



*Nueces River Authority*

## **2016 Basin Highlights Report**

**San Antonio-Nueces Coastal Basin**

**Nueces River Basin**

**Nueces-Rio Grande Coastal Basin**

**May 2016**

**Prepared in cooperation with the Texas Commission on Environmental Quality  
Clean Rivers Program**

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## Table of Contents

<b>List of Acronyms .....</b>	<b>i</b>
<b>INTRODUCTION .....</b>	<b>1</b>
<b>STAKEHOLDER INVOLVMENT .....</b>	<b>1</b>
<b>FY 2016 MONITORING AND SEGEMENT INFORMATION UPDATE .....</b>	<b>1</b>
<b>SAN ANTONIO – NUECES COASTAL BASIN.....</b>	<b>1</b>
<b>NUECES RIVER BASIN .....</b>	<b>2</b>
<b>NUECES – RIO GRANDE COASTAL BASIN .....</b>	<b>4</b>
<b>BAYS AND ESTUARIES.....</b>	<b>5</b>
<b>SPECIAL STUDIES AND PROJECTS .....</b>	<b>8</b>
<b>OUTREACH AND EDUCATION .....</b>	<b>11</b>
<b>CONTACT INFORMATION .....</b>	<b>12</b>

## List of Acronyms

AU	Assessment Unit
BCRAGD	Bandera County River Authority and Groundwater District
BMP	Best Management Practices
CBBEP	Coastal Bend Bays and Estuaries Program
CRP	Clean Rivers Program
DDE	Dichlorodiphenylethylene
DO	Dissolved Oxygen
EPA	Environmental Protection Agency
FM	Farm to Market
FY	Fiscal Year
I-Plan	Implementation Plan
mg/l	Milligrams Per Liter
NRA	Nueces River Authority
OSSF	On-Site Sewage Facilities
PCB	Polychlorinated biphenyl
RUAA	Recreational Use Attainability Analysis
SEP	Supplemental Environmental Project
SH	State Highway
TAMUCC	Texas A&M University – Corpus Christi
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
TMDL	Total Maximum Daily Load
TSSWCB	Texas State Soil and Water Conservation Board
WPP	Watershed Protection Plan

## INTRODUCTION

In 1991, the Texas Legislature passed the Texas Clean Rivers Act requiring basin-wide water quality assessments to be conducted for each river basin in Texas. Under this act, the Clean Rivers Program (CRP) has developed an effective partnership involving the Texas Commission on Environmental Quality (TCEQ), other state agencies, river authorities, local governments, industry, and citizens. Using a watershed management approach, the Nueces River Authority (NRA) and TCEQ work together with the local stakeholders to identify and evaluate surface water quality issues and to establish priorities for corrective action. Under CRP, NRA is responsible for the San Antonio – Nueces Coastal Basin, the Nueces River Basin, the Nueces – Rio Grande Coastal Basin, and the adjacent bays and estuaries.

## STAKEHOLDER INVOLVMENT

A CRP stakeholder is an individual or entity that cares about, could affect, or is affected by water quality of a river, creek, or reservoir. Stakeholders include drinking water providers, wastewater dischargers, land owners, and anyone who enjoys recreating on the water. The CRP and NRA rely on stakeholder involvement to help guide the program. They are the eyes and ears on the ground and have the ability to alert the TCEQ and local river authority to potential problems in order to prevent significant problems. For more information about CRP state-wide, visit <https://www.tceq.texas.gov/waterquality/clean-rivers>. For more information about NRA's CRP activities, visit <https://www.nueces-ra.org/CP/CRP>. To be added to the list of stakeholders that receive quarterly updates on the status of NRA's program and yearly reports, such as this one, email Sam Sugarek ([ssugarek@nueces-ra.org](mailto:ssugarek@nueces-ra.org)) or Rocky Freund ([rfreund@nueces-ra.org](mailto:rfreund@nueces-ra.org)), or call us at 361-653-2110.

