



Nueces River Authority

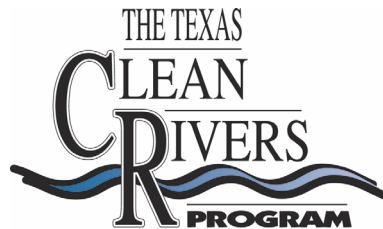
2017 Basin Highlights Report

San Antonio-Nueces Coastal Basin

Nueces River Basin

Nueces-Rio Grande Coastal Basin

May 2017



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

Table of Contents

List of Tables	ii
List of Figures	ii
List of Acronyms.....	iii
1.0.Introduction and 2016 Highlights	1
1.1 Introduction	1
1.2 2016 Highlights.....	1
2.0 Water Quality Monitoring	2
3.0 Water Quality Conditions	3
3.1 Water Quality Terminology	3
3.2 Watershed Summaries	6
3.2.1 San Antonio – Nueces Coastal Basin.....	7
Segment 2001: Mission River Tidal	8
Segment 2002: Mission River Above Tidal	9
Segment 2003: Aransas River Tidal	10
Segment 2004: Aransas River Above Tidal	11
Segment 2004A: Aransas Creek.....	13
Segment 2004B: Poesta Creek	15
3.2.2 Nueces Basin	17
Segment 2101: Nueces River Tidal.....	19
Segment 2102: Nueces River Below Lake Corpus Christi	20
Segment 2103: Lake Corpus Christi.....	22
Segment 2104: Nueces River Above Frio River	26
Segment 2105: Nueces River Above Holland Dam	27
Segment 2106: Nueces River / Lower Frio River	30
Segment 2107: Atascosa River.....	32
Segment 2108: San Miguel Creek.....	37
Segment 2109: Leona River	39
Segment 2109C: Live Oak Creek.....	42
Segment 2109D: Gallina Slough.....	42
Segment 2110: Lower Sabinal River	43
Segment 2111: Upper Sabinal River.....	44
Segment 2112: Upper Nueces River.....	45
Segment 2113: Upper Frio River.....	45
Segment 2114: Hondo Creek	46
Segment 2115: Seco Creek	48
Segment 2116: Choke Canyon Reservoir	49
Segment 2117: Frio River Above Choke Canyon Reservoir	50
3.2.3 Nueces – Rio Grande Coastal Basin	57
Segment 2201: Arroyo Colorado Tidal.....	59
Segment 2201A: Harding Ranch Drainage Ditch Tributary	66
Segment 2201B: Unnamed Drainage Ditch Tributary in Cameron Co. Drainage District #3	66
Segment 2202: Arroyo Colorado Above Tidal.....	67
Segment 2202A: Donna Reservoir	73
Segment 2202B: Unnamed Drainage Ditch Tributary to Arroyo Colorado	73
Segment 2202C: Unnamed Drainage Ditch Tributary to Arroyo Colorado	73
Segment 2203: Petronila Creek	74
Segment 2204: Petronila Creek Above Tidal.....	76

3.2 Watershed Summaries (cont.)	
3.2.4 Bays, Estuaries, and Gulf of Mexico	80
Segment 2462: San Antonio Bay / Hynes Bay	83
Segment 2463: Mesquite Bay	84
Segment 2471: Aransas Bay	84
Segment 2471A: Little Bay	85
Segment 2472: Copano Bay / Port Bay / Mission Bay	86
Segment 2473: St. Charles Bay	87
Segment 2481: Corpus Christi Bay	88
Segment 2482: Nueces Bay	89
Segment 2483: Redfish Bay	89
Segment 2483A: Conn Brown Harbor	90
Segment 2484: Corpus Christi Inner Harbor	91
Segment 2485: Oso Bay	93
Segment 2485A: Oso Creek	95
Segment 2485B: Unnamed Tributary of Oso Creek	97
Segment 2485D: West Oso Creek	97
Segment 2491: Laguna Madre	98
Segment 2491B: North Floodway	101
Segment 2492: Baffin Bay / Alazan Bay / Cayo del Grullo / Laguna Salado	103
Segment 2492A: San Fernando Creek	104
Segment 2493: South Bay	106
Segment 2494: Brownsville Ship Channel	107
Segment 2494A: Port Isabel Fishing Harbor	109
Segment 2501: Gulf of Mexico	109
4.0 Stakeholder Participation and Public Outreach	112
4.1 Stakeholder Participation	112
4.2 Public Outreach and Education	112
Contact Information	114
Appendix A Wastewater Discharge Permits	115

List of Tables

3.1. CRP and SWMQ Sites in the San Antonio – Nueces Coastal Basin	7
3.2. List of Impairments and Concerns in the San Antonio – Nueces Coastal Basin	16
3.3. CRP and SWMQ Sites in the Nueces River Basin	17
3.4. List of Impairments and Concerns in the Nueces River Basin	54
3.5. CRP and SWMQ Sites in the Nueces – Rio Grande Coastal Basin	58
3.6. List of Impairments and Concerns in the Nueces – Rio Grande Coastal Basin	78
3-7. CRP and SWMQ Sites in the Bays and Estuaries and Gulf of Mexico	81
3-8. List of Impairments and Concerns in the Bays and Estuaries and Gulf of Mexico	110

List of Figures

1.1. NRA's Basins of Responsibility	1
2-1. Routine Quarterly Monitoring Sites in the Nueces River Basin, San Antonio-Nueces Coastal Basin, and Nueces-Rio Grande Coastal Basin	2
3-1. Sample Map	6
3-2. San Antonio Nueces Coastal Basin	7
3.3. Nueces River Basin	17
3-4. Nueces – Rio Grande Coastal	57
3-5. Bays and Estuaries and Gulf of Mexico	80
3-6. Corpus Christi Bay Beach Watch Stations	89

List of Acronyms

AU	Assessment Unit
BCRAGD	Bandera County River Authority and Groundwater District
BMP	Best Management Practices
CAFO	Confined Animal Feeding Operations
CBBEP	Coastal Bend Bays and Estuary Program
CCIH	Corpus Christi Inner Harbor
CCSC	Corpus Christi Ship Channel
cfu	Colony Forming Units
CM	Channel Marker
CR	County Road
CRP	Clean Rivers Program
CWQM	Continuous Water Quality Monitoring
DDE	Dichlorodiphenylethylene
DO	Dissolved Oxygen
DSHS	Department of State Health Services
FM	Farm to Market
Hr	Hour
ICWW	Intracoastal Waterway
IH	Interstate Highway
km	Kilometers
m	Meters
mg/l	Milligrams Per Liter
mL	Milliliter
MSL	Mean Sea Level
NCR	Non Contact Recreation
NRA	Nueces River Authority
PCB	Polychlorinated biphenyl
PCR	Primary Contact Recreation
RR	Ranch Road
RRC	Railroad Commission of Texas
RUA	Recreational Use Attainability Analysis
SCR1	Secondary Contact Recreation 1
SCR2	Secondary Contact Recreation 2
SH	State Highway
su	Standard Units
SWQM	Surface Water Quality Monitoring
SWQMIS	Surface Water Quality Monitoring Information System
TCEQ	Texas Commission on Environmental Quality
TDS	Total Dissolved Solids
TGLO	Texas General Land Office
TIAER	Texas Institute of Applied Environmental Research
TMDL	Total Maximum Daily Load
TPWD	Texas Parks and Wildlife Department
TSS	Total Suspended Solids
TSSWCB	Texas State Soil and Water Conservation Board
µg/l	Micrograms Per Liter
US	United States (Highway)
WPP	Watershed Protection Plan
WWTP	Wastewater Treatment Plant

1.0 INTRODUCTION and 2016 HIGHLIGHTS

1.1 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 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, an area roughly 31,500 square miles, ranging from the hill country in Edwards County to San Antonio Bay in Refugio County to the Brownsville Ship Channel in Cameron County. (Figure 1.1)

San Antonio – Nueces Coastal Basin

The San Antonio – Nueces Coastal Basin is approximately 3,100 square miles, covering all or part of 7 counties. The basin is bordered by the San Antonio River Basin to the north, the Lavaca-Guadalupe Coastal Basin to the northeast, bays, estuaries, and the Gulf of Mexico to the east, the Nueces-Rio Grande Coastal Basin to the south, and the Nueces River Basin to the northwest. Being a coastal area, the basin is naturally host to several state-operated recreational areas. These include Goose Island State Park near Rockport, Copano Bay State Fishing Pier along SH 35 north of Fulton, Fulton Mansion State Historic Park in Fulton, and the Aransas National Wildlife Refuge in Aransas County.

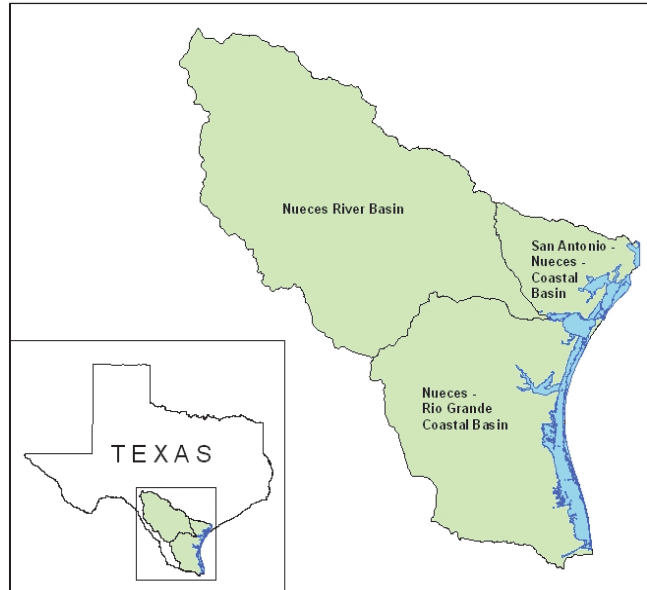


Figure 1.1. NRA's Basins of Responsibility

Nueces River Basin

The Nueces River Basin covers approximately 17,000 square miles, encompassing all or part of 23 counties in South-Central Texas. Other rivers within the basin include the Frio, Leona, Sabinal, and Atascosa Rivers. The basin is bordered by the Colorado, Guadalupe, and San Antonio River Basins to the north, the San Antonio – Nueces Coastal Basin to the southeast, the Nueces – Rio Grande Coastal Basin to the south, and the Rio Grande River basin to the south and southwest. Throughout the basin, the rivers are used for water supply and recreational purposes. The basin is home to numerous state-operated recreational areas including: Choke Canyon State Park on the south side of Choke Canyon Reservoir near Three Rivers, Lake Corpus Christi State Park on the southeast bank of Lake Corpus Christi near Mathis, Garner State Park north of Concan, Tips State Recreational Area on the Frio River in Three Rivers, Lipantitlan State Historic Park near Sandia, Lost Maples State Natural Area north of Vanderpool, and Hill Country State Natural Area north of Hondo.

Nueces – Rio Grande Coastal Basin

The Nueces – Rio Grande Coastal Basin covers approximately 10,400 square miles, encompassing all or part of 12 counties in South Texas. The basin is bordered by the Nueces River Basin and the San Antonio – Nueces Coastal Basin to the north, bays, estuaries, and the Gulf of Mexico to the east, and the Rio Grande River Basin to the south and southwest. The inland area of the basin is dominated by large ranches, including the King Ranch. State-operated recreational areas are primarily along the coast and include Mustang Island State Park, Port Isabel Light House State Historic Park in Port Isabel, and the Padre Island National Seashore.

1.2 2016 Highlights

2016 was a very interesting year for the Nueces River Basin. The Nueces River Watershed routinely experiences periods of drought and flooding but 2016 was unusual in that they both occurred simultaneously. Heavy rains in the Hill County resulted in massive flooding of both the west and east prong of the Nueces River in late September. Floodwaters took approximately 25 days to reach Lake Corpus Christi pushing percent capacity up to the 90% range, where it remained until year's end. However, the main tributary to Choke Canyon Reservoir, the Frio River, did not experience the rain event in the same manner. Consequently, Choke Canyon percent of capacity has been stuck in the 30% to 40% capacity range since 2015. The last time Choke Canyon was full was back in 2007.

2.0 WATER QUALITY MONITORING

In general, the CRP and Surface Water Quality Monitoring (SWQM) programs conduct quarterly monitoring at routine monitoring sites. Most of these sites have been monitored for many years and provide valuable information with respect to trends and/or changing conditions. Routine water quality samples are analyzed for conventional and bacteria parameters. These samples are usually collected four times per year, once per quarter. Field parameters are also recorded as part of the sampling events.

Parameters analyzed for conventional monitoring include alkalinity, ammonia, total dissolved solids (TDS), total suspended solids (TSS), total phosphorous, chlorides, sulfate, hardness (fresh water sites), nitrates, chlorophyll-a, pheophytin, and total organic carbon.

Routine bacteria analysis includes enterococcus in saltwater bodies and tidal segments and *E. coli* for fresh water sites. Additional bacterial analysis is being conducted for some of the special studies. These studies are discussed in Section 3.2, Watershed Summaries.

Measured field parameters in the NRA CRP include dissolved oxygen (DO), salinity (saltwater and tidal sites), flow (fresh water sites), pH, water temperature, air temperature, conductivity, secchi depth, and wind speed and direction. Observations such as water color, water odor, surface conditions, turbidity, current weather, recent rainfall amounts, and evidence of primary contact recreation are noted.

Low DO concerns are more thoroughly evaluated with 24-Hour (Hr) DO measurements. This monitoring is conducted when adequate flow conditions exist.

Specific sites and the type of monitoring being conducted during FY 2017 are listed in summary tables at the beginning of each basin subsection within Section 3.2. Detailed information is available on the Statewide Coordinated Monitoring Schedule, <http://cms.lcra.org/>, maintained by the Lower Colorado River Authority. Figure 2-1 shows a map of routine quarterly monitored sampling locations and program partners involved in water quality monitoring in the Nueces River Basin, San Antonio-Nueces Coastal Basin, and Nueces-Rio Grande Coastal Basin.

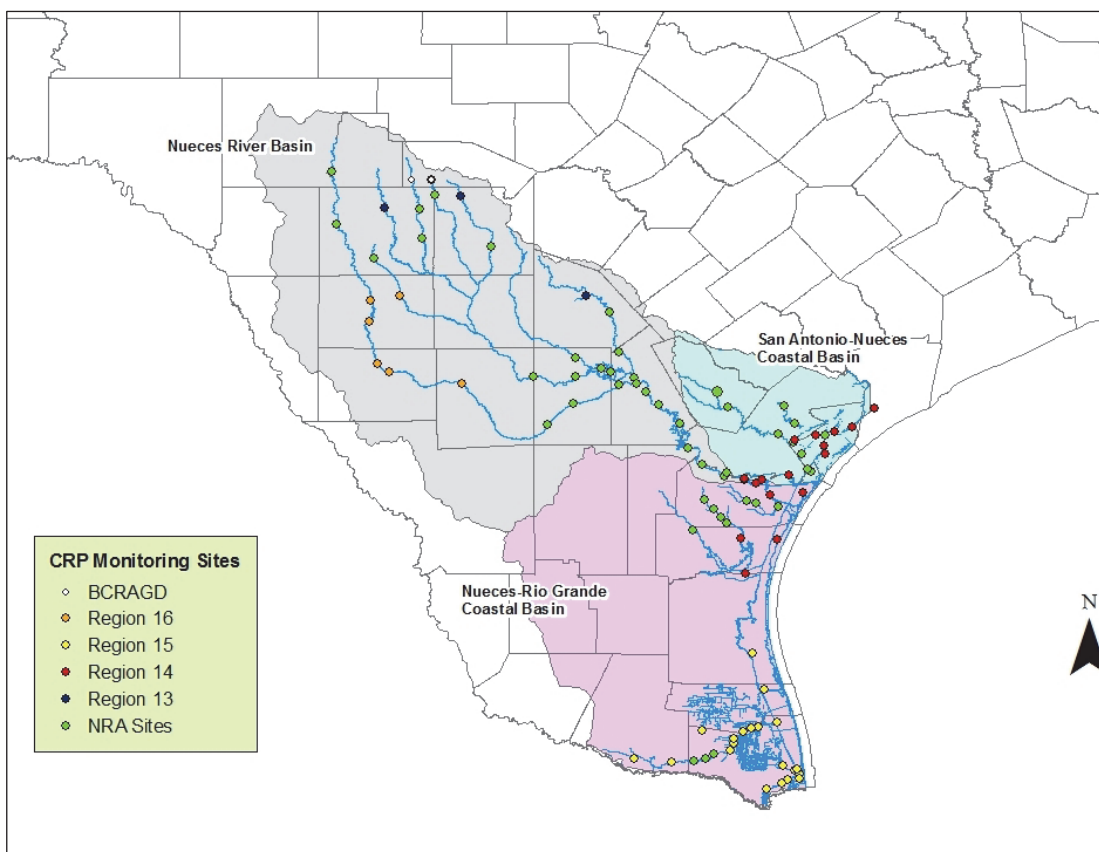


Figure 2-1. Monitoring Sites in the Nueces River Basin, San Antonio-Nueces Coastal Basin, and Nueces-Rio Grande Coastal Basin

3.0 WATER QUALITY CONDITIONS

3.1 Water Quality Terminology

The 2014 Integrated Report assesses suitable data in the State's water quality database (Surface Water Quality Monitoring Information System (SWQMIS)) for a 7-year period, and a new 7-year data set is assessed every two years. This has changed from the previous 5-year data sets. In most cases, a minimum of 10 samples is required to conduct the assessment. In some cases, the 10 samples are obtained by using a slightly longer period of time. The 2014 Integrated Report included data from December 1, 2005 through November 30, 2012. The Draft 2016 Integrated Report is under development and will include data from December 1, 2007 through November 30, 2014. For this report, the analysis and discussion of the concerns and impairments in each segment is based on the 2014 Integrated Report and includes graphs of the data. Post 2014 assessment data, through November 2016, have been added to the graphs for a visual comparison to the 2014 assessment data. Prior to 2010, water quality assessments conducted by the TCEQ were called the Water Quality Inventory.

For the 2014 Integrated Report, TCEQ assessed a variety of parameters including DO, pH, water temperature, total phosphorus, nitrates, ammonia, chlorophyll-a, and bacteria (*E. coli* for fresh water segments and *Enterococcus* on tidal and marine segments) values on each assessment unit (AU) of a classified segment where ample data were available. Metals data were assessed where applicable. A single segment can consist of one to several AUs. TDS, chloride, and sulfate are assessed for the entire segment and only on fresh water segments. AU boundaries are occasionally modified to be more representative and provide for a more accurate analysis.

Impairments for the following parameters are defined as follows:

Parameter	Criteria	Calculation Used for Impairment*
TDS, chloride, and sulfate	Segment specific	Average of samples are above the criteria
DO (for High Aquatic Life Use)	3.0 mg/l** grab sample 5.0 mg/l 24-Hr average or Segment specific	10% of samples are below either criteria
pH	6.5 su*** and 9 su	10% of samples are above or below the criteria
<i>E. coli</i>	126 cfu****	Geometric mean is greater than the criteria
	394 cfu	25% of samples are above the criteria
Enterococci	35 cfu	Geometric mean is greater than the criteria
	89 cfu	25% of samples are above the criteria

*The percent of samples exceeding the criteria or screening level varies somewhat with small sample sizes (between 10 and 20). When sample sizes are greater than 20 samples, the percentage shown in the calculation column is much more accurate.

**mg/l: milligrams per liter

***su: standard units

****cfu: colony forming units

Concerns for the following parameters are defined as follows:

Parameter	Screening Levels*			Calculation Used for Concern
	Stream	Reservoir	Tidal Stream	
Ammonia-Nitrogen	0.33 mg/l	0.11 mg/l	0.46 mg/l	20% of samples are above the criteria
Nitrate	1.95 mg/l	0.37 mg/l	1.10 mg/l	
Total phosphorus	0.69 mg/l	0.20 mg/l	0.66 mg/l	
Chlorophyll-a	14.1 µg/l**	26.7 µg/l	21.0 µg/l	

*Screening levels to identify concerns have been developed by the State to enable an assessment of water quality for some parameters, primarily nutrients that only have a narrative criteria. The levels were developed by calculating the 85th percentile for all water quality data in the TCEQ's water quality database over a 10 year period.

**µg/l: micrograms per liter

The following chart explains the potential impacts when the water quality standards are not met along with an explanation of the most common causes for the standards not to be met.

Parameter of Concern or Impairment	Impact	Cause
DO	Organisms that live in water need oxygen to live. In waters with depressed DO levels, organism may not have sufficient oxygen to survive.	Modifications to the riparian zone, human activity that causes water temperatures to increase, and increases organic matter, bacteria, and over abundant algae.
pH	Most aquatic life is adapted to live within a narrow pH range. Different organisms can live and adjust to differing pH ranges, but all fish die if pH is below 4 (the acidity of orange juice) or above 12 (the pH of ammonia).	Industrial and wastewater discharge, runoff from quarry operations, and accidental spills.
Ammonia	Elevated levels of ammonia in the environment can adversely affect fish and invertebrate reproductive capacity and reduced growth of the young.	Ammonia is excreted by animals and is produced during the decomposition of plants and animals. It is an ingredient in many fertilizers and is also present in sewage, storm water runoff, certain industrial wastewaters, and runoff from animal feedlots.
Nutrients Nitrates Total phosphorus	These nutrients increase plant and algae growth. When plants and algae die, the bacteria that decompose them use oxygen so that is no longer available for fish and other living aquatic life. The more dead plants in the water, the more bacteria are produced to decompose the dead leaves. High levels of nitrate and nitrites can produce Nitrite Toxicity, or "brown blood disease," in fish. This disease reduces the ability of blood to transport oxygen throughout the body.	Nutrients are found in effluent released from wastewater treatment plants (WWTP)s, fertilizers, and agricultural runoff carrying animal waste from farms and ranches. Soil erosion and runoff from farms, lawns, and gardens can add nutrients to the water.
Chlorophyll-a	Chlorophyll-a is the photosynthetic pigment found in all green plants, algae, and cyanobacteria. Elevated levels indicate abundant plant growth which could lead to reduced DO levels.	Modifications to the riparian zone, human activity that causes water increases in organic matter, nutrients, bacteria, and over abundant algae.
TSS	TSS measures the amount of particles that are suspended in water and which will not pass through a filter. It can also affect light penetration. Deposition of these particles can bury and/or destroy benthic habitat for most species of aquatic insects, snails and crustaceans.	TSS originates from multiple point and nonpoint sources but most commonly results from erosion of soils substrates. A good measure of the upstream land use conditions is how much TSS rises after a heavy rainfall.
TDS Chloride Sulfate	High levels of these parameters may affect the aesthetic quality of water, interfering with washing clothes and corroding plumbing fixtures. They can also affect the permeability of ions in aquatic organisms.	Mineral springs, carbonate deposits, salt deposits, and sea water intrusion are natural sources of these parameters. Other sources can be attributed to oil exploration, drinking water treatment chemicals, storm water and agricultural runoff, and wastewater discharges.

Recreational Use Designations

Beginning in 2010, TCEQ initiated a Water Quality Standards revision by expanding categories for Recreational Uses. Below is a breakdown of definitions of each designation and corresponding bacterial concentrations.

- Primary contact recreation (PCR): Water recreation activities, such as wading by children, swimming, water skiing, diving, tubing, surfing, and whitewater kayaking, canoeing, and rafting, involving a significant risk of ingestion of water. For *E. coli*, the geometric mean criterion is 126 cfu per 100 milliliters of sampled water; for Enterococcus, the geometric mean criterion is 35 cfu per 100 milliliters of sampled water.

- Secondary contact recreation 1 (SCR1): Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion and that commonly occur. For *E. coli*, the geometric mean criterion is 630 cfu per 100 milliliters of sampled water; for Enterococcus, the geometric mean criterion is 175 colonies per 100 milliliters of sampled water.

- Secondary contact recreation 2 (SCR2): Water recreation activities, such as fishing, commercial and recreational boating, and limited body contact incidental to shoreline activity, not involving a significant risk of water ingestion but that occur less frequently than for secondary contact recreation 1 due to (1) physical characteristics of the water body and/or (2) limited public access. For *E. coli*, the geometric mean criterion is 1030 cfu per 100 milliliters of sampled water.

- Noncontact recreation (NCR): Activities, such as ship and barge traffic, birding, and using hike and bike trails near a water body, not involving a significant risk of water ingestion, and where primary and secondary contact recreation should not occur because of unsafe conditions. For *E. coli*, the geometric mean criterion is 2,060 cfu per 100 milliliters of sampled water; for Enterococcus, the geometric mean criterion is 350 cfu per 100 milliliters of sampled water.

Recreational Use Designations	<i>E. coli</i> (Freshwater) cfu/100 mL	Enterococcus (Salt Water) cfu/100 mL
Primary Contact Recreation	126	35
Secondary Contact 1	630	175
Secondary Contact 2	1030	*
Noncontact Recreation	2060	350

*There is no Secondary Contact 2 designation for Enterococcus.

In order to determine the appropriate designation, a Recreational Use Attainability Analysis (RUAA) must be conducted. An RUAA is designed to: capture information of the types of recreational uses occurring in a water body; document physical stream characteristic that affect recreational uses; and document observed, historical, and anecdotal recreational uses. The information is obtained via questionnaires, field surveys, and research. Until an RUAA is conducted and a designation other than primary contact recreation is found to be more appropriate, a segment will continued to be assessed using the primary contact recreation criteria.



Tubers on the Frio River helping keep the river clean

3.2 Watershed Summaries

This section contains detailed information for each of the three basins in NRA's area of responsibility for CRP: the San Antonio – Nueces Coastal Basin, the Nueces Basin, and the Nueces – Rio Grande Coastal Basin. Information included for each of the basins contains a map of the basin, a description of the basin, a summary of concerns and impairments identified in the 2014 Integrated Report, a table of the FY 2017 sampling locations, and summaries for each segment within the basin.

The summaries for each segment include a map, a description of the watershed, a concern and impairment discussion, and graphs of the data relating to each concern and impairment. Appendix A contains a list of all wastewater discharge permits.

The map shows the segment boundaries; includes landuse / land cover information of the contributing watershed (see key below); the location of sampling sites, WWTPs, and confined animal feeding operations (CAFO); the names of nearby cities and major roads; and an inset of the watershed's location within the basin. Figure 3-1 is a sample map.

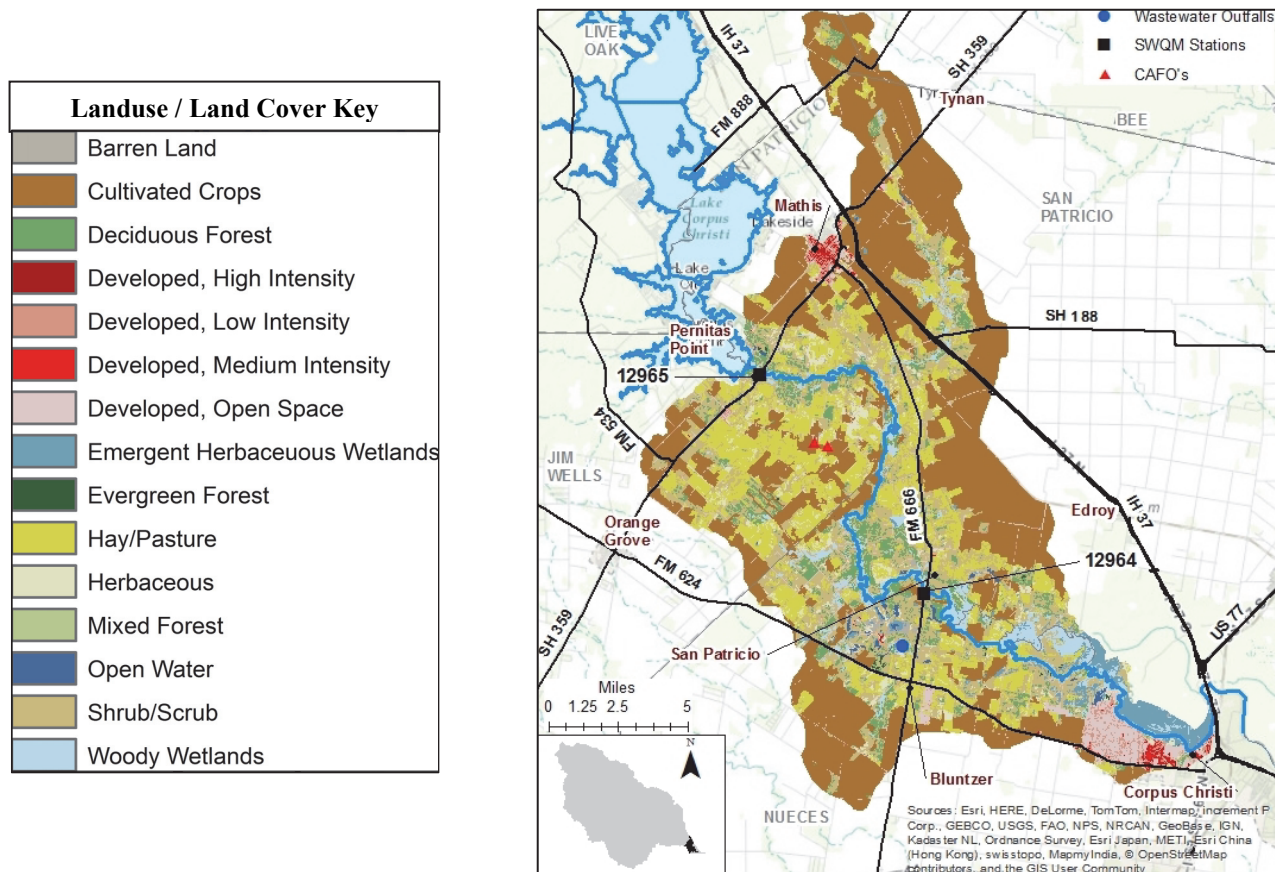


Figure 3-1. Sample Map

3.2.1 SAN ANTONIO – NUECES COASTAL BASIN (Figure 3-2)

The San Antonio – Nueces Coastal Basin is approximately 3,100 square miles, covering all or part of 7 counties. The basin is largely rural, with the dominant industries being crop farming and cattle rearing. Rivers and creeks in the basin include: Blanco and Medio Creeks which flow into Mission River, Poesta and Aransas Creeks which flow into Aransas River. Chiltipin and Copano Creeks discharge directly into Copano Bay. The basin also includes the tributaries of St. Charles Bay.

The tidal segments of both the Aransas and Mission Rivers are impaired for bacteria for primary contact recreation. Copano Bay is impaired for fecal coliform in oyster waters.

Table 3.1 lists all the CRP and SWQM sites being monitored during FY 2017 in this basin.

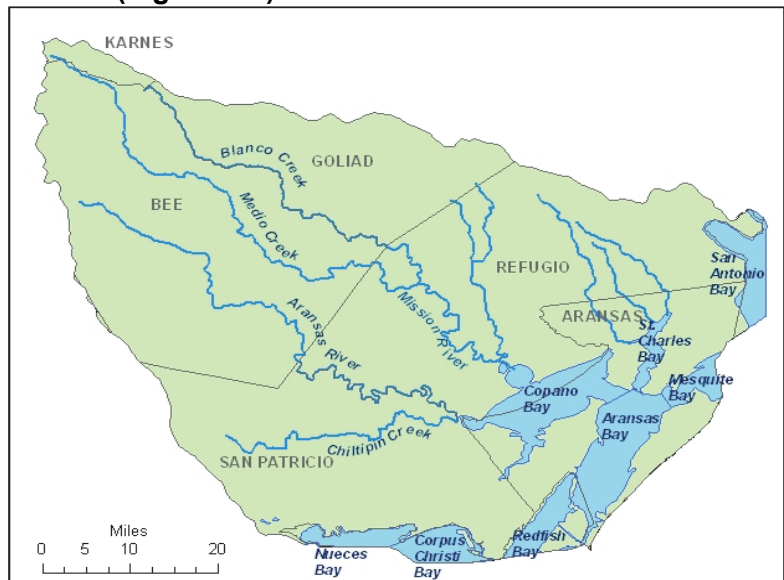


Figure 3-2. San Antonio Nueces Coastal Basin

Table 3-1: CRP and SWQM Sites in the San Antonio – Nueces Coastal Basin

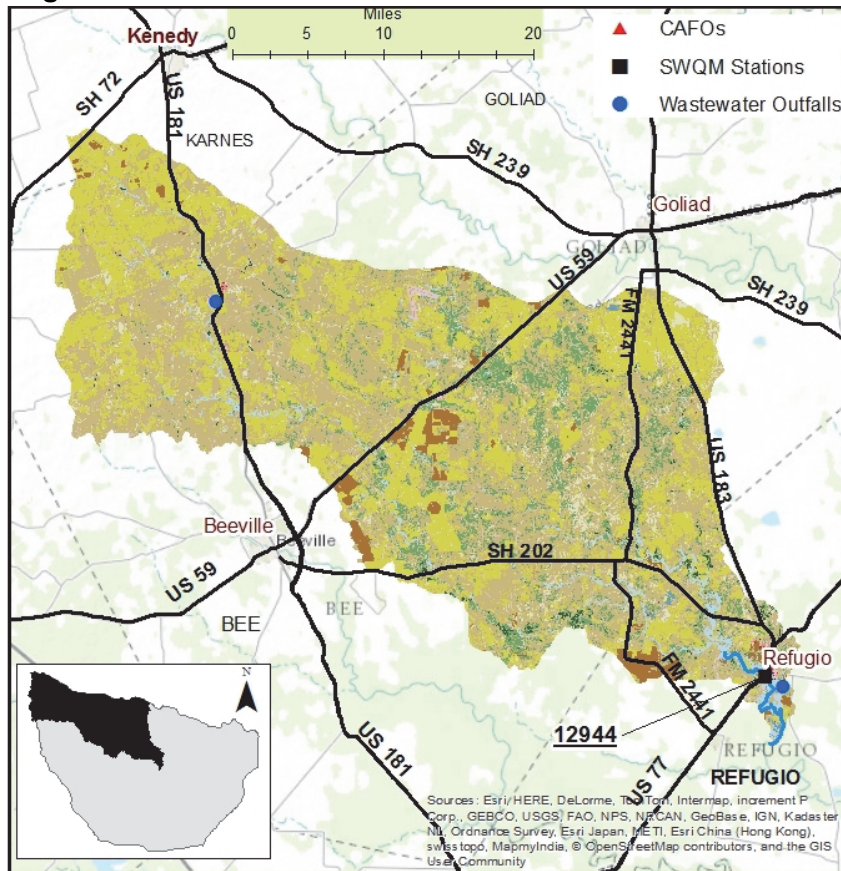
Segment Name	Station Id	Description	Monitoring Entity	Conventional, Bacteria, Field	Other
2001 Mission River Tidal	12943	Near south bank immediately downstream of FM 2678 between Refugio and Bayside	NRA	Quarterly	
2002 Mission River Above Tidal	12944	At US 77 upstream from bridge at Refugio	NRA	Quarterly	
2003 Aransas River Tidal	12947	At boat ramp at FM 629 terminus south of Bonnie View	NRA	Quarterly	
2004 Aransas River Above Tidal	12952	At county road east of Skidmore	NRA	Quarterly	
2004A Aransas Creek	12941	At US 181 North of Skidmore	NRA		4 24-Hr DO
2004B Poesta Creek	12937	77 m downstream of SH 202	NRA	Quarterly	

The segment has been impaired for bacteria for primary contact recreation since the 2004 Assessment and was included in the Copano Bay Total Maximum Daily Load (TMDL). The enterococci samples collected during the 2014 assessment period kept this parameter on the 2014 303(d) List.

This segment will likely remain on future 303 (d) lists based on the enterococci samples collected after the 2014 assessment period.



Segment 2002: Mission River Above Tidal



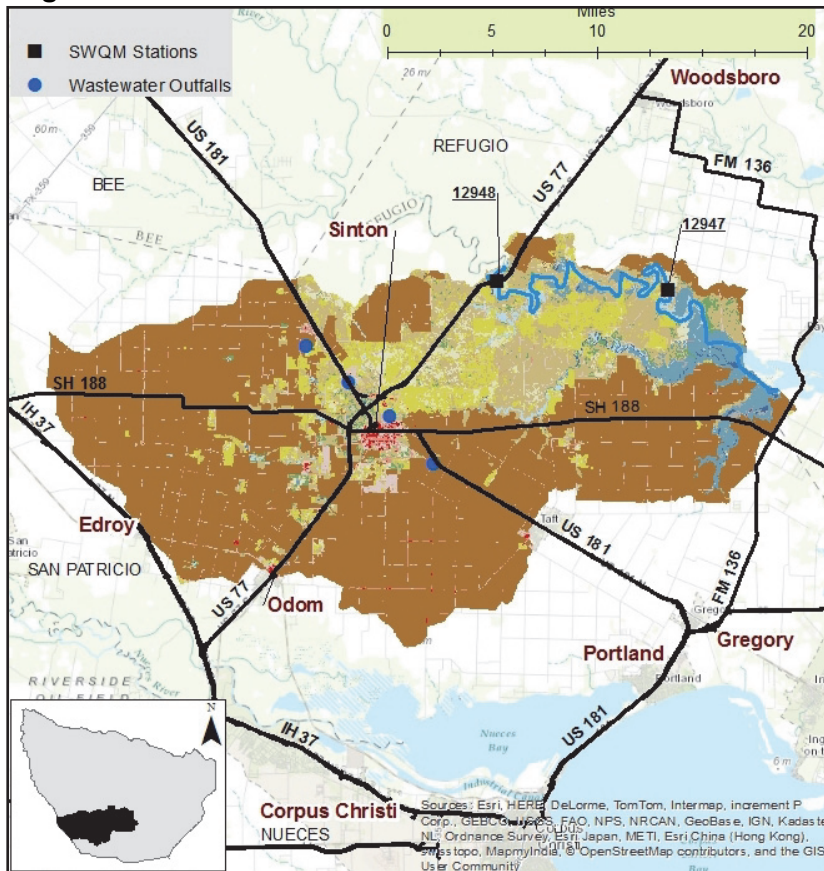
The above tidal segment flows 9 miles from the confluence of Blanco Creek and Medio Creek to a point 4.6 miles downstream of US 77 in Refugio County. Its watershed is 452,172 acres. The area is predominately ranch and farm land. The Town of Refugio is the only community in the watershed.

All the assessed parameters met their assessment criteria in the 2014 Integrated Report.



Mission River at US 77

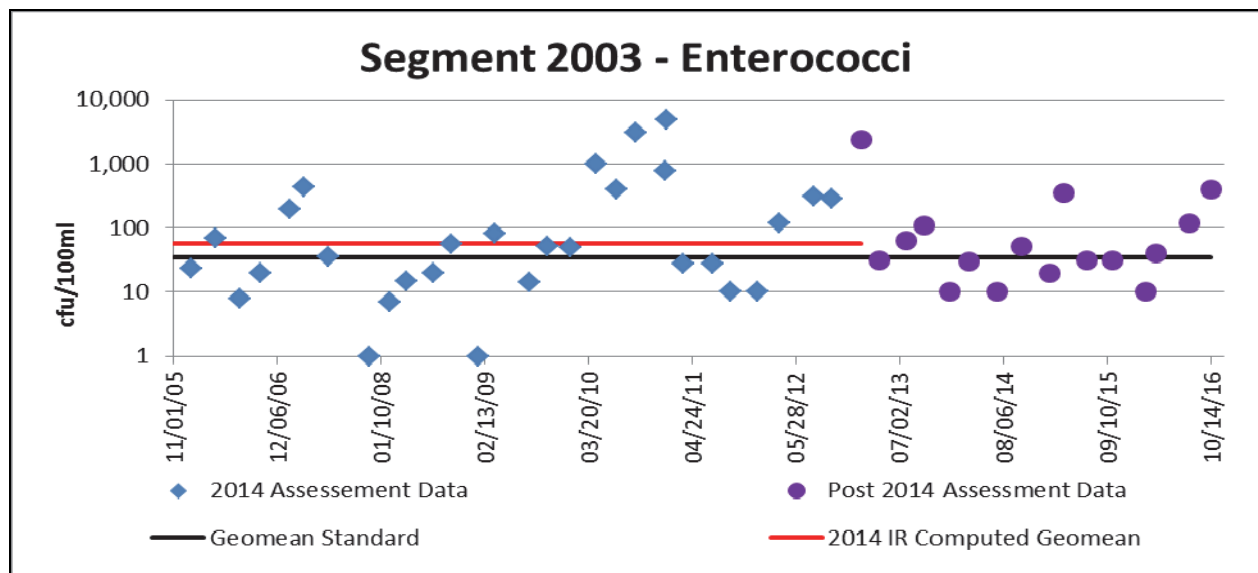
Segment 2003: Aransas River Tidal



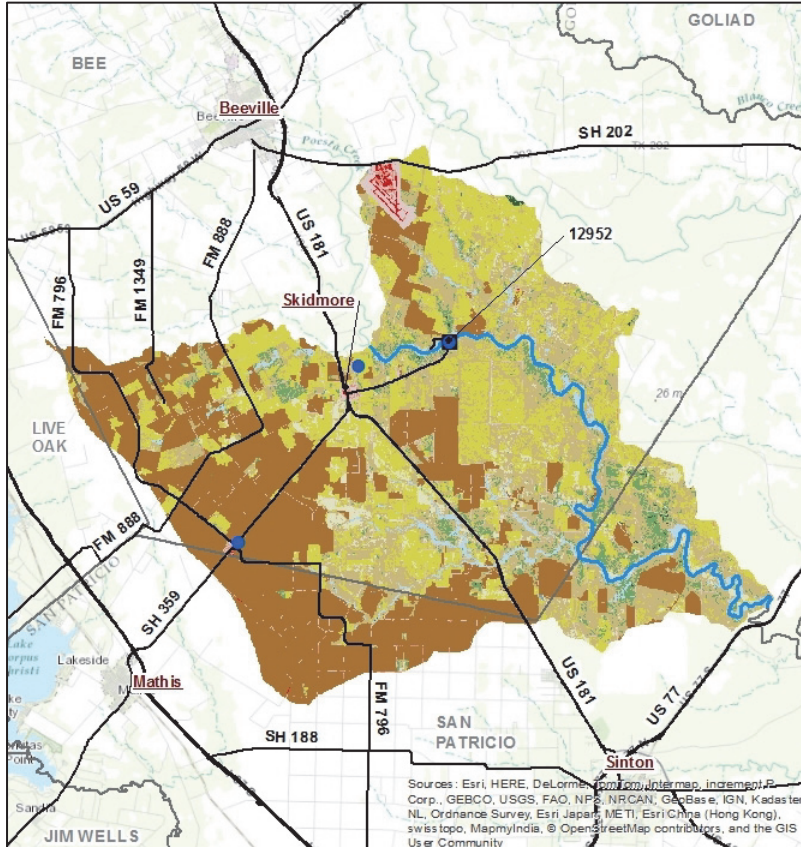
The tidal segment forms part of the county line between Refugio and San Patricio Counties. It flows 6 miles from a point 1.0 mile upstream of US 77 in to its confluence with Copano Bay. Its watershed is 208,031 acres.

The segment has been impaired for bacteria for primary contact recreation since the 2004 Assessment and was included in the Copano Bay TMDL. The Enterococci samples collected during the 2014 assessment period kept this parameter on the 2014 303(d) List. A subsequent Copano Bay TMDL project was initiated FY2013 to address the impairment. BMPs to address the issue include improvements and upgrades to WWTPs and the development and implementation of conservation plans in priority areas of the watershed. All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.

This segment will likely remain on future 303(d) lists based on the enterococcus samples collected after the 2014 assessment period.



Segment 2004: Aransas River Above Tidal



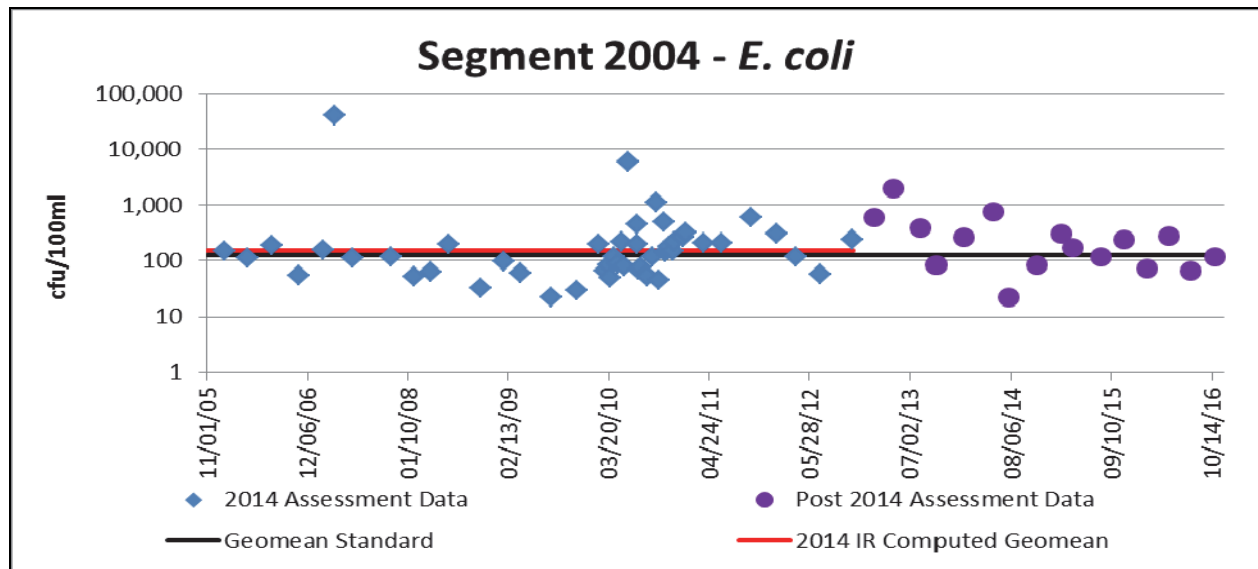
The above tidal segment flows 35 miles from the confluence of Poesta Creek and Aransas Creek to a point 1.0 mile upstream of US 77. Its watershed is 178,807 acres. The segment is divided into two AUs; the lower 17 miles (AU_01) and the upper 18 miles (AU_02). Sampling has only been conducted on AU_02. The area is predominately ranchland. Skidmore and Tynan are the only communities in the watershed.

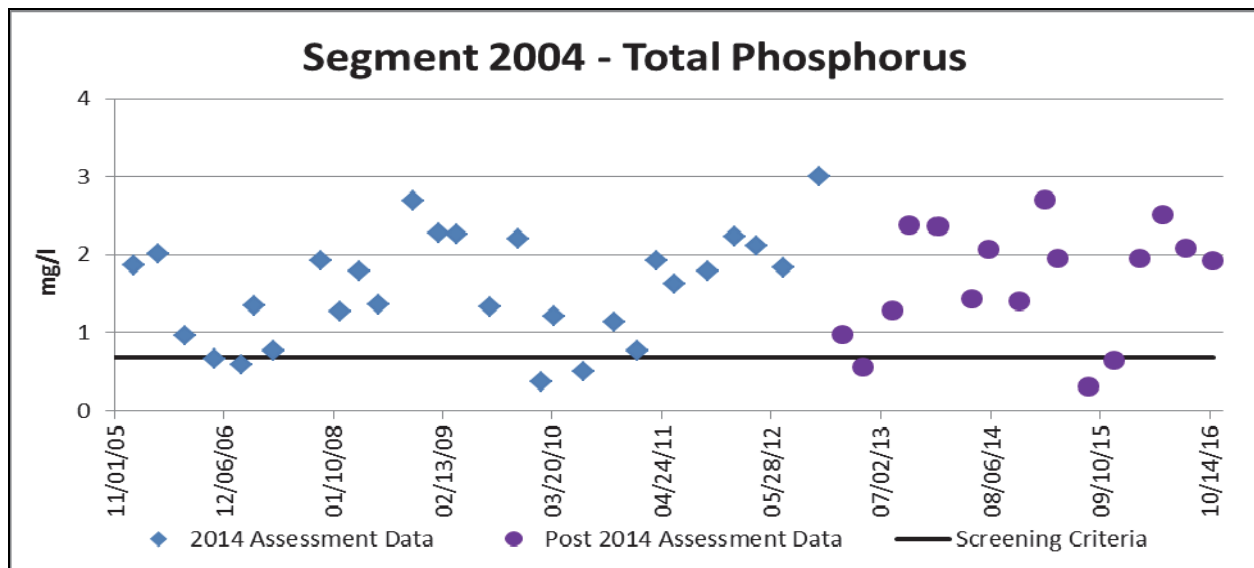
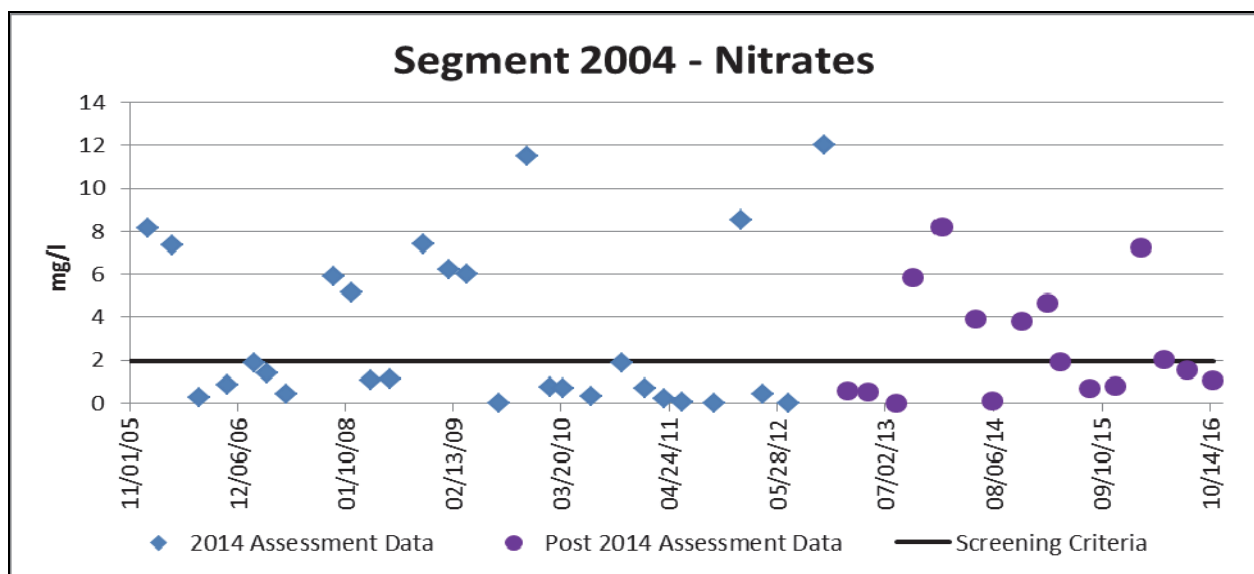
The segment was included in the Copano Bay TMDL. *E. coli* was identified as an impairment during the 2014 Assessment and placed on the 2014 303(d) List.

This segment will likely remain on future 303 (d) lists based on the *E. coli* samples collected after the 2014 assessment period.

A previously identified concern for depressed DO at the 5 mg/l screening level has been removed as of the 2014 Integrated Report.

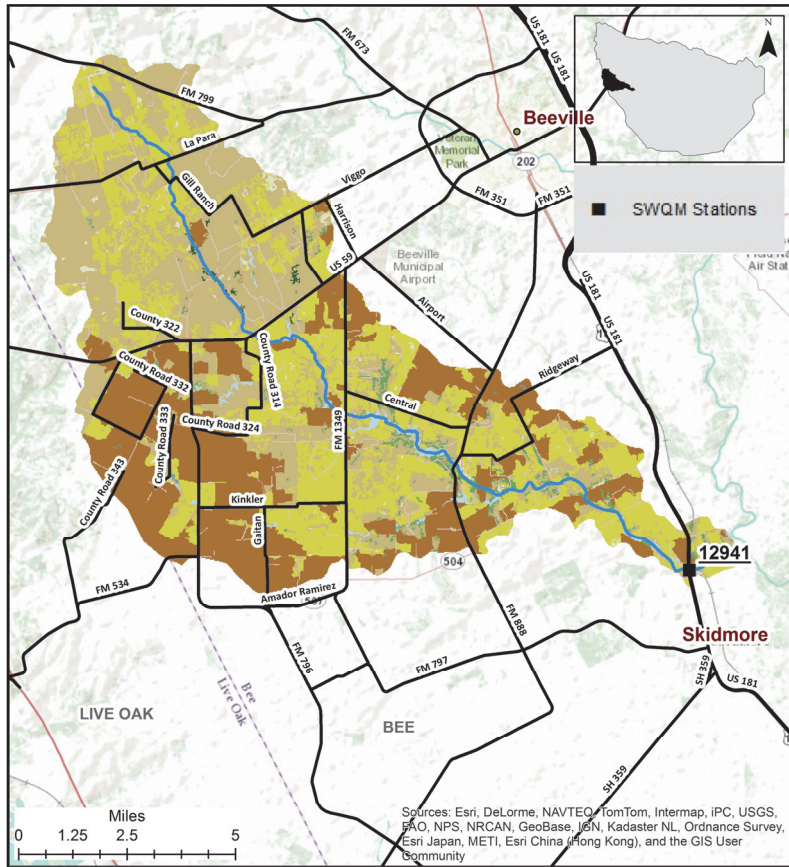
However, concerns identified in the 2006 Water Quality Inventory remain for nitrates and total phosphorus based on the data collected for the 2014 Assessment, and will most likely remain concerns based on the post 2014 assessment data. Possible sources include nutrient laden runoff from cropland and effluent from WWTPs. All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.





Aransas River east of Skidmore

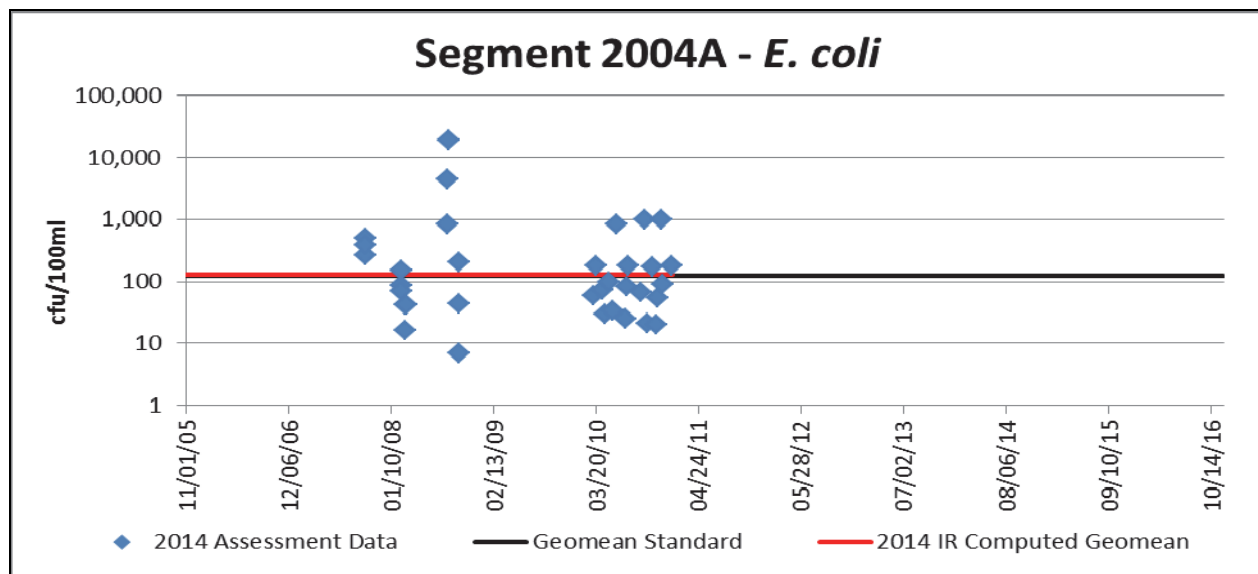
Segment 2004A: Aransas Creek

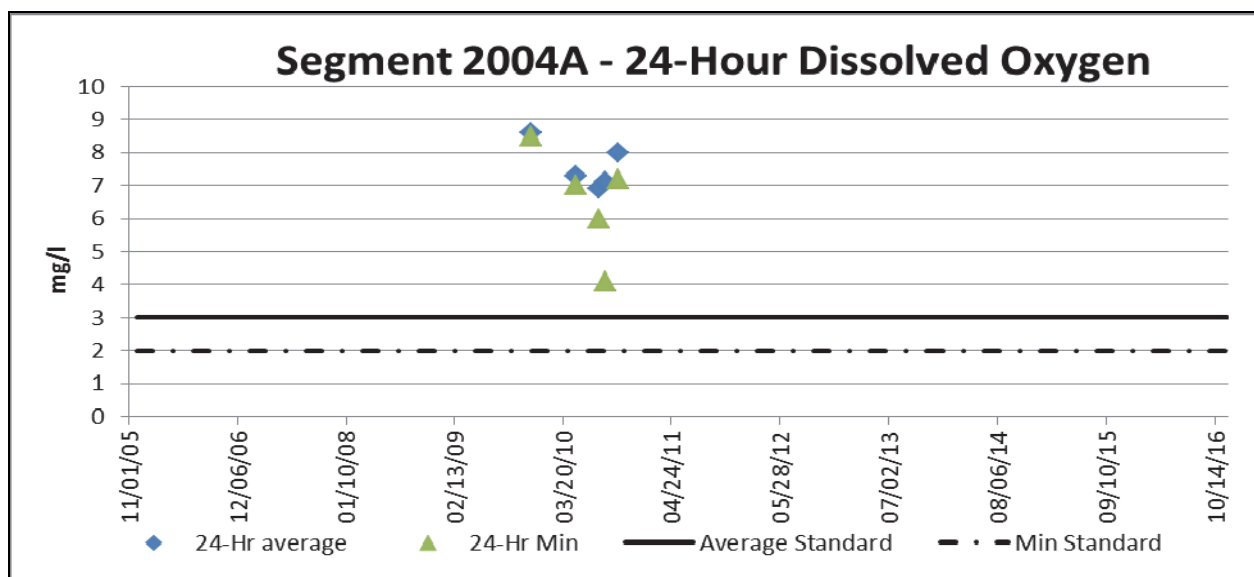


The segment is 20 miles long, beginning west of Beeville to its confluence with the Aransas River. Its watershed is 45,196 acres. The area is predominately ranchland. There are no major communities in the watershed.

The segment was listed as being impaired for bacteria in 2006 based on Fecal coliform analysis. For several years, Station 12941, at US 181, was accidentally monitored instead of at 12952 on the Aransas River. The impairment remains listed in the 2014 Integrated Report. Data collected at Station 20066 during the Copano TMDL confirmed the impairment. NRA, under contract with the Texas State Soil and Water Conservation Board (TSSWCB), conducted an RUAA on Aransas Creek. The final report for the RUAA was submitted to TSSWCB in May 2013. If the recreational use is designated as secondary contact, the creek will meet the new standard. No additional sampling for bacteria has taken place since 2011.

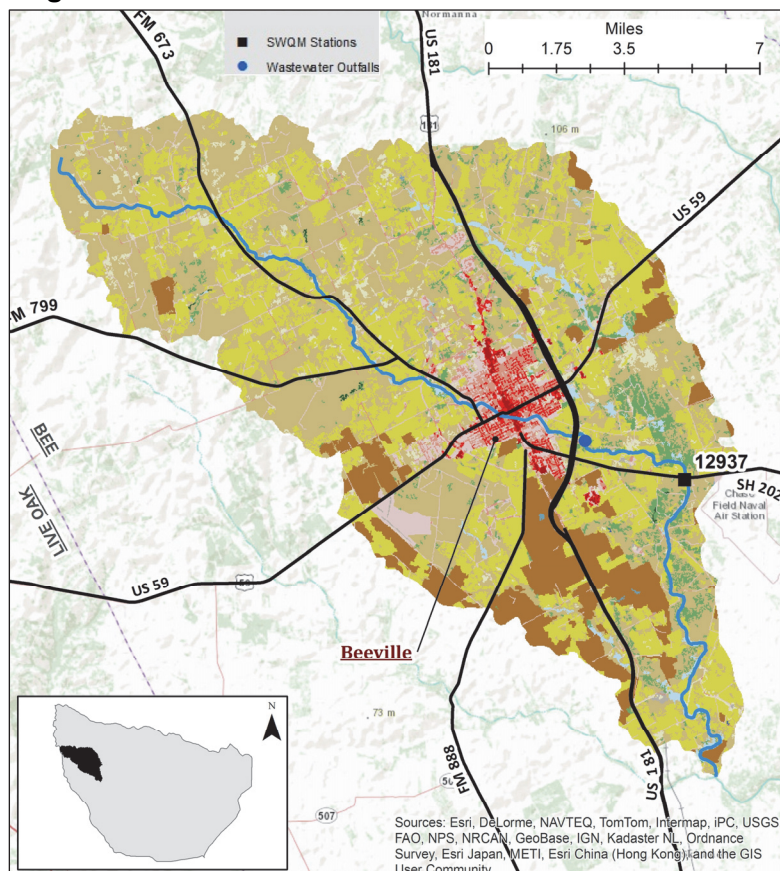
The depressed DO concerns for grab sample minimum and screening level were also carried forward in the 2014 Integrated Report. Due to the drought, NRA has not been able to collect a sufficient number of 24-Hr DO measurements to fully evaluate the concern. Subsequent rains have not been adequate for enough continuous flow to conduct the measurements. The five 24-Hr DO measurements that were able to be collected in 2009 and 2010 met the standards.





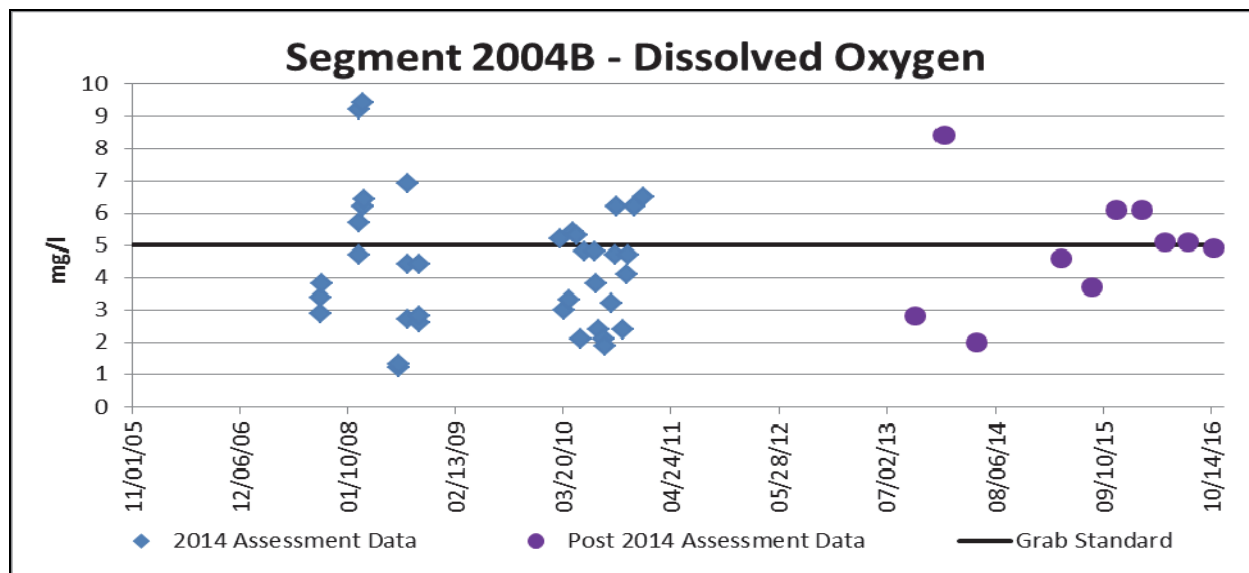
Aransas Creek at US 281

Segment 2004B: Poesta Creek



The segment is approximately 24 miles long, beginning northwest of Beeville, 7.5 km upstream of FM 673, to its confluence with the Aransas River. Its watershed is 78,921 acres. The area is predominately ranchland. Beeville is the only community in the watershed.

Only DO and *E. coli* were assessed for this segment. The data set is not temporally representative, but indicates potential concerns for the DO grab screening level and bacteria levels. Additional sampling at Station 12932 at US 181 began in FY 2014 in order to collect enough data to fully assess the parameters. The sampling location moved to Station 12937 at SH 202 in FY 2016 due to construction on US 181. Station 12937 is considered to be more representative of the overall creek since it is located in a more rural area.



