BUREAU OF ECONOMIC GEOLOGY
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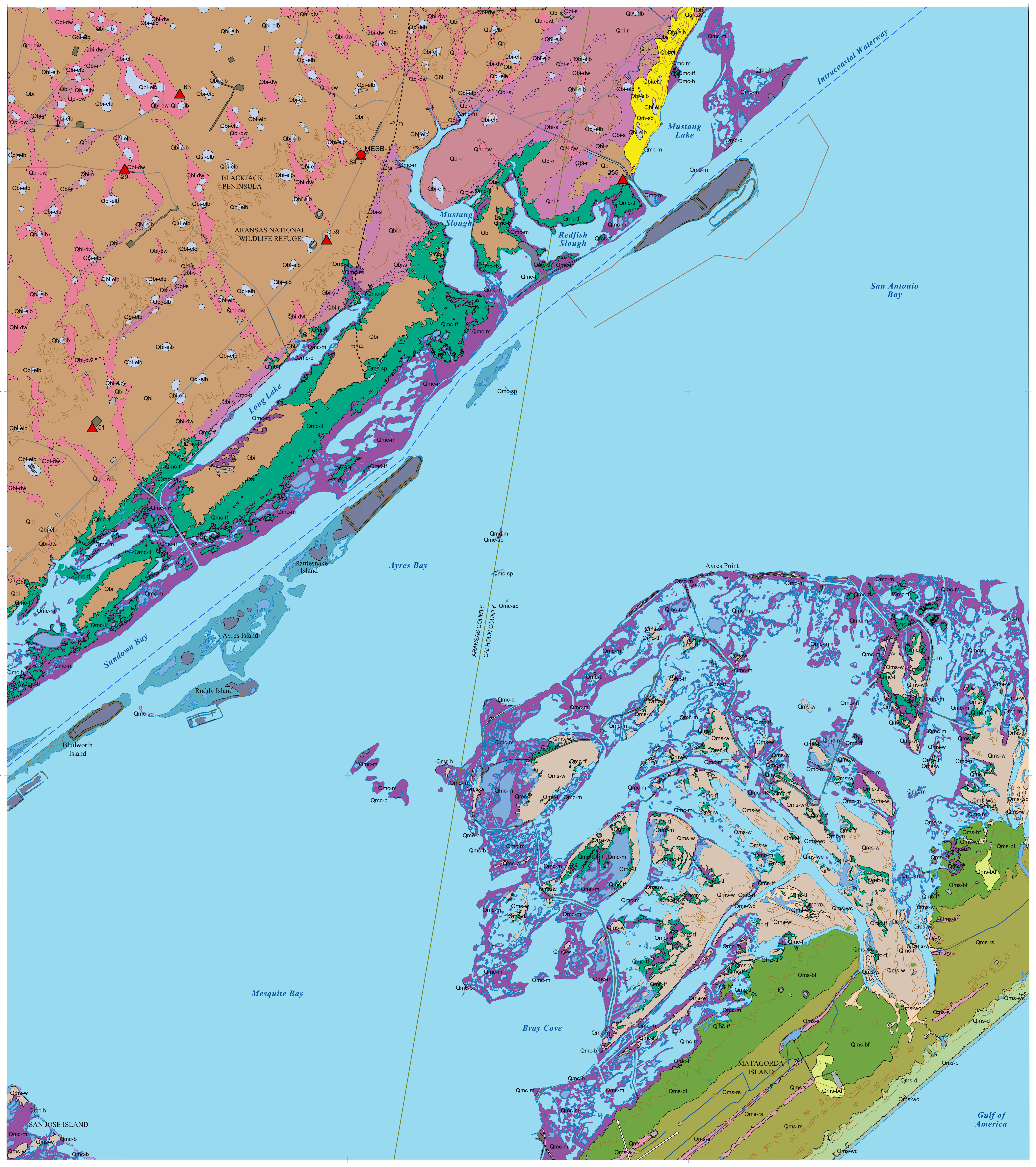


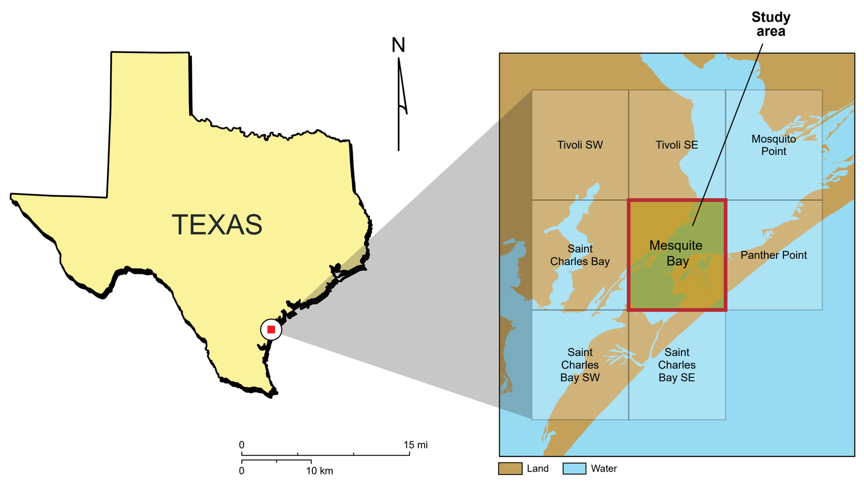
N
1.03°GN
2.61°MN
True North
Magnetic North
Approximate 2026 Magnetic North (MN) declination

