Nueces River Authority

Steering Committee and Stakeholder Update for Q5
September - November 2022

Basin 20 - San Antonio-Nueces Coastal Basin

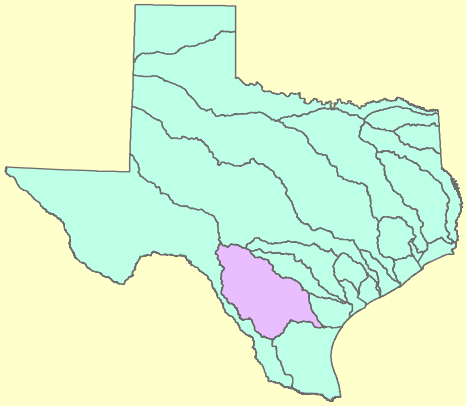
The San Antonio-Nueces Coastal Basin covers approximately 3,100 square miles, draining to Copano and St. Charles bays. The basin is largely rural, with the dominant industries being crop farming and cattle rearing. Monitoring sites in Basin 20 are located on the tidal and above tidal portions of the Mission and Aransas rivers and Poesta Creek (see map on page 14). Tidal portions of the Mission and Aransas rivers have been impaired for the contact recreation standard, bacteria, since the 2004 Assessment. The above tidal portion of Aransas River and Poesta Creek are listed for the same parameter in the 2022 Assessment.

Mission and Aransas River Basin Sampling

Nueces River Authority conducts routine water quality monitoring at 7 locations in the Mission/Aransas watershed (map of sampling sites on page 14). Mission and Aransas rivers as well as Aransas and Poesta creek stations were monitored on October 18th. Bacteria concentrations were found at a number of sites including: Poesta Creek at FM 202 (400 cfu/100 mL), Aransas River above tidal east of Skidmore (340 CFU/100 mL), Aransas River tidal (950 CFU/100 mL), and Mission River Tidal at FM 629 (945 CFU/100 mL) However, 2 sites, Aransas Creek at US 281(37 CFU/100 mL) and Mission River Above Tidal (91 CFU/100 mL) had bacteria results below the standard of 126 CFU/100 mL).

Station 12952 – Aransas River east of Skidmore on October 18th, 2022

Basin 21 - Nueces River Basin



The Nueces River Basin covers approximately 17,000 square miles in South-Central Texas. The Nueces River winds 315 miles from its source in the Edwards Plateau near Rock Springs (elevation 2,402) through the brush country of the South Texas Plains to its end in Nueces Bay, located near Corpus Christi. The Nueces River is joined by the Frio and Atascosa rivers near the town of Three Rivers. Nueces River Authority conducts routine water quality monitoring at 25 locations throughout the Nueces River Basin (see map on page 15).

Nueces River Basin Sampling

Much of the Nueces River Basin was certainly a lot greener this quarter compared with mid-summer when severe drought conditions were prevalent throughout the watershed. Flows began to taper off quickly in September following the San Casimiro Flood that added approximately 5 feet to the water level in Lake Corpus Christi in August. Flows in the upper basin are recovering from near record low flows that plagued many of the beloved recreation hotspots like the Upper Frio, Nueces, and Sabinal rivers. The upper basin is still experiencing moderate/severe drought status at the end of November. More rain is always welcome.

Station 16704 – Flows resume on the Upper Nueces at Highway 55

Segment 2104 – Nueces River Above Frio River

Following the San Casimiro Creek Flood in August, water has returned to portions of the middle Nueces River. Station 12974 located at the crossing at FM 624 had approximately 30,000 feet^3/sec flow through during that event but dropped back down to zero by mid-October. Dissolved oxygen levels were low at 3.0 mg/L and 32.2% of capacity at the site visit on Oct. 20th. Dissolved minerals were very low (TDS was around 380 ppt). The green film on the water's surface is duckweed which is common in the river in this area. Too much of it may have an adverse effect of the dissolved oxygen levels. This appears to be a moderate amount.

Station 12974 – Nueces River at FM-624 Crossing

Segment 2112 - Upper Nueces River

NRA added 3 new stations in the Upper Nueces River for FY 2023. The stations include a historic station off Highway 55 near Barksdale (Station 13005), a new station at County Road 414 at Montell (Station 22331), and a new station at Chalk Bluff Park (Station 22330). These stations were requested to keep an eye on bacteria levels following the influx of new residents following the Covid migration. New residents mean potentially increased bacteria (*E. coli*) from septic systems that may not be up to the task. A big thank you goes out to the CRP for funding this critical and prized stretch of river.