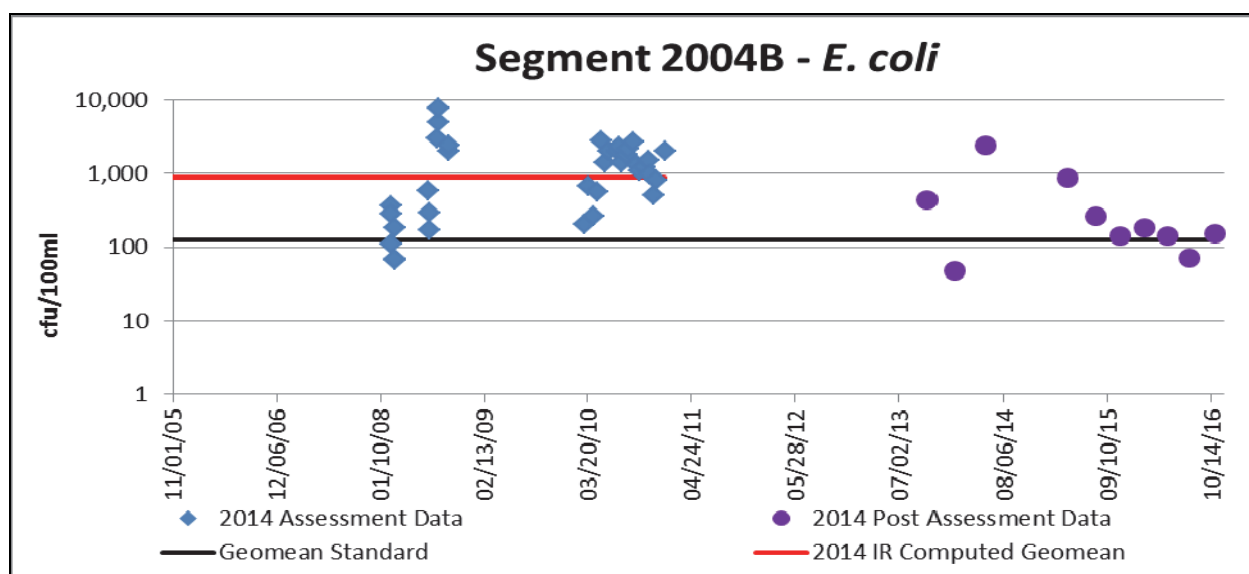


Table 3-2: List of Impairments and Concerns in the San Antonio – Nueces Coastal Basin

Segment Name	AU	Description	Impairments	Concerns
2001 Mission River Tidal	01	Entire water body	Bacteria	None
2002 Mission River Above Tidal	01	Entire water body	None	None
2003 Aransas River Tidal	01	Entire water body	Bacteria	None
2004 Aransas River Above Tidal	01	From the downstream end of segment to the confluence with Papalote Creek	None	None
	02	From the confluence with Papalote Creek to the upstream end of segment at the confluence with Aransas Creek and Poesta Creek	Bacteria	Nitrate, Total Phosphorus
2004A Aransas Creek	01	Entire 20 miles of segment	Bacteria	DO
2004B Poesta Creek	02	From the confluence with Aransas Creek to the headwaters of the stream ~ 7.5 km upstream of FM 673	Bacteria	DO

3.2.2 NUECES BASIN (Figure 3-3)

The Nueces River Basin covers approximately 17,000 square miles, encompassing all or part of 23 counties in South-Central Texas. Other rivers within the basin include the Frio, Leona, Sabinal, and Atascosa Rivers.

There are several TMDLs that have been conducted in the basin: Segment 2104, Nueces River above Frio River, for depressed DO; Segment 2107, Atascosa River, for bacteria and depressed DO; Segment 2110, Lower Sabinal River, for nitrates; and Segment 2113, Frio River above Choke Canyon Reservoir, for depressed DO.

Table 3.3 lists all the CRP and SWQM sites monitored during FY 2017 in this basin.

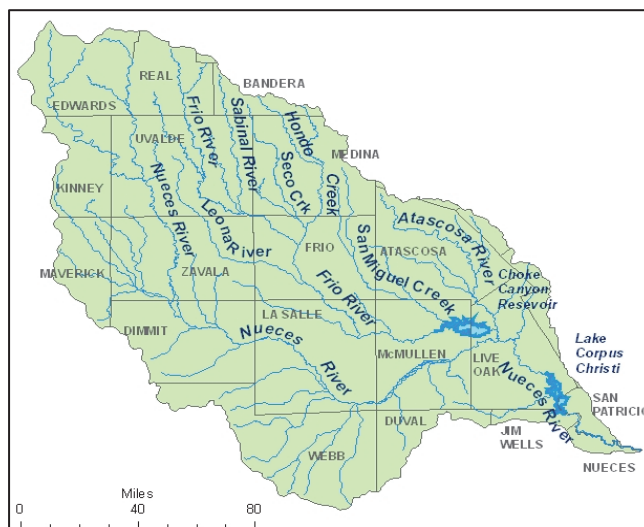


Figure 3.3. Nueces River Basin

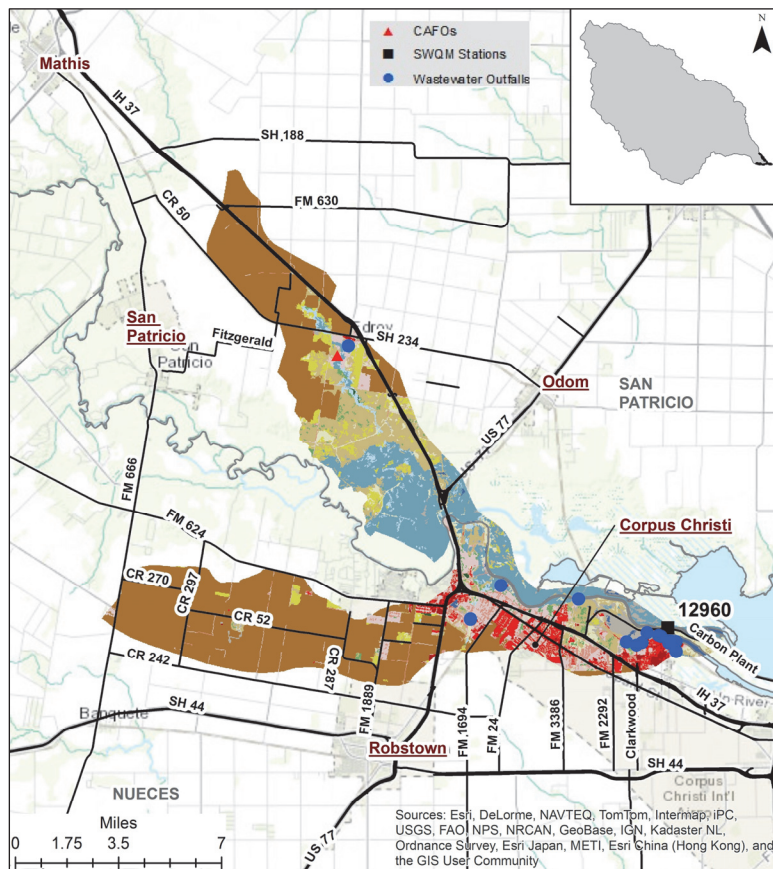
Table 3-3: CRP and SWQM Sites in the Nueces River Basin

Segment Name	Station Id	Description	Monitoring Entity	Conventional, Bacteria, Field	Other
2101 Nueces River Tidal	12960 (AU_01)	North of Viola Turning Basin	TCEQ Region 14	Quarterly	
2102 Nueces River Below Lake Corpus Christi	21815 (AU_01)	Immediately upstream of the saltwater barrier dam at Labonte Park	NRA	Quarterly	
	20936 (AU_01)	At Hazel Bazemore Park Boat Ramp	NRA	Quarterly	
	12964 (AU_01)	Bluntzer Bridge at FM 666	NRA	Quarterly	
	12965 (AU_02)	At La Fruta Bridge on SH 359	NRA	Quarterly	
2103 Lake Corpus Christi	12967 (AU_01)	380 m north-northwest of northern tip of dam	NRA	Quarterly	
	17384 (AU_04)	0.2 miles off western shore directly west of Hideaway Hill	NRA	Quarterly	
	17648 (AU_06)	At Live Oak CR 151 near River Creek Acres	NRA	Quarterly	
2104 Nueces River Above Frio River	12972 (AU_01)	At FM 1042 bridge 1.2 miles north of Simmons	NRA	Quarterly	
	12973 (AU_02)	At SH 16 south of Tilden	NRA	Quarterly	
	12974 (AU_03)	At FM 624	NRA		(4) 24-Hr DO
2105 Nueces River Above Holland Dam	12975 (AU_01)	At Business IH 35 south of Cotulla	TCEQ Region 16	Quarterly	
	12976 (AU_02)	At FM 190-north of Asherton	TCEQ Region 16 NRA	Quarterly	(4) 24-Hr DO
	20156 (AU_02)	Immediately upstream of SH 85 approximately 12 miles east of Carrizo Springs	TCEQ Region 16	Quarterly	
2106 Nueces / Lower Frio River	12979 (AU_01)	At US 281 south of Three Rivers	NRA	Quarterly	
	20701 (AU_01)	Northeast of the intersection of Airport Rd and CR 379 / Paisano Dr.	NRA	Quarterly	
	12977 (AU_02)	At US 72 in Three Rivers	NRA	Quarterly	

Table 3-3: CRP and SWQM Sites in the Nueces Basin (cont.)

Segment Name	Station Id	Description	Monitoring Entity	Conventional, Bacteria, Field	Other
2107 Atascosa River	12980 (AU_01)	At FM 99 west of Whitsett	NRA	Quarterly	
	20764 (AU_02)	At FM 541	NRA	Quarterly	(4) 24-Hr DO
	12981 (AU-03)	On dirt road directly east of Pleasanton at railroad bridge	NRA		(4) 24-Hr DO
2108 San Miguel Creek	12983 (AU_01)	At SH 16 north of Tilden	NRA	Quarterly	
2109 Leona River	12987 (AU_02)	At US 57 near Batesville	TCEQ Region 16	Bi-annually	
	18418 (AU_03)	370 m upstream of FM 140	NRA	Quarterly	
2110 Lower Sabinal River	12993 (AU_01)	At US 90 west of Sabinal	TCEQ Region 13	Quarterly	
2111 Upper Sabinal River	12994 (AU_01)	At RR 187 approx. 10 km south of Utopia and 400 m upstream of confluence with Onion Creek	NRA	Quarterly	
	14939 (AU_02)	At FM 187 south of Vanderpool	BCRAGD	Quarterly	
2112 Upper Nueces River	12996 (AU_01)	20 m upstream of US 57 south of Uvalde	TCEQ Region 16	Bi-annually	
	17143 (AU_01)	At Lake Averhoff / Upper Nueces Lake 1.62 km upstream of Texas Parks and Wildlife Department (TPWD) boat ramp	TCEQ Region 16	Quarterly	
	16704 (AU_03)	Immediately downstream of SH 55 southbound bridge approx 2.5 km south of Laguna	NRA	Quarterly	
	13005 (AU_04)	At SH 55 south of Barksdale	NRA	Quarterly	
2113 Upper Frio River	13006 (AU_01)	At SH 127 east of Concan	TCEQ Region 13	Quarterly	
2114 Hondo Creek	18408 (AU_01)	At FM 173 southeast of Hondo	NRA	Quarterly	
	13010 (AU_02)	150 m downstream of RR 462 near Tarpley	TCEQ Region 13	Bi-annually	
2115 Seco Creek	13013 (AU_02)	At Medina CR 111 on Miller Ranch near Utopia at 4 th crossing downstream of SH 470	NRA	Quarterly	
	13017 (AU_02)	At SH 470 approximately 10 miles west of Tarpley	BCRAGD	Quarterly	
2116 Choke Canyon Reservoir	13020 (AU_03)	Mid lake 15 m east of Live Oak/McMullen County line near old HWY 99 1.25 km north of Choke Canyon State Park Point	NRA	Quarterly	
	17389 (AU_06)	0.45 km southeast of FM 99 southern most bridge crossing the Frio River Arm	NRA	Quarterly	
2117 Frio River Above Choke Canyon Reservoir	13023 (AU_01)	At SH 16 in Tilden	NRA	Quarterly	
	18373 (AU_02)	Immediately upstream of SH 97 north of Fowlerton	NRA	Quarterly	

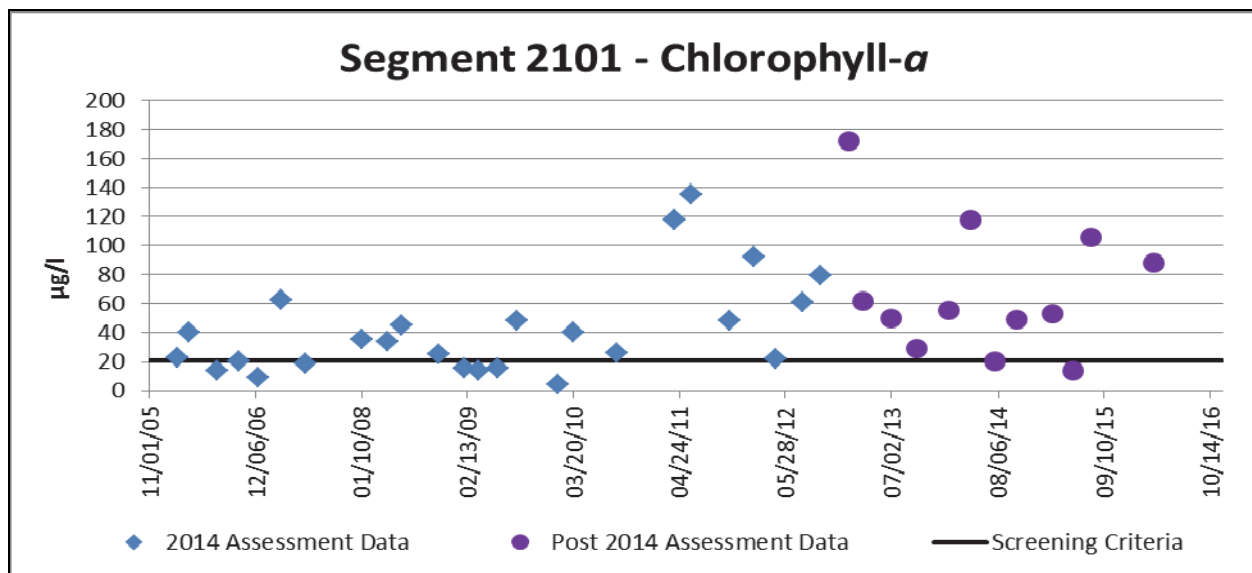
Segment 2101: Nueces River Tidal



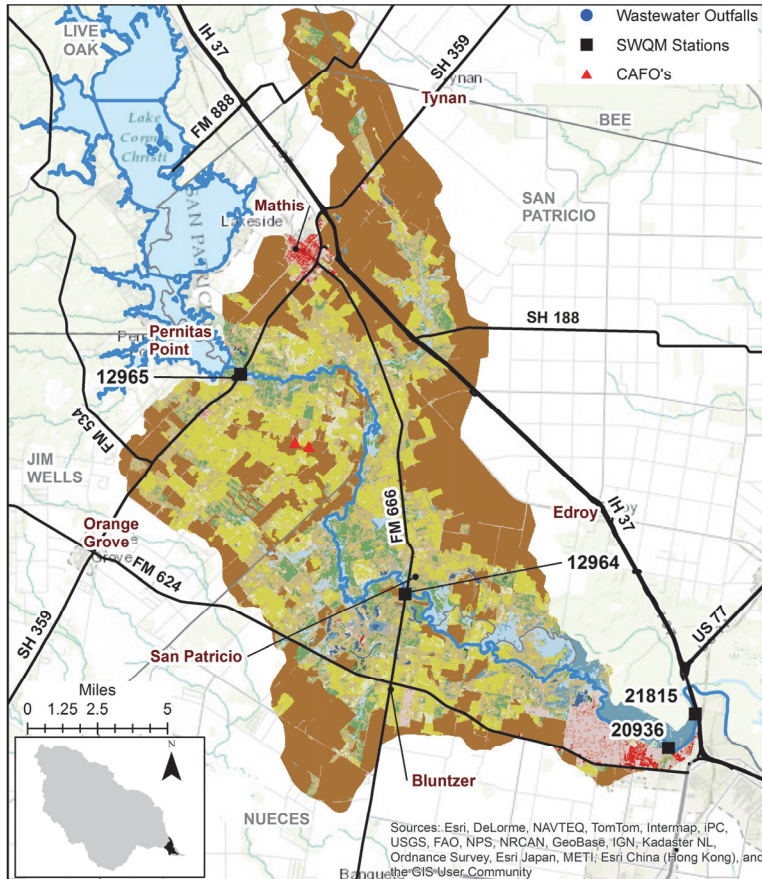
The tidal segment forms part of the county line between Nueces and San Patricio Counties. It flows 12 miles from Calallen Dam 1.7 km (1.1 miles) upstream of US 77 / IH 37 to its confluence with Nueces Bay. Its watershed is 175,301 acres. The City of Corpus Christi borders the south bank of the river. A large portion of the area north of the river is included in the Coastal Bend Bays and Estuaries Program's (CBBEP) Nueces Delta Preserve. The rest is owned by private ranches.

The segment is assessed as having a concern for chlorophyll-a. One possible explanation is that the tidal portion is not flushed on a regular basis. In general, the amount of water released from Lake Corpus Christi for freshwater inflows into the Nueces Estuary is based on the amount of water that has flowed into the reservoir system. Except during times of major flooding, the water more or less sloshes back and forth with tides. The Rincon Bayou Pipeline diverts some of the freshwater inflows to the upper delta instead of being passed down the river. This may also contribute to less frequent flushing of the river. All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.

The segment will most likely remain on the concerns list for chlorophyll-a based on the post 2014 assessment data.



Segment 2102: Nueces River Below Lake Corpus Christi

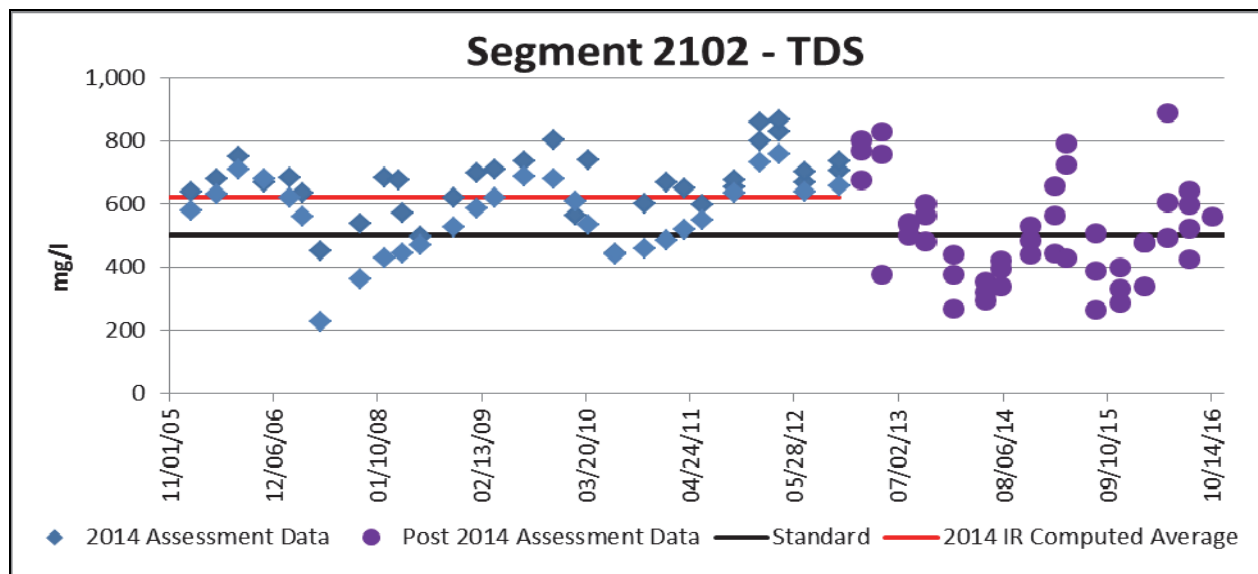


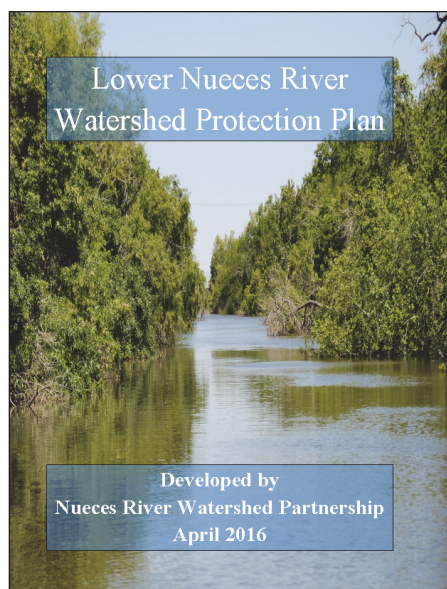
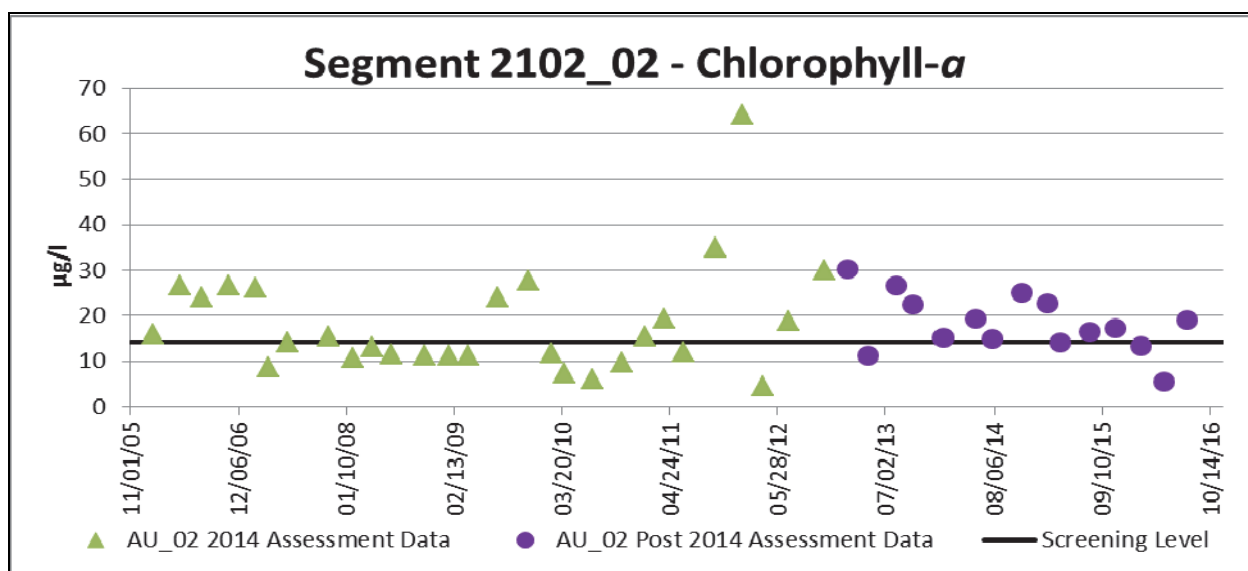
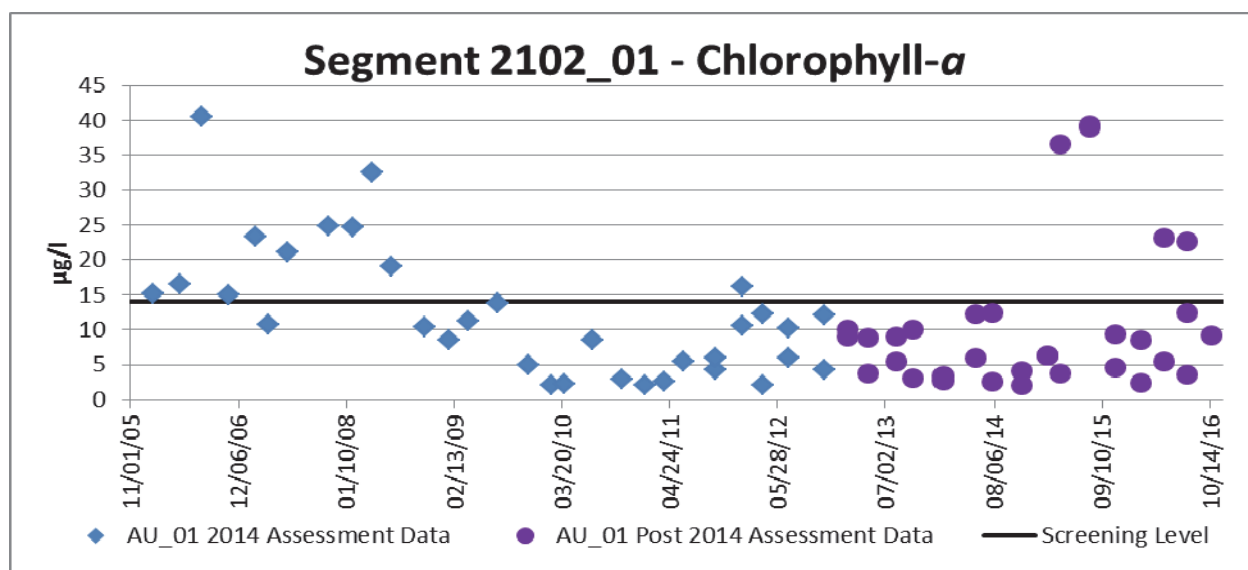
The segment forms part of the county line between Jim Wells and San Patricio Counties and between Nueces and San Patricio Counties. It flows 39 miles from Wesley Seale Dam at Lake Corpus Christi to Calallen Dam 1.7 km (1.1 miles) upstream of US 77 / IH 37. Its watershed is 116,863 acres. The segment is divided into two AUs; from the downstream end of the segment to the confluence with Javelin Creek (AU_01) and from the confluence of Javelin Creek to Wesley Seale Dam (AU_02).

The City of Corpus Christi borders the south bank of the river in the lower 10 miles of the segment. The City conducts its own water quality monitoring as this is the primary drinking water source for the area. There are several freshwater intakes in the Calallen Pool just above the Saltwater Barrier Dam. The upper half of the segment is primarily private ranches and farms. There are numerous, active and inactive, sand and gravel pits in the lower half.

The segment has been impaired for TDS since the 2012 Integrated Report. The post 2014 assessment concentrations appear to be decreasing, but they need to continue to decrease for several more years before this segment can be removed from the 303(d) List.

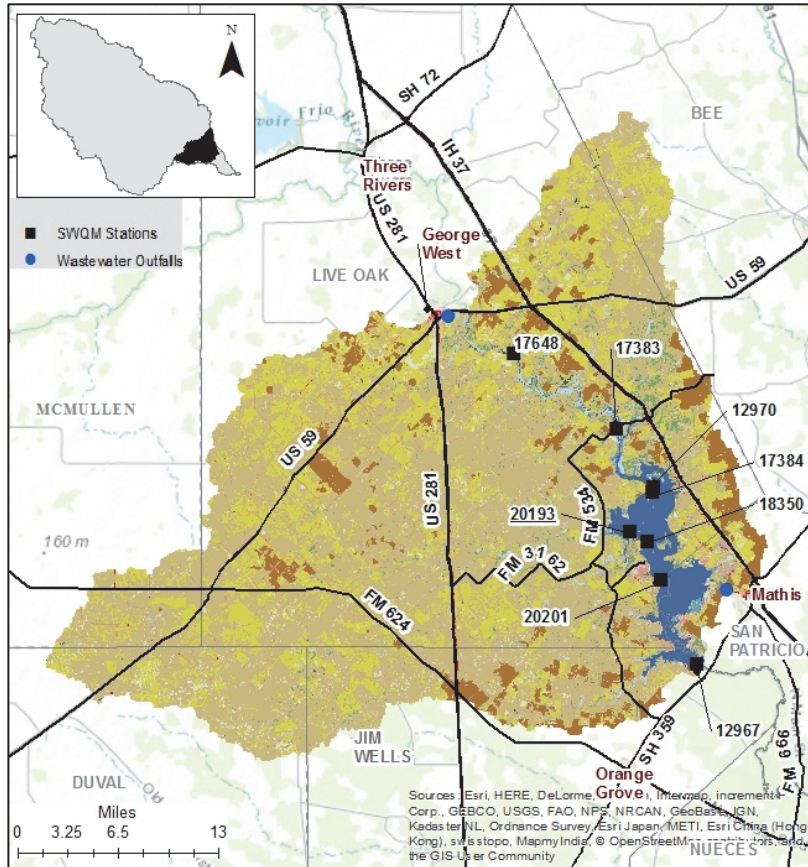
AU_01 and AU_02 are listed as having a concern for chlorophyll-a. Both AUs will likely remain listed as having this concern based on the post 2014 data. All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.





The Lower Nueces River Watershed Protection Plan (WPP) is being implemented for this section of the river. The WPP was approved by the US Environmental Protection Agency in April 2016. Visit <http://www.nuecesriverpartnership.org/> for more information.

Segment 2103: Lake Corpus Christi



Lake Corpus Christi is formed by Wesley Seale Dam near Mathis and impounds the Nueces River. It is defined by the 94' above mean sea level (MSL) elevation. The lake covers portions of Live Oak, Jim Wells, and San Patricio Counties. The segment extends upstream to a point 100 m (110 yards) upstream of US 59 in Live Oak County. Its watershed is 505,550 acres. When the lake is near capacity, the river levels are influenced by the lake level as far north as Airport Road north of George West.

The segment is divided into six AUs; mid-lake near the dam (AU_01), the area approximately 4 miles SE of FM 3162 and FM 534 intersection near the western shore (AU_02), the western arm of the lake near the Lagarto Creek Inlet (AU_03), the upper portion of the lake on the opposite shore from Hideaway Hills (AU_04), the upper arm of the lake at FM 534 crossing (AU_05), and the remainder of the segment (AU_06).

The City of George West is located near the upstream end of the segment. There are many smaller communities and individual homes surrounding the lake and along the river.

The segment is listed as being impaired for TDS as a result of the 2010 Texas Integrated Report. A proposed standards revision from 500 mg/l to 750 mg/l is under consideration. If

and when approved, the lake would meet the proposed standard and be removed from the 303 (d) List. Post 2014 assessment data have been collected in AU_01, AU_04, and AU_06 and appear to meet the proposed standard. TDS levels tend to increase as lake levels drop and can be attributed to evaporation of surface waters that concentrate the dissolved solids. The water level graph displays the lake percent of capacity from December 1, 2005 through November 30, 2016.

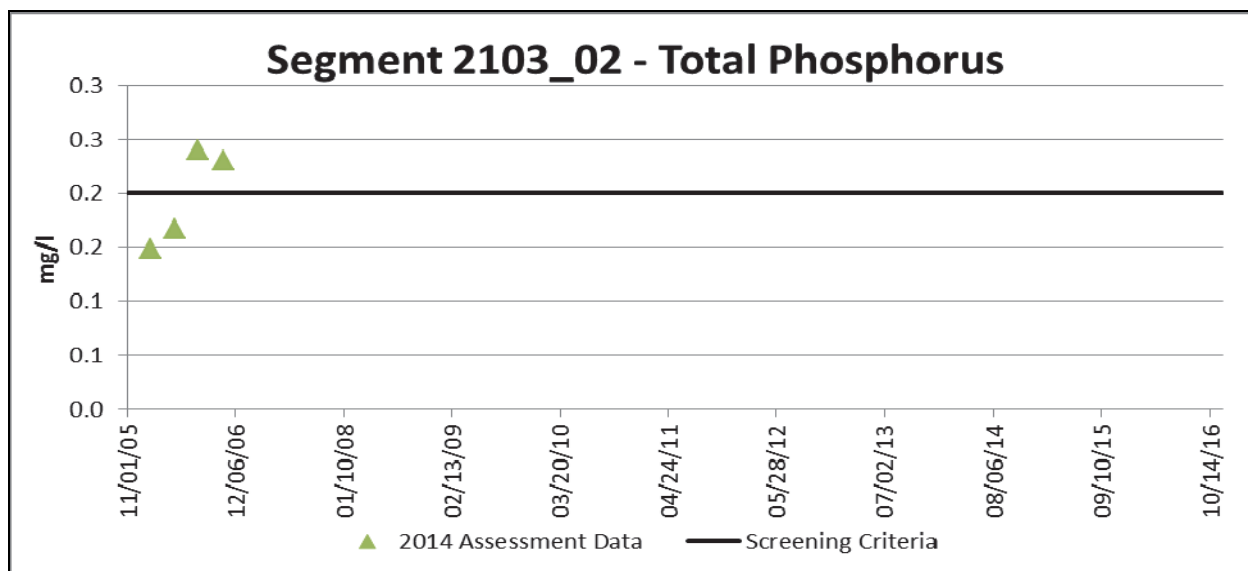
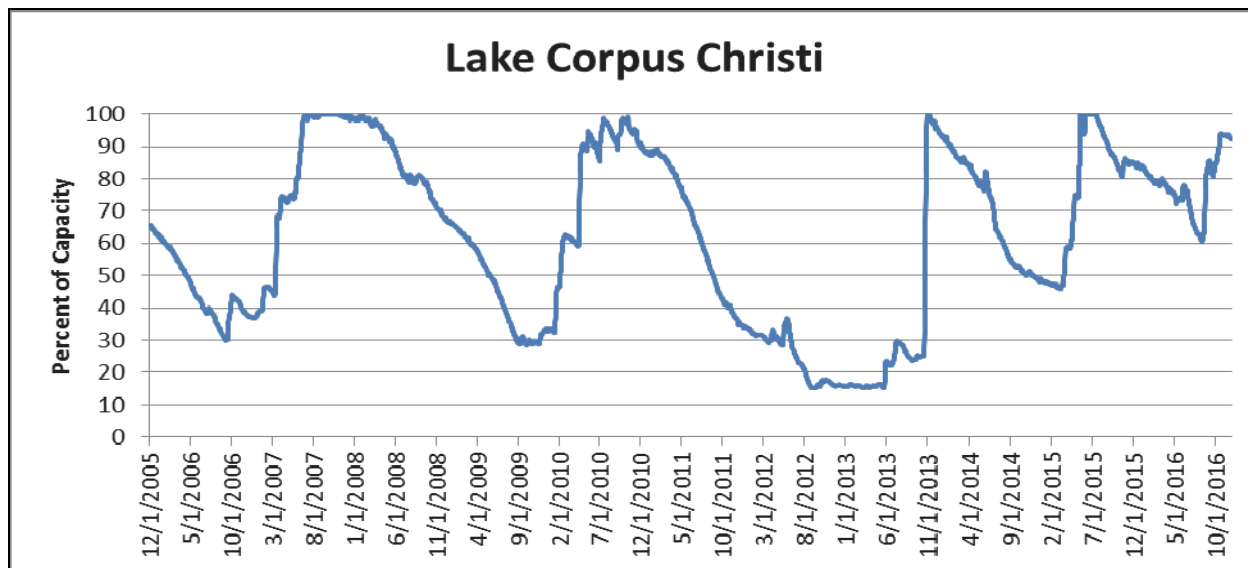
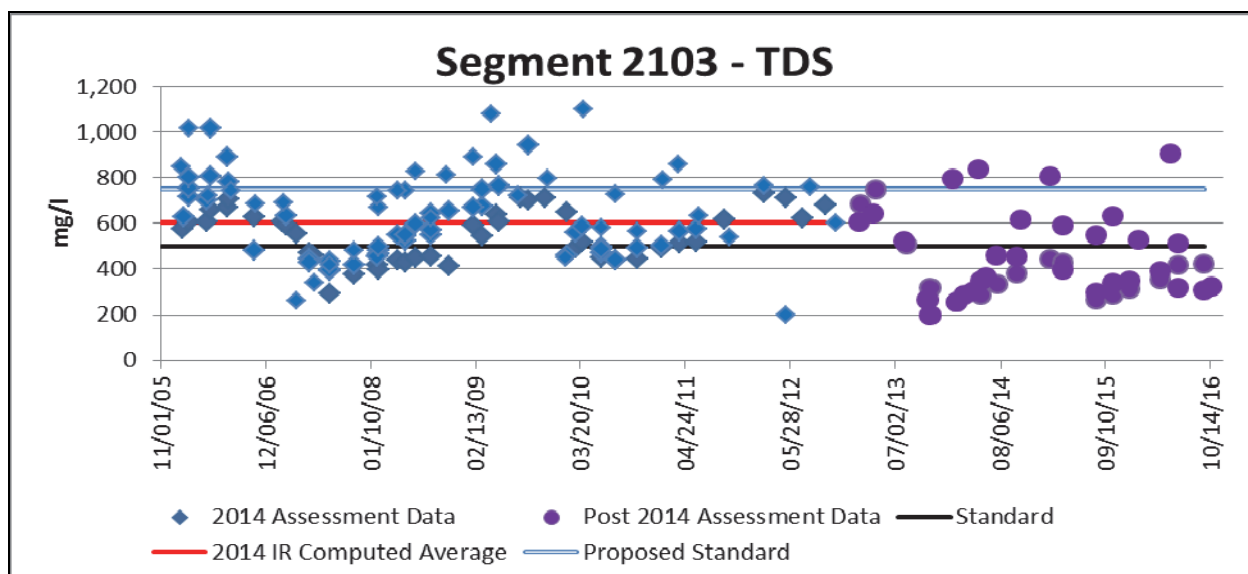
The segment is also listed as having concerns for total phosphorus (AU_02, AU_04 and AU_06). AU_04 and AU_06 will likely remain listed as having total phosphorus concerns based on post 2014 assessment sampling results. No additional sampling has taken place in AU_02.

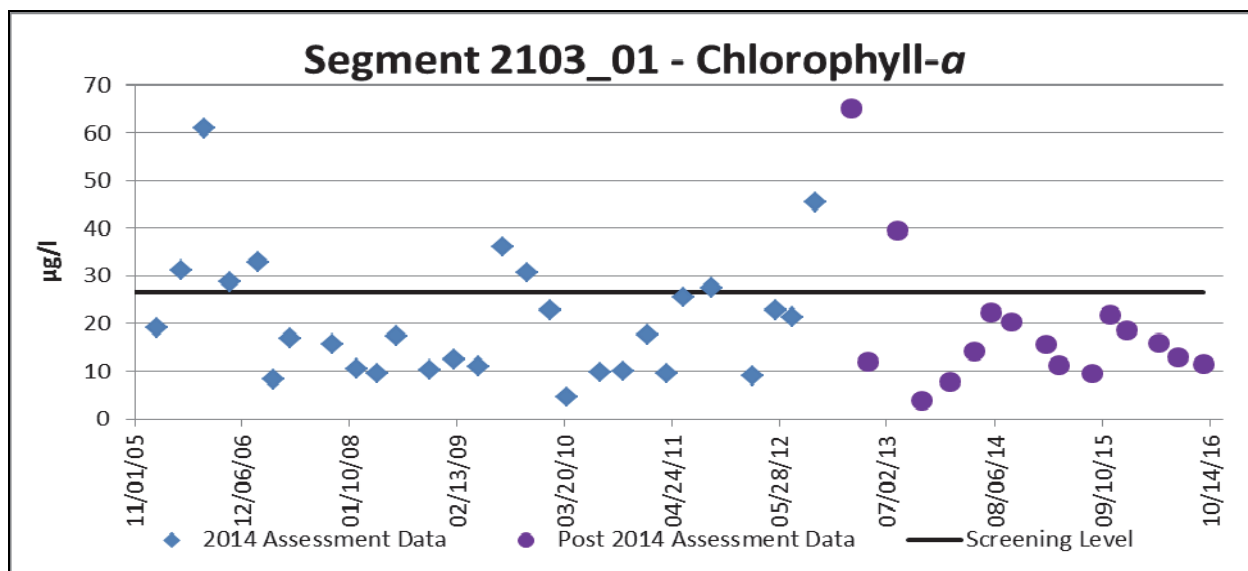
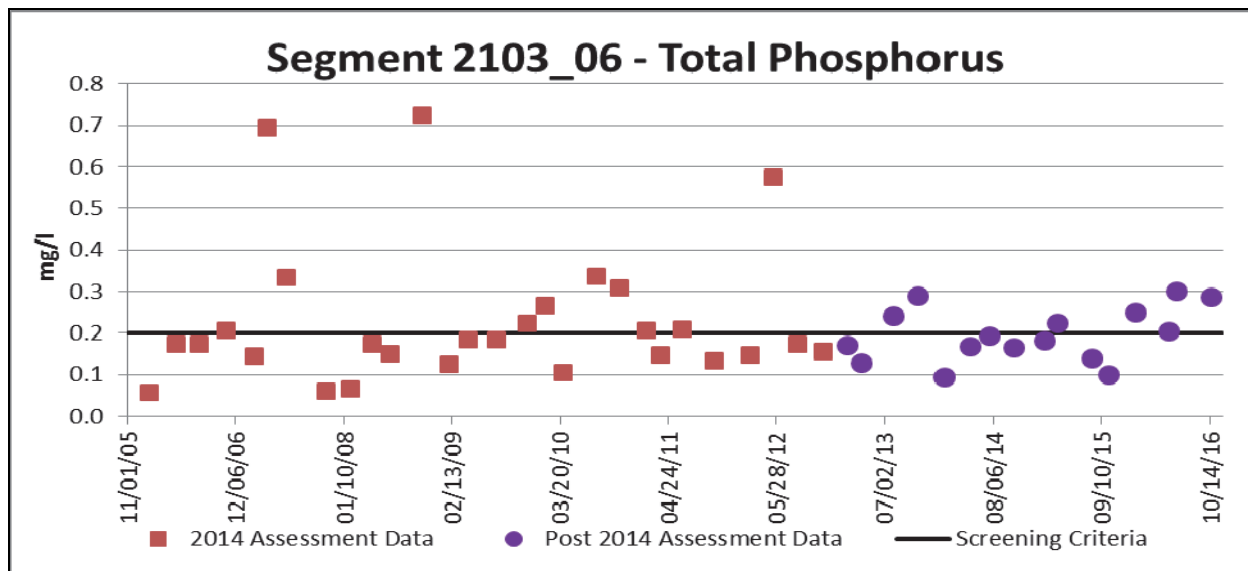
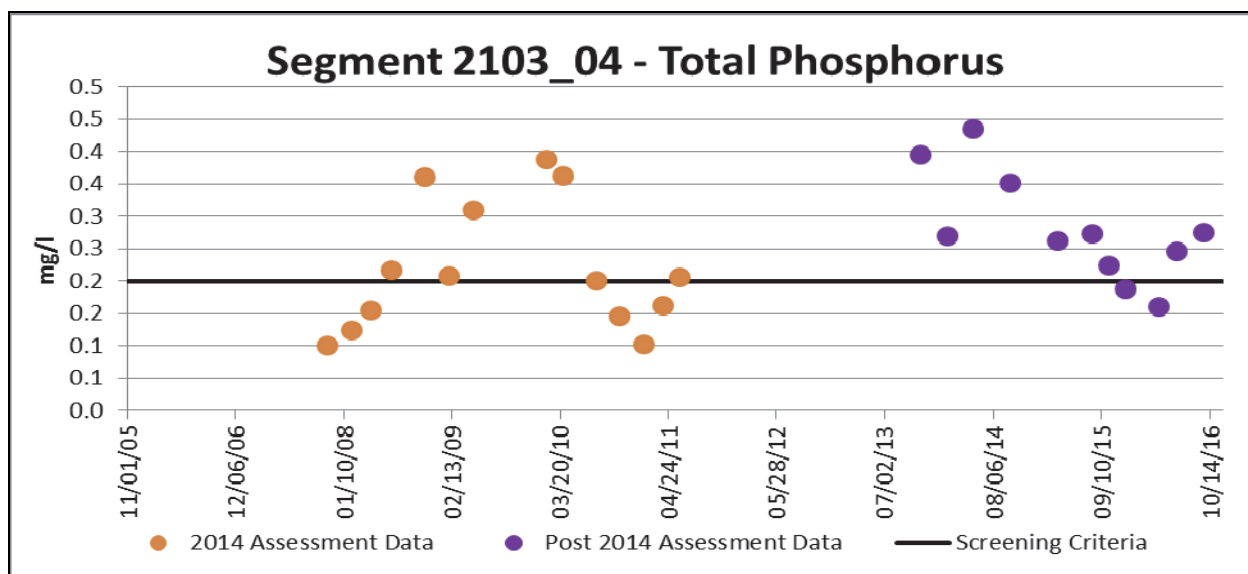
The segment is also listed as having concerns chlorophyll-a (AU_01, AU_02, and AU_06). For AU_01, the concentrations appear to be decreasing, and may be removed as a concern in future assessments. AU_06 will likely remain listed as having chlorophyll-a concerns based on post 2014 assessment sampling results. No additional sampling has taken place in AU_02.

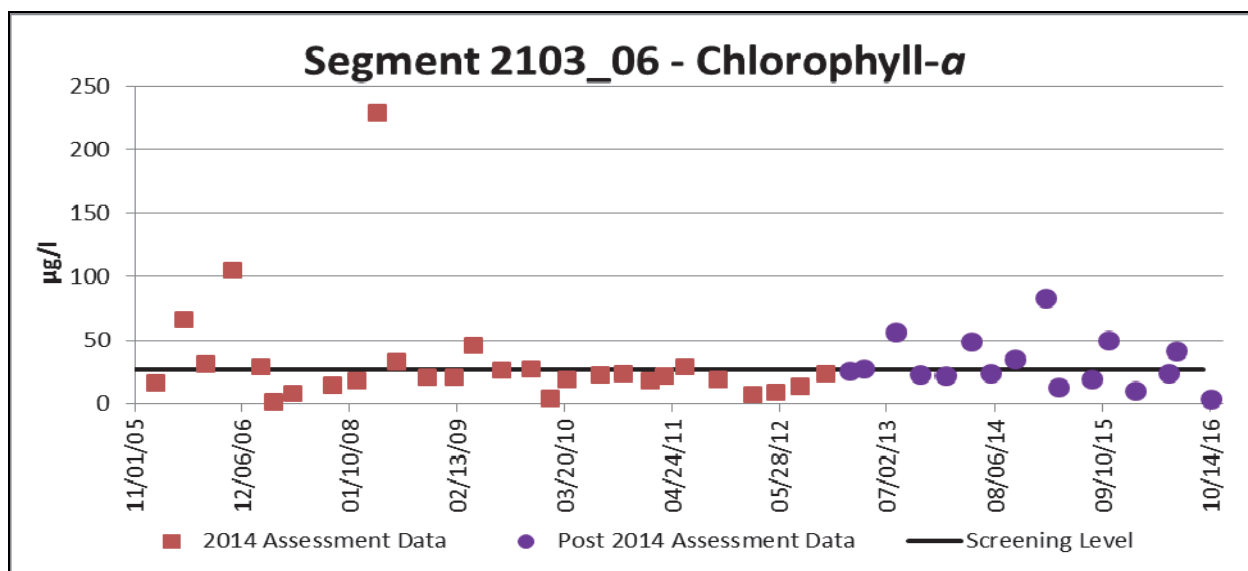
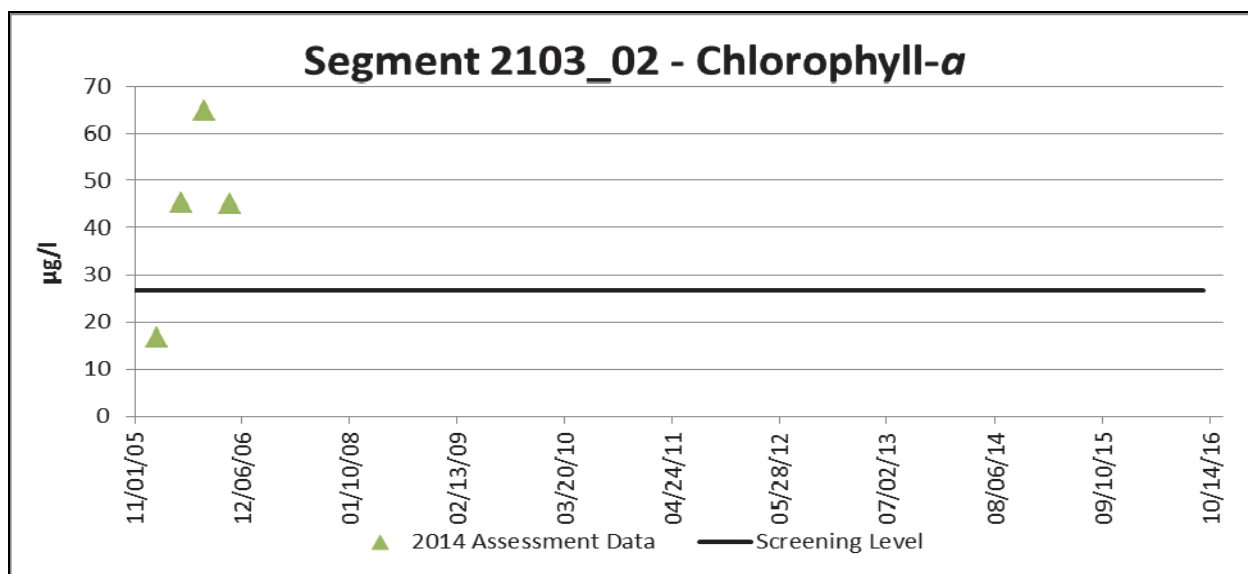
All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.

Additional information about the reservoir is available at

http://www.twdb.texas.gov/surfacewater/rivers/reservoirs/corpus_christi/index.asp.

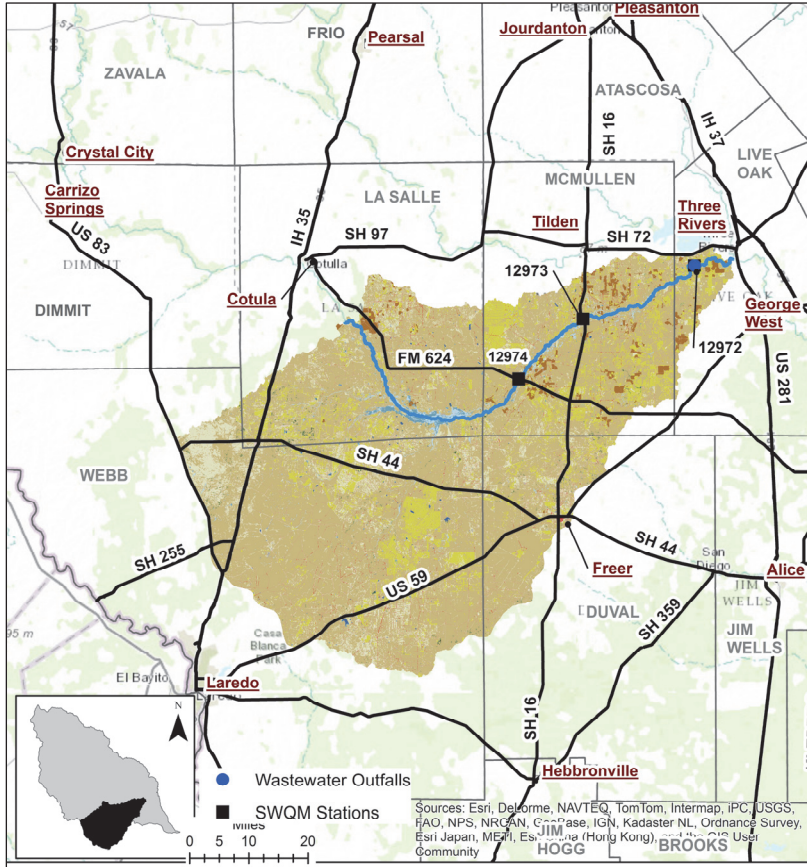






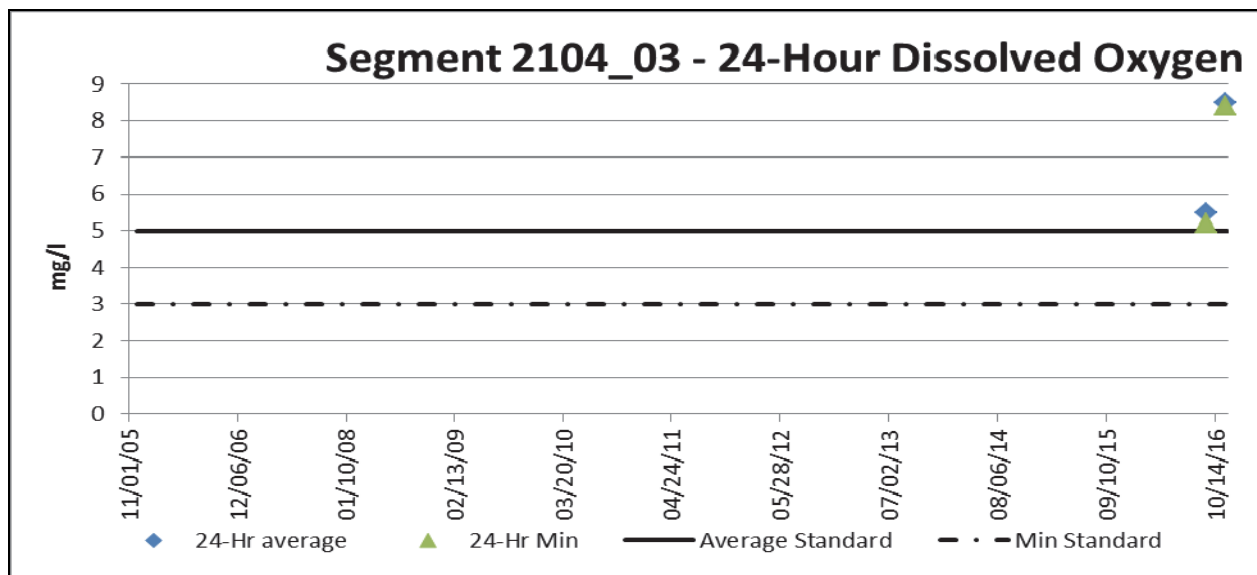
Lake Corpus Christi near Wesley E. Seale Dam

Segment 2104: Nueces River Above Frio River

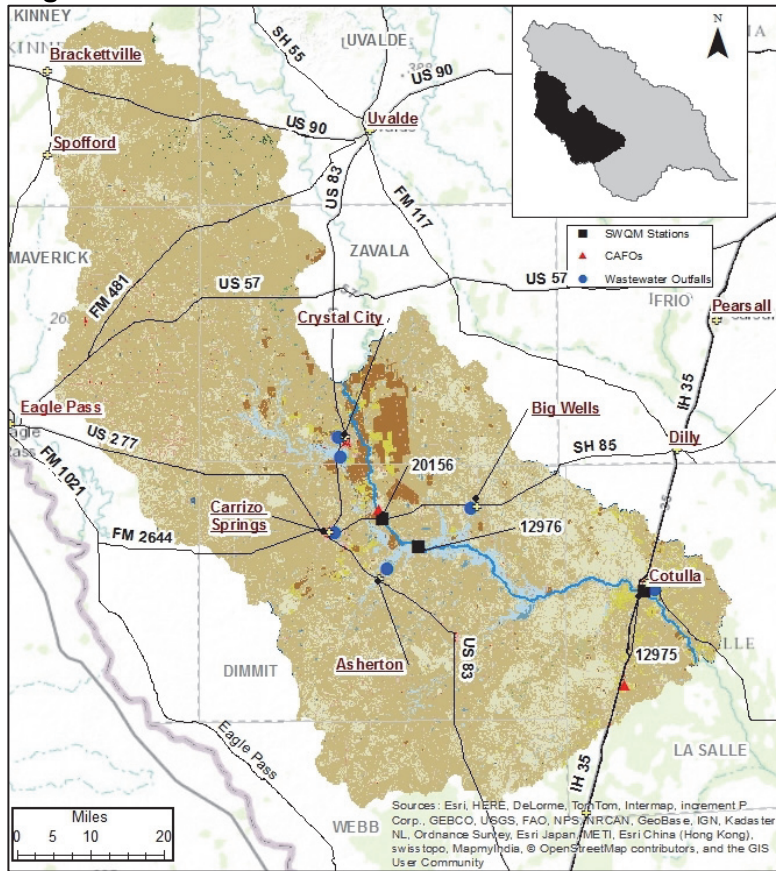


The segment flows 91 miles from Holland Dam in La Salle County to its confluence with the Frio River in Live Oak County. It is divided into three AUs; from the downstream end of the segment to the confluence with Dragon Creek (AU_01), from the confluence with Dragon Creek to the confluence with Guadalupe Creek (AU_02), and from the confluence with Guadalupe Creek to Holland Dam (AU_03). Its watershed is 1,876,877 acres. The area is dominated by large ranches.

The depressed DO concern for the minimum screening level is listed in the 2014 Integrated Report for AU_03. NRA has been able to collect two 24-Hr DO measurements in the first quarter of FY 2017. Both events met both the 24-Hr minimum and 24-Hr average. NRA will attempt to conduct enough 24-Hr DO monitoring to fully evaluate the concern, provided there is sufficient flow. All the other assessed water quality parameters met their assessment criteria in the 2014 Integrated Report. Biological impairments and concerns identified in the 2010 Texas Integrated Report are being carried forward in the 2014 Integrated Report. TCEQ will be conducting two aquatic life biological sampling events. The first one is scheduled for June 2017.



Segment 2105: Nueces River Above Holland Dam



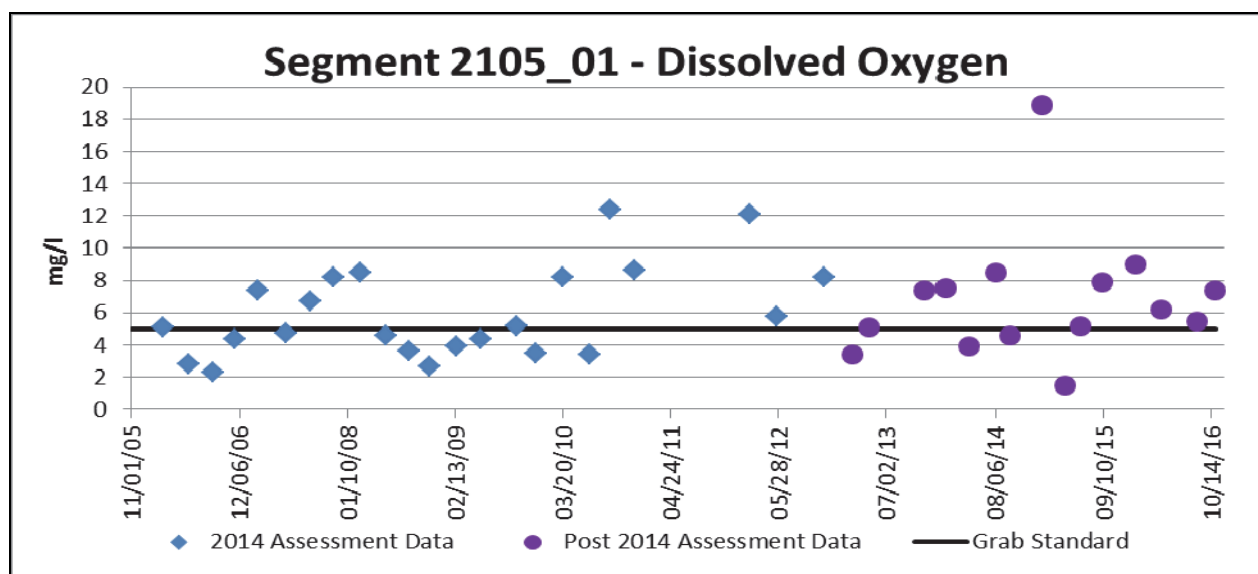
The segment flows 78 miles from FM 1025 in Zavala County to Holland Dam in La Salle County. It is divided into three AUs; from the downstream end of the segment to the confluence with Sauz Mocho Creek (AU_01), from the confluence with Sauz Mocho Creek to the confluence with Line Oak Slough (AU_02), and from the confluence of Live Oak Slough to the upstream end. (AU_03). Its watershed is 2,200,065 acres.

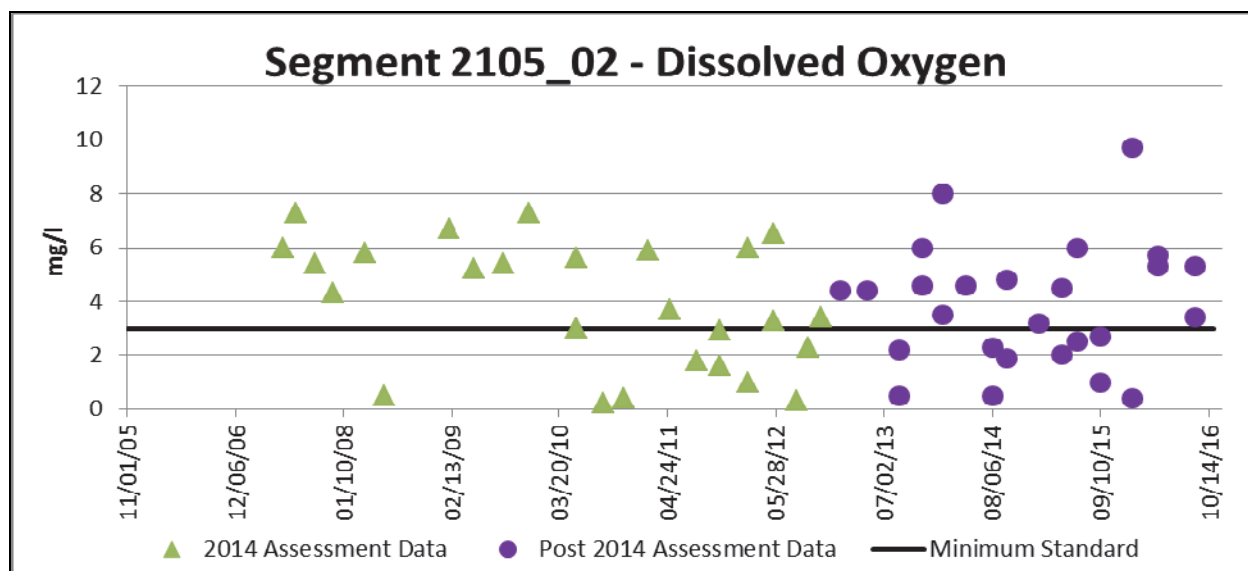
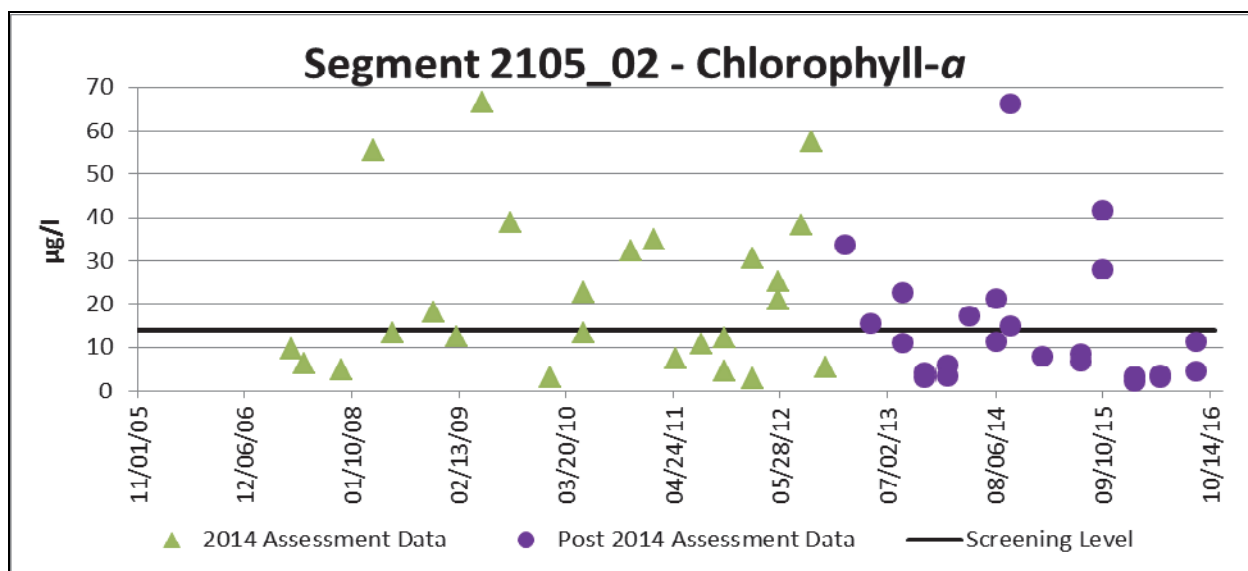
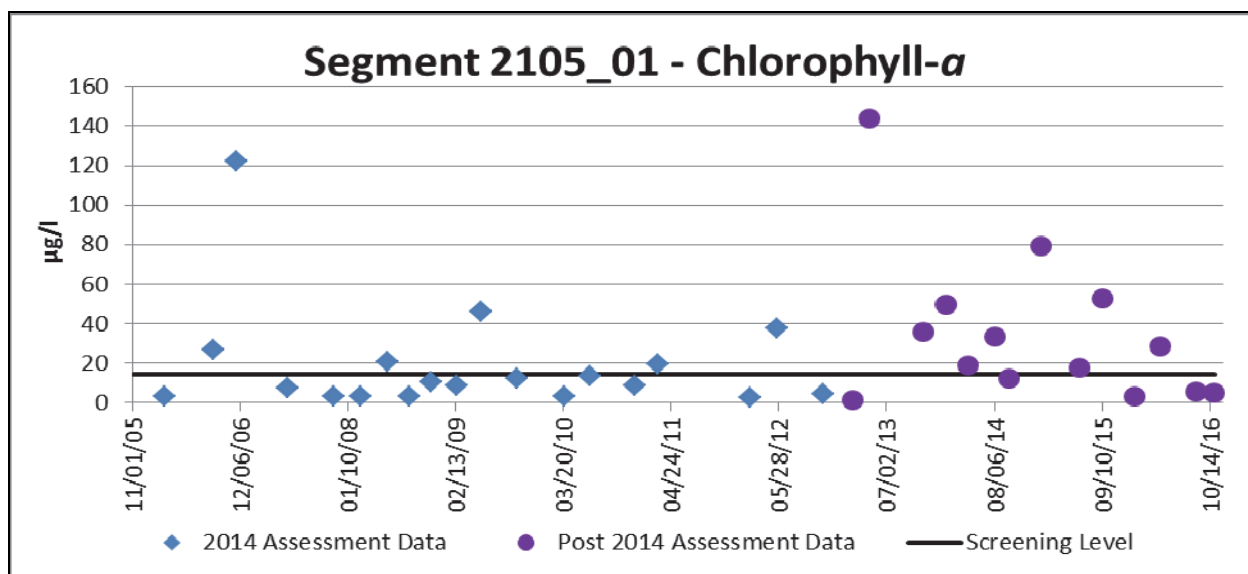
The Cities of Crystal City, Carrizo Springs, Asherton, Big Wells, and Cotulla are all in this watershed. Each of these cities has WWTPs that discharge into the river.