SCALE 1:24,000

0 1 2 MILES

0 1 2 KILOMETERS

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



GEOLOGIC MAP OF THE MESQUITE BAY QUADRANGLE
TEXAS GULF OF AMERICA COAST

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Explanation

HOLOCENE
Matagorda Formation

Eolian Deposits

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.

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. Salt- 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-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-b — **Qms-b - Beach.** Unconsolidated sand deposited in forebeach or backbeach environment. Forebeach is unvegetated. Backbeach may have sparse vegetation.

Qms-d — **Qms-d - Dune.** Unconsolidated sand deposited by wind adjacent to the beach. Includes foredunes and former foredunes. May be active or stabilized by vegetation.

Qms-bd — **Qms-bd - Blowout dune.** Unconsolidated sand deposited by wind. May include back-island or elongate dunes extending across the barrier flat. May be active or stabilized by vegetation.

Qms-s — **Qms-s - Swale.** Unconsolidated sand and mud deposited in generally coast-parallel topographic troughs. Common fresh- to brackish-water marsh vegetation.

Qms-rs — **Qms-rs - Ridge and swale, undifferentiated.** Barrier island, peninsula, or strandplain ridge and swale deposits, undifferentiated. Common coastal prairie vegetation on ridges and fresh- or brackish-water marsh vegetation in swales.

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.

Qms-w — **Qms-w - Washover.** Unconsolidated sand and shell deposited in sheets, fans, or bars landward of the beach by high water level and wave activity during tropical cyclone passage. May be barren or vegetated.

Qms-wc — **Qms-wc - Washover channel.** Unconsolidated sand, shell, and mud deposited in washover channels active during high water level associated with tropical cyclone passage. May be barren or vegetated.

PLEISTOCENE
Beaumont Formation

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-r — **Qbi-r - Barrier ridge.** Semiconsolidated sand deposited in generally coast-parallel topographic high showing barrier-island progradation. Live oak common.

Qbi-s — **Qbi-s - Barrier swale.** Semiconsolidated sand and mud deposited in generally coast-parallel topographic troughs between progradational ridges.

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)
- Waterline
- Normal fault - approximately located (U / D)
- Stream (active or intermittent), drainage ditch, canal, or tidal channel
- Elevation (ft); contour interval 5 ft
- Road
- Ship channel
- Coastal structure - Jetty, pier, groin, or breakwater
- County line
- 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.
- Pit; Excavated area. May contain standing water.
- Pier; Structure extending from shore into a water body.
- Groin; Concrete or rock structure extending from the shore into major water body for sediment retention or erosion protection.
- Airfield; Airfield runway, taxiway, and fill.

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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 Mesquite Bay quadrangle flown in March 1930 and March 1937, and in December 1957. 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, Beeville–Bay City Sheet (Aronow and others, 1975; revised 1987); the 1:125,000-scale Environmental Geologic Atlas of Texas, Port Lavaca area (McGowen and others, 1976); and the 1:125,000-scale map of Distribution of Wetlands and Benthic Macroinvertebrates from the Submerged Lands of Texas, Port Lavaca area (White and others, 1989). 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 a TEMCompany sTEM time-domain electromagnetic induction instrument. Elevation contours were modified from the U.S. Geological Survey. Roads and dredged ship channels were obtained from the Texas Department of Transportation. Streams and drainage ditches were mapped from aerial imagery and the lidar-derived DEM. Access to the Aransas National Wildlife Refuge was facilitated by Alison Griffin, U.S. Fish and Wildlife Service.

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System	Series	Time (ka)	Map Units: Eolian	Lacustrine	Fluvial and Deltaic	Bay and Estuarine	Gulf margin
Quaternary	Holocene	0 – ~12	Qm-sd			Qmc-m, Qmc-b, Qmc-ba, Qmc-sp, Qmc-tf	Qms-b, Qms-d, Qms-bd, Qms-s, Qms-rs, Qms-bf, Qms-w, Qms-wc
	Pleistocene	~2,600					Qbi, Qbi-r, Qbi-s, Qbi-dw, Qbi-elb