Hazel Bazemore Overview

River and Riparian Concepts – September 2022

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TEXAS MASTER NATURALISTS

learn. explore. serve.™

SOUTH TEXAS CHAPTER

Down

Up

Bird's Eye View Looking East towards Gulf of Mexico

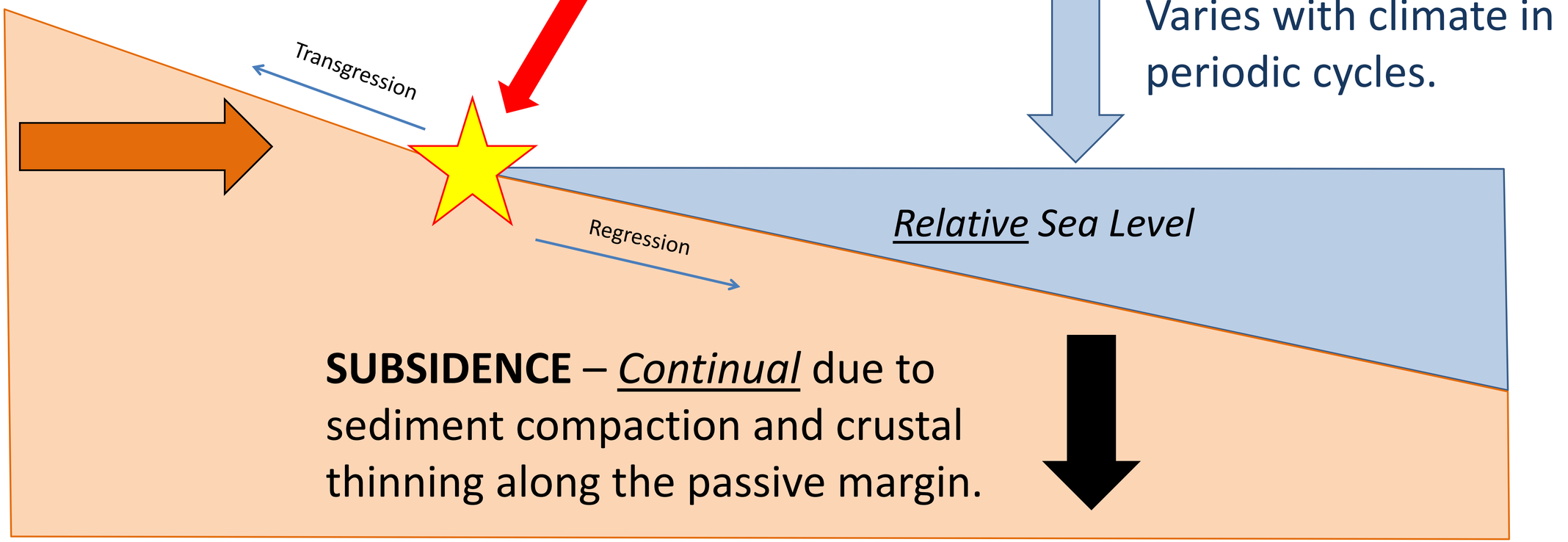
Data SIO, NOAA, U.S. Navy, GEBCO

Google earth

Gulf Coast Shoreline System

SEDIMENT INFLUX – Varies with climate, tectonics, and maturity of region. *Generally* it slows as highlands wear down.

This place, we call the **SHORELINE**, is subject To the influences of **SEDIMENT INFLUX**, **SEA LEVEL**, And **SUBSIDENCE**. It is a *result*, <u>not</u> a cause.

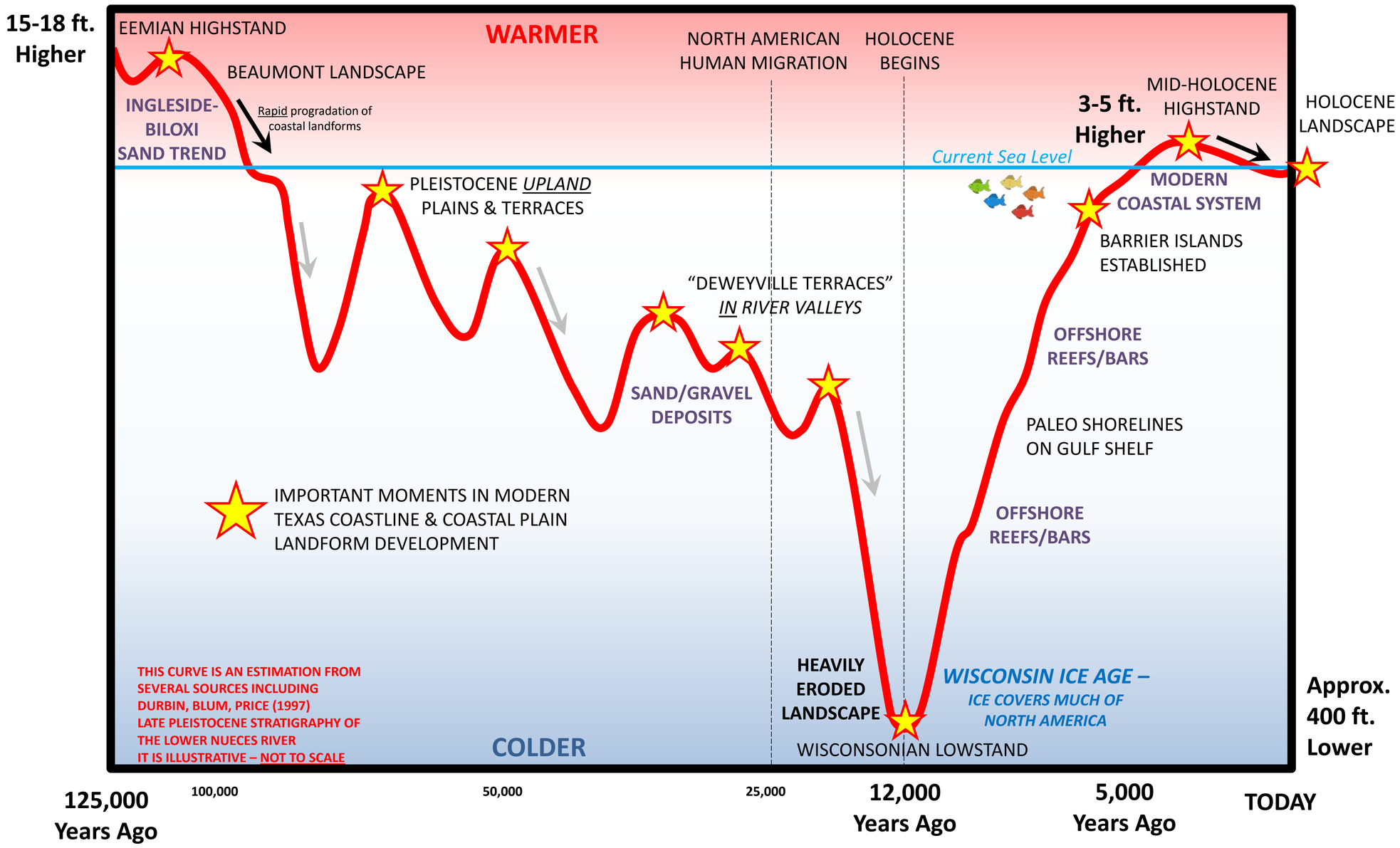


SEA LEVEL
Varies with climate in periodic cycles.