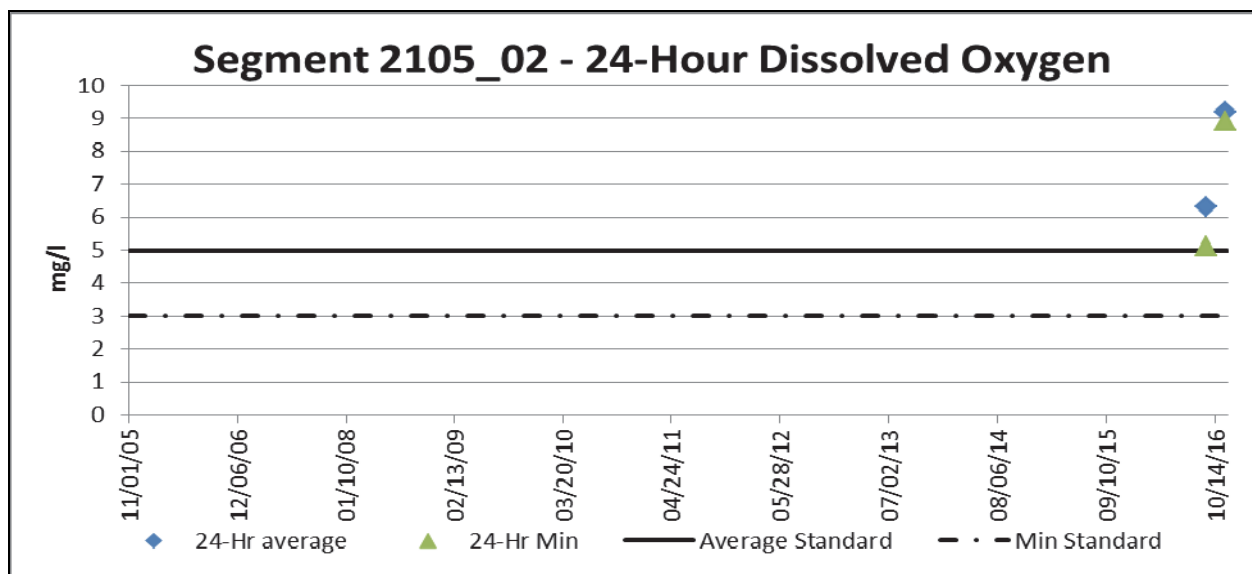
AU_01 has concerns for depressed DO for the grab screening level and for chlorophyll-a. Post 2014 assessment data has periods of DO values below the grab standard, but a majority of the values meet the standard. Chlorophyll-a will most likely remain a concern based on the post 2014 assessment data.

AU_02 is impaired for depressed DO at the grab minimum and a concern for chlorophyll-a. The DO impairment will most likely remain based on the post 2014 assessment data. Two 24-Hr DO's have been conducted at Station 12976 during the first quarter of 2017. Both met the 24-Hr average and 24-Hr minimum. NRA will continue to conduct 24-Hr monitoring at this site until the impairment can be fully assessed. Chlorophyll-a will most likely remain a concern based on the post 2014 assessment data.

All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.

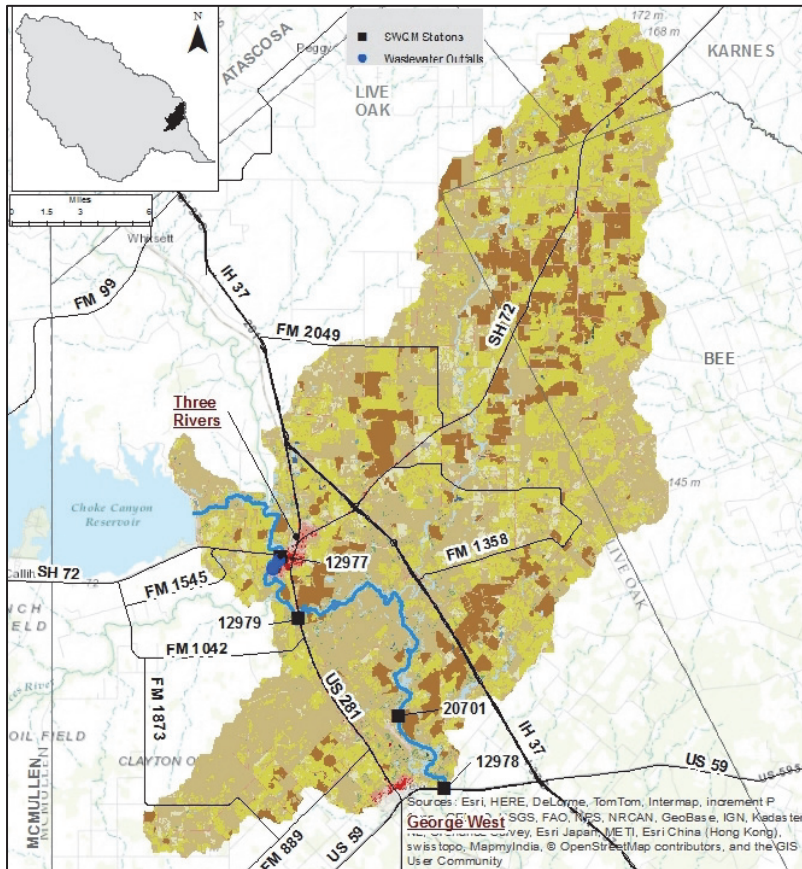






Nueces River at FM 190 north of Asherton

Segment 2106: Nueces River / Lower Frio River



The segment flows 27 miles from Choke Canyon Reservoir Dam to just upstream of US 59. It is divided into two AUs; the Nueces River from the downstream end to the confluence with the Frio River (AU_01), and the Frio River from the confluence with the Nueces River to the Choke Canyon Reservoir Dam (AU_02). Its watershed is 204,055 acres.

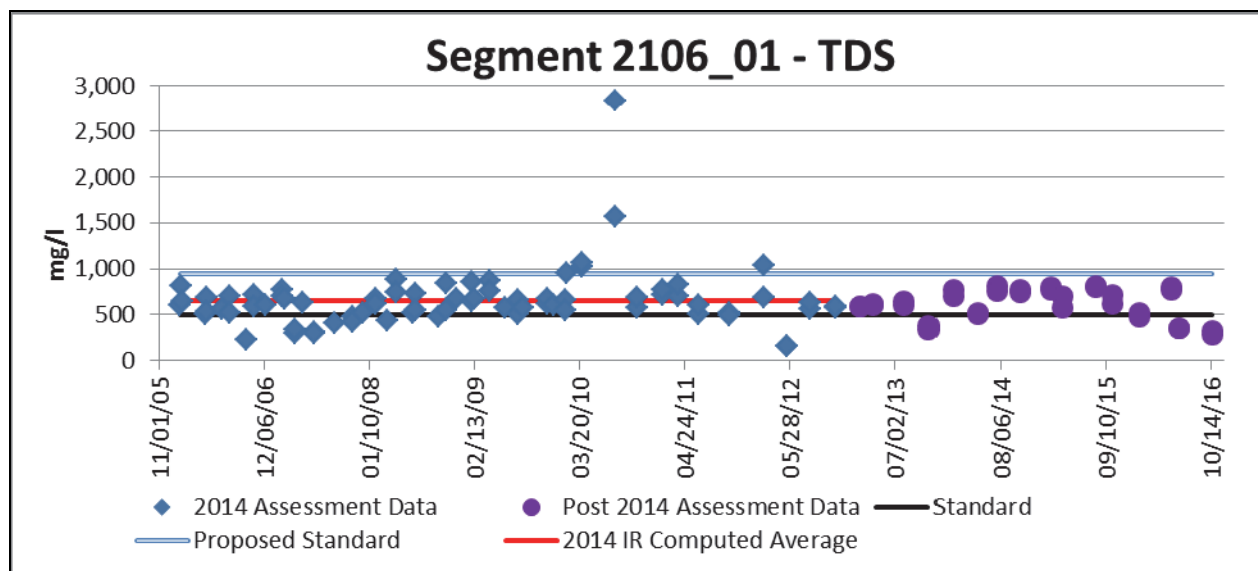
The City of Three Rivers and the Valero Refinery WWTPs discharge to the Frio River below SH 72.

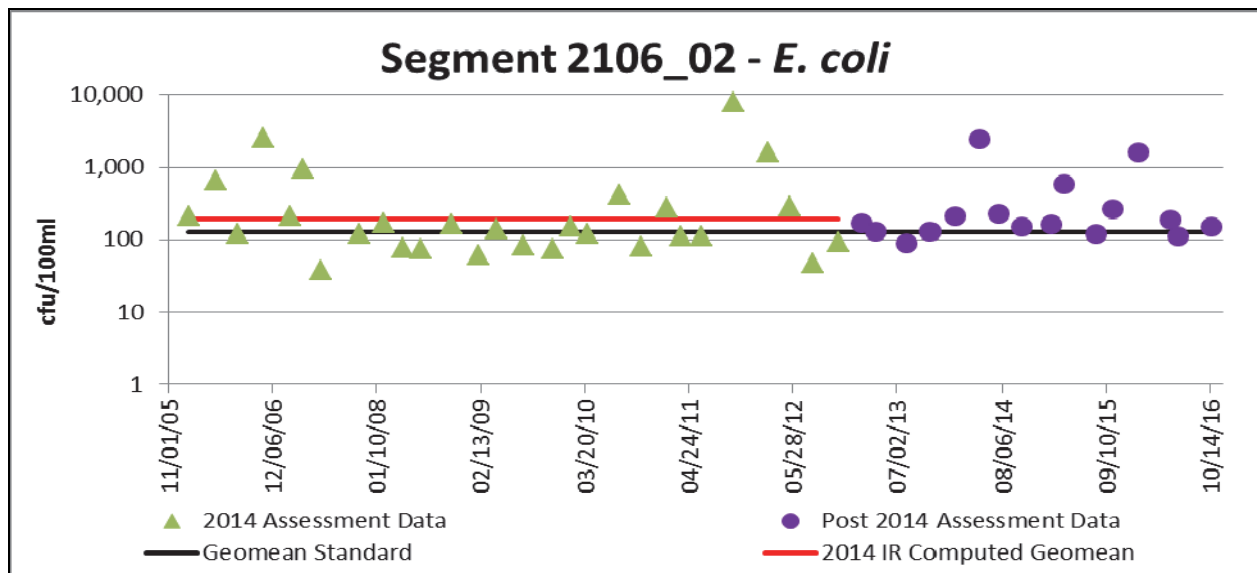
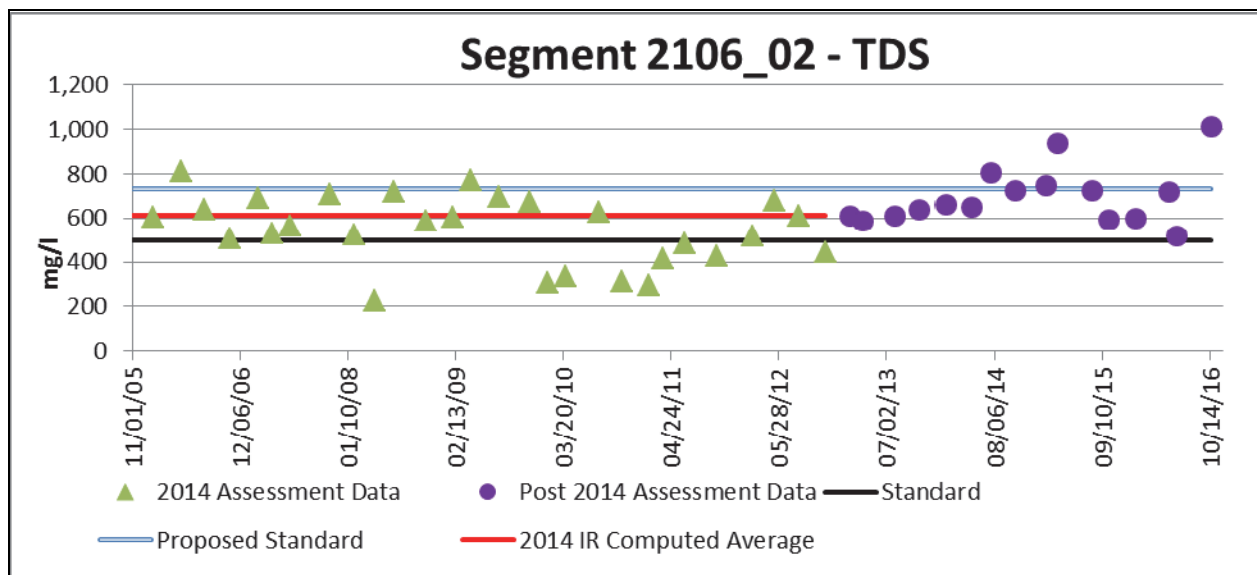
Both AUs have been listed as being impaired for TDS since the 2006 Assessment. The standard is based on the average of all values and is currently 500 mg/l for both AUs. Alan Plummer and Associates, Inc., working on behalf of the City of Corpus Christi, worked with TCEQ to develop revised and separate standards for the two distinct portions of this segment. The proposed changes will increase the TDS standard to 950 mg/l in the downstream portion (AU_01) and 735 mg/l in the upstream portion (AU_02). If and when approved, AU_01 will most likely meet the proposed standard and be removed from the 303(d) List. Several of the post 2014 assessment data in AU_02 exceed the proposed standard, and may possibly remain listed for TDS.

Standards revisions are also being proposed for chloride and sulfate in the segment. Again, the standard is based on the average of all values. For AU_01, chloride would increase from 250 mg/l to 350 mg/l and sulfate would decrease from 250 mg/l to 165 mg/l. For AU_02, chloride would increase from 250 mg/l to 285 mg/l and sulfate would decrease from 250 mg/l to 145 mg/l.

A bacteria impairment for AU_02 was identified in the 2014 Assessment. It will most likely remain listed for bacteria based on the post 2014 assessment data.

All the other assessed parameters met their assessment criteria in the 2014 Integrated Report.





Frio River at Tips Park south of SH 72 near Three Rivers

[illegible]

AU_01 and AU_02 have been listed as being impaired for bacteria for primary contact recreation since the 1996 Assessment. Sampling for a TMDL to address the bacteria impairment was conducted between 2002 and 2004. The sampling confirmed the impairment and an RUAA was conducted by Texas Institute for Applied Environmental Research (TIAER) at Tarleton State University in 2006 and 2007. AU-01 will most likely remain listed for bacteria based on the post 2014 assessment data. Routine sampling on AU_02 was picked up by NRA beginning the last quarter of FY 2016. Based on the limited post 2014 assessment data, the bacteria impairment on AU_02 will most likely be carried forward.

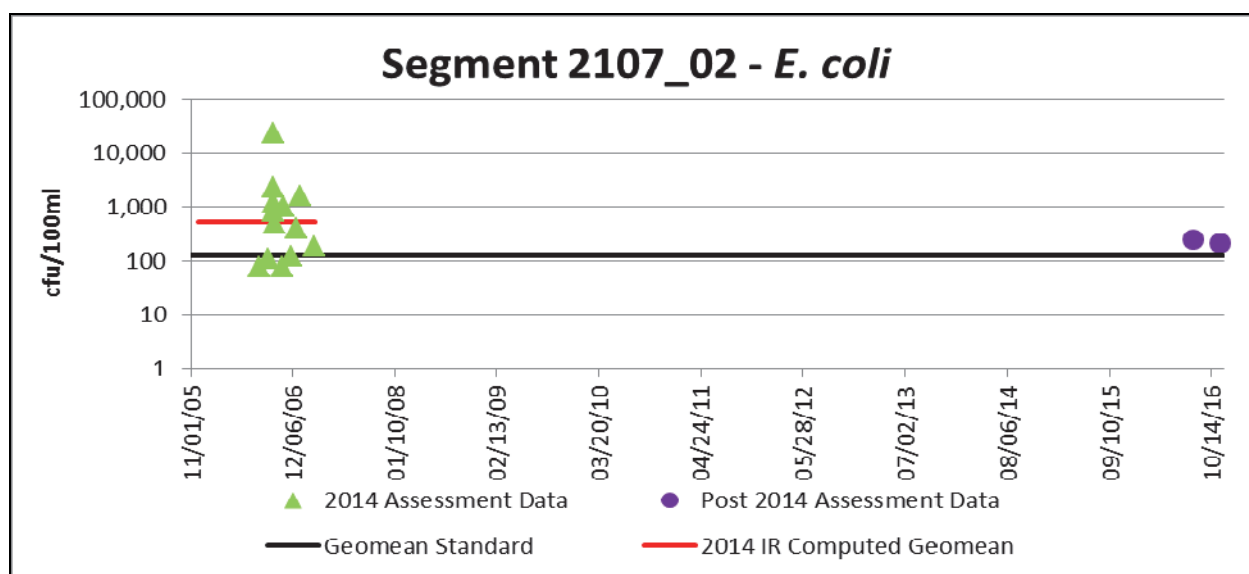
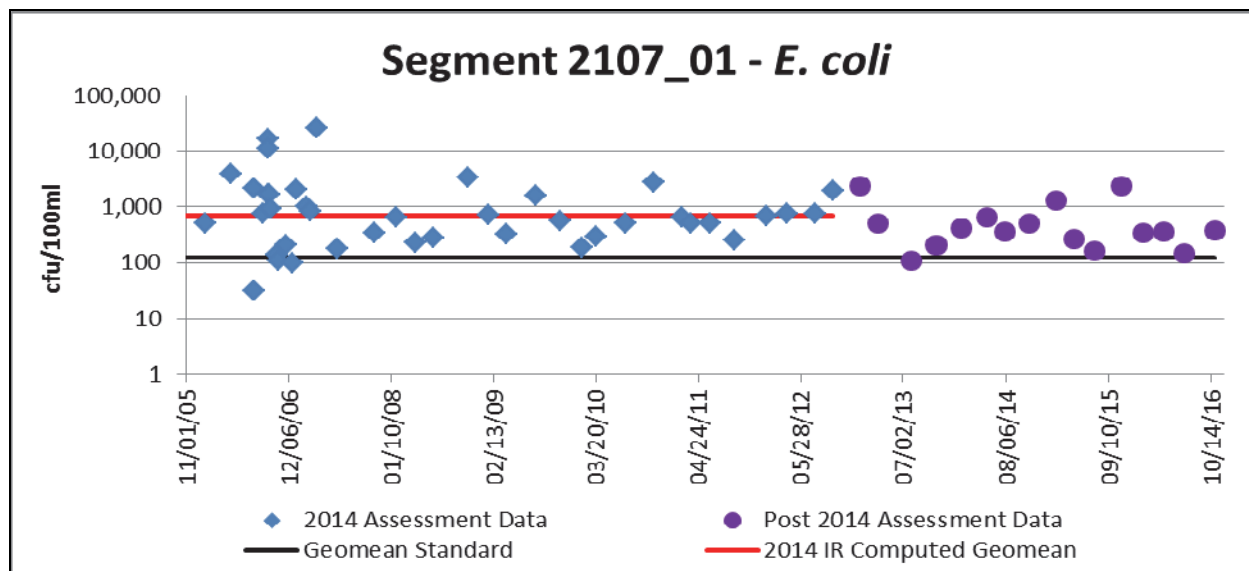
Assessment. Additional 24-Hr DO sampling to address concerns regarding potential violations or findings of a concern for low DO at the grab screening station. The two recent DO measurements on AU_02 are below the minimum required for aquatic life impairments for 24-Hr DO average in AU_02 and 7-day average. The two recent DO measurements on AU_03 are below the minimum required for aquatic life as has not been adequate flow in AU_03 to conduct 24-Hr DO sampling to allow for it.

Nitrate and total phosphorus are concerns in AU_02. Based on the limited post 2014 assessment data, these concerns most likely will be carried forward.

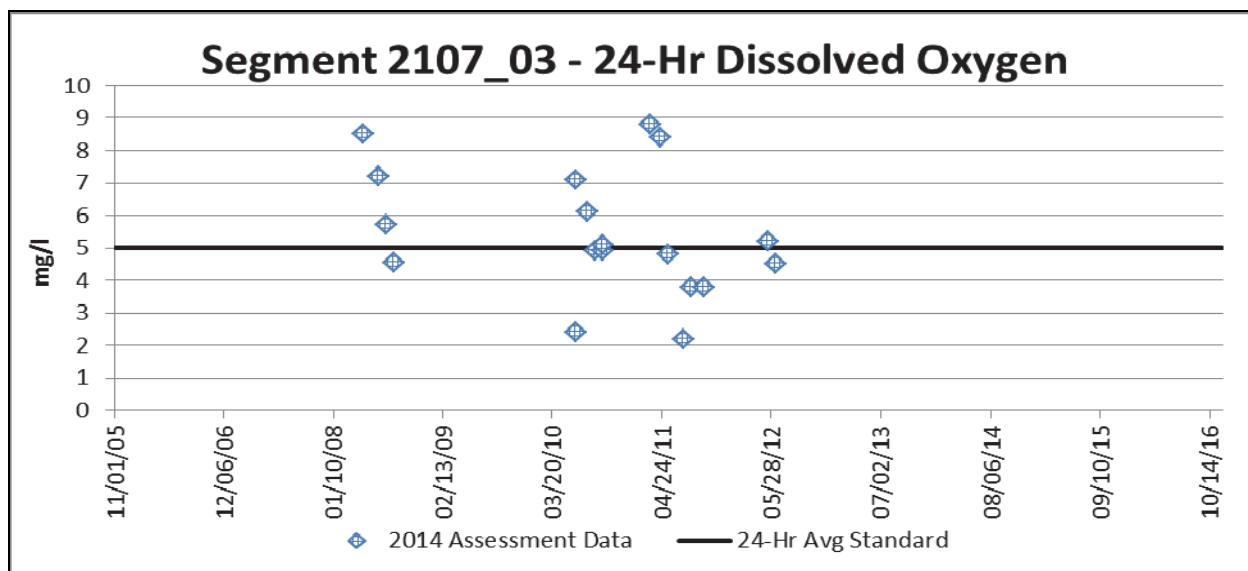
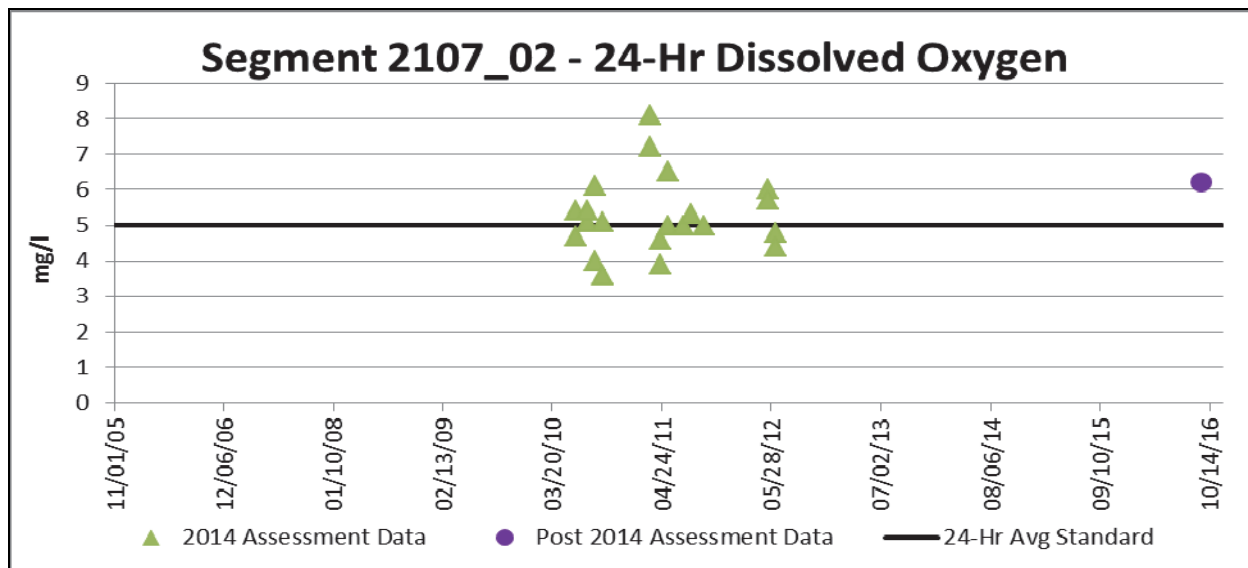
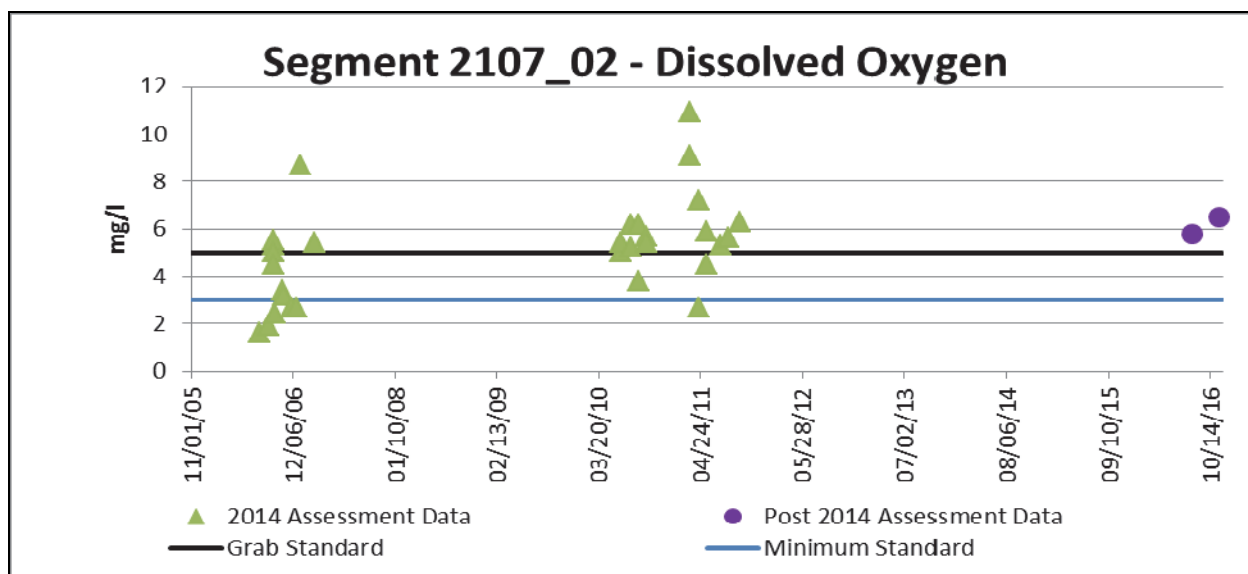
The TMDL and other extensive sampling that has taken place on this segment has resulted in some proposed standards revisions as well as changes to the segment descriptions. If and when approved:

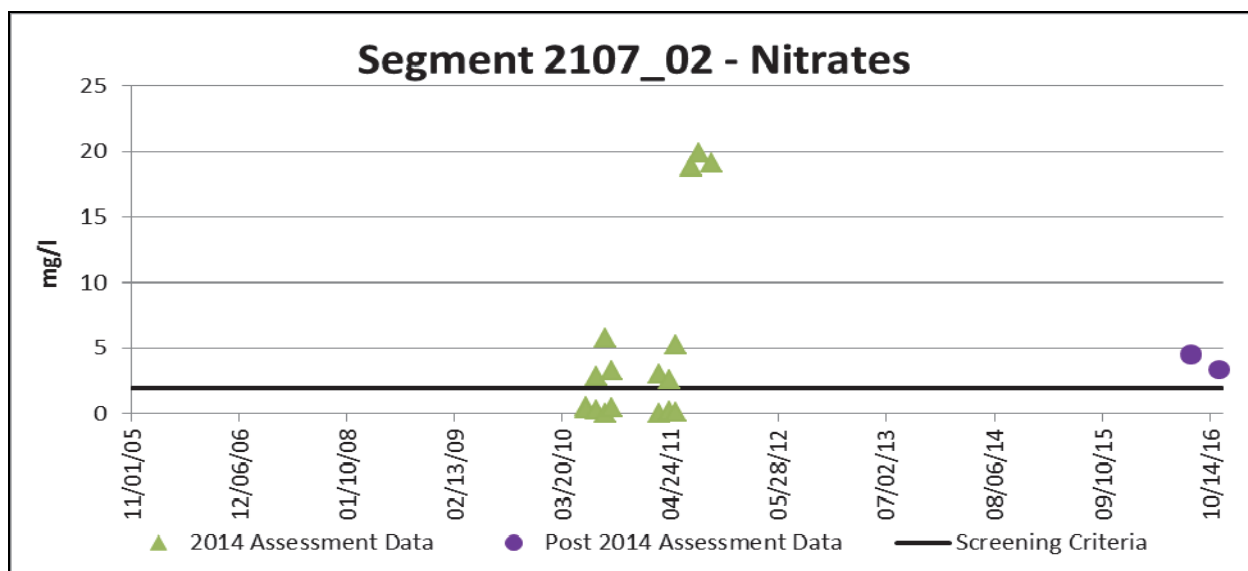
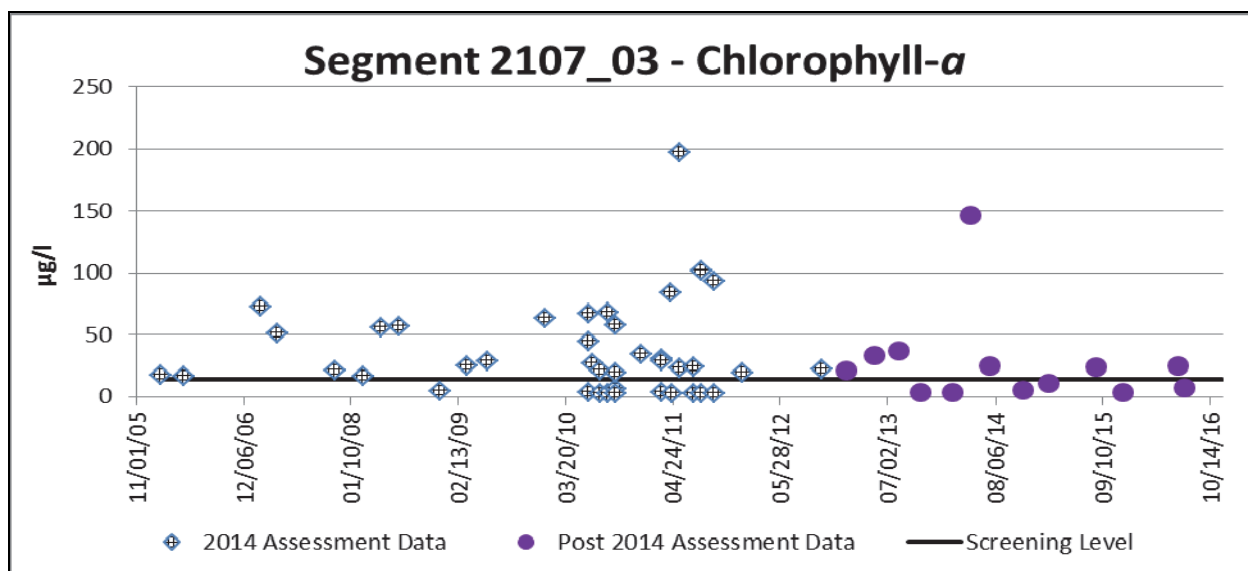
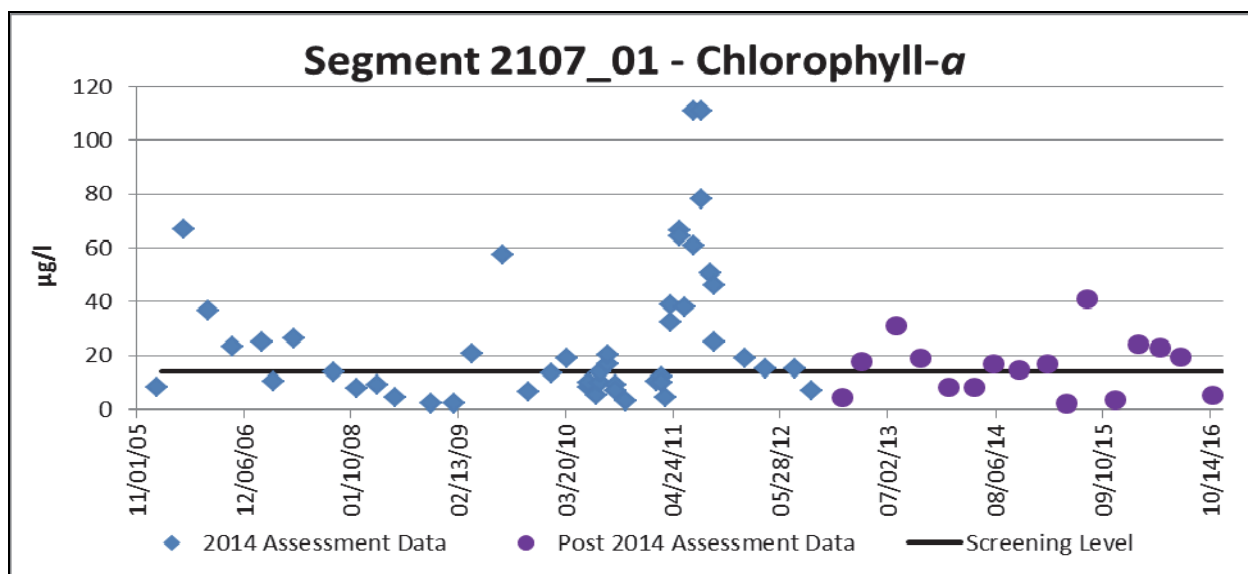
- 32

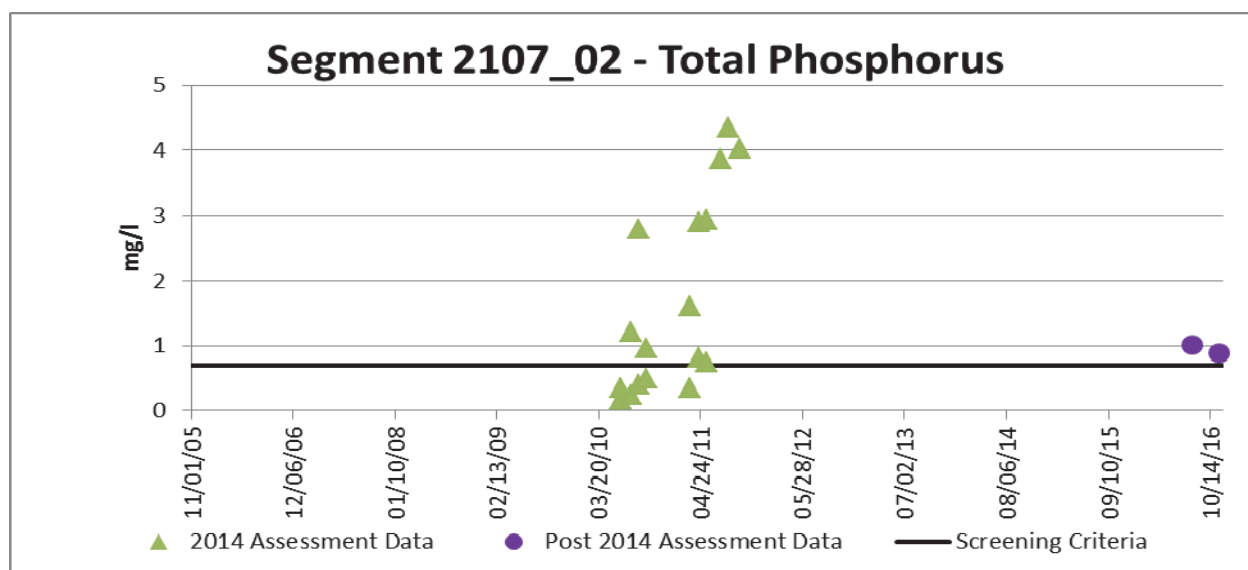
Additional proposed standards revisions for Segment 2107 include chloride from 600 mg/l to 400 mg/l, sulfate from 500 mg/l to 300 mg/l, and TDS from 1,500 mg/l to 1,650 mg/l. The proposed standards for Segment 2118 for chloride, sulfate, and TDS are 350 mg/l, 700 mg/l, and 1,550 mg/l, respectively.



Atascosa River at FM 541





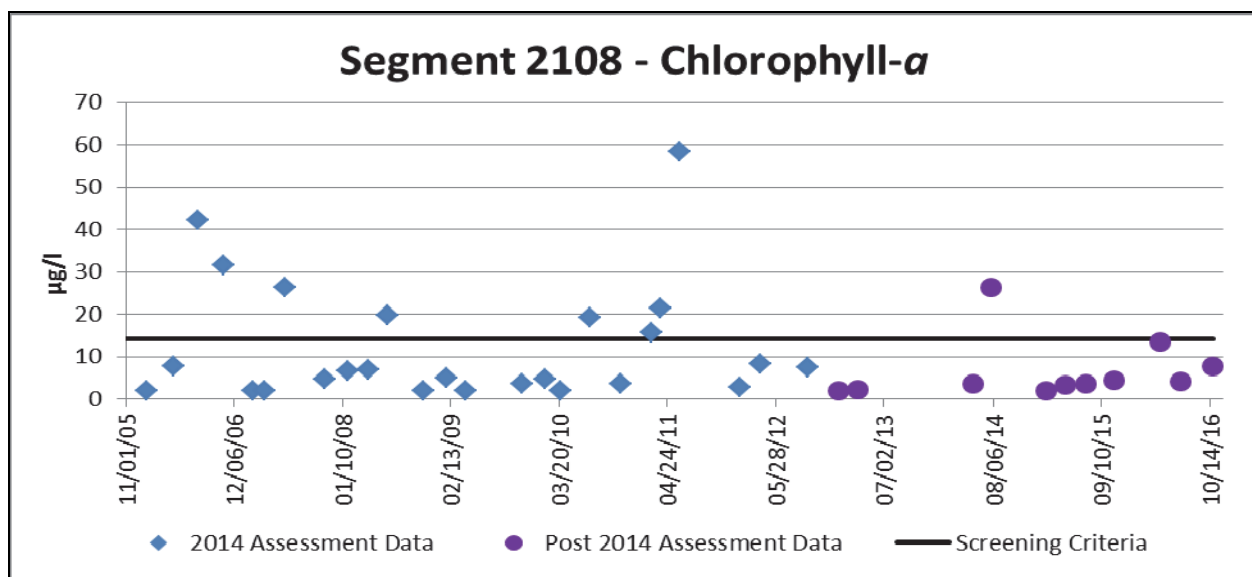


Atascosa River at FM 99

[illegible]

AU_01 also has a concern for chlorophyll-a. Based on the post 2014 Assessment data, the overall concentrations appear to be decreasing.





San Miguel Creek at SH 16

Legend:

- SWQM Stations (Black square)
- Waste Water Outfalls (Blue circle)
- CAFOs (Red triangle)

Map Labels:

- Counties:** UVALDE, MEDINA, FRIO, ZAVALA, DIMMIT
- Cities/Towns:** Sabinal, Uvalde, La Pryor, Pearsall, Dilley, Hondo
- Roads:** US 90, US 57, FM 117, FM 140, FM 1025, FM 1667, FM 491, CR 201, SH 55, SH 127, IH 35
- Water Features:** Rio River, Leona River
- Other Labels:** 18418, 12989, 12987, 21063, 12985, 234 m, 233 m, 988 m, 993.1 m, Los Ninos, 13 Miles, 3.25, 6.5

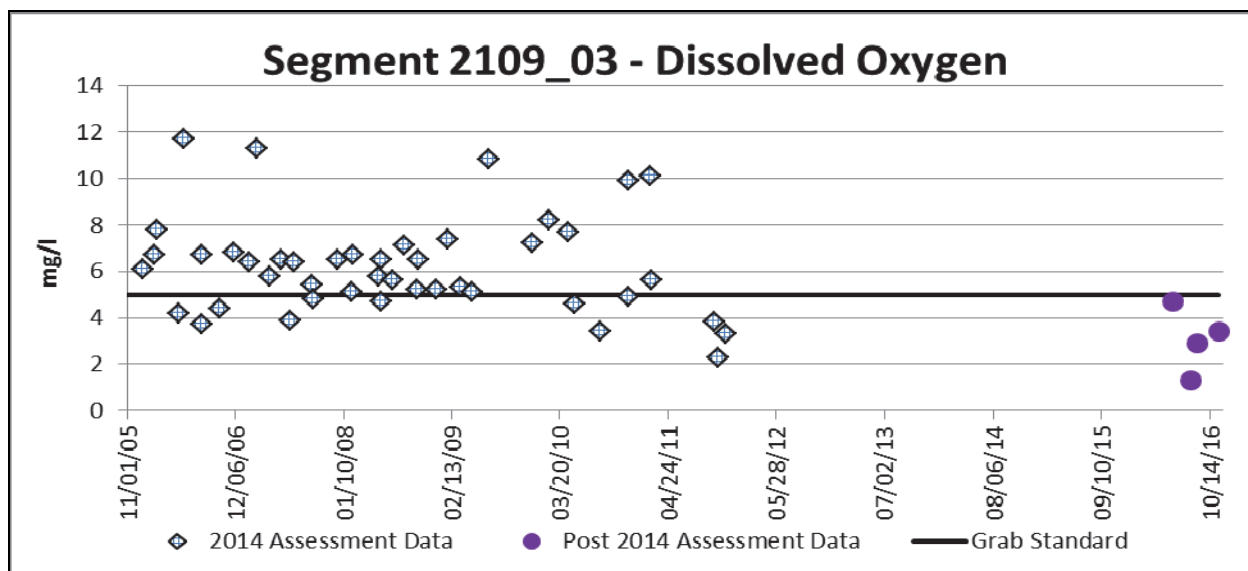
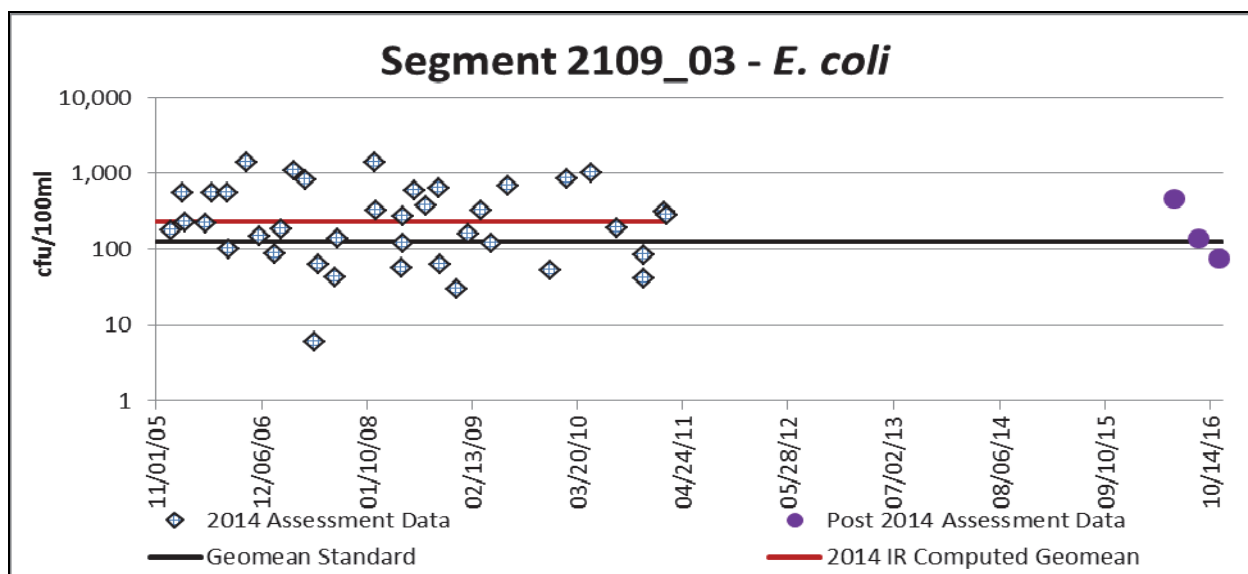
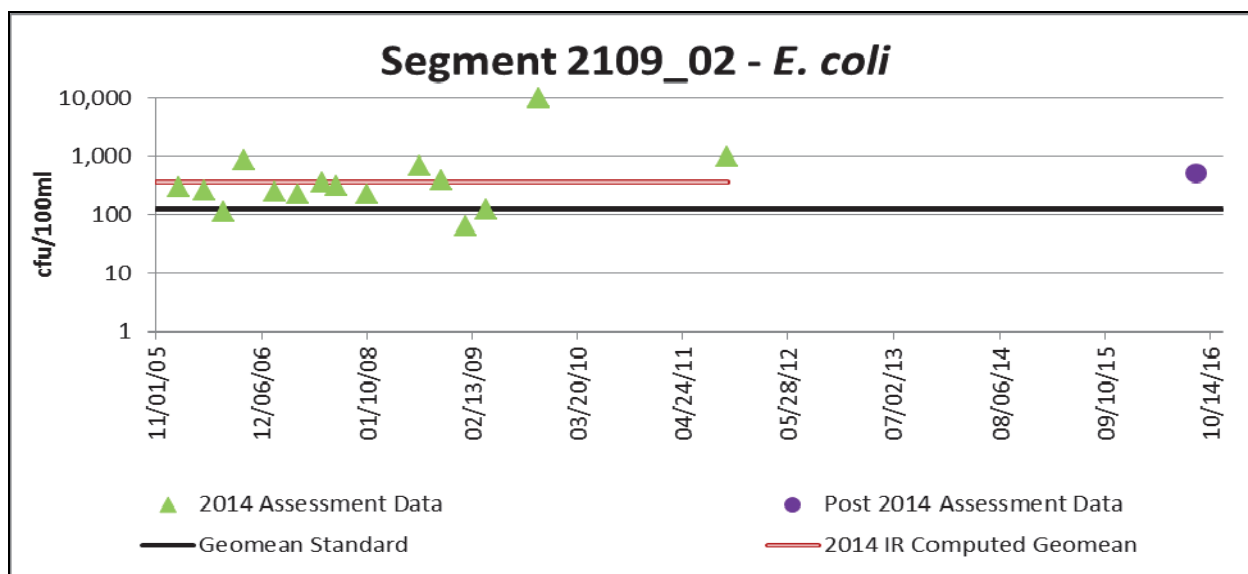
Sources: Esri, HERE, DeLorme, TomTom, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GEBCO, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), Swisstopo, MapmyIndia, © OpenStreetMap contributors, and the GIS User Community

The entire segment was listed as being impaired for bacteria for primary contact recreation as a result of the 2006 Water Quality Inventory. An RUAA was conducted by TIAER from January 2011 through December 2012. The interviews indicated that contact recreation (wading by children) does occur. No recreational activities were observed during the field surveys or site visits. Visit <http://www.leonariver.org/> for more information. Due to the drought, no additional samples have been taken in AU_01; AU_02 and AU_03 have just recently received enough rainfall for sampling to occur. This impairment will likely carry forward for all AUs.

There is a concern for low DO at the grab screening level in AU_03. Recent samples have all met the screening level, but the concern will likely be carried forward.

There is a concern for nitrates for all AUs. Again, because of limited sampling due to the drought, the concerns will likely remain.



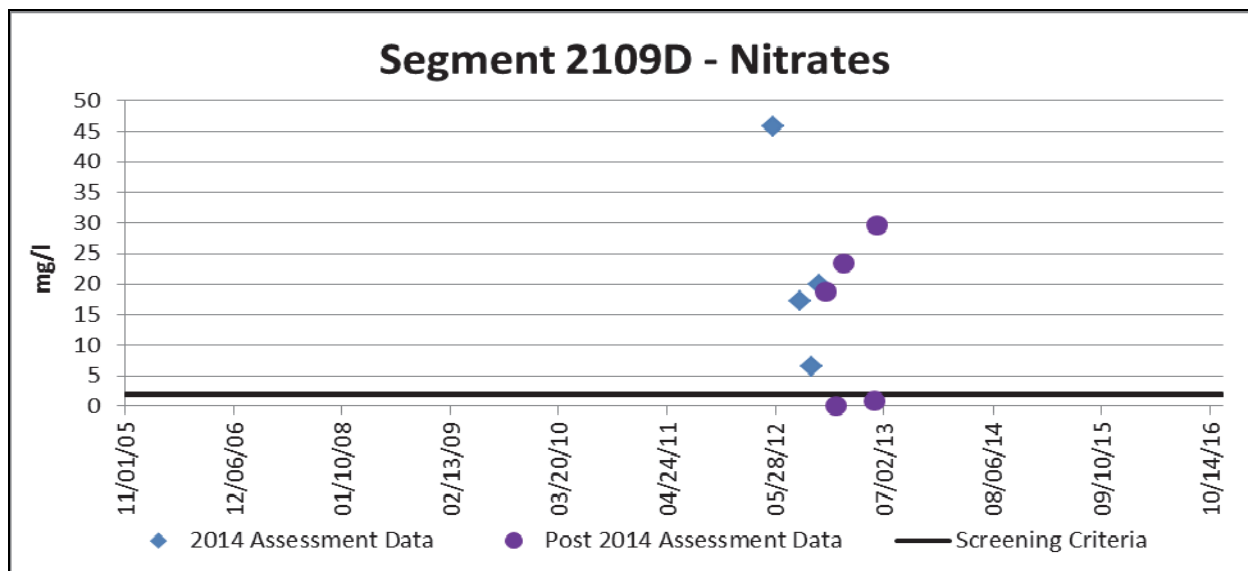
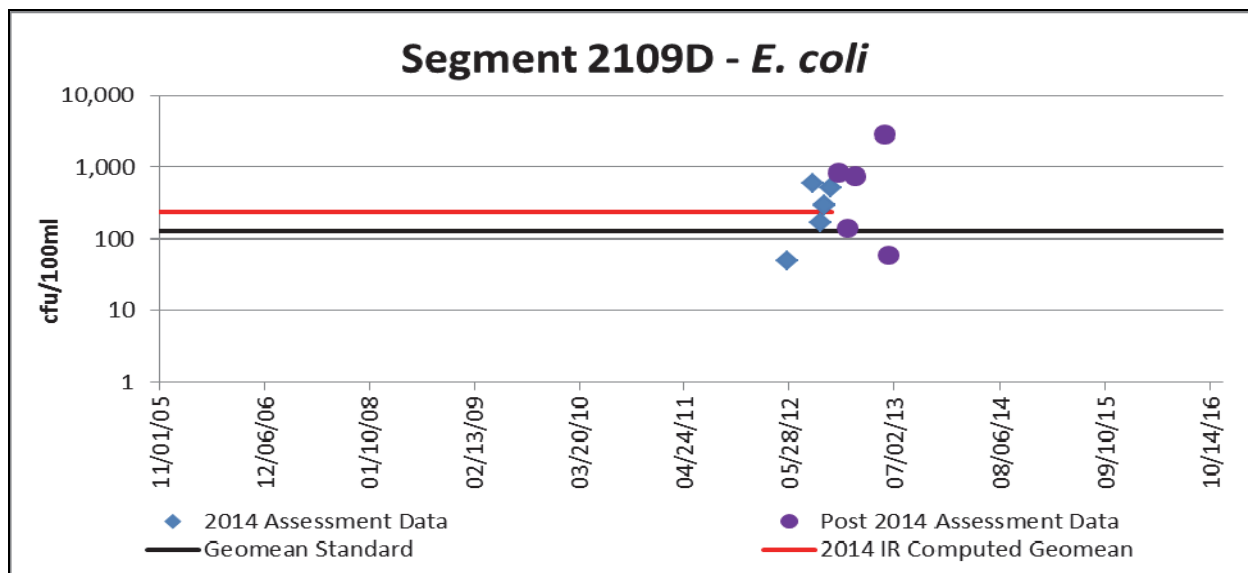


2109C: Live Oak Creek

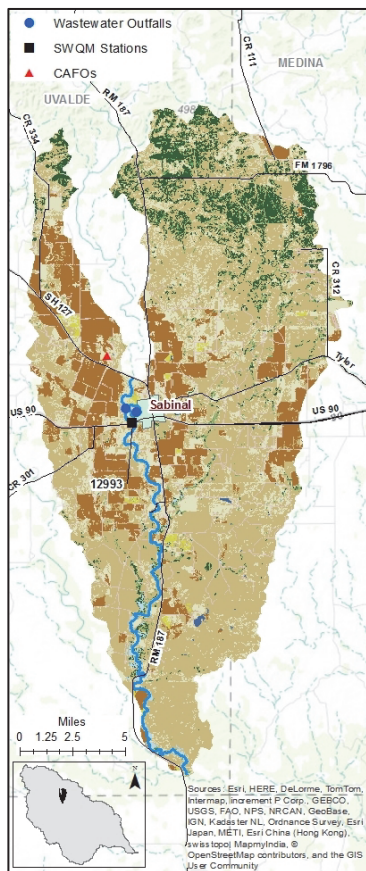
This unclassified waterbody is within the Leona River watershed and is from its confluence with the Leona River in Zavala County to the headwaters approximately 15.2 km upstream of US 57 in Zavala County. Only limited DO data collected during the Leona RUAA was assessed, and no concerns or impairments were listed in the 2014 Integrated Report.

2109D: Gallina Slough

This unclassified waterbody is within the Leona River watershed and is from its confluence with the Leona River in Zavala County to the headwaters approximately 9 km upstream of US 57 in Zavala County. Based on limited data collected during the Leona RUAA, it is assessed as having concerns for bacteria and nitrates. There are no active monitoring sites on this segment, so these concerns will likely be carried forward.



Segment 2110: Lower Sabinal River



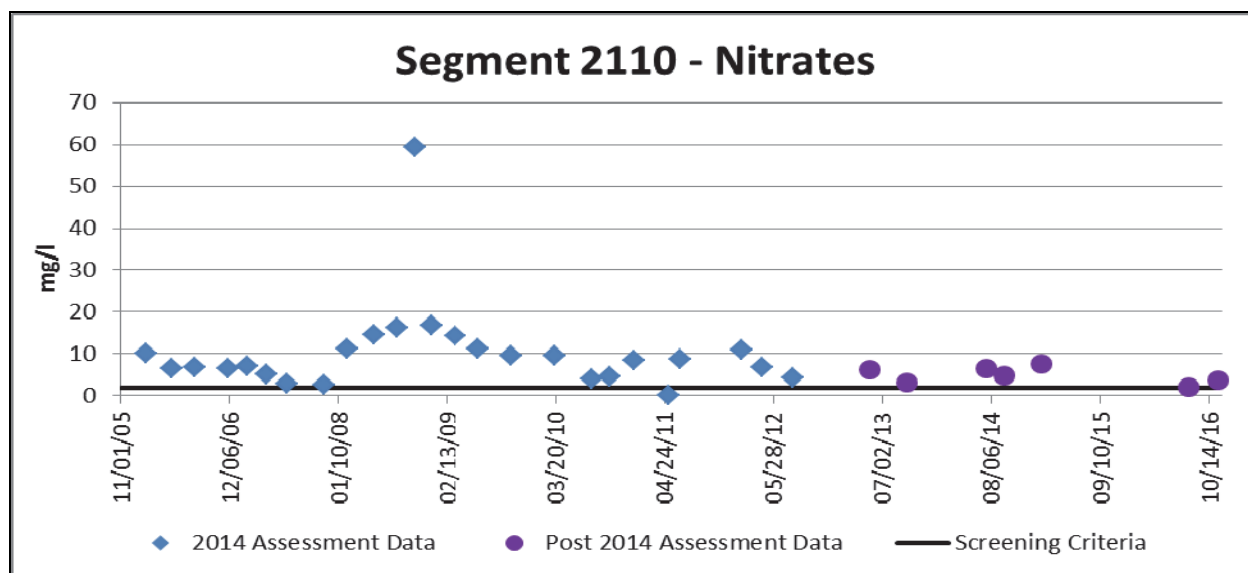
The segment flows 27 miles from a point 100m upstream of SH 127 to the confluence with the Frio River. Its watershed is 136,676 acres. The City of Sabinal is the only community in the watershed.

The segment was first listed as being impaired for nitrates in the 2002 Assessment. The suspected source was the Sabinal WWTP which was subject to inundation during floods. A TMDL was conducted and an Implementation Plan has been approved. The plan called for the construction of a new plant which has been completed and came online on July 27, 2011.

Nitrates are being carried forward as a concern in the 2014 Integrated Report until enough time has passed for the routine sampling to show the effects of the new plant. The overall concentrations are lower, but still above the screening criteria. All other assessed parameters met the standards in the 2014 Integrated Report.



Sabinal River at US 90



Segment 2111: Upper Sabinal River



The segment flows 48 miles from the most upstream crossing FM 187 in Bandera County to a point 100m upstream of SH 127 in Uvalde County. It is divided into two AUs; from the downstream end to the confluence with the West Sabinal River (AU_01), and from the confluence with the West Sabinal River to the upstream end (AU_02). Its watershed is 149,444 acres. The Cities of Utopia and Vanderpool are the only communities in the watershed. Lost Maples State Park is near the headwaters.

Bandera County River Authority and Groundwater District (BCRAGD) became a CRP sub-participant in FY 2016 to help NRA with sampling in AU_02 of the Upper Sabinal River and AU_02 of Seco Creek (Segment 2115). They are contributing their resources for this sampling and providing the data to NRA for submittal to SWQMIS.

All assessed parameters met the standards in the 2014 Assessment.



Sabinal River at FM 187 south of Vanderpool



Sabinal River at RR 187 south of Utopia

Segment 2112: Upper Nueces River

The segment flows 123 miles from the confluence of the East Prong Nueces River and Hackberry Creek in Edwards County to a point 100m (110 yards) upstream of FM 1025 in Zavala County. It is divided into four AUs; from the downstream end to the confluence with Sand Ridge Creek (AU_01), from the confluence with Sand Ridge Creek to just downstream of US 90 (AU_02), from just downstream of US 90 the confluence with Miller Creek (AU_03), and from the confluence with Miller Creek to the upstream end. Its watershed is 1,336,006 acres. There are several small communities in the watershed.

All assessed parameters met the standards in the 2014 Assessment.



Upper Nueces River at SH 55 south of Barksdale

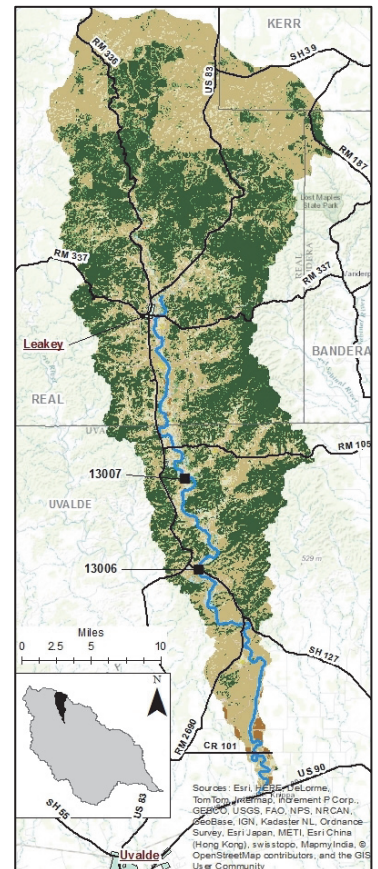
Segment 2113: Upper Frio River

The segment flows 47 miles from the confluence with the West Frio River and the East Frio River in Real County to a point 100m upstream of US 90 in Uvalde County. It is divided into two AUs; from the downstream end to the confluence with Bear Creek (AU_01), and from the confluence with Bear Creek to the upstream end (AU_02). Its watershed is 280,596 acres.

All assessed water quality parameters met the standards. Biological impairments and concerns identified in the 2006 Water Quality Inventory were carried forward in the 2014 Integrated Report. TCEQ is conducting two aquatic life biological sampling events. The first one was held in April 2017 and the second one is planned for September 2017. The results will be used to reassess these impairments and concerns.



Biological sampling on the Upper Frio River



Segment 2114: Hondo Creek



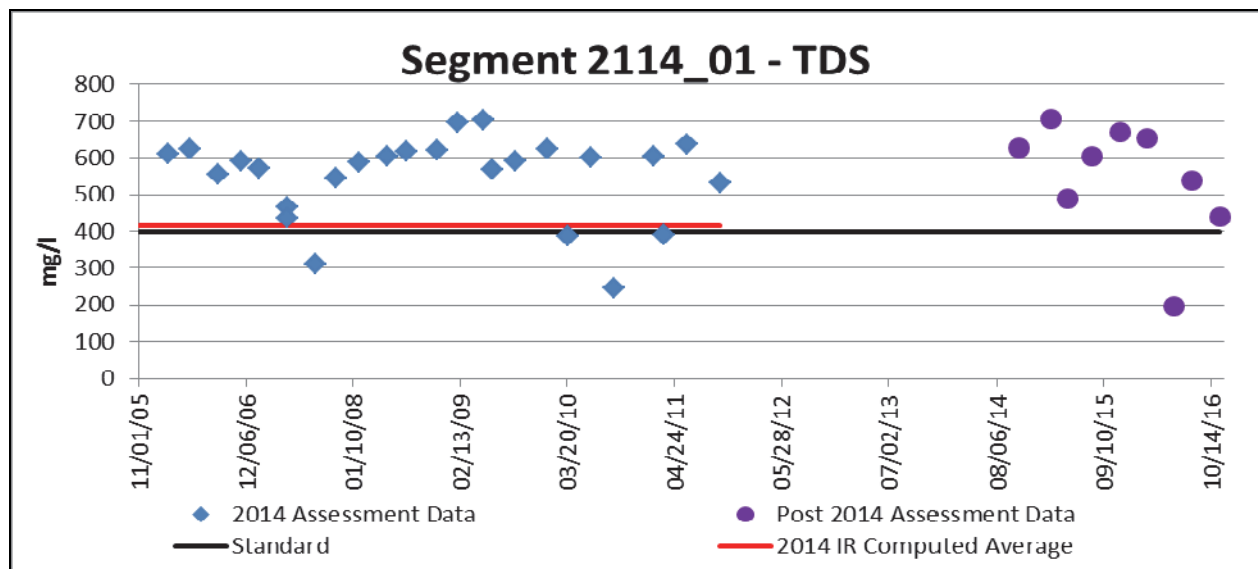
The segment flows 78 miles from FM 470 in Bandera County to the confluence with the Frio River in Frio County. It is divided into two AUs; from the downstream end to just upstream of FM 2676 (AU_01), and from just upstream of FM 2676 to the upstream end (AU-02). Its watershed is 435,985 acres. The City of Hondo WWTP discharges to this segment.

