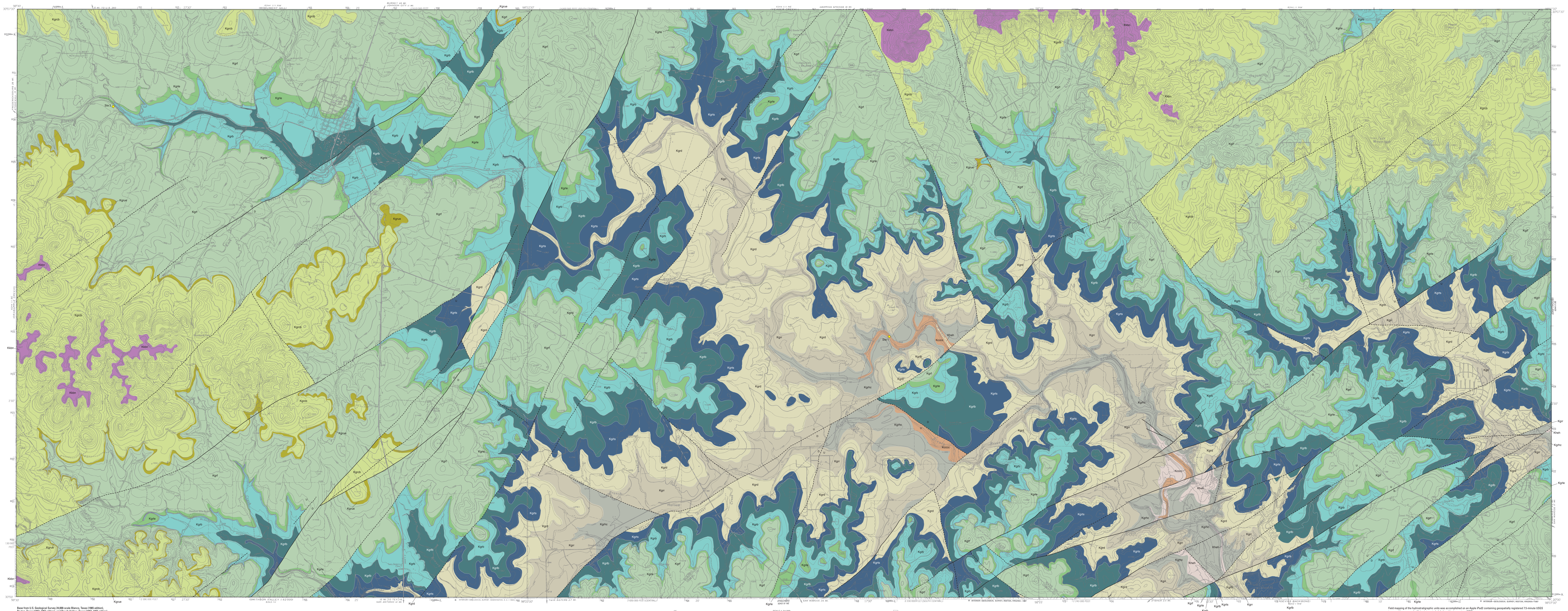
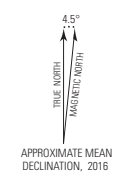
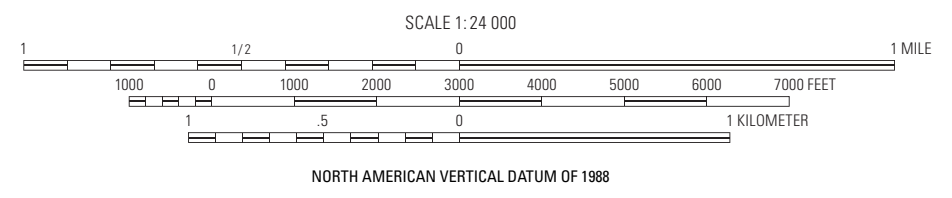
U.S. Department of the Interior
U.S. Geological Survey

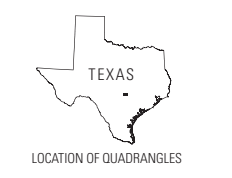
Scientific Investigations Map 3363
Version 1.1
Pamphlet accompanies map


98°30'
30°07'30"
98°22'30"
98°15'
98°07'30"
30°00'
FREDERICKSBURG 29 MI.
STONEWALL 15 MI.
6244 I SE (CRABAPPLE CREEK)
6344 III NW (MONUMENT HILL)
6344 III NE (YEAGER CREEK)
6344 II NW (HENLY)
BURNET 46 MI.
JOHNSON CITY 11 MI.
DRIPPING SPRINGS 16 MI.
(DRIFTWOOD) 6344 II SE
WIMBERLEY 2.7 MI.
SAN MARCOS 17 MI.
ISMITHSON VALLEY 1:62 500I 6343 IV
15 MI. TO TEX. 46
SAN ANTONIO 41 MI.
TWIN SISTERS 2.7 MI.
(FISCHER) 6343 IV NE
SAN MARCOS 25 MI.
FISHER 3.4 MI.
(DEVILS BACKBONE) 6343 I NW
Site 1
Site 2
Kkbn
Kgrcb
Kgrue
Kgrf
Kgrle
Kgrb
Kgrlb
Kgrts
Kgrd
Kgrr
Kgrhc
Kheh
Kcccc
Khah
U
D

Base from U.S. Geological Survey 24,000-scale Blanco, Texas (1965 edition), Payton, Texas (1963, 1987 edition), and Rough Hollow, Texas (1963, 1987 edition)
North American Datum of 1983 (NAD83)
Universal Transverse Mercator Projection, zone 14


4.5°
TRUE NORTH
MAGNETIC NORTH
APPROXIMATE MEAN DECLINATION, 2016


SCALE 1:24 000
1
1/2
0
1 MILE
1000
0
1000
2000
3000
4000
5000
6000
7000 FEET
1
.5
0
1 KILOMETER
NORTH AMERICAN VERTICAL DATUM OF 1988


TEXAS
LOCATION OF QUADRANGLES

Field mapping of the hydrostratigraphic units was accomplished on an Apple iPad2 containing geospatially registered 7.5-minute USGS topographic maps and utilizing integrated global positioning system (GPS).
The field data were transferred to Esri ArcMap (Esri, 2014), quality checked, and then used to produce the study area's hydrostratigraphic map.

Lithologic and hydrostratigraphic descriptions are from field observations and previous investigations.

Digital cartography and GIS database by Diana E. Pedraza.