SUBSIDENCE – <u>*Continual*</u> due to sediment compaction and crustal thinning along the passive margin.

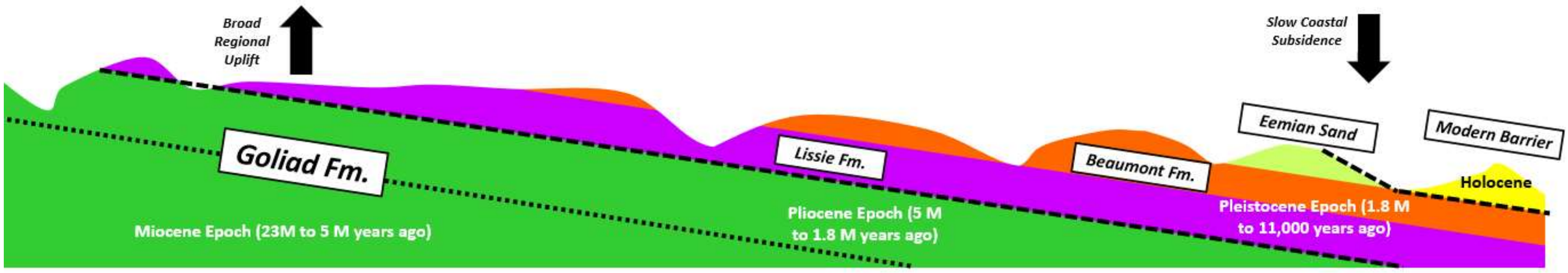
A fixed sea level naturally results in a slow transgression due to diminishing sediment input and natural rates of subsidence. But sea level is almost never fixed at one elevation. It rises and falls.