Station 13005 – Monitoring at the Barksdale Crossing has resumed for FY 2023

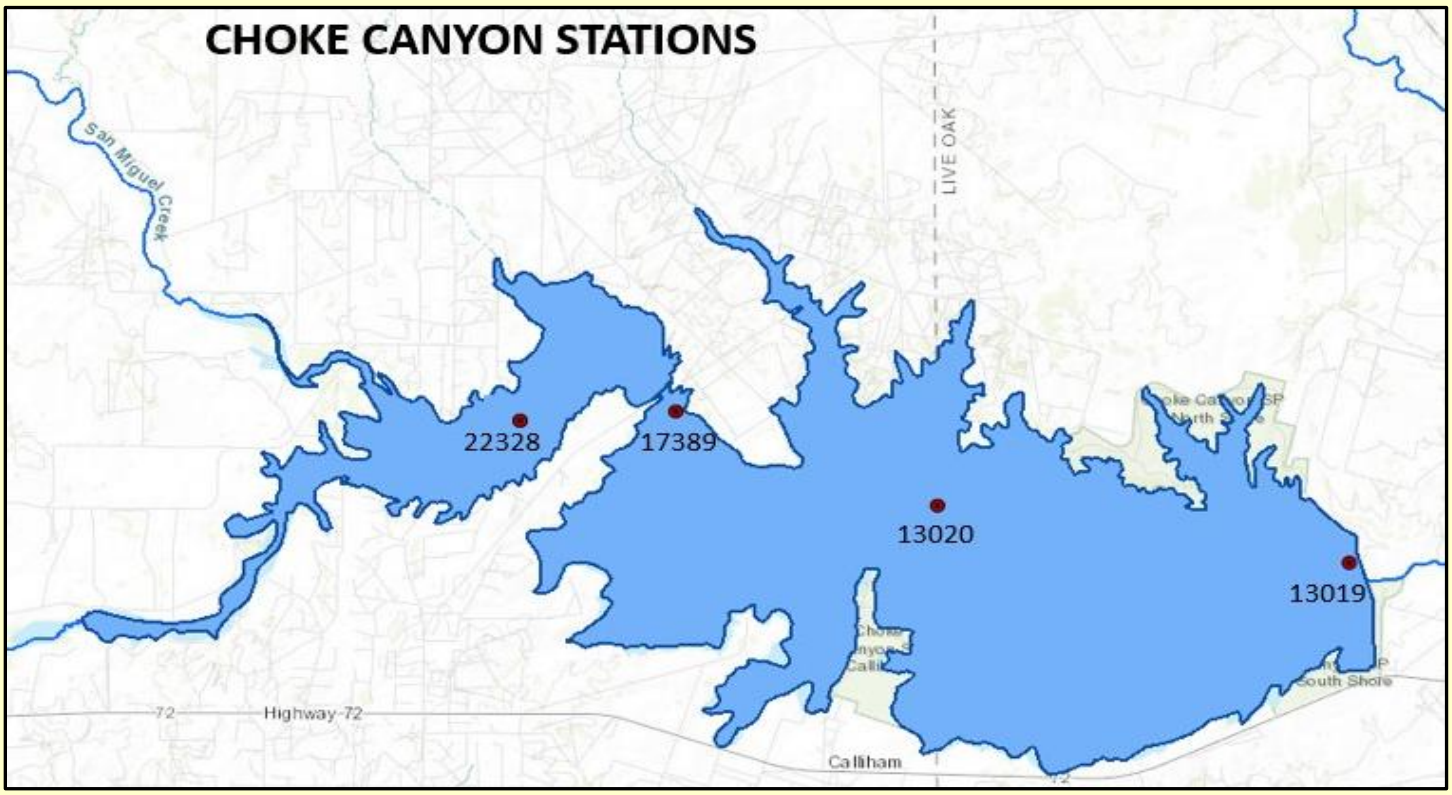
Station 22331 – New Station at County Road 414 at Montell

Station 22330 – New station at Chalk Bluff Park at Montell

Station 16704 – Nueces River at the 19-mile bridge crossing

Segment 2116 - Choke Canyon Monitoring

NRA kicked off a year-long study examining the water quality in Choke Canyon due to exceedances to the nutrient reservoir criterion for excessive algal growth in water. NRA is conducting monthly monitoring on the reservoir at 4 stations including 24-hour dissolved oxygen. Two stations are located in open water with one site located near the dam and the other located in the middle of the reservoir. Two more stations exist in the upper portion of the reservoir. One is located near the FM-99 bridge and the other is near the confluence of San Miguel Creek. Due to low lake levels, the upper portion of the lake is more riverine with an abundance of black willow (*Salix nigra*) lining the bank and an abundance of floating algae present on the water's surface. It's likely that leaf matter from the willows and a lack of circulation might be playing a role in nutrient/dissolved oxygen dynamics.



