

68

This map illustrates the Guadalupe River watershed, which is outlined in green. The watershed originates in the north near Gonzales and flows south through various counties, including De Witt, Lavaca, and Victoria, eventually emptying into the Gulf of Mexico near Victoria. Key features include:

- Water Quality Monitoring Points:** Indicated by orange circles with flame icons and numerical labels: 20470, 12592, 12590, 12578, and 12577.
- Water Treatment Plants:** Represented by brown circular icons with a house-like shape inside, located near Gonzales, Cuero, and Victoria.
- Geographical Features:** The Guadalupe River is shown in blue, with tributaries like the Colorado River and Kuy Creek. Major roads (highways) are shown in red and orange, and county boundaries are marked with dashed lines.
- GBRA Saltwater Barrier:** A label in the bottom right corner indicates the barrier's location near the river's mouth.



- Major River/Stream
— Stream

- State Highway (SH)
- US Highway (US)
- Interstate Highway (IH)

-

68



Aerial View of GBRA Salt Water Barrier

Segments

Segment 1801 - Guadalupe River Tidal

Segment 1802 - Lower Guadalupe River Below San Antonio River

Segment 1803 - Lower Guadalupe River Below San Marcos River

Segment Summaries

Guadalupe River Tidal (1801)

Guadalupe River Tidal is the 10-mile-long stretch of the Guadalupe River from the GBRA Salt Water Barrier to the confluence of Guadalupe Bay. As this segment's name suggests, it is a tidally influenced zone. This segment is prone to frequent log jams which typically occur around bridges, railroad crossings, and other obstructions in the river, restricting flow, altering the river channel, and creating new ecosystems within the segment. The flood plain can often extend several miles beyond the stream banks in this segment. The GBRA Salt Water Barrier is used by GBRA to maintain headwater elevation, divert river flow into GBRA's system of surface water canals, and to prevent brackish waters from traveling upstream during times of low river flows. Originally constructed in 1964, the Saltwater Barrier consisted of two 10-ft by 50-ft water filled rubber bladder spillway gates that were anchored to the concrete foundation. In June 2022, the rubber bladders were damaged and the decision was made to replace the bladders with steel

gates. Installation of the new gates is expected to be complete in early 2023.

Guadalupe River Tidal is monitored quarterly by TCEQ at one station (12577), located at the state highway 35 tidal bridge northeast of Tivoli. Bacteria (*enterococcus*) in this segment has been reported above the screening criteria since 2014, however until recently there were not enough data points to make a confident assessment for impairment. As a result, segment 1801 has had a concern for bacteria since the 2014 Texas Integrated Report; that concern was moved to an impairment on the 2022 Texas Integrated Report.

Station ID	Dissolved Oxygen	Biologicals	Bacteria	Temperature	Nutrients	Chlorophyll a
12577	M	M	I	M	C	M

M - Meets water quality criteria

C - Concern for water quality criteria

I - Impaired for water quality criteria

Table 19: Summary of the 2022 Texas Integrated Report / Segment 1801

Lower Guadalupe River Below San Antonio River (1802)

Lower Guadalupe River Below San Antonio River is a 0.4-mile-long section of the Guadalupe River that stretches from the GBRA Salt Water Barrier to the confluence of the San Antonio River. This segment is a typical slow-moving coastal river and is the most downstream segment of the Guadalupe River that is not tidally influenced. This segment lies in the Western Gulf Coast Ecoregion and is characterized by floodplains and low terraces of alluvial sediments. Lowland forests of elm, water oak, and ash trees are common, as well as grazed pastureland and cropland. GBRA monitors this segment monthly at station 12578, located upstream of the Saltwater Barrier.

Station ID	Dissolved Oxygen	Biologicals	Bacteria	Temperature	Nutrients	Chlorophyll a
12578	M	M	M	M	C	M

M - Meets water quality criteria

C - Concern for water quality criteria

Table 20: Summary of the 2022 Texas Integrated Report / Segment 1802

Trend analyses performed on data from this segment show an increasing trend for chloride (Figure 45), and grab samples collected in 2021 exceeded the screening criteria for chloride for the first time during the reported period. This segment receives considerable inflow from the San Antonio River, which could be a contributing factor to this increase. Another potential contributor to the increase in chlorides could be saltwater intrusion.