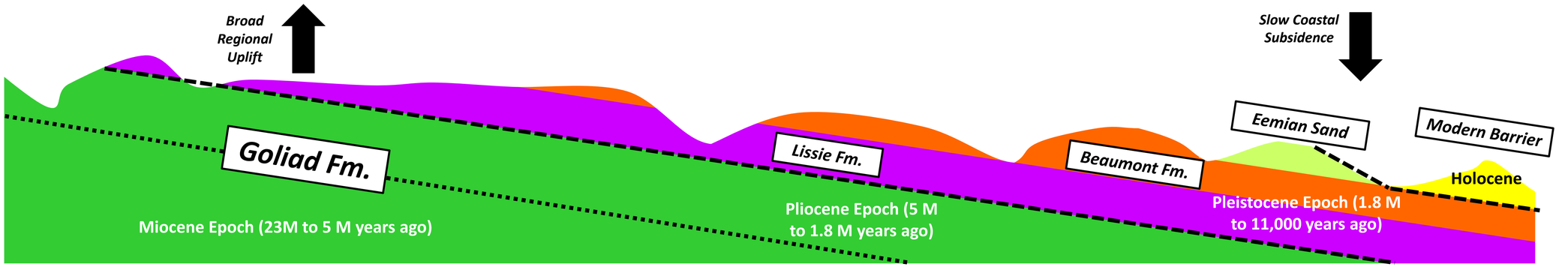
LATE PLEISTOCENE – HOLOCENE SEA LEVEL ALONG TEXAS COAST

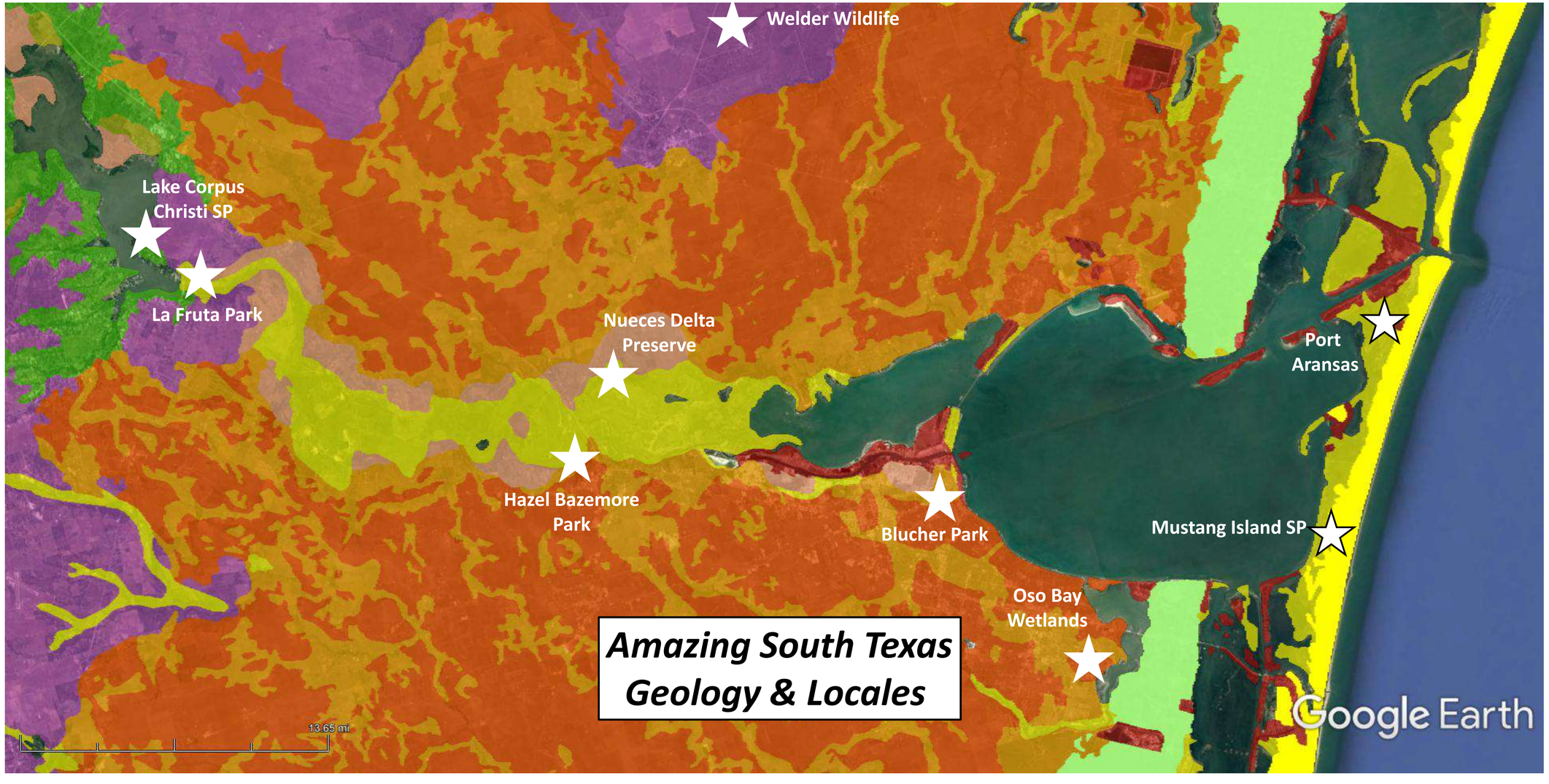


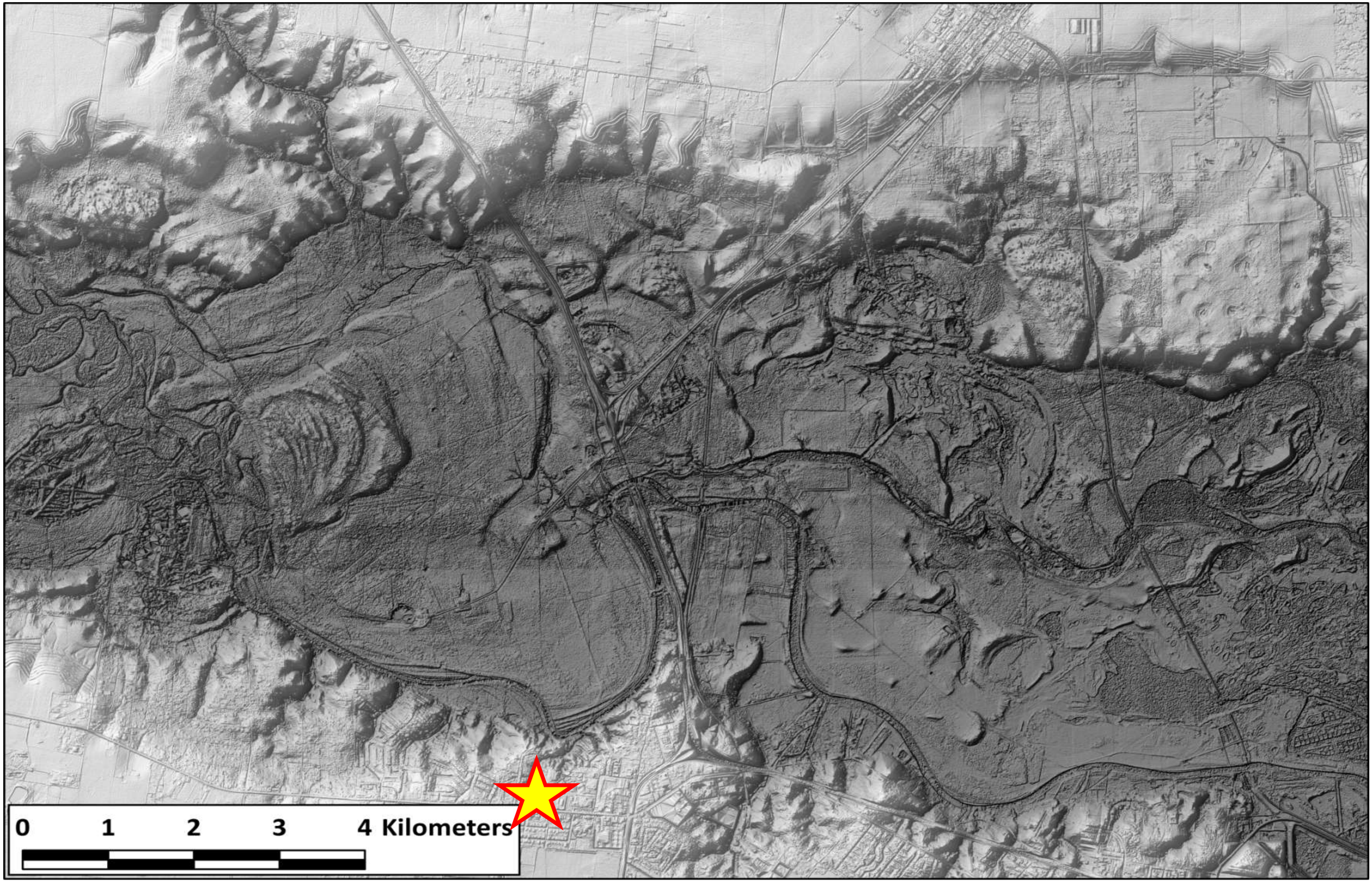
Geologic Units of the South Texas Chapter

- Goliad Sandstone (Miocene/Pliocene 2-5 my)
- Lissie Shale (Early Pleistocene (~500,000 years)
- Beaumont Shale (100,000 to ~300,000 years)
- Late Beaumont (Ingleside) Sand (125,000 years)
- Deweyville Sands and Gravels (14,000-100,000 years)
- Holocene Fill Sands, Silts, and Muds (0-11,700 years)