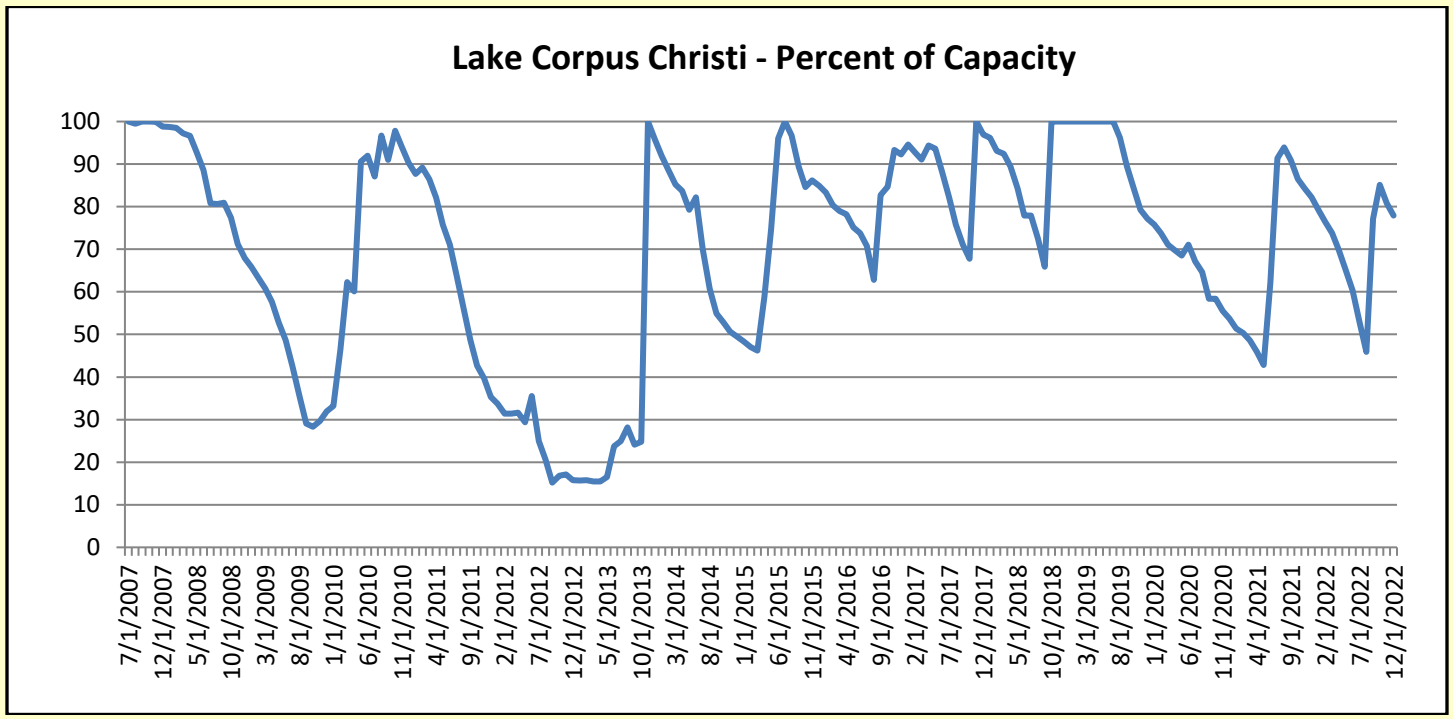
Station 17389 – Choke Canyon Reservoir at FM-99

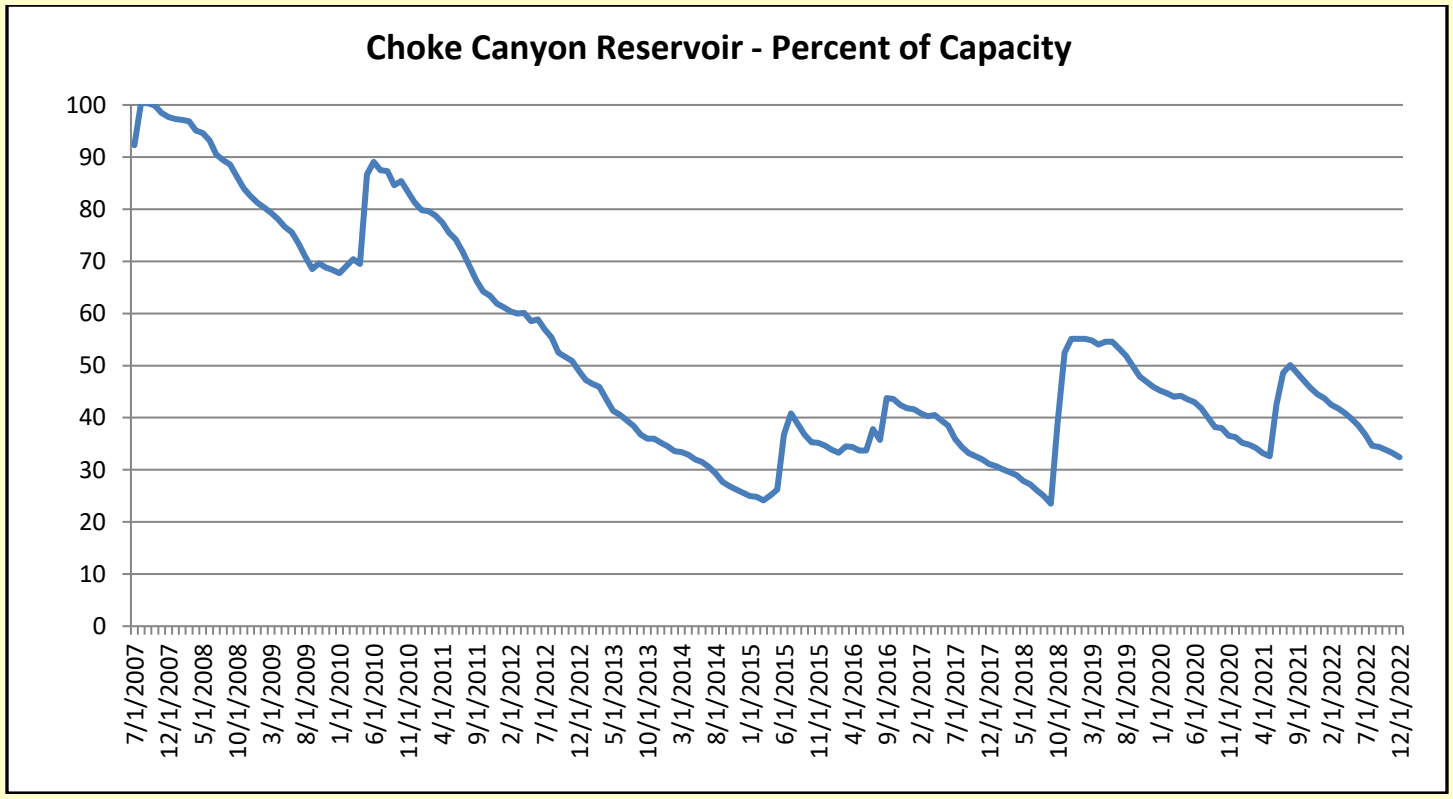
Station 13019 – 24-hour dissolved oxygen collection on Choke Canyon Reservoir near the Dam