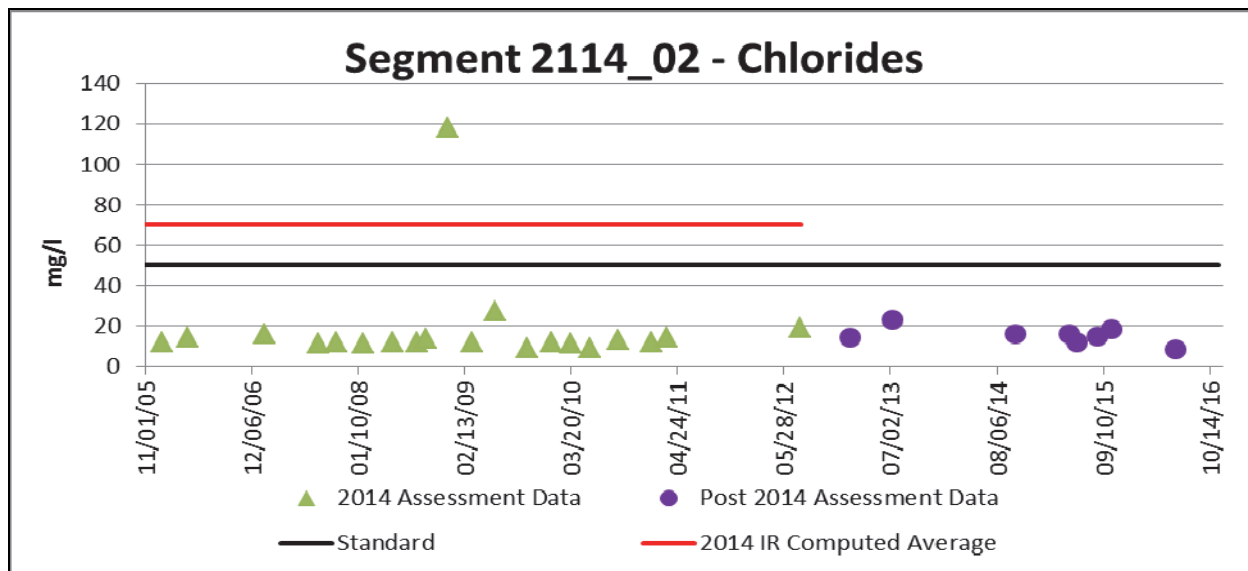
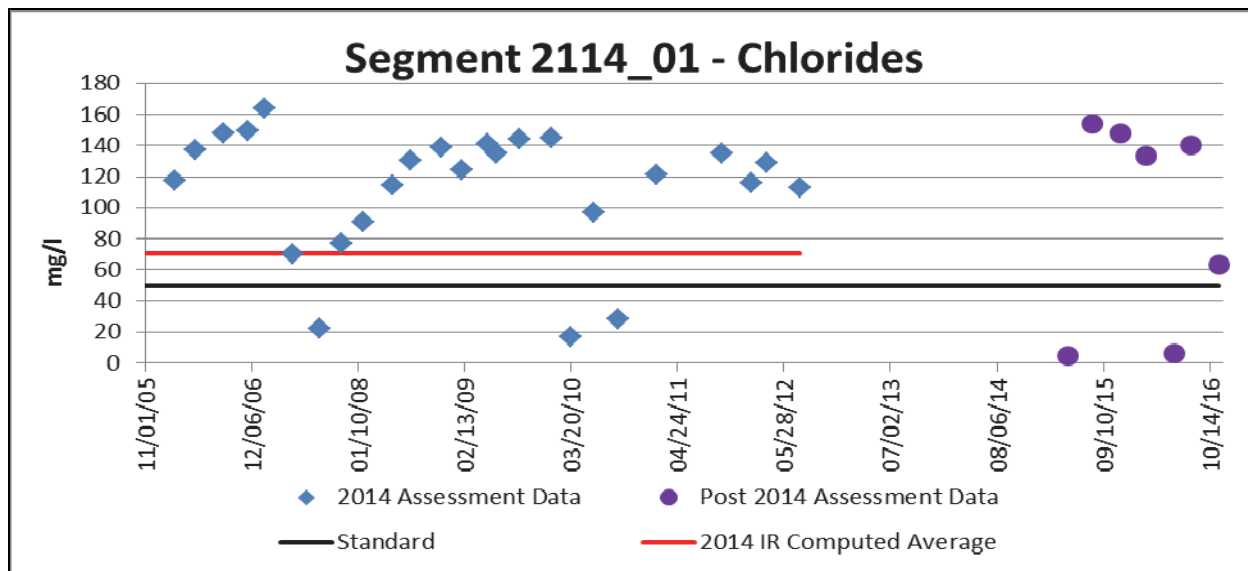
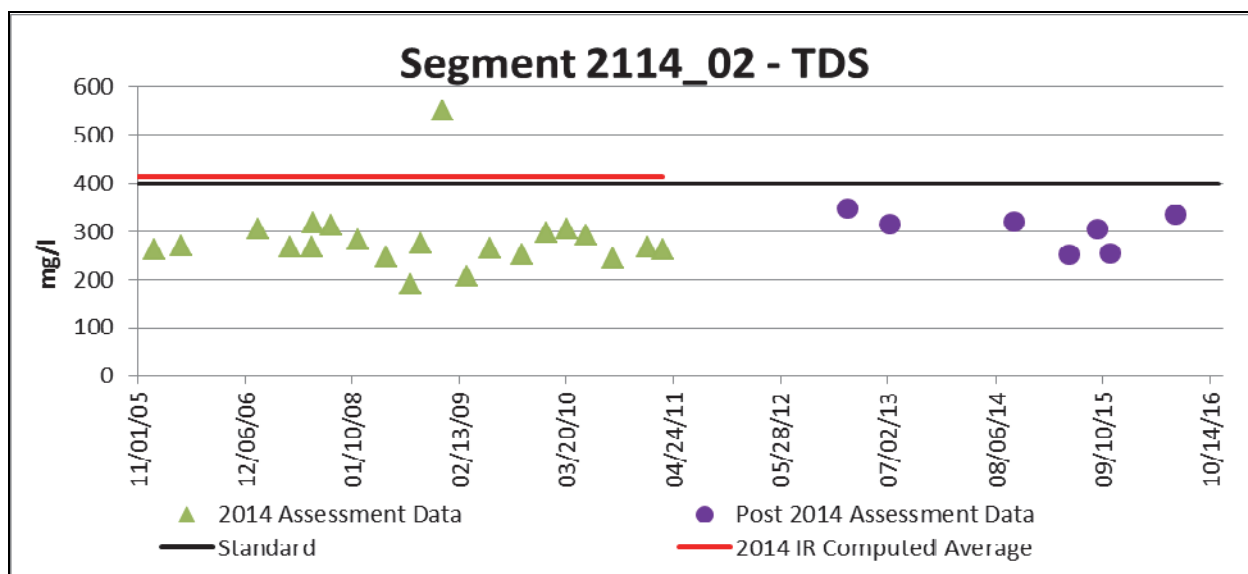
There are concerns for TDS and chloride for the entire segment and for nitrate in AU_01. The sampling site in AU_01 was dropped by TCEQ beginning FY 2013. NRA picked the site back up beginning in FY 2015 to provide additional information for the assessments.

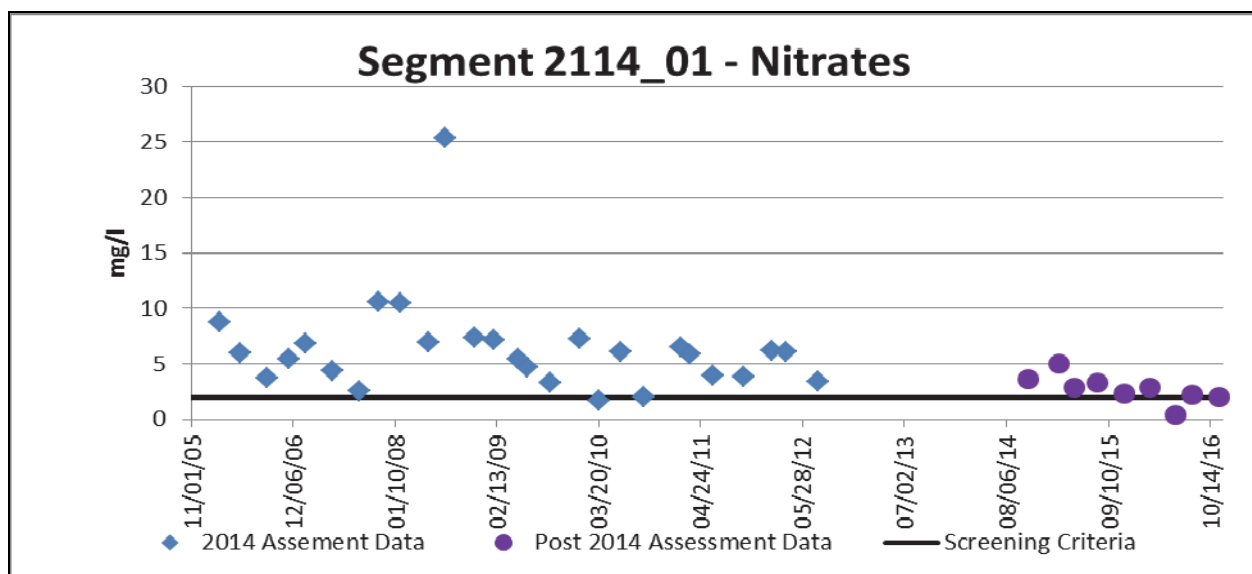
Although TDS and chloride are evaluated based on the data from the entire segment, it is obvious from the graphs that the TDS and chloride levels in AU_01 are the cause of the concern. Therefore, for this segment's data results graphs are being shown for the individual AUs. The computed averages for the TDS and chloride were 415 mg/l and 70.5 mg/l, respectively, for the combined AUs in the 2014 Assessment.

Since the 2014 Assessment, TCEQ has not measured TDS directly in AU_02. Therefore, the TDS post assessment values were computed by multiplying the specific conductance readings by 0.65.

There is a concern for nitrates in AU_01. The concentrations measured since the 2014 Assessment appear to be decreasing, but still above the screening criteria.







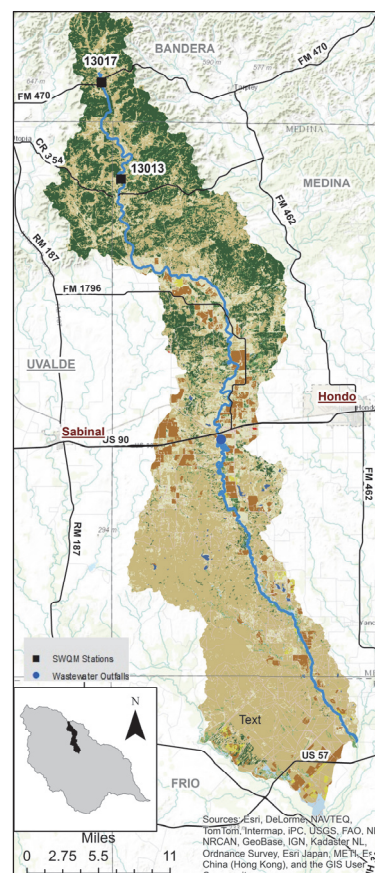
Hondo Creek at SH 173 southeast of Hondo

Segment 2115: Seco Creek

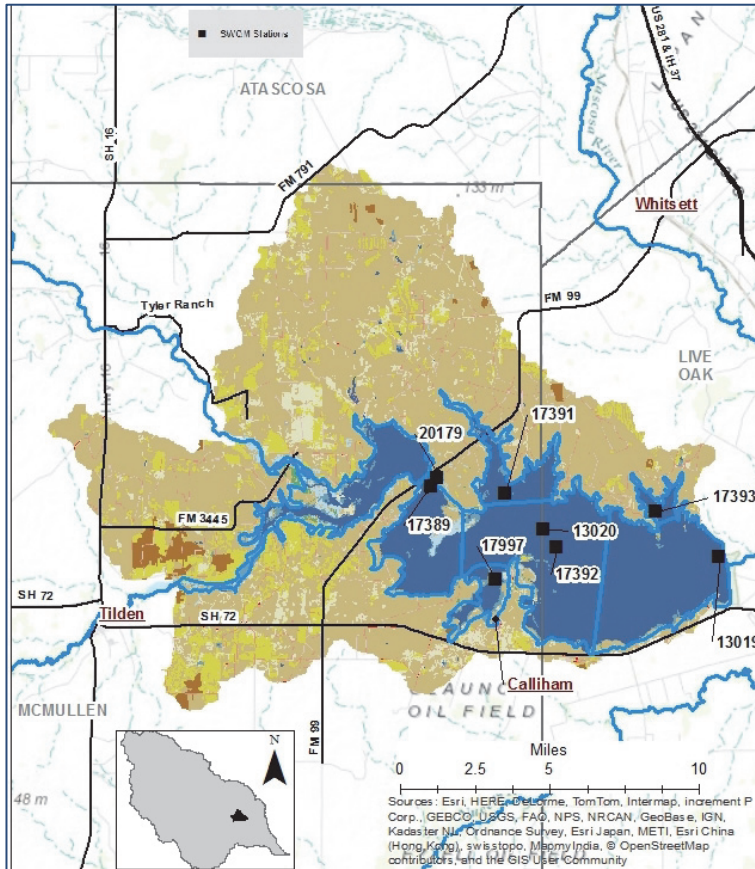
The segment flows 70 miles from the confluence with West Seco Creek in Bandera County to the confluence with Hondo Creek in Frio County. It is divided into two AUs; from the downstream end to the confluence with an unnamed tributary near FM 1796 (AU_01), and from the confluence with an unnamed tributary near FM 1796 to the upstream end (AU_02). Its watershed is 266,833 acres. There are no sampling sites in AU_01.

BCRAGD began sampling in AU-02 in FY 2016. They are contributing their resources for this sampling and providing the data to NRA for submittal to SWQMIS.

All assessed parameters met the standards in the 2014 Integrated Report.



Segment 2116: Choke Canyon Reservoir

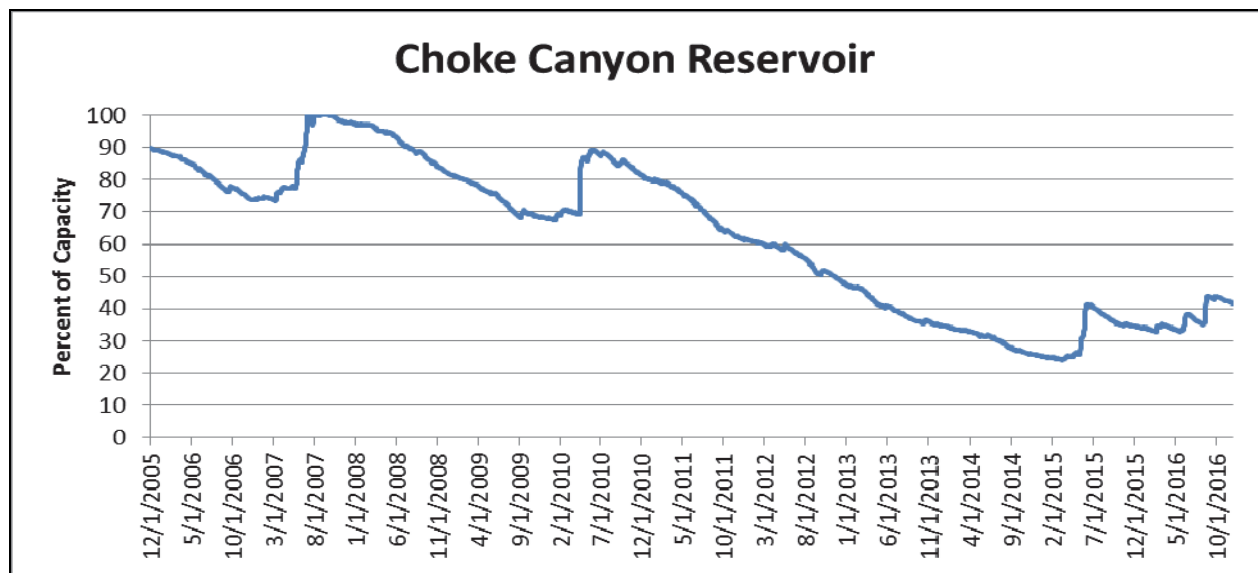


Choke Canyon Reservoir impounds the Frio River and is defined by the 220.5' MSL elevation. The reservoir covers portions of McMullen and Live Oak Counties. When near capacity, the water levels at the Frio River at Tilden are affected.

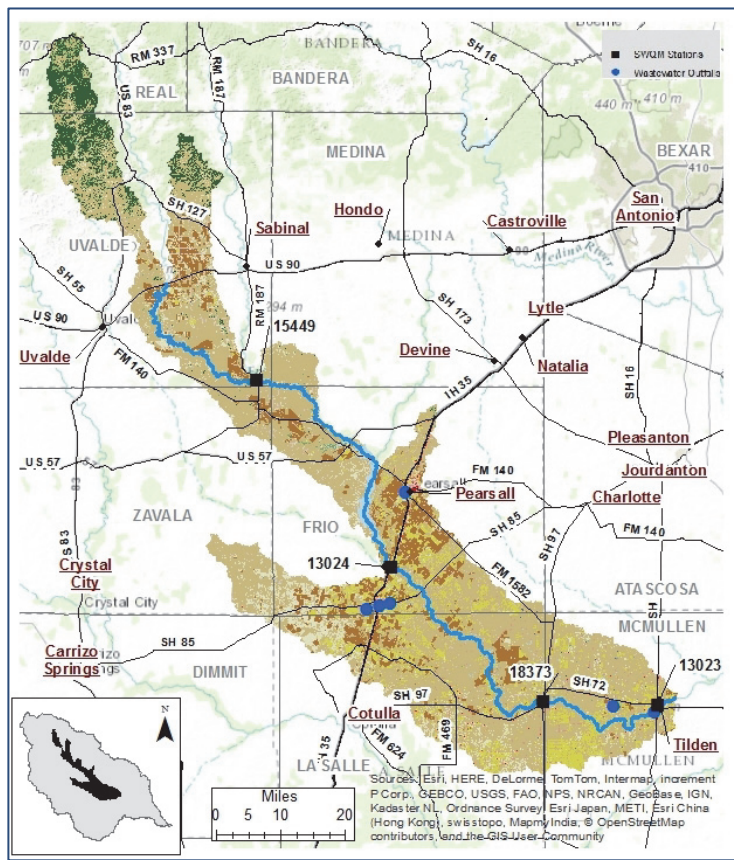
The reservoir is divided into seven AUs; the 5120 acres near the dam (AU_01), the small north arm near the dam and Willow Hollow Tank (AU_02), the 5120 acres in the middle of the reservoir (AU_03), the large north arm near mid-reservoir and Jacob Oil Field (AU_04), the southern arm near mid-reservoir and Recreation Road 7 west of Calliham (AU_05), the western end of the reservoir up to RR 99 (AU_06), and from RR 99 to the upper end (AU_07). Its watershed is 11,304 acres.

All assessed parameters met the standards in the 2014 Integrated Report. The last time the reservoir was full was in September 2007. The water level graph displays the lake percent of capacity from December 1, 2005 through November 30, 2016.

Additional information about the reservoir is available at http://www.twdb.texas.gov/surfacewater/rivers/reservoirs/choke_canyon/index.asp.



Segment 2117: Frio River Above Choke Canyon Reservoir



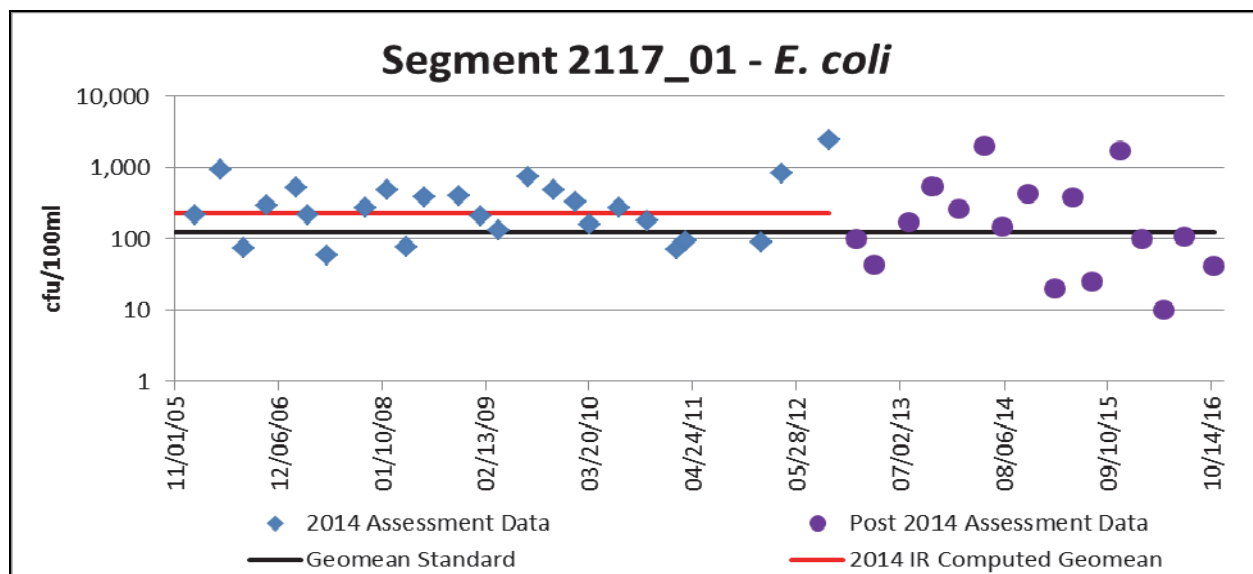
The segment flows 158 miles from 100m upstream of US 90 in Uvalde County to the confluence with Choke Canyon Reservoir in McMullen County. The segment is divided into six AUs; from Choke Canyon Reservoir to the confluence with Esperanza Creek (AU_01), from the confluence with Esperanza Creek to the confluence with Ruiz Creek (AU_02), from the confluence with Ruiz Creek to the confluence with Live Oak Creek (AU_03), from the confluence with Live Oak Creek to the confluence with Elm Creek (AU_04), from the confluence with Elm Creek to the confluence with Spring Branch (AU_05), and from the confluence with Spring Branch to the upper end of the segment. Its watershed is 1,161,405 acres.

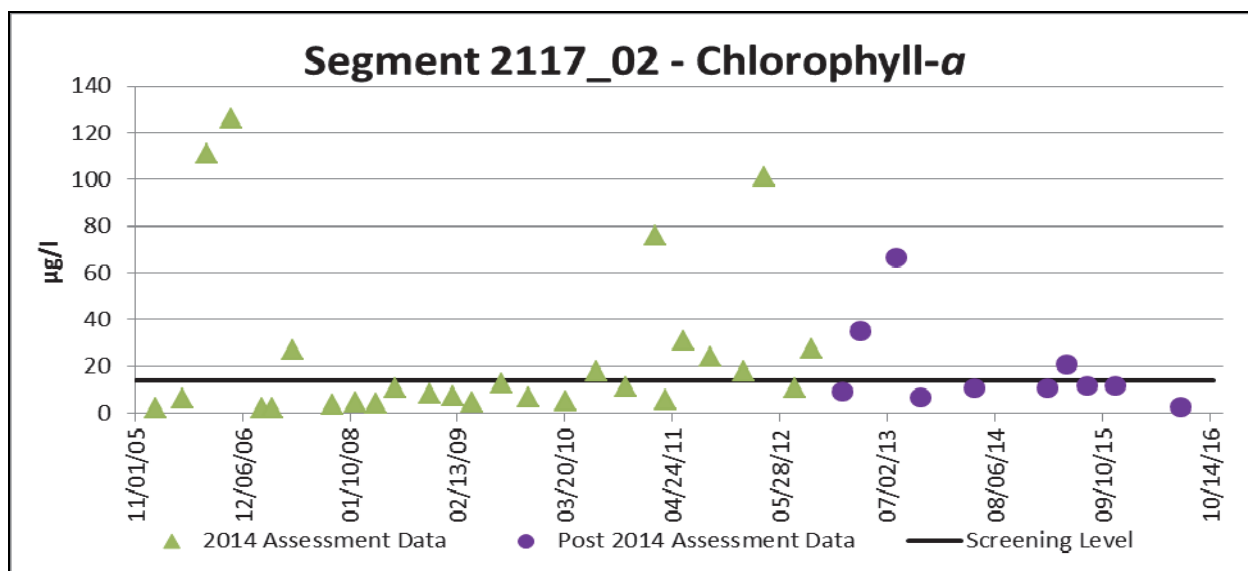
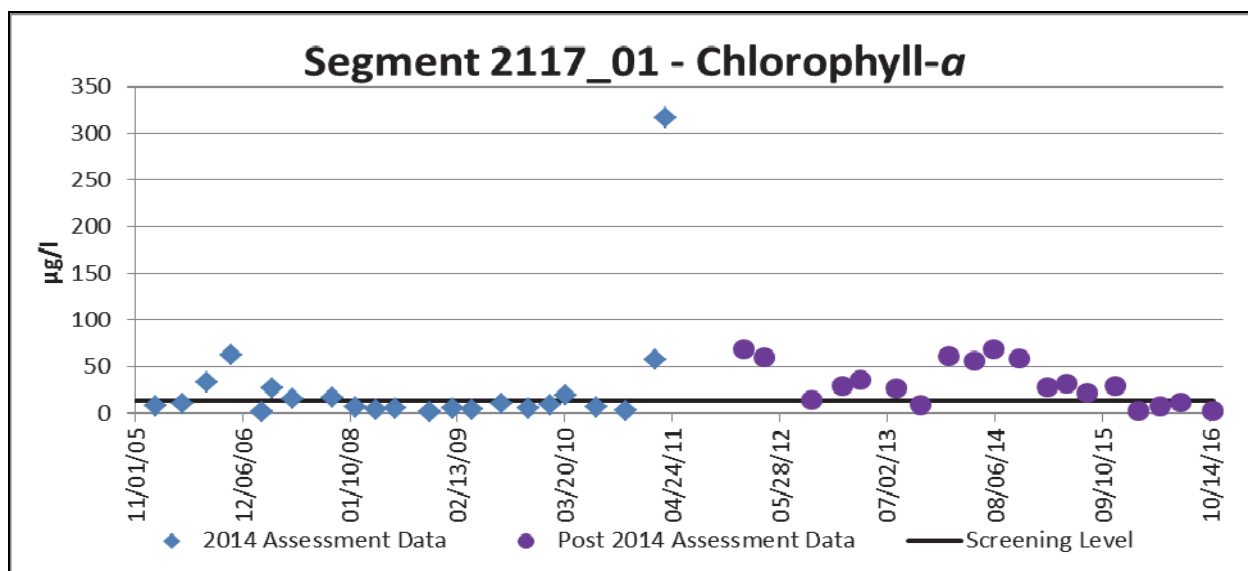
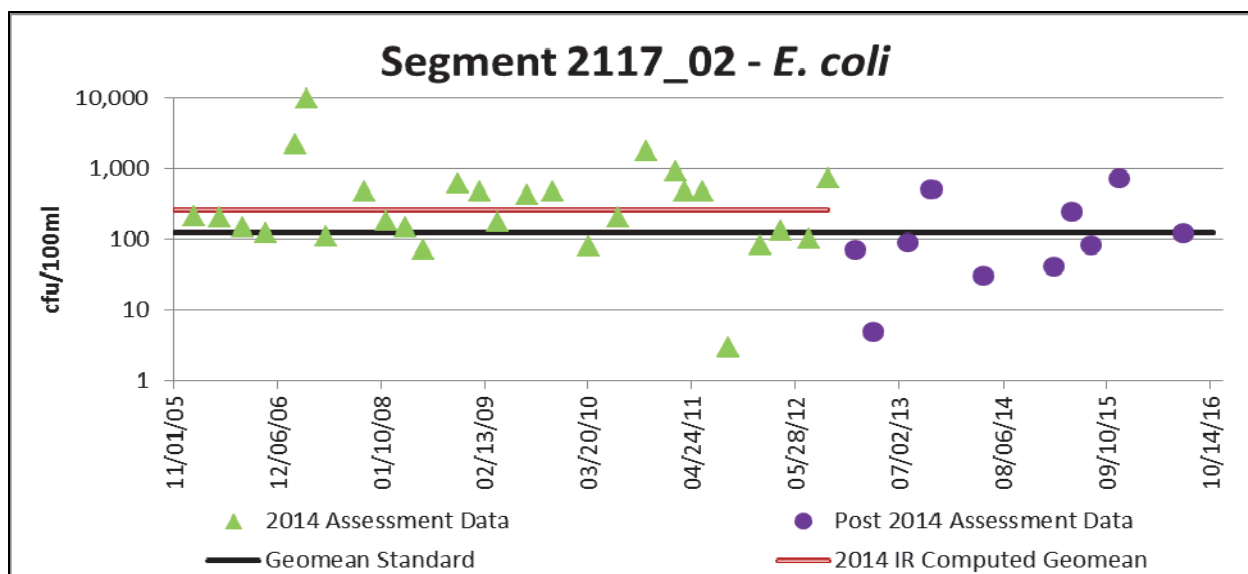
AU_01 and AU_02 are listed as being impaired for bacteria for primary contact recreation as a result of the 2012 Integrated Report and 2008 Water Quality Inventory, respectively. Both AU's will likely remain listed for bacteria based on the post assessment data.

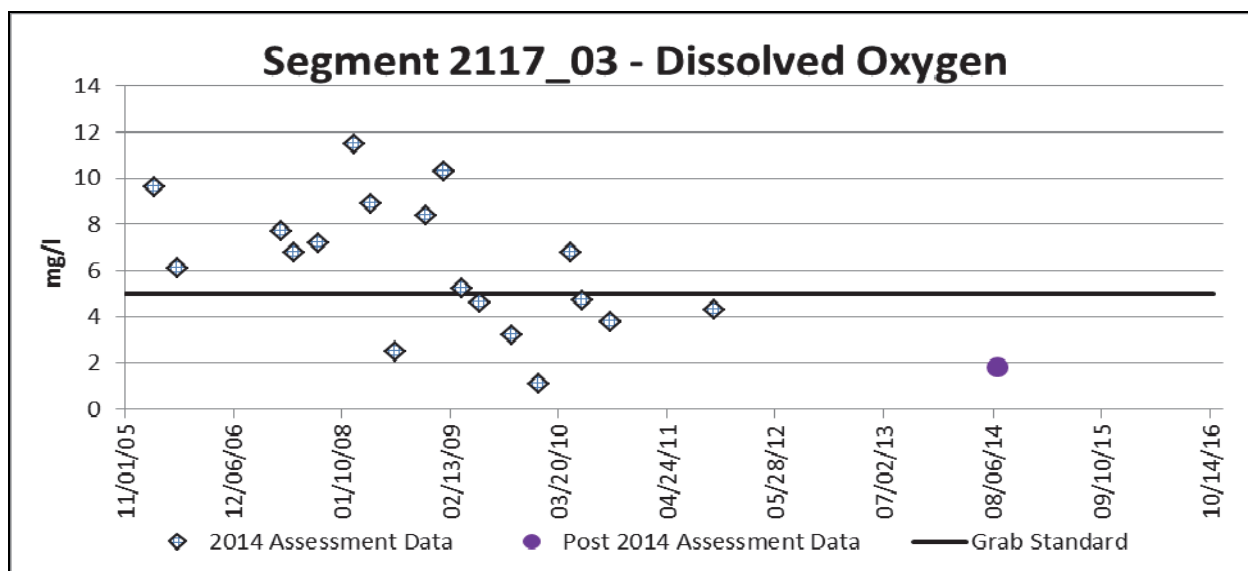
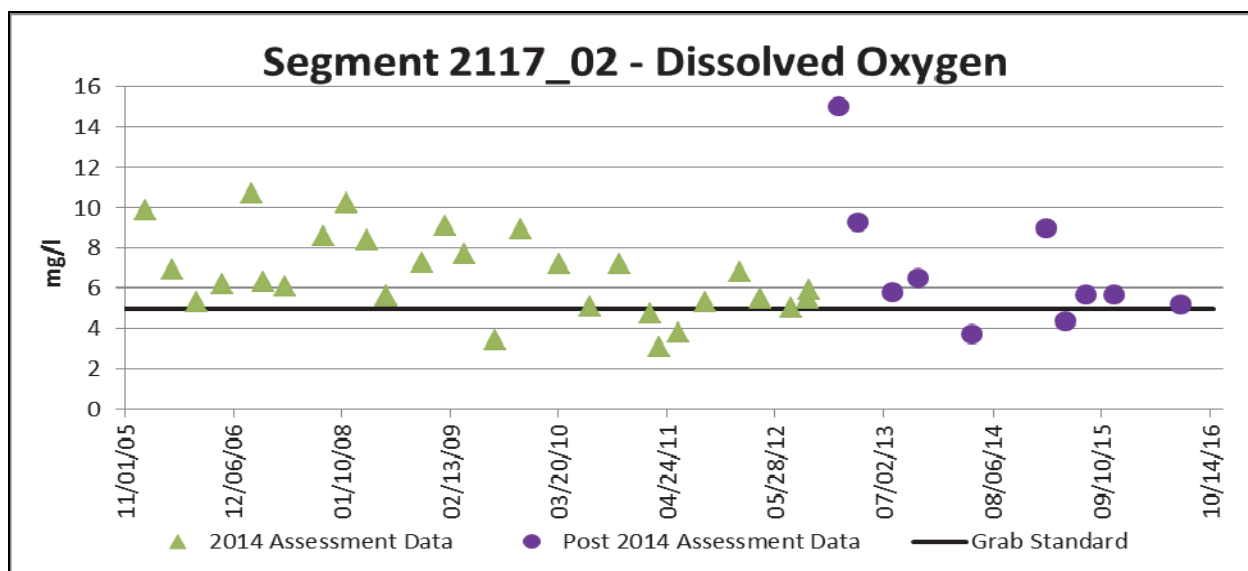
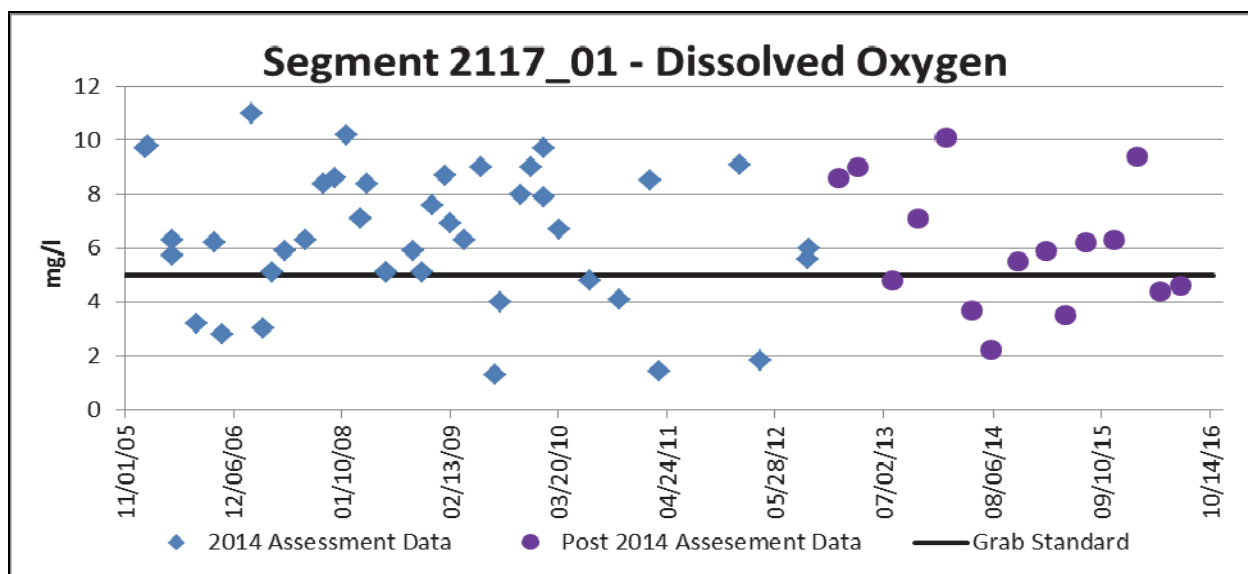
AU_01 and AU_02 also have a concern for chlorophyll-a. The concentrations appear to be decreasing in AU_02, but both AU's will likely remain listed.

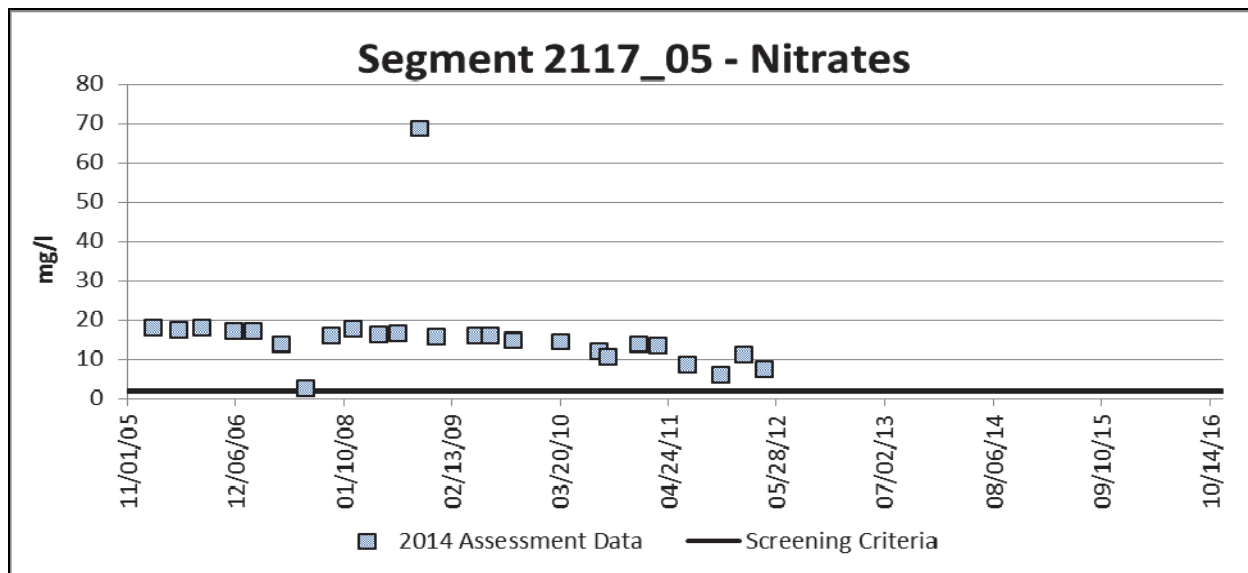
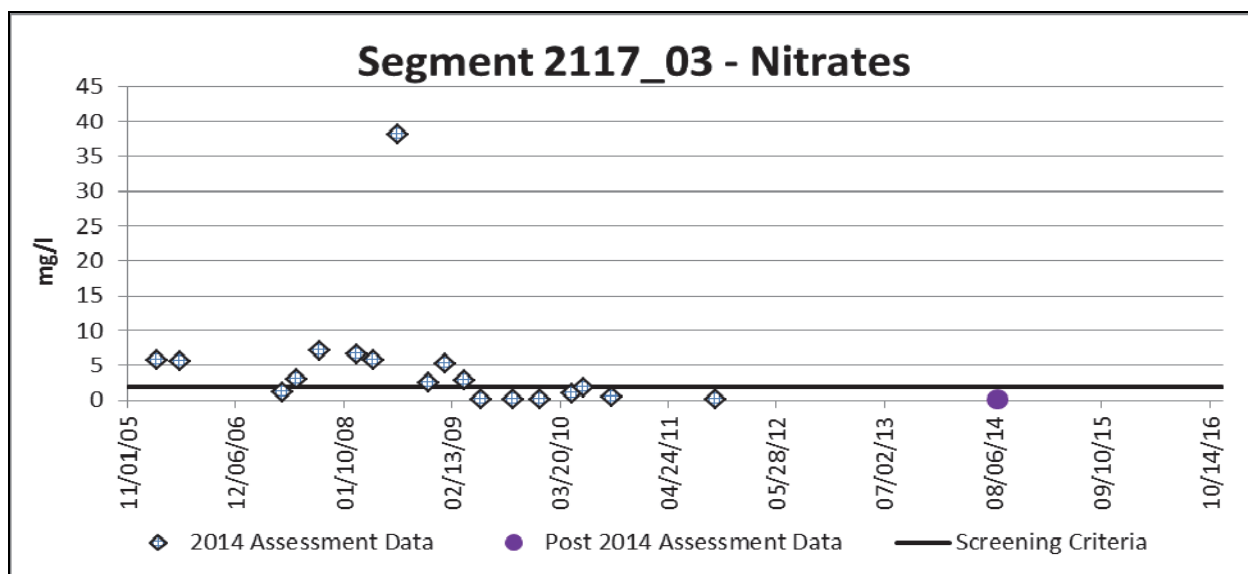
AU_01 through AU_03 have a concern for low DO at the grab screening level. The post 2014 assessment data for AU_01 and AU_02 varies greatly. 24-Hr DO measurements are needed for evaluation. Due to the drought, only one post 2014 assessment sample was collected in AU_03, and it was well below the screening level.

AU_03 through AU_05 have a concern for nitrates. Although there are no sampling sites in AU_04, a concern for nitrates is being carried forward in the 2014 Integrated Report most likely because the AUs on either side have high levels. Due to the drought, only one post 2014 assessment sample was collected in AU_03 and none in AU_05. Therefore, these concerns will most likely be carried forward.









Frio River at SH 16 in Tilden

Table 3-4: List of Impairments and Concerns in the Nueces River Basin

Segment Name	AU	Description	Impairment	Concern
2101 Nueces River Tidal	01	Entire water body	None	Chlorophyll-a
2102 Nueces River Below Lake Corpus Christi	01	From the downstream end of segment to the confluence with Javelin Creek	TDS	Chlorophyll-a
	02	From the confluence with Javelin Creek to the upstream end of segment at Lake Corpus Christi	TDS	Chlorophyll-a
2103 Lake Corpus Christi	01	Mid lake near dam	TDS	Chlorophyll-a,
	02	Area ~ 4 miles SE of FM 3162 and FM 634 intersection near western shore	TDS	Chlorophyll-a, Total Phosphorus
	03	Western arm of lake near Lagarto Creek Inlet	TDS	none
	04	Upper portion of lake on opposite shore from Hideaway Hill	TDS	Total Phosphorus
	05	Upper arm of lake in more riverine section surrounding FM 534	TDS	none
	06	Uppermost riverine part of reservoir upstream of FM 534 to upper end of segment to just upstream of US Hwy 59	TDS	Chlorophyll-a, Total Phosphorus
2104 Nueces River Above Frio River	01	From the downstream end of the segment to the confluence with Dragon Creek	None	Impaired macrobenthic community
	02	From the confluence with Dragon Creek to the confluence with Guadalupe Creek	None	Impaired fish community, impaired macrobenthic community
	03	From confluence of Guadalupe Creek to Holland Dam	None	DO
2105 Nueces River Above Holland Dam	01	From the downstream end of the segment to the confluence with Sauz Mocho Creek	None	Chlorophyll-a, DO
	02	From the confluence with Sauz Mocho Creek to the confluence with Live Oak Slough	DO	DO, Chlorophyll-a
	03	From the confluence of Live Oak Slough to the upstream end	None	None
2106 Nueces / Lower Frio River	01	The Nueces River from the downstream end to the confluence with the Frio River	TDS	None
	02	The Frio River from the confluence with the Nueces River to the Choke Canyon Reservoir Dam	Bacteria, TDS	None
2107 Atascosa River	01	From the downstream end to the confluence with Borrego Creek	Bacteria	Chlorophyll-a
	02	From confluence with Borrego Creek to the confluence of Galvan Creek	Bacteria, DO, Impaired fish community, Impaired macrobenthic community	DO, Impaired habitat, Nitrate, Total Phosphorus
	03	From the confluence with Galvan Creek to the confluence with Palo Alto Creek	DO, Impaired fish community, Impaired macrobenthic community	Impaired habitat, Chlorophyll-a
	04	From the confluence with Palo Alto Creek to the upper end of the segment	None	None
2108 San Miguel Creek	01	From Choke Canyon Reservoir to the confluence with Live Oak Creek	Bacteria	Chlorophyll-a
	02	From the confluence of Live Oak Creek to the upstream end of the segment	None	None

Table 3-4: List of Impairments and Concerns in the Nueces River Basin (cont.)

Segment Name	AU	Description	Impairment	Concern
2109 Leona River	01	From the confluence with the Frio River to the confluence with Yoledigo Creek	Bacteria	Nitrate
	02	From the confluence with Yoledigo Creek to the confluence with Camp Lake Slough	Bacteria	Nitrate
	03	from the confluence with Camp Lake Slough to the upstream end	Bacteria	DO, Nitrate
2109C Live Oak Creek	01	From its confluence with the Leona River in Zavala County to the headwaters approximately 15.2 km upstream of US Hwy 57 in Zavala County	None	None
2109D Gallina Slough	01	From the confluence with the Leona River in Zavala County to the headwaters ~ 9 km upstream of US Hwy 57 in Zavala County	None	Bacteria, Nitrate
2110 Lower Sabinal River	01	Entire water body	None	Nitrate
2111 Upper Sabinal River	01	From the downstream end to the confluence with the West Sabinal River	None	None
	02	from the confluence with the West Sabinal River to the upstream end	None	None
2112 Upper Nueces River	01	From the downstream end to the confluence with Sand Ridge Creek	None	None
	02	From the confluence with Sand Ridge Creek to the confluence with unnamed tributary just downstream of US Hwy 90	None	None
	03	From the confluence with unnamed tributary just downstream of US Hwy 90 to the confluence with Miller Creek	None	None
	04	From the confluence with Miller Creek to the upper end of the segment	None	None
2113 Upper Frio River	01	From the downstream end to the confluence with Bear Creek	Impaired fish community, Impaired macrobenthic community	Impaired Habitat
	02	From the confluence with Bear Creek to the upstream end	None	Impaired habitat, Impaired fish community
2114 Hondo Creek	01	From downstream end to just upstream of FM 2676	Chloride, TDS	Nitrate
	02	From just upstream of FM 2676 to the upstream end	Chloride, TDS	None
2115 Seco Creek	01	From the downstream end of the segment to the confluence with and unnamed tributary at -99.28N, 29.42W	None	None
	02	From the confluence with an unnamed tributary near FM 1796 to the upstream end	None	None
2116 Choke Canyon Reservoir	01	5120 acres near dam	None	None
	02	Small north arm of lake near dam and Willow Hollow Tank	None	None
	03	5120 acres in the middle of the reservoir	None	None
	04	Large north arm near mid lake and Jacob Oil Field	None	None
	05	Southern arm near mid-Lake and RR7 west of Caliham	None	None
	06	western end of the reservoir up to RR 99	None	None
	07	Remainder of lake from RR 99 bridge to upper end of segment	None	None

Table 3-4: List of Impairments and Concerns in the Nueces River Basin (cont.)

Segment Name	AU	Description	Impairment	Concern
2117 Frio River Above Choke Canyon Reservoir	01	From Choke Canyon Reservoir to the confluence with Esperanza Creek	Bacteria	Chlorophyll-a, DO
	02	From the confluence with Esperanza Creek to the confluence with Ruiz Creek	Bacteria	Chlorophyll-a, DO
	03	From the confluence with Ruiz Creek to the confluence with Live Oak Creek	None	Nitrate, DO
	04	From the confluence with Live Oak Creek to the confluence with Elm Creek	None	Nitrate
	05	From the confluence with Elm Creek to the confluence with Spring Branch al	None	Nitrate
	06	From the confluence with Spring Branch to the upstream end of the segment	None	None

**Nueces River at FM 1042 north of Simmons**

3.2.3 NUECES – RIO GRANDE COASTAL BASIN (Figure 3-4)

The Nueces – Rio Grande Coastal Basin covers approximately 10,400 square miles, encompassing all or part of 12 counties in South Texas.

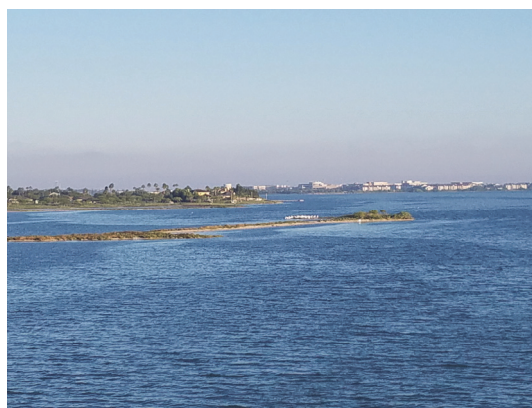
Table 3.5 lists all the CRP and SWQM sites monitored during FY 2014 in this basin.



Tide monitoring station at Copano Bay at SH 35



Figure 3-4: Nueces – Rio Grande Coastal



Oso Bay at South Padre Island Drive



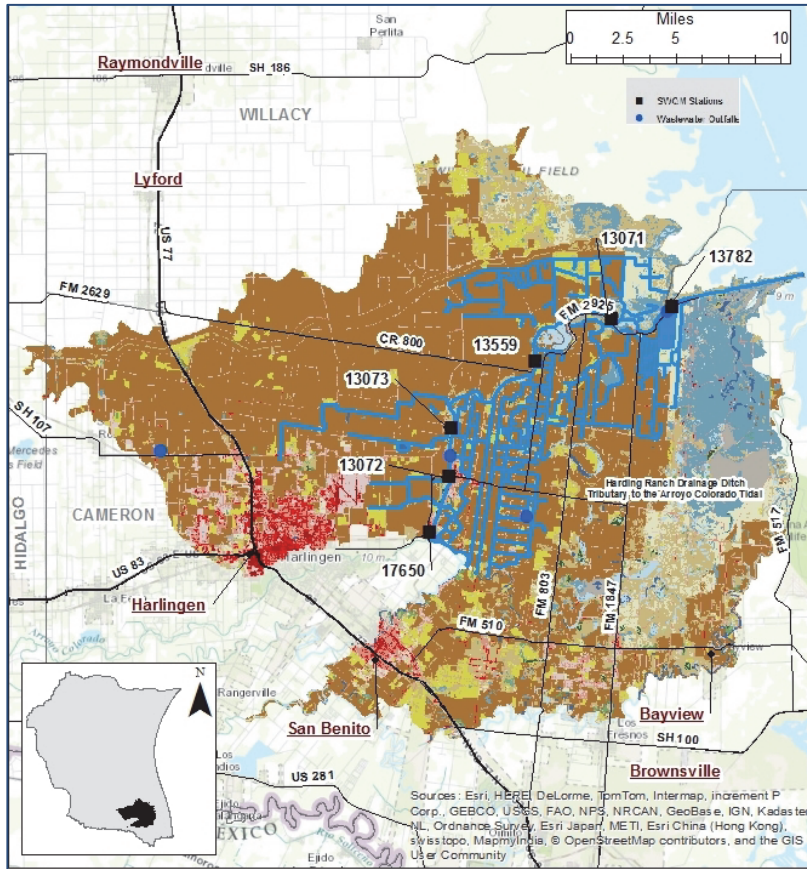
Copano Bay at FM 136

Table 3-5: CRP and SWQM Sites in the Nueces – Rio Grande Coastal Basin

Segment Name	Station Id #	Description	Monitoring Entity	Conventional, Field	Other
2201 Arroyo Colorado Tidal	13782 (AU_01)	Near Marker 16 at Arroyo City 492 m downstream of confluence with Arroyo Colorado and Arroyo Colorado cutoff	TCEQ Region 15	Quarterly	
	13071 (AU_02)	At Mile 10 Marker 22 81 m upstream from San Vicente drain ditch	TCEQ Region 15	Quarterly	
	13073 (AU_04)	At Camp Perry north of Rio Hondo 177 m downstream from confluence with unnamed ditch west side of Arroyo Colorado	TCEQ Region 15	Quarterly	
	13072 (AU_05)	At FM 106 bridge at Rio Hondo	TCEQ Region 15	Quarterly	
2202 Arroyo Colorado Above Tidal	13074 (AU_01)	At low water bridge at Port Harlingen at Cemetery Rd bridge	TCEQ Region 15	Quarterly	
	13079 (AU_02)	At US 77 in SW Harlingen	NRA	Quarterly	
	13080 (AU_02)	At FM 506 south of La Feria	NRA	Quarterly	
	16445 (AU_02)	At low water crossing at Dilworth Rd east of La Feria	NRA	Quarterly	
	13081 (AU_03)	At FM 1015 south of Weslaco	TCEQ Region 15	Quarterly	
	13084 (AU_03)	At US 281 south of Pharr	TCEQ Region 15	Quarterly	
2203 Petronila Creek Tidal	13090	1.2 km upstream of the confluence with Tunas Creek	TCEQ Region 14	Quarterly	
2204 Petronila Creek Above Tidal	13093 (AU_01)	At FM 70 Bridge East of Bishop (CAMS 731)	NRA	Quarterly	Monthly TDS, chloride, sulfate
	13094 (AU_01)	At FM 892 SE of Driscoll	NRA	Quarterly	Monthly TDS, chloride, sulfate bacteria, flow
	13096 (AU_02)	At FM 665 east of Driscoll	NRA	Quarterly	Monthly TDS, chloride, sulfate bacteria, flow
	20806 (AU_02)	At 181 m West and 6 m South from the intersection of Alice Road and Lost Creek road	NRA	Quarterly	

**Arroyo Colorado at US 77 in southwest Harlingen**

Segment 2201: Arroyo Colorado Tidal



The segment flows 26 miles from 110 yards downstream of Cemetery Road south of the Port of Harlingen to its confluence with the Laguna Madre. The segment forms part of the county line between Cameron and Willacy Counties. The segment is divided into five AUs; from the confluence with the Laguna Madre to the confluence with San Vicente Drainage Ditch (AU_01), from the confluence with San Vicente Drainage Ditch to the confluence with an unnamed drainage ditch at 26.31, -97.53 (AU_02), from an unnamed drainage ditch at 26.31, -97.53 to the confluence with the Harding Ranch Ditch tributary (AU_03), from the confluence with the Harding Ranch Ditch tributary to just upstream of the City of Hondo wastewater discharge point (AU_04), and from just upstream of the City of Rio Hondo wastewater discharge point to the upstream end of the segment (AU_05). The area is predominately farmland. The Arroyo Colorado Tidal segment serves as the waterway from the Laguna Madre to the Port of Harlingen. Its watershed is 294,591 acres. The City of Rio Hondo is just downstream of the Port. Arroyo City is located along the southern shore, with many homes lining the river.

The impairment for bacteria for primary contact recreation in all AUs is based on limited data. Due to the eight hour holding time and because there are no local labs accredited for

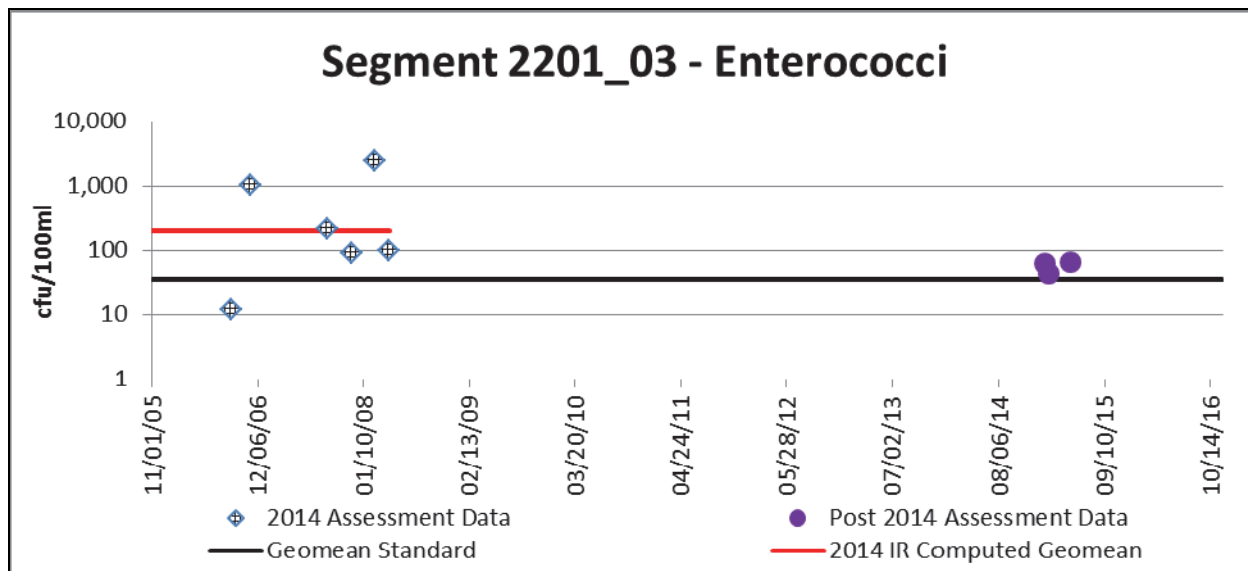
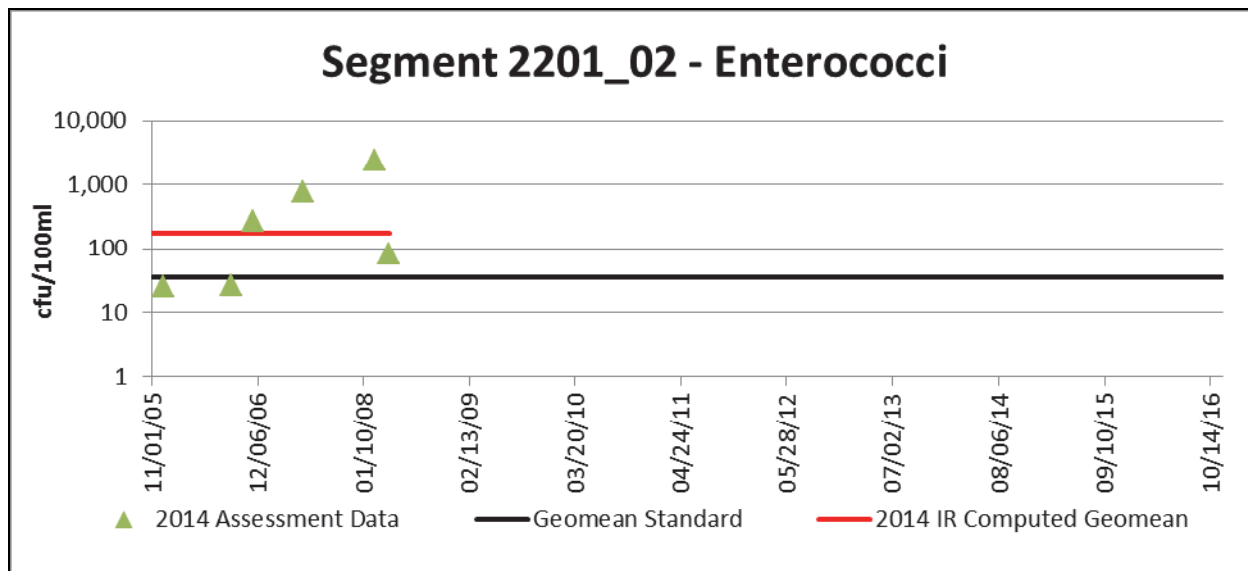
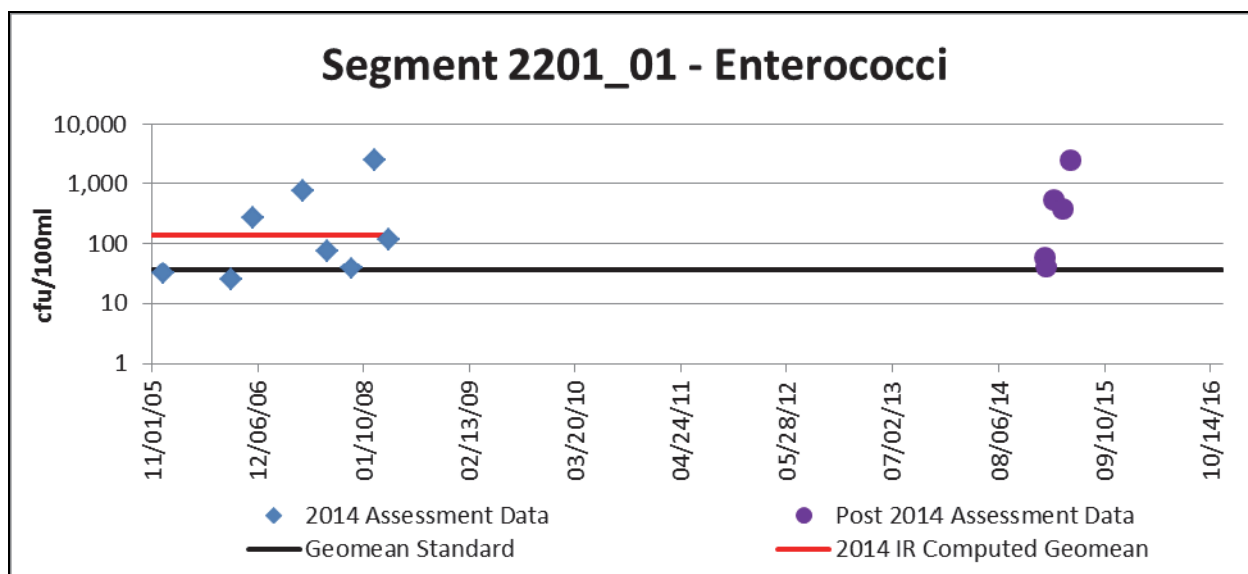
Enterococci analysis, routine bacteria sample collection has been suspended. A special study by TSSWCB in early 2015 collected samples in all AUs except AU_02. All samples collected in 2015 were above the standard.

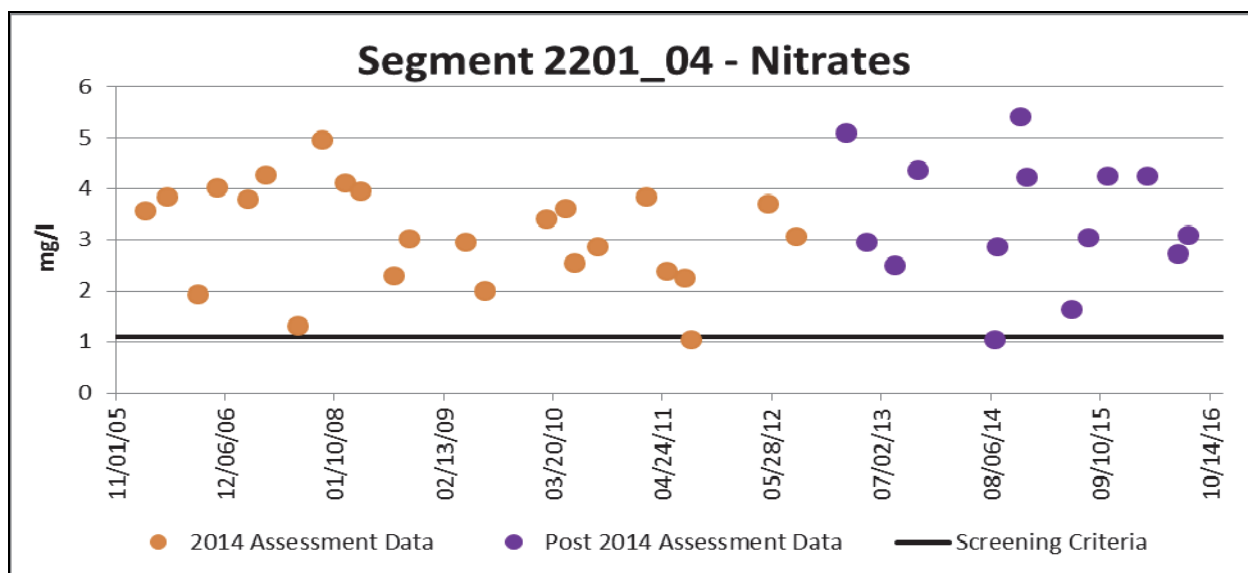
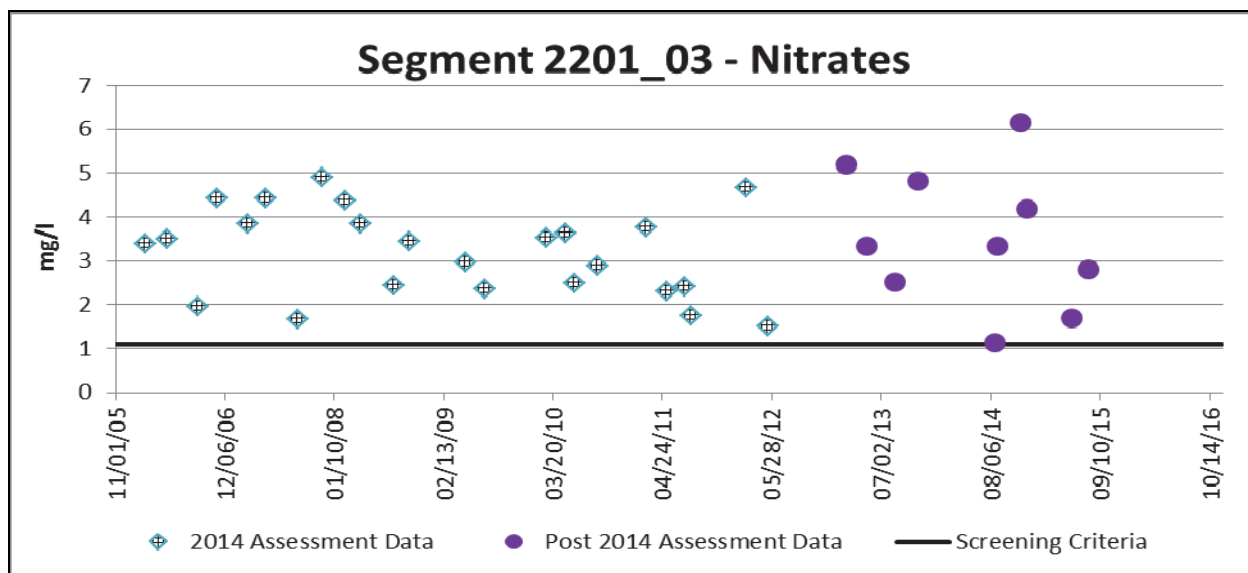
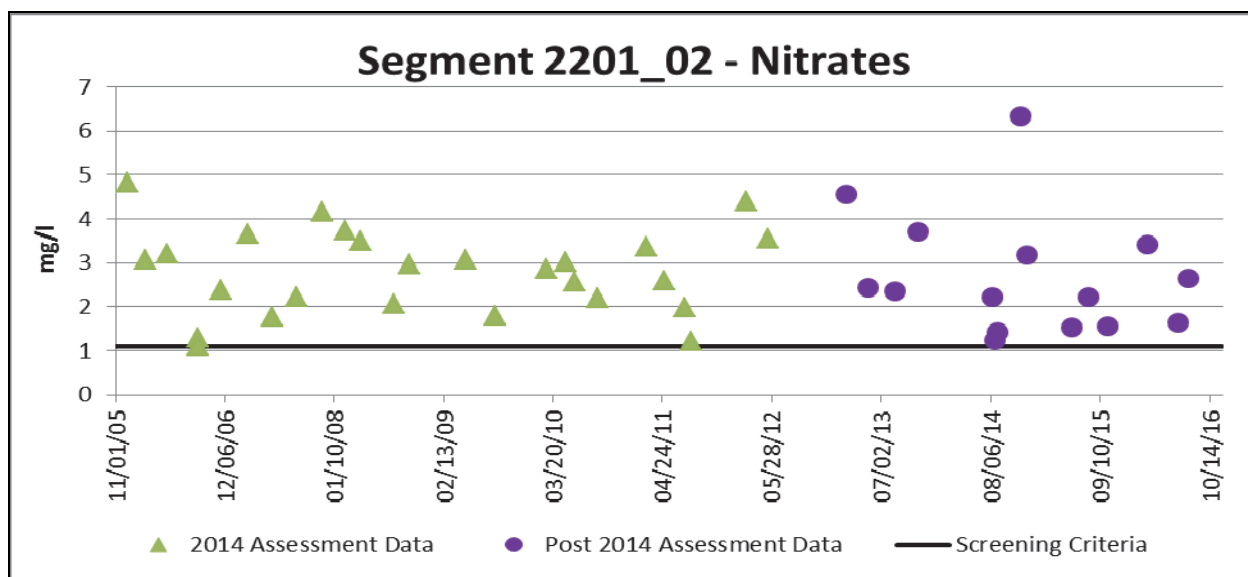
All AUs also have concerns for nitrates and chlorophyll-a. Based on the post 2014 assessment data, nitrates and chlorophyll-a will likely remain listed as concerns in all AUs.