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DESCRIPTION OF MAP UNITS

Edwards Group (upper Lower Cretaceous, Albian)—Overlies the Trinity Group; mudstone, wackestone, packstone, grainstone, boundstone, dolomitic limestone, argillaceous limestone, evaporites, shale, chert. Most removed by erosion. Thickness of remaining Edwards Group 60 ft. Only basal nodular member of Kainer Formation is present in study area

Kainer Formation (late Early Cretaceous, Albian)—Overlies the Trinity Group; mudstones, wackestone, packstone, grainstone, dolomitic limestone, shale, chert (except in the basal nodular unit). Most removed by erosion. Thickness of remaining Edwards Group 60 ft. Only basal nodular member of Kainer Formation is present in study area

Kkbn **Hydrostratigraphic unit VIII**—Confining, locally water bearing; bedding plane, fracture porosity, and minor cave porosity. Thickness 60 ft

Trinity Group (Lower Cretaceous)—Overlies, in the subsurface, Pennsylvanian shale (Imlay, 1940) in the study area. Contains shale, mudstone to grainstone, boundstone, sandstone, and argillaceous limestone. Thickness of Trinity Group approximately 635–802 ft

Glen Rose Limestone (Lower Cretaceous, lower Aptian to middle Albian)—Alternating beds of yellowish-tan, medium-bedded limestone and argillaceous limestone with minor evaporite layers. Composed of the Lower and Upper Members, separated by a regionally extensive marker bed, composed of the small fossil identified as *Corbula* sp.

Upper Member (Lower Cretaceous, lower to middle Albian)—Massive shale, claystone, evaporites, siltstone, mudstone, wackestone, packstone, grainstone, boundstone and argillaceous limestone. Locally 300–390 ft thick. Composed of the following hydrostratigraphic units in descending stratigraphic order: Cavernous (Kgrc), Camp Bullis (Kgrcb), upper evaporite (Kgrue), fossiliferous (Kgrf), lower evaporite (Kgrle)

Kgrcb **Camp Bullis hydrostratigraphic unit**—Confining; burrow, fracture porosity, and bedding plane. Thickness 220–230 ft

Kgrue **Upper evaporite hydrostratigraphic unit**—Aquifer; interparticle, moldic (boxwork) and breccia porosity. Thickness absent to 10 ft

Kgrf **Fossiliferous hydrostratigraphic unit**—Aquifer; interparticle, moldic, fracture and cave (near top of unit). Thickness 120 ft

Kgrle **Lower evaporite hydrostratigraphic unit**—Aquifer; interparticle, moldic (boxwork) and breccia porosity. Thickness 10 ft

Lower Member (Lower Cretaceous, upper Aptian)—Massive, shale, evaporites, mudstone to grainstone, boundstone and argillaceous limestone. Locally 195–270 ft thick. Composed of the hydrostratigraphic units in descending stratigraphic order: Bulverde (Kgrb), Little Blanco (Kgrlb), Twin Sisters (Kgrts), Doeppenschmidt (Kgrd), Rust (Kgrr) and Honey Creek (Kgrhc)

Kgrb **Bulverde hydrostratigraphic unit**—Confining; moldic and breccia (where evaporites have been removed), bedding plane and fracture porosity. Thickness 30 ft

Kgrlb **Little Blanco hydrostratigraphic unit**—Aquifer; moldic, fracture and bedding plane porosity. Thickness 30 ft

Kgrts **Twin Sisters hydrostratigraphic unit**—Confining in shale beds; interparticle porosity. Thickness 10–30 ft

Kgrd **Doeppenschmidt hydrostratigraphic unit**—Aquifer; interparticle, moldic, burrow, fracture, bedding plane, and cave porosity. Thickness 40–70 ft

Kgrr **Rust hydrostratigraphic unit**—Confining; interparticle, fracture, and cave porosity. Thickness 40–50 ft

Kgrhc **Honey Creek hydrostratigraphic unit**—Aquifer; contains interparticle, moldic, burrow, fractured, channel, bedding plane, and cave porosity. Thickness 45–60 ft

Pearsall Formation (Lower Cretaceous, upper Aptian)—Defined by Imlay (1945), contains five members (from top to bottom): Hensell Sand, Cow Creek Limestone and Hensell Shale Members. Thickness 90–162 ft

Hensell Sand Member (Lower Cretaceous, upper Aptian)—Sandstone and limestone. Weakly cemented, claystone, siltstone, terrigenous sand. Quartz geodes and oysters common. Red sandstone conglomerate/breccia at base. Thickness absent to 40 ft

Kheh **Hensell hydrostratigraphic unit**—Aquifer; interparticle, moldic, shelter, and cave porosity. Thickness absent to 40 ft

Cow Creek Limestone Member (Lower Cretaceous, upper Aptian)—Lower 14 ft dolomitic mudstone to wackestone grades to dolomitic wackestone to packstone. Oysters. Upper part very fine-grained to fine-grained carbonate sand, cross-bedded locally. Thickness about 40–72 ft. Contains Cow Creek hydrostratigraphic unit

Kcccc **Cow Creek hydrostratigraphic unit**—Aquifer; interparticle, moldic, burrow, vug, fracture, bedding plane, channel and cave porosity. Thickness about 40–72 ft

Hammett Shale Member (Lower Cretaceous, upper Aptian)—Contains siltstone, thin dolomite, and claystone. Lower 15 ft contains siltstone and dolomite. Upper part is claystone with sandstone lenses, overrun by fossiliferous, dolomitic limestone (Lozo and Stricklin, 1956; Weirman and others, 2010). Total thickness 50 ft (Lozo and Stricklin, 1956). Contains Hammett hydrostratigraphic unit

Khah **Hammett hydrostratigraphic unit**—Confining unit, little porosity. Thickness 50 ft

MAP EXPLANATION

U
D **Fault**—Type unspecified, dashed where inferred. U, upthrown block; D, downthrown block

Contact—Between hydrostratigraphic units; dashed where inferred

Corbula bed contact—The *Corbula* sp. bed marks the boundary between the Lower and Upper Members of the Glen Rose Limestone. This report considers the Corbula marker bed to be at the base of the Upper Member of the Glen Rose Limestone because three Corbula beds have been found in the study area. The marker bed is the lowest of three Corbula beds. The Corbula marker bed, which is a grainstone, averages 6 inches thick and often contains ripple marks. The overlying Corbula beds are thin, often less than an inch thick, and usually contain more muds. Dashed where inferred

● **Sites highlighted in the text**—
Site 1, 30°03´20˝N., 98°17´14˝W., location of 195-foot measured section within the Blanco River
Site 2, 30°06´21˝N., 98°28´39˝W., stratigraphic type location for the contact of the Upper and Lower Glen Rose Limestone

