

Nueces River Authority

Steering Committee and Stakeholder Update for Q4 June - August 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

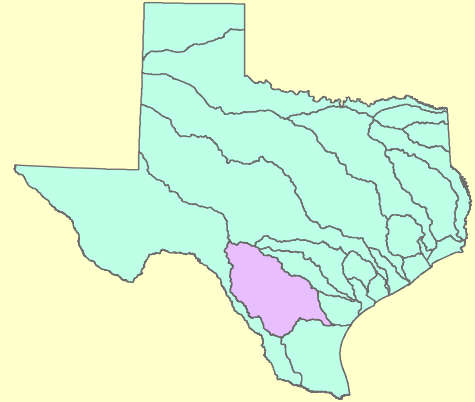
Nueces River Authority conducts routine water quality monitoring at 7 locations in the Mission/Aransas watershed (map of sampling sites on page 14). Mission and Aransas rivers as well as Aransas and Poesta creek stations were monitored on June 15th. The area below the bridge of Poesta Creek at FM 202 was cleaned out with erosion controls added since the last site visit. *E. coli* bacteria results on Poesta Creek were elevated at 260 cfu/100 mL. Station 12941 located on Aransas Creek at US 181 near Skidmore wasn't flowing nor did it have a pool big enough to monitor. Aransas River Tidal had bacteria results that were highly elevated at >2,400 CFU/100 mL. Chiltipin Creek Tidal was monitored on August 9th and included metals-in-water analysis.



Station 12937 – Erosion Control at Poesta Creek at FM 202 near Beeville on June 15th, 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

The Nueces River Basin has been experiencing extreme drought conditions since Fall 2021. Station 12973, located on the middle Nueces River at FM 624 (pic below) stopped flowing back in mid-September 2021 with many of the refuge pools drying up. From June through the end of July, site visits in the middle portion of the watershed encountered a lack of flowing water at the Nueces River at FM 624, Nueces River at SH 16, Leona River at FM 140, Frio River at Fowlerton and at Tilden, Atascosa River at McCoy and Whitsett, and San Miguel Creek at SH 16. Due to the lack of water, 24-DO monitoring on the Leona, Atascosa, and Nueces rivers did not occur this quarter. Flows in the upper basin were down to historic lows as well with the Frio in Concan dropping to zero. The good news is that the rains did come in August (after sampling for the quarter was completed) and many of the dry locations had flowing water by the end of the quarter.



Station 12974 – Dry riverbed at the Nueces River at FM 624 on June 22nd, 2022



Station 12973 – Dry streambed of the Nueces River at SH 16 south of Tilden



Station 18373 – Dry streambed of the Frio River at Fowlerton



Station 18418 – Dry streambed at Leona River at FM 140 near Uvalde



Station 16704 – Very low flows in Upper Nueces River at HW 55 (19-mile bridge)



Station 20764 – No flow at Atascosa River at FM 541 in McCoy

Metals Monitoring

In FY 2022, NRA monitors for metals in water at 2 locations on a semi-annual basis in the Nueces River Basin. This occurs at Station 12983 on San Miguel Creek and Station 12980 on the Atascosa River at FM 99 near Whitsett. Due to drought conditions, metals monitoring did not occur in Q4. Metals sampling did occur on Chiltipin Creek, a tributary of Aransas River Tidal.