## FY 2016 MONITORING AND SEGMENT INFORMATION UPDATE

This section provides a brief segment-by-segment discussion including the FY 2016 monitoring plans and the 2014 Integrated Report findings. The entire CRP monitoring schedule is available at <https://cms.lcra.org>.

### *SAN ANTONIO – NUECES COASTAL BASIN*

**Segment 2001 – Mission River Tidal:** The segment is impaired for bacteria for contact recreation and was included in the Copano Bay Total Maximum Daily Load (TMDL). NRA continues to monitor at one station in the segment.

**Segment 2002 – Mission River Above Tidal:** All assessed parameters met the standards in the 2014 Integrated Report. NRA continues to monitor at one station in the segment.

**Segment 2003 – Aransas River Tidal:** The segment is impaired for bacteria for contact recreation and was included in the Copano Bay TMDL. NRA continues to monitor at one station in the segment.

**Segment 2004 – Aransas River Above Tidal:** The segment is impaired for bacteria for contact recreation and was included in the Copano Bay TMDL. There are also concerns for nitrates and total phosphorous. NRA continues to monitor at one station in the segment.

**Segment 2004A – Aransas Creek:** The segment is impaired for bacteria for contact recreation and a Recreational Use Attainability Analysis (RUAA) was performed. The stakeholders commented that contact recreation does not occur on the creek, and the field surveys support those comments. The RUAA report is currently under review by TCEQ. The segment also has concerns for low dissolved oxygen (DO) at the grab screening and grab minimum levels. NRA continues to monitor at one station in the segment and will conduct up to four 24-hour DO measurements, given ample flow.

**Segment 2004B – Poesta Creek:** The segment is impaired for bacteria for primary contact recreation and has a concern for low DO at the grab screening level. NRA replaced Station 12932, Poesta Creek upstream of the US 181 bypass, in FY 2016 with station 12937, Poesta Creek downstream of SH 202. Station 12937 has both rural and urban attributes which is more representative of the creek. Currently, only bacteria and field parameters are being collected at this station. NRA intends to begin sampling the full suite of parameters beginning in the 4<sup>th</sup> quarter of FY 2016.

## ***NUECES RIVER BASIN***

**Segment 2101 – Nueces River Tidal:** The segment has a concern for chlorophyll-*a*. TCEQ Region 14 continues to monitor at one station in the segment.

**Segment 2102 – Nueces River Below Lake Corpus Christi:**

The segment is impaired for total dissolved solids (TDS) and has concerns for chlorophyll-*a*. NRA intends to create a new station at the salt water barrier dam to support monitoring for the Lower Nueces River Watershed Protection Plan (WPP). Monitoring is expected to begin in the 4<sup>th</sup> quarter of FY 2016. One of the management strategies of the WPP is to have homes along the river taken off of on-site sewage facilities (OSSF) and connected to existing City of Corpus Christi wastewater infrastructure. This project is below the current most downstream monitoring station, and this new station will be able to provide documentation of changes in water quality once the project is complete. NRA continues to monitor at the three existing stations in the segment.



**Segment 2103 – Lake Corpus Christi:** The segment is impaired for TDS. A proposed TDS standards revision from 500 mg/l to 750 mg/l is under consideration. If and when approved, the lake would meet the new TDS standard and potentially be removed from the 303(d) list pending subsequent assessment. The segment also has concerns for chlorophyll-*a* and total phosphorous. NRA continues to monitor at three stations in this segment: two in the main body of the lake and one in the river near the upstream end of the segment.

**Segment 2104 – Nueces River Above Frio River:** The segment has a concern for low DO at the grab screening level. NRA has not yet been able to collect a sufficient number of 24-hour DO measurements to fully evaluate the concern due to insufficient flow. The segment also has concerns for impaired macrobenthic and fish communities. NRA continues to monitor at two stations in the segment. This segment is part of the Supplemental Environmental Project (SEP) special study which is described in the Special Studies and Projects section beginning on Page 8.

**Segment 2105 – Nueces River Above Holland Dam:** The segment has concerns for depressed DO at the grab screening level and for chlorophyll-*a*. NRA may conduct 24-hour DO measurements in this segment beginning in FY 2017 to fully evaluate the concern. TCEQ Region 16 conducts the routine monitoring at three stations in the segment.