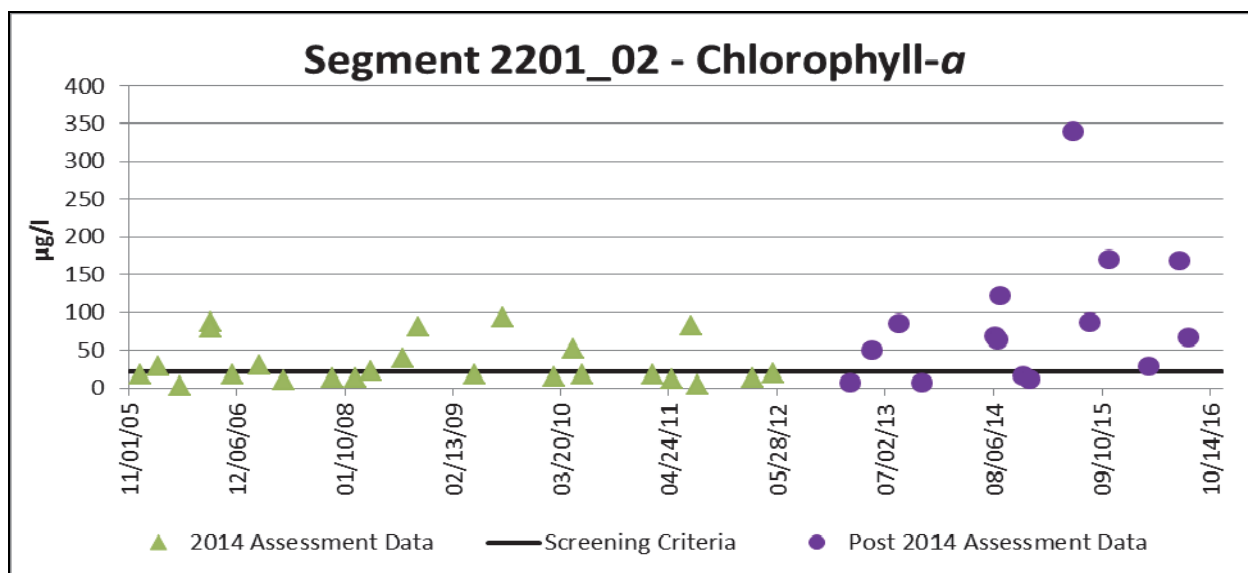
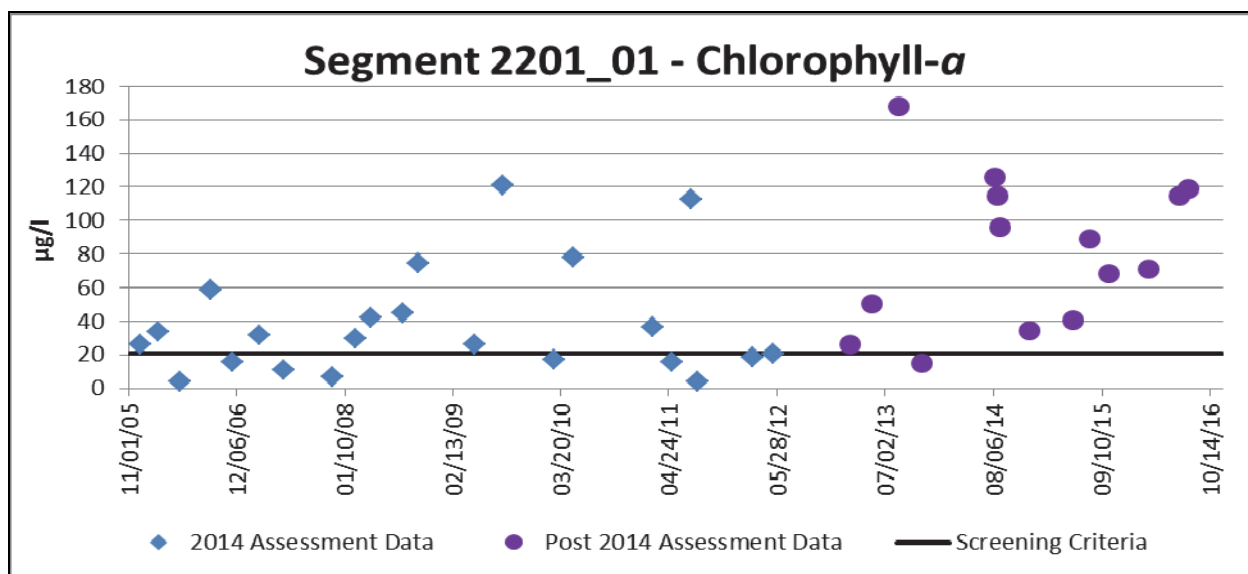
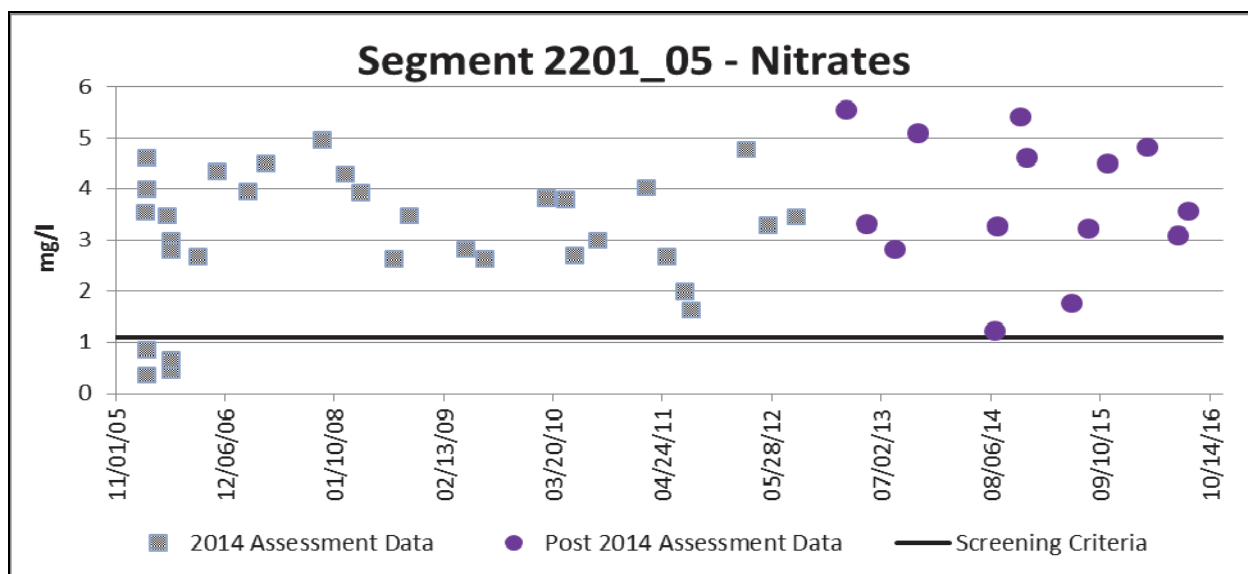
AU-04 and AU_05 have been impaired for depressed DO since the 1996 Assessment, generally attributed to the physical properties of the segment, including the Port of Harlingen and manipulation by dredging and other mechanical changes to the river. At times, barge traffic to the Port causes the anoxic water near the bottom of the channel to rise to the surface which results in fish kills. The impairment for AU_04 and AU_05 24-Hr DO minimum and the 24-Hr DO average for AU_05 are being carried forward in the 2014 Integrated Report. This report also lists AU_05 as having a concern for low DO at the grab screening level. The graphed data does not include the multiple profile readings. Additional 24-Hr DO monitoring will be needed to fully evaluate the concern.

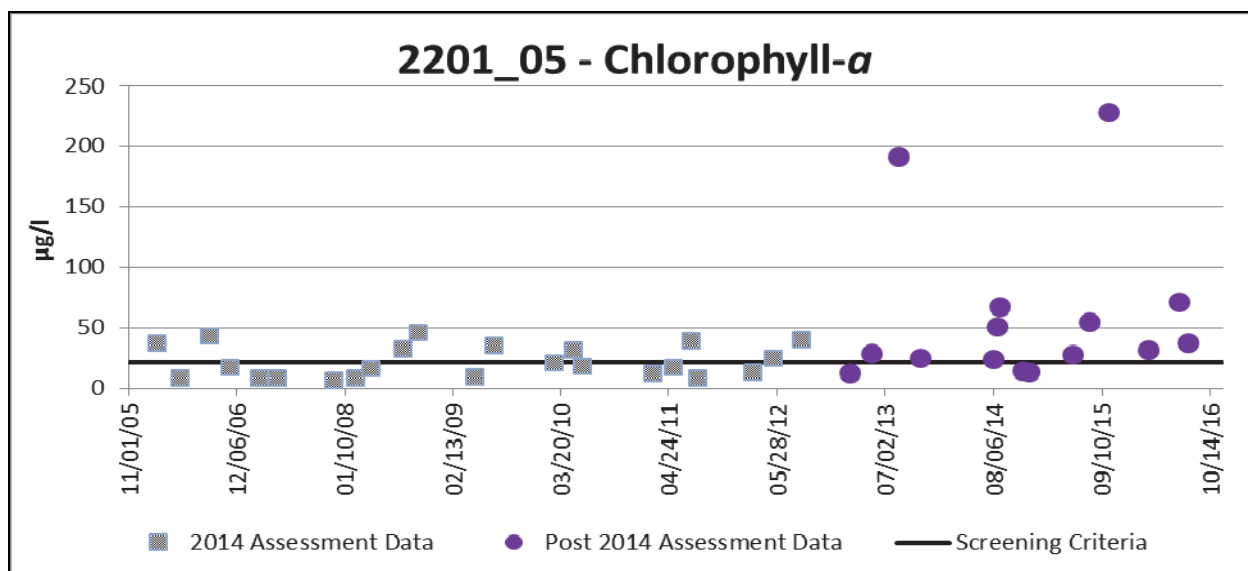
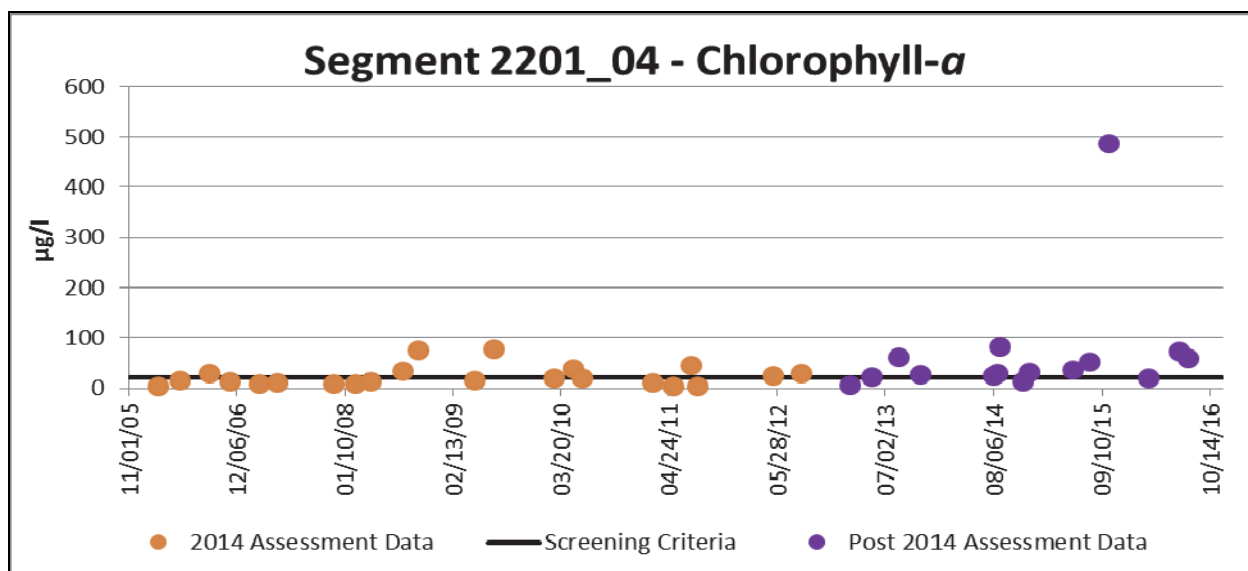
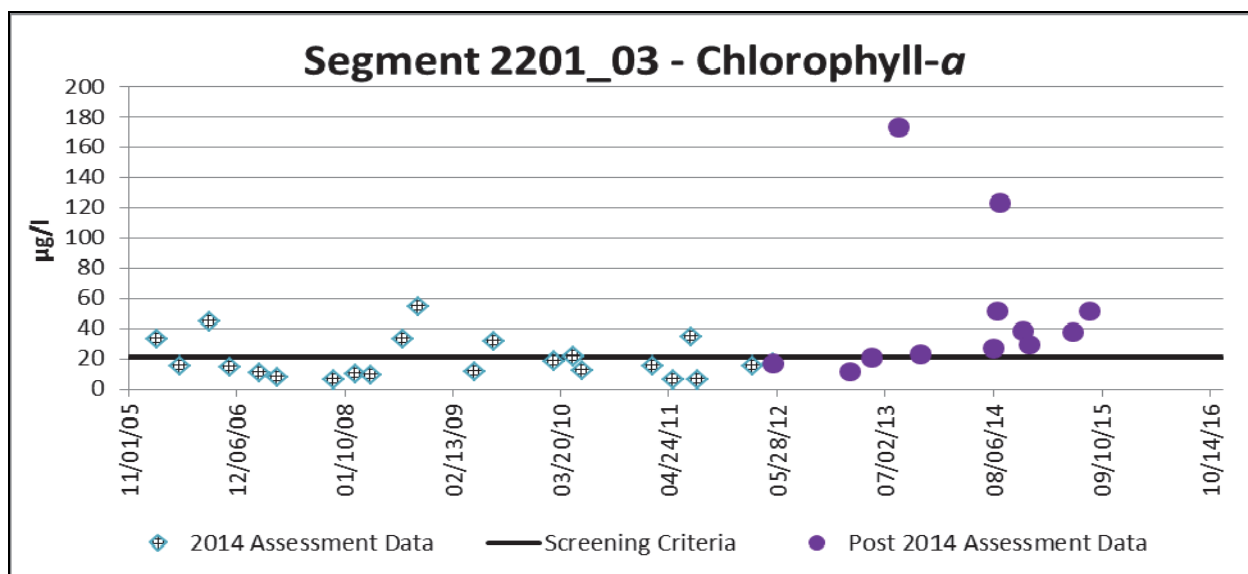
Fish consumption warnings continue for AU_05. More information on fishing advisories and bans are available at <http://dshs.texas.gov/seafood/advisories-bans.aspx>.

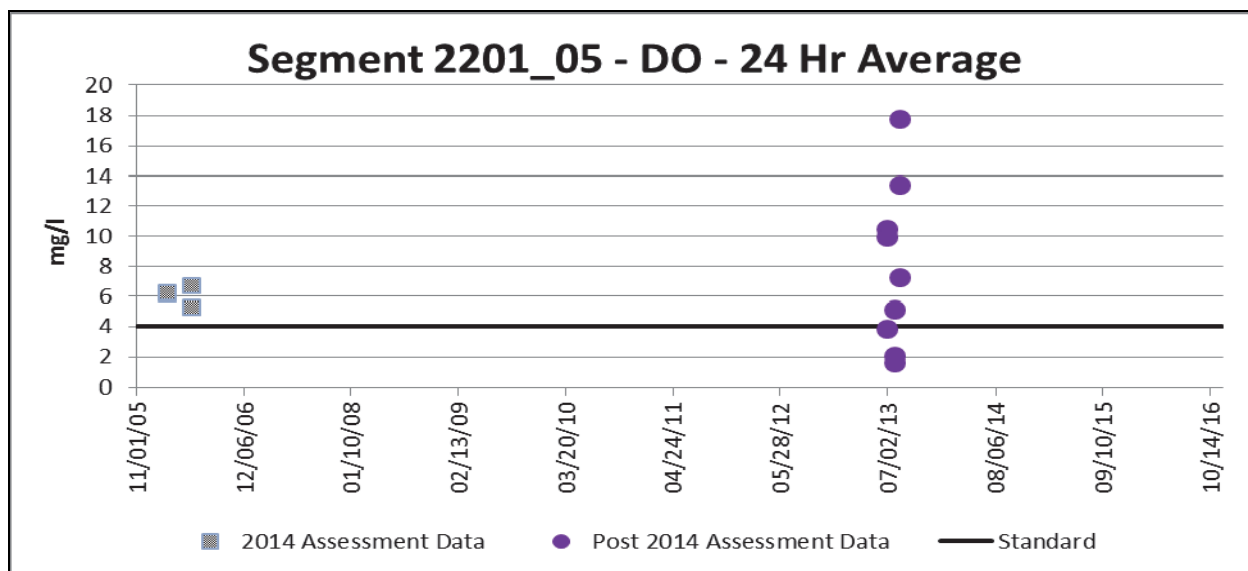
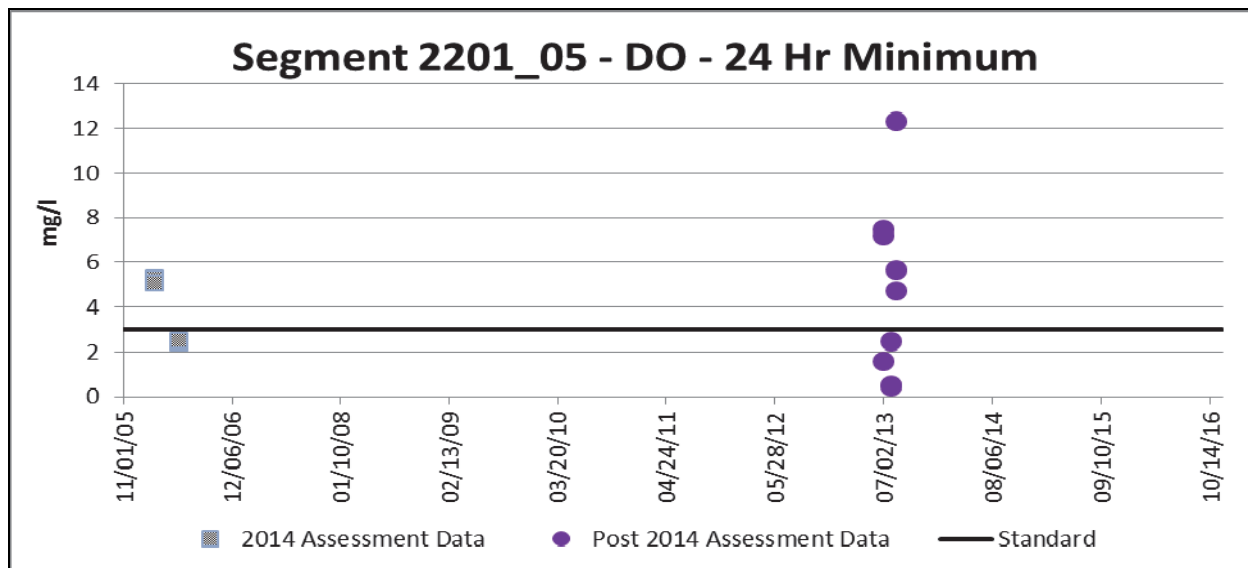
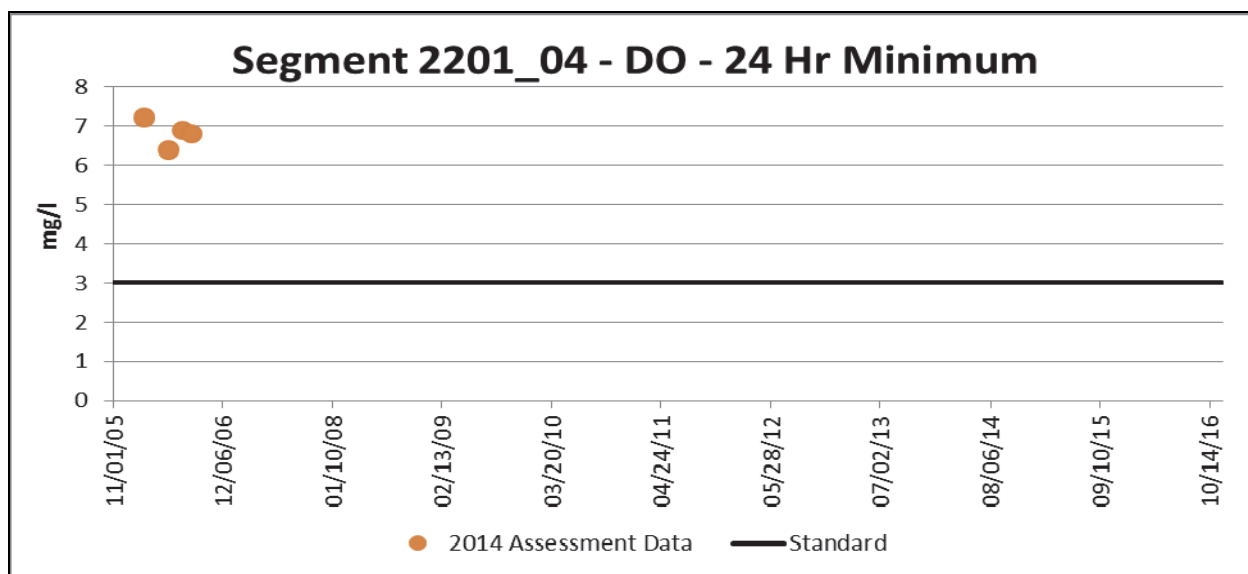
All concerns and impairments are being addressed by the Arroyo Colorado WPP. Visit <http://arroyocolorado.org/> for more information.

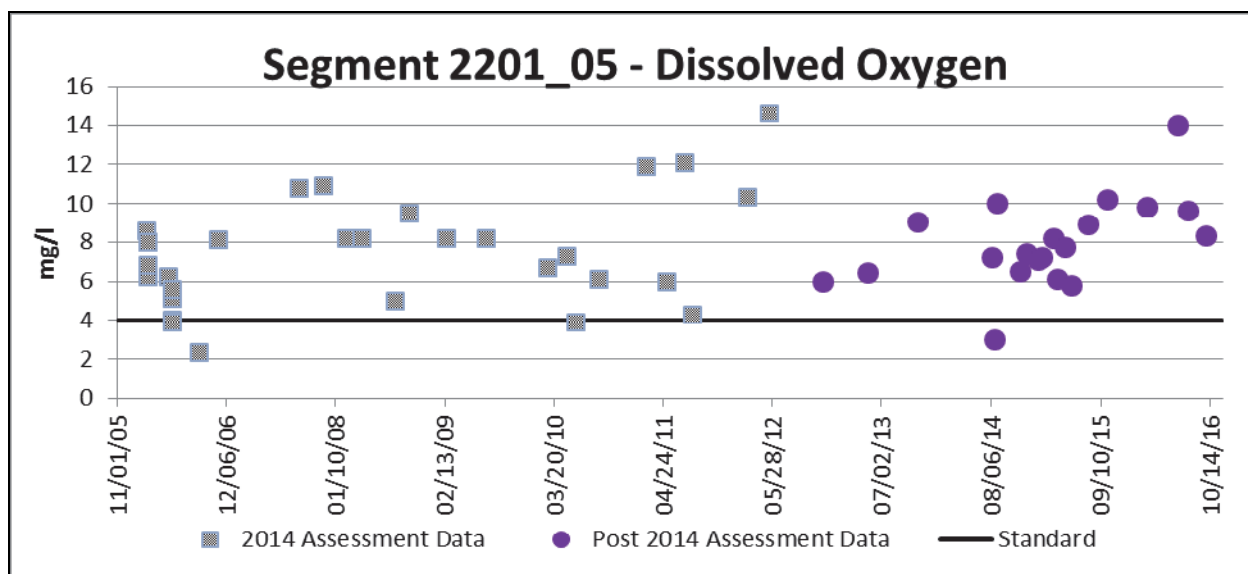












Arroyo Colorado at FM 506 south of La Feria

Segment 2201A: Harding Ranch Drainage Ditch Tributary

The unclassified water body flows from 20.8 km upstream of the FM 508 crossing to the confluence with the Arroyo Colorado Tidal.

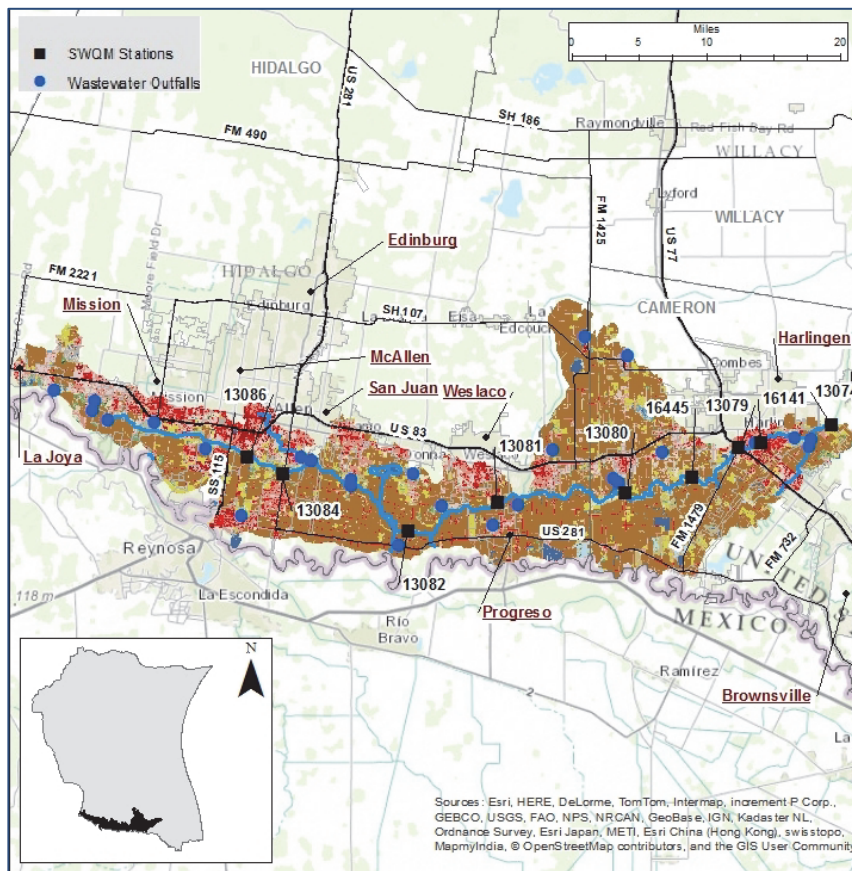
There are no active monitoring sites on the segment. Data were collected during 2001 and 2002 as part of the Arroyo Colorado TMDL study. No additional sampling has taken place, but the concern for ammonia identified during the study is being carried forward in the 2014 Integrated Report and addressed by the WPP.

Segment 2201B: Unnamed Drainage Ditch Tributary in Cameron County Drainage District #3

The unclassified water body flows from 17.6 km upstream of the FM 510 crossing to the confluence with the Arroyo Colorado Tidal in the Rio Hondo turning basin.

There are no active monitoring sites on the segment. Data were collected during 2001 and 2002 as part of the Arroyo Colorado TMDL study. No additional sampling has taken place, but a bacteria impairment and concerns for nitrates and chlorophyll-a are listed in the 2014 Integrated Report and addressed by the WPP.

Segment 2202: Arroyo Colorado Above Tidal



The segment flows 63 miles FM 2062 in Hidalgo County to 110 yards downstream of Cemetery Road south of the Port of Harlingen. The segment is divided into four AUs; from the downstream end of the segment to the confluence with Little Creek just upstream of State Loop 499 (AU_01), from the confluence with Little Creek to the confluence with La Feria Main Canal just upstream of Dukes Highway (AU_02), from confluence with La Feria Main Canal to the confluence with La Cruz Resaca just downstream of FM 907 (AU_03), and from the confluence with La Cruz Resaca to the upstream end of the segment (AU_04). Its watershed is 252,633 acres.

This area is one of the fastest growing areas in the State of Texas. There are numerous cities along US 83 just north of the Arroyo Colorado, with farming activities in between. The Arroyo Colorado is the primary conveyance of wastewater and agricultural runoff for this area.

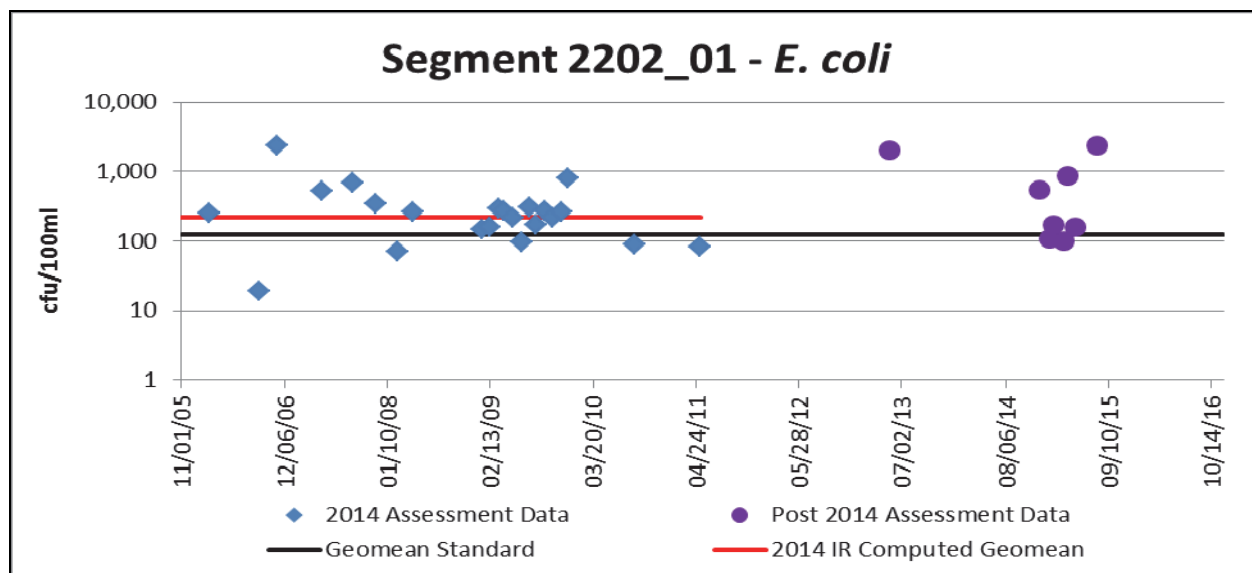
All AUs have been impaired for bacteria for primary contact recreation since the 1996 Assessment. Based on post 2014 assessment data, the impairment will likely remained for all AUs.

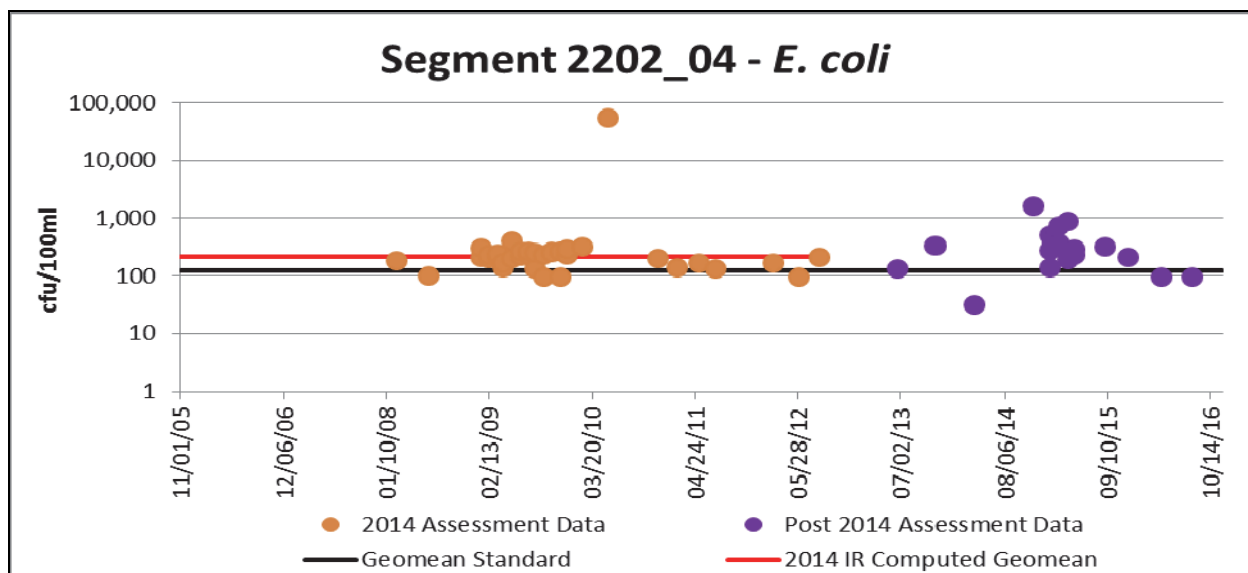
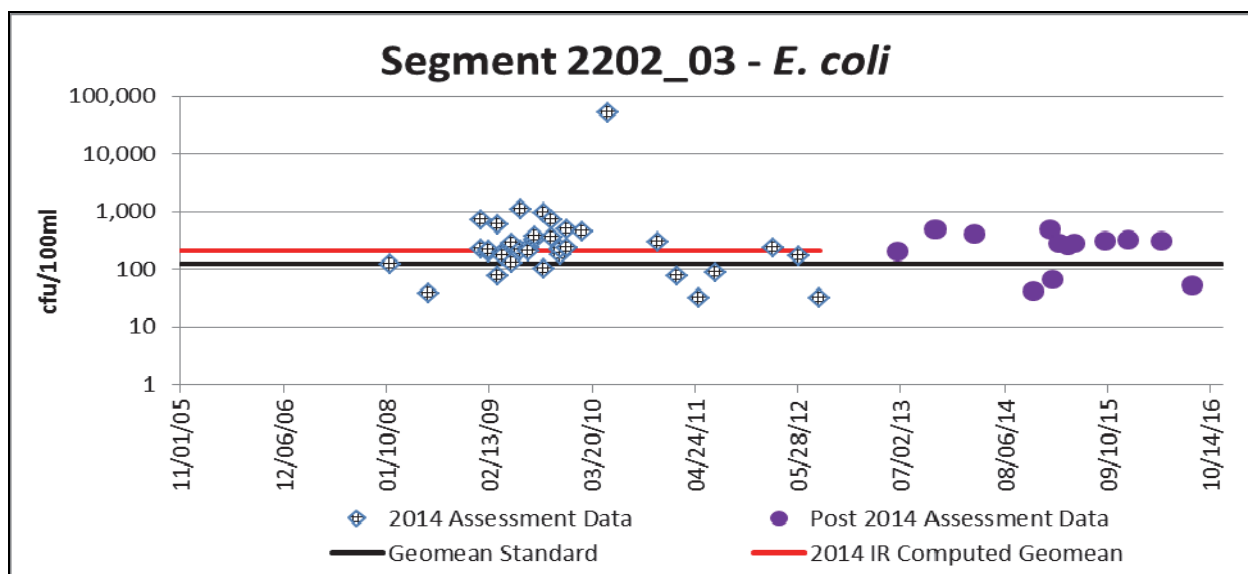
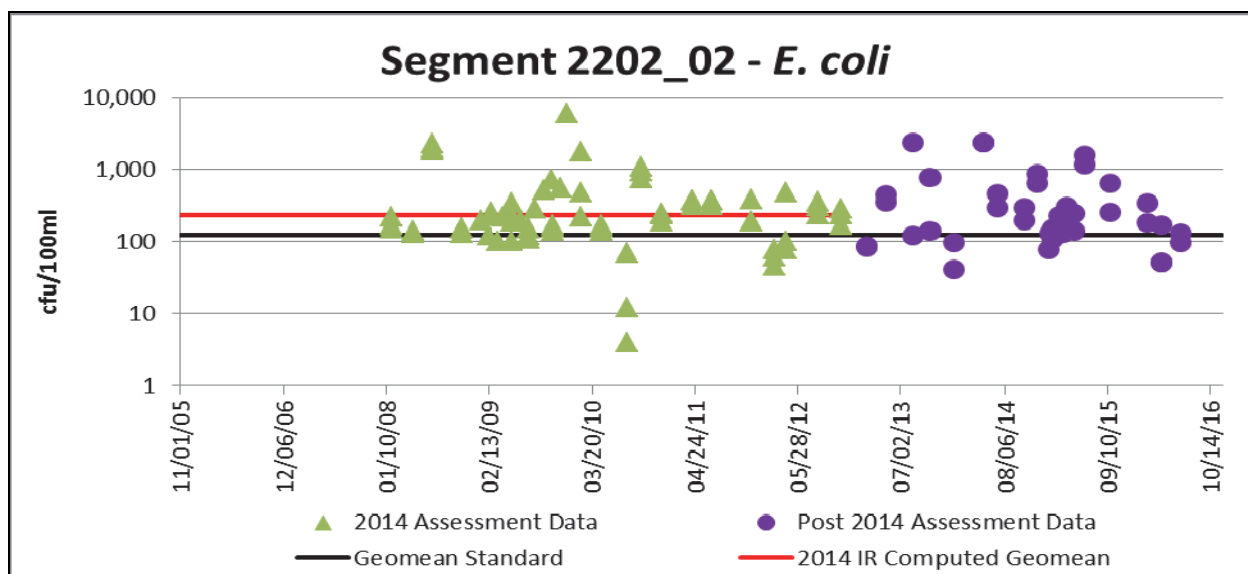
All AUs also have concerns for nitrates, chlorophyll-a, and total phosphorus. Based

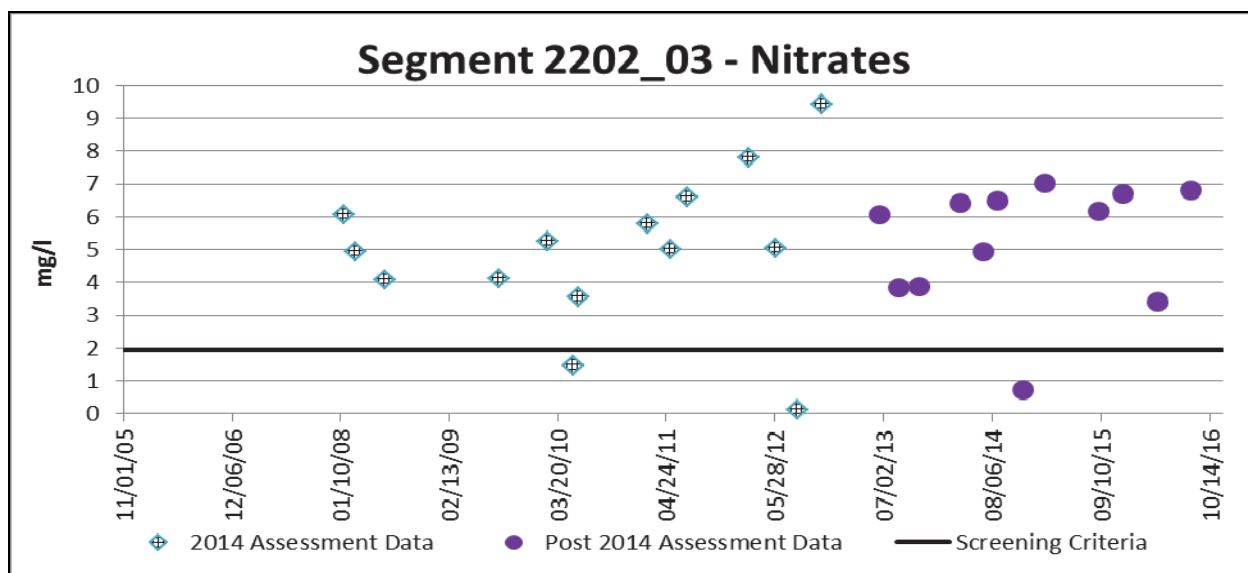
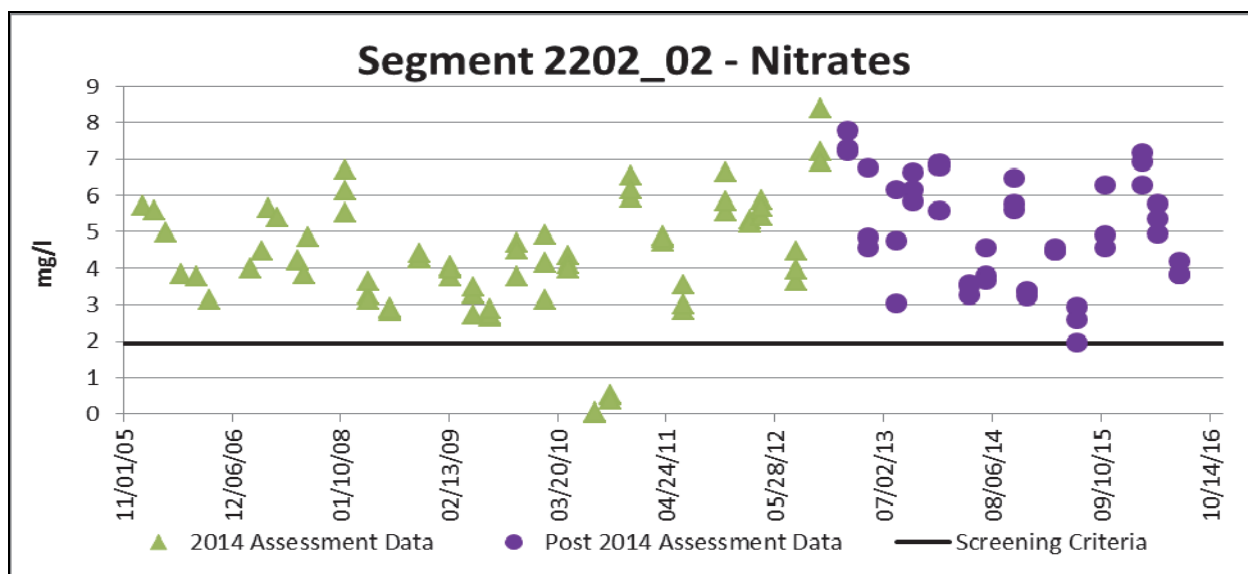
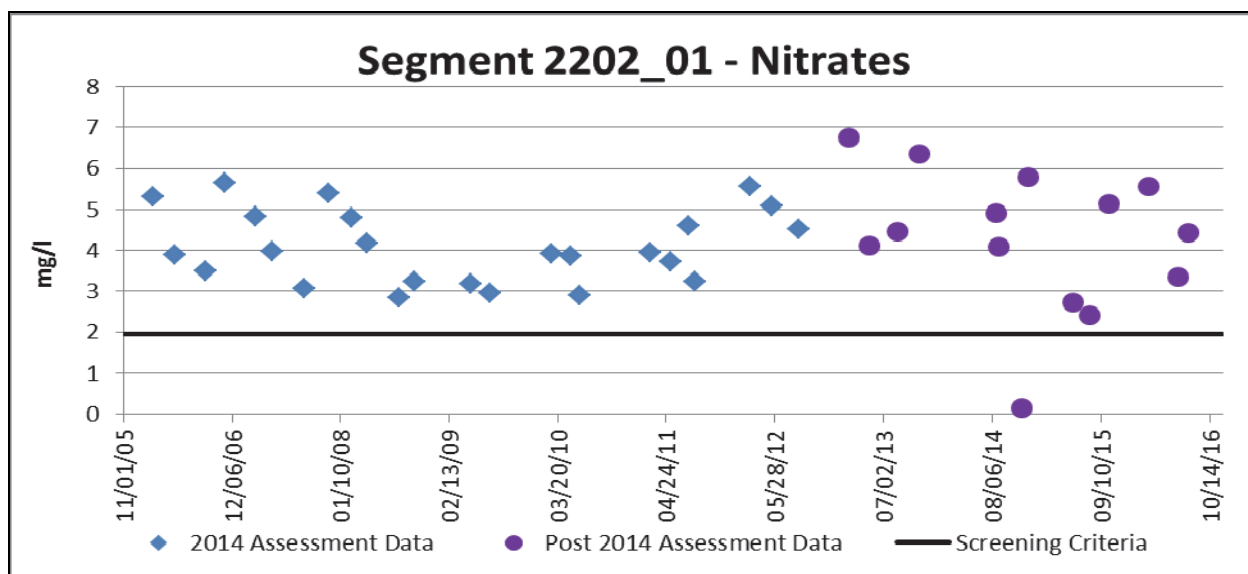
on the post 2014 assessment data, chlorophyll-a, nitrates, and total phosphorus will likely remain listed as concerns in all AUs.

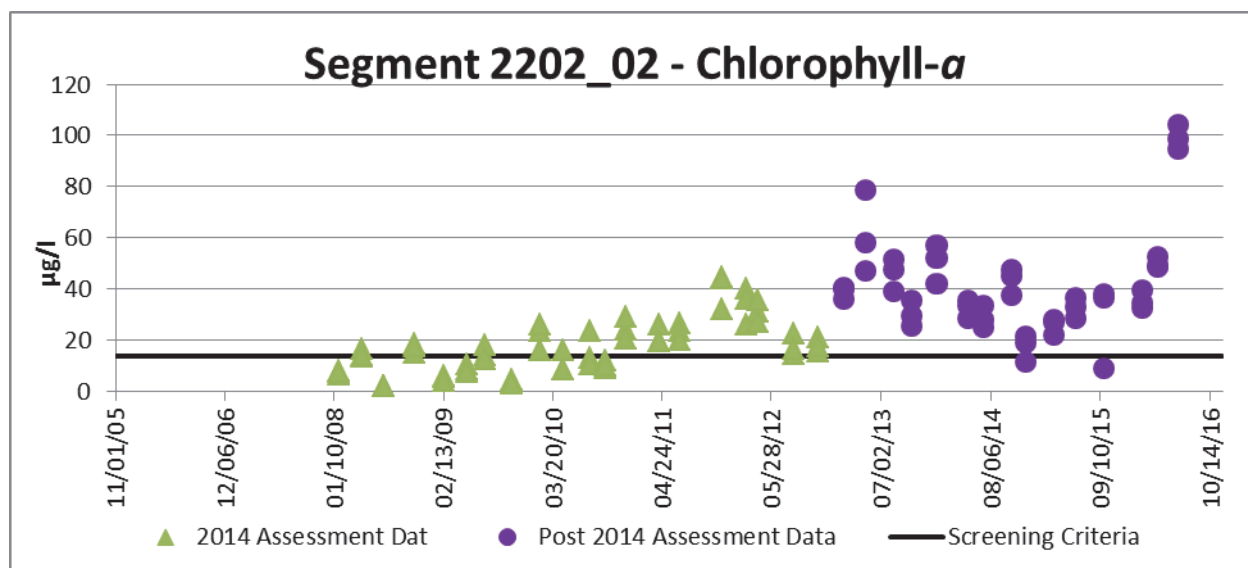
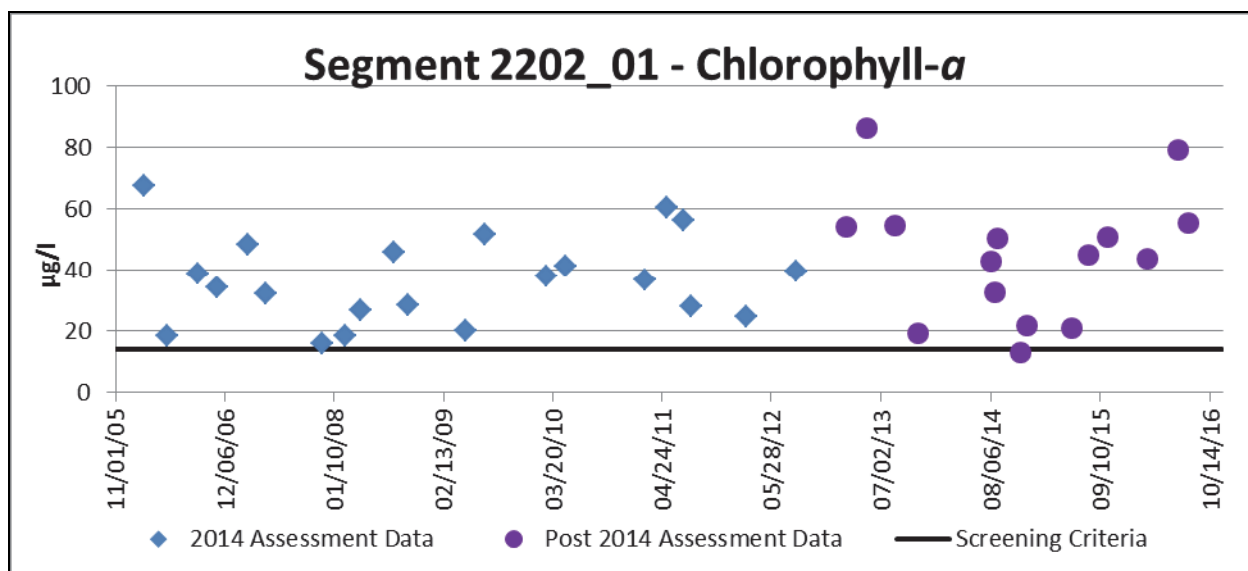
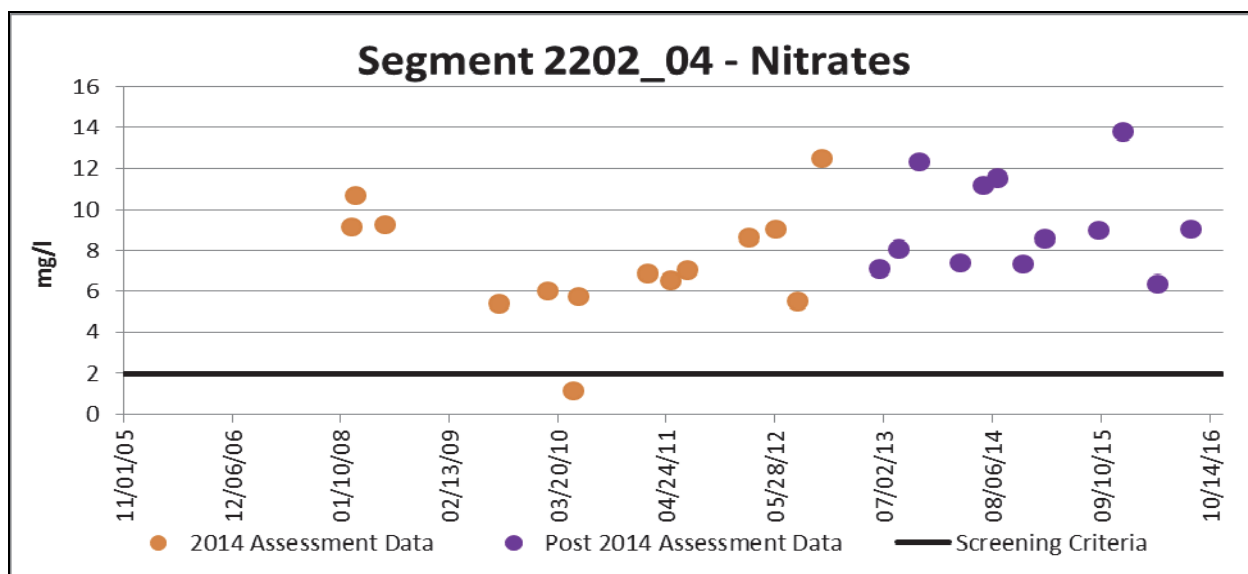
Fish consumption warnings continue for all AUs. More information on fishing advisories and bans are available at <http://dshs.texas.gov/seafood/advisories-bans.aspx>.

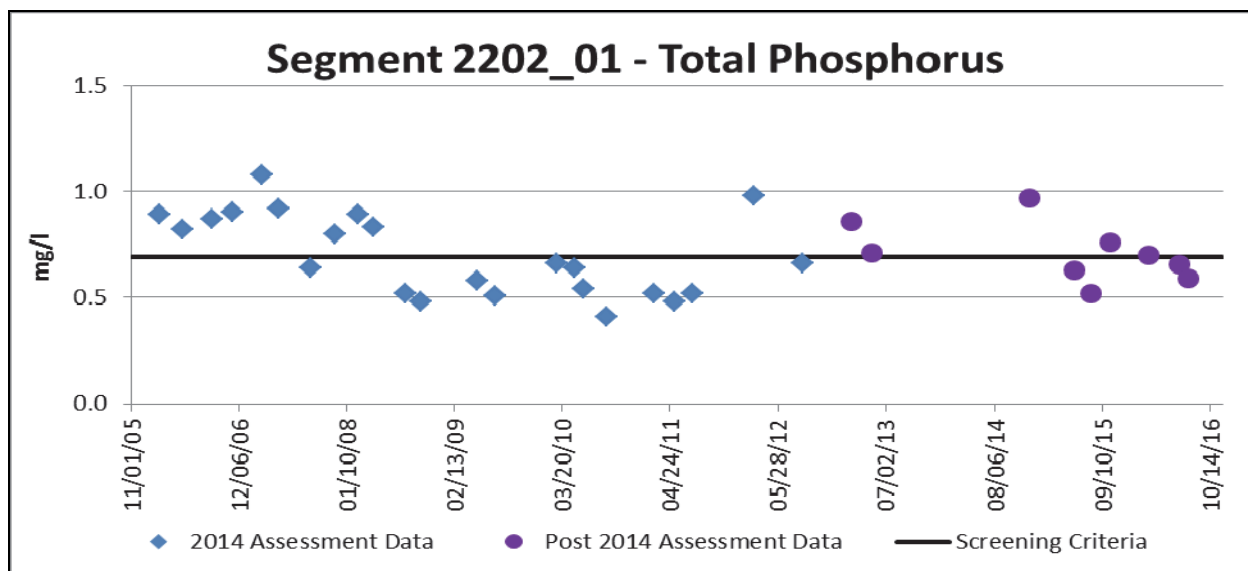
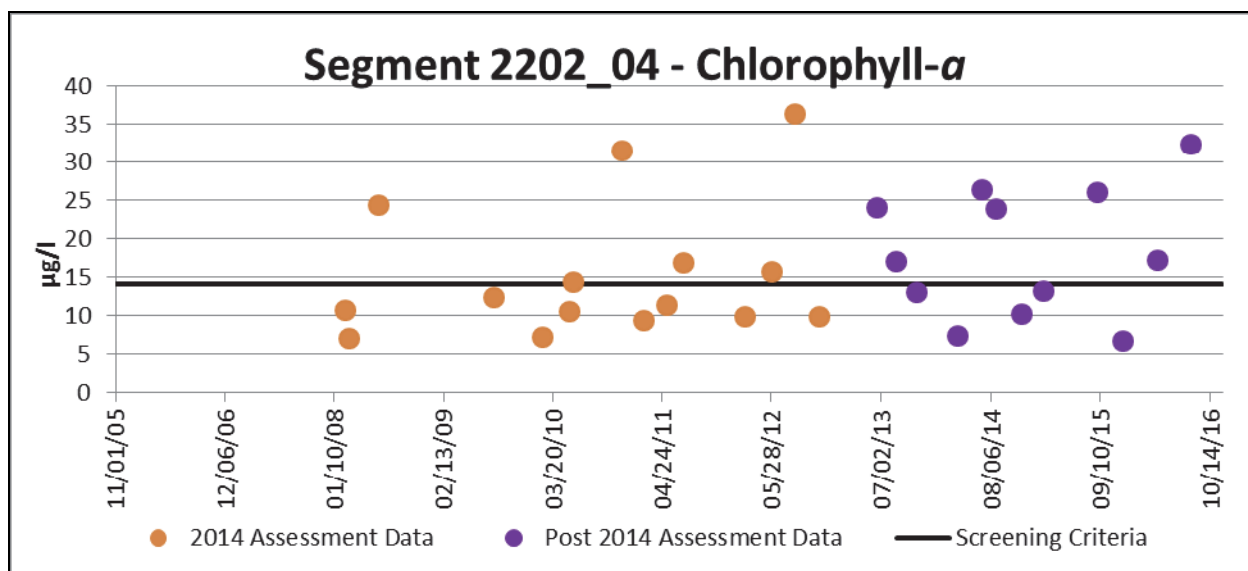
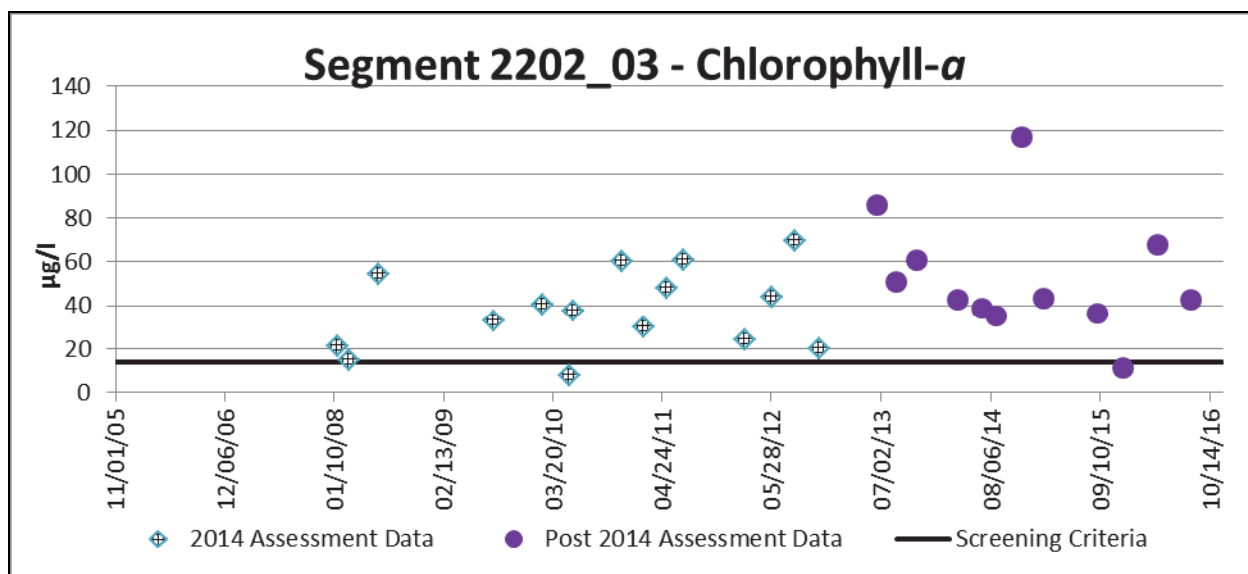
All concerns and impairments are being address by the Arroyo Colorado WPP. Visit <http://arroyocolorado.org/> for more information.

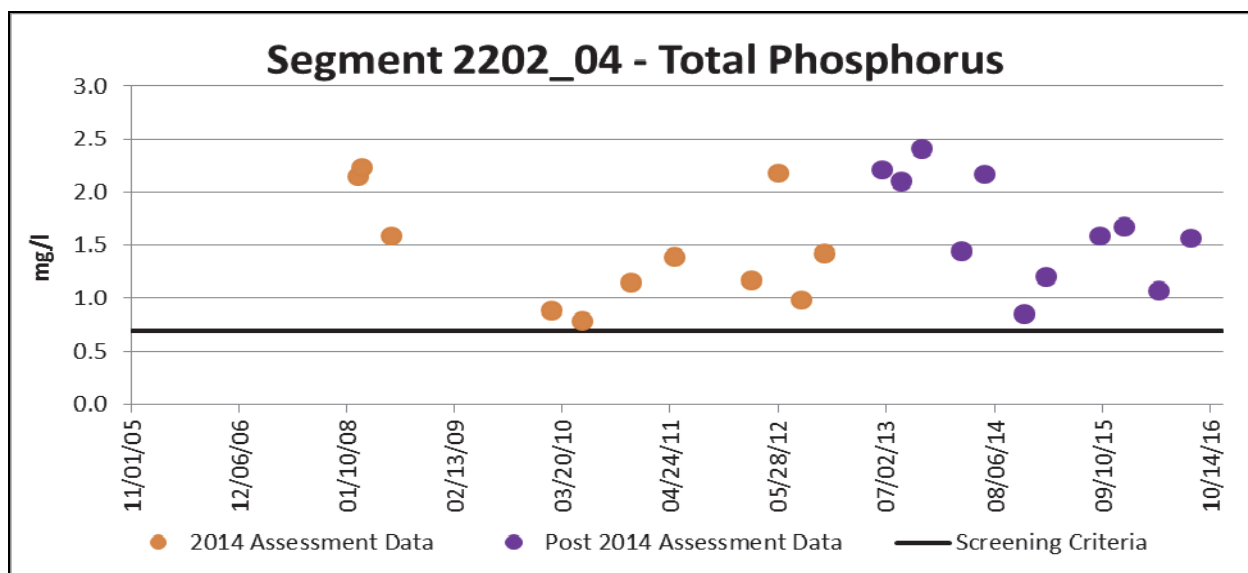
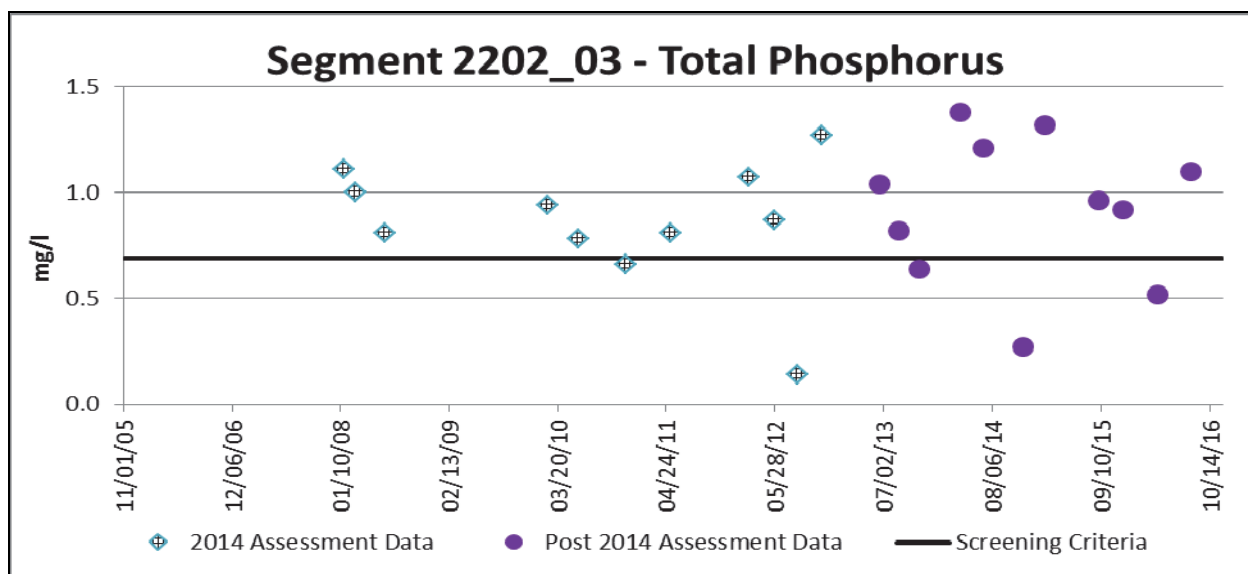
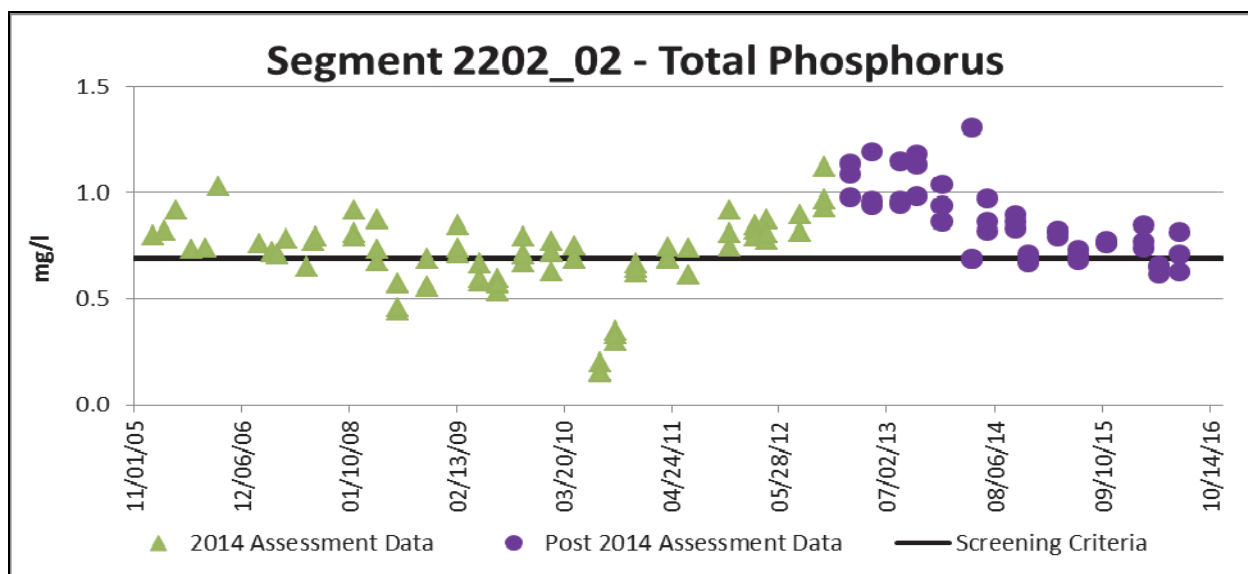












Segment 2202A: Donna Reservoir

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 sites on the segment.