Station 22328 – 24-hour dissolved oxygen collection on Choke Canyon Reservoir near San Miguel Creek confluence

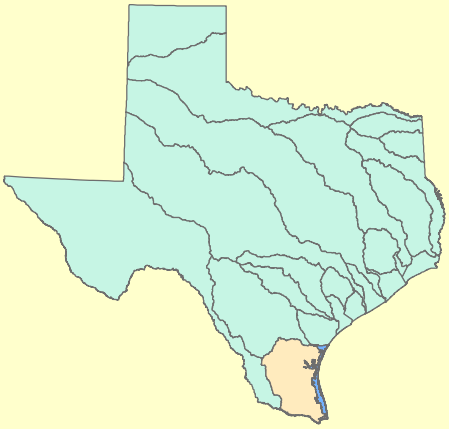
Lake Levels

Combined lake levels began the quarter (September 1st) at 46.4% and dropped slightly to 45.1% by the end of November. For the Daily Reservoir System and Pass-Thru Status Report, please visit the website https://www.nueces-ra.org/CP/CITY/passthru/index.php.





Basin 22 – Nueces-Rio Grande Coastal Basin

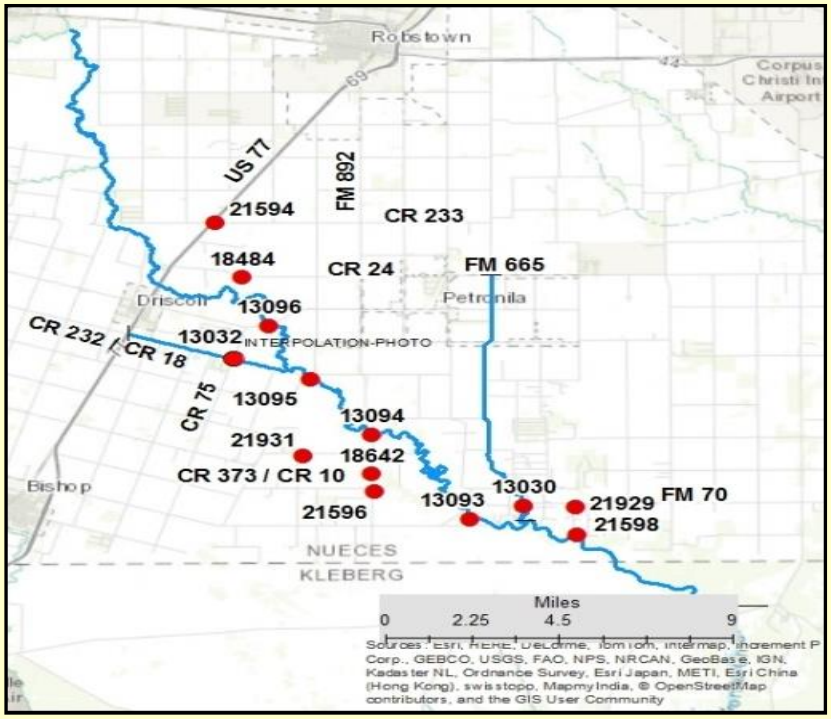


The Nueces-Rio Grande Coastal Basin covers approximately 10,400 square miles in South Texas and includes streams such as the Arroyo Colorado Tidal (Segment 2201) and above tidal (Segment 2202) in the Rio Grande Valley and Petronila Creek Tidal (Segment 2203) and above tidal (Segment 2204), which is a tributary to Alazan Bay located on the northern arm of Baffin Bay.

Petronila Creek Tributary Study – Segment 2204

Since FY 2013-2014, the TCEQ has contracted with NRA to conduct monthly water quality monitoring to identify chloride, sulfate, and TDS contributions from tributaries of Petronila Creek, including drainage ditches. For FY 2023, NRA is conducting monthly monitoring at 13 sites, same as the past few years. Four sites are located on the main stem of Petronila Creek (13096, 13095, 13094, and 13093 – data is in bold on the graph). Specific conductivity monitoring data for September through November is summarized below. (Disclaimer – Data has not been validated or input into the SWQMIS Database.)