**Segment 2106 – Nueces River / Lower Frio River:** The segment is impaired for TDS. Proposed TDS standards revisions from 500 mg/l to 950 mg/l in assessment unit (AU)\_01 and to 735 mg/l in AU\_02 are under consideration. If and when approved, both AUs would meet its new TDS standard and potentially be removed from the 303(d) list pending subsequent assessment. AU\_02 is impaired for bacteria for contact recreation. NRA continues to monitor at three stations in the segment.

**Segment 2107 – Atascosa River:** The lower portion of this segment is proposed to be split into two segments. Segment 2107 will become what is currently AU\_01 and a new Segment 2118 will be what AU\_02 is currently. What is now AU\_03 will be moved to Appendix D (Site-Specific Uses and Criteria for Unclassified Water Bodies), and what is now AU\_04 will be considered an undescribed portion. The reason for the split is because of

the vastly different physical and hydrologic characteristics of the AUs. Additionally, proposed standards revisions for Segment 2107 include changing chloride from 600 mg/l to 400 mg/l, sulfate from 500 mg/l to 300 mg/l, and TDS from 1,500 mg/l to 1,650 mg/l. The proposed standards for Segment 2118, when approved, for chloride, sulfate, and TDS are 350 mg/l, 700 mg/l, and 1,550 mg/l, respectively

AU\_01 is impaired for bacteria for contact recreation and has a concern for chlorophyll-*a*. NRA continues to monitor at one station in the segment. It is also part of the SEP special study which is described in the Special Studies and Projects section beginning on Page 8.

AU\_02 is impaired for bacteria for contact recreation, depressed DO at the grab minimum level, and impaired macrobenthic and fish communities. It has concerns for depressed DO at the grab screening level, impaired habitat, nitrates, and total phosphorous. There are currently no monitoring stations on this AU, but NRA intends to conduct 24-hour DO measurements given ample flow.

AU\_03 is impaired for 24-hour depressed DO average and impaired macrobenthic and fish communities. It has concerns for impaired habitat and chlorophyll-*a*. TCEQ Region 13 monitors at one station on this segment. NRA intends to conduct 24-hour DO measurements given ample flow.

**Segment 2108 – San Miguel Creek:** The segment is impaired for bacteria for contact recreation and has a concern for chlorophyll-*a*. NRA completed an RUAA in 2015. The stakeholders commented that contact recreation does not occur on the creek, and the field surveys support those comments. The RUAA report is currently under review by TCEQ. NRA continues to monitor at one station in the segment. This segment is also part of the SEP special study which is described in the Special Studies and Projects section beginning on Page 8.



**Segment 2109 – Leona River:** The segment is impaired for bacteria for contact recreation, has a concern for low DO at the grab screening level in AU\_03, and concerns for nitrates in all three AUs. Texas Institute for Applied Environmental Research conducted an RUAA in the segment in 2013. The RUAA report is currently under review by TCEQ. NRA continues to monitor at one station in the segment. TCEQ Region 16 also monitors at one station in the segment, but has reduced the frequency from quarterly to bi-annually due to a consistent absence of flow.

**Segment 2109C – Live Oak Creek:** This unclassified waterbody was monitored for DO (grab samples) during the Leona River RUAA but not enough data points were collected for an assessment in the 2014 Integrated Report. No monitoring is currently taking place in this segment.

**Segment 2109D – Galena Slough:** This unclassified waterbody was monitored for DO (grab samples), *E. coli*, and nitrates during the Leona River RUAA. Based on limited data, the segment has concerns for bacteria for contact recreation and for nitrates. No monitoring is currently taking place in this segment.

**Segment 2110 – Lower Sabinal River:** The segment has a concern for nitrates. TCEQ Region 13 dropped monitoring at station 12993 to use their resources elsewhere. NRA intends to pick up the sampling in this segment beginning in the 4<sup>th</sup> quarter of FY 2016 to maintain the historical information.

