

Ancient Landscapes of South Texas: World Geography

TEKS Alignment

Process Standards: WG.21, WG.22, WG.23

Introduction to Physical Geography: WG.9(A)

Introduction to Human Geography: WG.1(A), WG.8(A)

Culture: WG.2(A), WG.5(A)

**The United States and Canada: WG.1(A), WG.5(A),
WG.8(A), WG.9(A), WG.16(A), WG.17(D)**

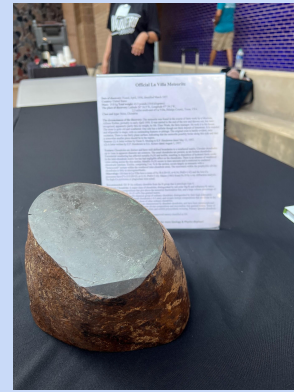
Instructional Guide

Use the collection of slides to introduce important geographic concepts related to South Texas. The purpose of the lesson is to engage the students in an archaeological discovery of the past to promote a positive perspective of place in the present.

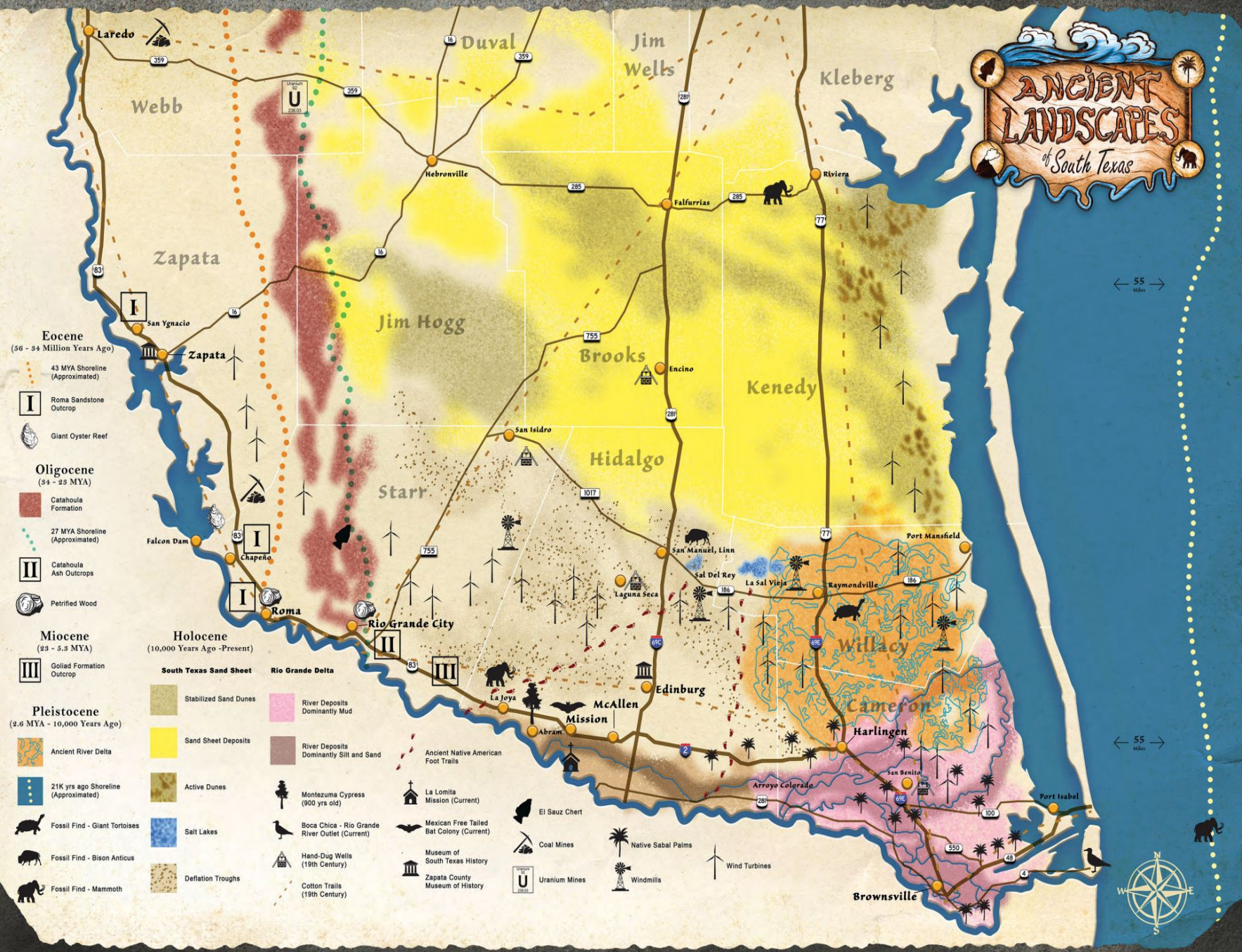
The University of Texas RGV via the CHAPS program has produced invaluable resources and research that supports the lesson, many of the slides contain links that will redirect you to the [UTRGV site](#).