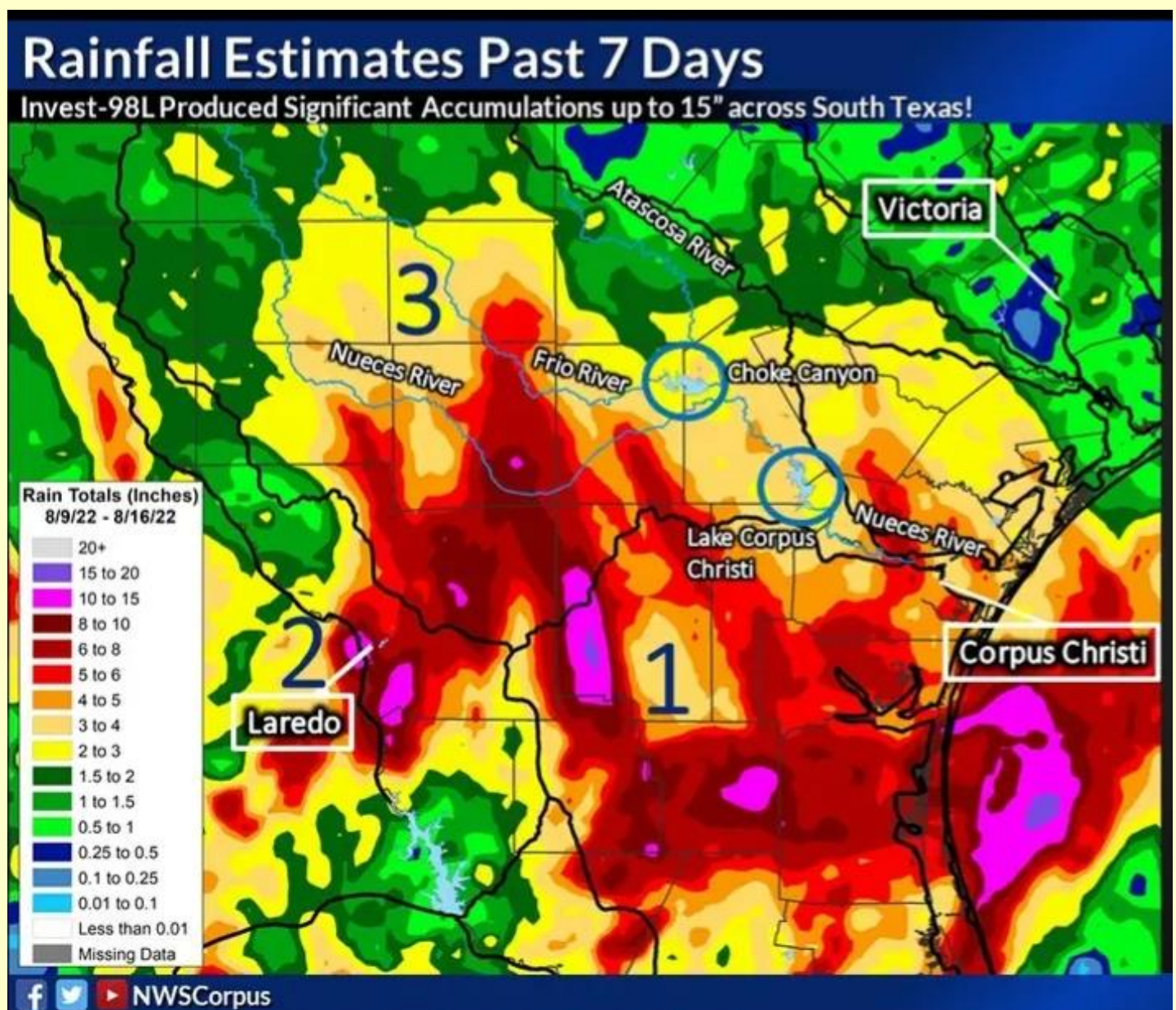
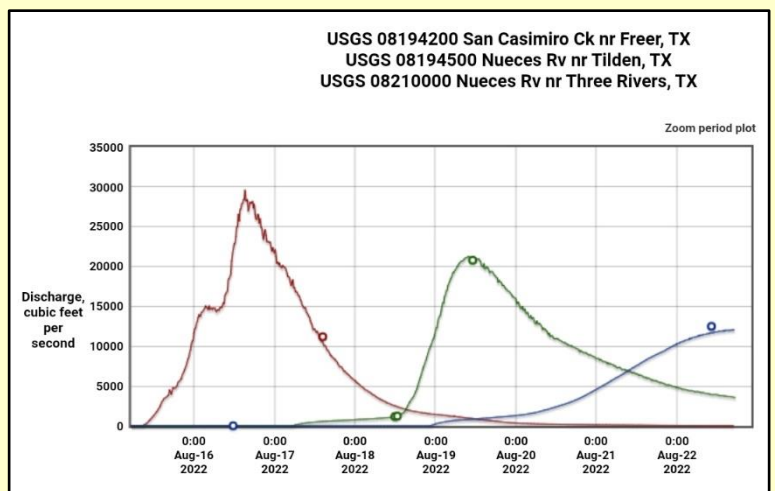
Indigo Snakes