Study boundary

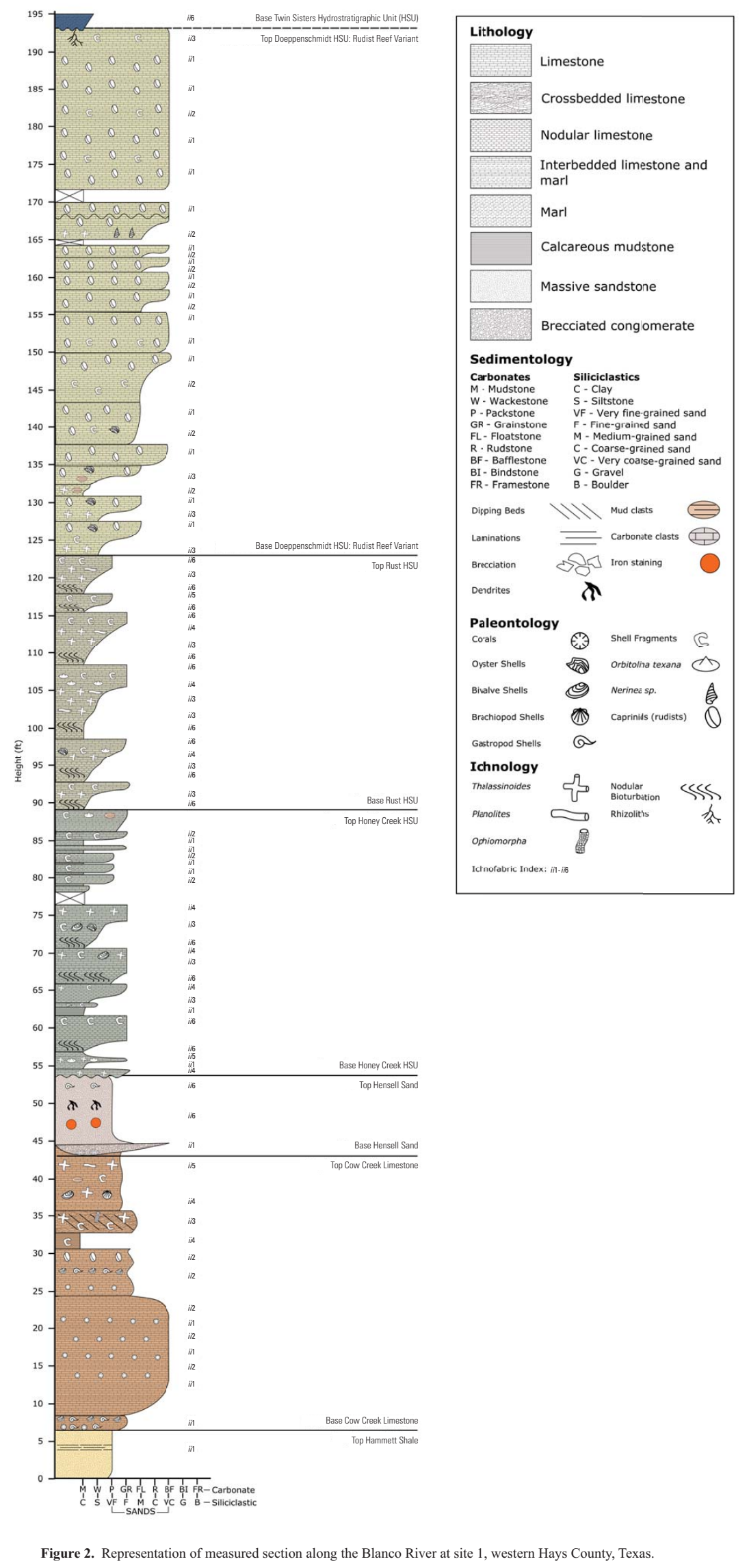

Base Twin Sisters Hydrostratigraphic Unit (HSU)
Top Doeppenschmidt HSU: Rudist Reef Variant
Base Doeppenschmidt HSU: Rudist Reef Variant
Top Rust HSU
Base Rust HSU
Top Honey Creek HSU
Base Honey Creek HSU
Top Hensell Sand
Base Hensell Sand
Top Cow Creek Limestone
Base Cow Creek Limestone
Top Hammett Shale
Height (ft)
195
190
185
180
175
170
165
160
155
150
145
140
135
130
125
120
115
110
105
100
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
M W P GR FL R BF BI FR — Carbonate
C S VF F M C VC G B — Siliciclastic
SANDS
Lithology
Limestone
Crossbedded limestone
Nodular limestone
Interbedded limestone and marl
Marl
Calcareous mudstone
Massive sandstone
Brecciated conglomerate
Sedimentology
Carbonates
M - Mudstone
W - Wackestone
P - Packstone
GR - Grainstone
FL - Floatstone
R - Rudstone
BF - Bafflestone
BI - Bindstone
FR - Framestone
Siliciclastics
C - Clay
S - Siltstone
VF - Very fine-grained sand
F - Fine-grained sand
M - Medium-grained sand
C - Coarse-grained sand
VC - Very coarse-grained sand
G - Gravel
B - Boulder
Dipping Beds
Laminations
Brecciation
Dendrites
Mud clasts
Carbonate clasts
Iron staining
Paleontology
Corals
Oyster Shells
Bivalve Shells
Brachiopod Shells
Gastropod Shells
Shell Fragments
Orbitolina texana
Nerinea sp.
Caprinids (rudists)
Ichnology
Thalassinoides
Planolites
Ophiomorpha
Nodular Bioturbation
Rhizoliths
Ichnofabric Index: ii1–ii6

Figure 2. Representation of measured section along the Blanco River at site 1, western Hays County, Texas. The ichnofabric index is adapted from Droser and Bottjer (1986), the carbonate scale is from Dunham (1962), and the siliciclastic scale is from Wentworth (1922).

CONVERSION FACTORS

Multiply	By	To obtain
	Length	
inch (in.)	2.54	centimeter (cm)
inch (in.)	25.4	millimeter (mm)
foot (ft)	0.3048	meter (m)
mile (mi)	1.609	kilometer (km)