Upon completion of the lesson take some time to reflect on how the students perspective of South Texas has changed, whether there is a heightened level appreciation of where they are from, and a stronger sense of empowerment of where they are situated in the story of South Texas.

ANCIENT LANDSCAPES OF SOUTH TEXAS



ANCIENT LANDSCAPES of South Texas



Eocene (56 - 34 Million Years Ago)

- 43 MYA Shoreline (Approximated)
- I** Roma Sandstone Outcrop
- Giant Oyster Reef

Oligocene (34 - 23 MYA)

- Catahoula Formation
- 27 MYA Shoreline (Approximated)
- II** Catahoula Ash Outcrops
- Petrified Wood

Miocene (23 - 5.3 MYA)

- III** Goliad Formation Outcrop

Pleistocene (2.6 MYA - 10,000 Years Ago)

- Ancient River Delta
- 21K yrs ago Shoreline (Approximated)
- Fossil Find - Giant Tortoises
- Fossil Find - Bison Anticus
- Fossil Find - Mammoth

South Texas Sand Sheet

- Stabilized Sand Dunes
- Sand Sheet Deposits
- Active Dunes

Rio Grande Delta

- River Deposits Dominantly Mud
- River Deposits Dominantly Silt and Sand

- Montezuma Cypress (900 yrs old)
- Boca Chica - Rio Grande River Outlet (Current)
- Hand-Dug Wells (19th Century)
- Cotton Trails (19th Century)
- River Deposits Dominantly Mud
- River Deposits Dominantly Silt and Sand
- Ancient Native American Foot Trails
- La Lomita Mission (Current)
- Mexican Free Tailed Bat Colony (Current)
- Museum of South Texas History
- Zapata County Museum of History
- Uranium Mines

- El Sauz Chert
- Coal Mines
- Native Sabal Palms
- Windmills
- Wind Turbines

← 55 Miles →

← 55 Miles →



Fill in the Blanks

Starr Country? 27 [redacted] years ago a [redacted] eruption covered what is today Rio Grande City in more than 60 feet of ash? Minerals in this volcanic ash created a [redacted] palm forest in Starr County, and deposits of [redacted] in South Texas? A [redacted] known as Sauz chert formed from these minerals and would be used millions of years later by [redacted] Americans to make tools? The UTRGV ceremonial [redacted] contains petrified palm and Sauz chert. The Rio Grande [redacted] of Texas holds infinite possibilities for discovery, interpretation, and scholarship. Please join us in our journey through the Ancient [redacted] of South Texas!

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Draw It



^ Instructions

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Collaborate Board

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La Villa Meteorite

**Click on the Title
and Image to
Learn More**





Draw It

Highlight the sentence that estimates when it fell to Earth

^ Instructions

La Villa in Hidalgo County, Texas.

With an original mass of 19.8 kg (43.65 lbs), this meteorite was found by a farmer while plowing his field. The piece is rounded and ellipsoidal in shape, with one fairly flat surface, indicating that it probably broke during entry into the earth's atmosphere. It has no outstanding features or pittings, only a 3 mm thick hydrated ferric oxide crust.

Geochemical analysis of a rounded, and suspiciously heavy 44-pound rock, found in 1956 by a farmer plowing a field a few miles from La Villa in Hidalgo County revealed it as an ordinary chondrite, a major class of stony meteorite with more than 90% iron.

The meteorite's age is estimated to be 4.5 billion years, having formed at the beginning of our solar system. While this makes it the oldest object in south Texas, the estimated timing of its landing makes it one of the most recent geological objects to arrive there! The meteorite has only a thin iron oxide crust from normal weathering and was found near the surface, not deeply buried. Both factors suggest it

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Roma Sandstone

**Click on the Title
and Image to
Learn More**



Fill in the Blanks

THE [REDACTED] EXPOSED ROCKS IN THE LOWER RIO GRANDE VALLEY.

