



Nueces River Authority
Steering Committee and Stakeholder Update #4
(4th Quarter of FY 2018-2019)
June- August 2018

September 11th, 2018

Routine Clean Rivers Program Monitoring

Field staff from the Nueces River Authority conducted routine quarterly water quality sampling at all river/reservoir stations and coastal stations in the second quarter. A couple of stations were dry including San Miguel Creek and the Frio River in Tilden. No dissolved oxygen monitoring occurred this quarter due to a lack of streamflow in the middle Nueces and Atascosa rivers.

Monitoring Changes for FY 2019

Following the Coordinated Monitoring Meeting last March, Nueces River Authority field staff revised the list of sampling stations. In an attempt to streamline the monitoring to avoid duplication of efforts, a number of sites in the same Assessment Unit (AU) were dropped. On the chopping block for 2019 were two quarterly sites in the above tidal portion of the Arroyo Colorado down in the Rio Grande Valley; Stations 16445 and 13080. NRA also dropped quarterly Station 20701 (Nueces River at the Airport Road boat ramp) and Station 13093 on Petronila Creek. Station 13093 will be monitored through the Petronila Tributary Study that is ongoing.



Arroyo Colorado at Dilworth Road (Station 16445)



Arroyo Colorado at FM 506 (Station 13080)



Petronila Creek at FM 70 (Station 13093)



Nueces River at Airport Road (Station 20701)

Two new quarterly sites will be added to the sampling site list for 2019: Los Olmos Creek (Station 13034), located on US 77 near Riviera and Choke Canyon Reservoir (Station 13019) near the Dam.



Choke Canyon Reservoir (Station 13019)



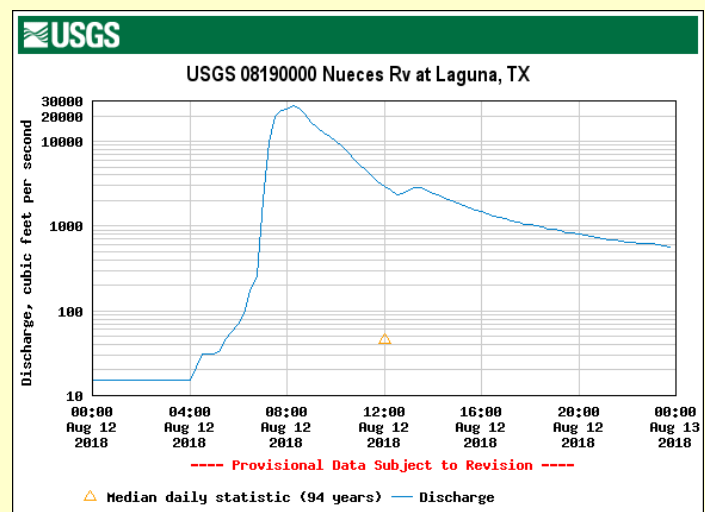
Los Olmos Creek at US 77 (Station 13034)

NRA will add metals in water at four routine quarterly monitoring sites: Choke Canyon Reservoir (Station 17389), Atascosa River at FM 99 (Station 12980), Conn Brown Harbor (Station 18848), and Port Bay at BM 188 (Station 13405).

Flood and Drought Report

It seems that South Texas is always in a drought or in a flood, or both at the same time. In mid-June, tropical moisture inundated the coast with a 4-day long gully washer but left the mid and Upper Nueces River Basin high and dry. After the rain totals were tallied, it became clear that the only water flowing into Lake Corpus Christi came from the sky as opposed to the rivers. Lake Corpus Christi did rise about 10" between June 15th and June 22nd, all from direct rainfall on or near the lake.