We saw two large indigo snakes on the same day (June 22nd) while out sampling.



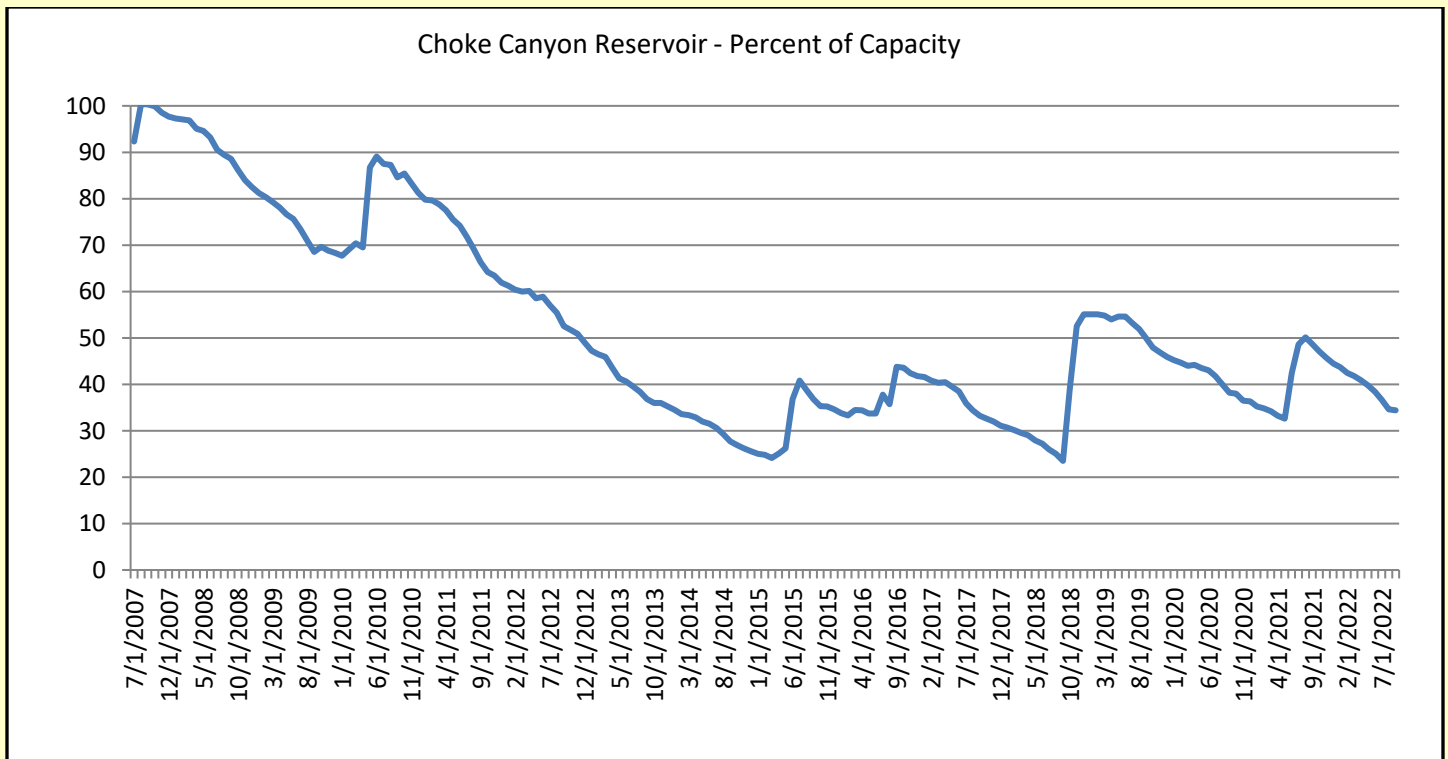
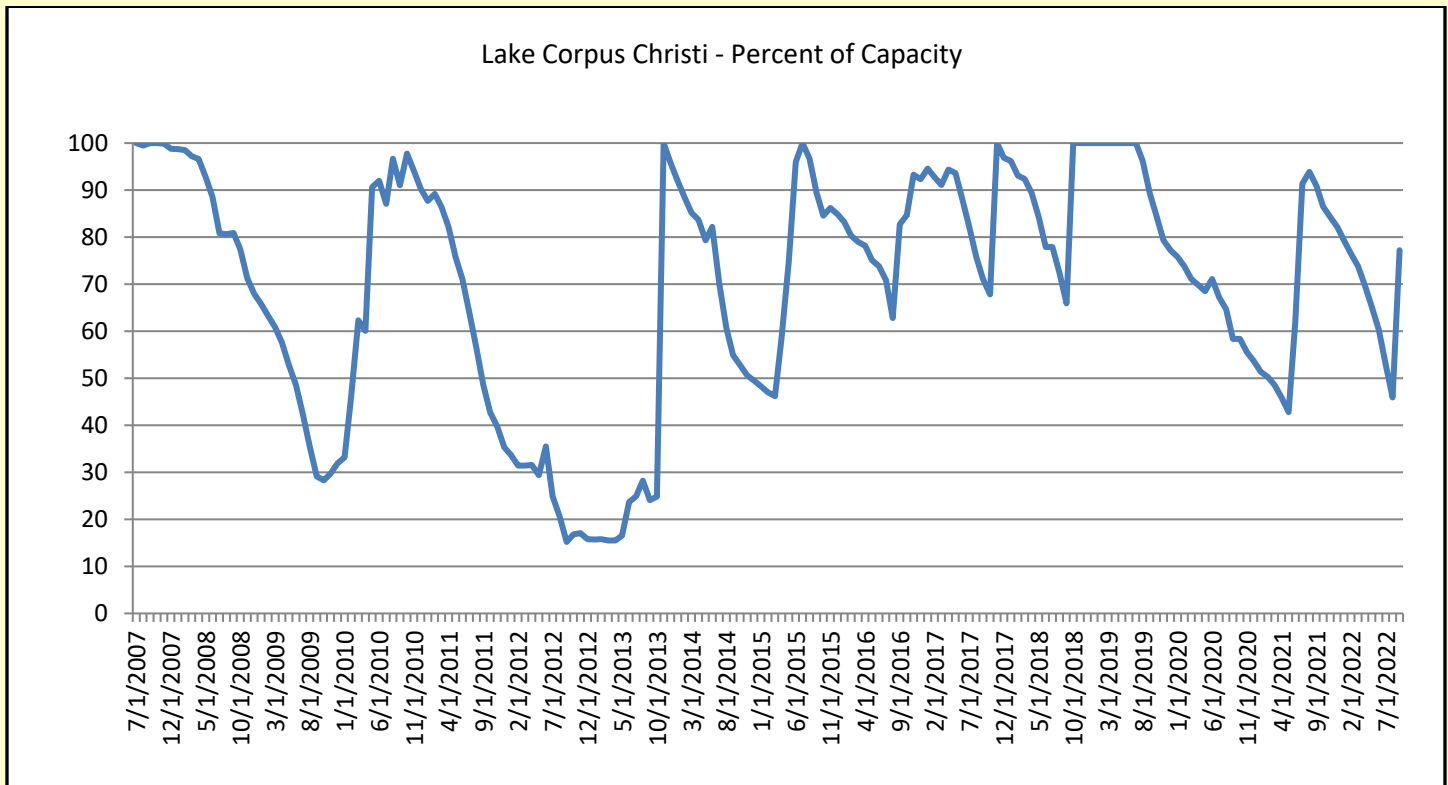
San Casimiro Creek Flood