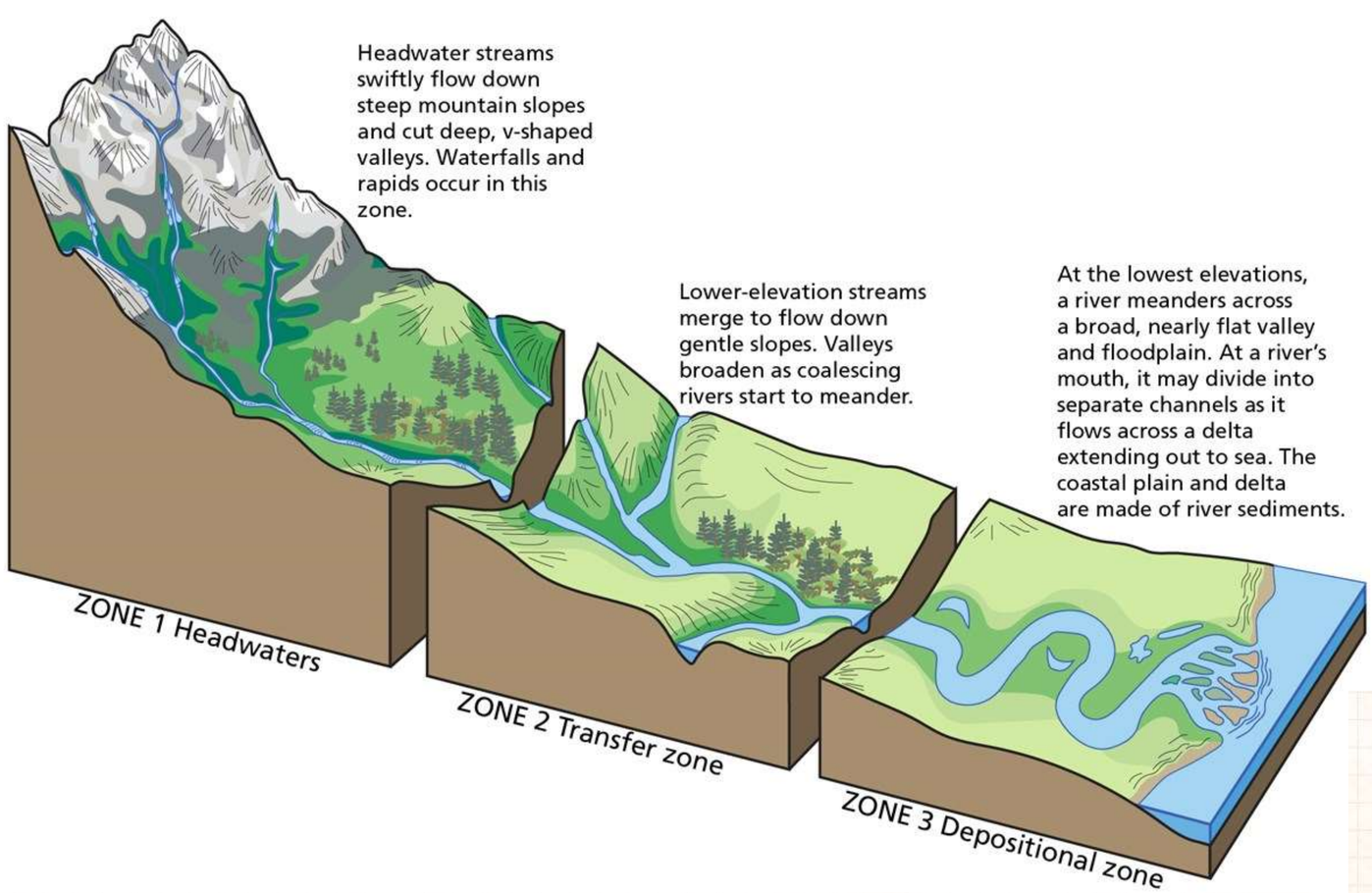

Broad
Regional
Uplift
Slow Coastal
Subsidence
Goliad Fm.
Lissie Fm.
Beaumont Fm.
Eemian Sand
Modern Barrier
Holocene
Miocene Epoch (23M to 5 M years ago)
Pliocene Epoch (5 M
to 1.8 M years ago)
Pleistocene Epoch (1.8 M
to 11,000 years ago)


Welder Wildlife
Lake Corpus
Christi SP
La Fruta Park
Nueces Delta
Preserve
Hazel Bazemore
Park
Blucher Park
Port
Aransas
Mustang Island SP
Oso Bay
Wetlands
Amazing South Texas
Geology & Locales
13.65 mi
Google Earth


0 1 2 3 4 Kilometers

Introduction to Riparian Concepts

Source: Remarkable Riparian & USGS



Wetness Indicators

Within this guide, a Wetness Indicator (WI) is assigned to each plant according to the degree of soil moisture needed and tolerated by the plant. This rating is based on Region 6 U.S. Fish and Wildlife Service (USFWS), Wetland Plant List.

There are five categories:

OBL – Obligate Wetland Plants
almost always found in very wet locations

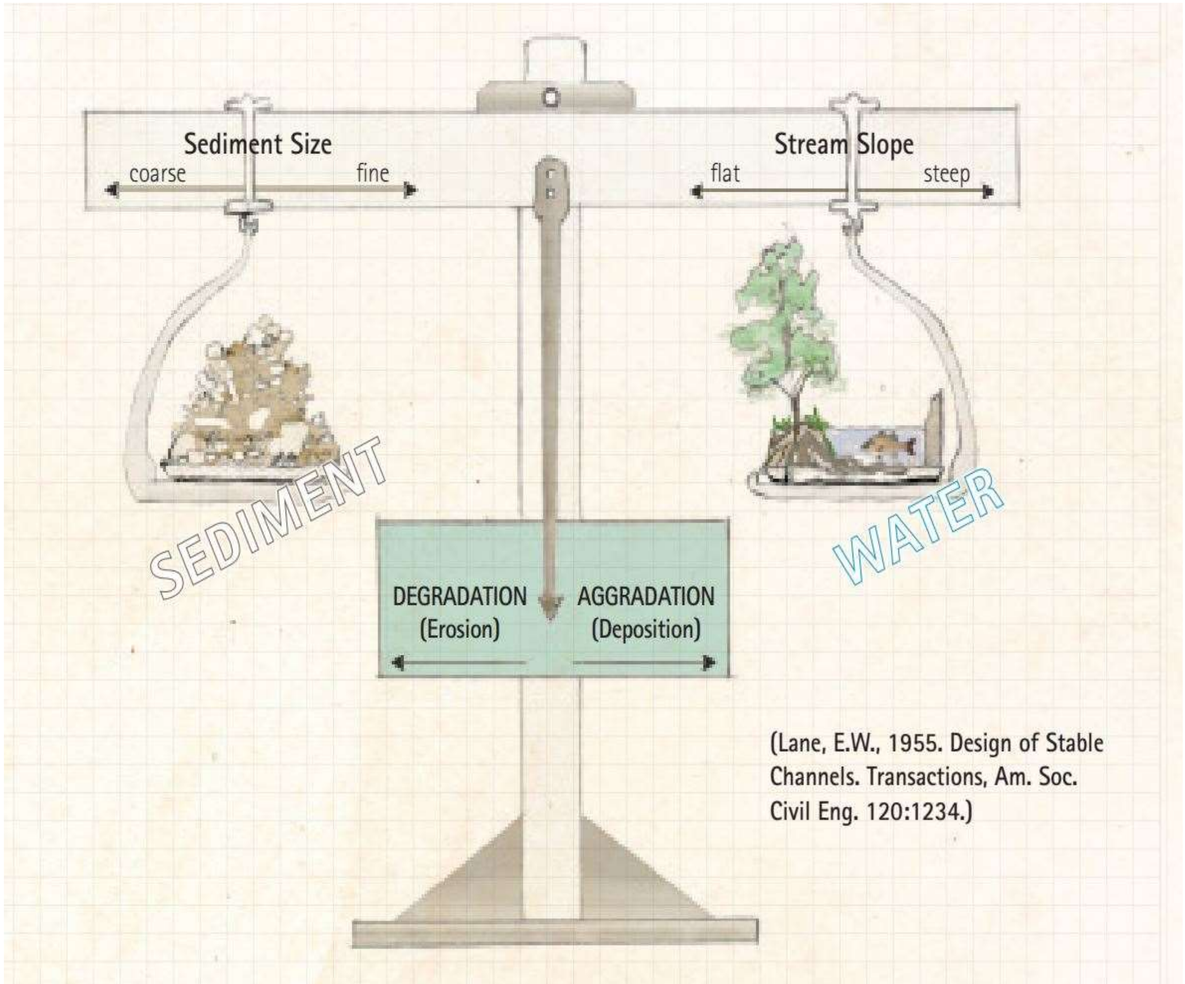
FACW – Facultative Wetland Plants
usually found in wet locations

FAC – Facultative Plants
found equally in wet and non-wet locations

FACU – Facultative Upland Plants
usually found in non-wet locations

UPL – Obligate Upland Plants
almost always found in non-wet locations

Think of your riparian area as a sponge collecting, storing and slowly releasing water. Removal of vegetation, compaction or disturbance of the soil that makes up the sponge can inhibit this key function.