**Segment 2111 – Upper Sabinal River:** All assessed parameters met the standards in the 2014 Integrated Report, consequently, TCEQ Region 13 has dropped their monitoring station. NRA intends to pick up the sampling in this segment beginning in the 4<sup>th</sup> quarter of FY 2016 to maintain the historical information. Bandera County River Authority and Groundwater District (BCRAGD) monitors at one site in the upper portion of the segment and will begin providing data to NRA in the the 4<sup>th</sup> quarter of FY 2016.



**Segment 2112 – Upper Nueces River:** All assessed parameters met the standards in the 2014 Integrated Report. TCEQ Region 13 has dropped one of their two monitoring stations (station 16704), and reduced sampling to bi-annually in the other. NRA picked up the TCEQ dropped station and dropped its station 13005. NRA intends to pick back up the sampling at station 13005 beginning in the 4<sup>th</sup> quarter of FY 2016.



**Segment 2113 – Upper Frio River:** This segment has impairments for macrobenthic and fish communities. It also has concerns for impaired habitat in the 2014 Integrated Report. TCEQ Region 13 maintains one station in Concan with a bi-annual monitoring frequency. A biological assessment is scheduled for August and October 2016 to address the concerns and impairments.

**Segment 2114 – Hondo Creek:** The segment has concerns for TDS, chlorides, and nitrates. Currently only nutrients, TDS, chloride, sulfate, and field parameters are being collected by NRA on the lower reach of the segment. NRA intends to begin sampling the full suite of parameters beginning in the 4<sup>th</sup> quarter of FY 2016 at this station. TCEQ Region 13 has dropped its station in the upper reach of the segment due to consistent low flow and may try to find an alternate location.



**Segment 2115 – Seco Creek:** All assessed parameters met the standards in the 2014 Integrated Report, consequently, TCEQ Region 13 dropped the only monitoring station in the segment, station 13013, to utilize their resources elsewhere. BCRAGD intends to begin sampling at the station beginning in the 4<sup>th</sup> quarter of FY 2016 to maintain the long-term data history and will provide the data to NRA.

**Segment 2116 – Choke Canyon Reservoir:** All assessed parameters met the standards in the 2014 Integrated Report. NRA continues to monitor at two stations in the reservoir.

**Segment 2117 – Frio River Above Choke Canyon Reservoir:** The segment is impaired for bacteria for contact recreation and has concerns for depressed DO at the grab screening level, chlorophyll-*a*, and nitrates. TCEQ Region 13 has dropped two monitoring stations, but NRA continues to monitor at two other stations. This segment is also part of the SEP special study, which is described in the Special Studies and Projects section beginning on Page 8.

#### ***NUECES – RIO GRANDE COASTAL BASIN***

**Segment 2201 – Arroyo Colorado Tidal:** The segment is impaired for bacteria for contact recreation; 24-hour minimum DO; and dichlorodiphenylethylene (DDE), mercury, and polychlorinated biphenyl (PCBs) in edible fish tissue. There are also concerns for chlorophyll-*a*, nitrates, and 24-hour DO average. TCEQ Region 15 has dropped one station to avoid duplication of monitoring within the same AU, but continues to monitor at four stations in the segment.

**Segment 2201A – Harding Ranch Drainage Ditch Tributary:** A concern for ammonia identified during a TMDL study in 2001 and 2002 is being carried forward in the 2014 Integrated Report. There are no active monitoring stations in the segment.

**Segment 2201B – Unnamed Drainage Ditch Tributary in Cameron County Drainage District #3:** A bacteria impairment for contact recreation and concerns for chlorophyll-*a* and nitrates, identified during a TMDL study in

2001 and 2002, are being carried forward in the 2014 Integrated on this unclassified water body. There are no active monitoring stations in the segment.

**Segment 2202 – Arroyo Colorado Above Tidal:** The segment is impaired for bacteria for contact recreation and DDE, mercury, and PCBs in edible fish tissue. There are also concerns for chlorophyll-*a*, nitrates, and total phosphorus. TCEQ Region 15 and NRA continue to monitor at three stations each in this segment.



