

# **Lower San Antonio River Implementation Plan**

**[ LSAR I-Plan ]**

**I-Plan Coordination Committee  
Meeting**

# Agenda

- History of the TMDLs and I-Plan
- Next Steps for the I-Plan Update

# Lower San Antonio TMDLs

- One TMDL for Bacteria in the Lower San Antonio Watersheds developed.
- Covered segment and assessment units (AUs):
  - 1901 – Lower San Antonio River
    - Five total AUs are in the affected area of the watershed (1901\_01 through 1901\_05)
  - TMDLs were adopted by TCEQ in August 2008 and approved by EPA in October 2008.

# Lower San Antonio I-Plan

- I-Plan meetings were initiated in 2015 and over 10 meetings were held to develop the plan.
- I-Plan was approved by TCEQ Commissioners in August 2018.
  - Between the TMDL adoption and I-Plan adoption, the number of TMDLs in the watershed changed from one to five. At the time of the TMDL adoption in 2008, the number of TMDLs in a watershed was determined based on the number of impaired segments. This method has since changed and the number of TMDLs in a watershed is based on the number of impaired AUs.
- Included nine management measures and two control measures.

# Next Steps

- Compile management measure updates and post on TCEQ's Lower San Antonio project webpage.
  - Prior to posting, the update will be sent out to stakeholders for final comments.

# TCEQ Project Website

The screenshot shows the TCEQ website page for the Upper San Antonio River project. The page features a navigation menu with links for Home, Air, Land, Water, Licenses, Permits, and Reporting. A sidebar on the left contains links for Data, Forms, Maps, Publications, Records, Webcasts, and TCEQ Online Services. The main content area is titled "Upper San Antonio River: A Community Project to Protect Recreational Uses" and includes a description of the project, watershed counties, parameters, and segments. A photograph of the San Antonio River is displayed. The page also includes sections for "Overview and Goals", "Get Involved", "Implementation Plan", and "TMDLs".

TEXAS COMMISSION ON ENVIRONMENTAL QUALITY

Home Air Land Water Licenses Permits Reporting

Search Site

Data  
Forms  
Maps  
Public Notices  
Publications  
Records  
Webcasts  
TCEQ Online Services  
Pay, Permits  
Licenses, Reporting  
Filing, Comments

Cleanups, Remediation  
Emergency Response  
Licensing  
Permits, Registration  
Preventing Pollution  
Recycling  
Reporting  
Rules

How are we doing? Take our customer satisfaction survey

Home / Water Quality / Total Maximum Daily Load Program / Upper San Antonio River: A Community Project to Protect Recreational Uses >> Questions or Comments: [tmdl@tceq.texas.gov](mailto:tmdl@tceq.texas.gov)

## Upper San Antonio River: A Community Project to Protect Recreational Uses

A community project to reduce bacteria levels and protect recreational safety in the river. Stakeholders worked together to develop an approved I-Plan, which together with the adopted TMDLs is the road map to improving water quality.

**Watershed Counties:** Bexar, Karnes, Wilson

**Parameter:** Bacteria

**Basin:** San Antonio River

**Segments:** 1910, 1910A, 1010D, 1911, 1913B, 1911C, 1911D, 1911E

- Project Summary

On this page:

- Overview and Goals
- Get Involved
- Implementation Plan
- Adopted TMDLs
- Reports and Other Documents
- For More Information

### Overview and Goals

The goal of this current project is to reduce bacteria levels in parts of the San Antonio River, making them safer for recreation. High levels of bacteria may pose a risk to people who swim or waded in them—activities called “contact recreation” in the state’s standards for water quality.

The stream segments included in the project are Salado Creek (Segment 1910), Walnut Creek (Segment 1910A), and the Upper San Antonio River (Segment 1911). [Texas A&M Life Research](#) and the [San Antonio River Authority \(SARA\)](#) are key partners in this project.

Back to top

### Get Involved

In all our projects, we seek opinions and information from stakeholders—people who represent government, permitted facilities, agriculture, business, environmental, and community and private interests in the watershed. Texas A&M Life coordinated with people in the watershed to develop the I-Plan. A coordination committee representing diverse interests developed the plan.

All stakeholders are welcome to get involved in implementing the strategy to improve water quality. Public meetings about the project are open to everyone. Find out more about what it means to participate in TMDL projects.

Back to top

### Implementation Plan

The TCEQ and Texas A&M Life worked with stakeholders to develop an I-Plan for the project watersheds.

The I-Plan will complement the existing watershed protection plan (WPP) for the Upper San Antonio River. The WPP, which was updated in 2014, was originally developed by SARA in 2007, together with stakeholders, the City of San Antonio, Bexar County, and other partners. The WPP was developed to allow early implementation of measures to reduce pollution; environmental improvement targets were based on data and information in the TMDL report.