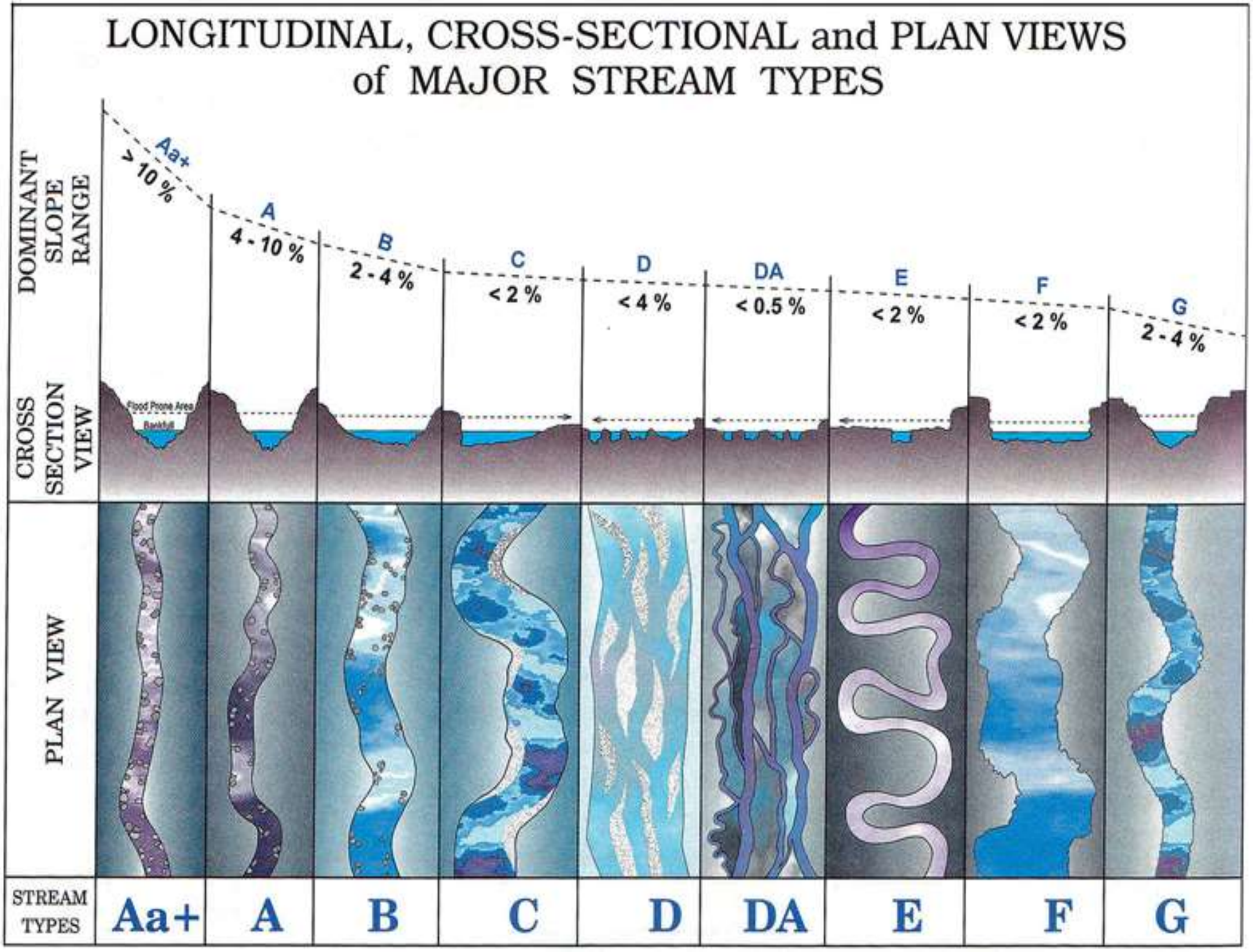


(Lane, E.W., 1955. Design of Stable Channels. Transactions, Am. Soc. Civil Eng. 120:1234.)

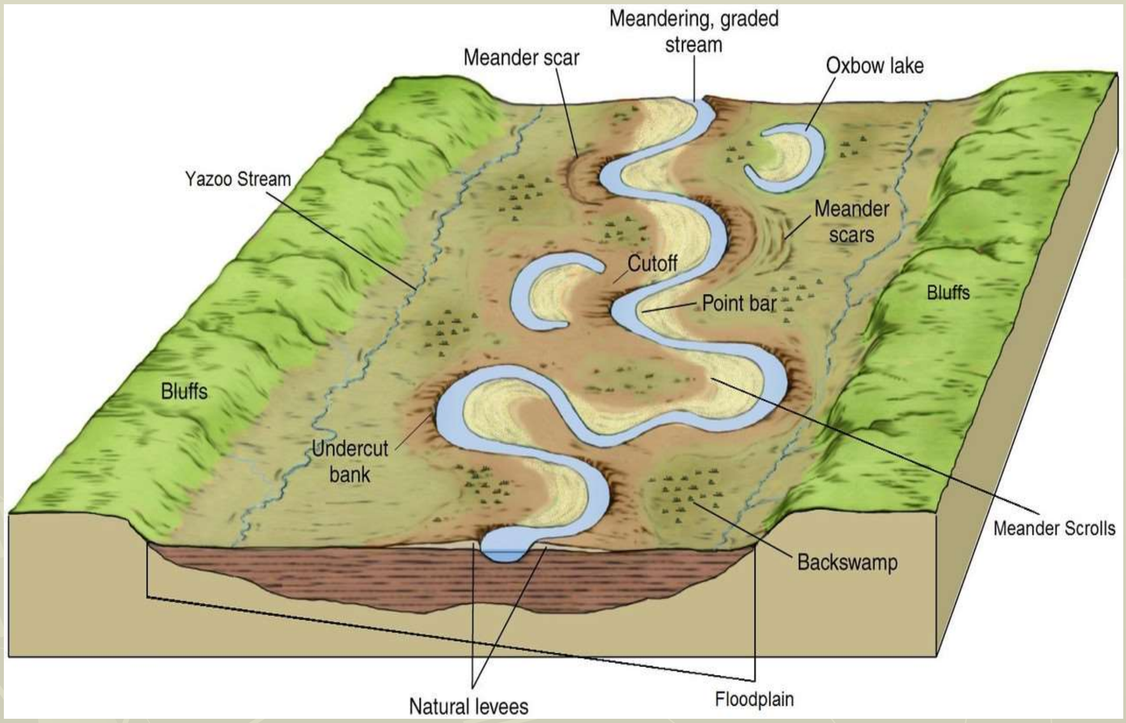
7 Myths About Creeks and Rivers

1. Floods are bad.
2. Droughts are bad.
3. Streams should be wide and straight.
4. Large wood clogs creeks and should be removed.
5. Removal of riparian vegetation increases stream flow.
6. Cut-banks are bad.
7. People must “fix” them.
    - Fix them in place.
    - Repair their inadequacies.