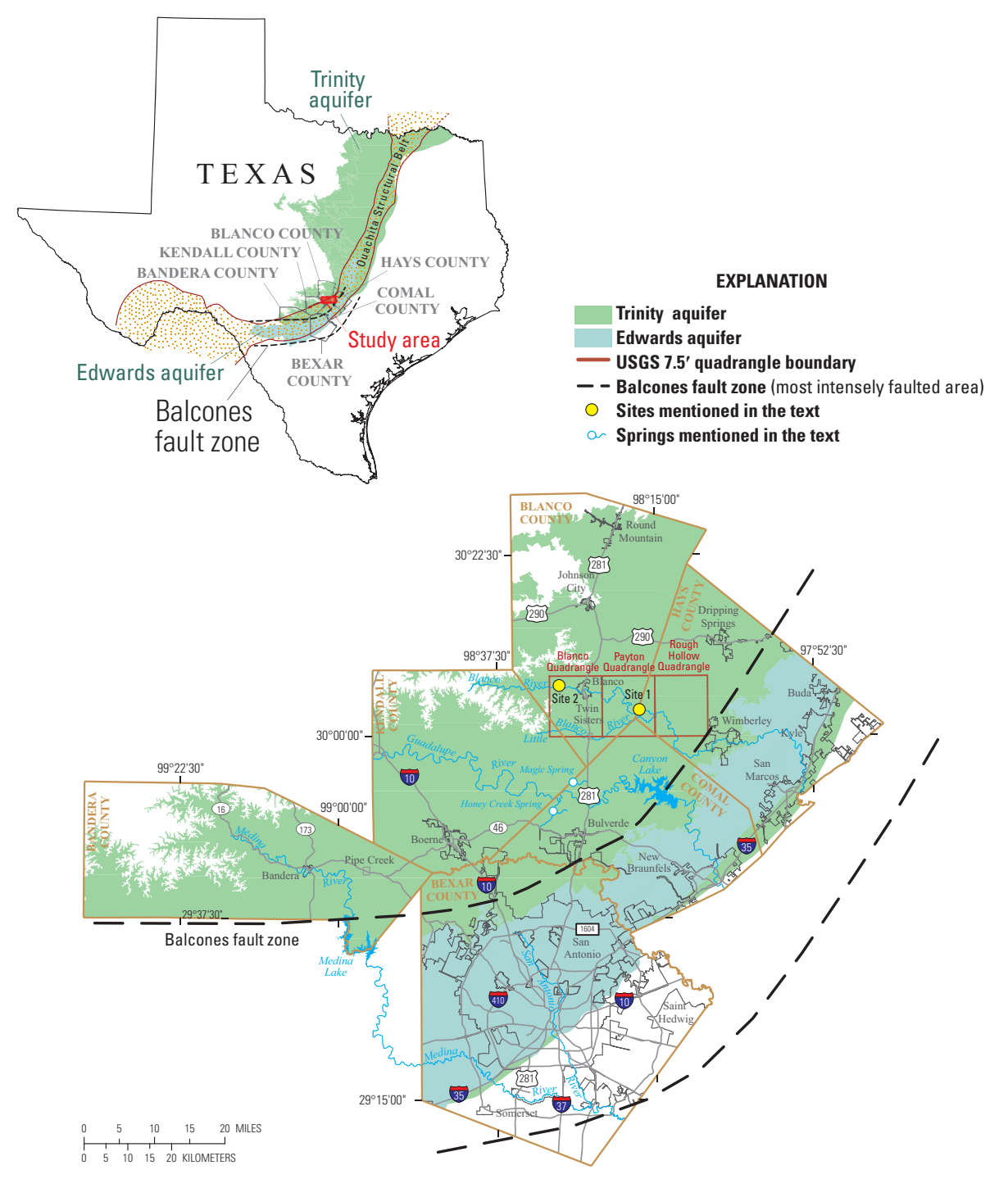
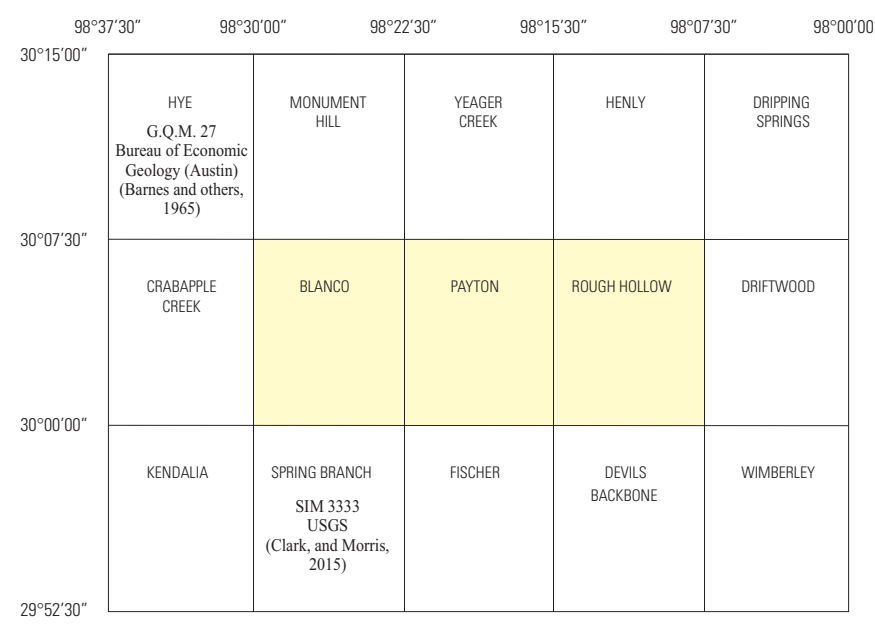

Trinity aquifer
TEXAS
BLANCO COUNTY
KENDALL COUNTY
BANDERA COUNTY
HAYS COUNTY
COMAL COUNTY
BEXAR COUNTY
Study area
Edwards aquifer
Balcones fault zone
EXPLANATION
Trinity aquifer
Edwards aquifer
USGS 7.5' quadrangle boundary
Balcones fault zone (most intensely faulted area)
Sites mentioned in the text
Springs mentioned in the text
98°15'00"
30°22'30"
98°37'30"
97°52'30"
30°00'00"
99°22'30"
99°00'00"
29°37'30"
29°15'00"
Blanco Quadrangle
Payton Quadrangle
Rough Hollow Quadrangle
Site 2
Site 1
Johnson City
Dripping Springs
Twin Sisters
Wimberley
San Marcos
Bulverde
New Braunfels
Boerne
Bandera
Pipe Creek
San Antonio
Medina Lake
Canyon Lake
Balcones fault zone
0 5 10 15 20 MILES
0 5 10 15 20 KILOMETERS

Figure 1. Location of study area.

EXPLANATION OF HYDROSTRATIGRAPHIC UNITS

Group	Formation	Member	Informal hydrostratigraphic unit	
Edwards	Kainer Formation	basal nodular of the Fort Terrett Formation	Kkbn	VIII
Trinity	Glen Rose Limestone	Upper	Kgrc	Cavernous (absent from study area)
			Kgrcb	Camp Bullis
			Kgrue	Upper evaporite
			Kgrf	Fossiliferous
			Kgrle	Lower evaporite
		Lower	Kgrb	Bulverde
			Kgrlb	Little Blanco
			Kgrts	Twin Sisters
			Kgrd	Doeppenschmidt
			Kgrr	Rust
			Kgrhc	Honey Creek
	Pearsall Formation	Hensell Sand	Kheh	Hensell
		Cow Creek Limestone	Kcccc	Cow Creek
		Hammett Shale	Khah	Hammett


98°37'30"
98°30'00"
98°22'30"
98°15'30"
98°07'30"
98°00'00"
30°15'00"
30°07'30"
30°00'00"
29°52'30"
HYE
G.Q.M. 27
Bureau of Economic Geology (Austin)
(Barnes and others, 1965)
MONUMENT HILL
YEAGER CREEK
HENLY
DRIPPING SPRINGS
CRABAPPLE CREEK
BLANCO
PAYTON
ROUGH HOLLOW
DRIFTWOOD
KENDALIA
SPRING BRANCH
SIM 3333
USGS
(Clark, and Morris, 2015)
FISCHER
DEVILS BACKBONE
WIMBERLEY

Index map showing map area in yellow and adjacent U.S. Geological Survey (USGS) 7.5-minute quadrangles. For publications cited in this report, the agency or institution, author, and publication year are shown.

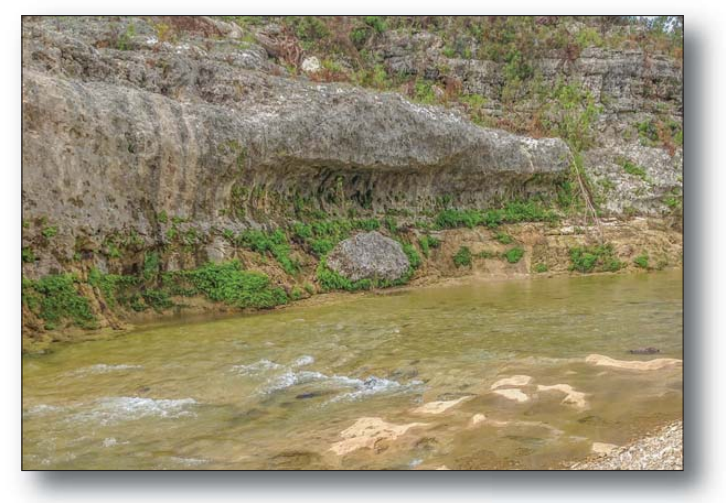


Figure 3. Photograph showing contact between the Hammett Shale (bottom) and Cow Creek Limestone (top) along the Blanco River at site 1, western Hays County, Texas. Photograph taken on July 13, 2015, by Allan Clark.