The unclassified water body has been impaired for Polychlorinated biphenyl (PCB) in edible fish tissue since the 1996 Assessment. A TMDL was conducted and an Implementation Plan was approved in 2001. This pollutant is considered a background source that reflects the site-specific application histories and loss rates. Any continuing source of pollutant loadings occur from nonpoint source runoff, leaching, or erosion of sinks that may exist within the watershed. Residual PCB contamination from a site near the Donna Canal is likely to remain a continuing source until site investigation and remediation is completed. No authorized point source discharges of this pollutant are allowed by law. The Implementation Plan is available at https://www.tceq.texas.gov/assets/public/waterquality/tmdl/07arroyoleg/07-implan_arroyo.pdf.



No Fishing sign at Donna Reservoir

Segment 2202B: Unnamed Drainage Ditch Tributary to Arroyo Colorado

The unclassified water body is perennial drainage ditch that flows into the Arroyo Colorado in Harlingen.

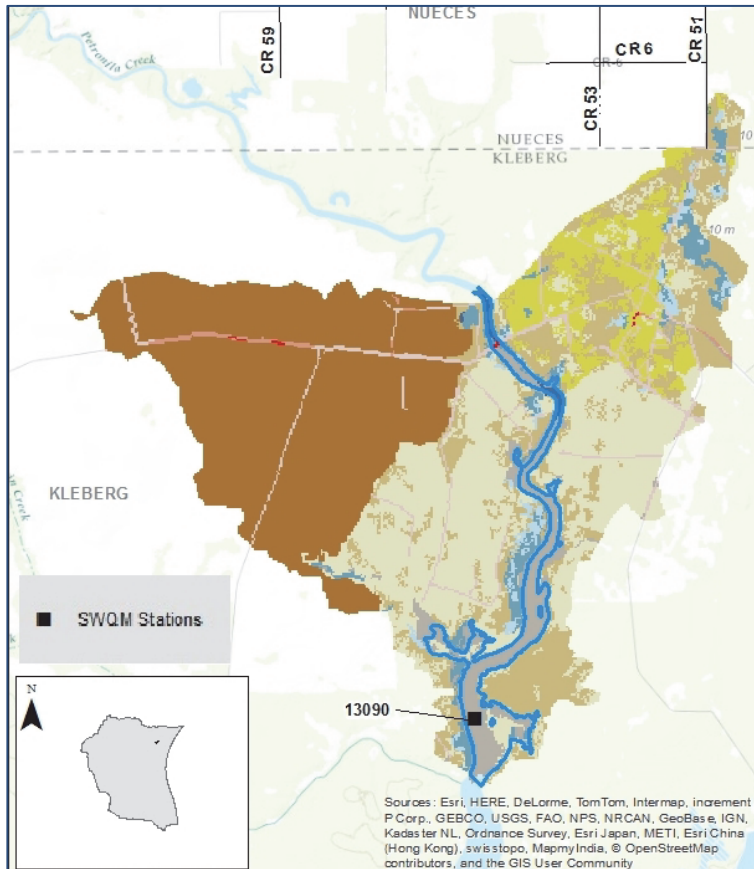
There are no active monitoring sites on the segment. Data were collected as part of the Arroyo Colorado TMDL study. No additional sampling has taken place, but concerns for bacteria, ammonia, and chlorophyll-a identified during the study are being carried forward in the 2014 Integrated Report and addressed by the WPP.

Segment 2202C: Unnamed Drainage Ditch Tributary to Arroyo Colorado

The unclassified water body is from a point 1.1 miles upstream of US 281 to the confluence with the Arroyo Colorado southeast of Donna.

There are no active monitoring sites on the segment. Data were collected as part of the Arroyo Colorado TMDL study. No additional sampling has taken place, but concerns for bacteria and ammonia identified during the study are being carried forward in the 2014 Integrated Report and addressed by the WPP.

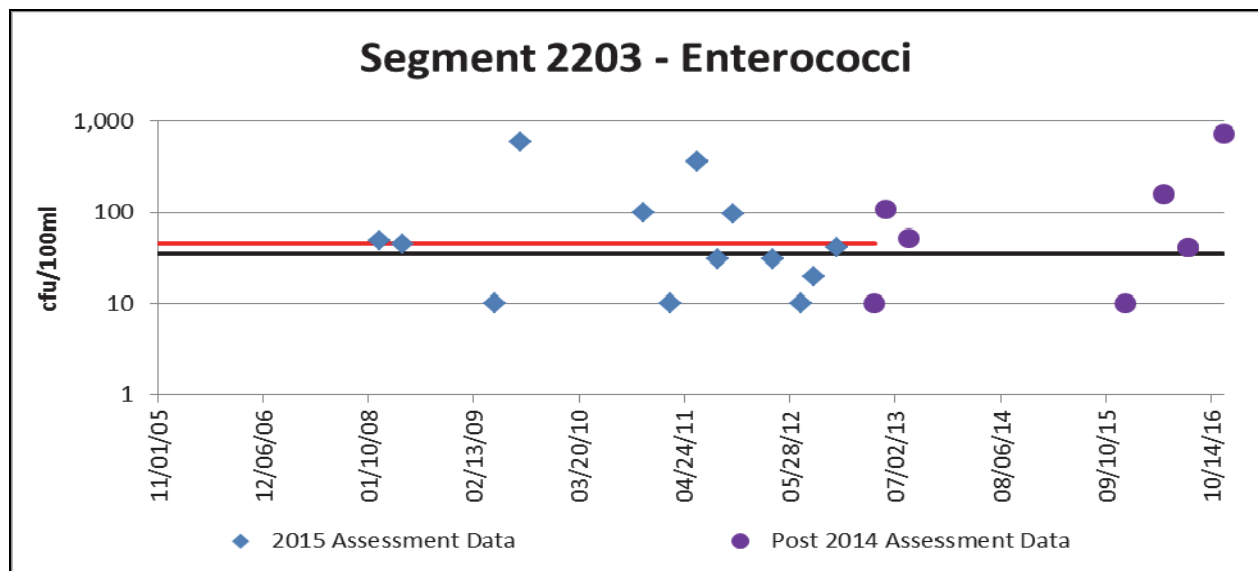
Segment 2203: Petronila Creek Tidal

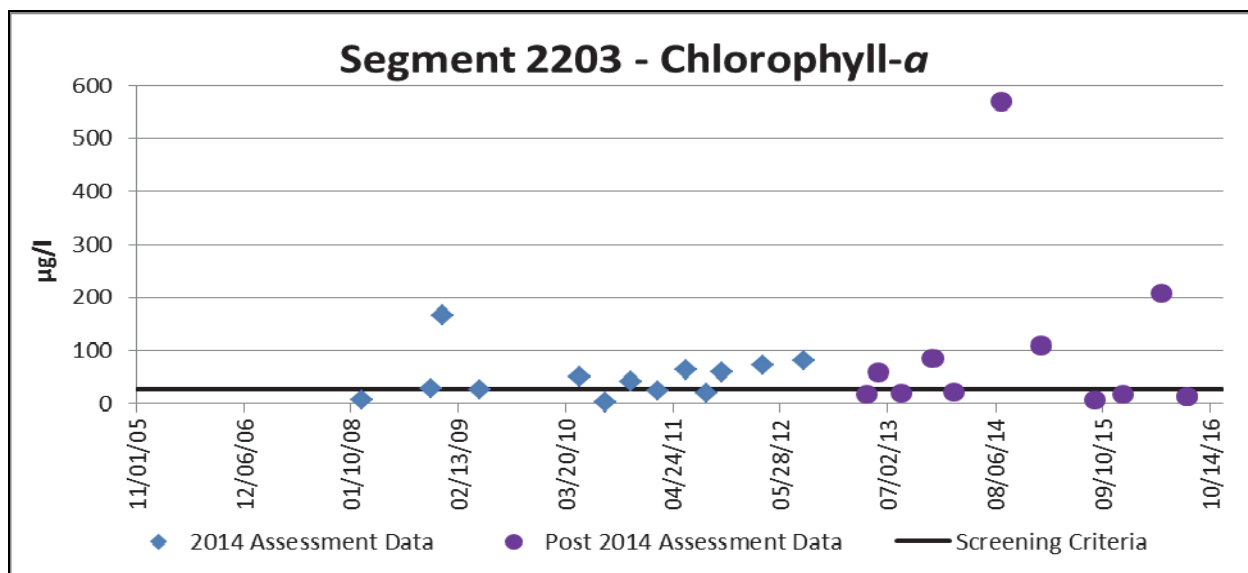
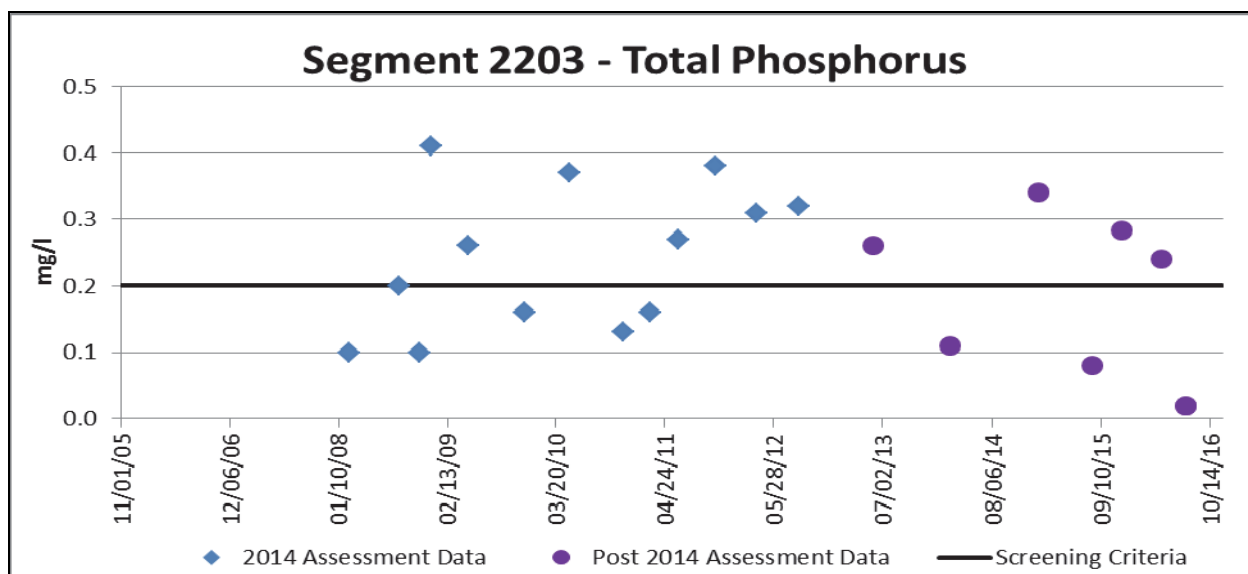
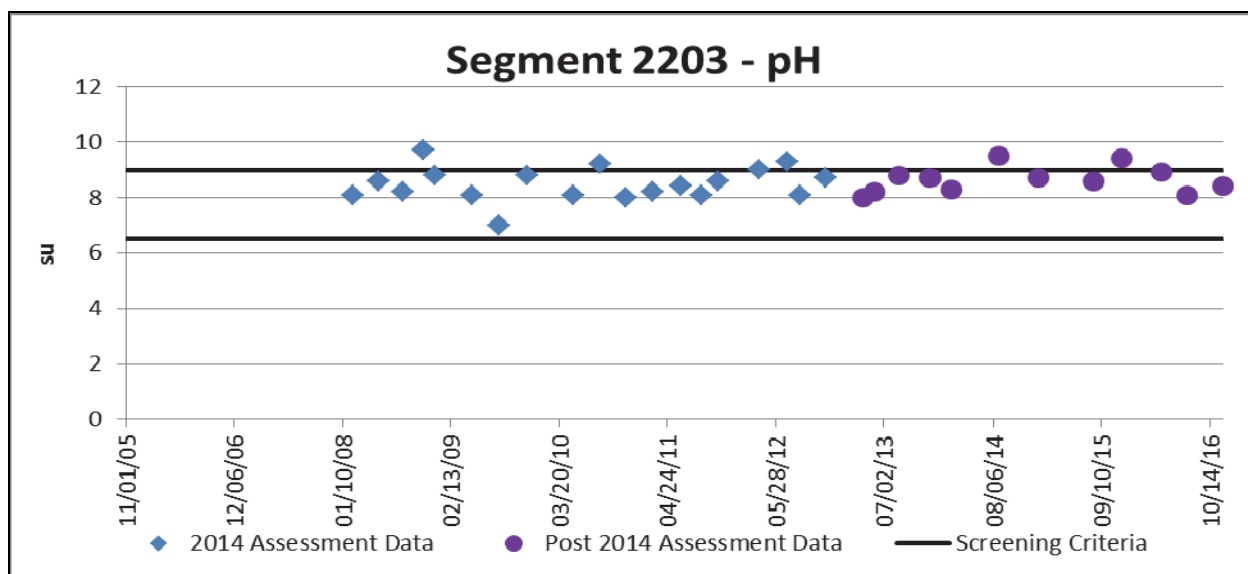


The segment flows 14 miles from a point 0.6 miles upstream of a private road crossing near Laureles Ranch in Kleberg County to the confluence with Chiltipin Creek / Alazan Bay in Kleberg County. Its watershed is 10,918 acres.

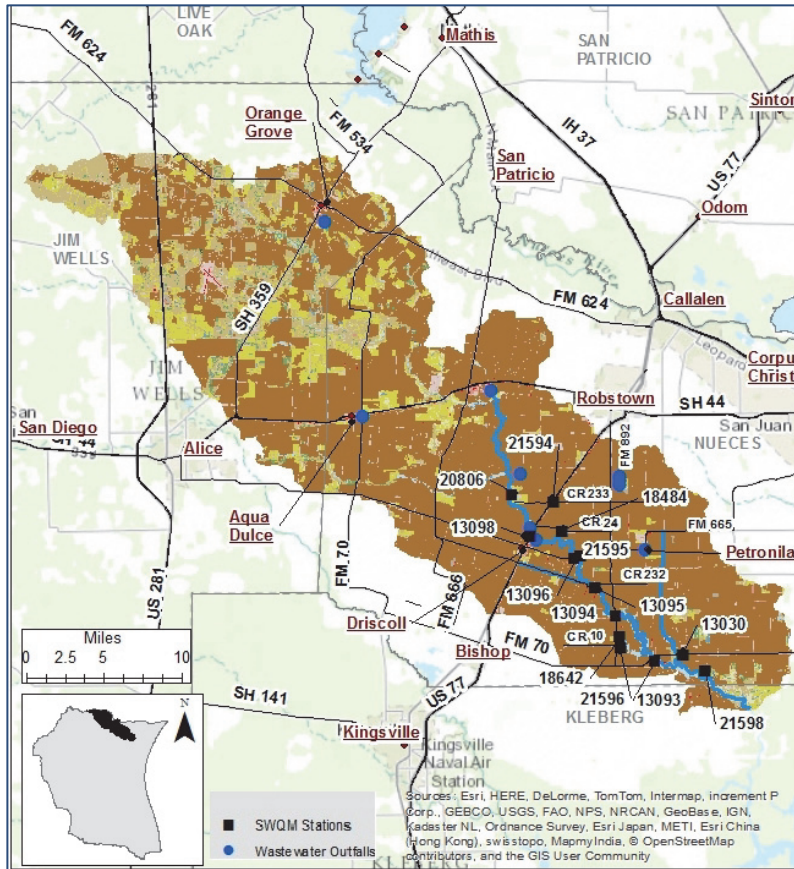
Station 13090 is the only active SWQM site at which TCEQ conducts routine quarterly sampling. Due to its location being on King Ranch property, accessibility is sometimes an issue.

The segment has been listed as having an impairment for bacteria for primary contact recreation since the 2010 Texas Integrated Report. The segment also has concerns for pH, total phosphorus, and chlorophyll-a. Based on the post 2014 assessment data, the segment will most likely remain listed for the impairment and all concerns.





Segment 2204: Petronila Creek Above Tidal



The segment flows 35 miles from the confluence of Agua Dulce and Banquete Creeks in Nueces County to a point 0.6 miles upstream of a private road crossing near Laureles Ranch in Kleberg County. The segment is divided into two AUs; from the downstream end to the confluence with 2204A (AU_01) and from the confluence with 2204A to the upstream end of the segment (AU-02). Its watershed is 1,867,755 acres.

The segment is primarily farmland interspersed with a number of small communities and cities. It flows through the City of Driscoll, at US 77, and several colonias.

There are a number of WWTPs that discharge to this segment and a storm water discharge permit for a hazardous waste landfill.

The segment has been impaired for TDS, chloride, and sulfates since 1999. A TMDL was conducted and concluded that the impairments were the result of historic oil and gas operations. The Implementation Plan recommended a continuous water quality monitoring (CWQM) station and a program to properly plug and abandon wells that are no longer active. The CWQM instrumentation was installed by TCEQ at the location of Station 13093 at FM 70 in December 2006. NRA performed the routine maintenance. The CWQM station was discontinued in February 2016 after it was

determined that sufficient data had been gathered to help understand the relationship between water level and pollutant concentrations.

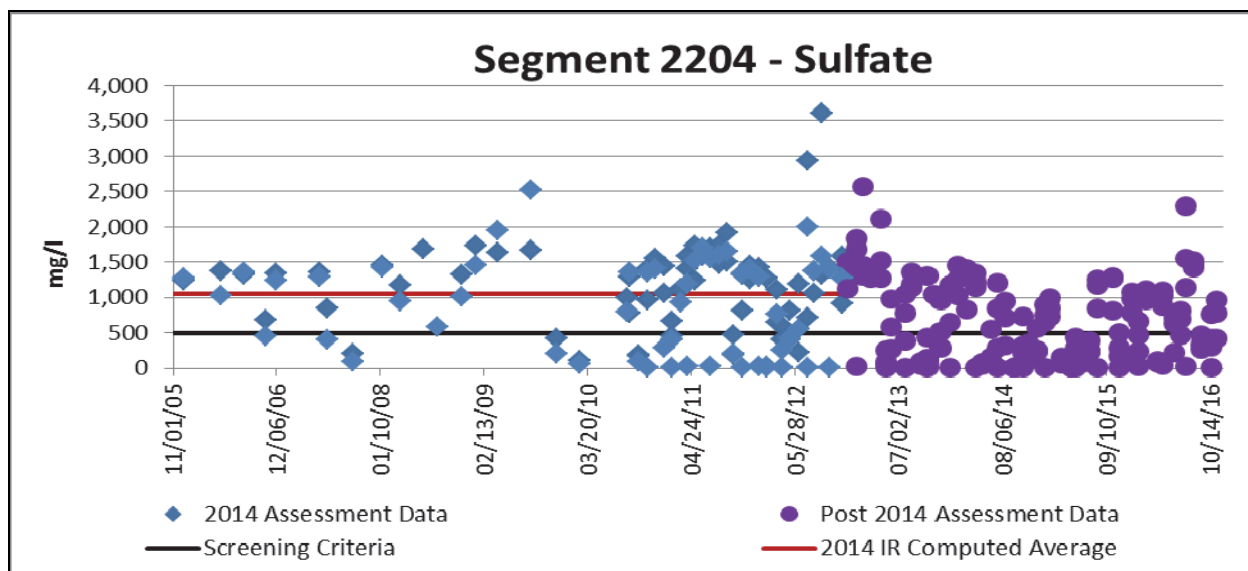
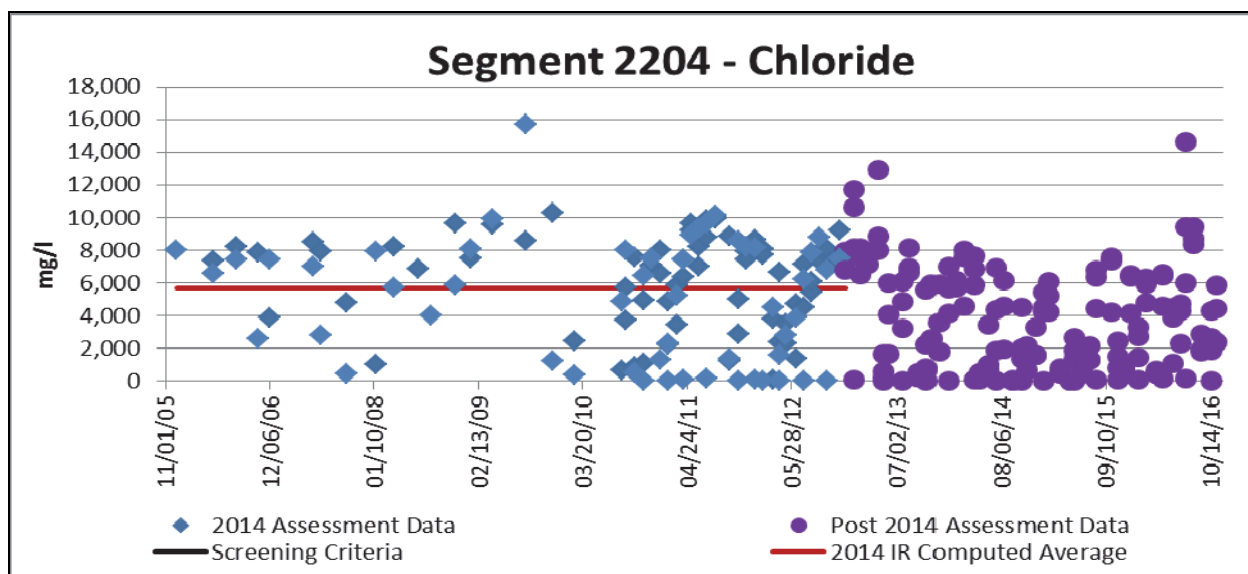
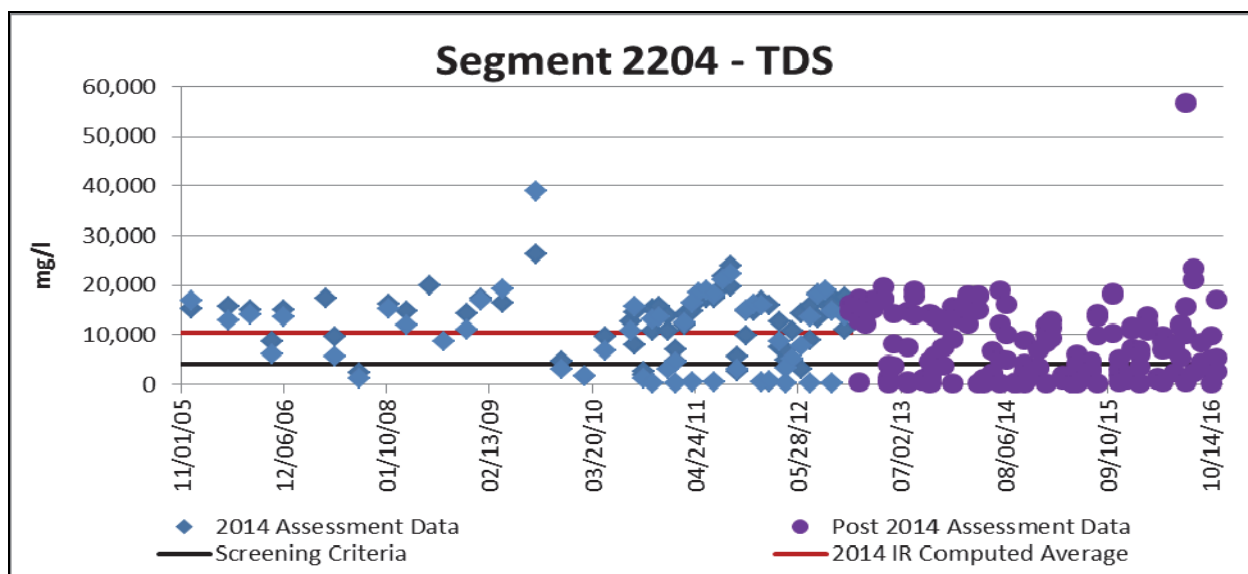
The Railroad Commission of Texas (RRC) has been working with identified operators to properly plug and abandon wells and to remove contaminated soils. Where operators cannot be identified, the RRC has been doing work as funding is available.

NRA completed a review of the Implementation Plan in FY 2014. Continued routine monitoring and monthly monitoring in the creek and tributaries were recommended and implemented. Based on the post 2014 assessment data, the segment will most likely remain listed for the TDS, chloride, sulfate impairments.

The segment also has concerns for chlorophyll-a in both AUs. Based on the post 2014 assessment data, the segment will most likely remain listed for these concerns in both AUs.



CWQM Station at Petronila Creek at FM 70



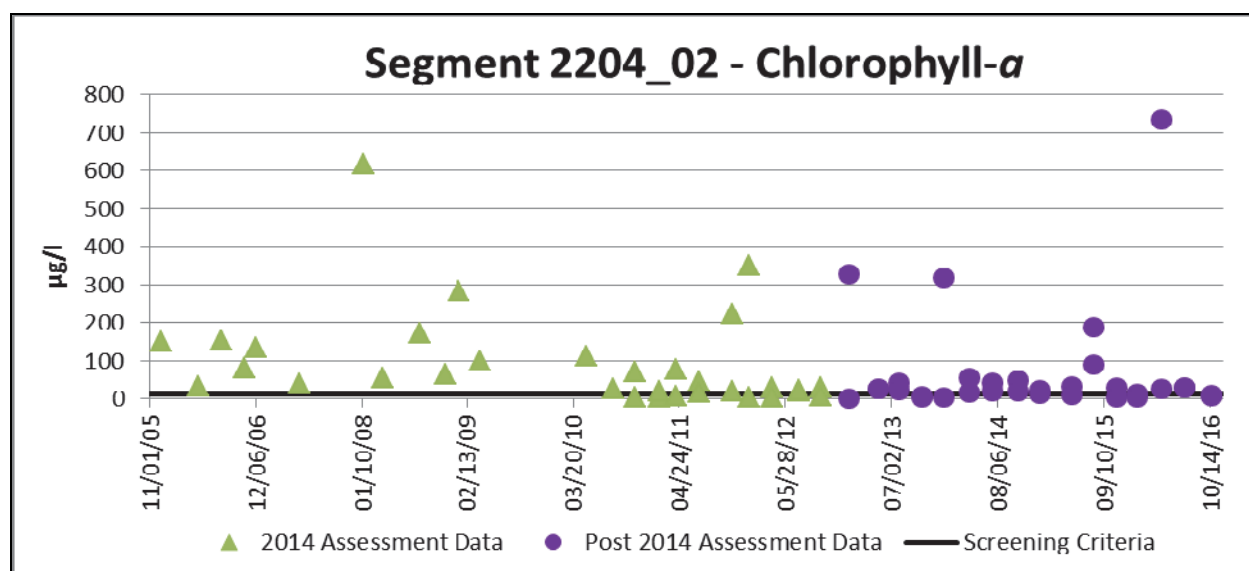
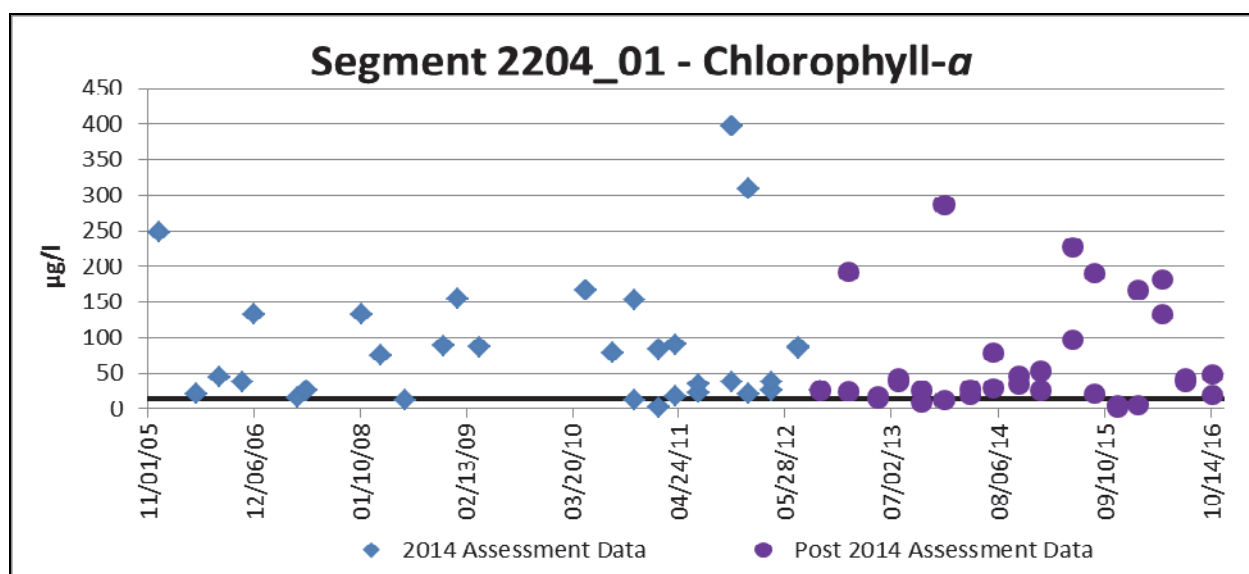


Table 3-6: List of Impairments and Concerns in the Nueces – Rio Grande Coastal Basin

Segment Name	AU	Description	Impairment	Concern
2201 Arroyo Colorado Tidal	01	From the confluence with the Laguna Madre to the confluence with San Vicente Drainage Ditch	Bacteria	Chlorophyll-a, Nitrate
	02	From the confluence with San Vicente Drainage Ditch to the confluence with an unnamed drainage ditch at 26.31, -97.53	Bacteria	Chlorophyll-a, Nitrate
	03	From an unnamed drainage ditch at 26.31, -97.53 to the confluence with the Harding Ranch Ditch tributary	Bacteria	Chlorophyll-a, Nitrate
	04	From the confluence with the Harding Ranch Ditch tributary to just upstream of the City of Hondo wastewater discharge point	Bacteria, DO	Chlorophyll-a, Nitrate
	05	From just upstream of the City of Rio Hondo wastewater discharge point to the upstream end of the segment	DO, Bacteria, DDE in edible tissue, Mercury in edible tissue, and PCBs in edible tissue	Chlorophyll-a, DO, Nitrate

Table 3-6: List of Impairments and Concerns in the Nueces – Rio Grande Coastal Basin (cont.)

2201A Harding Ranch Drainage Ditch Tributary (A) to the Arroyo Colorado Tidal	01	Entire water body	None	Ammonia
2201B Unnamed Drainage Ditch Tributary (B) in Cameron County Drainage District #3	01	Entire water body	Bacteria	Chlorophyll-a, Nitrate
2202 Arroyo Colorado Above Tidal	01	From the downstream end of the segment to the confluence with Little Creek just upstream of State Loop 499	Bacteria, DDE in edible tissue, Mercury, in edible tissue, PCBs in edible tissue	Chlorophyll-a, Nitrate, Total Phosphorus
	02	From the confluence with Little Creek to the confluence with La Feria Main Canal just upstream of Dukes Highway	Bacteria, DDE in edible tissue, Mercury in edible tissue, PCBs in edible tissue	Chlorophyll-a, Nitrate, Total Phosphorus
	03	From confluence with La Feria Main Canal to the confluence with La Cruz Resaca just downstream of FM 907	Bacteria, DDE in edible tissue, Mercury in edible tissue, PCBs in edible tissue	Chlorophyll-a, Nitrate, Total Phosphorus
	04	From the confluence with La Cruz Resaca to the upper end of segment at FM 2062	Bacteria, DDE in edible tissue, Mercury in edible tissue, PCBs in edible tissue	Chlorophyll-a, Nitrate, Total Phosphorus
2202A Donna Reservoir	01	Entire Reservoir	PCBs in edible fish tissue	None
2202B Unnamed Drainage Ditch Tributary (B) to S. Arroyo Colorado	01	Entire segment	None	Ammonia, Bacteria, Chlorophyll-a
2202C Unnamed Drainage Ditch Tributary (C) to S. Arroyo Colorado	01	Entire segment	None	Ammonia, Bacteria
2203 Petronila Creek Tidal	01	Entire segment	Bacteria	Chlorophyll-a, pH, Total Phosphorus
2204 Petronila Creek Above Tidal	01	From the downstream end to the confluence with 2204A	TDS, Chloride, Sulfate	Chlorophyll-a
	02	From the confluence with 2204A to the upstream end of the segment	TDS, Chloride, Sulfate	Chlorophyll-a

3.2.4 Bay and Estuaries and Gulf of Mexico (Figure 3-5)

Several TMDLs and special studies have been conducted in the basin. Segment 2472, Copano Bay, for bacteria in oyster waters (See Section 3.2.2); Segment 2482, Nueces Bay, for zinc in oyster tissue; Segment 2485, Oso Bay for bacteria and depressed DO; Segment 2485A for bacteria; and Segment 2491, Laguna Madre for depressed DO.

Beach Watch is a Texas General Land Office (TGLO) sponsored program that collects bacteria samples at Texas Beaches. There are five bays with Beach Watch Stations: Segment 2471, Aransas Bay – Rockport Beach; Segment 2481, Corpus Christi Bay; Segment 2483, Redfish Bay; Segment 2491, Laguna Madre; and Segment 2491, Baffin Bay - Cayo del Grullo Bay. Specific sites are discussed in their respective segments. The data are used to alert the public for times when it may be unsafe to be in water and can be found on the Beach Advisory and Closing On-line Notification (BEACON) Website (http://iaspub.epa.gov/waters10/beacon_national_page.main).

Table 3.7 lists all the CRP and SWQM sites monitored during FY 2017 in the bays, estuaries, and Gulf of Mexico.



Corpus Christi Marina



Figure 3-5: Bays and Estuaries and Gulf of Mexico



Bird Island Basin, Laguna Madre

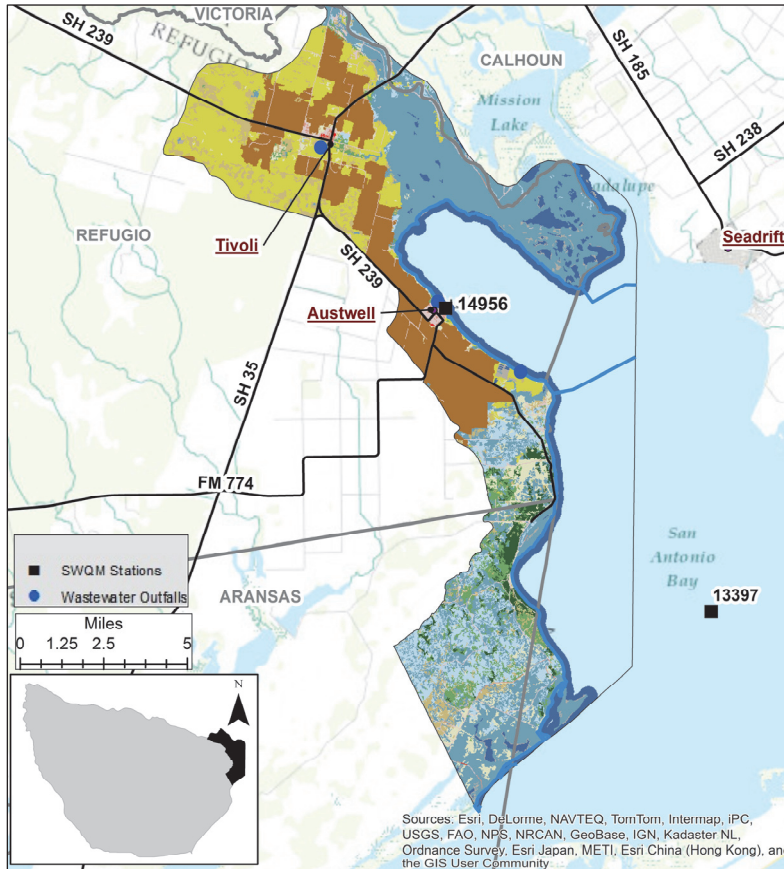
Table 3-7: CRP and SWQM Sites in the Bays and Estuaries and Gulf of Mexico

Segment Name	Station Id	Description	Monitoring Entity	Conventional Bacteria, Field	Other
2462 San Antonio Bay / Hynes Bay/ Guadalupe Bay	13397	At Intercoastal Waterway (ICWW) Buoy C-17	TCEQ Region 14	Quarterly	2 Metals in Sediment
2463 Mesquite Bay	13400	South of ICWW Marker 13	TCEQ Region 14	Quarterly	
2471 Aransas Bay	13402	At intersection of Intracoastal Canal and Lydia Ann Channel south of Rockport	TCEQ Region 14	Quarterly	
2471A Little Bay	16232	At Broadway and the inlet Canal to Canoe Lake in Rockport	TCEQ Region 14	Quarterly	
2472 Copano Bay / Port Bay / Mission Bay	12945	At FM 136 bridge 355 m from intersection with Egery Island Rd south of Bayside	NRA	Quarterly	
	13404	At west side of fishing pier near south end of SH 35 Causeway	NRA	Quarterly	
	13405	Port Bay at middle of SH 118 west of Rockport	NRA	Quarterly	
	14783	125 m south and 655 m east of Copano Bay Dr. at Spoonbill east of Bayside	TCEQ Region 14	Quarterly	
	17724	At Approx 3.5 mile west of Copano Bay Fishing pier at South end of Copano Bay Causeway SH 35	TCEQ Region 14	Quarterly	
2473 St. Charles Bay	17692	Approx 0.5 mi NE of Hail Point on Lamar Peninsula	TCEQ Region 14	Quarterly	
2481 Corpus Christi Bay	13409 (AU_01)	La Quinta CM 16	TCEQ Region 14	Quarterly	2 Metals in Water 2 Metals in Sediment 2 Organics In Sediment
	13411 (AU_02)	1 km NE of Intersection of Doddridge St. and Ocean Dr.	TCEQ Region 14	Quarterly	
	14355 (AU_03)	0.4 km east of Shamrock Island and 1.5 km NE of Shamrock Point	TCEQ Region 14	Quarterly	
2482 Nueces Bay	13422	0.5 mi from south shore at east overhead powerline	TCEQ Region 14	Quarterly	2 Metals in Water 2 Metals in Sediment
2483 Redfish Bay	13426	At SH 361 at 3 rd bridge between Aransas Pass and Port Aransas	NRA	Quarterly	
2483A Conn Brown Harbor	18848	Mid harbor 50 m northeast of the intersection of Huff St and E Maddox Ave in Aransas Pass	NRA	Quarterly	
2484 Corpus Christi Inner Harbor	13432	0.4 km east of Navigation Blvd draw bridge	TCEQ Region 14	Quarterly	
	13439	Viola turning basin	TCEQ Region 14	Quarterly	2 Metals in water
2485 Oso Bay	13440	Immediately offshore at tip of peninsula at Padre Island Drive/southbound SH 358	NRA	Quarterly	
2485A Oso Creek	13028	Immediately downstream of SH 286 south of Corpus Christi	NRA	Quarterly	
	13029	Immediately downstream of FM783 SW of Corpus Christi	NRA	Quarterly	

Table 3-7: CRP and SWQM Sites in the Bays and Estuaries and Gulf of Mexico (cont.)

Segment Name	Station Id	Description	Monitoring Entity	Conventional Bacteria, Field	Other
2491 Laguna Madre	13445 (AU_01)	at ICWW approx. 1.6 km southwest from the southernmost point of south Bird Island	TCEQ Region 14	Quarterly	bacteria
	13446 (AU_03)	ICWW at Marker 129 east of Port Isabel	TCEQ Region 15	Quarterly	
	13447 (AU_02)	Intersection of ICWW and Arroyo Colorado	TCEQ Region 15	Quarterly	(10) Organics in Sediment
	13448 (AU_01)	Intersection of ICWW and Port Mansfield Channel	TCEQ Region 15	Bi-annually	
	13449 (AU_01)	CM C-225A north of Port Mansfield	TCEQ Region 15	Bi-annually	
	14870 (AU_03)	200 yds off Laguna Vista shoreline	TCEQ Region 15	Quarterly	
2491B North Floodway	20930	North Floodway at US77 South of Intersection of US77 and FM 2629 in Sebastian	TCEQ Region 15	Quarterly	
2492 Baffin Bay / Alazan Bay / Cayo Del Grullo / Laguna Salada	13450	At CM 14	TCEQ Region 14	Quarterly	bacteria
2492A San Fernando Creek	13033	At US 77 at Kingsville	NRA	Quarterly	bacteria
2493 South Bay	13459	Near ship CM 17	TCEQ Region 15	Quarterly	
	14865	Middle of bay	TCEQ Region 15	Quarterly	
2494 Brownsville Ship Channel	13460	Near ship CM35 / black buoy	TCEQ Region 15	Quarterly	
	14871	Mid-channel 595 m east of SH 48 at Foust Rd.	TCEQ Region 15	Quarterly	
	14875	Mid-channel at entrance to San Martin Lake	TCEQ Region 15	Quarterly	
2494A Port Isabel Fishing Harbor	13285	Port Isabel Fishing Harbor	TCEQ Region 15	Quarterly	
2501 Gulf of Mexico	13468 (AU_06)	At Aransas Pass 165 m south and 413 m east of tip of South Jetty near Marker R-7	TCEQ Region 14	Quarterly	bacteria
	13470 (AU_08)	At Port Isabel, 1.18 km east and 35 m south of Brazos Santiago Pass North Jetty	TCEQ Region 15	Quarterly	

Segment 2462: San Antonio Bay / Hynes Bay

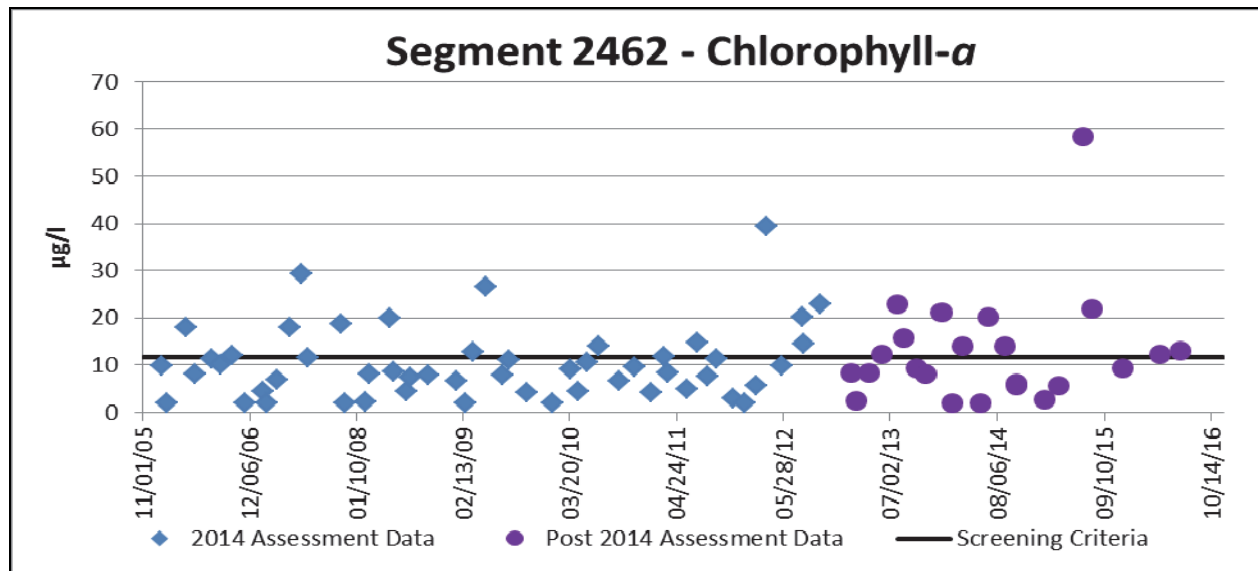


This segment is primarily in Refugio and Calhoun Counties and includes Guadalupe Bay. The official boundary for the San Antonio – Nueces Coastal Basin includes all of Hynes Bay and only a portion of San Antonio Bay. Its watershed is 69,939 acres. The area around the bay is dominated by farm and ranch lands. The small town of Austwell is on the bay is the only community in the area.

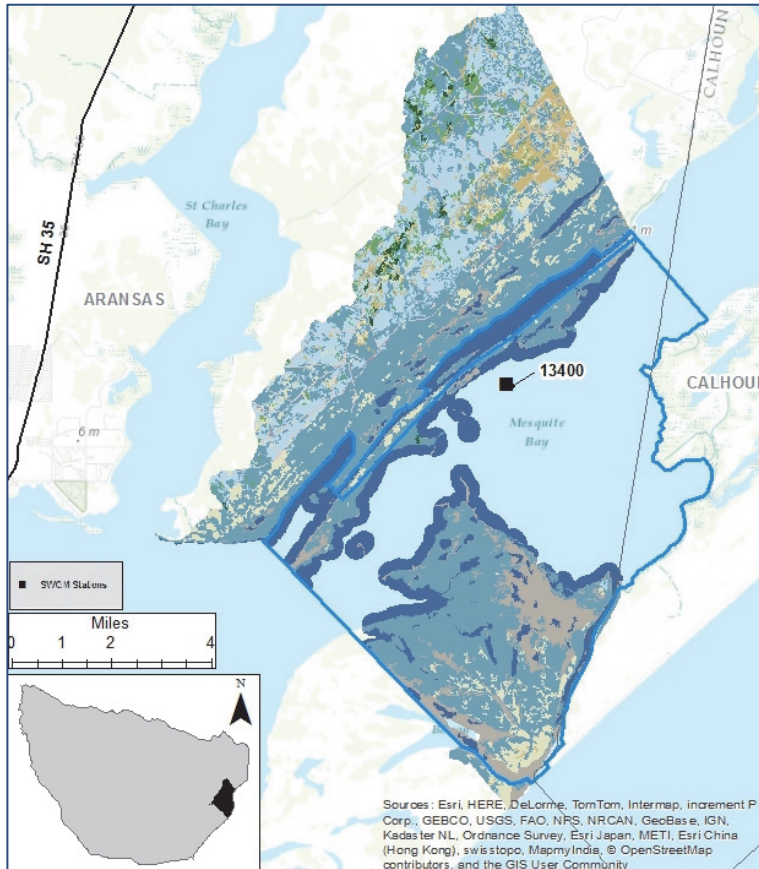
There is a concern for chlorophyll-a. Based on the post 2014 assessment data, the concern will likely remain. The Department of State Health Service's (DSHS) shellfish restrictions for bacteria in oyster waters are being carried forward in the 2014 Integrated Report.



San Antonio Bay at Austwell



Segment 2463: Mesquite Bay



This segment is in Aransas County. Its watershed is 37,323 acres. The bay is surrounded by natural areas. The Aransas Wildlife Refuge is to the northwest and uninhabited San Jose and Matagorda Islands are to the southeast.

All assessed water quality parameters met the standards in the 2014 Integrated Report. The DSHS shellfish restrictions for bacteria in oyster waters are being carried forward in the 2014 Integrated Report.



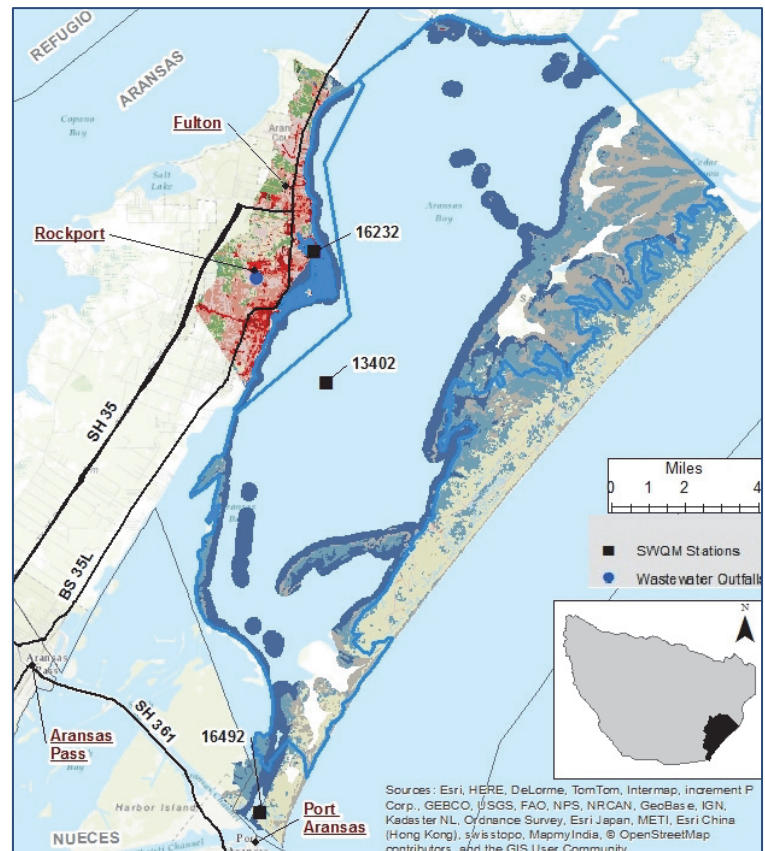
Alligator at Aransas Wildlife Refuge

Segment 2471: Aransas Bay

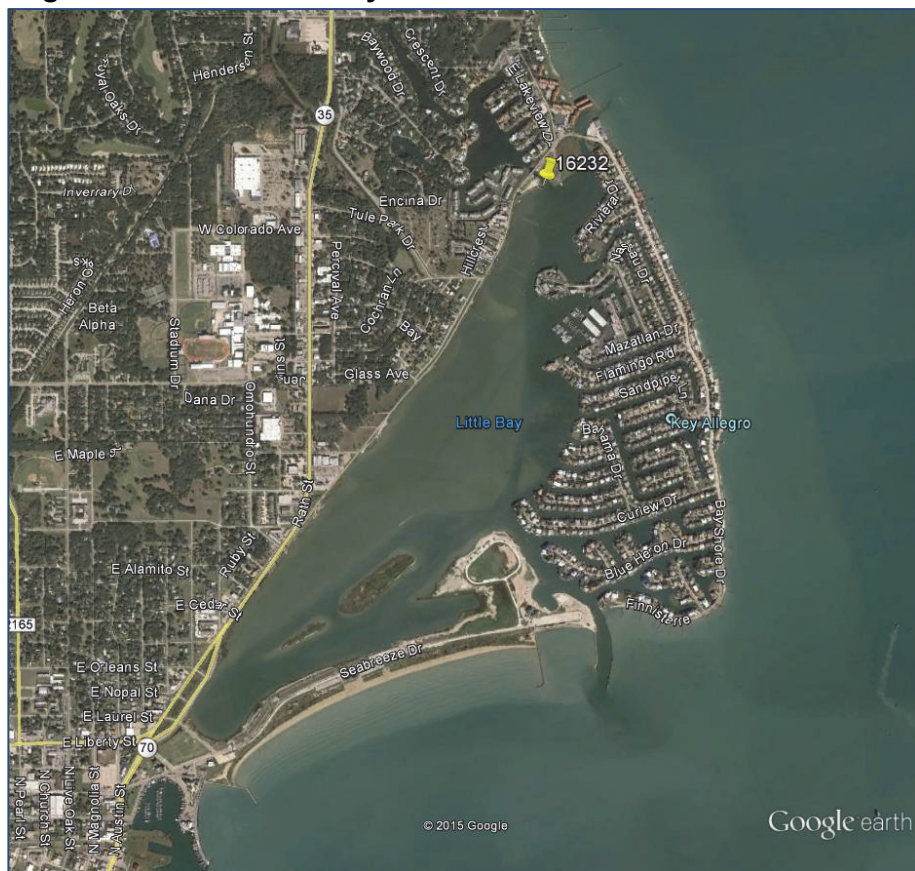
This segment is primarily in Aransas County. Its watershed is 85,724 acres. The City of Rockport is along the western shore of the bay and the uninhabited Matagorda Island is on the east. The Aransas Wildlife Refuge is to the north.

All assessed water quality parameters met the standards in the 2014 Integrated Report. The DSHS shellfish restrictions for bacteria in oyster waters are being carried forward in the 2014 Integrated Report.

The concern for bacteria for primary contact recreation based on Beach Watch data at Rockport Beach Park has been removed.

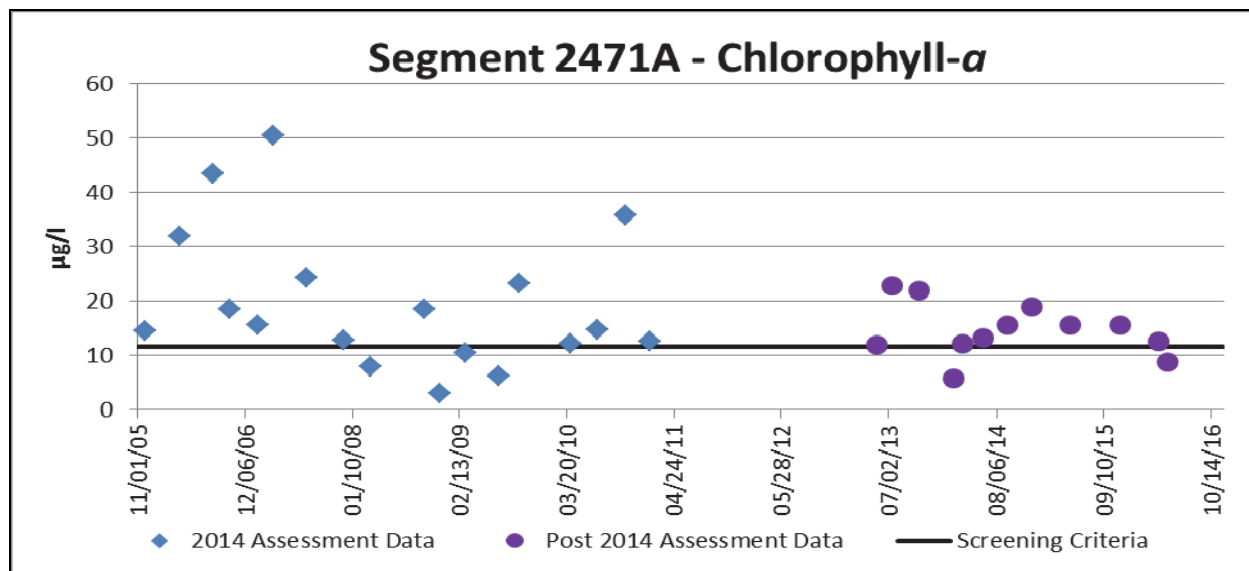


Segment 2471A: Little Bay

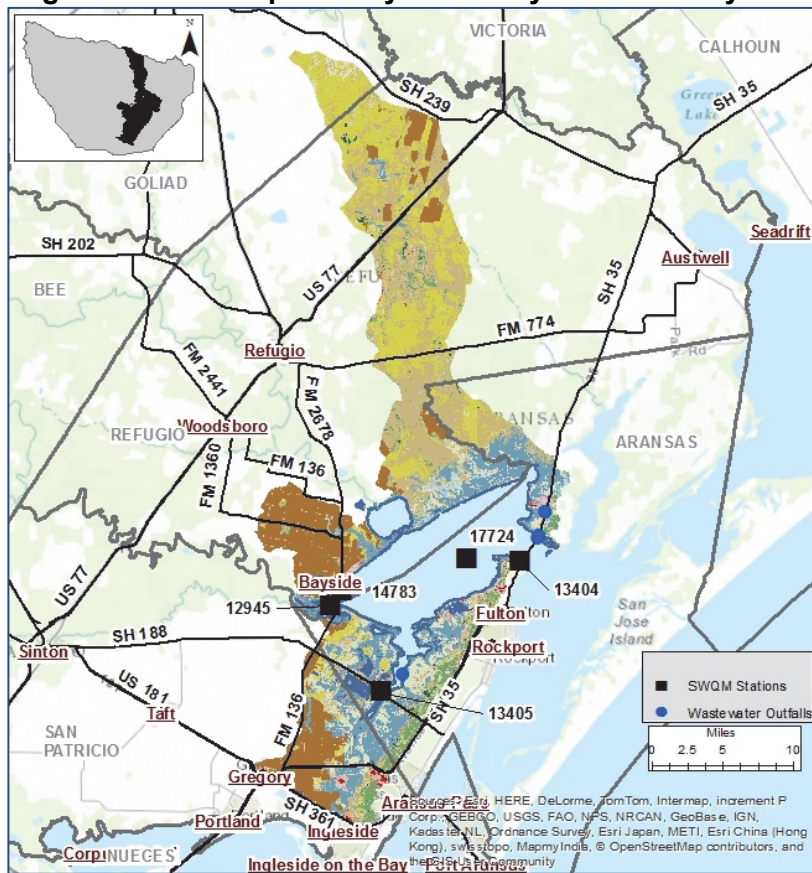


This segment is located between Aransas Bay, Broadway Street in Rockport, and Rockport Beach.

There is a concern for chlorophyll-*a*. The elevated concentrations may be due to limited circulation within the bay. Based on the post 2014 assessment data, the concern will likely remain.



Segment 2472: Copano Bay / Port Bay / Mission Bay



These bays are located in Refugio and Aransas Counties. Its watershed is 249,235 acres. The south and east sides of the bay have a number of developments and small communities. The north and west sides are mostly farm and ranch lands.

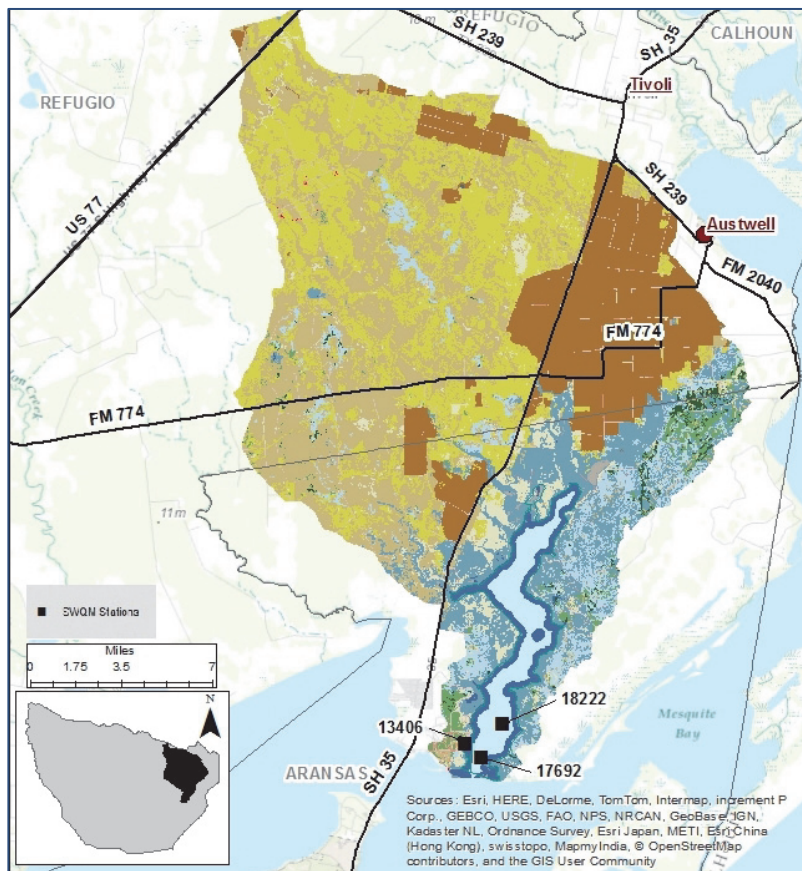
All assessed water quality parameters met the standards in the 2014 Integrated Report. The DSHS shellfish restrictions for bacteria in oyster waters are being carried forward in the 2014 Integrated Report.



Copano Bay at SH 35



Segment 2473: St. Charles Bay

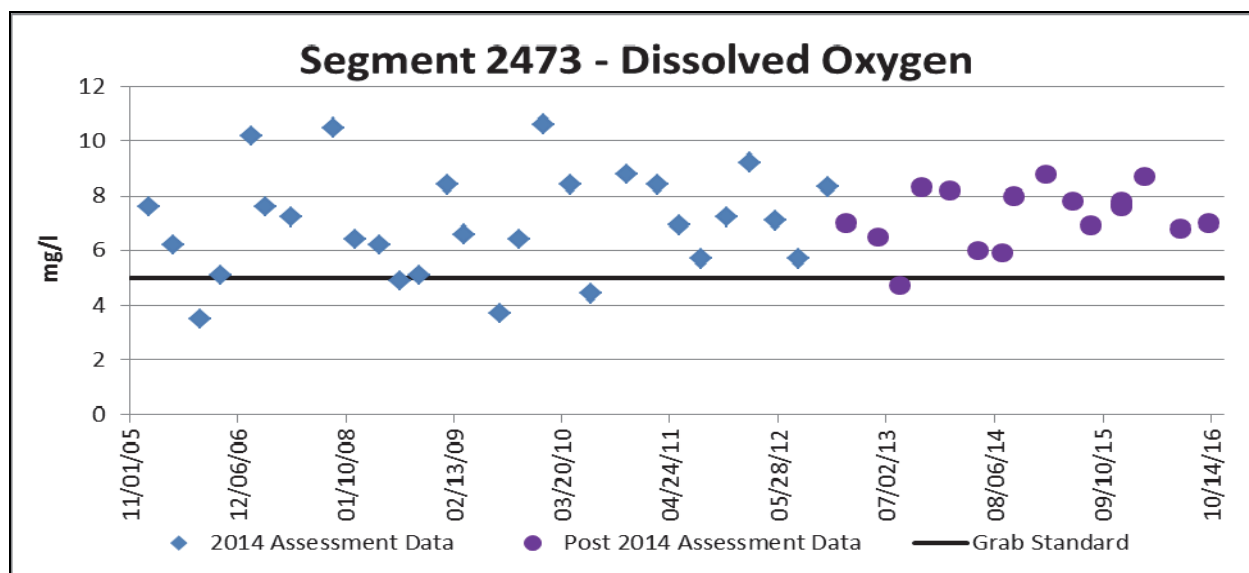


This segment is located in Aransas County. Its watershed is 162,401 acres. The bay is nearly surrounded by the Aransas Wildlife Refuge. The small community of Lamar is located on the southwest side adjacent to Aransas Bay.

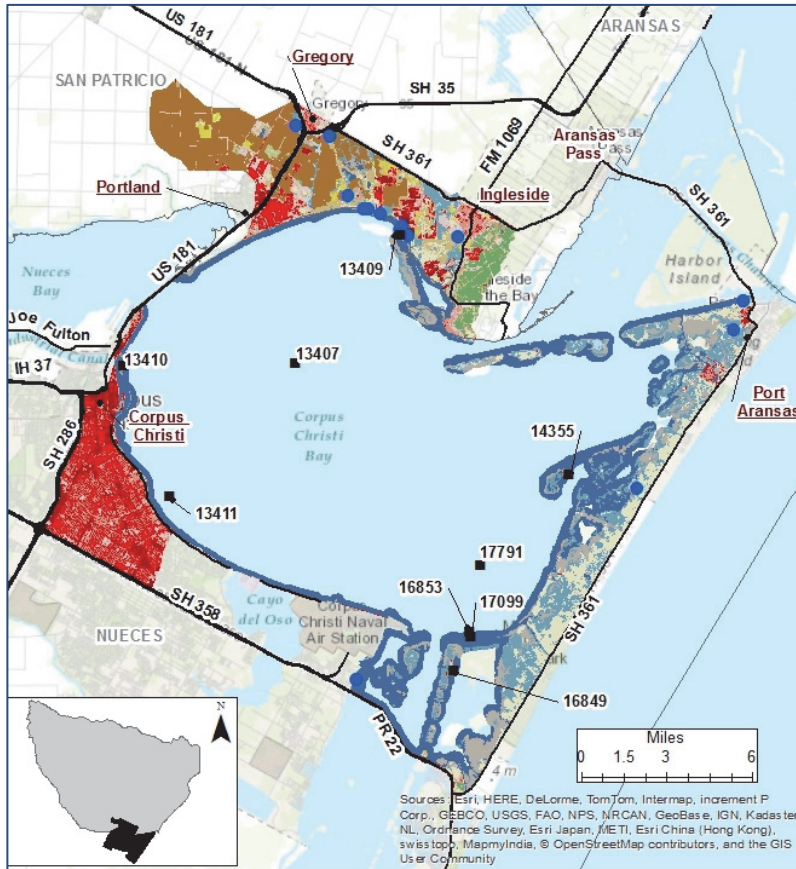
There is a concern for low DO at the grab screening level. All but one of the post 2014 assessment values met the screening level. This concern may possibly be removed during the 2018 assessment when <10 percent of the values are above the screen level.