LONGITUDINAL, CROSS-SECTIONAL and PLAN VIEWS of MAJOR STREAM TYPES



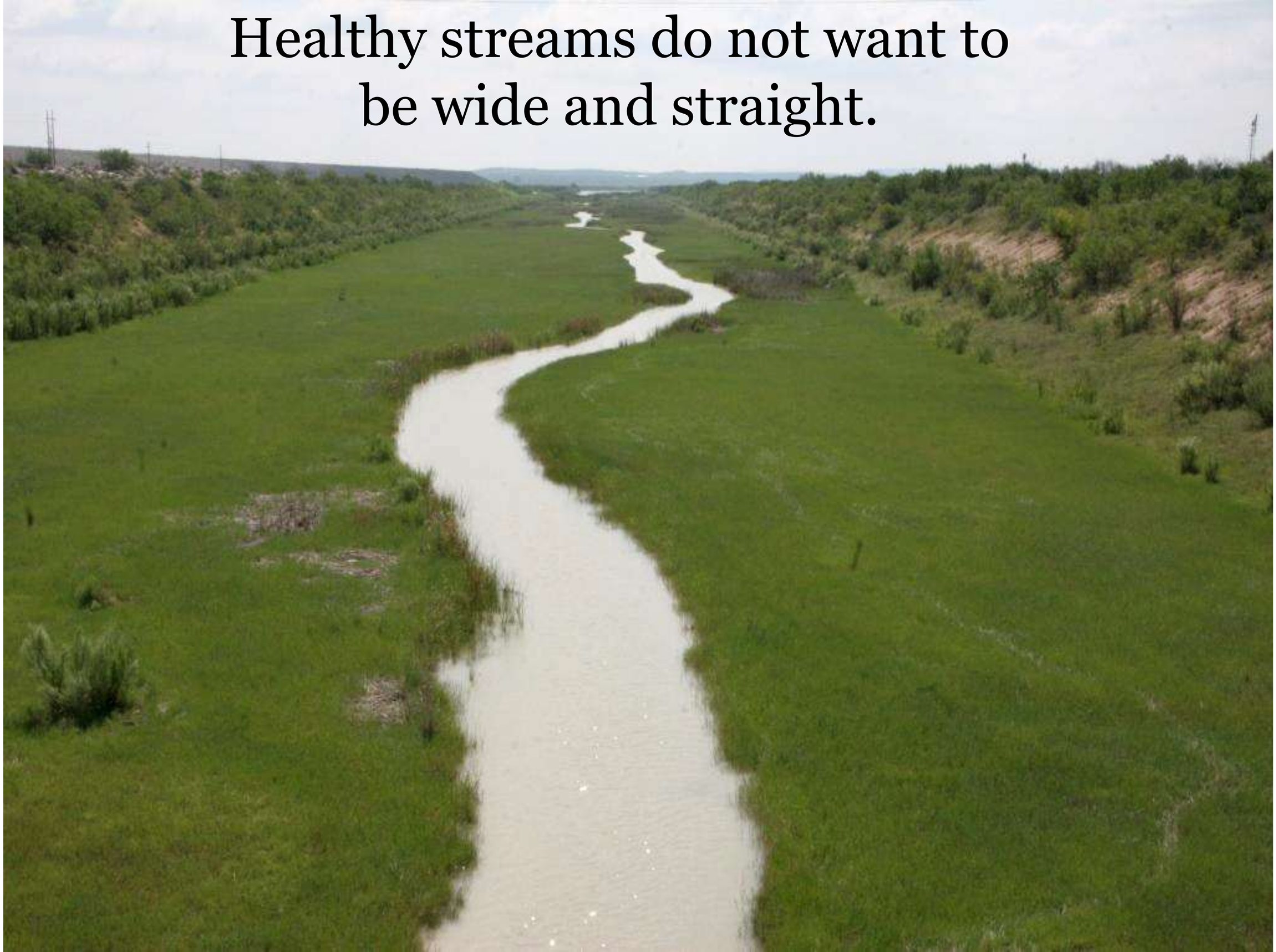
Why Do Rivers Meander?

