm-sd - Sand dune.** Unconsolidated sand deposited by wind, including blowout dunes. May be active or stabilized by vegetation. May include Pleistocene deposits.
- Qm-cd** **Qm-cd - Clay dune.** Semiconsolidated silt, clay, and sand deposited by wind adjacent to active and abandoned tidal flats. May include storm deposits. Common coastal prairie vegetation.

Carancahua Member (Bay- and Estuarine-margin Deposits)

- Qmc-m** **Qmc-m - Marsh.** Unconsolidated mud and sand deposited in low-relief areas adjacent to bay shoreline. Common tidal channels. Saltwater or brackish-water marsh vegetation.
- Qmc-b** **Qmc-b - Beach or berm.** Unconsolidated sand, shell, and mud deposited along bay shoreline from wave action. Beach is unvegetated; berm may be sparsely vegetated.
- Qmc-ba** **Qmc-ba - Beach or berm; abandoned.** Unconsolidated sand, shell, and mud deposited in low berm along former bay shorelines from wave action. Commonly vegetated.
- Qmc-w** **Qmc-w - Washover.** Unconsolidated sand and shell deposited adjacent to bay shoreline by high water level and wave activity during tropical cyclone passage. Commonly unvegetated.
- Qmc-sp** **Qmc-sp - Spit.** Unconsolidated sand, shell, and mud deposited across bay and valley mouths from erosion of adjacent shoreline and lateral sediment migration. May include beach, berm, and washover deposits.
- Qmc-tf** **Qmc-tf - Tidal flat.** Unconsolidated sand and mud deposited in a tidal flat that is periodically inundated by astronomical tides or wind-driven water at the margins of bays or tributary valleys. May include barren or vegetated areas and algal mats.

Saluria Member (Gulf-margin Deposits)

- Qms-bf** **Qms-bf - Barrier flat.** Unconsolidated sand deposited in low-relief barrier-island environment landward of the beach and dune system. May include washover and eolian deposits.

HOLOCENE TO PLEISTOCENE

- Qal** **Qal - Alluvium, undifferentiated.** Unconsolidated sand, silt, and clay deposited in a variety of environments along streams and drainages. May include Pleistocene and Holocene deposits.

PLEISTOCENE Beaumont Formation

- Qb** **Qb - Beaumont Formation, undifferentiated.** Semiconsolidated clay, silt, sand, and minor gravel deposited in fluvial-deltaic, interdistributary, distributary, and bay and estuarine settings. Includes floodplain and delta-plain deposits and channel, levee, and crevasse-splay deposits.

Ingleside Unit

- Qbi** **Qbi - Barrier island, barrier peninsula, and strandplain, undifferentiated.** Semiconsolidated sand, silt, and lesser clay deposited in barrier island, barrier peninsula, or strandplain setting. Common pimple mounds, closed basins, and ridge-and-swale topography.
- Qbi-bf** **Qbi-bf - Barrier flat.** Semiconsolidated sand and mud deposited in barrier-flat environment.
- Qbi-bbl** **Qbi-bbl - Back barrier and lagoon.** Semiconsolidated sand and mud deposited in back barrier or lagoon environment.
- Qbi-dw** **Qbi-dw - Barrier drainageway.** Semiconsolidated sand, silt, and lesser clay deposited in former Ingleside larger swales, tidal channels, and washover channels. Generally low elevation with few pimple mounds. Commonly flooded by storm-elevated tides.
- Qbi-elb** **Qbi-elb - Ephemeral lake basin.** Semiconsolidated sand and mud deposited in closed or connected topographic basins in a barrier-island or strandplain environment. May include younger lacustrine deposits.

Map Symbols (lines, symbols, and patterns)

- Contact (distinct)
- - - Contact (gradational)
- · - · - Normal fault - approximately located
- Stream (active or intermittent), drainage ditch, canal, or tidal channel
- - - Ship channel
- Coastal structure - Jetty, pier, groin, or breakwater
- Waterline
- County line
- Road
- Railroad
- Elevation (ft); contour interval 5 ft
- ▲ Apparent electrical conductivity (in millisiemens per meter, or mS/m) of the ground measured using a Geonics EM31 ground-conductivity meter in the vertical dipole coil orientation. Value shown is bulk conductivity from the surface to depths of 10 to 20 ft (McNeill, 1980a, 1980b).
- Time-domain EM sounding for subsurface lithostratigraphic interpretation.
- Water; Bay, large lake, or large stream connected to bay
- SPW: Selected ponded water
- Fill; Land artificially elevated by fill material
- DMDA: Dredged material disposal area
- DMR: Dredged material, reworked. Unconsolidated sand and mud.
- DCP: Dredged or excavated canal, ditch, or pond. May contain water.
- PI: Excavated area. May contain standing water.
- IA: Highly developed industrial area with significant land disturbance and areal extent
- Br: Breakwater. Protective rock structure.

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Acknowledgments

Photography used in the study included (1) 0.6-m pixel, natural color, National Agriculture Imagery Program (NAIP) digital imagery, photographed in 2022 and 2024 and (2) 1:24,000-scale Tobin aerial photographic mosaics of the Port Ingleside quadrangle flown between March 1930 and April 1937 and in December 1958. NAIP imagery was obtained from the Texas Geographic Information Office (TXGIO). Photography was supplemented by 1-m cell size digital elevation models (DEMs) constructed from data acquired during an airborne lidar survey flown by the U.S. Geological Survey (USGS) in 2018. Previous regional maps that cover this area include the 1:250,000-scale Geologic Atlas of Texas, Corpus Christi Sheet (Brown and others, 1975); the 1:125,000-scale Environmental Geologic Atlas of Texas, Corpus Christi area (Brown and others, 1976); and the 1:125,000-scale map of Distribution of Wetlands and Benthic Macroinvertebrates from the Submerged Lands of Texas, Corpus Christi area (White and others, 1983). The rationale for the mapping approach to Holocene fluvial, deltaic, bay, and estuarine deposits is described in Paine and others (in press).

The study included field observations of surficial deposits and collection and interpretation of surface and subsurface electrical conductivities measured using Geonics EM31 and EM38 ground-based electromagnetic induction conductivity meters (McNeill, 1980a, 1980b) and time-domain electromagnetic induction instruments (TEMCompany sTEM). Elevation contours were obtained in GIS format from the U.S. Geological Survey. Roads, railroads, and dredged ship channels were obtained in GIS format from the Texas Department of Transportation. Streams and drainage ditches were mapped from aerial imagery and the lidar-derived DEM.

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System	Series	Time (ka)	Map Units				
Quaternary	Holocene	0	Eolian	Lacustrine	Fluvial and Deltaic	Bay and Estuarine	Gulf Margin
			Qm-sd Qm-cd		Qal	Qmc-m Qmc-b Qmc-ba Qmc-w Qmc-sp Qmc-tf	Qms-bf
	Pleistocene	~12			Qal Qb	Qbi-bbl	Qbi Qbi-dw Qbi-elb
		~2,800					