A very rare flooding event occurred in mid-August due to tropical moisture associated with tropical system Invest-98L. Rainfall associated with Invest-98L fell mainly along the coast, but a small portion of the middle Nueces River Watershed (San Casimiro Creek sub-watershed) did get rainfall in excess of 10" in some locations. The resultant flood crested around 30,000 feet³/sec on August 16th. The floodwaters took approximately 6 days to reach the USGS gauge in Three Rivers.



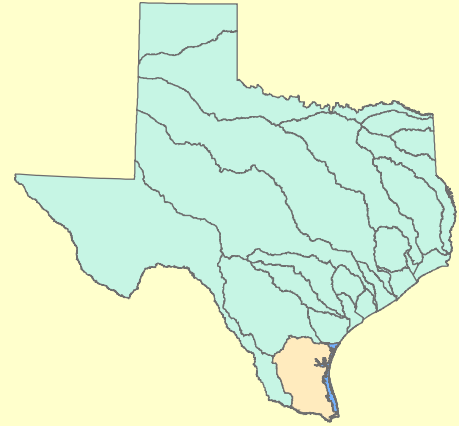
Lake Levels

Combined lake levels began the quarter (June 1st) at 44.5% and rose slightly to 46.4 % by the end of August following the flood from San Casimiro Creek that raised Lake Corpus Christi by approximately 5 feet off the July lows. For the Daily Reservoir System and Pass-Thru Status Report, please visit the website <https://www.nueces-ra.org/CP/CITY/passthru/index.php>.



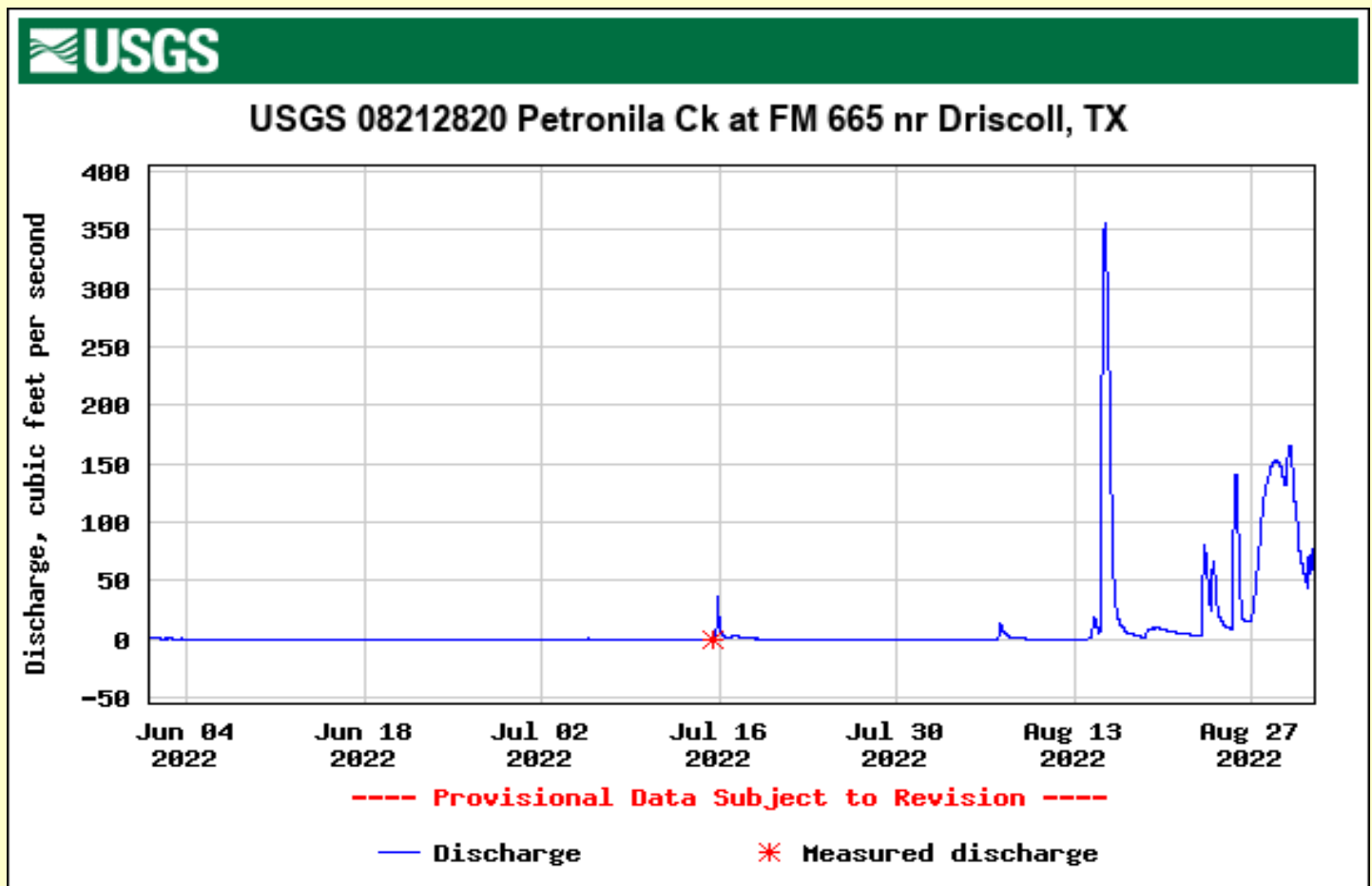
Basin 22 – Nueces-Rio Grande Coastal Basin

