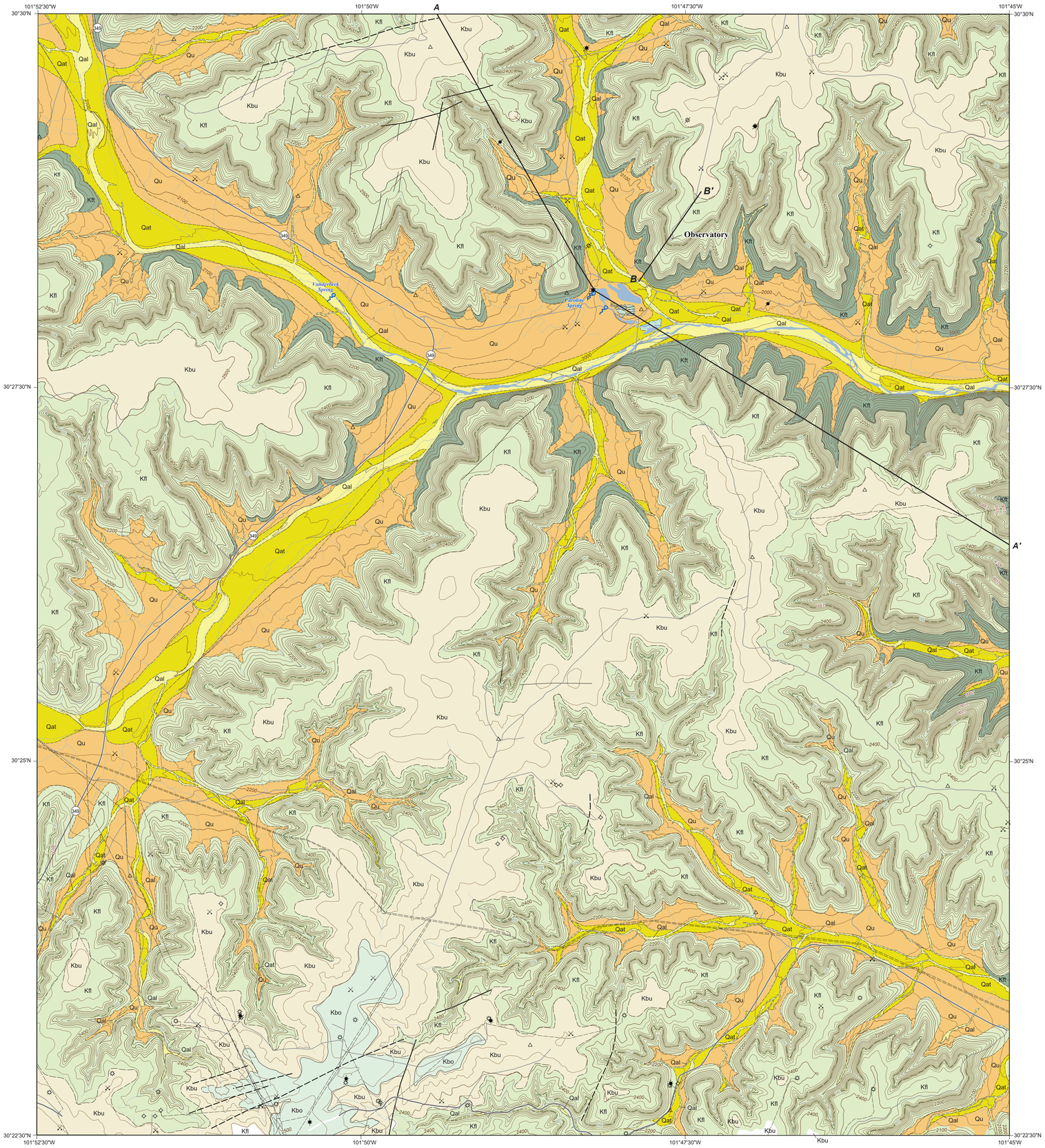
BUREAU OF ECONOMIC GEOLOGY
LORENA G. MOSCARDELLI, DIRECTOR
JACKSON SCHOOL OF GEOSCIENCES, THE UNIVERSITY OF TEXAS AT AUSTIN
In cooperation with the State of Texas Advanced Resource Recovery (STARR) Program and the
U.S. Geological Survey National Cooperative Geologic Mapping Program under STATEMAP award No. G23AC00581, 2023

GEOLOGIC MAP OF THE OASIS RANCH QUADRANGLE
TERRELL COUNTY, TEXAS
OPEN-FILE MAP No. 290
2024



SURFICIAL DEPOSITS

Qal—Alluvium (Holocene)—Gravel sand, clay, silt, and organic material. Active stream and floodplain deposits generally unconsolidated or very weakly cemented sediments along active stream and river channels. Locally contains bedrock exposures not mapped.

Qat—Alluvium and terrace (Holocene)—Gravel, sand, silt, and clay. Unconsolidated or weakly cemented sediments on irregular treads adjacent to active stream channels. Likely eroded older terrace deposits modified by modern flood sediments (Qal). Unit contains vegetation and soils composed of silty to gravely clay loam corresponding to the Dev-Iraan (De) soil association mapped by the NRCS (Soil Survey Staff, 2024).