On April 5, 2016, the commission approved the I-Plan.

- Implementation Plan for Three Total Maximum Daily Loads for Indicator Bacteria in the Upper San Antonio Watershed
- Response to Comments on the I-Plan

Back to top

### TMDLs

The commission adopted these TMDLs on July 25, 2007. The EPA approved them on September 25, 2007, at which time they became part

See Also:

- TMDL Home
- TMDL Projects
- TMDL News
- TMDL Calendar

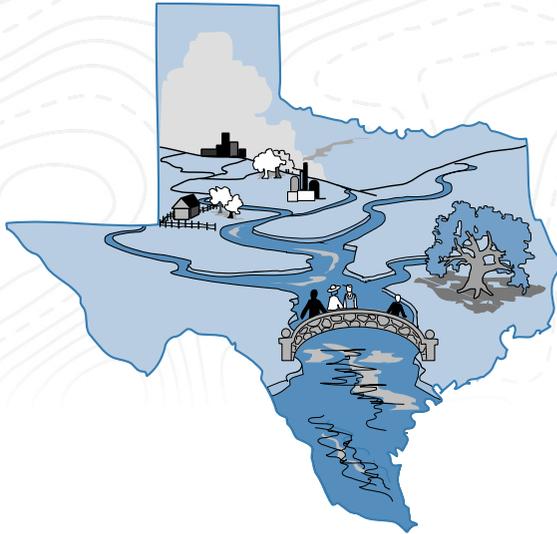
Committee Working Together  
Taking Care of Our Waters, Land, and Air

[www.tceq.texas.gov/waterquality/tmdl/34-lowersanantoniobac.html](http://www.tceq.texas.gov/waterquality/tmdl/34-lowersanantoniobac.html)

# Contact Information

TCEQ TMDL Program Website:

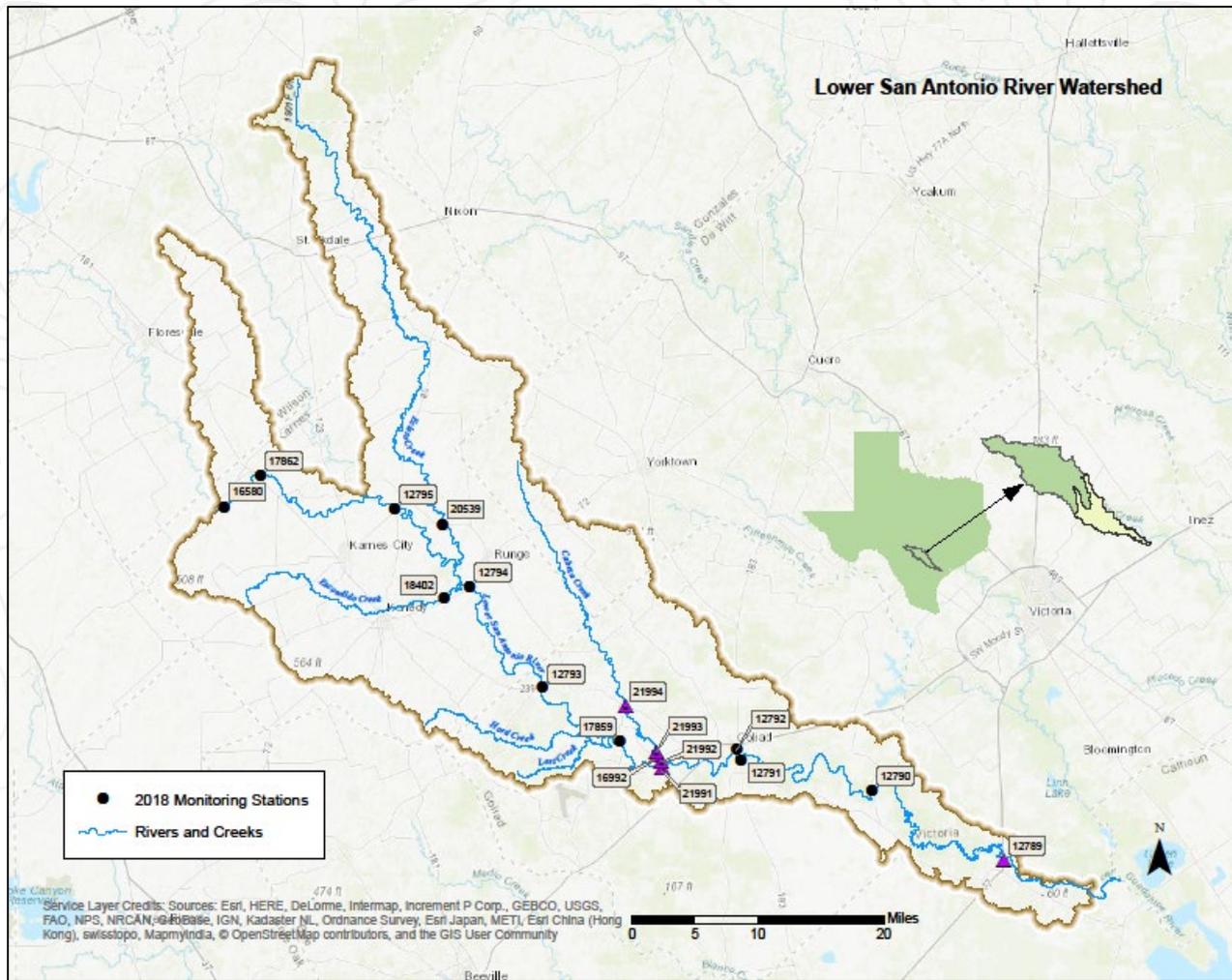
<http://www.tceq.texas.gov/waterquality/tmdl/>