Site #	Sep 22' (µmhos)	Oct 22' (µmhos)	Nov 22' (µmhos)
21594	2,910	3,650	2,360
18484	45,800	47,600	31,800
13032	37,600	45,300	21,600
13096	**8,500**	**19,000**	**8,820**
13095	**11,100**	**20,700**	**9,840**
21931	dry	3,460	3,740
13094	**11,700**	**20,500**	**11,300**
18642	29,000	8,150	7,510
21596	20,300	24,500	24,300
13093	**5,500**	**14,800**	**8,940**
13030	15,000	31,800	6,790
21929	44,300	dry	4,800
21598	41,600	54,600	5,450



Arroyo Colorado Above Tidal (Segment 2202)

Station 13079 is located on the above tidal portion of the Arroyo Colorado (Segment 2202) at the US-77 Bridge in Harlingen. Water quality at Station 13079 was monitored on June 16th. Bacteria levels (200 MPN) were slightly elevated above the standard (126 MPN) during the site visit.

Station 13079 – Arroyo Colorado at US 77 in Harlingen

San Martin Lake (Segment 2494C)

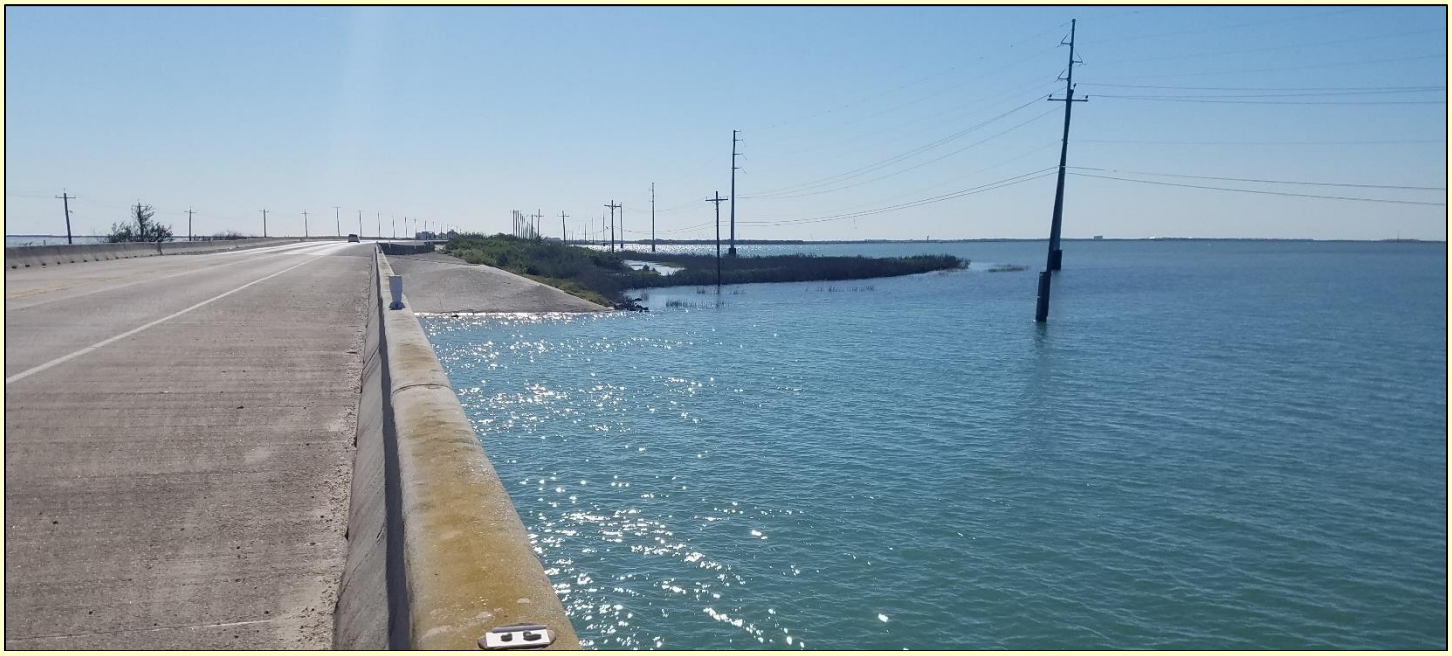
San Martin Lake system is located off the Brownsville Ship Channel in the Lower Rio Grande Valley. NRA field staff rented a boat/boat captain from UTRGV to travel up the shallow waterway on October 26th. The tide was very low on the site visit exposing the oyster beds along the bank. Enterococcus bacteria levels were once again, highly elevated during the site visit (>2,400 MPN).

Station 22170 - San Martin Lake off Brownsville Ship Channel

Basin 24 –Bays and Estuaries

The Bays and Estuaries region of Texas covers approximately 2,002 square miles along the entire Texas Coast. There are 48 classified estuarine segments that are monitored by several River Authorities and TCEQ regional offices. NRA monitors water quality in 5 of the coastal segments including: Copano/Port/Mission Bay (Segment 2472), Redfish Bay (Segment 2483), Oso Bay (Segment 2485), Laguna Madre (Segment 2491), and Baffin Bay/Alazan Bay/Cayo del Grullo/Laguna Salada (Segment 2492) which includes Los Olmos and San Fernando creeks.

Station 13442 – Oso Bay at Ocean Drive (NAS Bridge)



Station 13426 – Redfish Bay at SH 361

Hidalgo Main and Raymondville Drain (Segment 2491C)

The Hidalgo Main (Station ID 22003) and Raymondville Drains (Station ID 22004) are tributaries of the Lower Laguna Madre (Segment 2491). These two sites are located east of US-77 and were added to the CRP Monitoring Schedule back in 2018. Both sites were visited on October 24th. The Raymondville Drain was widened and deepened since our last trip out in June. It looks like it will handle a lot more water in the future. The riparian vegetation should return in short order.