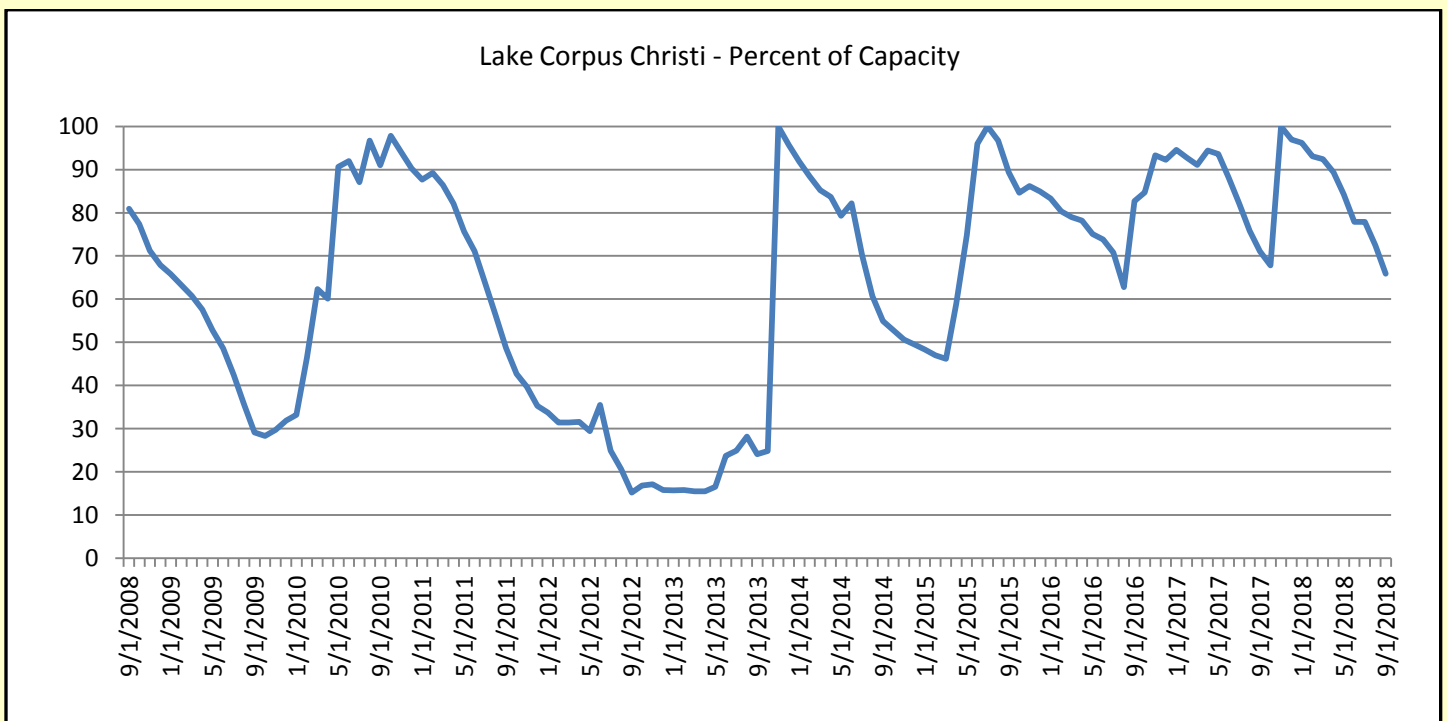
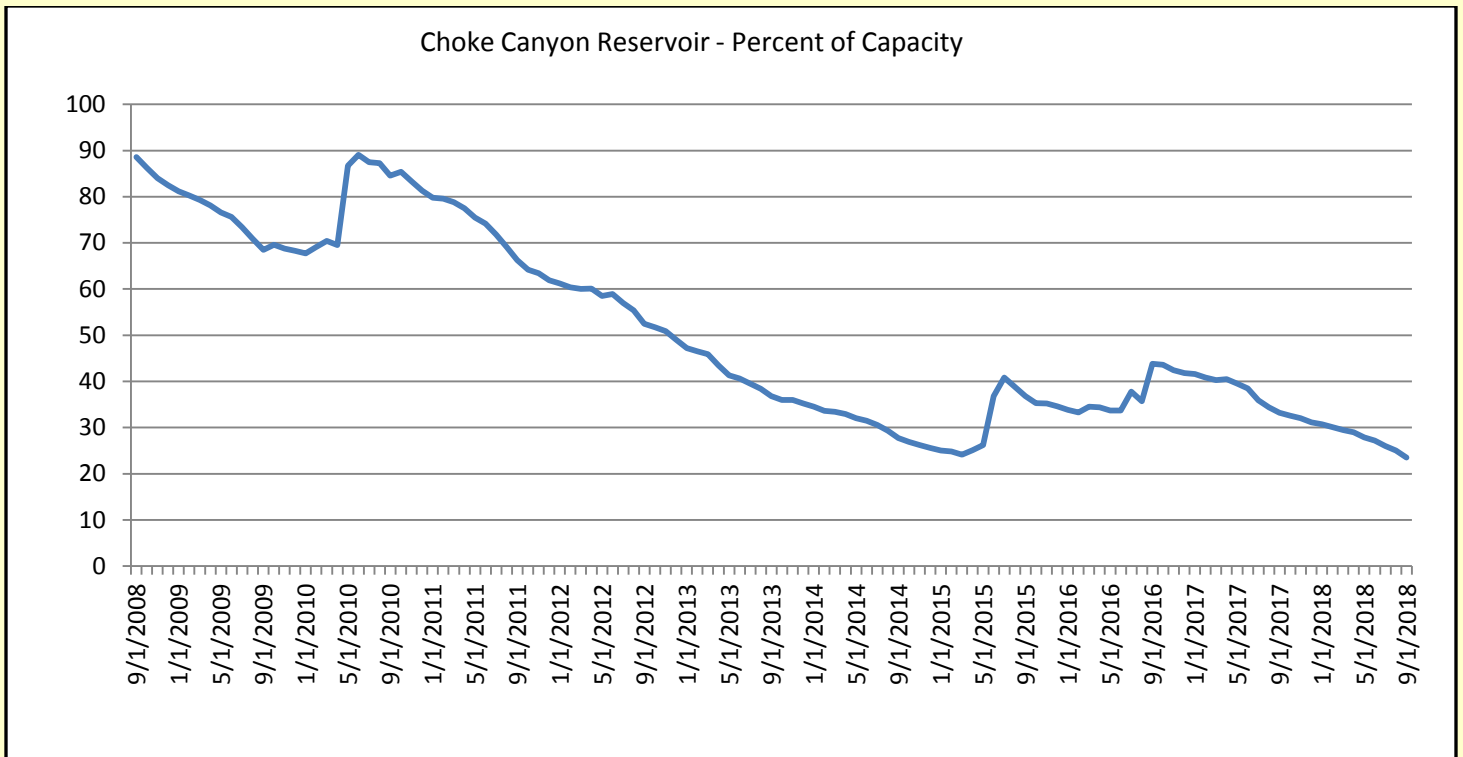
Mother Nature evened things out on August 12th as 8+ inches of rain fell in the Upper Nueces River Basin in Uvalde County. The brief but heavy rain caused a dangerous flash flood that required helicopters to be called in to help rescue 27 people from Chalk Bluff Park in Uvalde County. The river rose nearly 12 feet in the span of about 2 hours. No injuries were reported thanks to the quick emergency response. Peak flow rates during the flood event topped out at 26,500 cfs at the USGS gage at Laguna. Peak flow at the Uvalde gage downstream the topped out around 9,700 cfs later that day. However, the flow event was completely absorbed into the landscape/aquifer and didn't make it to the next stream gage downstream in Asherton.