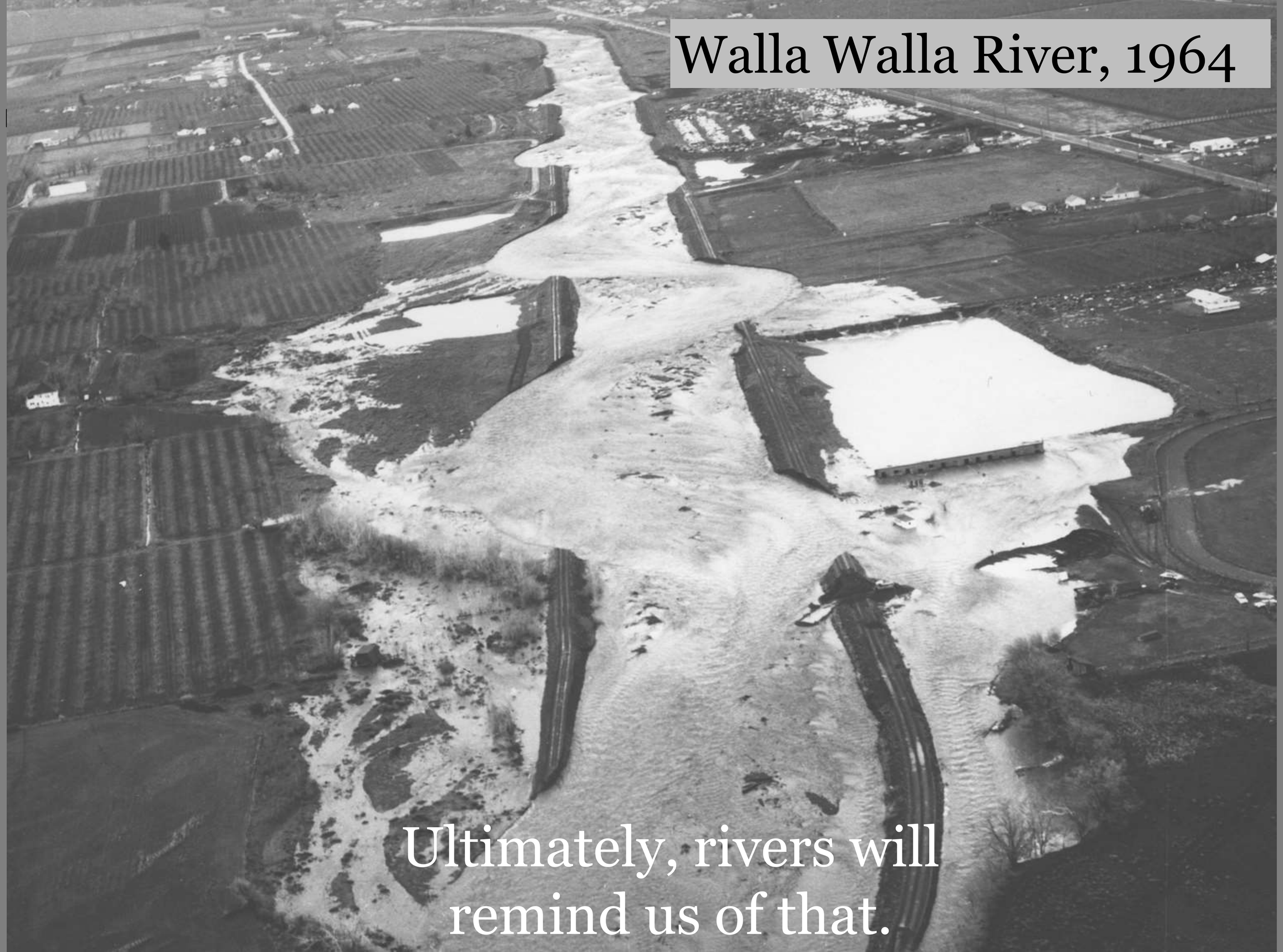


RIVERS <u>RESPOND</u> to changes in volumes of sediment, amount of water, elevation gradient, and "base" sea-level.

- All flowing fluids move in a sinuous "meandering" pattern.
  - Rivers
  - Creeks
  - Rain rivulets
- Meandering rivers are seeking "stability" in deposition and erosion, dispensing energy.
- Meandering rivers shift across flood plains and deltas in the lower reaches of rivers.

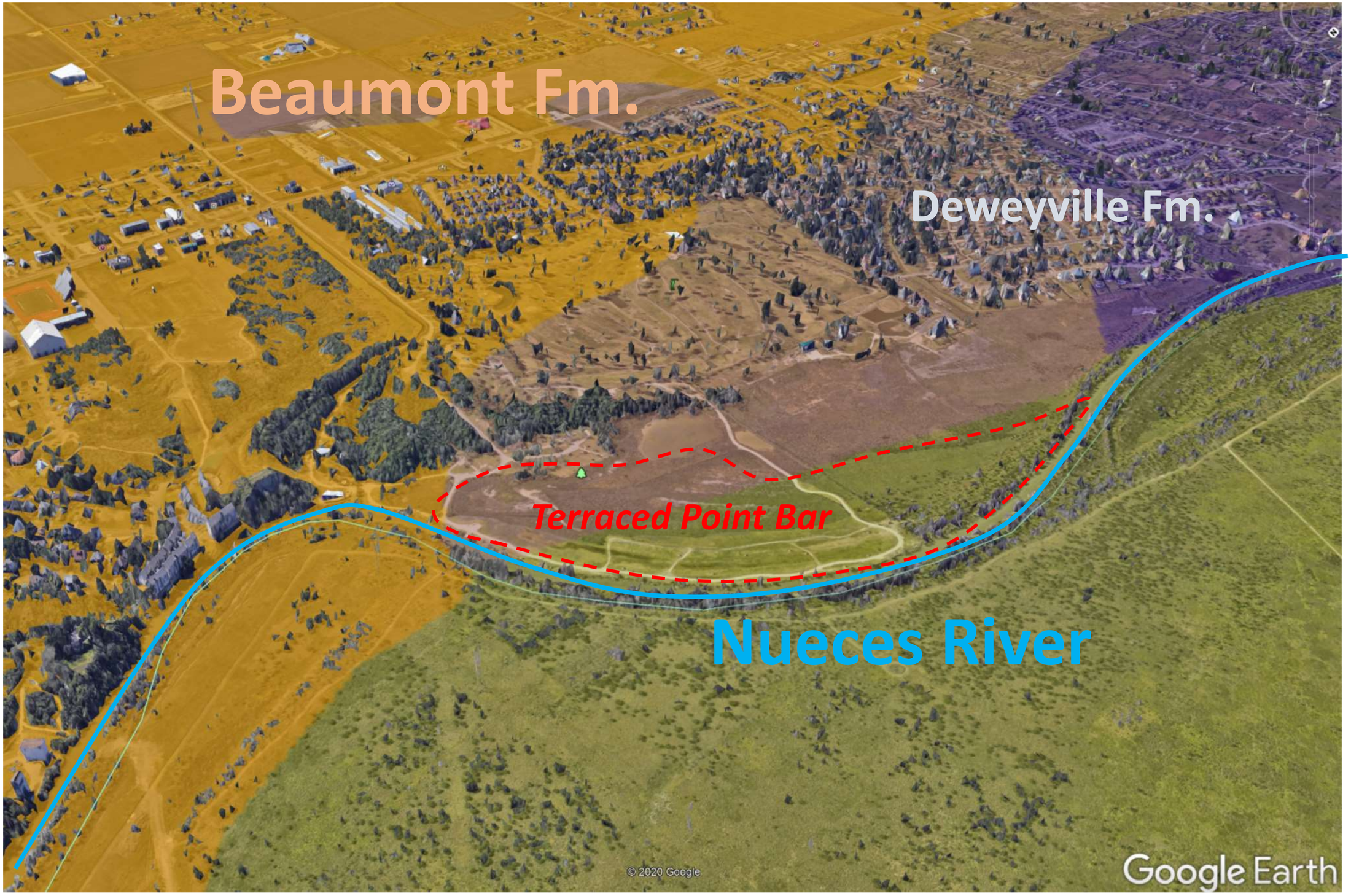
Healthy streams do not want to
be wide and straight.





Walla Walla River, 1964

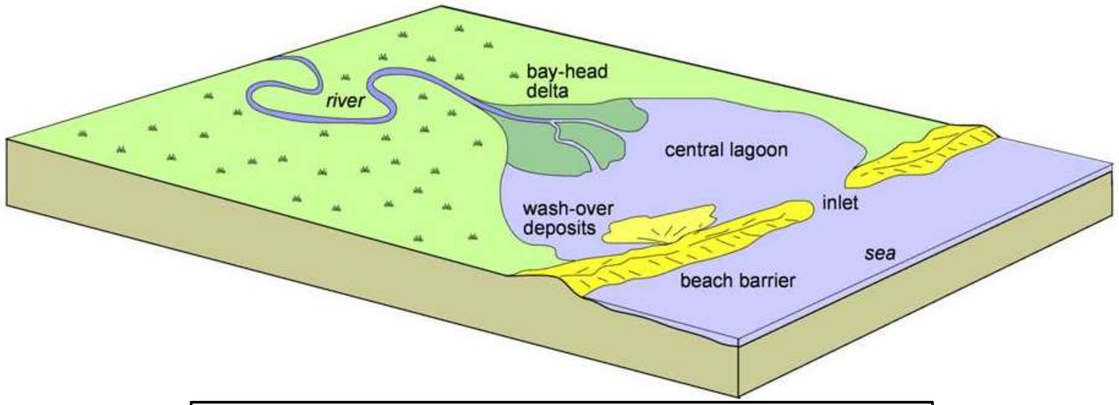
Ultimately, rivers will
remind us of that.