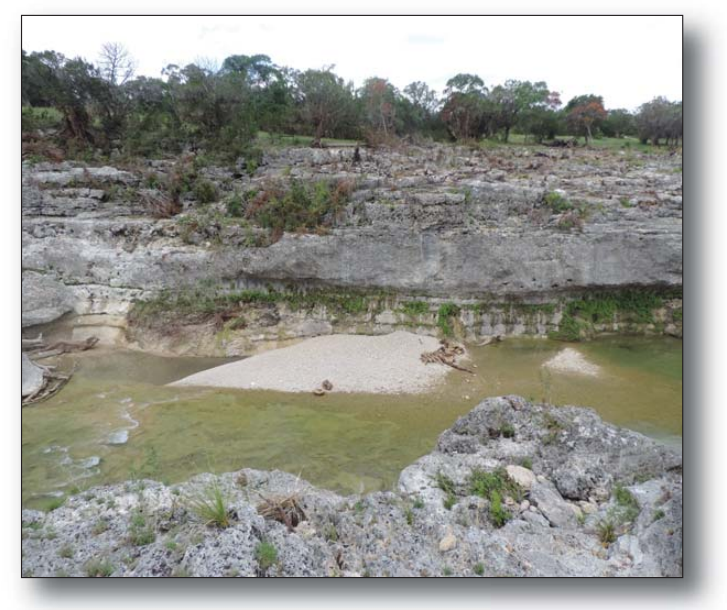


Figure 4. Photograph showing an outcropping of the Cow Creek Limestone along the Blanco River at site 1, western Hays County, Texas. Photograph taken on July 13, 2015, by Allan Clark.

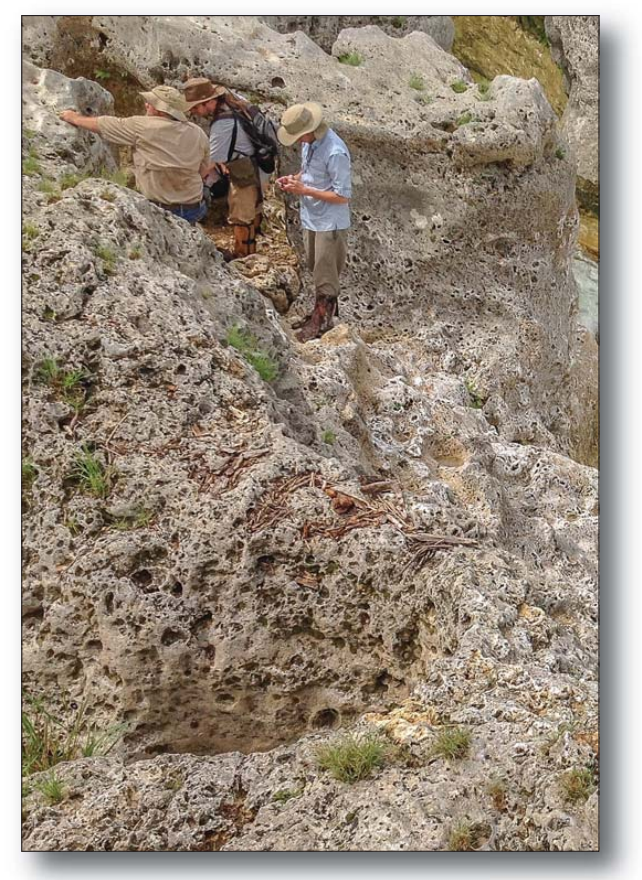


Figure 5. Photograph showing an outcropping of a biostrome in the Cow Creek Limestone along the Blanco River at site 1, western Hays County, Texas. Photograph taken on July 13, 2015, by Robert Morris.

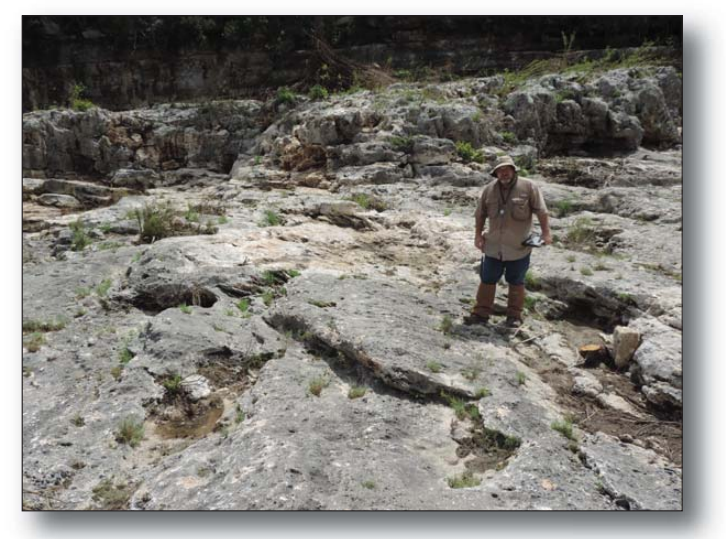


Figure 6. Photograph showing an outcropping of strandplain at the top of the Cow Creek Limestone at site 1 along the Blanco River, western Hays County, Texas. Note dipping ripple marked beds of talus. Photograph taken on July 13, 2015, by Robert Morris.

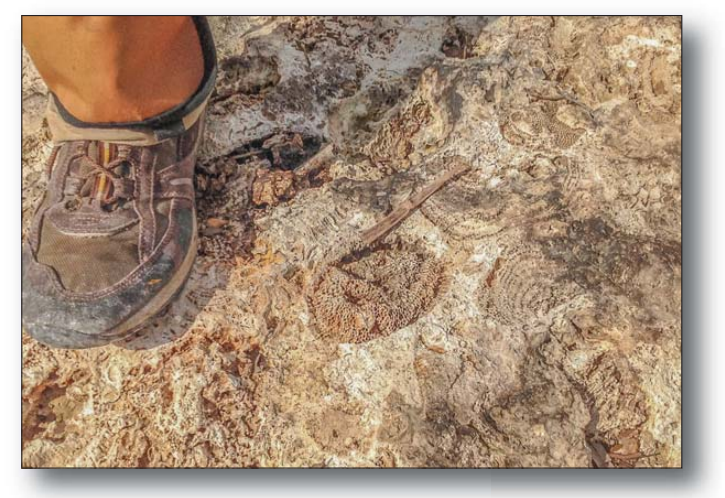


Figure 7. Photograph showing a close-up of corals that form the biostrome at site 1 in the Cow Creek Limestone along the Blanco River, western Hays County, Texas. Photograph taken on July 13, 2015, by Allan Clark.