Qu—Quaternary deposits undivided (Pleistocene to Holocene)—Poorly sorted, angular to rounded limestone gravel to sand, and chert mixed with caliche. Includes alluvial fan deposits, colluvium, caliche and alluvium. Alluvial fan deposits occupy steep slopes and merge with colluvium and alluvium. Unit contains soils composed of very gravely loam corresponding to the Sanderson-Upton (Su) soil complex mapped by the NRCS (NRCS, 2024).

UNCONFORMITY

UPPER CRETACEOUS

Kbo—Boquillas Formation (Cretaceous)—Light yellowish-gray to grayish-orange thin, cross-laminated (clastic) carbonate grainstone interbedded with siltstone (McKalips and others, 1981). Most of the unit is eroded with only thin remnants (less than 20 ft or 6 m) of the basal portion remaining. Lower portion of the unit appears as a distinctly dark bands on aerial photos with denser vegetation and less-developed bedding than the underlying Buda.

Kbu—Buda Limestone (Cretaceous)—Light gray to pale orange fine-grained, bioclastic, interbeds of hard to nodular argillaceous limestones (McKalips and others, 1981). Buda Limestone forms much of the plateau surface in the quadrangle and is distinguished from the overlying Boquillas by its distinctly lighter color and vegetated bands on aerial photos. Unit is about 40 ft (12 m) thick.

UNCONFORMITY

FREDERICKSBURG-WASHITA DIVISION
LOWER CRETACEOUS

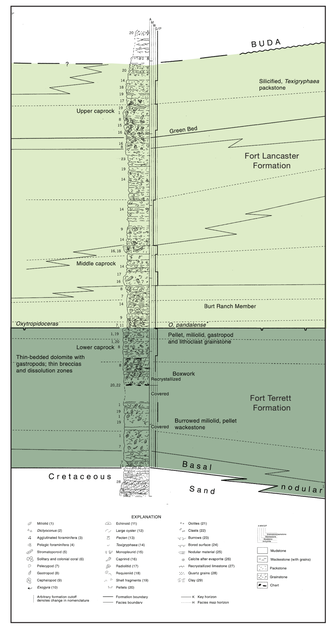
Kfl—Fort Lancaster Formation (Cretaceous)—Limestone and dolostone. Rudist, miliolid, shell-fragment, pellet grainstone to wackestone with chert and dolomite. Contains discontinuous rudistid *reef* (bioherm) boundstones (Smith and others, 2000). Thickness of the Fort Lancaster Formation in the study area is approximately 360–390 ft (110–120 m), consistent with published values of up to 475 ft (145 m) (Smith, 1964; Smith and others, 2000). The Fort Lancaster Formation is described and mapped by Smith and others (2000), and equivalent to the Segovia Formation previously described by Rose (1972) and mapped by McKalips and others (1981). The Fort Lancaster transitions from a fossiliferous marly and slope-forming unit to the northwest, into two bluff-forming grainstone and rudistid limestones known informally as the middle and upper caprock beds, which are separated by two distinct and mappable slope-forming intervals. The base of the upper caprock is defined by a vegetative band mapped by McKalips and others (1981) as the "UC" bed. The bed occurs just below the overlying cliff-forming rudistid limestone and contains a thin nodular limestone that forms a consistent and distinctive vegetation band at the base of the cliff-forming rudistid limestone. The UC bed is about 260 ft (80 m) above the top of the underlying Fort Terrett Formation and has a consistent southward dip of about 16 ft per mile (3 m per kilometer). The second mappable slope-forming unit is the Burt Ranch Member at the base of the Fort Lancaster Formation. The unit is generally recessive and argillaceous (marly), forming a distinctive slope and vegetative mapping horizon about 40 ft (12 m) thick. The unit reportedly contains *E. texana* (oyster) and ammonites representative of the *Manuaniceras powelli* zone (Smith and others, 2000). The contact with the underlying Fort Terrett Formation is sharp and locally defined by an iron-stained and bored hardground. The Burt Ranch Member is reportedly the only regional mappable marker bed within the Edwards Plateau (Smith and others, 2000). The Burt Ranch Member is equivalent to the lower Sue Peaks Formation in the Big Bend area of West Texas, and to the Regional Dense Member of the Person Formation along the Balcones Fault Zone of Central Texas (Rose, 1972; Smith and others, 2000).

Kft—Fort Terrett Formation (Cretaceous)—Heterolithic, composed of milliolid, pellet, shell fragment, clams, gastropod, rudistid grainstone to wackestone, chert and dolomite (Smith and others, 2000). The top of the Fort Terrett locally contains a bluff-forming interval known as the lower caprock. The top of that interval locally contains a bored hardground and forms the sharp contact with the overlying recessive Burt Ranch Member of the Fort Lancaster Formation. The Fort Terrett Formation is approximately 300 ft (91 m) thick in the study area (Smith, 1964; Rose 1972), but only the upper 100 ft (30 m) is exposed in the quadrangle.