Station 22004 – Upstream view of Raymondville Drain at CR 445 on October 24th, 2022

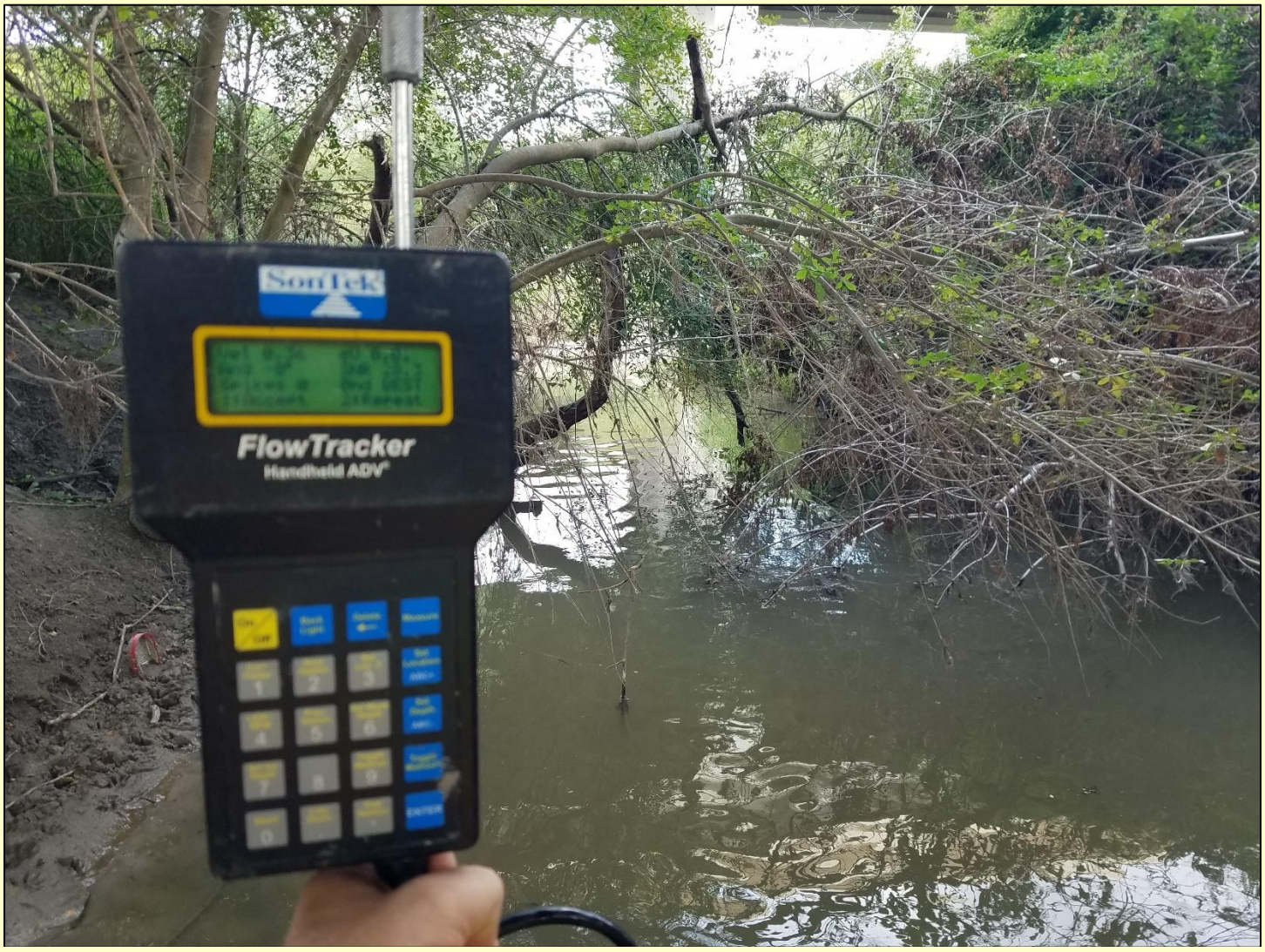
Station 22004 – Upstream view of Raymondville Drain at CR 445 on June 30th, 2022

Station 22004 – Downstream view of Raymondville Drain at CR 445 on October 24th, 2022

Station 22004 – Downstream view of Raymondville Drain at CR 445 on June 30th, 2022

San Fernando Creek (Segment 2492A)

San Fernando Creek flows 45.6 miles from a point just east of the Nueces and Jim Wells County line to the confluence of the Cayo del Grullo arm of Baffin Bay in Kleberg County. Its watershed is 288,572 acres. San Fernando Creek is currently listed as **impaired** for **bacteria** (*E. coli*) in the 2022 IR Assessment. The creek also has water quality **concerns** for **chlorophyll-*a***, **nitrate**, and **total phosphorus**. Water quality monitoring for the creek occurred on October 24th. We did notice a sweet smell to the water on the site visit. We called one of the permitted dischargers to the creek, but after talking to them, we determined the smell was likely a natural occurrence. The headwater tributary is named Aqua Dulce Creek (sweet water in Spanish). Bacteria results on the site visit were slightly elevated at 160 MPN. Nitrate concentrations were 0.74 mg/L (screening level is 1.95 mg/L) and total phosphorus was 2.7 mg/L (screening level is 0.69 mg/L). We measured the flow to be 3.6 $feet^3$/sec using our Sontek Doppler Flowmeter.