On the western side of the Rio Grande Valley in Roma, we find evidence of a [REDACTED] shoreline much like South Padre Island is today. The Roma Sandstone is evidence of its existence. Over the past 43MY, the coastline has prograde over 100miles east to its current position.

The “Roma [REDACTED] is a local informal name for a portion of the Eocene-age Jackson Formation exposed in the cliffs below Water Street in Roma, Texas, and isolated outcrops elsewhere in that region. At the [REDACTED] Bluffs, the massively bedded and very resistant sandstone is underlain by thinly bedded layers. These layers are [REDACTED] faster in a cut bank of the Rio Grande that runs at the base of the bluffs resulting in undercutting and periodic collapse of large blocks down the nearly vertical cliff face. The [REDACTED] are a World Birding Center site and provide a unique view of a portion of the [REDACTED] border town of Ciudad Miguel Aleman and the [REDACTED] bridge.

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Catahoula Volcanic Ash

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Draw It

^ Instructions

The time of the ash deposition has been determined at 27.4 million years before present; this corresponds to the Oligocene Epoch in the Geologic Time Scale, a time when the shoreline of the Gulf of Mexico was near Rio Grande City. Twenty meters of ash fell on the region and blanketed all landforms permanently changing the landscape. The light-colored ash is indicative of a "felsic" magma, a highly viscous type of magma known to produce violent eruptions when a caldera blows its top off. The exact location of the caldera remains undetermined but based on age and chemical affinity of the ash, likely candidates are several large calderas in the Sierra Madre Occidental in Mexico, over 500 km to the southeast of the Rio Grande Valley. The volcanic ash is the reason for two other sites of interest on the Ancient Landscapes map and trail, the Petrified Forest, and El Sauz Chert. It is also the source for the uranium that has been mined in south Texas for over fifty years in counties to the north of the Rio Grande Valley.

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La Sal del Rey

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Quiz

appears on maps from the 1700s when salt was quarried and traded into interior of New Spain. Under Spanish law, the mineral resources belonged to the crown, hence the name “The King’s Salt”. During the US Civil War, the state took over the mining and export operations. In 1866 the lake and its salt were the subject of a constitutional amendment which privatized ownership of all subsurface minerals in the state of Texas, opening the way to private development of oil, gas, and other resources. Trade continued into the 1930s. Brine was also produced here for use in oil and gas operations.

- A. Union Troops during the Civil War
- B. Indigenous Groups prior to colonization
- C. Spanish colonizers
- D. The Republic of Texas