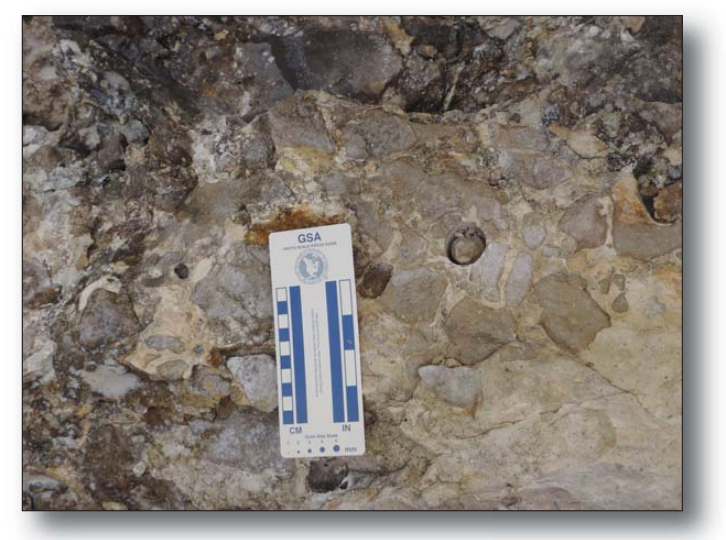


Figure 8. Photograph showing a close-up of the conglomerate/breccia bed at the base of the Hensell Sand at site 1 along the Blanco River, western Hays County, Texas. Note circular hole where rock plug was removed. Photograph taken on July 13, 2015, by Allan Clark.

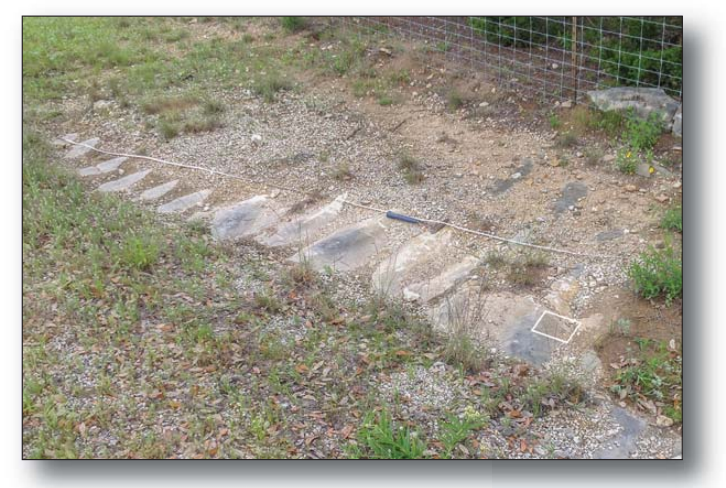


Figure 9. Corbula bed containing ripples along Ledgerock Road, southeastern Rough Hollow quadrangle, western Hays County, Texas. Note hammer for scale. Photograph taken on August 18, 2015, by Robert Morris.

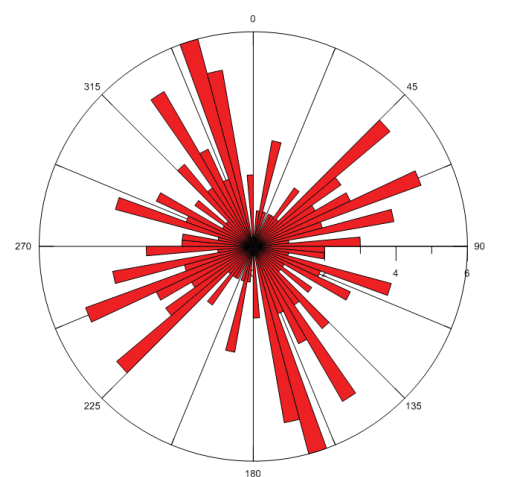


Figure 10. Rose diagram depicting trend of fractures.

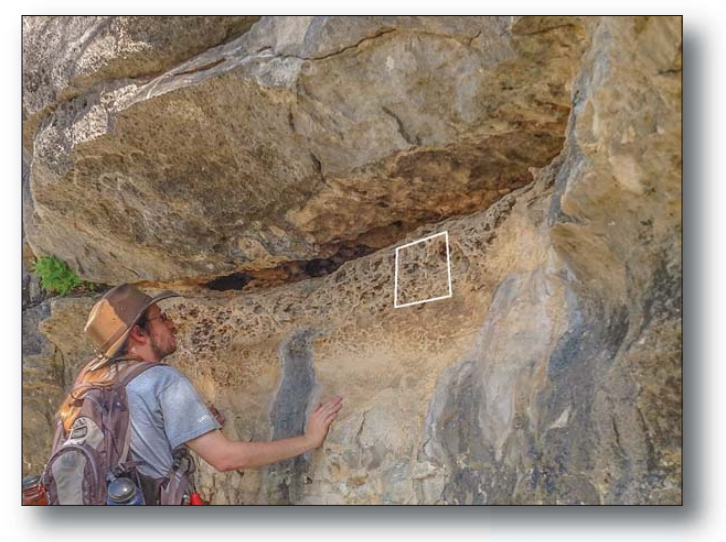


Figure 12. *Thalassinoides* network filled with grainstone dominated by *Orbitolina texana* with a weather-eroded mudstone matrix, western Rough Hollow quadrangle, western Hays County, Texas (white box shown in detail in figure 13). Photograph taken on July 13, 2015, by Robert Morris.

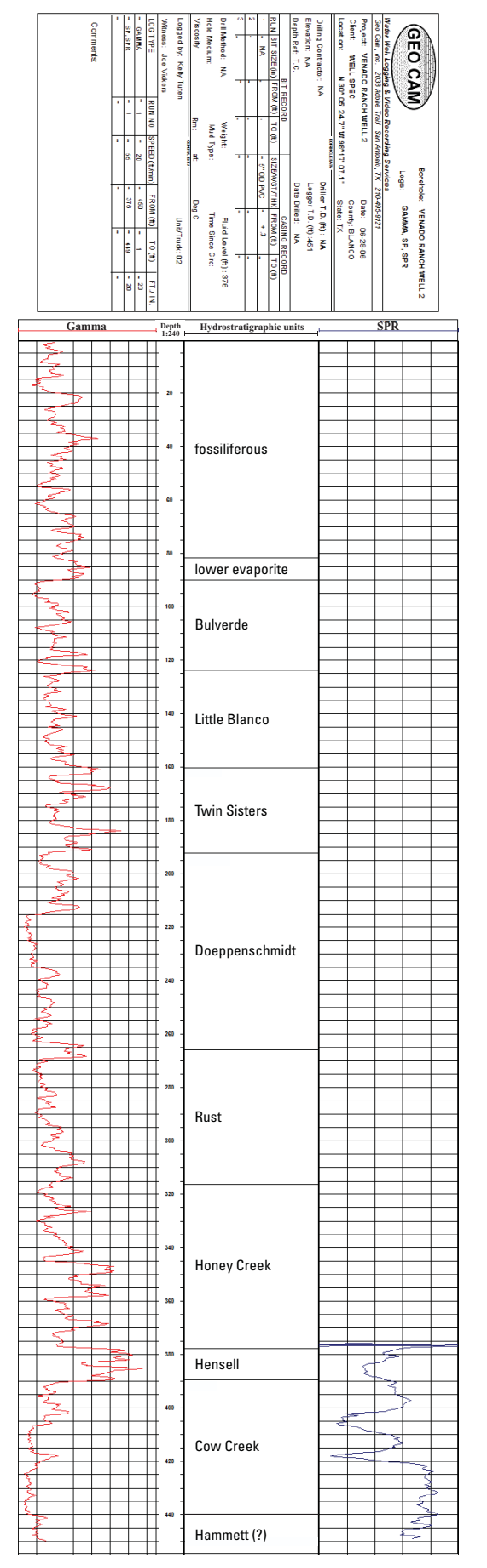


Figure 11. Geophysical log with breakdown of hydrostratigraphic units based on variations in the gamma log (30°05´24.˝N., 98°17´07.1˝W.).