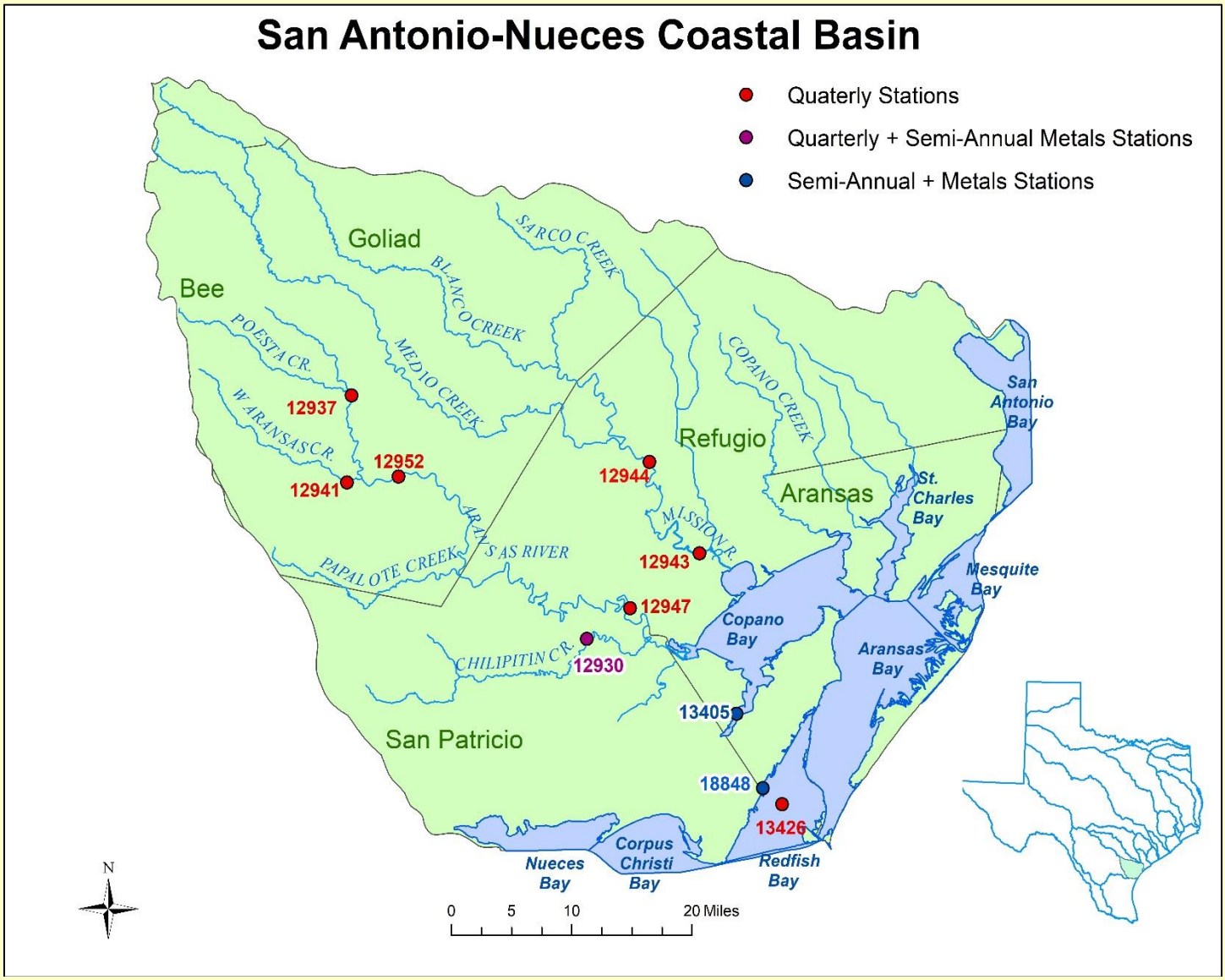


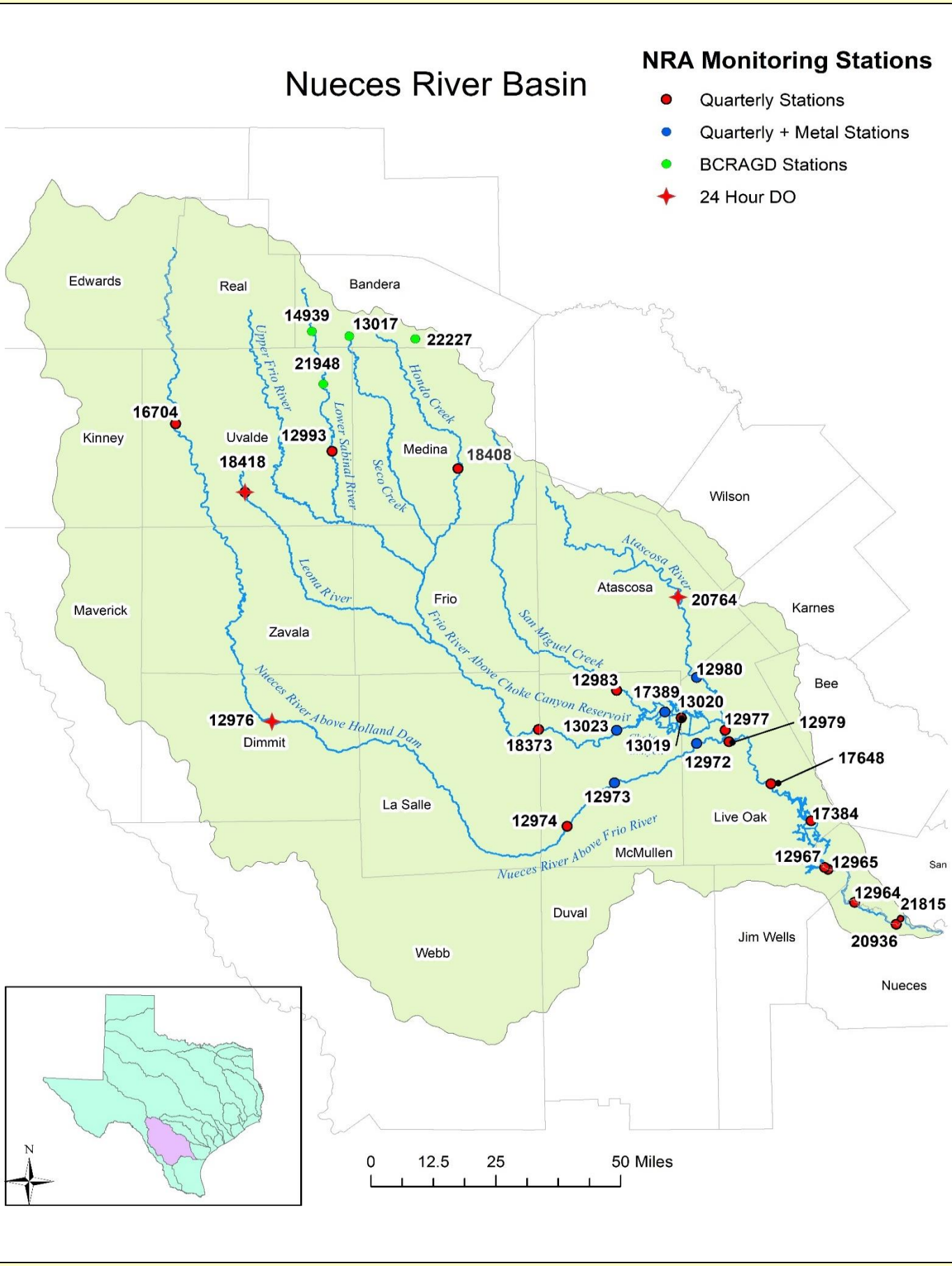
Station 13033 – San Fernando Creek at US-77

Los Olmos Creek Tidal (Segment 2492B)

Los Olmos Creek runs 71 miles from southern Duval County to its confluence with Laguna Salada, an inlet of Baffin Bay. The creek was a new site (Station ID 13034) for FY2019, located at the bridge crossing at US 77 south of Riviera. NRA field staff visited the site on October 24th. Salinity values were highly elevated this quarter with a value of >70.7 PSU (92 ppt measured by a salt refractometer). Bacteria concentrations were highly elevated on the site visit (>2,400 MPN/100 mL); The enterococcus standard is 35 MPN/100mL. Bat guano was present on the shore on the October site visit. Monthly monitoring on the creek resumed in October thanks to an EPA grant to study Baffin Bay submitted by Dr. Jeffrey Turner at Texas A&M-CC.

Station 13034 - Los Olmos Creek at US 77 near Riviera


San Antonio-Nueces Coastal Basin
Quaterly Stations
Quarterly + Semi-Annual Metals Stations
Semi-Annual + Metals Stations
Goliad
Bee