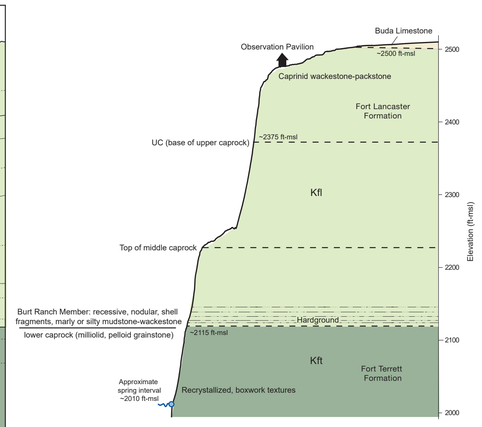
MAP SYMBOLS

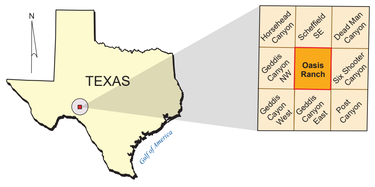
- Contact
- Contact approximate
- Contact inferred
- Contact concealed
- Fault, dashed where approximate
- Pit quarry
- A A′ Cross section
- Improved road
- Local road
- Pipeline
- Intermittent stream
- Spring
- USGS water quality gage
- Water well
- Marsh
- O&G: Plugged oil well
- O&G: Dry hole
- O&G: Plugged gas well
- O&G: Plugged oil/gas
- O&G: Gas well
- O&G: Shut-in gas
- O&G: Unknown

Fort Lancaster Composite Measured Section
(from Smith and others, 2000)



B–B′ Oasis Ranch Observatory Hill Profile



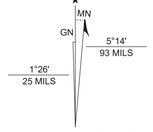


SCALE 1:24,000

0 1 2 4 MILES

0 1 2 4 KILOMETERS

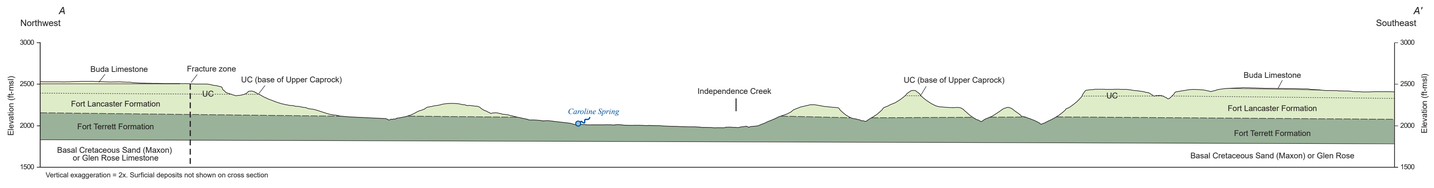
UNIVERSAL TRANSVERSE MERCATOR PROJECTION, ZONE 14N NAD 83
CONTOUR INTERVAL 20 FT
DATUM IS MEAN SEA LEVEL



UTM GRID AND 2024 MAGNETIC NORTH (MN)
DECLINATION AT CENTER OF SHEET

GEOLOGIC MAP OF THE OASIS RANCH QUADRANGLE TERRELL COUNTY, TEXAS

Brian B. Hunt and Mark A. Helper
2024



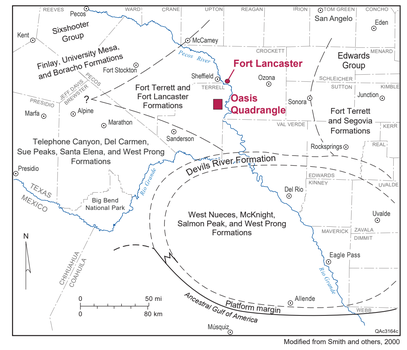
Vertical exaggeration = 2x. Surficial deposits not shown on cross section

Correlation of Map Units

Chrono-stratigraphy	Lithostratigraphy: Edwards Plateau	Map Units	
Quaternary		Qal Alluvium	Surficial deposits
		Qat Alluviated terrace	
		Qu Quaternary, undiff.	
Unconformity			
Upper Cretaceous: Cenomanian | Turonian	Gulfian	Kbo Boquillas Fm.	Bedrock units
Lower Cretaceous: Upper Albian	Comanchean	Kbu Buda Limestone	
Unconformity			
Lower Cretaceous: Middle Albian	Comanchean: Upper / Middle / Lower Fredericksburg-Washita Division	Segovia Formation / Fort Lancaster Formation (Edwards Group, Rose, 1972)	Kfl UC (base of Upper Caprock); Fort Lancaster Formation; Burt Ranch Member Kfl (br); Kirschberg Member
		Fort Terrett Formation	Kft Fort Terrett Formation; Basal Nodular Member
			Subsurface

Lithostratigraphy and Chronostratigraphy
Modified from Rose, 1972; McKalips and others, 1981; Smith and others, 2000.

Regional Lower Cretaceous Lithostratigraphy
(Rose, 1972; Smith and others, 2000)



Modified from Smith and others, 2000

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Acknowledgments

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