**Nicole Reed**  
**[nicole.reed@tceq.texas.gov](mailto:nicole.reed@tceq.texas.gov)**  
**(512) 239-3182**

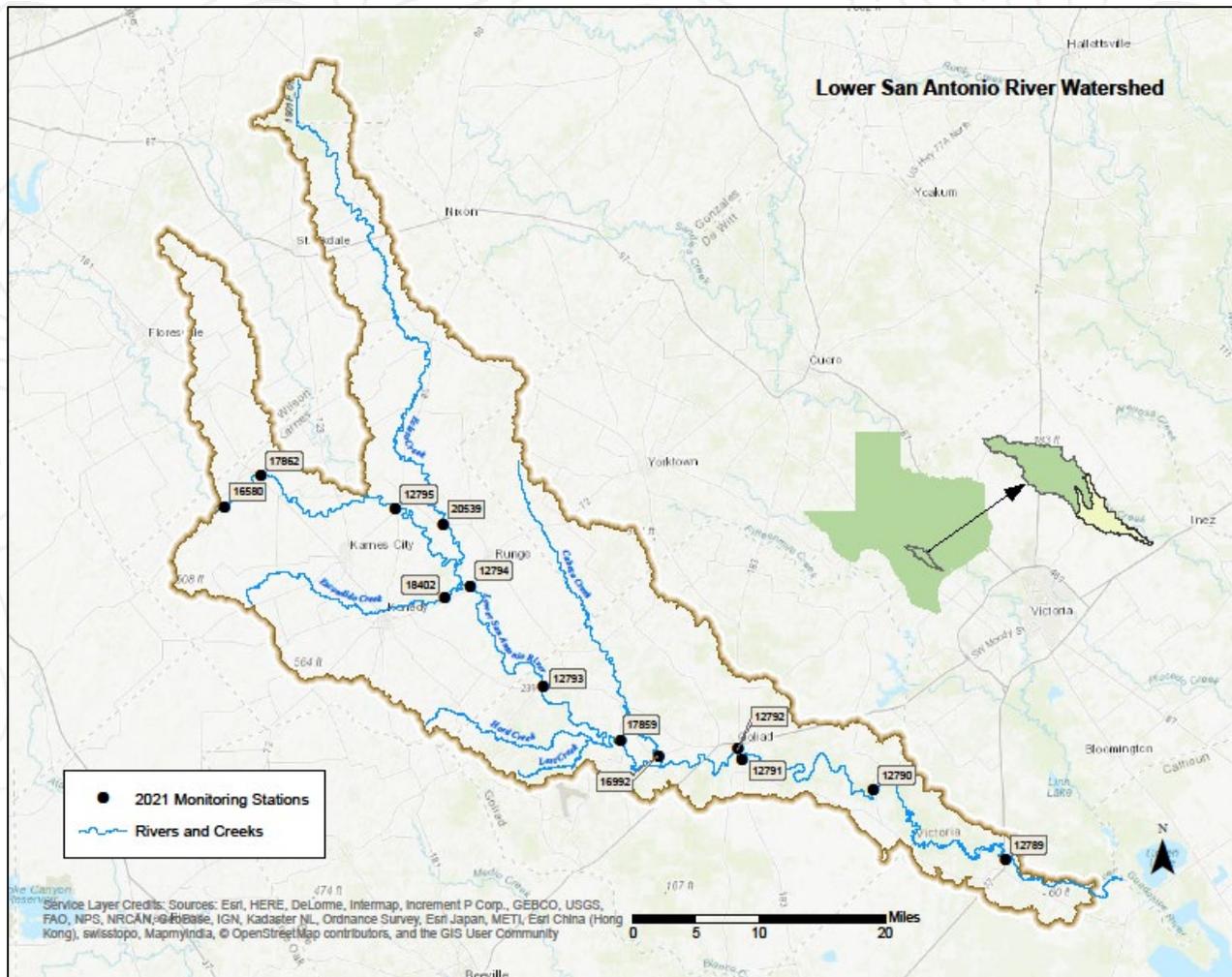