Refugio
Aransas
San Patricio
SARCO CREEK
BLANCO CREEK
POESTA CR.
MEDIO CREEK
W ARANSAS CR.
COPANO CREEK
ARANSAS RIVER
MISSION R.
PAPALOTE CREEK
CHILIPITIN CR.
12937
12952
12941
12944
12943
12947
12930
13405
18848
13426
San Antonio Bay
St. Charles Bay
Mesquite Bay
Copano Bay
Aransas Bay
Nueces Bay
Corpus Christi Bay
Redfish Bay
N
0 5 10 20 Miles


Nueces River Basin
NRA Monitoring Stations
Quarterly Stations
Quarterly + Metal Stations
BCRAGD Stations
24 Hour DO
Edwards
Real
Bandera
Kinney
Uvalde
Medina
Wilson
Maverick
Zavala
Frio
Atascosa
Karnes
Bee
La Salle
Live Oak
McMullen
Duval
Jim Wells
Webb
Nueces
San
14939
13017
22227
21948
16704
12993
18418
18408
20764
12980
12983
17389
13020
12977
12979
12976
Dimmit
13023
18373
13019
12972
17648
12973
12974
17384
12967
12965
12964
21815
20936
Upper Frio River
Lower Sabinal River
Seco Creek
Hondo Creek
Atascosa River
Leona River
Frio River Above Choke Canyon Reservoir
San Miguel Creek
Nueces River Above Holland Dam
Nueces River Above Frio River
N
0
12.5
25
50 Miles

Nueces-Rio Grande Coastal Basin

Monitoring Stations

- NRA Routine Stations