**Segment 2202A: Donna Reservoir:** The segment is impaired for PCBs in edible fish tissue. The unclassified water body is an off-channel irrigation reservoir pumped from the Rio Grande River near the City of Donna. There are no active monitoring stations in the segment.

**Segment 2202B: Unnamed Drainage Ditch Tributary to Arroyo Colorado:** Concerns for ammonia, bacteria for contact recreation, and chlorophyll-*a*, were identified during a TMDL study in 2001 and 2002, are being carried forward in the 2014 Integrated Report. There are no active monitoring stations in the segment.

**Segment 2202C: Unnamed Drainage Ditch Tributary to Arroyo Colorado:** Concerns for ammonia and bacteria for contact recreation, identified during a TMDL study in 2001 and 2002, are being carried forward in the 2014 Integrated Report. There are no active monitoring stations in the segment.

**Segment 2203 – Petronila Creek Tidal:** The segment is impaired for bacteria for contact recreation and has concerns for chlorophyll-*a*, high pH, and total phosphorus. TCEQ Region 14 continues to monitor at one station in the segment.

**Segment 2204 – Petronila Creek Above Tidal:** The segment is impaired for TDS, chloride, and sulfate and has concerns for chlorophyll-*a*. NRA continues to monitoring quarterly at three stations for the full suite of parameters and monthly for TDS, chloride, and sulfate at four stations on the main stem of the segment. NRA also conducts monthly monitoring for TDS, chloride, and sulfate at seven tributary stations. See the Special Studies and Projects section beginning on Page 8.



### **BAYS AND ESTUARIES**

**Segment 2462 – San Antonio / Hynes / Guadalupe Bays:** The segment is impaired for bacteria in oyster waters and has a concern for chlorophyll-*a*. TCEQ Region 14 continues to monitor at one station in the segment. NRA has dropped its station at Austwell to avoid duplication of monitoring within the same AU.

**Segment 2463 – Mesquite Bay:** All assessed parameters met the standards in the 2014 Integrated Report. TCEQ Region 14 continues to monitor at one station in the segment.

**Segment 2471 – Aransas Bay:** All assessed parameters met the standards in the 2014 Integrated Report. TCEQ Region 14 has dropped one of its two stations in Lydia Ann Channel to avoid duplication of monitoring within the same AU.

**Segment 2471A – Little Bay:** The segment has a concern for chlorophyll-*a*. TCEQ Region 14 continues to monitor at one station in the segment.



**Segment 2472 – Copano Bay / Port Bay / Mission Bay:** The segment is impaired for bacteria in oyster waters. TCEQ Region 14 continues to monitor at two stations and NRA continues to monitor at three stations in the segment.

**Segment 2473 – St. Charles Bay:** The segment has a concern for depressed DO at the grab screening level. TCEQ Region 14 has dropped two of its three stations to avoid duplication of monitoring within the same AU.

**Segment 2481 – Corpus Christi Bay:** All assessed parameters in the bay proper met the standards in the 2014 Integrated Report. TCEQ Region 14 has dropped three of its six stations to avoid duplication of monitoring within the same AU. The recreational beaches at Cole Park and Ropes Park are impaired for bacteria for contact recreation based on the Texas General Land Office Beach Watch sampling. See the Special Studies and Projects section beginning on Page 8.



**Segment 2482 – Nueces Bay:** The segment is impaired for zinc in edible oyster tissue and has a concern for copper in water. TCEQ Region 14 has dropped two of its three stations to avoid duplication of monitoring within the same AU.

**Segment 2483 – Redfish Bay:** The segment has a concern for copper in water. NRA continues to monitor at one station in the segment.

**Segment 2483A – Conn Brown Harbor:** The segment has a concern for copper in water. NRA continues to monitor at one station in the segment.

**Segment 2484 – Corpus Christi Inner Harbor:** The segment has concerns for nitrates and ammonia. TCEQ Region 14 has dropped one of its three stations to avoid duplication of monitoring within the same AU.