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.

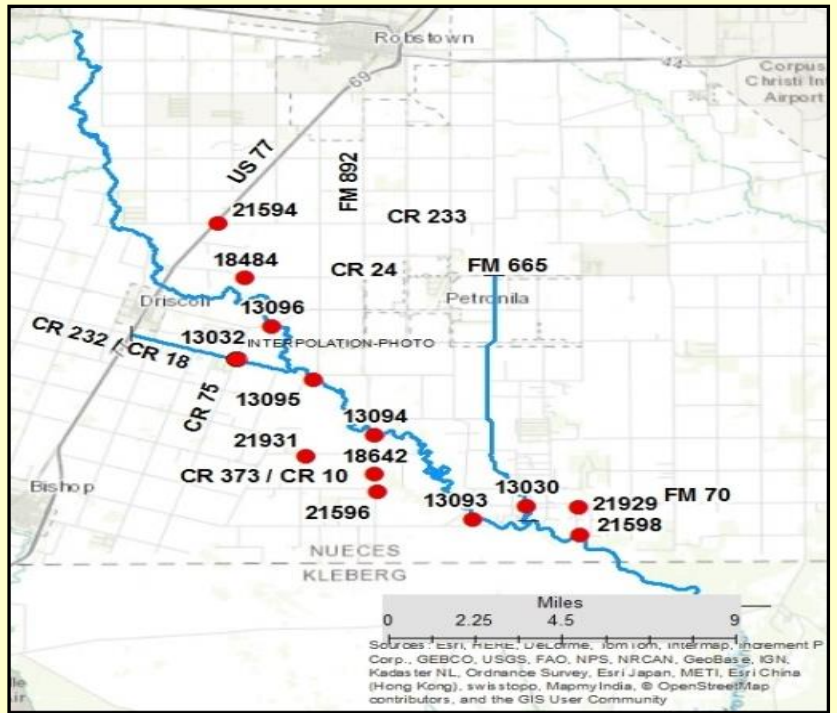


Petronila Creek Tributary Study – Segment 2204

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 2022, 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 June thru August is summarized below. (Disclaimer – Data has not been validated or input into the SWQMIS Database.) The quarter started off on a very dry note with three dry tributary sites in June. By August, that number had grown to seven tributary locations. By mid-August, tropical moisture associated with tropical system Invest-98L delivered rain that resulted in a spike up to 350 feet³/sec. Data collected in August took place before the rain event.