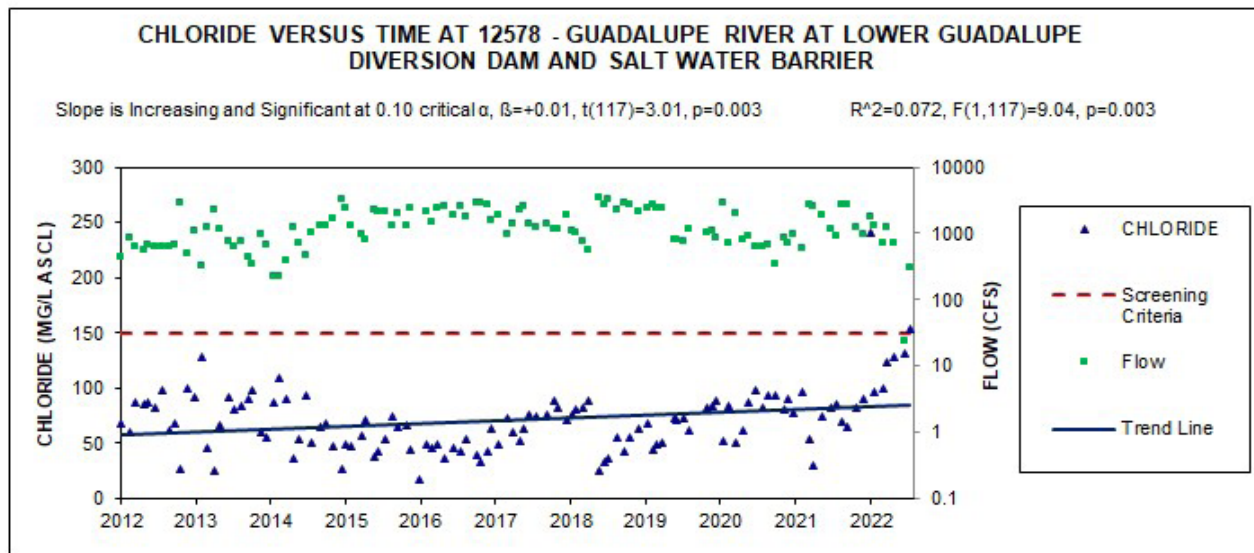


Figure 45: Chloride trend at Station 12578

Lower Guadalupe River Below San Marcos River (1803)



Photo 10:Guadalupe Orb

Lower Guadalupe River Below San Marcos River is a 161.5-mile-long stretch of river that begins west of Gonzales at the confluence with the San Marcos River and ends at the confluence with the San Antonio River. The segment flows through Dewitt, Victoria, and Calhoun counties and has numerous tributaries including Peach Creek and Sandies Creek. This portion of the Guadalupe River is characterized by a large river channel and slow-moving waters with minimal elevation changes, and flows through the Southern Post Oak Ecoregion, Savannah Ecoregion, and southern Blackland Prairie ecoregions. Soils in this watershed range from sandy, to clay, to sandy-clay.

Two proposed endangered species of mussels have been found in this segment, the false spike (*Fusconaia mitchelli*) and Guadalupe orb (*Cyclonaias necki*). The Guadalupe orb (Photo 10) is endemic to the Guadalupe River Basin, meaning that it is only found in this river system. Currently GBRA monitors three stations in segment 1803; all

three are located in the upper half of the segment. GBRA previously monitored an additional station (16579), in the lower portion of this segment. Monitoring was discontinued at that site in 2006 when it was discovered that it was in the mixing zone of an industrial wastewater discharge. GBRA was unable to find a suitable location with adequate access in that area to continue monitoring. The lower portion of 1803 has a concern for nitrate-nitrogen, however it is believed that this concern is not representative of ambient conditions and is likely a result of the samples collected within the mixing zone. The middle and upper portions of 1803 have no concerns or impairments and exhibit a high level of water quality.

Station ID	Dissolved Oxygen	Biologicals	Bacteria	Temperature	Nutrients	Chlorophyll a
12590	M	M	M	M	M	M
12592	M	M	M	M	M	M
20470	M	M	M	M	M	M

M - Meets water quality criteria

Table 21: Summary of the 2022 Texas Integrated Report / Segment 1803

Though still below the screening level, analyses showed increasing trends for nitrate-nitrogen at all three stations in this segment. Data from station 20470 is shown here (Figure 46). Increased non-point source pollution from agriculture in the surrounding watershed could be a contributing factor.

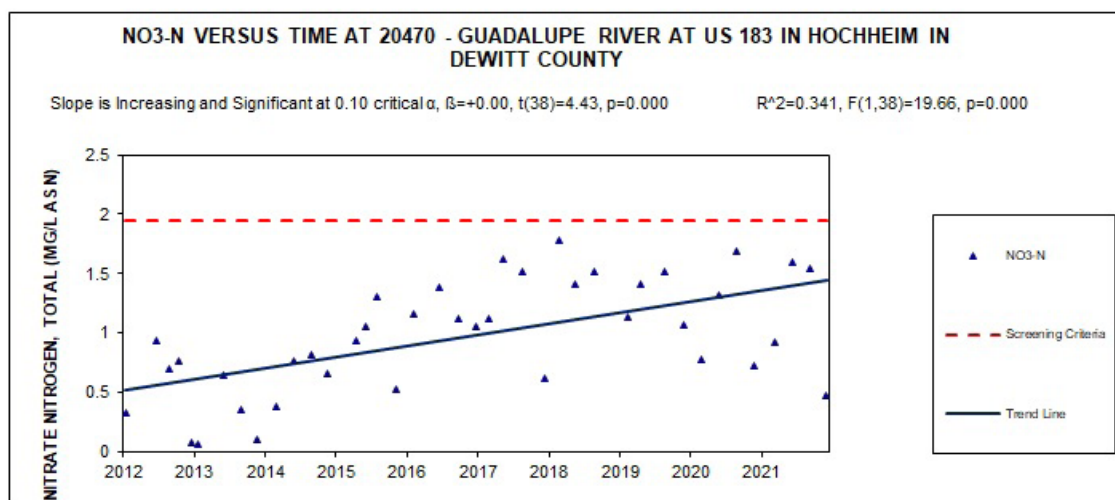


Figure 46: Nitrate trend at Station 20470