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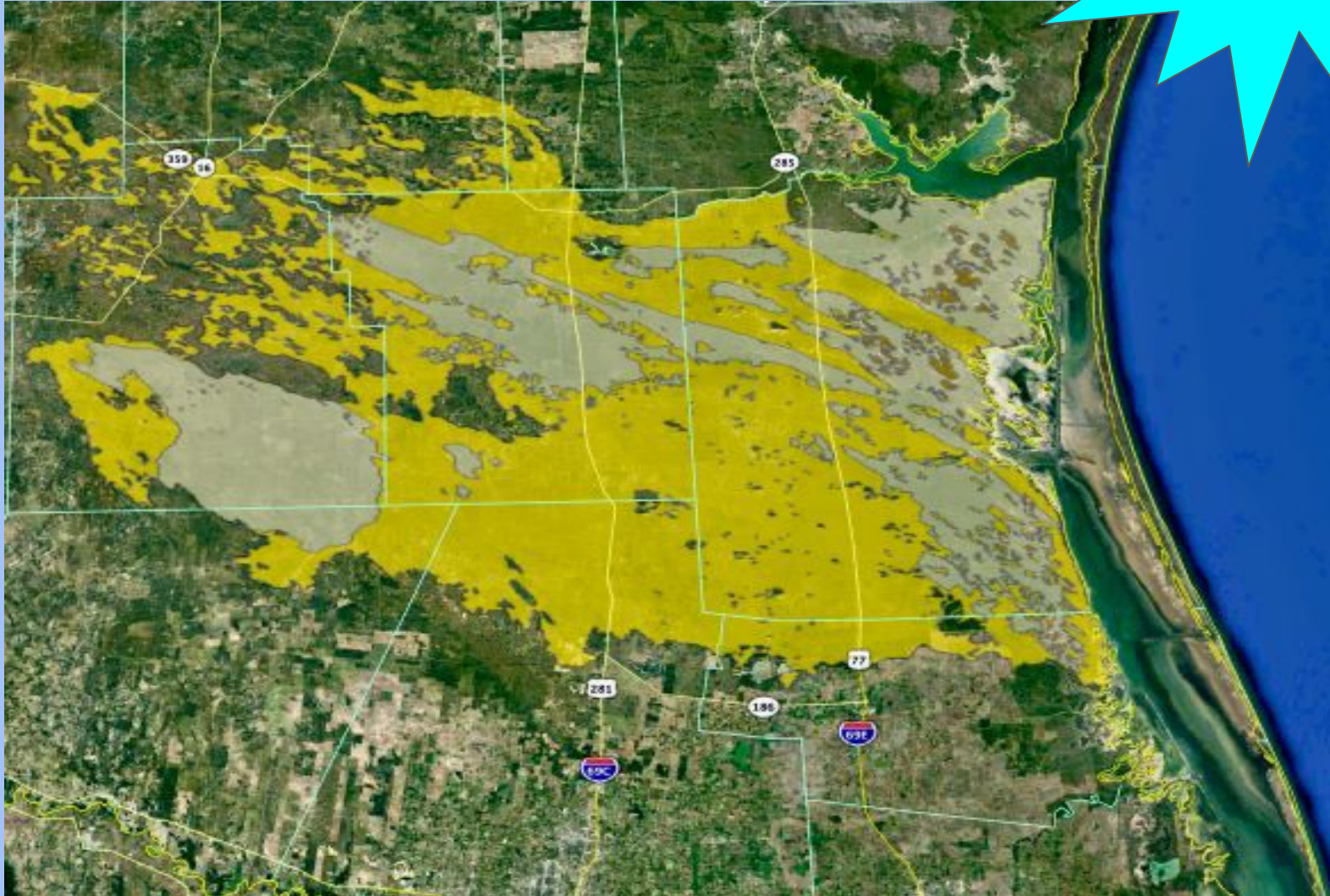
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South Texas Sand Sheet

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Fill in the Blanks

the Nueces River to the [REDACTED] and the Rio Grande to the [REDACTED]. It spreads over five counties (Kenedy, Brooks, Hidalgo, Jim Hogg and Willacy) from the inland shore of Laguna Madre to 100 km (~62 miles) inland and is considered the most southerly and [REDACTED] dune field in North America. The landscape of the STSS is dominated by a hummocky topography that represents the sand sheet proper. It is stabilized by [REDACTED] and discontinuous oak and smaller honey mesquite mottes, with relict and active longitudinal sand dunes oriented to the northwest. The area is characterized by limited [REDACTED] (50 cm/yr), high summer temperatures (39 °C), and no flowing water. The STSS is home to a multitude of [REDACTED] mammals, birds, and reptiles, as well as [REDACTED] species, including the largest herd of [REDACTED] in North America, an antelope native to India and Nepal introduced to south Texas in the 1930s, and is intersected by a [REDACTED] corridor for [REDACTED] butterflies and birds.