Site #	June 22' (µmhos)	July 22' (µmhos)	Aug 22' (µmhos)
21594	Dry	Dry	Dry
18484	43,700	46,000	50,900
13032	Dry	Dry	Dry
13096	21,400	27,100	24,600
13095	19,500	21,400	22,600
21931	Dry	Dry	Dry
13094	21,200	26,100	24,900
18642	17,700	80,000	Dry
21596	15,600	Dry	Dry
13093	5,000	22,000	23,000
13030	15,900	Dry	Dry
21929	39,300	Dry	Dry
21598	42,200	86,900	92,200



Station 21929 – Salt crystals form in July during drought conditions in Petronila Creek.

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 June 16th. Enterococcus bacteria levels were elevated during the site visit (2,400 MPN). Rain in the area just before the sampling event likely resulted in polluted runoff entering the waterbody. First mate, Boomer, was along for the ride showing us his “hang ten” pose.



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.

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 June 30th. The Hidalgo Drain had a floating mat of vegetated debris across the drain that was present the last year and a half. The mat looks to have shrunk a lot since last quarter, indicating a high flow event or cleaning occurred. Bacteria levels on the Hidalgo Main and Raymondville Drain were 100 MPN and 190 MPN (standard is 126 MPN) respectively which is a big improvement since last quarter. Nutrient concentrations were all under the screening levels indicating very good water quality this quarter. Good news indeed. (Disclaimer – Data has not been validated or input into the SWQMIS Database.)