**Segment 2485 – Oso Bay:** The segment is impaired for bacteria for contact recreation and for 24-hour DO minimum. It also has concerns for chlorophyll-*a* and total phosphorus. NRA continues to monitor at one station in the segment. A TMDL Implementation Plan (I-Plan), for Oso Bay / Oso Creek, is currently being developed. See the Special Studies and Projects section beginning on Page 8.



**Segment 2485A – Oso Creek:** The segment is impaired for bacteria for contact recreation and has concerns for chlorophyll-*a*, nitrates, and total phosphorus. NRA continues to monitor at one station in the segment. Texas A&M University – Corpus Christi (TAMUCC) is monitoring at two stations to support the TMDL I-Plan that is being developed for Oso Bay / Oso Creek. See the Special Studies and Projects section beginning on Page 8.

**Segment 2485B – Unnamed Tributary of Oso Creek:** Concerns for total phosphorus, identified during a TMDL study from 2005 and 2008, is being carried forward in the 2014 Integrated Report on this unclassified water body. There are no active monitoring stations in the segment.

**Segment 2485D – West Oso Creek:** Concerns for total phosphorus, identified during a TMDL study from 2005 and 2008, is being carried forward in the 2014 Integrated Report on this unclassified water body. TAMUCC is monitoring at two stations to support the TMDL I-Plan for Oso Bay / Oso Creek.

**Segment 2491 – Laguna Madre:** The TCEQ is proposing to split the segment. If and when approved, Segment 2490 would be created to be the Upper Laguna Madre and Segment 2491 would become the Lower Laguna Madre.

The segment is impaired for depressed DO at the 24-hour minimum and bacteria for contact recreation. It also has concerns for chlorophyll-*a*, ammonia, nitrates, and depressed DO at the grab screening level. TCEQ recommends changing the 24-hour average criteria from 5.0 mg/l to 4.5 mg/l, but local stakeholders have requested that they consider 4.0 mg/l. The recommended change for the 24-hour minimum criteria is from 4.0 mg/l to 2.0 mg/l. If the proposed revisions are approved, the bay would meet the DO standard. TCEQ Region 14 has dropped one of its two stations to avoid duplication of monitoring within the same AU. TCEQ Region 15 conducts quarterly monitoring at four stations and bi-annual monitoring at two stations.

**Segment 2491B – North Floodway:** Data collection on this water body began in November 2011, so there is not yet enough data for a full assessment. TCEQ Region 15 monitors at one station in this segment.

**Segment 2492 – Baffin Bay / Alazan Bay / Cayo del Grullo / Laguna Salado:** The segment has a concern for chlorophyll-*a*. TCEQ Region 14 has dropped one of its two stations to avoid duplication of monitoring within the same AU.

**Segment 2492A – San Fernando Creek:** The segment is impaired for bacteria for contact recreation and has concerns for nitrates, chlorophyll-*a*, and total phosphorus. NRA continues to conduct quarterly routine monitoring at one station in this segment, but has discontinued monthly sampling for nutrients. Bacteria analysis is being done for both *E. coli* and Enterococcus. TCEQ has agreed that this segment should be evaluated as a fresh water stream instead of a tidal stream. The creek's flow is effluent dominated and is not tidally influenced at the monitoring station.



**Segment 2492A**

**Segment 2493 – South Bay:** All assessed parameters in the bay met the standards in the 2014 Integrated Report. TCEQ Region 15 continues to monitor at two stations in the segment.

**Segment 2494 – Brownsville Ship Channel:** The segment is impaired for bacteria for contact recreation and has a concern for depressed DO at the grab screening level. TCEQ Region 15 continues to monitor at three stations in the segment.

**Segment 2494A – Port Isabel Fishing Harbor:** The segment is impaired for bacteria for contact recreation. TCEQ Region 15 continues to monitor at one station in the segment.

**Segment 2501 – Gulf of Mexico:** The Gulf of Mexico along the entire Texas coast has been listed by the Department of State Health Services as being impaired for mercury in edible tissue (King Mackerel > 43”). TCEQ Region 13 continues to monitor at one station near Port Aransas, and Region 15 continues to monitor at one station near Port Isabel.