Also notable, the Atascosa River stopped flowing at the USGS gage at Whitsett only once before in my 18 years monitoring it. The 4th Quarter marks the longest period of zero flow in decades at 69 days and counting. Inflows to the reservoir system were virtually absent this summer.

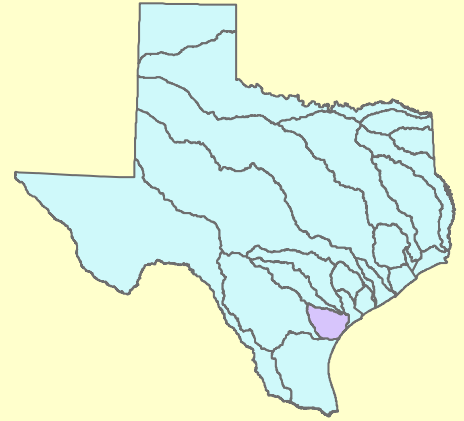
Lake Levels

Percent capacity of the Reservoir System (Choke Canyon + Lake Corpus Christi) dropped from 41.3% to 35.3% of capacity during the 4th quarter. 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 20 - San Antonio-Nueces Coastal Basin

The San Antonio-Nueces Coastal Basin covers approximately 3,100 square miles, draining to Copano and St. Charles Bay. 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. Tidal portions of the Mission and Aransas rivers have been impaired for the contact recreation standard bacteria since the 2004 Assessment. Above tidal portions of the Mission and Aransas rivers and Poesta Creek will be listed for the same parameter in the 2016 Assessment as it becomes finalized.



Poesta Creek at FM 202 (Station 12937)



Mission River Tidal at FM 629 (Station 12947)

Mission and Aransas Rivers: A Community Project to Protect Recreational Uses

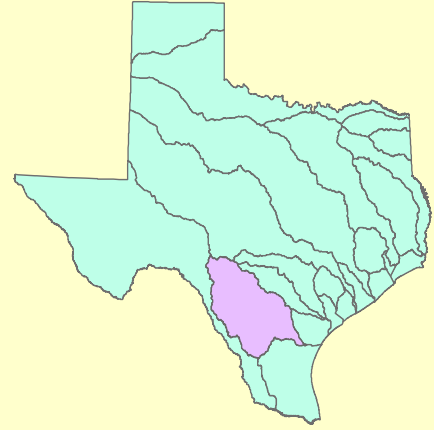
High concentrations of bacteria may indicate a health risk to people who swim or wade in the rivers. In response to the impairment, TCEQ provided funding to the Texas Water Resources Institute (TWRI) to coordinate development of the TMDLs and I-Plan. In August 2016, the EPA approved *Two Total Maximum Daily Loads for Indicator Bacteria in the Tidal Segments of the Mission and Aransas River*. An addendum to the TMDLs entitled *Technical Support Document for Total Maximum Daily Loads for Indicator Bacteria in Aransas River Above Tidal and Poesta Creek* was completed in 2017 by TWRI. For the latest information on the progress of the work done, please visit the website:

<https://www.tceq.texas.gov/waterquality/tmdl/42-copano.html>



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 monitors the water quality at 27 river sites in the watershed from the Upper Basin to the coast. NRA field staff assists other agencies with field work including fish and habitat studies, mussel monitoring, least disturbed stream studies, flow studies and riparian evaluations.



Least Disturbed Stream (LDS) Monitoring on the Nueces River and San Miguel Creek

Field staff from the NRA assisted the TCEQ's SWQM Team and TPWD biologists in the LDS biological monitoring project in mid-June. LDS is a type of monitoring that seeks to evaluate the health of streams where there has been minimal human impact. Monitoring mirrors the Aquatic Life Monitoring (ALM) procedure in which habitat, fish and benthic diversity, water quality and quantity are analyzed. Two sites were chosen in the Nueces River Basin, The Nueces River near La Pryor and on the San Miguel Creek. Both sites were located on privately owned ranches. Although flow on San Miguel Creek was absent, spring water from the Carrizo Aquifer kept the Nueces flowing during the monitoring event. A big thank you goes out to the landowners for their participation in the project.



Nueces River Watershed Partnership – Implementation of the Lower Nueces River Watershed Protection Plan (WPP)

Funding for the NRA, as watershed coordinator to seek funding for and initiate implementation of the WPP, is provided by the TSSWCB through a §319(h) grant from EPA. Following is a brief update on the status of the implementation of some of the management measures identified in the WPP that are currently underway and other proposed work in the watershed.