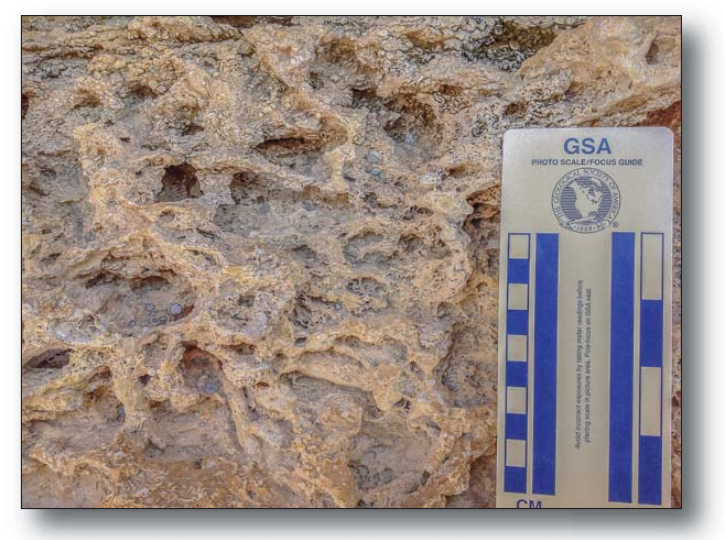


Figure 13. Close-up of *Thalassinoides* network filled with grainstone dominated by *Orbitolina texana* with a weather-eroded mudstone matrix, western Rough Hollow quadrangle, western Hays County, Texas. Photograph taken on July 13, 2015, by Robert Morris.

Table 1. *Summary of the geologic framework, hydrostratigraphy, and ichnology of the Blanco, Payton, and Rough Hollow 7.5-minute quadrangles, Blanco, Comal, Hays, and Kendall Counties, Texas.*

[Period, Epoch, Group, Formation, Members, and lithology modified from Whitney (1952), Lozo and Stricklin (1956), Stricklin and others (1971), Rose (1972), Stricklin and Smith (1973), Amsbury (1974), Inden (1974), Perkins (1974), Clark and others (2010), Blome and Clark (2014), Clark and others (2014), and the U.S. Geological Survey National Geologic Map Database, GEOLEX (http://ngmdb.usgs.gov/Geolex). Aquifers from Maclay and Small (1976), Ashworth (1983). Thickness from outcrop, Clark and others (2009), Weirman and others (2010), and Clark and others (2014). Hydrogeologic function modified from Clark and others (2009), Weirman and others (2010), Clark and others (2014), and Clark and Morris (2015). Porosity types modified from Choquette and Pray (1970).
Fabric selective: I, Interparticle porosity; SH, Shelter porosity; MO, Moldic porosity; BU, Burrowed porosity; BP, Bedding plane porosity. Not-fabric selective: FR, Fracture porosity; CH, Channel porosity; BR, Breccia; VUG, vug porosity; CV, Cave porosity.
*previously published identification for the hydrostratigraphic unit;
**not aerially exposed in the study area]

