BUREAU OF ECONOMIC GEOLOGY
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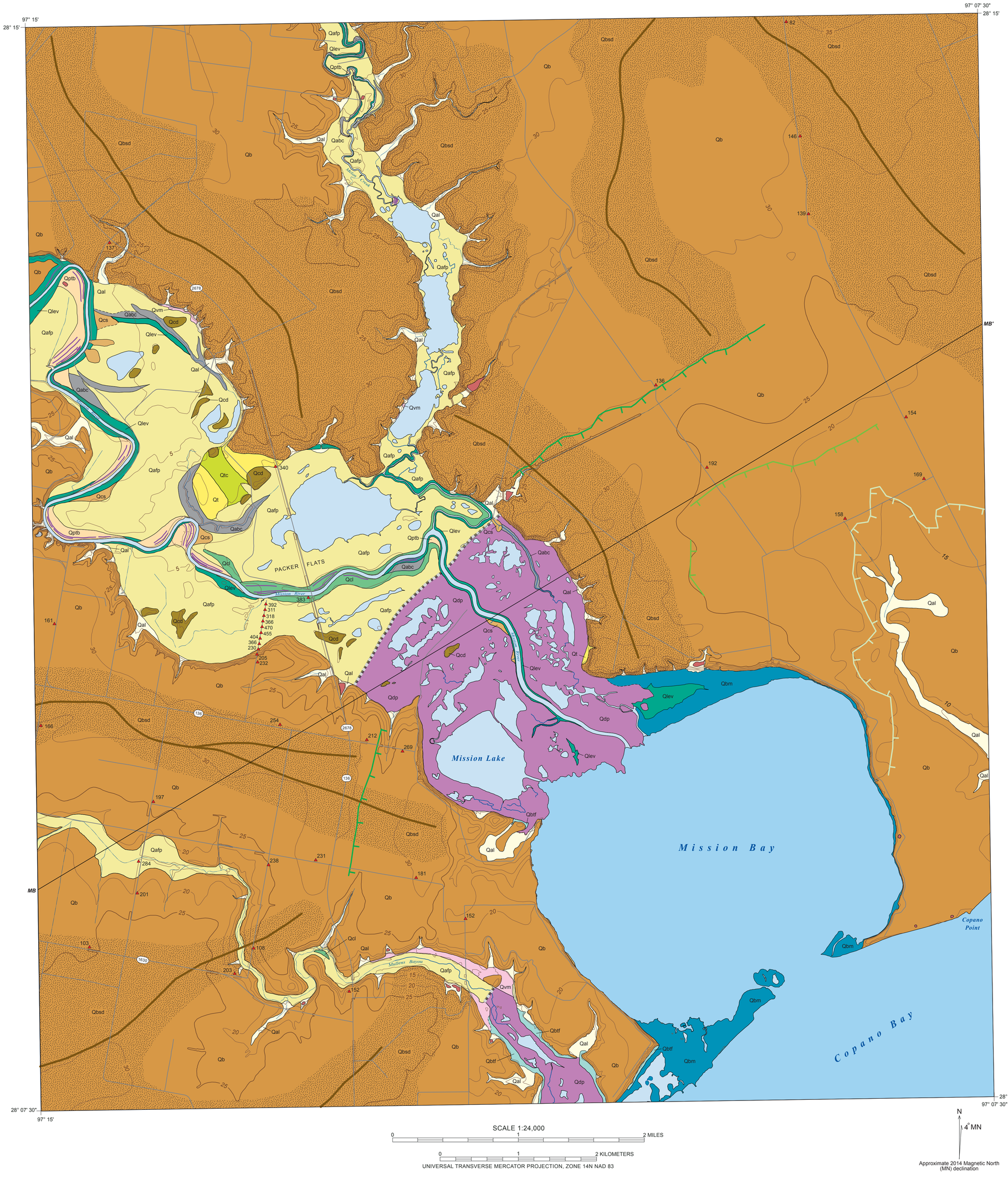
THE UNIVERSITY OF TEXAS AT AUSTIN
In cooperation with the STATEMAP component of the
National Cooperative Geologic Mapping Program,
administered by the U.S. Geological Survey

GEOLOGIC MAP OF THE MISSION BAY QUADRANGLE:
MISSION DELTA AND COPANO BAY AREA
TEXAS GULF OF MEXICO COAST
Open-File Map



SCALE 1:24,000
0 1 2 MILES
0 1 2 KILOMETERS
UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 14N NAD 83

N
4° MN
Approximate 2014 Magnetic North
(MN) declination

Explanation

Modern to Holocene

- Qal — **Qal—Alluvium of drainageways.** Sand, clay, less gravel.
- Qafp — **Qafp—Floodplain alluvium.** Sand, clay, less gravel. Includes undifferentiated minor levees, crevasse splays, tidal-channel levees, and active and abandon stream channels.
- Qt — **Qt—Alluvium of young terraces.** Sand, clay, less gravel.
- Qtc — **Qtc—Alluvium of terrace channel.** Mud and sand.
- Qabc — **Qabc—Abandon-channel deposits.** Mud and some sand.
- Qlev — **Qlev—Levee deposits.** Sand and mud. Low, narrow deposits subparallel and adjacent to stream and tidal channels.
- Qcl — **Qcl—Undivided channel and levee deposits.** Sand and mud.
- Qvm — **Qvm—Valley margin deposits.** Sand and mud.
- Qcs — **Qcs—Crevasse-splay deposits.** Sand and mud. Commonly fan-shaped deposits adjacent to stream channels and levees.
- Qptb — **Qptb—Point-bar deposits.** Sand and some mud.
- Qcd — **Qcd—Clay dune.** Clay, silt, sand, and organic matter. Located downwind of irregularly flooded areas such as ephemeral lakes and tidal flats.
- Qbtf — **Qbtf—Barren tidal flat deposits in emergent areas.** Sand and mud. Emergent areas that are periodically submerged by unusually high tides, storms, or wind-driven bay waters.
- Qbm — **Qbm—Bay margin deposits.** Sand and mud.
- Qdp — **Qdp—Delta plain deposits.** Mud and sand. Includes some undifferentiated, minor fluvial levees, crevasse splays, tidal-channel levees, and active and abandoned stream and tidal channels.