Beaumont Fm.
Deweyville Fm.
Terraced Point Bar
Nueces River
© 2020 Google
Google Earth

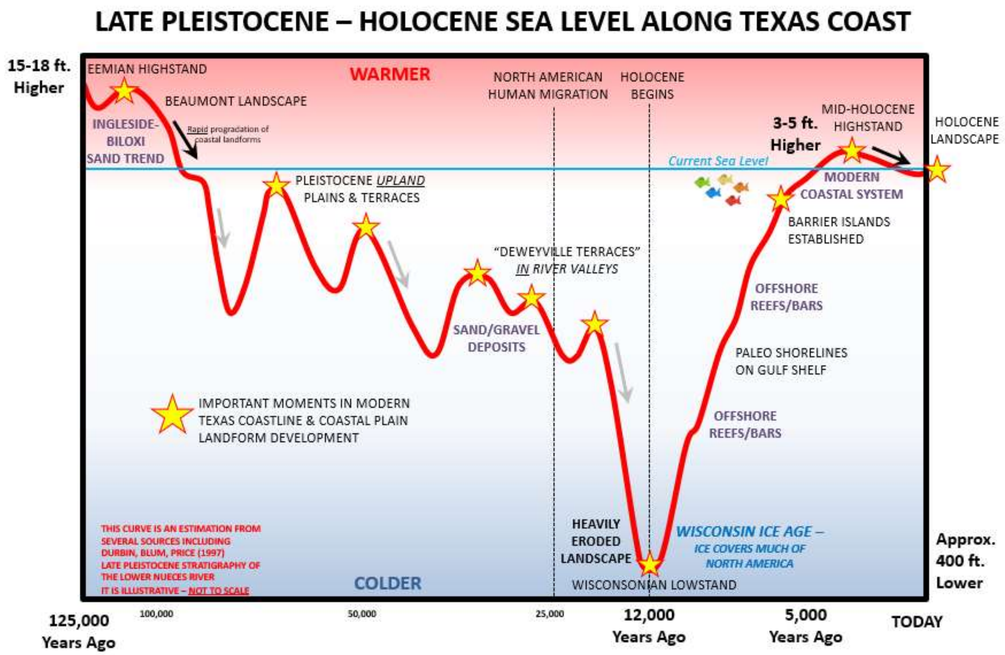
Bird’s Eye View Looking North towards Sinton

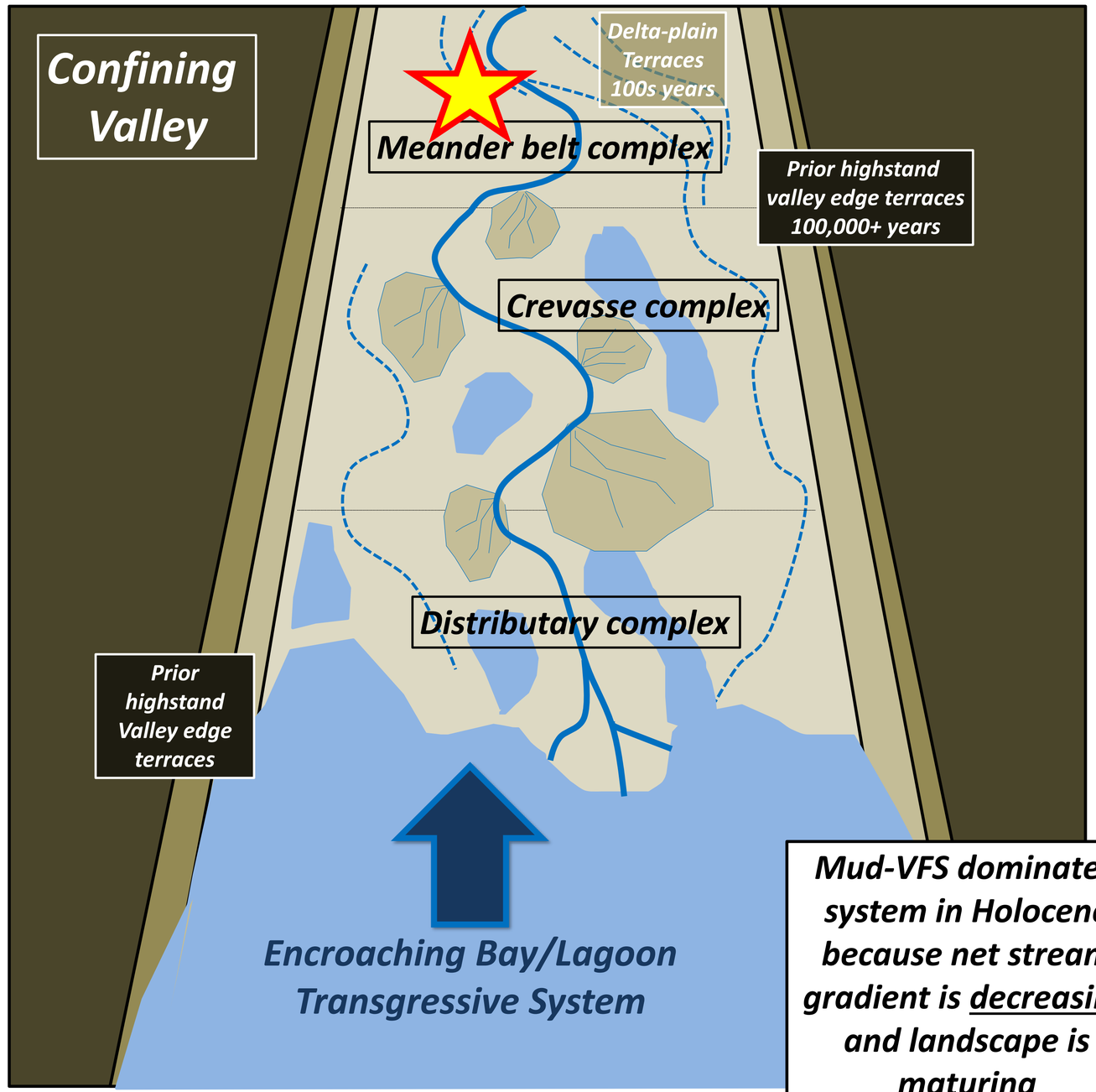
IDEALIZED T.S.T.* BAYHEAD DELTA MODEL

Holocene Transgressive Systems Tract



Simple wave-dominated bayhead model





Mud-VFS dominated system in Holocene because net stream gradient is <u>decreasing</u> and landscape is maturing