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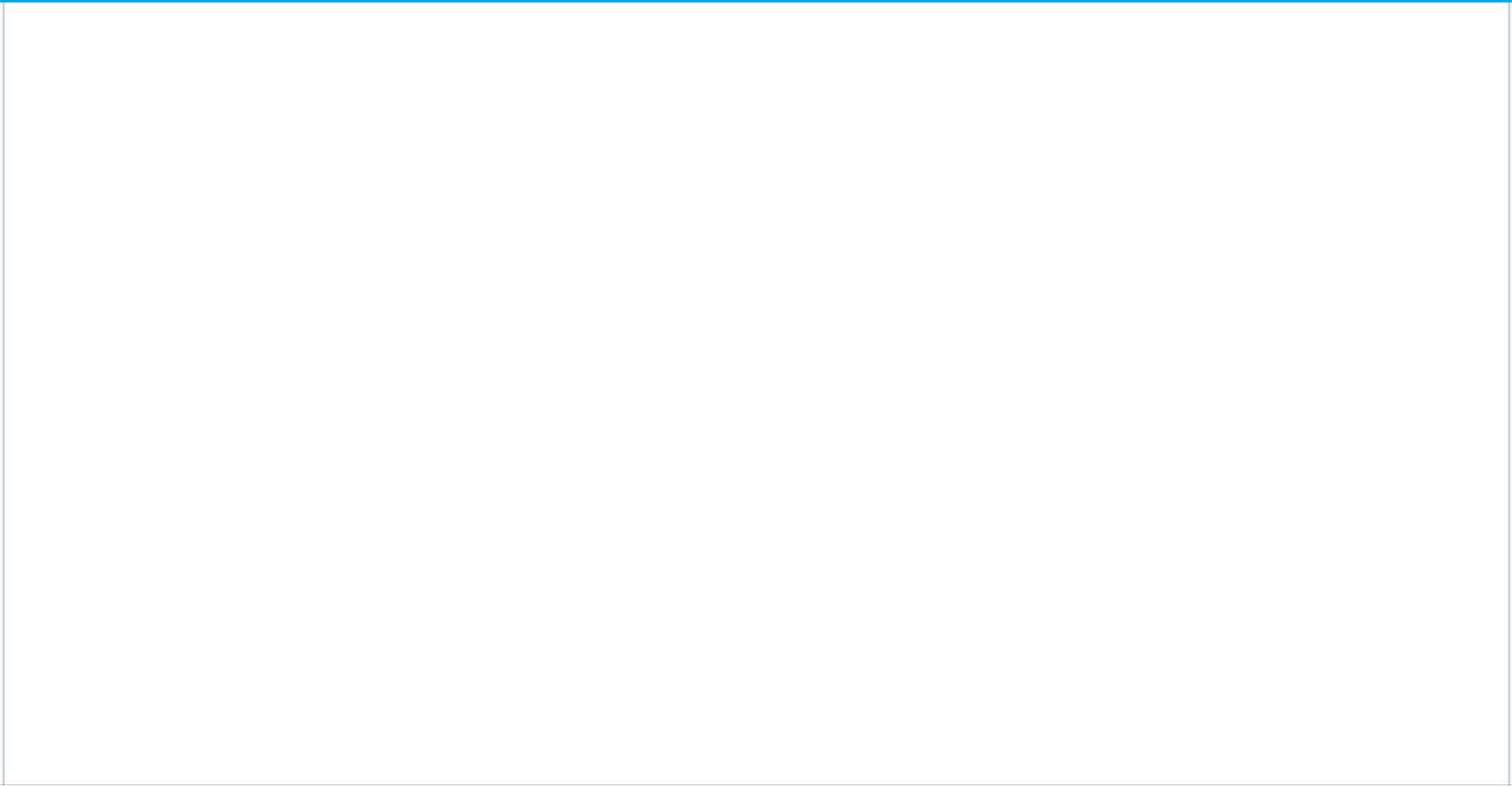
Pleistocene Megafauna