Pleistocene

- Qb / Qbsd — **Qb—Beaumont Formation.** Clay, silt, sand, and minor gravel in fluvial-deltaic inter-distributary and distributary setting. Includes stream-channel, point-bar, natural-levee, crevasse-splay, and back-swamp deposits. Some coastal-marsh, mud-flat, and lagoon deposits. Stippled pattern indicates area of sand-rich channel-system facies, Qbsd, at the surface and shallow subsurface. Qbsd contacts are gradational and approximate.

MAP SYMBOLS

- Contact; dashed where approximate.
- Gradational contact approximate
- 25 — Elevation (ft); contour interval 5 ft
- 155 — 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 a bulk conductivity from the surface to depths of 10 to 20 ft (McNeill, 1980a and b).
- Road
- Water; bay
- Selected ponded water and streams; ponded water and channels of delta plain include regularly flooded areas and intermittently flooded areas such as flats.
- Intermittent stream or canal
- Pit
- Channel scar
- Axis of Beaumont Formation sand-rich channel-system facies, Qbsd (approximate).
- Scarp A. Topographic scarp having relief of 3−5 ft (1−1.5m).
- Scarp B. Topographic scarp having relief of 1.5−3 ft (0.5−1m).
- Scarp C. Topographic scarp having relief of 1.5−3 ft (0.5−1m).

Photography used in the study was 1-m-pixel digital imagery, photographed in 2012, that was obtained from Texas Natural Resources Information System (TNRIS). A 1-m-resolution digital-elevation model (DEM) constructed from a 2014 airborne-lidar survey was also used. Previous regional maps that cover this area include the 1:125,000-scale Environmental Geologic Atlas, Corpus Christi Sheet (Brown and others, 1976), the 1:125,000-scale map of Distribution of Wetlands and Benthic Macroinvertiebrates (White and others, 1983), and the 1:250,000-scale Geologic Atlas of Texas, Beeville–Bay City Sheet (Aronow, 1975; revised 1987). Sand-rich facies, Qbsd, of the Beaumont Formation are adapted from review of 1:250,000-scale interpretations of the Beeville–Bay City Sheet (Aronow, 1975; revised 1987), study of soil maps (Guckian and Gacia, 1979; Guckian and others, 1988), field observations, and ground-based electromagnetic conductivity measurements measured for this study. The 1:250,000-scale interpretations of the Beeville–Bay City Sheet (Aronow, 1975; revised 1987) are displayed in digital data files developed by the Texas Water Development Board and U.S. Geological Survey as part of the 1:250,000-scale Statewide Digital Geologic Atlas of Texas created from hard-copy maps. Topographic scarps were mapped from the 2014 lidar-derived DEM. Review of Paine (1991) provided useful subsurface information for the Quaternary deposits. Digital files for topography adapted to this map came from TNRIS for U.S. Geological Survey topographic quadrangle maps, Bayside and Mission Bay. Digital files of roads and railroads were also obtained through TNRIS. Water bodies were adapted from aerial photographs, lidar-derived DEMs, and the U.S. Geological Survey topographic maps. BEG staff Kutalmis Saylam, Tiffany Caudle, Aaron Averett, Ruth Costley, John Andrews, and John Hupp acquired and processed airborne lidar data. Work for this map was supported partly by the U.S. Geologic Survey, National Geologic Mapping Program, with the assistance of STATEMAP award G13AC00178, and partly by the BEG STARR funds for geologic mapping and study of geologic hazards. Views and conclusions contained in this map should not be interpreted as necessarily representing the official policies, either expressed or implied, of the U.S. Government. The authors disclaim any responsibility or liability for interpretations from this map or digital data or decisions based thereon.

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Selected References

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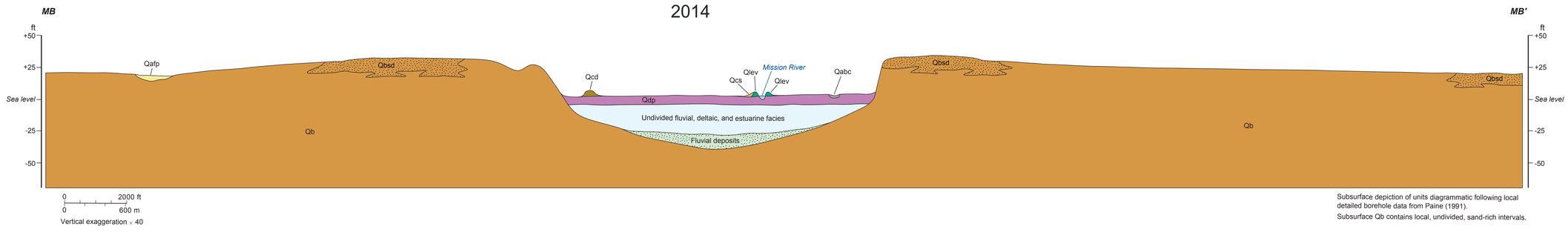
Jeffrey G. Paine and Edward W. Collins
2014



Subsurface depiction of units diagrammatic following local detailed borehole data from Paine (1991).
Subsurface Qb contains local, undivided, sand-rich intervals.

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