Geologic framework							Hydrostratigraphy					
PERIOD	Epoch	Group	Formation	Members	Approximate thickness (feet)[1]	Lithology	Aquifer	Hydrostratigraphic unit (*)	Thickness (feet; measured at outcrop)	Hydrogeologic function	Porosity type	Field identification
CRETACEOUS	Early Cretaceous	Edwards	Kainer	basal nodular of the Fort Terrett Formation	40–60	Shaly, nodular limestone; burrowed mudstone and miliolid grainstone: In western Comal County contains oyster reefs of *Ceratostreon [Exogyra] texana* and caprinid biostromes which is the transition to the Walnut Clay	Edwards	VIII (Kkbn)	40–60	Confining, locally water bearing	BP, FR, CV	Massive, nodular and mottled limestone, BRBs[2] and orange wisps in freshly broken rock, *Ceratostreon [Exogyra] texana*
		Trinity	Glen Rose Limestone	Upper	348–380 (typically 360)	Argillaceous wackestone, packstone to miliolid grainstone, argillaceous limestone; burrowed	Upper Trinity	Camp Bullis (B) (Kgrcb)	220–230	Confining	BU, BP, FR, occasional CV	Alternating beds of limestone and argillaceous limestone; fossils rare; stair-step topography
						Dissolved evaporites, highly altered crystalline limestone and chalky mudstone, breccia; commonly contains boxwork voids where the evaporites have been dissolved		Upper evaporite (C) (Kgrue)	0–10	Aquifer	I, MO, BR	Weathers to an orangish red pebbly texture, often has less cedar growth and hardier, more abundant grasses, boxwork structure, springs and seeps
						Alternating wackestone, packstone, clay, and mudstone; thin, silty "platy" mudstone at base, *Orbitolina minuta* (Douglas, 1960), *Porocystis golobularis*, *Tapes decepta*, *Protocardia texana*, *Hemiaster* sp., *Neithea* sp., *Turritella*, gastropods and mollusks		Fossiliferous (D) (Kgrf)	120	Confining	MO, FR, CV near top	Alternating beds of limestone and marls with *Orbitolina minuta* (Douglas, 1960) common
						Dissolved evaporites, highly altered crystalline limestone and chalky mudstone, breccia; up to three *Corbula* sp. beds; lower Corbula bed up to 1 foot thick with ripples common, commonly contains boxwork voids where evaporites have been dissolved		Lower evaporite (E) (Kgrle)	8–10	Aquifer	I, MO, BR	Weathers to an orange; is red pebbly texture, often has less cedar growth and hardier grasses, boxwork structure, *Corbula* sp., springs and seeps
				Lower	195–330 (typically 200–225)	Wackestone to grainstone, agrillaceous wackestone, shale, evaporites; *Salenia texana*, *Macraster* sp., *Orbitolina texana* (Roemer, 1852), *Nerinia* sp., pecten, gastropods, pelecyopods	Middle Trinity	Bulverde (A) (Kgrb)	30–40 (typically 30)	Confining	BP, FR; MO and BR where evaporites have been removed	*Salenia texana* bed immediately below Corbula bed, abundant fossils including Protocardia, pectin, *Orbitolina texana* (Roemer, 1852), Porocystis, gastropods, echinoids, grades into marls, bioturbated limestone beds, and evaporite beds
						Mudstone to wackestone, argillaceous wackestone, boundstone; *Orbitolina texana* (Roemer, 1852), caprinid, toucasia, monopleurid, pectens, pelecypods, gastropods		Little Blanco (B) (Kgrlb)	30–40 (typically 30)	Aquifer	MO in patch reefs, BP, FR	Limestone beds thicker and more resistive to erosion than overlying and underlying units, *Orbitolina texana* (Roemer, 1852), rudist patch reefs
						Argillaceous wackestone and shale; *Orbitolina texana* (Roemer, 1852), pelecypods, gastropods		Twin Sisters (C) (Kgrts)	10–40 (typically 30)	Confining shale beds	I	Thick marl beds, thin shale beds, *Orbitolina texana* (Roemer, 1852), often contains ponds and seeps, often little vegetation; steeper slopes often have "badlands" type weathering, thinner in areas of patch reefs in the underlying Doeppenschmidt hydrostratigraphic unit
						Mudstone to grainstone, argillaceous wackestone to packstone, boundstone, miliolid grainstone; pectens, oysters, pelecypods, *Nerinia* sp., *Orbitolina texana* (Roemer, 1852), *Tylostoma* sp., caprinid, toucasia, monopleurid		Doeppenschmidt (D) (Kgrd)	40–80 (typically 40)	Aquifer	I, MO, BU, BP, FR, CV	*Orbitolina texana* (Roemer, 1852), limestone beds thicker and more resistive than overlying and underlying, patch reefs formed on rudist, reefal talus
						Alternating beds of argillaceous wackestone to packstone and mudstone to grainstone, miliolid grainstone; pectens, oysters, pelecypods, *Nerinia* sp., *Orbitolina texana* (Roemer, 1852), *Tylostoma* sp., monopleurid		Rust (E) (Kgrr)	40–70 (typically 40)	Confining	I, FR, CV	Tends to form stair-step topography with soils, *Orbitolina texana* (Roemer, 1852)
						Wackestone to grainstone, boundstone, burrows, *Orbitolina texana* (Roemer, 1852), *Trigonia* sp., toucasia, caprinid, shell fragments, pectens, miliolids, *Turritella*, and various corals		Honey Creek (F) (Kgrhc)	45–60 (typically 55)	Aquifer	I, MO, BU, BP, FR, CH, CV	Thick beds of wackestone to grainstone; corals, caprinid, *Trigonia* sp., cliff forming; outcrop often contains large limestone float with large channel and moldic porosity; caves and springs
			Pearsall	Hensell Sand	0–40	Claystone, siltstone, terrigenous sand; red sandstone conglomerate/breccia at base of unit; oysters, quartz geodes		Hensell (Kheh)	0–40	Aquifer	I, MO, SH, CV	Quartz geodes, large oyster shells, reddish sandy soil with good grass growth, red sandstone conglomerate/breccia at base
				Cow Creek Limestone	26–58	Very fine-grained to fine grained carbonate sand (grainstone) with localized cross-bedding; Areas of coral and rudist biostromes (boundstone) overlain by rippled, cross-bedded grainstone		Cow Creek (Kcccc)	40–72	Aquifer	I, MO, BU, VUG, BP, FR, CH, CV	Carbonate sands, cross-bedding near top, biostrome composed of corals and rudist, talus slopes
					14	Dolomitic mudstone to packstone; oysters						
				Hammett Shale	50	Upper: Claystone, with siltstone lenses, overlain by fossiliferous dolomitic limestone; Lower: siltstone and dolomite	Confining unit	Hammett (Khah)	50	Confining	**	Holds surface water; springs at contact with Cow Creek

[1] Thickness range based on minimum and maximum thickness of individual members (from field measurements and geophysical logs). The actual thickness range near the median of the possible thickness.
[2] Black rotund bodies (BRBs) probably from oxidation of Foraminifera (Small and Maclay, 1982).

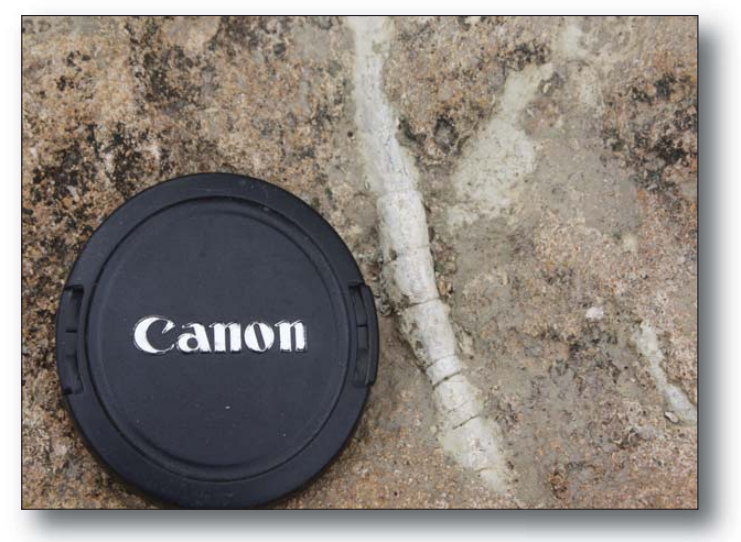


Figure 14. Plan view of a single *Planolites* northwestern Blanco quadrangle, approximately 3 miles west of the town of Blanco, Texas. Lens cap is 2.28 in. in diameter. Photograph taken August 19, 2014, by James Golab.

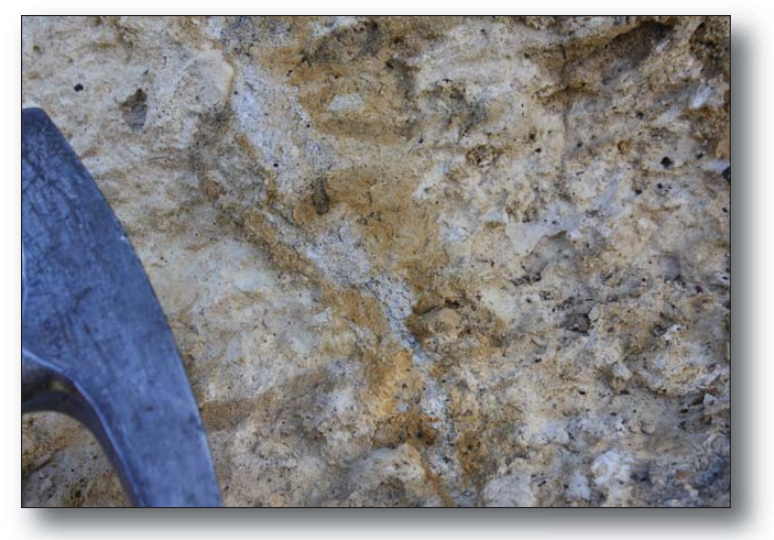


Figure 15. Rhizoliths with a yellow-tan rhizohalo observed in eastern Blanco quadrangle approximately 2 miles north of the town of Blanco, Texas, along US Hwy 281. Note head of geologic hammer for scale. Photograph taken on June 17, 2015, by James Golab.

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