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Draw It



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Drag & Drop

South Texas
Sand Sheet

La Sal del Rey

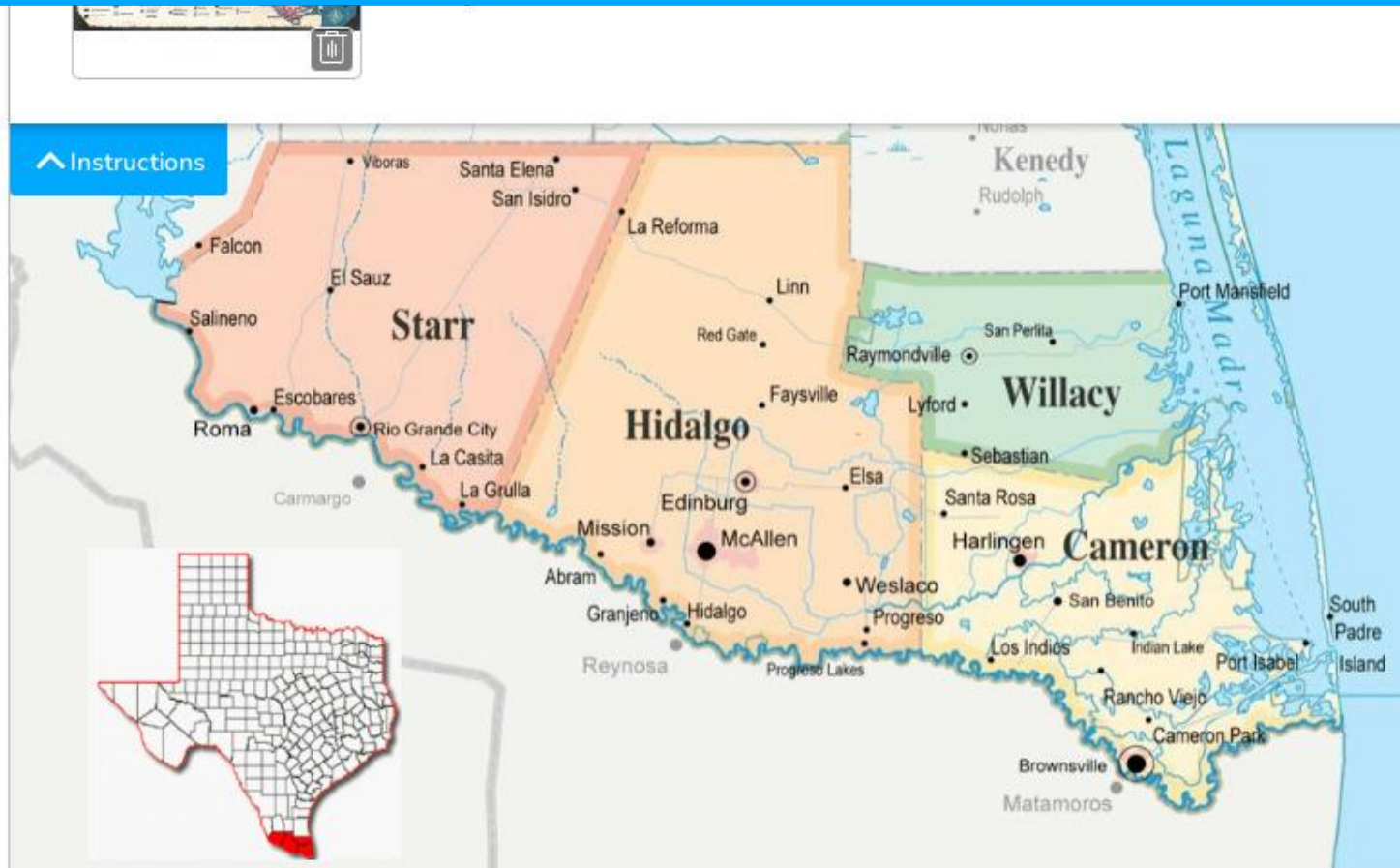
Catahoula
Volcanic Ash

Roma Sandstone

La Villa
Meteorite

Hand-dug Wells

Wind Farms



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Time to Climb

Time
To
Climb

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Matching Pairs

Instructions

the Sierra Madre Occidental range in Mexico blanketing 60 feet of ash on the

Roma Sandstone

South Texas Sand Sheet

billion years ago. It fell to Earth 6,000 - 7,000 years ago.

Deposited 43 million years ago when the shoreline of the Gulf of Mexico was at this site. The oldest exposed rocks in the lower Rio Grande Valley.

40 million years ago, during a period of global glaciation when the sea level was 300 feet lower than now, great beasts roamed the Rio Grande River

4 million ton mineral deposit that has been used by prehistoric civilizations. It appeared on Spanish maps in the 1700s and was used by the

Known as the Wild Horse Desert, home to an estimated 1 million horses in the 1800s.

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Open Ended Question

second to none. Ancient landscapes surround us but are invisible to most. When it comes to human perceptions of our broader natural landscape, it may seem that it is immutable and unchanging. We like to say the ancient landscape is 'hiding in plain sight' You just must know where to look and what to look for."

Given your knowledge of the Ancient Landscapes of South Texas, describe 2 examples of features that have been "hiding in plain sight".

Ready? Enter your answer here.

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Poll

- A.** I feel the same - I have always been very proud of South Texas, even though I knew very little.
- B.** I feel more knowledgeable - I am even more proud of South Texas, now that I have learned more.
- C.** I feel enlightened - I am now extremely curious about South Texas, inspired to discover more.
- D.** I do not understand the significance of South Texas - I do not believe there is anything unique about it.

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