OSSF Repair and Replacement

As of August 2018, 44 OSSFs within the watershed have been pumped out and inspected. Fourteen were found to be in good working order. Of the remaining 30 systems, 19 need to be completely replaced and 11 need some repair work. Fourteen replacements and nine repairs have been completed. The program, funded by the TCEQ through a §319(h) grant from EPA, will continue through February 2020 or until the budgeted funds are spent.

OSSF Conversion

This project will result in a detailed plan and cost estimate to connect some existing homes with OSSFs to the City of Corpus Christi's existing infrastructure. This project is also funded by the TCEQ through a §319(h) grant from EPA. A stakeholder meeting was held on July 19, 2018. There were 32 people in attendance.

John Byrum, City of Corpus Christi, reviewed: the project area; how OSSFs work; how traditional wastewater systems work; and a summary of the City's wastewater treatment plants (WWTP) (of which there are six), the number of miles of wastewater pipe (~1300 miles) within the city; and the number of lift stations (103) within the City.

The first phase of the feasibility study concluded that a combination of grinder pumps, pressure systems, and gravity systems will likely be needed to connect this area to the City's existing wastewater collection system. The estimated cost is \$3 million.

No decisions have been made, and there will be a second stakeholder meeting by August of next year to let them know what has been decided.

The following is a summary of the question and *answer* session:

- Will home foundations be affected if the septic system is removed and the ground dries out? *Not sure.*
- The TCEQ funding for this project only covers the feasibility study. The City will need to find funding to implement the project.
- Plans to expand the Allison WWTP are underway. This is the plant that serves this area of town.

- Several people asked about the costs that would be put upon the homeowners for the project such as connection fees, piping from the house to the wastewater line, or a portion of the overall cost. *The City understands that there will need to be incentives for the homeowners to connect, and will look for funding to minimize any costs to the homeowners, but that there will be a monthly utility fee.*
- Several people voiced concern about the how much their utility fees would increase since the wastewater fee is based on metered water to the house. Someone mentioned that the City will allow a separate irrigation meter.
- Some people voiced concern that this project would decrease their property value when trying to sell because the new owner would have to pay the monthly wastewater fee. Others said that it would increase their property value and make it easier to sell if there was not a septic system.
- One couple mentioned that the City told them that this area would be connect to the system within a year of when they bought their house, but that was over 20 years ago.
- Several people asked about when this project would be done and if they would be forced to connect to the City system if they had a functioning system. *That has not been decided.*

The final report for the November 2015 – June 2018 WPP Implementation contract with TSSWCB and an additional project and management strategy summary are available at <http://www.nuecesriverpartnership.org/pubs.php>.

The next stakeholder meeting is scheduled for November 7, 2018 at the Hilltop Community Center. For more information about the Partnership and the WPP, visit <http://www.nuecesriverpartnership.org> or contact Rocky Freund at (361) 653-2110 or rfreund@nueces-ra.org.

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 Petronila Creek (Segments 2203 and 2204), which is a tributary to Baffin Bay and the Arroyo Colorado (Segments 2201 and 2202) in the Rio Grande Valley.