## **SPECIAL STUDIES AND PROJECTS**

The following are brief descriptions of special studies and projects that being conducted throughout the three basins.

### **LOWER NUECES RIVER WPP**

The Lower Nueces River WPP was approved by the Environmental Protection Agency (EPA) in April 2016. NRA will coordinate its implementation through a grant from the Texas State Soil and Water Conservation Board (TSSWCB). There are currently two proposals out for consideration:

- A TCEQ Clean Water Act §319(h) grant application to provide free OSSF inspections and possible funding for replacement systems. TCEQ selected it to be included with their FY 2017 workplan to EPA. The contract is expect to begin November 2016.
- A Coastal Bend Bays and Estuaries Program (CBBEP) 2017 proposal to install up to five pet waste stations.



Two additional proposals were submitted for funding consideration, but not selected:

- An EPA Urban Small Water Grant application to evaluate connecting some homes within the Corpus Christi city limits that are on OSSFs to the City's sewer system.
- A CBBEP proposal to provide a feral hog management workshop and a wildlife management workshop.

### **SUPPLEMENTAL ENVIRONMENTAL PROJECT**

In FY 2016, NRA began a monitoring effort in the middle Nueces River Basin using TCEQ SEP funds to address concerns of possible illegal dumping of oil field wastewater. The funds were acquired through environmental fines in the middle Nueces River Watershed. Dissolved metals data was last conducted in this portion of the watershed in FYs 2004-2005. Concentrations of arsenic, barium, strontium, chloride, sulfate and TDS are being collected upstream of the Reservoir System (Choke Canyon Reservoir + Lake Corpus Christi) on a monthly basis for one year. Elevated concentrations of specific dissolved metals can be indicators of contaminated surface water and are used, in part, for assessing the public water supply use criteria. To date, the routine data results do not indicate contamination of surface waters by oil field waste.



### **PETRONILA CREEK CONTINUOUS WATER QUALITY MONITORING**

The Continuous Water Quality Monitoring Station, also known as CAMS 731, on Petronila Creek at FM 70 collected specific conductance, water temperature and water level data from January 2007 to February 2016. The station provided a significant amount of data for the development and evaluation of the Petronila Creek I-Plan. The station was terminated February 16, 2016 due to a number of site specific issues including extreme stratification of the water column under low flow conditions.





### **PETRONILA CREEK TRIBUTARY STUDY**

Petronila Creek (Segment 2204), is a stream approximately 44 miles long that flows into Alazan Bay, a small bay opening into Baffin Bay. The creek was listed on the 2000 Texas 303(d) list of impaired water bodies for exceeding the standards for chloride (1,500 mg/l), sulfate (500 mg/l), and TDS (4,000 mg/l). Field investigations identified that excessive chloride, sulfate, and TDS concentrations occur in the downstream section of the creek, southeast of US 77, in an area where anthropogenic nonpoint sources, such as, produced water, brine pits, and brine injection wells, related to oil and gas production, are most numerous. Monthly monitoring on the tributaries of Petronila Creek resumed in FY 2016. Seven stations were identified to monitor for TDS, chloride, sulfate and field parameters. Elevated concentrations of chloride, sulfate and TDS have been observed in all stations so far.



### **COLE AND ROPES PARK**

In 2010, water quality monitoring conducted by the Texas Beach Watch Program indicated concentrations of bacteria were greater than the criteria for protecting the contact recreation use at Cole and Ropes Park beaches (Segment 2481CB\_03 and 2481CB\_04). To address the impairment, TCEQ partnered with the Center for Coastal Studies at TAMUCC in 2010 and conducted a multi-year sampling project along Corpus Christi Bay. A TMDL was developed for Cole and Ropes Parks in 2014. Plans for implementing the TMDLs, through an action plan known as the Cole and Ropes Parks Bacteria Reduction I-Plan, was approved in 2015. Stakeholders in the process, with meetings coordinated by the Coastal Bend Bays Foundation, met regularly to develop the I-Plan. A five year review process will be undertaken to determine the success of implementation activities outlined in the plan. To keep up with the progress of the project, please visit the website: <http://ccs.tamucc.edu/tmdl-implementation-plans/tmdl-cc-beaches/>