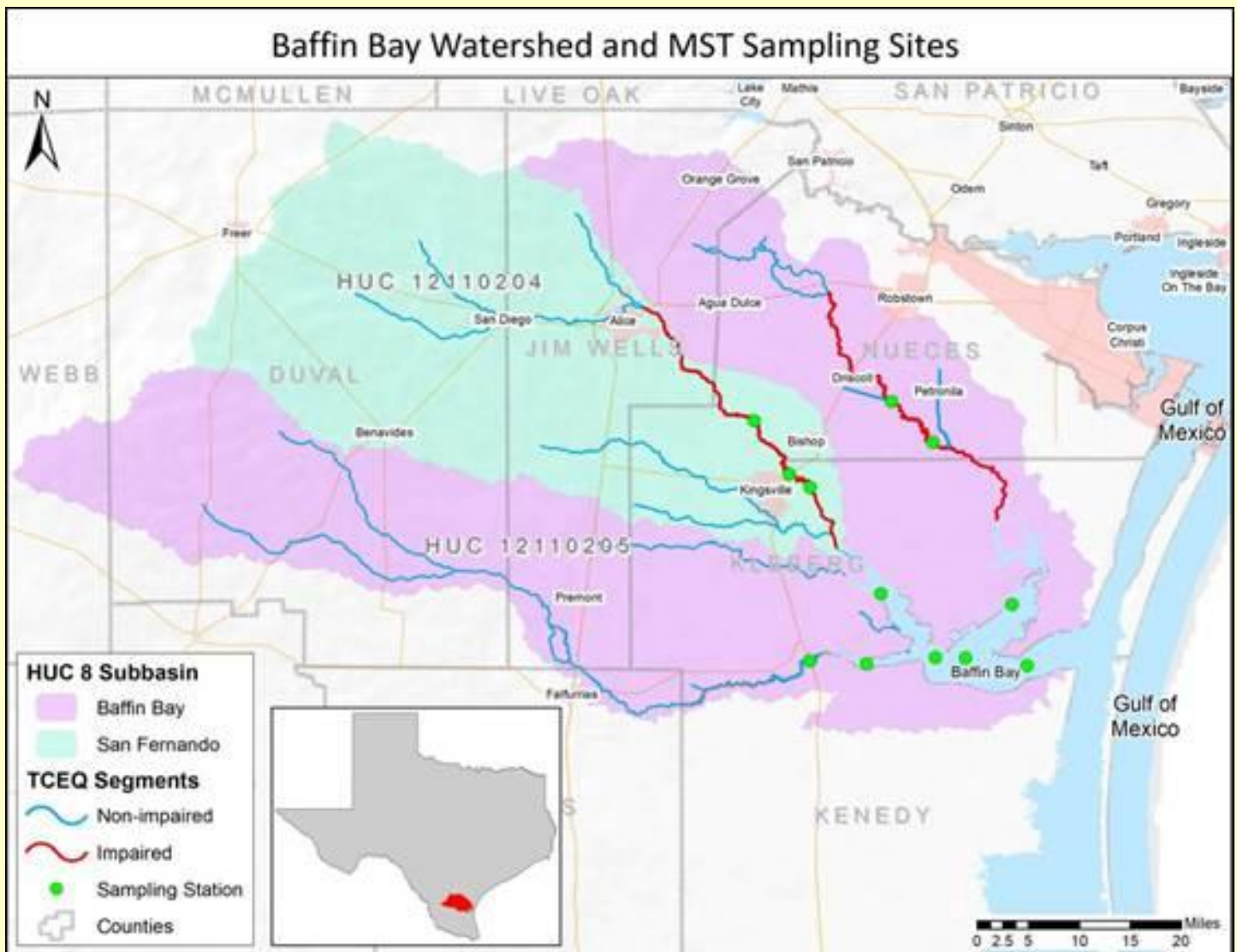


Station 22003 – Hidalgo Drain at FM 1420

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 June 30th. Bacteria results on the site visit were highly elevated at 440 MPN. Nitrate concentrations were 1.23 mg/L (screening level is 1.95 mg/L) and total phosphorus was 2.56 mg/L (screening level is 0.69 mg/L).

For FY2023, NRA will be adding 2 stations to the monitoring program at San Fernando Creek. Three stations (Stations 22327 @ FM 1355, 13033@ US 77, and 15969@ FM 2045) will be monitored on a monthly basis, paid for by an EPA grant through Dr. Jeffrey Turner at Texas A&M-CC. Dr. Turner's project will also address bacteria loadings and provide microbial source tracking (MST) data at a total of 12 locations in Baffin Bay and its watershed. Sampling for the project will kick off in October 2022 and run through August of 2024. We'll be very interested to see the results.



Dr. Jeffrey Turner's EPA funded water quality project sampling sites

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 June 30th. Salinity values were highly elevated this quarter with a value of >70.7 PSU, up from 36.9 PSU in Q3 (seawater is around 35 PSU). Bacteria concentrations were highly elevated on the site visit (>2,400 MPN/100 mL); The enterococcus standard is 35 MPN/100mL. The pinkish/orange water appearance and dead fish/crabs were reported to TPWD Spills and Kills staff. After the rain event associated with Invest-98L in mid-August, a fish-kill and another algal bloom occurred that turned the water bright green. Monthly monitoring on the creek will resume 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

Education outreach

NRA's education outreach program was busy this quarter. In March, 1,461 at 11 events, In April, 1,935 people at 17 events including Earth Day Bay Day, Water Day, and numerous classroom visits. We're also showing off our new Oso Creek watershed model to Corpus Christi area schools.

San Antonio-Nueces Coastal Basin



Nueces River Basin

NRA Monitoring Stations

- Quarterly Stations
- Quarterly + Metal Stations
- BCRA GD Stations
- ★ 24 Hour DO



Nueces-Rio Grande Coastal Basin

Monitoring Stations

- NRA Routine Stations