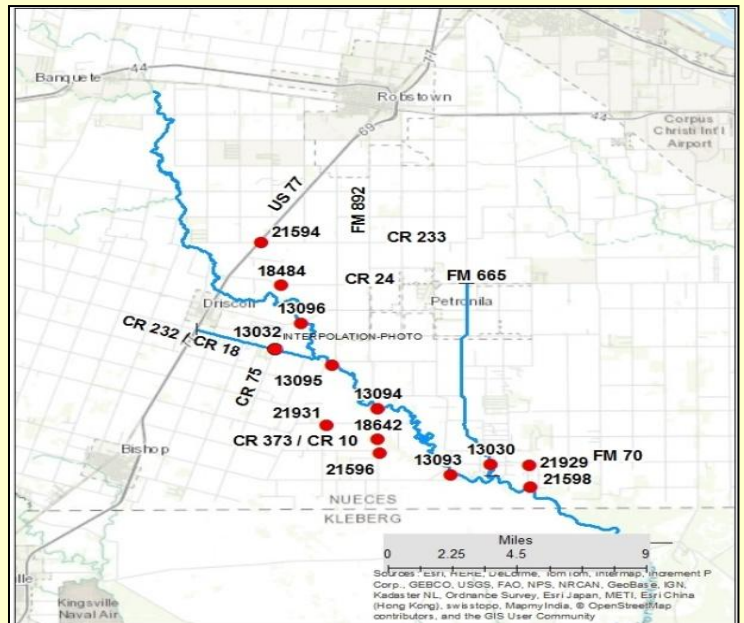
Wastewater Treatment Plant Problems

Water quality data at Station 13096 (Petronila Creek at FM 665) has been very bad lately. The last few site visits have shown *E. coli* data to be well above the standard of 126 colony forming units/100mL (CFU). The last time the bacteria data was in compliance with the standard was on January 12, 2016 with a value of 41 CFU. NRA staff called on the Corpus Christi Regional offices of the TCEQ to help investigate the matter in April of this year. The wastewater plant for the City of Driscoll (just upstream from the monitoring site) was found to be out of compliance, with multiple violations cited in the investigation. Big fines are expected.

Petronila Creek Tributary Study

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 2018, NRA is conducting monthly monitoring at 13 sites. Four sites are located on the main stem of Petronila Creek (13096, 13095, 13094, and 13093 – data is in bold on the graph). August data recorded the highest specific conductance value ever recorded by NRA field staff with a reading of 98,400 μmhos ; yikes! The creek was not flowing at the time so evaporation was a factor. (Disclaimer – Data has not been validated or input into the SWQMIS Database.)

| Site # | Jun 28 (μmhos) | Jul 12 (μmhos) | Jul 26 (μmhos) | Aug 9 (μmhos) |
|--------|--------------------------------|--------------------------------|--------------------------------|-------------------------------|
| 21594 | 2,320 | 7,560 | 3,020 | 2,050 |
| 18484 | 16,000 | 20,200 | 25,600 | 17,500 |
| 13032 | 2,130 | dry | dry | dry |
| 13096 | 295 | 2,160 | 13,400 | 18,800 |
| 13095 | 325 | 3,150 | 11,100 | 19,200 |
| 21931 | 4,750 | dry | dry | 9,900 |
| 13094 | 344 | 4,100 | 16,300 | 19,800 |
| 18642 | 8,900 | dry | dry | 36,100 |
| 21596 | dry | dry | 26,500 | 26,400 |
| 13093 | 430 | 2,300 | 6,980 | 11,300 |
| 13030 | 15,600 | 26,900 | 35,000 | 42,600 |
| 21929 | 5,070 | dry | dry | dry |
| 21598 | 9,190 | 36,900 | dry | 98,400 |



Unnamed Drainage off US77 (Station 21594)



Unnamed Drainage off FM70 (Station 13030)

Valley Monitoring

For FY2018, NRA monitored five sites down in the Rio Grande Basin (see page 13 for the map of stations). Three sites (16445, 13079, and 13080) are located on the above tidal portion of the Arroyo Colorado (Segment 2202) and two are tributaries of the Laguna Madre (Segment 2491). As mentioned earlier, NRA will be dropping sites 16445 and 13079 for FY 2019 due to the redundancy in the same Assessment Unit. All five sites were visited on July 18th following a minor flood event on the Arroyo Colorado. Streamflow rates were back in the normal range by the site visit though. (Disclaimer – Data has not been validated or input into the SWQMIS Database.)