### **OSO BAY / OSO CREEK TMDL**

Oso Bay in Nueces County has been identified as being impaired for having bacteria concentrations that exceed state water quality standards for contact recreation. Since 2003, the TCEQ and the TSSWCB have conducted studies of bacteria sources and quantities in the Oso Creek watershed. Based on the results of those studies, a TMDL for Oso Bay / Oso Creek was developed to address the contact recreation impairment. The next phase of work involves stakeholders developing the I-Plan to implement the TMDL with best management practices (BMPs) to reduce pollution.

### ***OSO CREEK RIPARIAN EVALUATION***

To support the I-Plan that is being developed to address the bacteria impairment on Oso Creek, NRA has entered into an agreement with the TCEQ to conduct a riparian evaluation of the creek. Tasks include an evaluation of current riparian conditions, identification of opportunities for improvement, establishment of visual assessment sites, and development of an educational outreach program. The targeted evaluation will aide in the identification of strong functioning, weak functioning, and non-functioning riparian areas. It is believed that properly functioning riparian areas can help address excess bacteria before it enters the creek or its tributaries; thereby, improving water quality.



### ***ARROYO COLORADO WPP***

In the heart of the Lower Rio Grande Valley flows the Arroyo Colorado which runs 90 miles before it empties into the Lower Laguna Madre. Numerous water quality issues exist in the Arroyo Colorado including low dissolved oxygen levels in the tidal portion that are attributed to high nutrient loads. The above tidal portion has been known to have high bacteria concentrations and legacy pollutants. The Arroyo Colorado Watershed Partnership has been busy updating Phase 1 Arroyo Colorado WPP (2007). Phase 2 of the WPP will incorporate new information including BMPs, stakeholder comments and suggestions, as well as, updated water quality information and study results. Phase 2 is currently in draft form but should be completed sometime in late 2016.



### ***LOWER LAGUNA MADRE/BROWNSVILLE SHIP CHANNEL WATERSHED STEERING COMMITTEE***

The Lower Laguna Madre/Brownsville Ship Channel Steering Committee was established in January 2016. The group meets on a quarterly basis in San Benito to discuss Lower Laguna Madre water quality issues, grant opportunities and related discussion items. Contact Jaime Flores for more information at: [jjflores@ag.tamu.edu](mailto:jjflores@ag.tamu.edu).



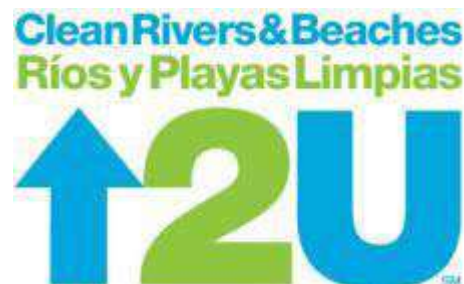
## ***OUTREACH AND EDUCATION***

NRA's Education and Outreach Program reaches out to thousands of school children and members of the public every quarter. Using tools such as a custom made watershed model of the Nueces River Basin, rainwater and groundwater models, NRA delivers a hands on approach to learning about water. NRA typically performs watershed education for elementary aged children but can also gear discussions for audiences ranging from teens to adults at outreach events such as livestock shows, Earth Day Bay Day, World of Water Day, and other public events. For more information about outreach and education, contact [slewey@nueces-ra.org](mailto:slewey@nueces-ra.org).



### ***Up2U***

NRA's Up2U campaign has been going strong since 2004 with its message for individuals to take a personal responsibility to reduce litter. NRA provides the mesh bags that are used at watershed cleanups throughout the Nueces River Basin. The City of Corpus Christi provides them when a beach vehicle permit for Nueces County Beaches is purchased. NRA provides bags as well during education and outreach events. Contact the NRA if you'd like some bags for a trash clean up event.



### ***CONTACT INFORMATION***

For More information on CRP, other activities of NRA, or to obtain additional copies of this report, contact:

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