Whooping Cranes at the Aransas Wildlife Refuge



Segment 2481: Corpus Christi Bay



The bay is located in Nueces County. It is split between the San Antonio – Nueces and Nueces – Rio Grande Coastal Basins. The bay is divided into four AUs: from the Corpus Christi Ship Channel (CCSC) east to Pelican Island, south to Demit Island including the La Quinta Channel and the CCSC adjacent to Redfish Bay (AU_01); from the CCSC east to Pelican Island, south to Demit Island including the area from the CCSC to Demit Island (Oso Bay and City of Corpus Christi area) (AU_02); from Pelican Island south to Demit Island, to Mustang Island and the area along Mustang Island State Park to the CCSC (AU_03); and from the JFK Causeway to a line from Demit Island across to Mustang Island State Park (AU_04). Its watershed is 144,878 acres.

The bay is nearly surrounded by cities and industries. The City of Corpus Christi borders the south side of the bay and encompasses a large portion of Mustang Island. Along the northern shore are the cities of Portland, Ingleside, and Ingleside-By-The-Bay. There are several industries located along La Quinta Channel, along with the recently closed Naval Station Ingleside.

All assessed water quality parameters met the standards in the 2014 Integrated Report.

Beach Watch data have identified Cole Park, Ropes Park, and Poenish Park as having impairments for bacteria for primary contact recreation. These data are collected during and after high stormwater runoff events at the beaches where it discharges into the bay people are likely to get into the water. Therefore, the impairment is only considered to be at the beaches Figure 3-6, and not the entire bay.



Sailing on Corpus Christi Bay

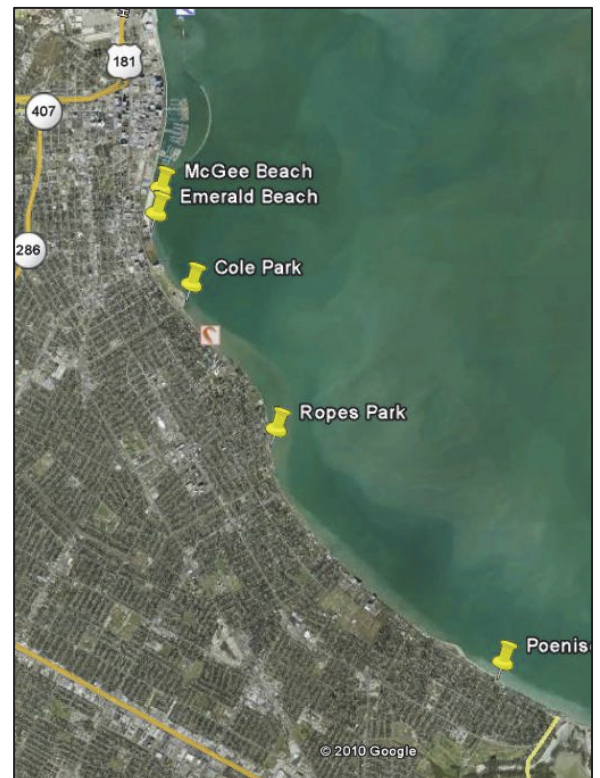
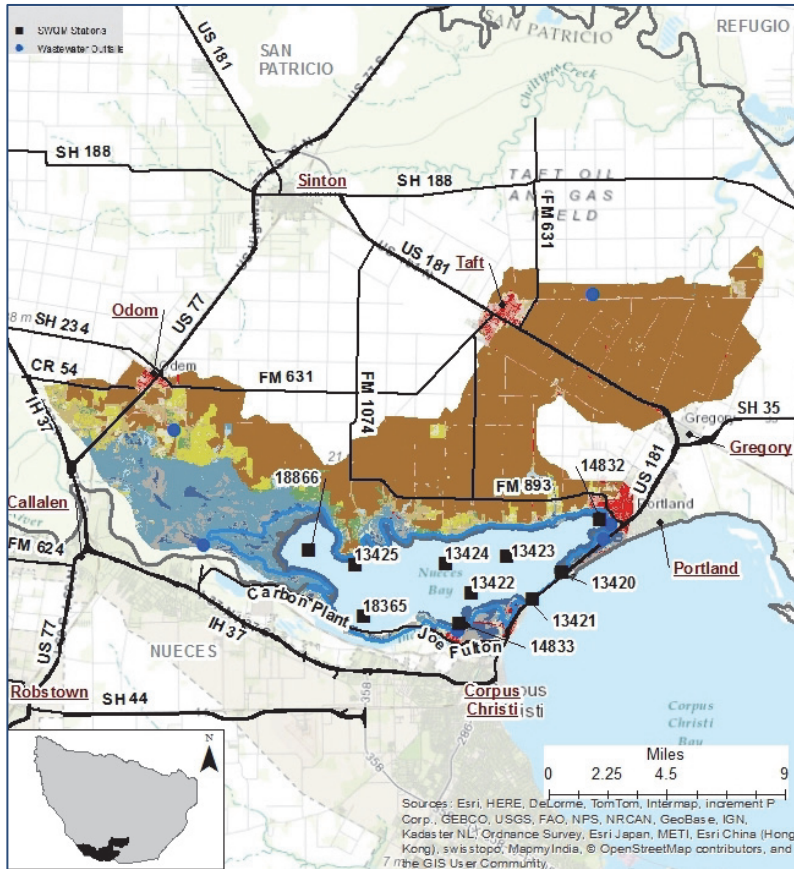


Figure 3-6. Corpus Christi Bay Beach Watch Locations

Segment 2482: Nueces Bay



The bay is located in Nueces County. It is split between the San Antonio – Nueces and Nueces – Rio Grande Coastal Basins. Its watershed is 92,834 acres. The bay is bordered on the south by the City of Corpus Christi where there are many industries associated with the CCSC. A large portion of the Nueces Delta has been bought and designated as a preserve. The area north of the bay is primarily farm and ranch lands.

There is a concern for copper in water based on limited data. The DSHS shellfish restrictions for zinc in edible tissue are being carried forward in the 2014 Integrated Report. The concern for bacteria for primary contact recreation based on Beach Watch data at Nueces Bay Causeway #3 has been removed.

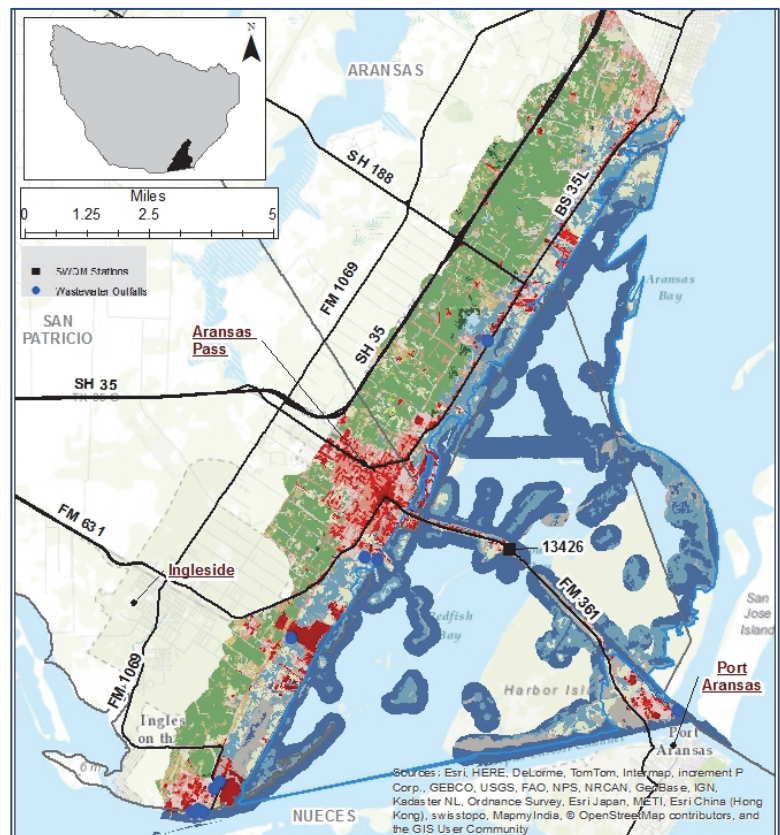
Segment 2483: Redfish Bay

The bay is located in Nueces County. Its watershed is 45,936 acres. There is very little undeveloped land on the western shore of the bay. The main cities are Ingleside and Aransas Pass, with numerous small communities all the way to Rockport. Port Aransas encompasses most of the eastern shoreline.

There is a concern for copper in water based on limited data.



Redfish Bay at FM 361



Segment 2483A: Conn Brown Harbor



The harbor is with the City of Aransas Pass. The northeast end is in Aransas County and the southwest end is in San Patricio County.

Conn Brown Harbor was a commercial harbor, used primarily by shrimpers, for many years, ending in the mid-2000s. The harbor is now used mainly by recreational fishermen and boaters.

There is a concern for copper in water based on limited data.

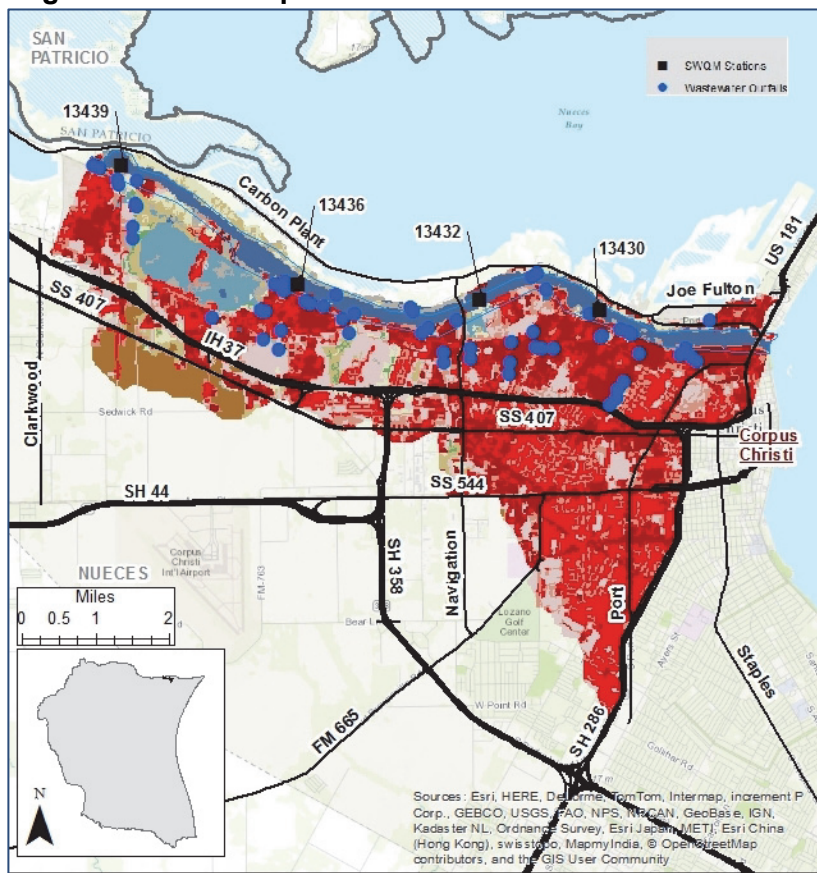


Shrimp boat at Conn Brown Harbor



Corpus Christi Inner Harbor

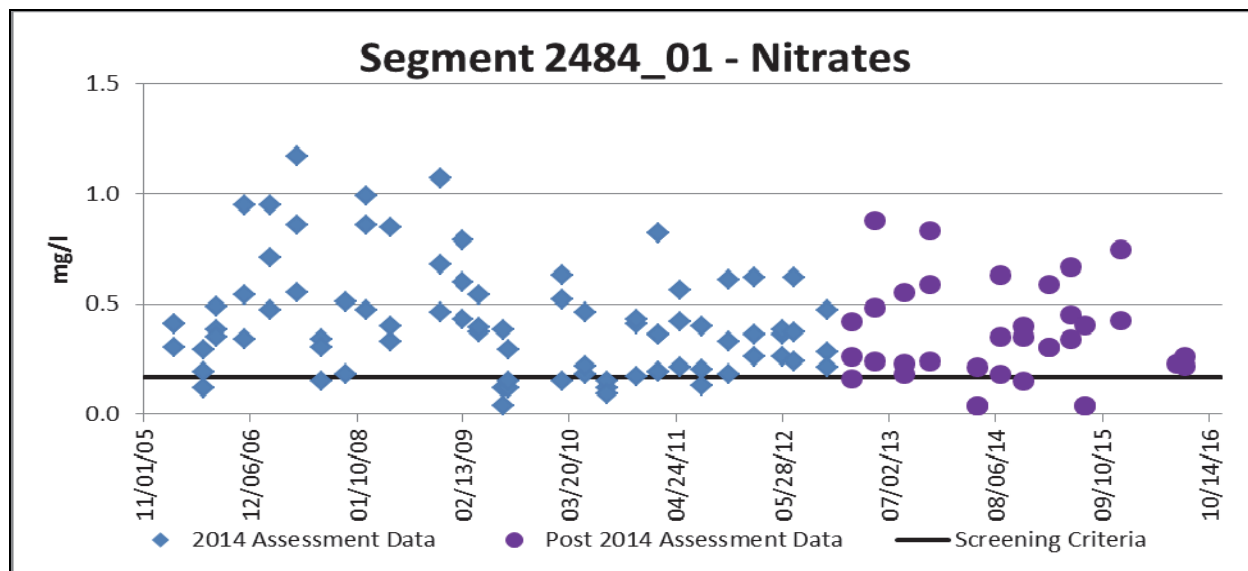
Segment 2484: Corpus Christi Inner Harbor

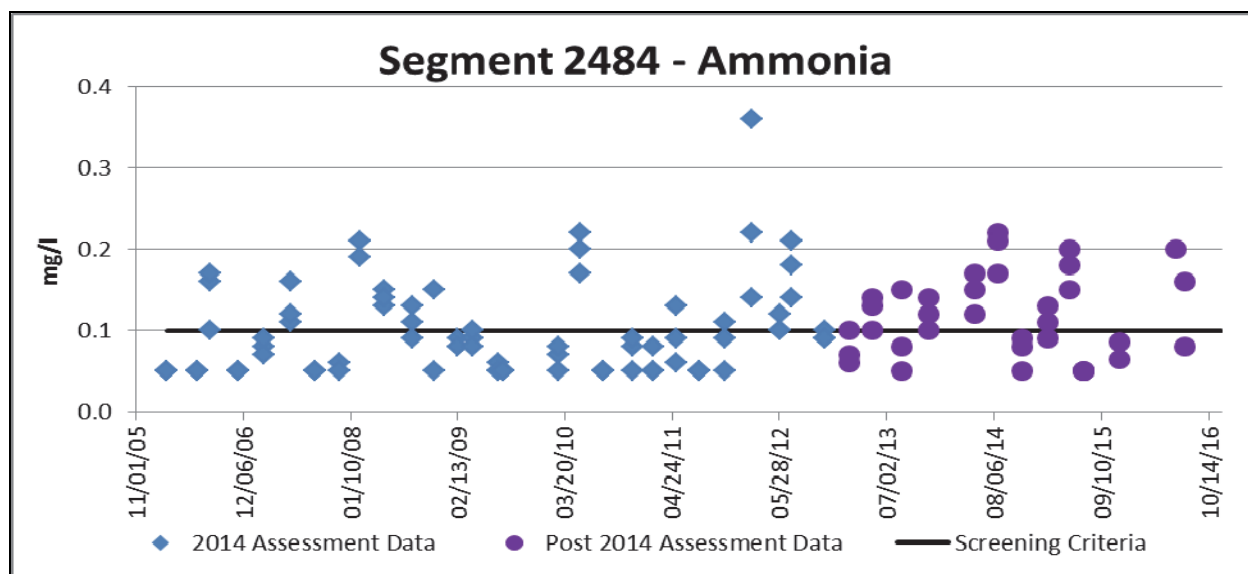


The Corpus Christi Inner Harbor (CCIH) is located in the City of Corpus Christi in Nueces County. Its watershed is 13,360 acres.

CCIH is home to the Port of Corpus Christi, the second deepest port in the State of Texas. Many refineries and other industries are located all along the harbor. There are also numerous permitted wastewater outfalls, many of which are for storm water. Only the outfalls for treated effluent are shown on the map.

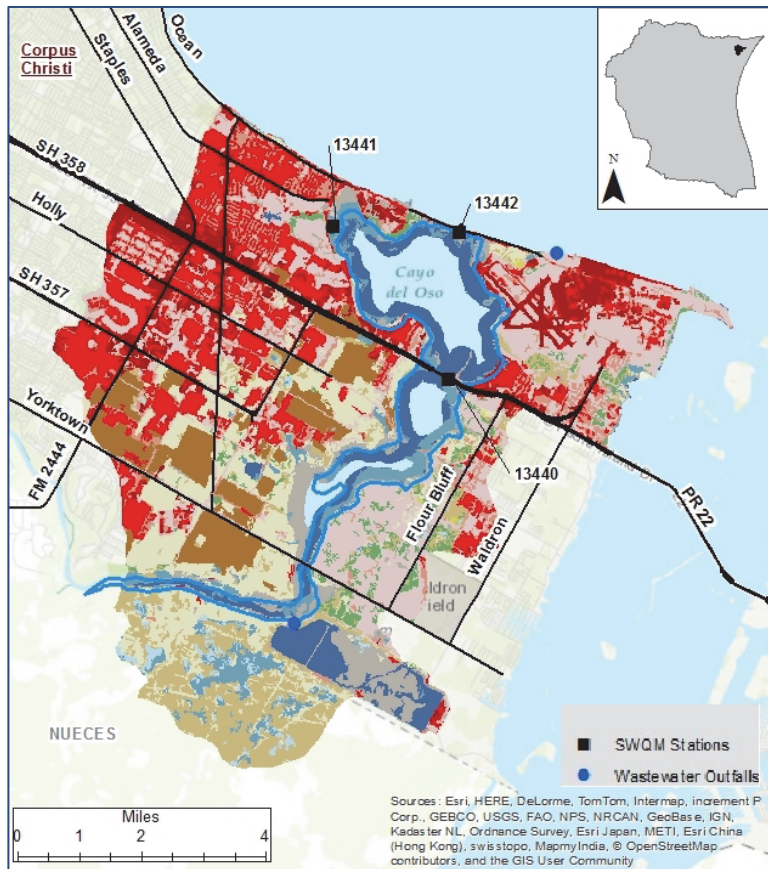
The harbor has concerns for nitrates and ammonia which may be related to the numerous WWTP and storm water discharge permits. Based on the post 2014 assessment data, the concerns will likely remain.





Refineries along the Corpus Christi Ship Channel

Segment 2485: Oso Bay



The bay is located in the City of Corpus Christi in Nueces County. The bay is divided into three AUs; the upper bay from Holly Road to CR 24 (AU_01), middle bay from SH 358 to Holly Road (AU_02), and from Ocean Drive to SH 358 (AU_03). Its watershed is 29,661 acres. The northwest portion of the bay between Ward Island and Ennis Joslin Road in AU_03 is known as the Blind Oso.

Oso Bay receives much of the storm water runoff from the City of Corpus Christi as well as the cooling water from the Barney Davis Power Plant. The housing developments around the bay range from large, multi-acre tracts, to neighborhoods with many houses per acre, to apartment complexes.

AU_03 has had an impairment for bacteria for primary contact recreation and oyster waters since 2004. A TMDL concluded that the Blind Oso differs significantly in physical characteristics and uses from the main portion of Oso Bay. It is extremely shallow, and has a soft muddy bottom and wetland areas. Local area stakeholders indicate that the Blind Oso is not used for contact recreation, but is used extensively by waterfowl since it provides high quality habitat for waterfowl and shorebirds. TAMU-CC collected additional bacteria samples for a special study in 2013. Most of those samples exceeded the standard.

An impairment for 24-Hr DO minimum in AU_02 is being carried forward in the 2014 Integrated

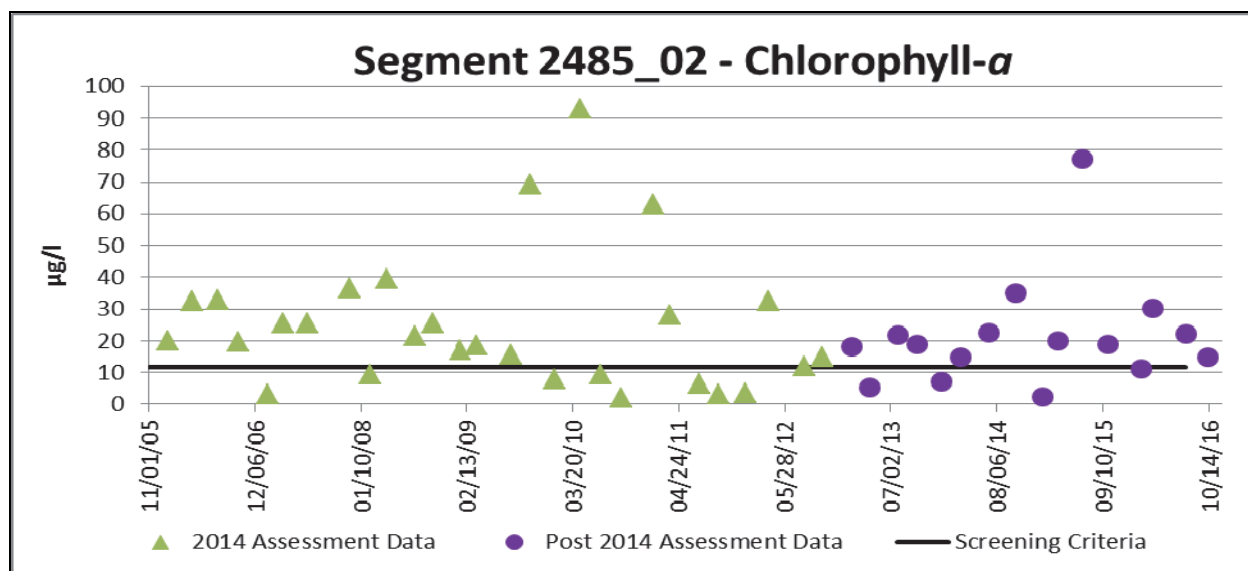
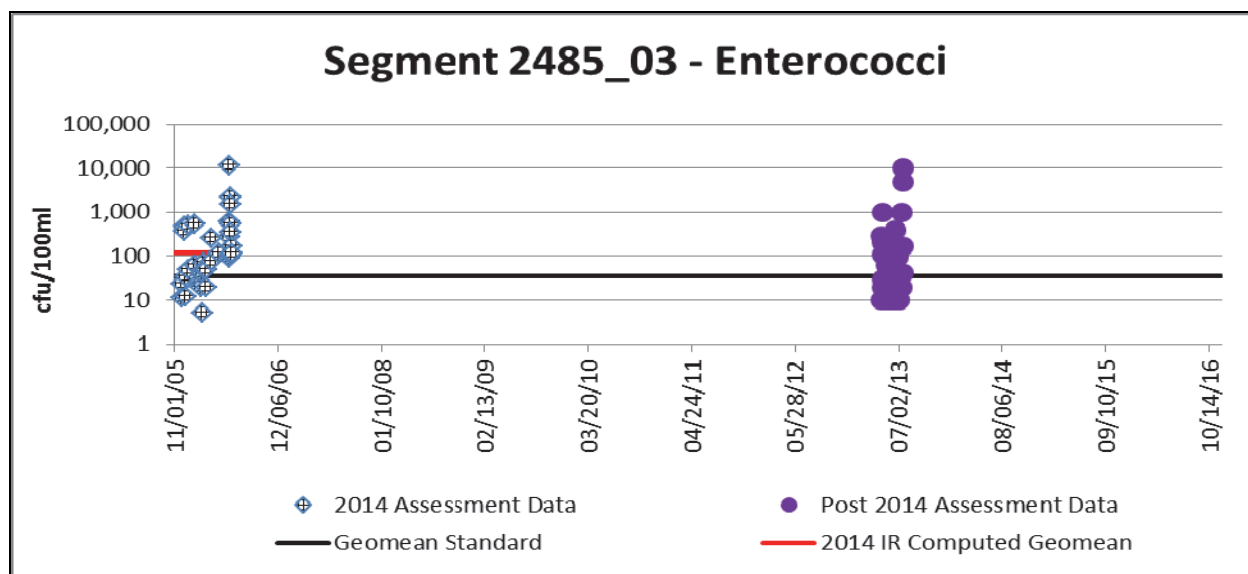
Report. A DO impairment for AU_01 and AU_03 has been removed as the data used the 2010 Texas Integrated Report shows that the DO standards are now being met. Based on data collected for the TMDL, a revision to the DO criteria is being proposed: The TCEQ recommends changing the 24-Hr average criteria from 5.0 mg/l to 4.5 mg/l. The recommended change for the 24-Hr 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.

AU_02 has a concern for chlorophyll-a. Based on the post 2014 assessment data, this concern will likely remain.

Chlorophyll-a concerns in AU_01 and Au_03 and a total phosphorus concern in AU-03 are being carried forward in the 2014 Integrated Report. There are no active monitoring sites in these AUs, and no data were collected during the 2014 assessment period.

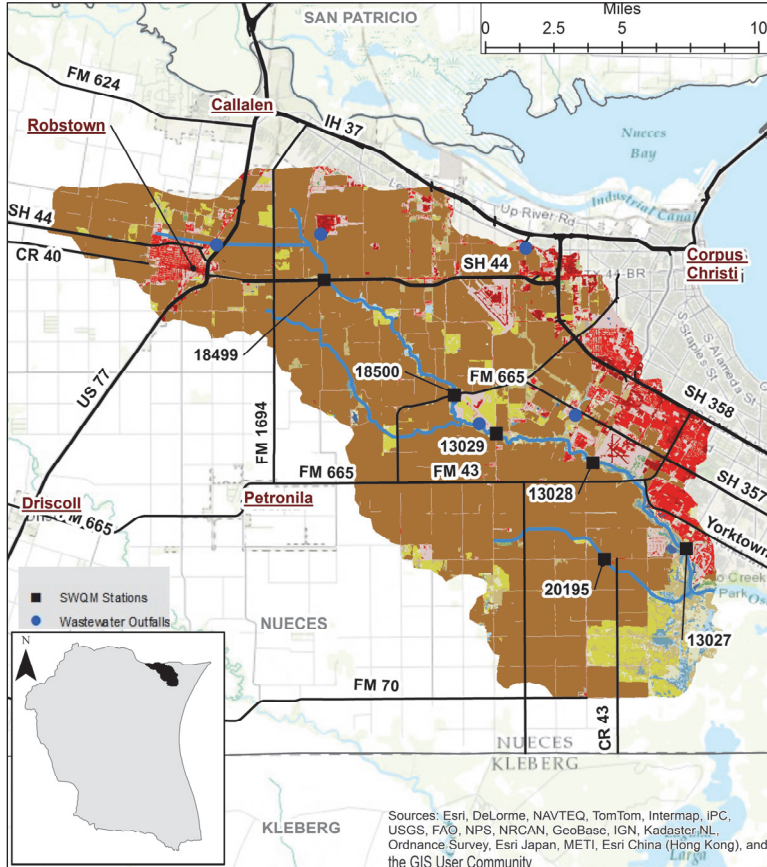


Blind Oso near TAMUCC



Pelicans on Oso Bay

Segment 2485A: Oso Creek

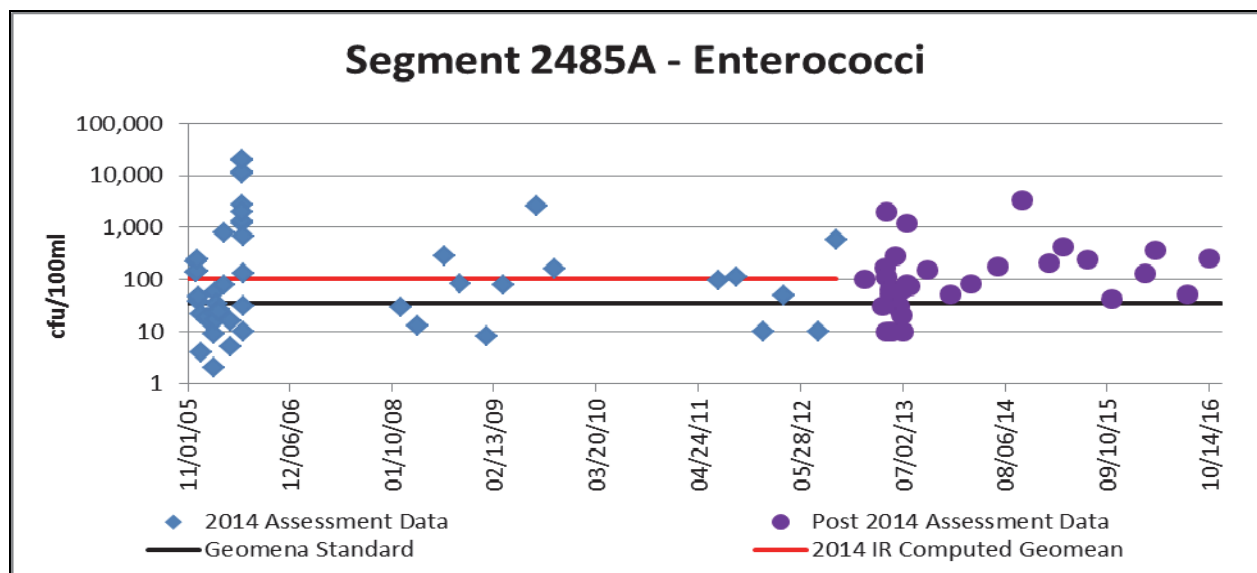


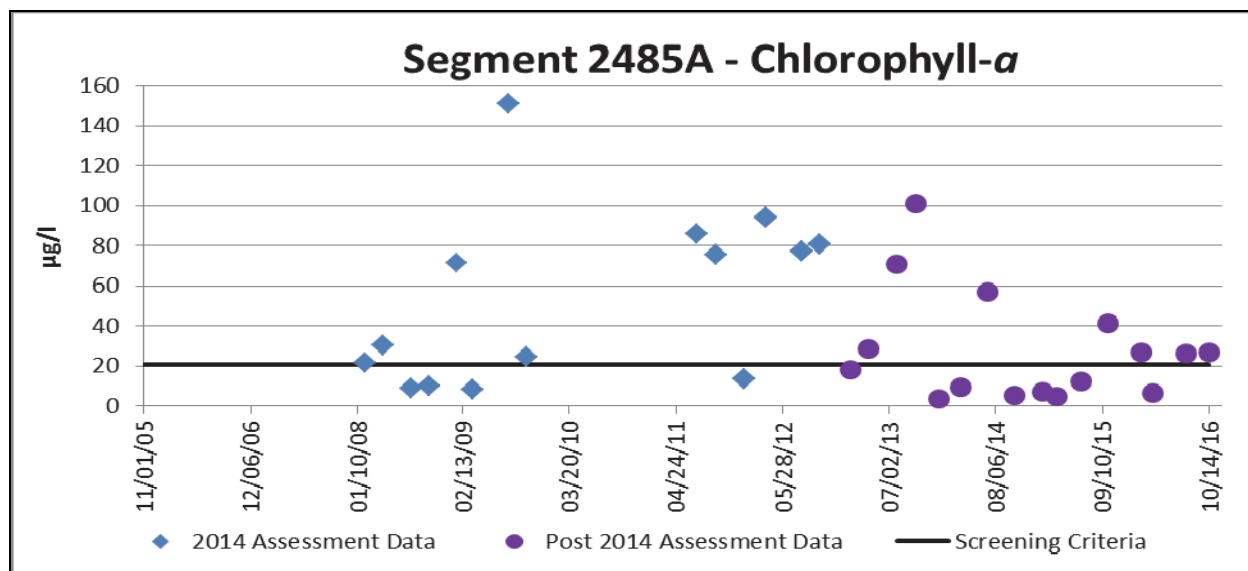
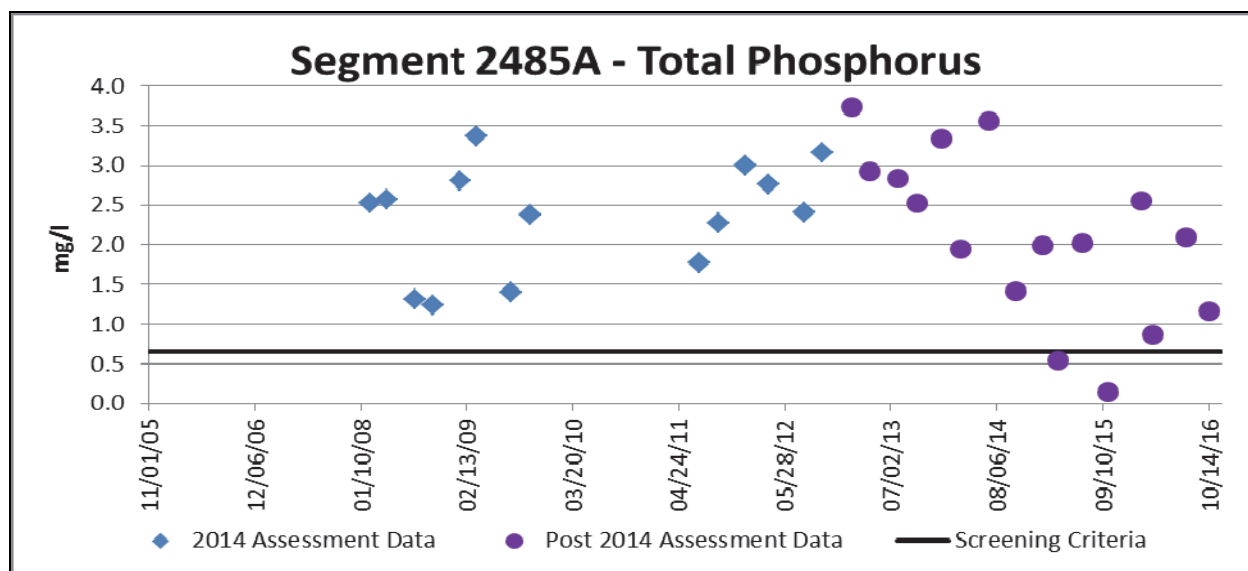
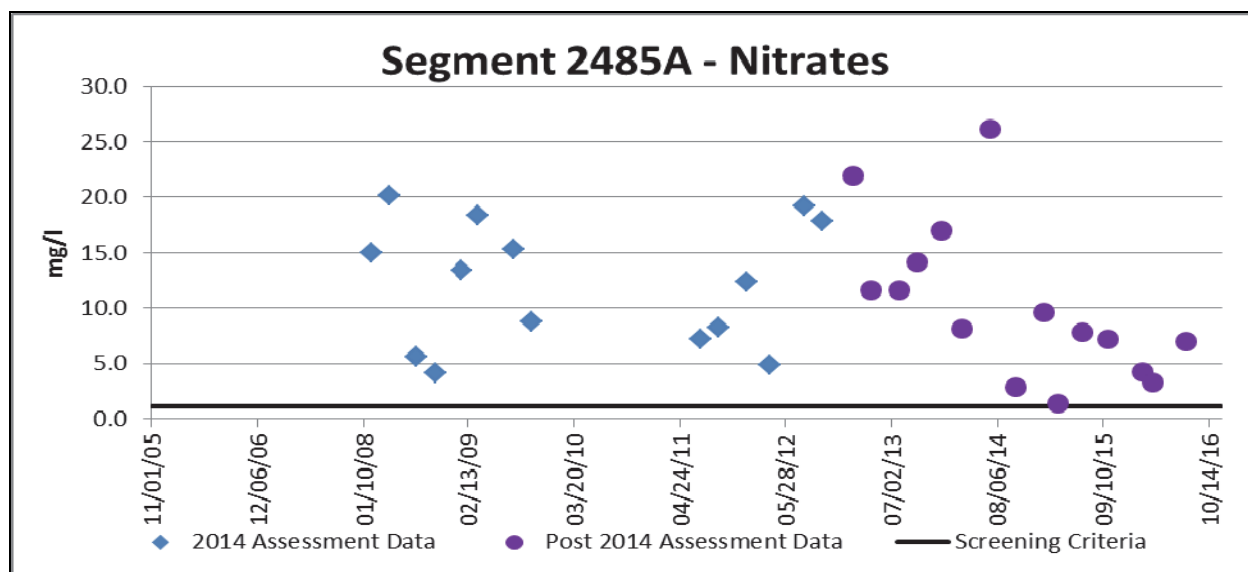
Oso Creek flows 29.5 miles from a point 3 miles upstream of SH 44 west of Corpus Christi to the confluence with Oso Bay in Nueces County. Its watershed is 118,380 acres. The southeastern end of the creek flows through highly developed areas of Corpus Christi. The northwestern end is primarily rural, but development is rapidly encroaching.

The creek has had an impairment for bacteria for primary contact recreation since 2002. The Center for Water Supply Studies is conducting a TMDL to address the issue. The creek also has concerns for nitrates, chlorophyll-a, and total phosphorus. Based on the post 2014 assessment data, the impairment and concerns will likely remain.



Oso Creek at SH 286

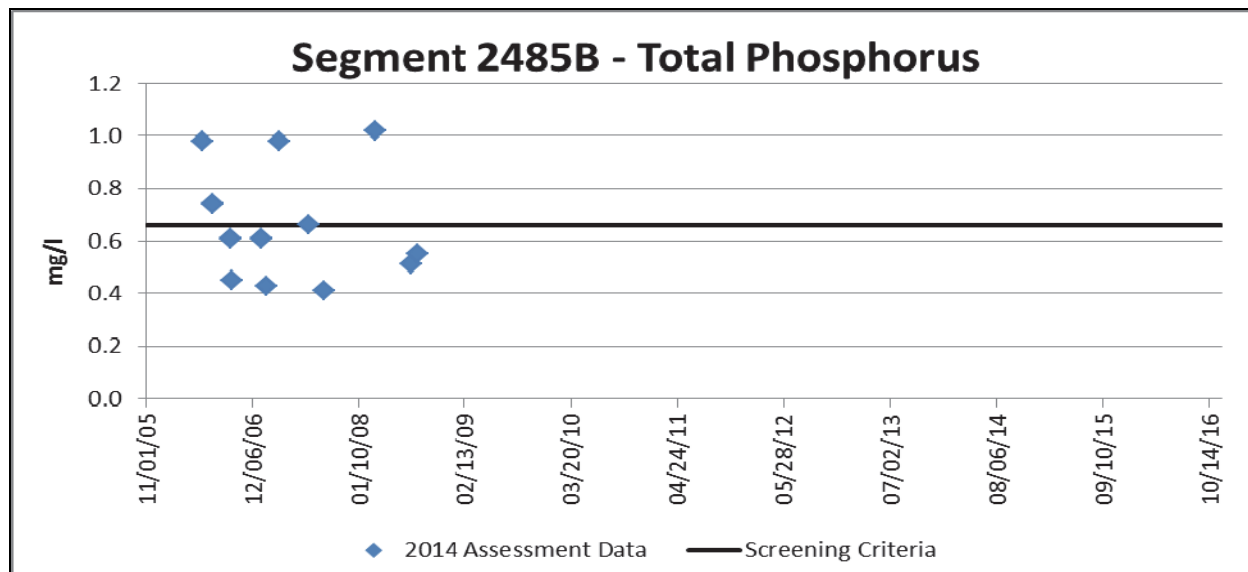




Segment 2485B: Unnamed Tributary of Oso Creek

The unclassified water body is from a point 3.2 miles west of SH 286 to the confluence with Oso Creek. This tributary is a primarily rural area, but development is rapidly encroaching.

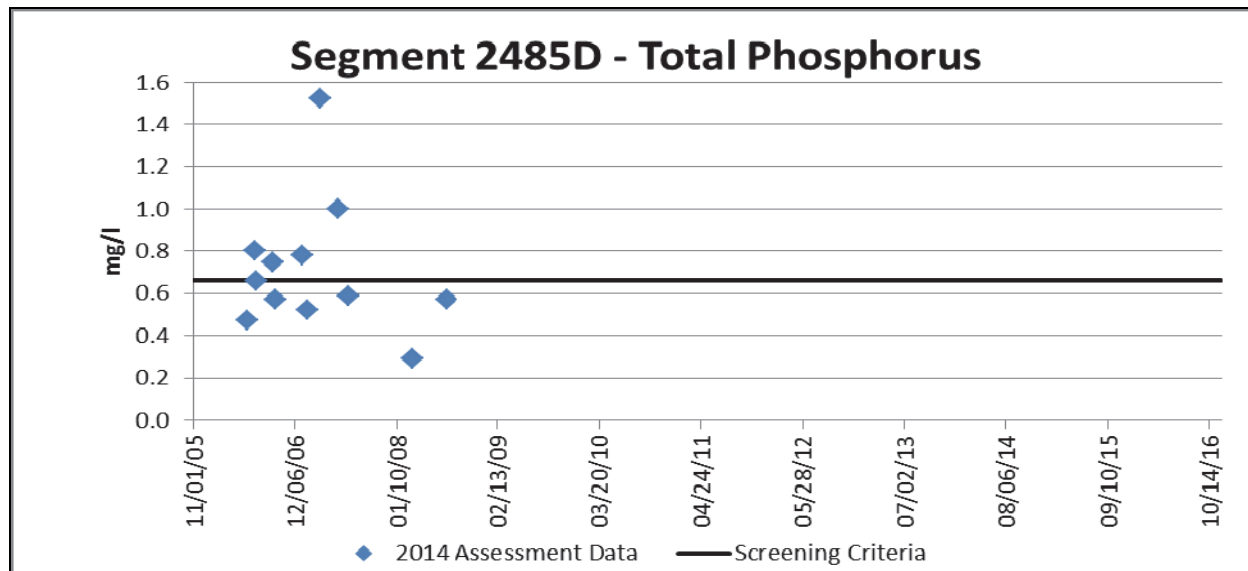
There are no active monitoring sites on the segment. Data for the assessment were collected during the TMDL studies. There is a concern for total phosphorus.



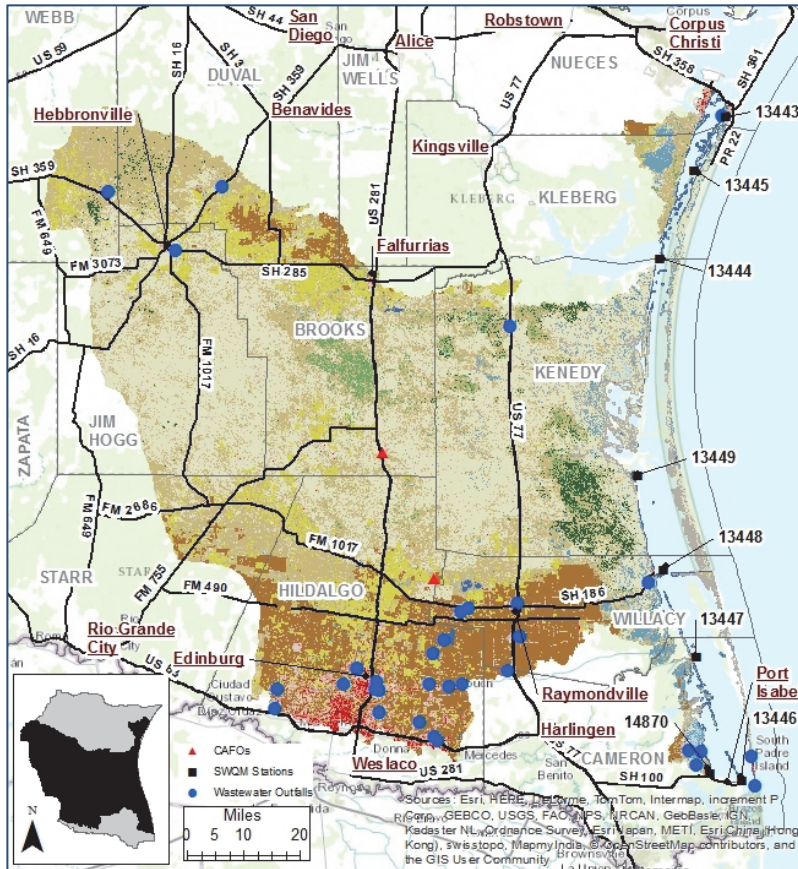
Segment 2485D: West Oso Creek

The unclassified water body is from a point 0.3 miles west of FM 1694 to the confluence with Oso Creek. This tributary is a primarily rural area, but development is rapidly encroaching.

There are no active monitoring sites on the segment. Data for the assessment were collected during the TMDL studies. There is a concern for total phosphorus.



Segment 2491: Laguna Madre



The Laguna Madre runs along the Texas coast from Corpus Christi Bay in Nueces County to the Brownsville Ship Channel in Cameron County. It is divided into three AUs; the upper portion north of the Arroyo Colorado confluence (AU_01), the area adjacent to the Arroyo Colorado confluence (AU_02), and the lower portion south of the Arroyo Colorado confluence (AU_03). Its watershed is 4,222,224 acres.

The Laguna Madre is a very unique body of water. The only development is the very northern and very southern ends: Corpus Christi and Port Isabel, respectively. Padre Island National Seashore encompasses most of the barrier island to the east. The land to the west is predominantly large ranches such as the King Ranch. 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.

There is little water exchange directly from the Gulf of Mexico. The Laguna is connected to Corpus Christi Bay and there are two channels through the island at Port Mansfield and Port Isabel. Additional channels open periodically with tropical storms and hurricanes.

There are numerous WWTPs permitted to discharge to the Laguna Madre via the North Floodway, some of which are as far west as McAllen.

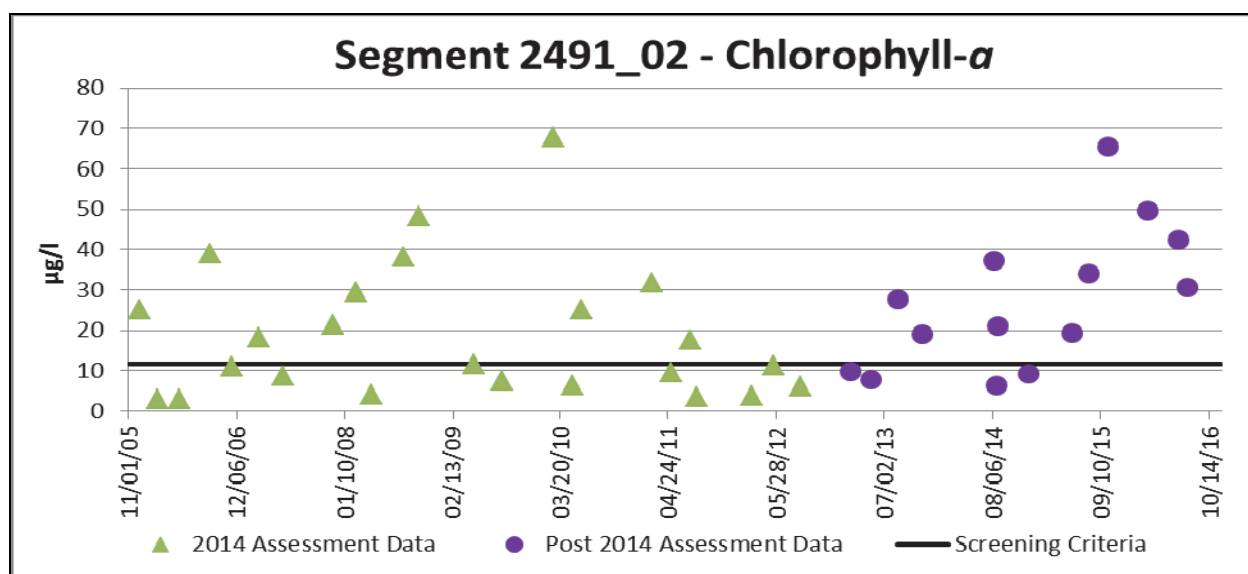
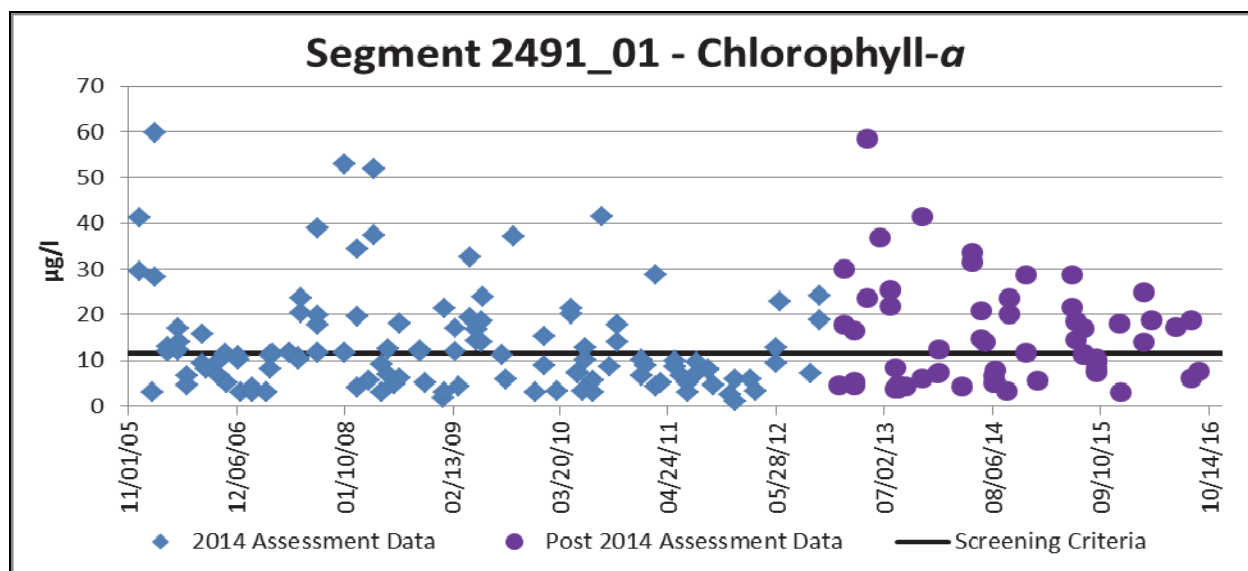
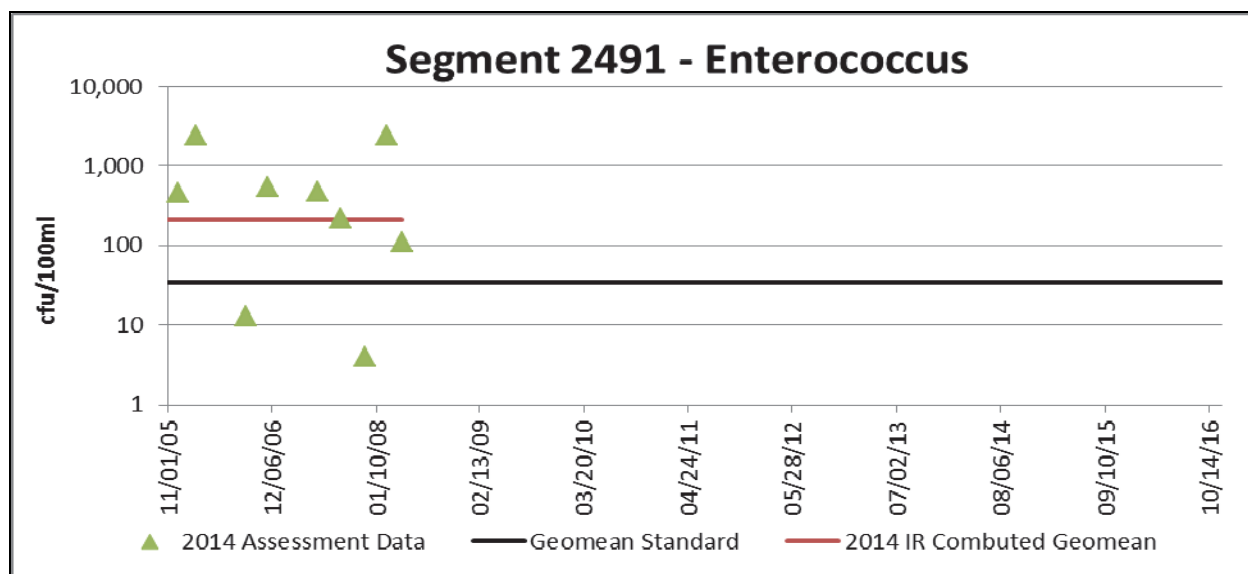
AU_02 has had an impairment for bacteria for primary contact recreation and oyster waters since 2006 and are being carried forward in the 2014 Integrated Report. Due to the eight hour holding time and because there are no local labs accredited for enterococci analysis, bacteria sample collection has been suspended.

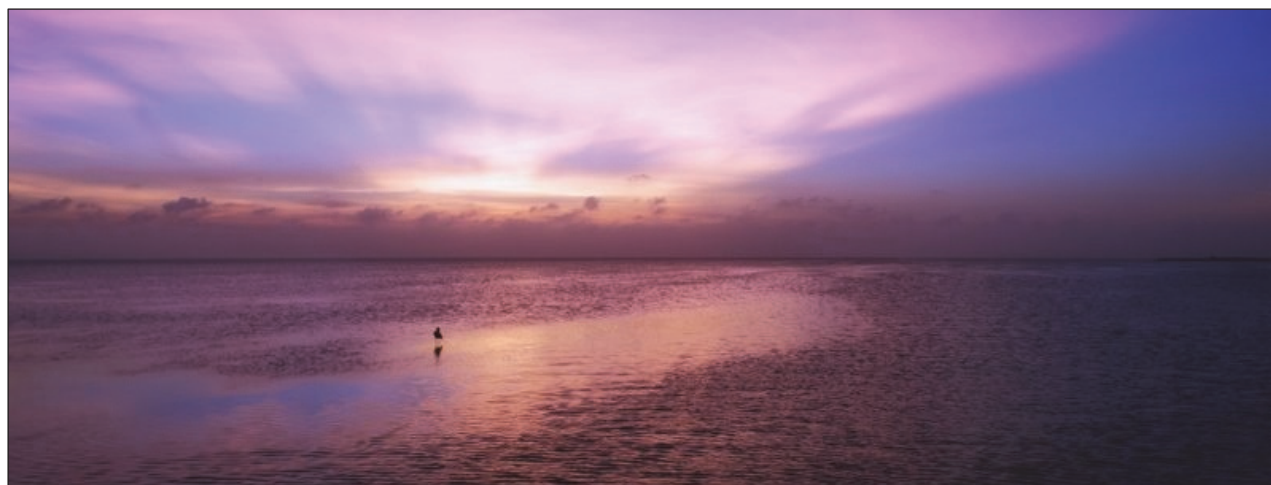
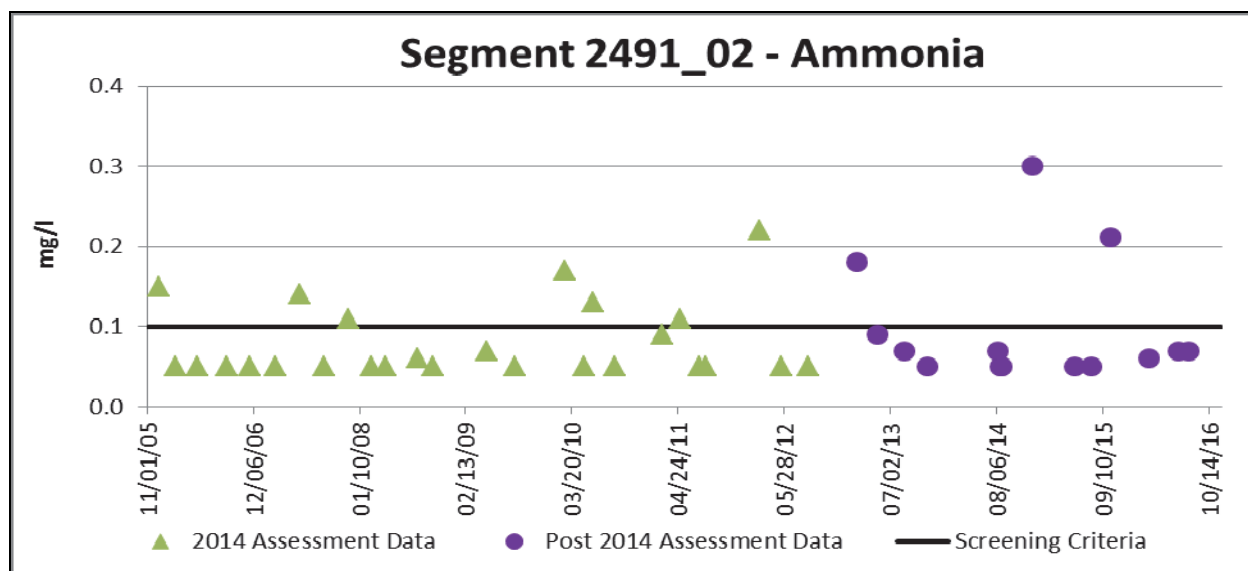
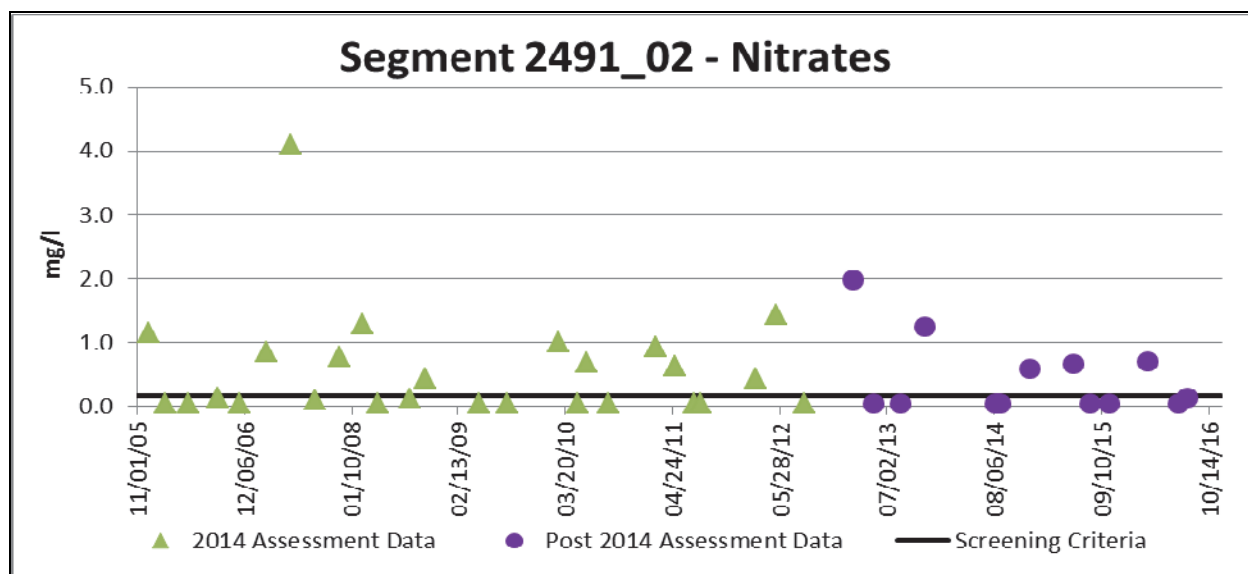
AU-01 and AU_02 have had an impairment for low DO since 1999. Based on data collected for the TMDL that was conducted to address the impairment, a revision to the DO criteria is being proposed: The TCEQ recommends changing the 24-Hr average criteria from 5.0 mg/l to 4.5 mg/l, but local stakeholders have requested that they consider 4.0 mg/l. The recommended change for the 24-Hr 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 in all AUs.

AU_01 and AU_02 have concerns for chlorophyll-a which may be related to limited circulation. AU_02 also has concerns for nitrates and ammonia. Based on the post 2014 assessment data, these concerns will likely remain.



Causeway to South Padre Island over the Laguna Madre

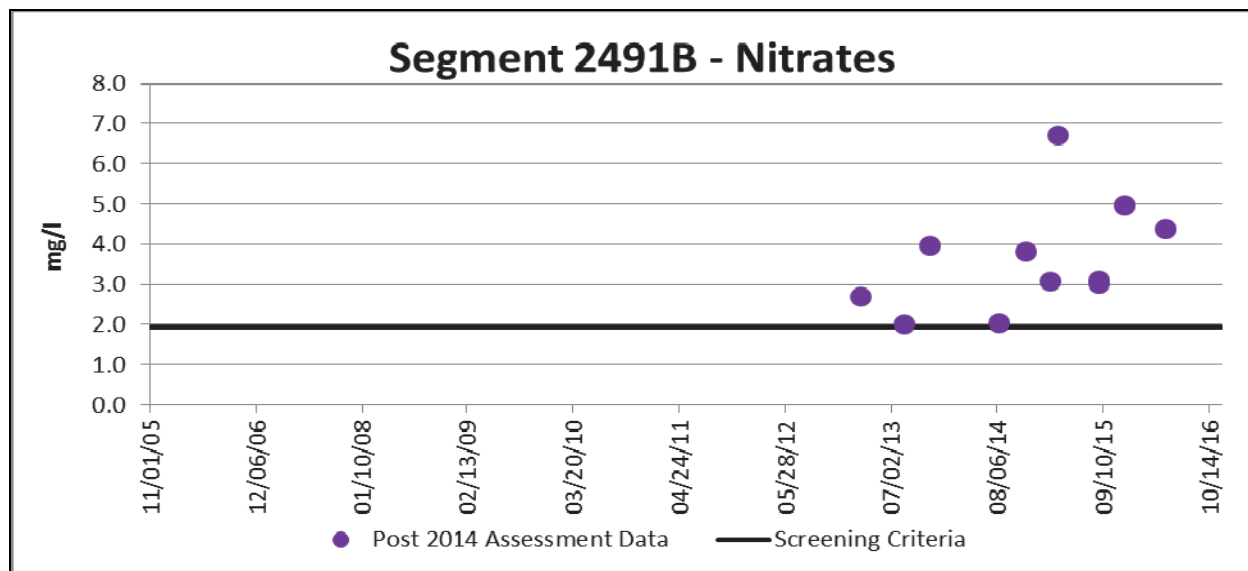
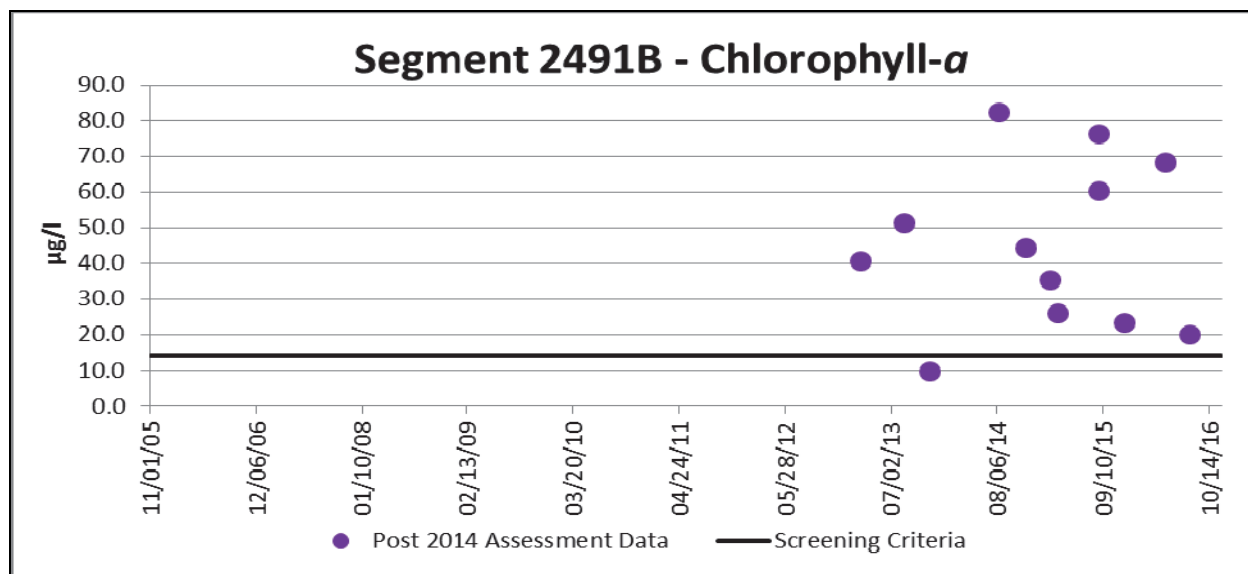


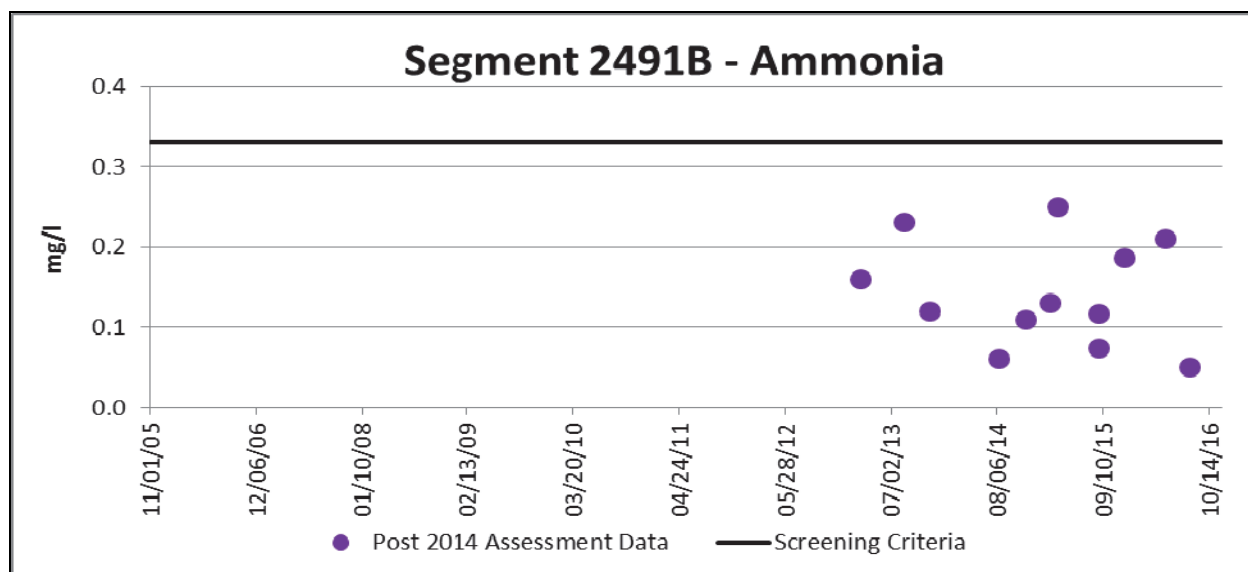


Sunset over the Laguna Madre

Segment 2491B: North Floodway

The North Floodway used to divert flood waters from the Arroyo Colorado. It is from 0.04 miles north of Campacuas Lake and 0.32 miles west of FM 491 in Mercedes, Texas to the confluence with the Lower Laguna Madre tidal flats. Data collection on this water body began in November 2011, so there was not enough data for the 2014 assessment data. Since the Laguna Madre is the receiving body for this segment, graphs of the chlorophyll-a, nitrates, and ammonia values (the concerns for Laguna Madre), are presented here. However, the fresh water stream screening criteria were used. Chlorophyll-a and nitrate values exceed their respective screening levels, but the ammonia values meet the screening criteria. Bacteria is not being collected on the segment due to a holding time issue.