Hidalgo Drain at FM1420 (Station 22003)



Raymondville Drain at CR 445 (Station 22004)

| Site | E. coli | Ammonia | TKN | Total Phos | Nitrate | Nitrite | Chlorophyll a |
|-------|---------|-----------|----------|------------|----------|-----------|---------------|
| 13079 | 97 MPN | <0.1 mg/L | 3.0 mg/L | 0.6 mg/L | 3.8 mg/L | <0.2 mg/L | 19.2 µg/L |
| 16445 | 230 MPN | <0.1 mg/L | 3.0 mg/L | 0.6 mg/L | 4.0 mg/L | <0.2 mg/L | 27.2 µg/L |
| 13080 | 80 MPN | <0.1 mg/L | 3.2 mg/L | 0.6 mg/L | 3.8 mg/L | <0.2 mg/L | 25.2 µg/L |
| 22003 | 20 MPN | 0.2 mg/L | 2.1 mg/L | 0.2 mg/L | 1.2 mg/L | <0.2 mg/L | 98.5 µg/L |
| 22004 | 250 MPN | <0.1 mg/L | 3.1 mg/L | 0.2 mg/L | 0.8 mg/L | <0.2 mg/L | 39.8 µg/L |

Basin 24 –Bays and Estuaries

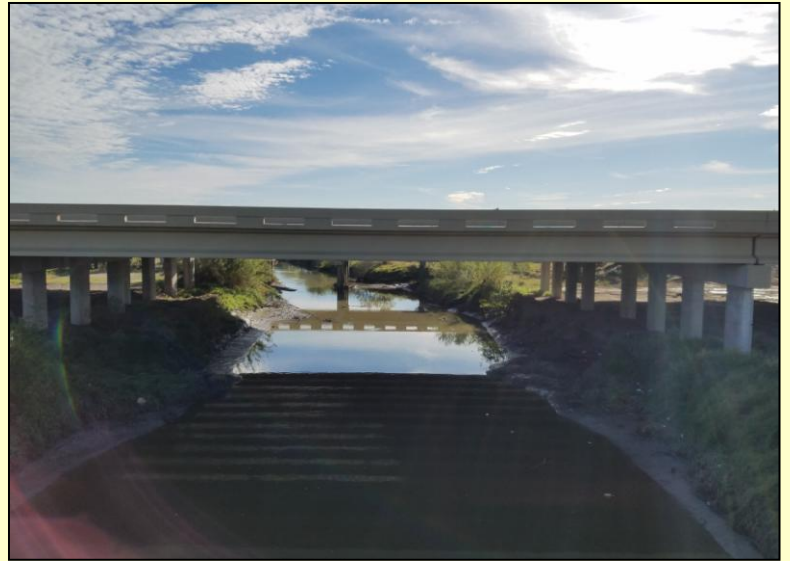
The Bays and Estuaries region of Texas covers approximately 2,002 square miles along the entire Texas Coast. There are 48 classified estuarine segments that are monitored by several River Authorities and TCEQ regional offices. Nueces River Authority monitors water quality in 5 of the coastal segments 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).



Oso Bay & Oso Creek TMDL and IP

Since 2002, Oso Creek (Segment 2485A), which flows 28 miles to the confluence of Oso Bay in Nueces County has been identified as being impaired for having bacteria concentrations that exceed state water quality standards. Since 2003, the TCEQ and the TSSWCB have conducted numerous studies of bacteria sources and quantities in the Oso Creek watershed. Based on the results of those studies, a Total Maximum Daily Load (TMDL) and an Implementation Plan (IP) for Oso Creek is being developed to address the contact recreation impairment. Staff from the Center for Coastal Studies at Texas A&M University – Corpus Christi and the Coastal Bend Bays Foundation is disseminating information to the public.



Meetings take place once a quarter and are held at the South Texas Botanical Gardens in Corpus Christi. You can learn more about the Oso Bay TMDL and/or the Oso Creek Watershed Public Outreach at the TCEQ project page: <http://www.tceq.texas.gov/waterquality/tmdl/67-osobaybacteria.html>;

Outreach and Education

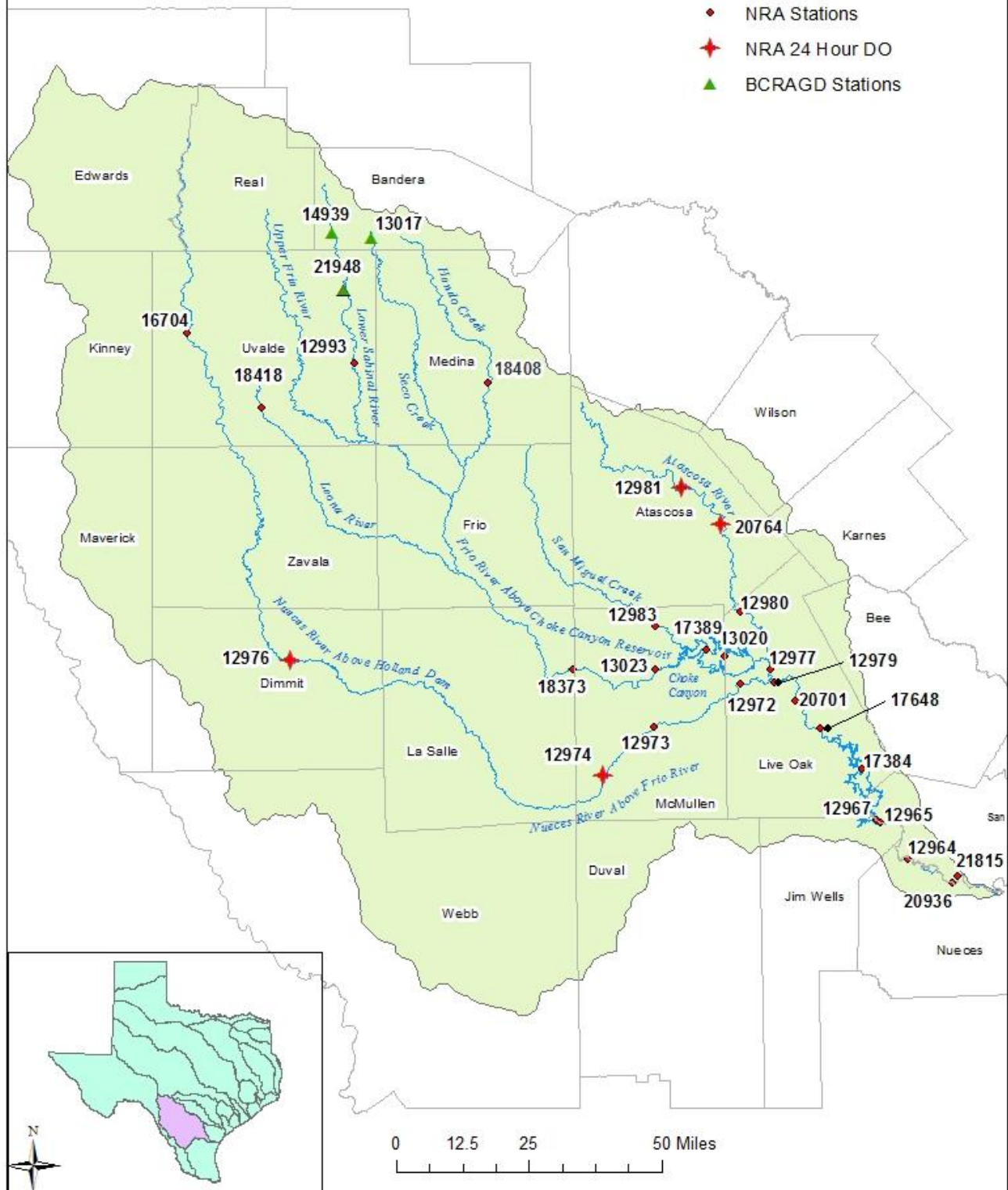
The 4th Quarter is generally not a very busy time for NRA's Education and Outreach Program due to school being out. The outreach total for the summer was 338 people. For more information about outreach and education, contact slewey@nueces-ra.org.



Nueces River Basin

NRA Monitoring Stations

- ◆ NRA Stations
- ◆ NRA 24 Hour DO
- ▲ BCRAGD Stations



San Antonio-Nueces Coastal Basin



Nueces-Rio Grande Coastal Basin

Monitoring Stations

- ◆ NRA