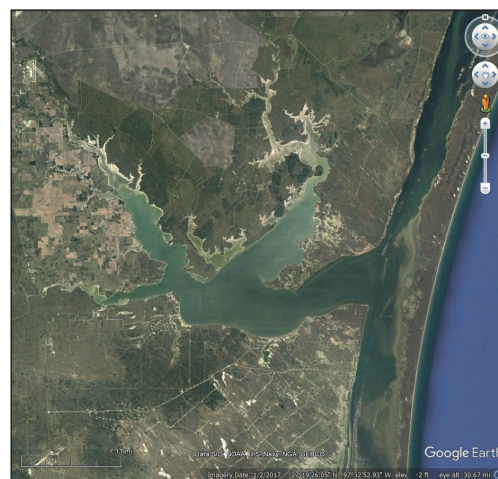




Arroyo Colorado North Floodway at US 77 during July 2010 event

Map of the San Antonio area showing the San Antonio River and surrounding regions. The map includes labels for various cities and towns such as George West, Mathis, Alice, Kingsville, and San Antonio. It also shows major roads like SH 16, SH 44, SH 77, and FM 624. A legend in the top right corner identifies symbols for CAFOs (red triangle), SWQM Stations (black square), and Wastewater Outfalls (blue circle). A scale bar at the bottom indicates distances in miles (0, 5, 10, 20).

The bay has concerns for chlorophyll-*a*, which may be related to limited circulation. Based on the post 2014 assessment data, this concern will likely remain.



Segment 2492 - Chlorophyll-*a*

µg/l

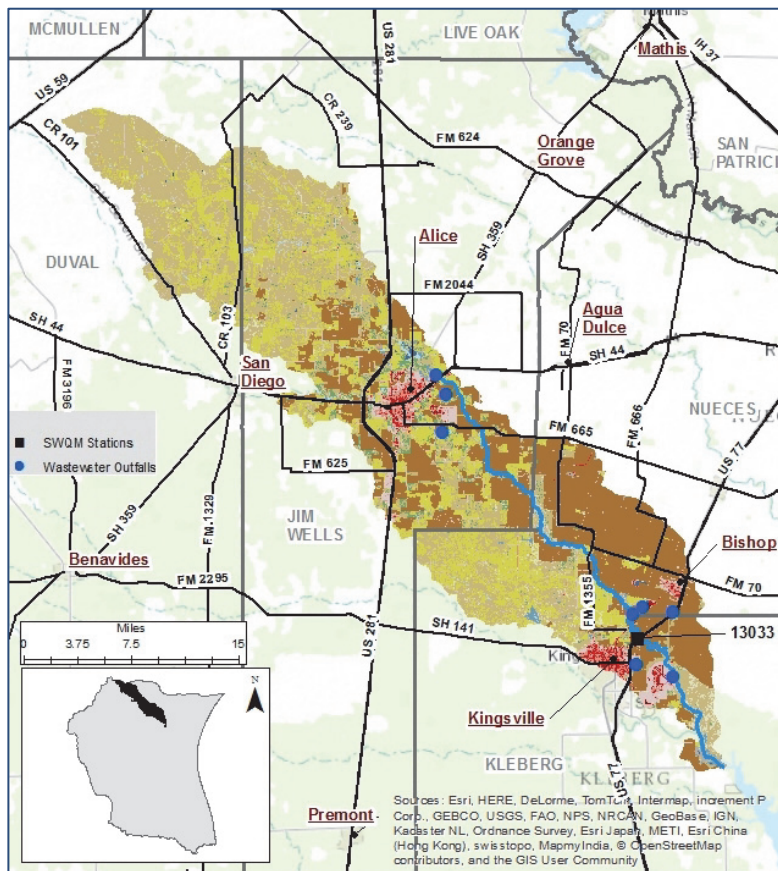
2014 Assessment Data

Post 2014 Assessment Data

Screening Criteria

Date	2014 Assessment Data (µg/l)	Post 2014 Assessment Data (µg/l)
11/01/05	68	
11/15/05	58	
11/29/05	48	
12/03/05	26	
12/07/05	32	
12/11/05	13	
12/15/05	36	
12/19/05	11	
12/23/05	5	
12/27/05	16	
12/31/05	7	
01/04/06	10	
01/08/06	29	
01/12/06	60	
01/16/06	31	
01/20/06	14	
01/24/06	19	
01/28/06	18	
02/01/06	26	
02/05/06	19	
02/09/06	36	
02/13/06	28	
02/17/06	13	
02/21/06	19	
02/25/06	5	
02/29/06	16	
03/03/06	24	
03/07/06	15	
03/11/06	17	
03/15/06	6	
03/19/06	24	
03/23/06	12	
03/27/06	5	
03/31/06	11	
04/04/06	8	
04/08/06	12	
04/12/06	37	
04/16/06	15	
04/20/06	61	
04/24/06	55	
04/28/06	32	
05/02/06	28	
05/06/06	38	
05/10/06	33	
05/14/06	62	
05/18/06	51	
05/22/06	55	
05/26/06	40	
05/30/06	33	
06/03/06	38	
06/07/06	61	
06/11/06	51	
06/15/06	40	
06/19/06	39	
06/23/06	44	
06/27/06	43	
07/01/06	17	
07/05/06	18	
07/09/06	35	
07/13/06	51	
07/17/06	46	
07/21/06	24	
07/25/06	24	
07/29/06	30	
08/02/06	15	
08/06/06	28	
08/10/06	15	
08/14/06	45	
08/18/06	8	
08/22/06	18	
08/26/06	15	
08/30/06	15	
09/03/06	15	
09/07/06	15	
09/11/06	15	
09/15/06	15	
09/19/06	15	
09/23/06	15	
09/27/06	15	
09/30/06	15	
10/04/06	15	
10/08/06	15	
10/12/06	15	
10/16/06	15	
10/20/06	15	
10/24/06	15	
10/28/06	15	
11/01/06	15	
11/05/06	15	
11/09/06	15	
11/13/06	15	
11/17/06	15	
11/21/06	15	
11/25/06	15	
11/29/06	15	
12/03/06	15	
12/07/06	15	
12/11/06	15	
12/15/06	15	
12/19/06	15	
12/23/06	15	
12/27/06	15	
12/31/06	15	
01/04/07	15	
01/08/07	15	
01/12/07	15	
01/16/07	15	
01/20/07	15	
01/24/07	15	
01/28/07	15	
02/01/07	15	
02/05/07	15	</

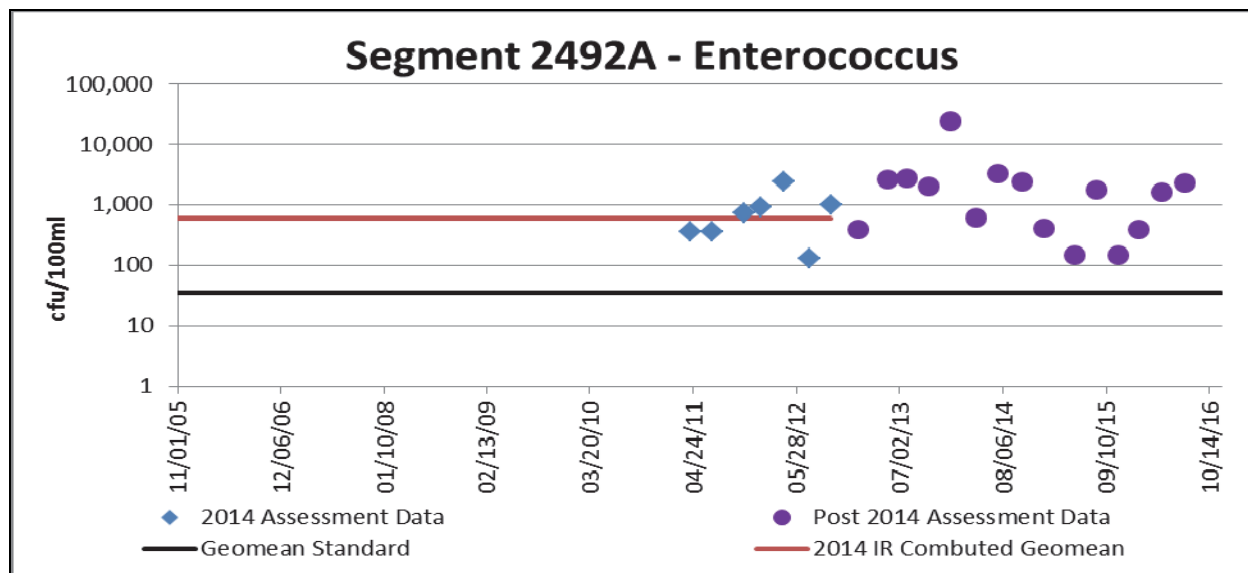
Segment 2492A: San Fernando Creek

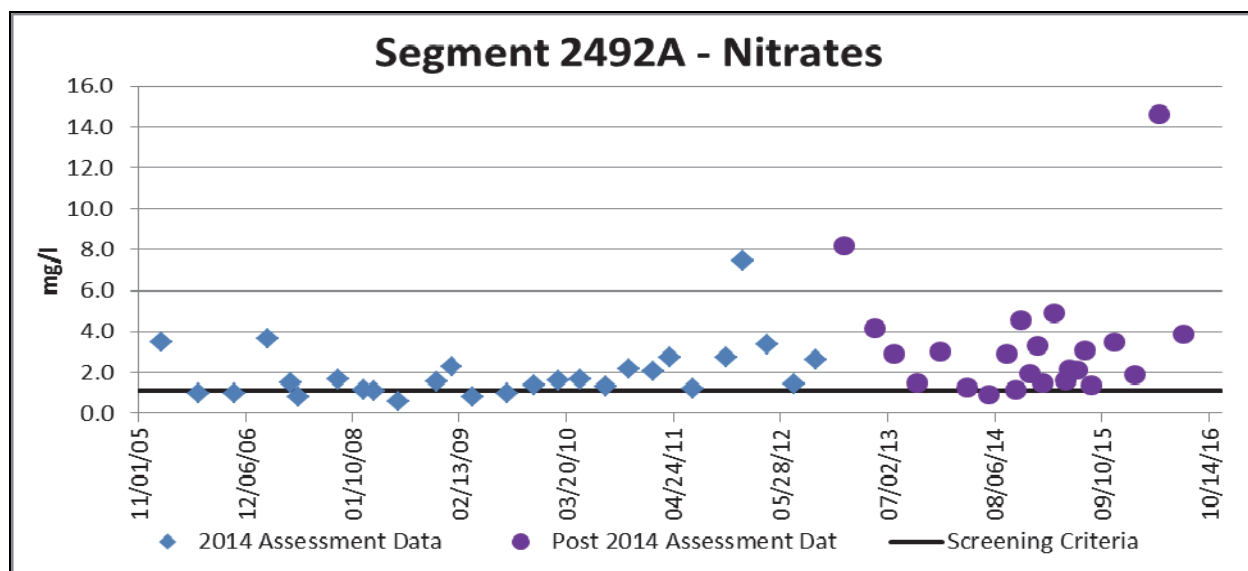
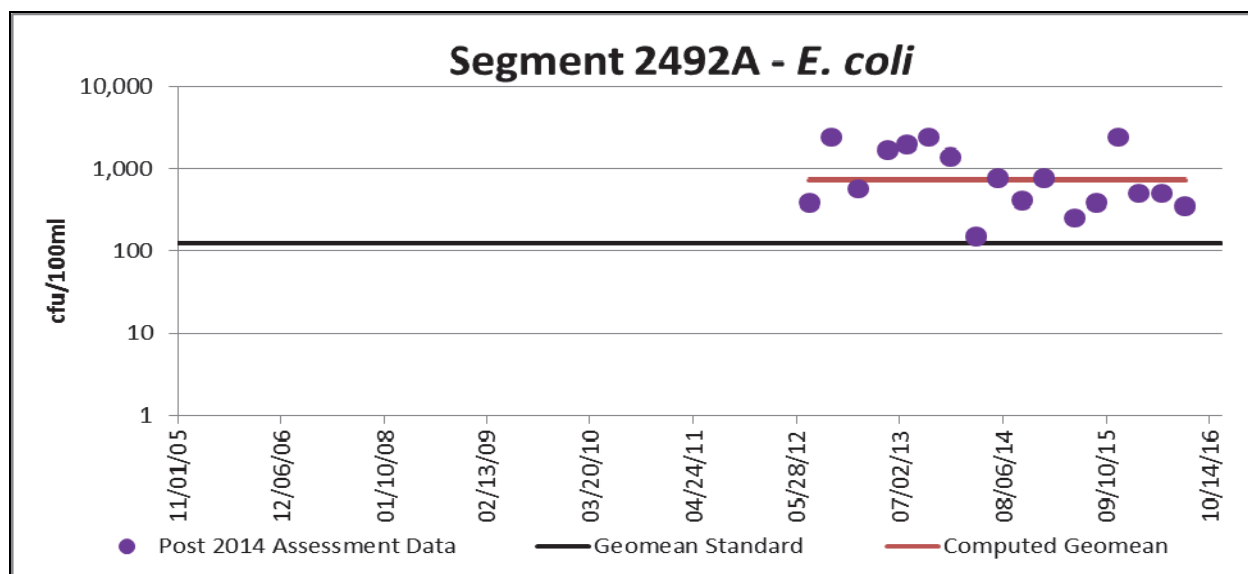


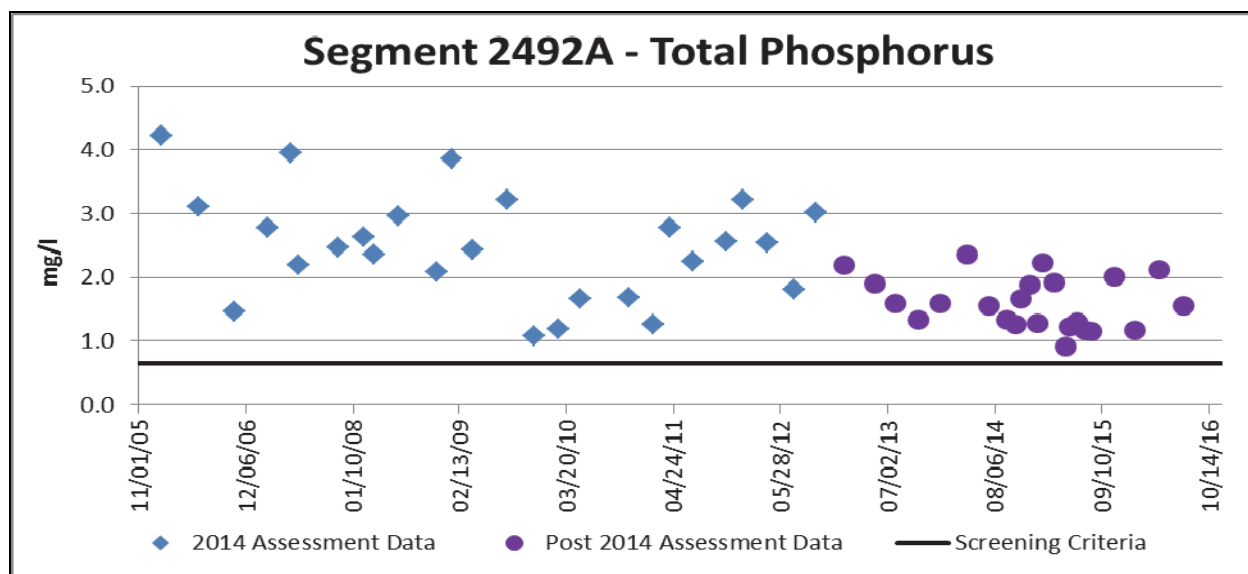
San Fernando Creek flows 45.6 miles from a point just east of the Nueces and Jim Wells county line to the confluence of the Cayo del Grullo arm of Baffin Bay in Kleberg County. Its watershed is 288,572 acres. While primarily rural, the creek flows through the City of Alice and the City of Kingsville.

The creek has had an impairment for bacteria for primary contact recreation since 2006 and is being carried forward in the Draft 2014 Integrated Report. There was gap in enterococcus sampling, but the recent data confirms the impairment. There are a number WWTPs that discharge into the creek. There are also smaller communities on septic systems in the area. The creek is effluent dominated, and flow at the sampling location is not tidally influenced. Therefore, NRA began also collecting *E. coli* data. These data also exceed the standard for primary contact recreation.

The creek also has concerns for nitrates, chlorophyll-*a*, and total phosphorus. There appears to be a decreasing trend for chlorophyll-*a* concentrations, but based on the post 2014 assessment data, concerns will likely remain for all of these parameters.







Segment 2493: South Bay

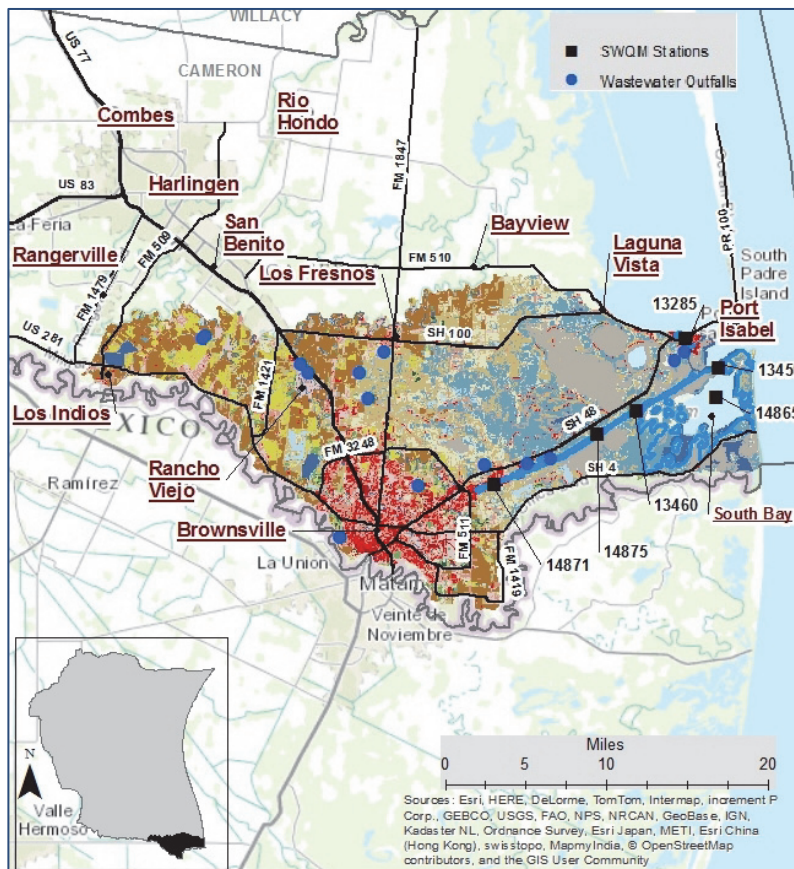


South Bay is located south of the Brownsville Ship Channel in Cameron County. Its watershed, combined with that of the Segment 2494, the Brownsville Ship Channel, and Segment 2494A, the Port Isabel Fishing Harbor, is 225,554 acres.

South Bay is the southernmost bay in Texas and is part of the South Bay Coastal Preserve. It supports the largest concentration of oysters in the Lower Laguna Madre and is relatively inaccessible.

All assessed parameters met the standards in the 2014 Integrated Report.

Segment 2494: Brownsville Ship Channel

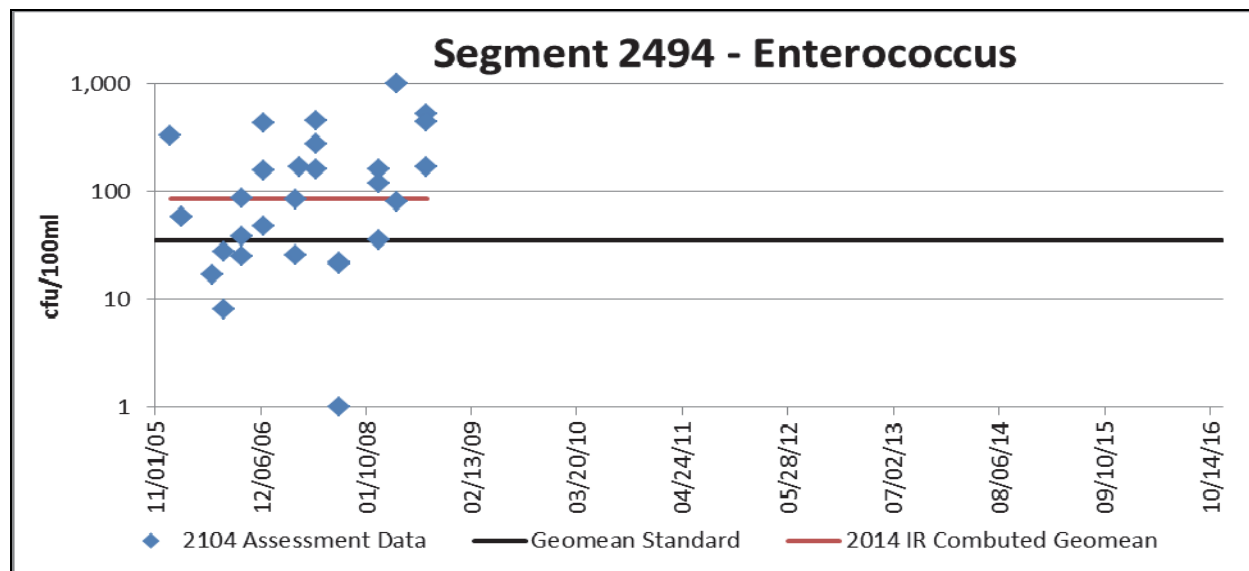


The ship channel extends from the Port of Brownsville to the Laguna Madre. Its watershed, combined with that of the Segment 2493, South Bay, and Segment 2494A, the Port Isabel Fishing Harbor is 225,554 acres.

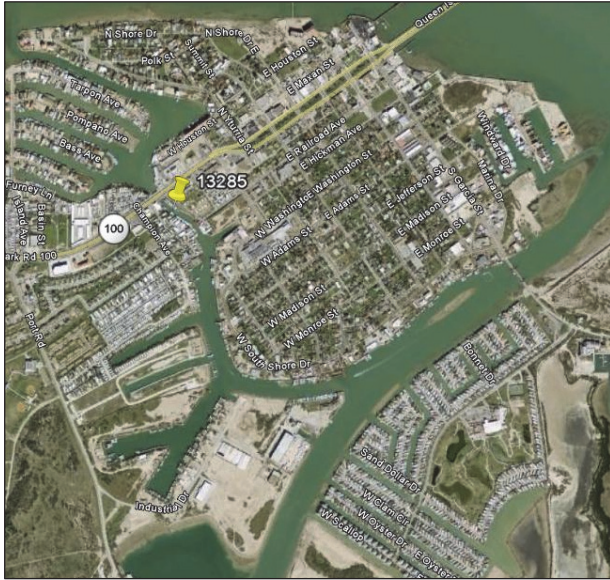
The ship channel is part of the Port of Brownsville, a major center of industrial development with over 230 companies doing business there.

The segment is listed as having an impairment for bacteria for primary contact recreation as a result of the 2010 Texas Integrated Report. This impairment may be related to the numerous WWTPs that discharge to the segment. Due to the eight hour holding time and because there are no local labs accredited for enterococci analysis, bacteria sample collection has been suspended.

The ship channel also has a concern for low DO for the grab screening level. Not enough 24-Hr DO events have been conducted to fully assess this concern.



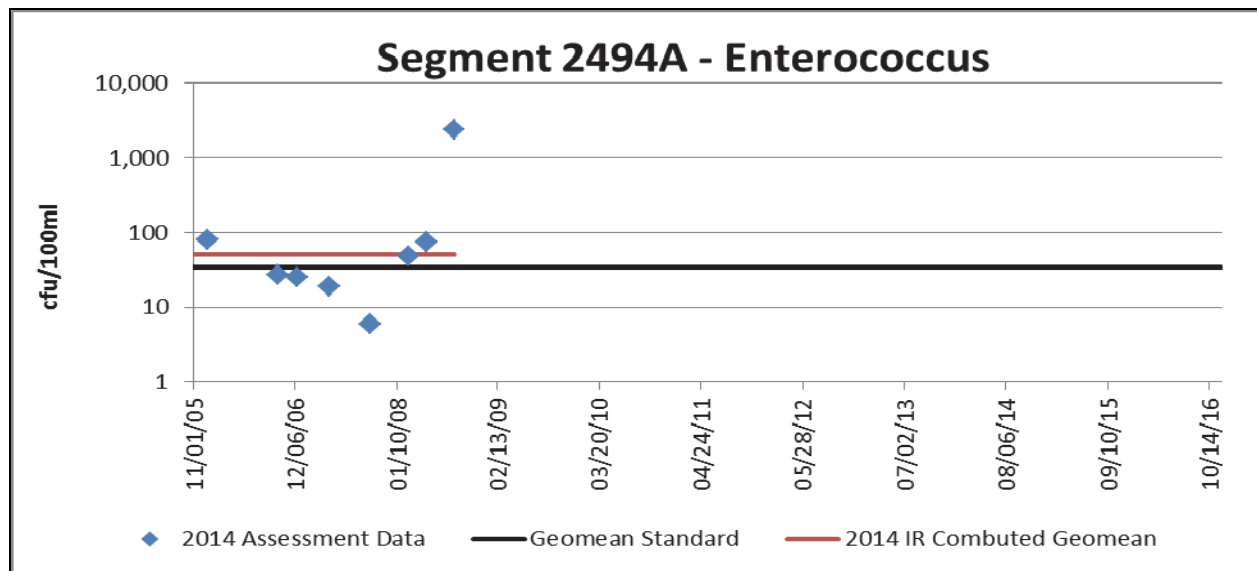
Segment 2494A: Port Isabel Fishing Harbor



The fishing harbor is located within the City of Port Isabel in Cameron County. It is connected to the Laguna Madre to the north and to the Brownsville Ship Channel to the south. Its watershed, combined with that of the Segment 2493, South Bay, and Segment 2494, the Brownsville Ship Channel is 225,554 acres.

The properties along the canals are a combination of businesses and residential properties.

The water body is listed as having an impairment for bacteria for primary contact recreation as a result of the 2010 Texas Integrated Report. The source of the bacteria is thought to be from nonpoint source runoff since there are no permitted discharges into the harbor. Due to the eight hour holding time and because there are no local labs accredited for Enterococcus analysis, bacteria sample collection has been suspended.



2501: Gulf of Mexico

The Gulf of Mexico along the entire Texas coast has been listed by the DSHS as being impaired for mercury in edible tissue (King Mackerel > 43") since 1998.

Table 3-8: List of Impairments and Concerns in the Bays and Estuaries and Gulf of Mexico

Segment Name	AU	Description	Impairments	Concerns
2462 San Antonio Bay / Hynes Bay/ Guadalupe Bay	01	Entire segment	Bacteria (oyster waters)	Chlorophyll-a
2463 Mesquite Bay	01	Entire segment	none	none
2471 Aransas Bay	01	Entire segment	none	none
2471A Little Bay	01	Entire segment	none	Chlorophyll-a
2471RB	01	Rockport (Recreational Beaches)	none	none
2472 Copano Bay / Port Bay / Mission Bay	02	Copano Bay	Bacteria (oyster waters)	none
2473 St. Charles Bay	01	Entire segment	none	DO
2481 Corpus Christi Bay	01	From the CCSC east to Pelican Island, south to Demit Island including the La Quinta Channel and the CCSC adjacent to Redfish Bay	none	none
	02)	From the CCSC east to Pelican Island, south to Demit Island including the area from the CCSC to Demit Island (Oso Bay and City of Corpus Christi area).	none	none
	03	From Pelican Island south to Demit Island, to Mustang Island and the area along Mustang Island State Park to the CCSC	none	none
	04	From the JFK Causeway to a line from Demit Island across to Mustang Island State Park	none	none
2481CB	01	Corpus Christi Marina	none	none
	02	Corpus Christi Beach - Main	none	none
	03	Cole Park	Bacteria	none
	04	Ropes Park	Bacteria	none
	05	McGee Beach		
	06	Poenisch Park	Bacteria	none
	07	Emerald Beach	none	none
	08	University Beach	none	none
	09	Packery Channel Park	none	none
2482 Nueces Bay	01	Entire segmetn	Zinc in edible oyster tissue	Copper in Water
2483 Redfish Bay	01	Entire segment	none	none
2483A Conn Brown Harbor	01	Entire segment	none	Copper in Water
2484 Corpus Christi Inner Harbor	01	Entire segment	none	Ammonia, Nitrate

Table 3-8: List of Impairments and Concerns in the Bays and Estuaries and Gulf of Mexico (cont.)

Segment Name	AU	Description	Impairments	Concerns
2485 Oso Bay	01	Upper bay (Holly Road to CR 24)	none	Chlorophyll- <i>a</i>
	02	Middle bay (SH 358 to Holly Road)	DO	Chlorophyll- <i>a</i>
	03	Lower portion of bay (Ocean Drive to State Park Road 22)	Bacteria	Chlorophyll-, Total Phosphorus
2485A Oso Creek	01	Entire segment	Bacteria	Chlorophyll- <i>a</i> , Nitrate, Total Phosphorus
2485B Tributary of Oso Creek	01)	Entire segment	none	Total Phosphorus
2485D West Oso Creek	01	Entire segment	none	Total Phosphorus
2491 Laguna Madre	01	Upper portion north of the Arroyo Colorado confluence (DO	Chlorophyll- <i>a</i>
	02	Area adjacent to the Arroyo Colorado confluence	DO, Bacteria	Chlorophyll- <i>a</i> , Ammonia, Nitrate
	03	Lower portion south of the Arroyo Colorado confluence	none	DO
2491B North Floodway	01	Entire Segment	none	none
2492 Baffin Bay / Alazan Bay / Cayo Del Grullo / Laguna Salada	01	Entire Segment	none	Chlorophyll- <i>a</i>
2492A San Fernando Creek	01	Entire segment	Bacteria	Chlorophyll- <i>a</i> , Nitrate, Total Phosphorus
2493 South Bay	01	Entire segment	none	none
2494 Brownsville Ship Channel	01	Entire segment	Bacteria	DO
2494A Port Isabel Fishing Harbor	01	Entire segment	Bacteria	none
2501 Gulf of Mexico	06	Port Aransas area	Mercury in edible tissue	none
	07	Area between Port Aransas and Port Mansfield	Mercury in edible tissue	none
	08	Port Mansfield area	Mercury in edible tissue	none
	09	Port Isabel area	Mercury in edible tissue	none

4.0 STAKEHOLDER PARTICIPATION and PUBLIC OUTREACH

4.1 Stakeholder Participation

CRP depends on public involvement and input from stakeholders to assist in understanding the needs of the basins and the areas of concern. The NRA steering committee serves as the focus for public input and assists with:

- Creation of specific achievable water quality objectives and basin priorities
- Review and development of work plans and allocation of resources
- Development and review of major reports
- Establishing monitoring priorities and developing monitoring plans
- Improving awareness of water quality, water resources, and pollutant source issues
- Increasing opportunities for citizens to identify pressing issues, concerns, and contributing ideas to the CRP process
- Expanding the public's role in water quality management issues

The steering committee includes stakeholder volunteers from across NRA's area of responsibility, representing:

- Private citizens
- Fee-payers (identified in Texas Water Code 26.0135(h))
- Political subdivisions (including local, regional, and state officials)
- TSSWCB
- Other appropriate state agencies including: TPWD, Texas Water Development Board, TGLO, DSHS, Texas Department of Agriculture, RRC, and Texas Department of Transportation
- Other entities interested in water quality matters including: TCEQ regional staff, business and industry, agriculture, environmental and other public interest groups

NRA encourages stakeholder participation to provide suggestions for additional monitoring, special studies, outreach opportunities, and to be a voice for local concerns. For more information about stakeholder participation, the steering committee process, or how to become a steering committee member, visit our web page at <http://www.nueces-ra.org/CP/CRP/public.php>, or contact NRA using the contact information at the end of this report.

4.2 Public Outreach

NRA participated in numerous CRP supported activities to help educate students and adults on pollution sources, the importance of keeping our waters clean, and what they can do help protect our rivers, lakes, and bays.

Watershed Model Demonstrations

NRA has two watershed models of the Nueces River Basin, and a third model is owned by the City of the Corpus Christi. NRA also has a model of the Arroyo Colorado Watershed, which is on loan to the Arroyo Colorado Watershed Protection Partnership, and a second one was completed in summer 2010. These models are taken to class rooms and outreach events and are used to demonstrate point and nonpoint source pollution. Primarily geared for 5th and 7th graders, participants of all ages enjoy participating in the demonstrations. Food coloring is dripped onto the model to simulate oil leaks, fertilized lawns, illegal dump sites, etc. Water is then squirted onto the model using spray bottles to simulate rain. Being an actual scale model of the basin, students locate where they live in the basin, and can see how pollution upstream can reach their communities and how pollution in their communities affect those downstream. This education program reaches about 13,000 students each year.

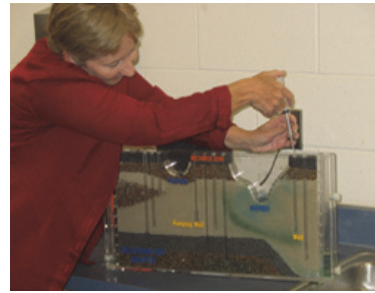


Other Education Tools

NRA also used an **Aquifer model** in school presentations to show demonstrate how water recharges a sand or karst aquifer, how wells tap an aquifer and how a plume of pollution can move through the ground and impact water quality coming from a water supply well. Students learn about groundwater aquifers, recharge and personal responsibility.

We have two **Rainfall-Runoff-Recharge models** to illustrate the role of land cover on water quality and quantity. These are delivered mostly at County Ag Fairs and Stock shows and support the 4th grade study of erosion and weathering. Different types of vegetative cover are demonstrated along with bare ground and impervious cover. In the demonstration, Eastern gamma, a native riparian grass generates 100% clear ground water with no run-off.

Our **Red Rain Barn** is a miniature barn is equipped with gutters and a rain water collection system calibrated to show how much water can be collected by a simple system. It is an engaging tool delivered at County Fairs and festivals.



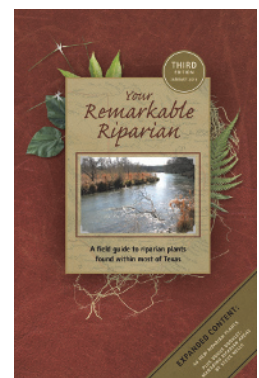
Up2U Campaign

NRA, with guidance from local partners, designed and launched print and media components of the Up2U CRP in 2004 in the headwaters of the Nueces River Basin. It was expanded to include the coastal area in 2009. Partners now include the City of Corpus Christi, the City of Port Aransas, the City of Rockport, CBBEP, Friends of the Frio, Nueces County, Port Aransas Chamber of Commerce, and TCEQ. The cornerstone of the campaign is a logo emblazoned mesh litter bag which is both a litter prevention tool and an advertizing tool. These bags are now being distributed to beach goers, boaters, students and litter prevention advocates from the Nueces headwaters to the coast. NRA received the Governor's 2008 Environmental Excellence Award for Education for this project.



Riparian Network

NRA facilitates riparian landowner education focusing of how riparian areas work and what activities can hinder this function. Often misunderstood, the basic riparian dynamics are illustrated via multimedia lessons delivered on www.remarkableriparian.org. This program also resulted in the publication of the *Your Remarkable Riparian Field Guide*, a field guide to riparian plants within the Nueces River Basin, (now on its third edition) and a companion booklet *Managing Riparian Areas*. NRA works to integrate riparian understanding into all stakeholder processes associated with WPP's, RUAA's, and other Special studies. Copies are available for purchase from the website.



CONTACT INFORMATION

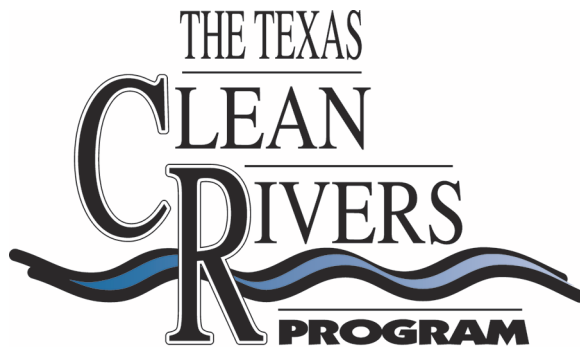
For More information on CRP, other activities of NRA, or to obtain additional copies of this report, contact:

General office
First State Bank Building, Suite 206
200 E. Nopal – P.O. Box 349
Uvalde, TX 78802-0349
Tel: (830) 278-6810
Fax: (830) 278-2025

Corpus Christi Office
602 N. Staples Street, Suite 280
Corpus Christi, TX 78401
Tel: (361) 653-2110
Fax: (361) 653-2115

Rocky Freund, Deputy Executive Director, Corpus Christi Office: rfreund@nueces-ra.org
Sky Lewey, Resource Protection and Education Director, General Office: slewey@nueces-ra.org
Sam Sugarek, Director of Water Quality Programs, Corpus Christi Office: ssugarek@nueces-ra.org

NRA would like to recognize and thank our CRP partners for their support and contributions to the program.



Bandera County 
River Authority & Groundwater District
Protecting & Preserving our Natural Resources

Appendix A

Wastewater Discharge Permit Information

2001 Mission River Tidal

WQ0010156-001 – Town of Woodsboro: 250,000 gpd via Willow Creek

2002 Mission River Above Tidal

WQ0010255-001 – Town of Refugio: 576,000 gpd with provision for beneficial land application and storm water

WQ0010748-001 – Pettus Municipal Utility District (MUD): 105,000 gpd via Medio Creek

2003 Aransas River Tidal

WQ0010055-001 – City of Sinton: 800,000 gpd via Chiltipin Creek

WQ0013412-001 – TxDOT: 3,800 gpd via Chiltipin Creek

WQ0013641-001 – City of Sinton Rob and Bessie Welder Park: 15,000 gpd via Chiltipin Creek

WQ0014119-001 – St. Paul Water Supply Corporation (WSC): 50,000 gpd via Chiltipin Creek

2004 Aransas River Above Tidal

WQ0010124-004 – City of Beeville, Chase Field: 2,500,000 gpd

WQ0014112-001 – Skidmore WSC: 131,000 gpd via unnamed tributary

WQ0014123-001 – Tynan WSC: 45,000 gpd via Papalote Creek

2004B Poesta Creek

WQ0010124-002 – City of Beeville: 3,000,000 gpd with provision for irrigation

2101 Nueces River Tidal

WQ0000531-000 – Flint Hill Resources Limited Partnership (LP): storm water

WQ0001255-000 – Lon C Hill: 1,098,000 gpd

WQ0004934-000 – City of Corpus Christi: WTP sludge

WQ0010401-006 – City of Corpus Christi (Allison Plant): 5,000,000 gpd

WQ0013644-001 – San Patricio County MUD No. 1: 75,000 gpd via Hondo Creek

2103 Lake Corpus Christi

WQ0004859-000 – Bar Ranch: WWTF sludge and domestic septic

WQ0010015-001 – City of Mathis: 947,000 gpd via unnamed tributary

WQ0010455-002 – City of George West: 539,000 gpd via Nueces River

WQ0011165-001 – Texas Parks and Wildlife Department – Lake Corpus Christi State Park: 67,000 gpd via evaporation and surface irrigation

2104 Nueces River Above Frio River

WQ0004184-000 – Webb County – Colorado Acres Water Plant: 28,800 gpd via evaporation

WQ0005091-000 – MultiChem Group Three Rives Facility – 11,500 gpd reverse osmosis reject water via 001

WQ0010088-001 – Freer Water Control and Improvement District (WCID) : 280,000 gpd via surface irrigation on nonpublic access agriculture land

WQ0013461-001 – US Department of Justice (DOJ): 300,000 gpd

WQ0013943-001 – Encinal WSC: 95,000 gpd via irrigation

2105 Nueces River Above Holland Dam

WQ0000546-000 – Del Monte Foods (Crystal City Plant) 1,800,000 gpd via irrigation

WQ0010098-001 – City of Crystal City: 1,200,000 gpd via Line Oak Slough

WQ0010145-001 – City of Carrizo Springs: 950,000 gpd via Soldier Slough

WQ0010153-001 – City of Cotulla: 990,000 gpd via Mustang Creek

WQ0013746-001 – City of Asherton: 200,000 gpd via Soldier Slough

WQ0013782-001 – City of Big Wells: 150,000 gpd via Arroyo Negro

WQ0014006-001 – Zavala County (Crystal City Land Fill): 50,000 gpd via Soldier Slough

WQ0015047-001 – MacBain Properties Inc.: 14,000 gpd via irrigation

WQ0015049-001 – Quail Run Services LLC: 300,000 gpd (pending)

2106 Nueces River / Lower Frio River

WQ0001353-000 – Diamond Shamrock Refining Company: 1,500,000 gpd via unnamed ditch

WQ0010301-003 – City of Three Rivers: 400,000 gpd (pending)

2107 Atascosa River

WQ0002043-000 – San Miguel Electric Cooperative: 62,000 gpd (nine outfalls) via evaporation (one outfall in San Miguel Creek Segment 2108)
WQ0002601-000 – San Miguel Electric Cooperative: coal pile runoff and storm water
WQ0010096-001 – City of Lytle: 450,000 gpd via West Prong Atascosa River
WQ0010418-001 – City of Jourdanton: 980,000 gpd via Metate Creek
WQ0010598-001 – City of Pleasanton: 1,420,000 gpd
WQ0013630-001 – City of Poteet: 640,000 gpd via Rutledge Hollow
WQ0014767-001 – TxDOT (Northbound rest stop): 10,000 gpd via unnamed tributary
WQ0014768-001 – TxDOT (Southbound rest stop): 10,000 gpd via Salt Branch Creek
WQ0015400-001 – Benton City: 15,000,000 gpd via unnamed tributary

2108 San Miguel Creek

WQ0002043-000 – San Miguel Electric Cooperative: 62,000 gpd (nine outfalls) via evaporation (eight outfalls in Atascosa River Segment 2107)
WQ0010142-001 – City of Charlotte: 220,000 gpd via Lagunillas Creek
WQ0010160-001 – City of Devine: 650,000 gpd via San Francisco Perez Creek
WQ0011806-001 – City of Natalia: 190,000 gpd via Chacon Creek
WQ0014239-001 – Moore WSC: 65,000 gpd via Black Creek

2109 Leona River

WQ0010306-001 – City of Uvalde: 970,000 gpd
WQ0014394-001 – Batesville WSC: 184,000 gpd via Gallina Slough

2110 Lower Sabinal River

WQ0014689-001 – City of Sabinal: 340,000 gpd

2111 Upper Sabinal River

WQ0011951-001 – Lost Maples State Park: 8,000 gpd via irrigation

2112 Upper Nueces River

WQ0012334-001 – City of Camp Wood: 101,000 gpd via irrigation
WQ0014367-002 – Zavala County WCID: 330,000 gpd via irrigation

2113 Upper Frio River

WQ0011683-001 – Alto Frio Baptist Encampment: 20,000 gpd via irrigation
WQ0015083-001 – NRA: 360,000 gpd via irrigation

2114 Hondo Creek

WQ0010189-001 – City of Hondo: 1,800,000 gpd via Elm Slough

2115 Seco Creek

WQ0011144-001 – Medina County WCID 002: 80,000 gpd

2116 Choke Canyon Reservoir

WQ0013100-001 – Texas Parks and Wildlife Department – Choke Canyon State Park, Calliham Unit: 13,000 gpd via evaporation
WQ0013461-001 – US DOJ – Federal Corrections Institution at Three Rivers: 300,000 gpd via irrigation plus effluent line to the Nueces River Segment 2104

2117 Frio River Above Choke Canyon Reservoir

WQ0010360-001 – City of Pearsall: 1,950,000 gpd via Buck Creek
WQ0010404-002 – City of Dilley: 300,000 gpd via Cibolo Creek
WQ0010404-003 – City of Dilley: 800,000 gpd
WQ0010404-005 – City of Dilley: 30,000 gpd
WQ0011962-001 – Garner State Park: 60,000 gpd via irrigation
WQ0014945-001 – McMullen County WCID No. 1 and McMullen County: 96,000 gpd via unnamed tributary
WQ0015016-001 – South Central Water Company: 300,000 gpd
WQ0015043-001 – Seventy Seven Land Company LCC: 24,000 gpd
WQ0015084-001 – La Salle Oil Field Services: 120,000 gpd via irrigation

2201 Arroyo Colorado Tidal

WQ0003596-000 – Taiwan Shrimp Village Association and Arroyo Aquaculture Association: 100,000,000 gpd
WQ0004792-000 – Military Highway WSC: 1,440,000 gpd via Resaca Del Rancho Viejo
WQ0005137-000 – La Paloma Energy Center LLC: 1,634,000 gpd
WQ0005226-000 – Denali Water Solutions, LLC: land application of WWTP and WTP sludge on 909 acres
WQ0010475-002 – City of Rio Hondo: 400,000 gpd
WQ0013462-008 – Military Highway WSC Lago: 510,000 gpd via Resaca Del Rancho Viejo
WQ0014558-001 – East Rio Hondo WSC: 160,000 gpd
WQ0015265-001 – City of San Benito

2201A Harding Ranch Drainage Ditch Tributary

WQ0005179-000 – Denali Water Solutions LLC: sludge on 1,048 acres

2201B Unnamed Drainage Ditch Tributary in Cameron Co. Drainage District #3

WQ0005025-000 – Military Highway WSC: 1,440,000 gpd of reverse osmosis reject water

2202 Arroyo Colorado Above Tidal

WQ0004051-000 – Frontera Generation Ltd.: 1,400,000 gpd via Main Floodway
WQ0004257-000 – Watermill Express: 1,000 gpd via subsurface drainfield
WQ0004754-000 – Military Highway WSC Progreso WTP: 520,000 gpd to Llano Grande Lake
WQ0004782-000 – North Alamo WSC: 2,000,000 gpd to the North Floodway
WQ0004789-000 – North Alamo WSC: 2,000,000 gpd to the North Floodway
WQ0004861-000 – Denali Water: WWTF and WTP sludge
WQ0004924-000 – Denali Water: WWTF and WTP sludge
WQ0005186-000 – Denali Water: WWTF and WTP sludge
WQ0010347-001 – City of Mercedes: 5,000,000 gpd via Arroyo Anacuitas
WQ0010484-001 – City of Mission: 9,000,000 gpd
WQ0010490-003 – City of Harlingen Water Works Facility #2: 10,000,000 gpd
WQ0010504-001 – City of Donna: 2,300,000 gpd to the Llano Grande Lake
WQ0010596-001 – City of Pharr: 5,000,000 gpd via Main Floodway
WQ0010619-005 – City of Weslaco South Plant: 2,000,000 gpd via South Donna Drain
WQ0010633-003 – City of McAllen Facility No. 2: 10,000,000 gpd via unnamed ditch
WQ0010697-001 – City of La Feria: 500,000 gpd via ditch
WQ0010697-002 – City of La Feria: 1,250,000 gpd via ditch
WQ0010972-002 – Palm Valley Estates: 280,000 gpd via irrigation
WQ0011080-001 – City of Hidalgo: 2,700,000 gpd via Hidalgo County drainage ditch
WQ0011512-001 – City of San Juan: 4,000,000 gpd via Outfall 001 and 200,000 gpd via Outfall 002 to Main Floodway
WQ0011628-001 – Winter Garden Park Corporation: 11,000 gpd into Reba Bass Lake
WQ0013462-001 – Military Highway WSC Progreso: 750,000 gpd
WQ0013462-002 – Military Highway WSC La Paloma: 210,000 gpd via irrigation
WQ0013462-003 – Military Highway WSC Santa Maria: 230,000 gpd via irrigation
WQ0013462-004 – Military Highway WSC San Pedro: 160,000 gpd via irrigation
WQ0013462-005 – Military Highway WSC Los Indios: 135,000 gpd via irrigation
WQ0013462-006 – Military Highway WSC South Alamo: 510,000 gpd
WQ0013523-007 – La Joya ISD: 12,570 gpd via subsurface low pressure dosed drainfields
WQ0013523-009 – La Joya ISD: 12,500 gpd via subsurface low pressure dosed drainfields
WQ0013523-010 – La Joya ISD: 20,000 gpd via subsurface low pressure dosed drainfields
WQ0013523-012 – La Joya ISD: 9,000 gpd via subsurface low pressure dosing drainfields
WQ0013523-013 – La Joya ISD: 35,000 gpd via subsurface low pressure dosed drainfields
WQ0013523-016 – La Joya ISD: 12,000 gpd via subsurface low pressure dosing drainfields
WQ0013633-001 – City of Alamo: 2,000,000 gpd via Hidalgo County drainage ditch
WQ0013680-002 – Donna ISD Munoz Elementary: 2,500 gpd via subsurface drainfields
WQ0013680-003 – Donna ISD Garza Elementary: 12,500 gpd via subsurface drainfields
WQ0014178-001 – US Fish and Wildlife Service Santa Ana National Wildlife Refuge: 1,500 gpd via evaporation
WQ0014415-003 – Agua Special Utility District: 7,550,000 gpd (pending)

2202A Donna Reservoir

WQ0015513-001 – North Alamo WSC: 700,000 gpd (pending)

2204 Petronila Creek Above Tidal

WQ0002888-000 – US Ecology Texas: storm water via Nueces County drainage ditch
WQ0010140-001 – City of Agua Dulce: 160,000 gpd via Agua Dulce Creek
WQ0010592-001 – City of Orange Grove: 200,000 gpd via Agua Dulce Creek
WQ0011541-001 – City of Driscoll: 100,000 gpd
WQ0011583-002 – Nueces County WCID #5: 8,000,000 gpd via Banquete Creek
WQ0011754-001 – Bishop Consolidated ISD: 8,000 gpd via drainage ditch
WQ0014981-001 – Adult and Teen Challenge of Texas: 15,000 gpd

2462 San Antonio Bay / Hynes Bay

WQ0003995-000 – Austwell Aqua Farm, Inc.: 3,700,000 gpd
WQ0004917-000 – Aransas National Wildlife Refuge: 937 gpd via subsurface application
WQ0010256-001 – Refugio WCID No. 1: 75,000 gpd
WQ0011117-001 – City of Austwell: 60,000 gpd

2471 Aransas Bay

WQ0011624-001 – Aransas County MUD #1: 263,000 gpd via irrigation

2471A Little Bay

WQ0010054-001 – City of Rockport: 2,500,000 gpd to Little Bay to Aransas Bay and via irrigation

2472 Copano Bay / Port Bay / Mission Bay

WQ0004290-000 – Holiday Beach WSC: 120,000 gpd via mud flats
WQ0004788-000 – Sherwin Alumina Inc. sludge
WQ0004956-000 – Aransas Bay Utilities Co.: 61,000 gpd
WQ0010705-001 – City of Taft: 900,000 gpd via mud flats
WQ0013892-001 – Town of Bayside: 64,200 gpd
WQ0014925-001 – City of Rockport, Port Bay.: 550,000 gpd
WQ0011624-001 – Aransas County MUD #1: 263,000 gpd via irrigation (Interim II and Final Phases)

2473 St. Charles Bay

WQ0011624-001 – Aransas County MUD #1: 263,000 gpd via irrigation (Interim I Phase)

2481 Corpus Christi Bay

WQ0001651-000 – E. I. Du Pont De Nemours & Co.: 4,610,000 gpd via submerged pipe in La Quinta Channel and storm water
WQ0002317-000 – US Department of the Navy Corpus Christi Naval Air Station (NAS): 1,500,000 gpd
WQ0003083-000 – Occidental Chemical Corporation: 2,240,000 gpd via submerged pipeline in La Quinta Channel
WQ0003966-000 – Reynolds Metal Company: 1,000 metric tons per year on closed bauxite tailing beds
WQ0004606-000 – Reynolds Metals Co.: storm water and leachate
WQ0004646-000 – Sherwin Alumina LP: storm water
WQ0005097-000 – voestalpine: 6,020,000 gpd
WQ0005218-000 – Nashtec: storm water (new permit)
WQ0005219-000 – Gregory Power Partners LLC: 918,000 gpd
WQ0010092-001 – City of Gregory: 320,000 gpd via Green Lake
WQ0010422-001 – City of Ingleside: 1,200,000 gpd via Kinney Bayou
WQ0010846-001 – Nueces Co. WCID No. 4 Mustang Island North Plant: 1,880,000 gpd via mud flats
WQ0010846-002 – Nueces Co. WCID No. 4 Mustang Island South Plant: 1,200,000 gpd to Shamrock Cove

2482 Nueces Bay

WQ0001244-000 – Nueces Bay WLE LP: 500,000,000 gpd once through cooling water and previously monitored effluent
WQ0010237-002 – City of Odem: 475,000 gpd via Rincon Bayou
WQ0010478-001 – City of Portland WWTP: 2,500,000 gpd via drainage ditch
WQ0011096-001 – Sublight Enterprises, Inc. (Portland Inn): 9,000 gpd.

2483 Redfish Bay

WQ0002077-000 – Evonik Degussa Corporation: storm water
WQ0003012-000 – Gulf Marine Fabricators: 4,000 gpd
WQ0005162-000 – Mile 533 Marine Ways: 5,000 gpd
WQ0010521-002 – City of Aransas Pass: 1,600,000 gpd.
WQ0012064-001 – Gulf Marine Fabricators: 12,000 gpd via drainage ditch
WQ0012731-001 – Martin Operating Partnership, LP: 3,800 gpd

2484 Corpus Christi Inner Harbor

WQ0000349-000 – Elementis Chromium LP: 20,000,000 gpd
WQ0000457-000 – Flint Hills Resources LP: 2,160,000 gpd
WQ0000465-000 – Valero Refining-Texas LP: 3,000,000 gpd and storm water
WQ0000467-000 – Citgo Refining and Chemicals: 5,300,000 gpd and storm water
WQ0000531-000 – Flint Hills Resources LP: 145,000 gpd via irrigation and storm water
WQ0001909-000 – Valero Refining Company-Texas: 50,000 gpd and storm water
WQ0002070-000 – Magellen Terminals Holdings: 1,060,000 gpd via drainage ditch
WQ0002075-000 – Equistar Chemicals LP: 2,000,000 gpd (1 oufall; 2 outfalls in 2485A)
WQ0002540-000 – Coastal Refining and Marketing: storm water
WQ0002614-000 – Citgo Refining and Chemicals: storm water
WQ0002720-000 – BTB Refining LCC: 120,000 gpd via underground pipe and storm water
WQ0003137-000 – Markwest Company: 288,000 gpd plus 100,000 gpd via irrigation
WQ0003562-000 – Citgo Refining and Chemicals: storm water
WQ0004158-000 – Corpus Christi Cogeneration: 11,000,000 gpd.
WQ0004889-000 – John Bludworth Shipyard, LLC: ballast water
WQ0004977-000 – Citgo Refining and Chemical Co, LPP : ballast water
WQ0005024-000 – EF90 Mini Refinery: 197,600 gpd
WQ0005019-000 – M&G Resins: - 38,500,000 reject and filtration water
WQ0005217-000 – Koch Sulfur Products Company LLC: 600,000 gpd
WQ0010401-005 – City of Corpus Christi Broadway Plant: 10,000,000 gpd

2485 Oso Bay

WQ0001490-000 – AEP Texas Central Barney M. Davis Plant: 540,000,000 gpd
WQ0010401-004 – City of Corpus Christi Oso Facility: 16,200,000 gpd

2485A Oso Creek

WQ0002075-000 – Equistar Chemicals LP – Corpus Christi Plant: storm water (2 outfalls; 1 outfall in 2484)
WQ0010261-001 – City of Robstown: 3,000,000 gpd via unnamed ditch
WQ0010401-003 – City of Corpus Christi – Greenwood Plant: 16,000,000 gpd via La Volla Creek
WQ0011134-002 – Corpus Christi Peoples Baptist Church: 20,000 gpd directly to Oso Creek.
WQ0014228-001 – MPB Properties, Cuddihy Airfield: 60,000 gpd

2491 Laguna Madre

WQ0001752-000 – Rio Grande Valley Sugar Growers: 289,000 gpd via North Floodway Pilot Channel
WQ0002525-000 – Azteca Milling: 300,000 gpd via irrigation
WQ0002803-000 – Value Frozen Foods: 6.9 acre feet/acre/year via irrigation
WQ0003946-000 – Harlingen Shrimp Farms, LTD: 8,000,000 gpd via tidal ditch
WQ0004040-000 – Calpine Construction Finance: 1,110,000 gpd via North Floodway Pilot Channel
WQ0004138-000 – Calpine Hidalgo Energy Center: 920,000 gpd via North Floodway Pilot Channel
WQ0004480-000 – North Alamo WSC: 1,000,000 gpd via East Main Drain
WQ0004758-000 – P.E.N. Joint Tenants and North Cameron Regional WSC: 2,000,000 gpd: via North Floodway
WQ0004782-000 – North Alamo WSC: 2,000,000 gpd via Donna Drain
WQ0004789-000 – North Alamo WSC: 2,000,000 gpd via Donna
WQ0004915-000 – North Alamo WSC: 1,000,000 gpd
WQ0005159-000 – Denali Water Solutions LLC: sludge
WQ0010330-001 – City of Santa Rosa: 390,000 gpd via North Floodway
WQ0010365-001 – City of Raymondville: 1,500,000 gpd via Delta Irrigation Ditch
WQ0010401-008 – City of Corpus Christi Laguna Madre: 3,000,000 gpd via pipeline
WQ0010401-009 – City of Corpus Christi Whitecap: 2,500,000 gpd
WQ0010503-002 – City of Edinburg: 5,900,000 gpd via North Floodway
WQ0010619-001 – City of Weslaco: 250,000 gpd via North Floodway
WQ0010619-003 – City of Weslaco: 3,000,000 gpd via North Floodway
WQ0010633-004 – City of McAllen: 15,000,000 gpd via North Floodway
WQ0010682-003 – Willacy Co. Navigation District: 221,000 gpd via Four Mile Slough
WQ0010757-001 – Laguna Madre Water District Isla Blanca Plant: 2,600,000 gpd via irrigation
WQ0010799-001 – Jim Hogg County WCID No. 2 (Hebbronville Plant): 796,000 gpd: via drainage ditch
WQ0010973-002 – County of Hidalgo Delta Lake Park: 5,000 gpd via Willacy WCID Ditch No. 1 (pending)
WQ0011210-001 – City of Lyford: 270,000 gpd via North Floodway
WQ0011510-002 – City of Elsa: 800,000 gpd via via North Floodway
WQ0012321-001 – U.S. Department of Homeland Security Immigration and Customs Enforcement: 160,000 gpd via Cameron County WCID No. 11 Drainage Ditch
WQ0013344-002 – US Department of the Interior: 25,000 gpd via wetland

2491 Laguna Madre (cont.)

WQ0013523-014 – La Joya ISD: 13,500 gpd
WQ0013742-001 – Sebastian MUD: 225,000 gpd via North Floodway
WQ0013747-001 – North Alamo WSC: 100,000 gpd via drainage ditches
WQ0013747-002 – North Alamo WSC: 210,000 gpd via surface irrigation
WQ0013747-003 – North Alamo WSC: 122,000 gpd via surface irrigation
WQ0013747-004 – North Alamo WSC: 300,000 gpd via drainage
WQ0013772-001 – Laguna Madre Water District Andy Bowie Park Plant: 1,500,000 gpd via wetland
WQ0013924-001 – Bruni Rural WSC: 62,500 gpd
WQ0014069-001 – Laguna Madre Water District Laguna WWTP: 650,000 gpd via City of Port Isabel Reservoir
WQ0014076-001 – City of San Perlita: 100,000 gpd via evaporation and percolation
WQ0014698-001 – TxDOT: 13,000 gpd via drainage ditches
WQ0014781-002 – City of La Villa: 399,000 gpd via North Floodway
WQ0014919-001 – City of Edcouch: 310,000 gpd via North Floodway Pilot Channel
WQ0014950-001 – Hidalgo County MUD #1: 950,000 gpd
WQ0015163-001 – North Alamo: 500,000 gpd

2492 Baffin Bay / Alazan Bay / Cayo del Grullo / Laguna Salado

WQ0010067-002 – Duval County Conservation and Reclamation District: 40,000 gpd via Los Olmos Creek
WQ0010084-001 – Utility Board of Falfurias: 460,000 gpd via surface irrigation
WQ0010253-001 – City of Premont: 350,000 gpd via surface irrigation
WQ0011515-001 – Riviera ISD: 16,000 gpd via surface irrigation
WQ0013361-002 – Kenedy County Sarita Sewer Service and WSC: 44,000 gpd via evaporation
WQ0013374-001 – Kleberg County Kaufer Hubert Memorial Park: 33,000 gpd via Cayo Del Grullo.
WQ0013374-002 – Riviera WCID: 60,000 gpd via Los Olmos Creek
WQ0013374-003 – County of Kleberg Ricardo WWTP: 48,500 gpd via Jaboncillos Creek
WQ0014808-001 – King Ranch Inc.: 25,500 gpd via evaporation

2492A San Fernando Creek

WQ0000579-000 – Ticona Polymers, Inc. (Celanese): storm water
WQ0004819-000 – SNBL USA Ltd.: 35,000 gpd via evaporation
WQ0010067-001 – Duval County Conservation and Reclamation District: 250,000 gpd via Santa Gertrudis Creek
WQ0010270-001 – San Diego MUD: 750,000 gpd via San Diego Creek
WQ0010427-001 – City of Bishop: 320,000 gpd via Carreta Creek
WQ0010536-002 – City of Alice: 2,600,000 gpd via Lattas Creek
WQ0010536-004 – City of Alice: 2,020,000 gpd and irrigation
WQ0010696-001 – City of Kingsville – Plant 1: 3,000,000 gpd via Tranquitas Creek
WQ0010696-004 – City of Kingsville: 1,000,000 gpd via Santa Gertrudis Creek and irrigation
WQ0012035-001 – US Department of the Navy (Kingsville NAS: 400,000 gpd

2494 Brownsville Ship Channel

WQ0002597-000 – Brownsville Navigation District: 100,000 gpd via evaporation
WQ0002817-000 – Brownsville Navigation District Fishing Harbor: 250,000 gpd
WQ0003936-000 – Valley MUD No. 2: 500,000 gpd via San Martin Lake
WQ0004126-000 – Texas Pack, Inc: 150,000 gpd via irrigation
WQ0004541-000 – Southmost Regional Water Authority and Brownsville Public Utilities Board: 4,000,000 gpd via San Martin Lake
WQ0005005-000 – Tenaska Brownsville Partners: storm water
WQ0005209-000 – Maverick Fuel Oil Terminal: storm water (pending)
WQ0010332-001 – Brownsville Navigation District Northside Plant: 98,000 gpd via drainage ditch
WQ0010350-001 – Laguna Madre Water District Port Isabel Plant: 1,100,000 gpd via Vadia Ancha and monofill sludge on permittee property
WQ0010397-005 – Brownsville Public Utilities N. Robindale Plant: 14,500,000 gpd via San Martin Lake
WQ0010590-002 – City of Los Fresnos: 1,000,000 gpd via San Martin Lake
WQ0011348-001 – Valley MUD No. 2: 400,000 gpd via San Martin Lake
WQ0013817-001 – Olmito WSC (Olmito Plant): 750,000 gpd via San Martin Lake
WQ0014355-001 – Brownsville Navigation District: 100,000 gpd via San Martin Lake