# 2018 LSAR

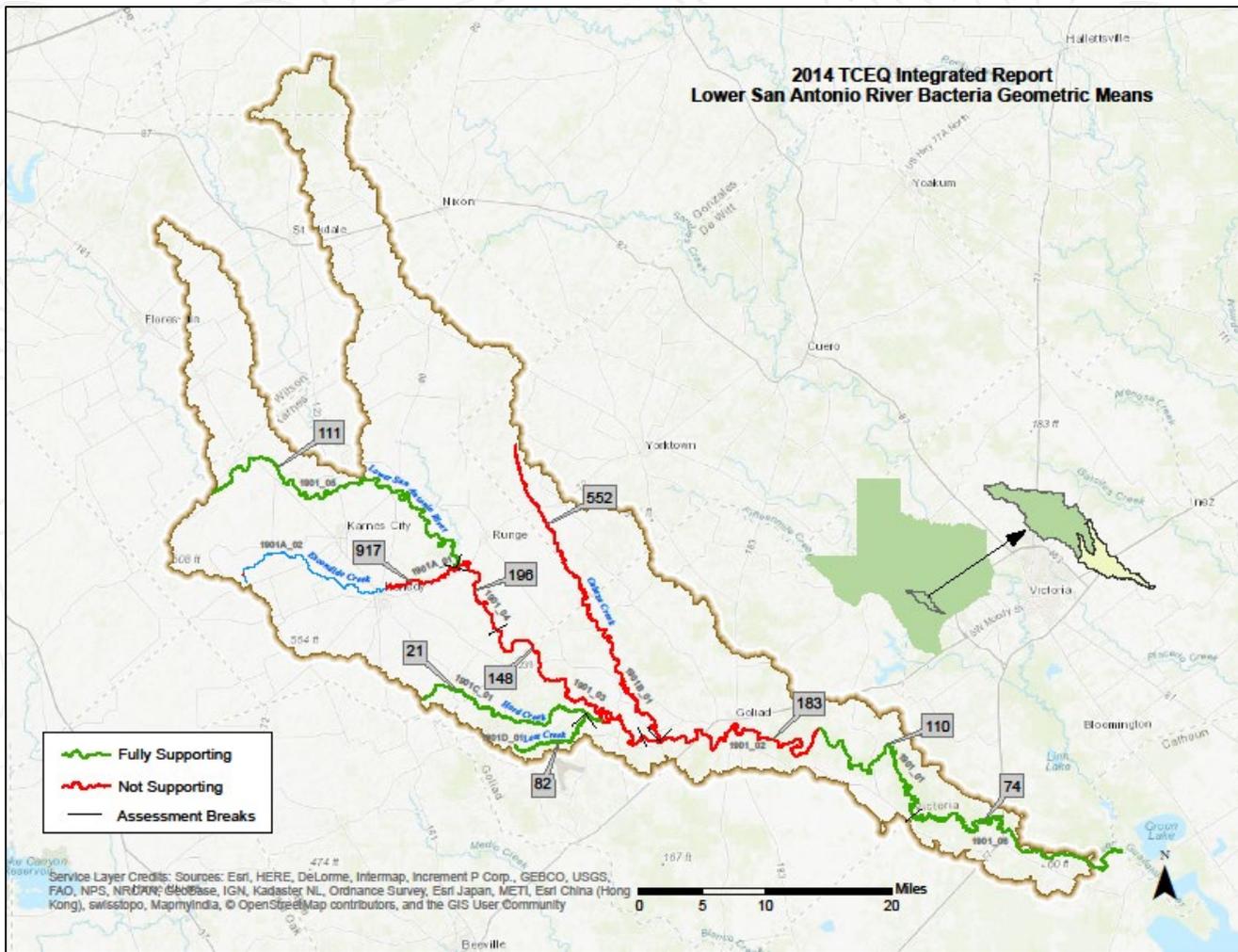
- Clean Rivers Program and SARA Stream Monitoring
  - 17 stations
  - Varying frequency
  - Bacterial analysis at most sites



# 2021 LSAR

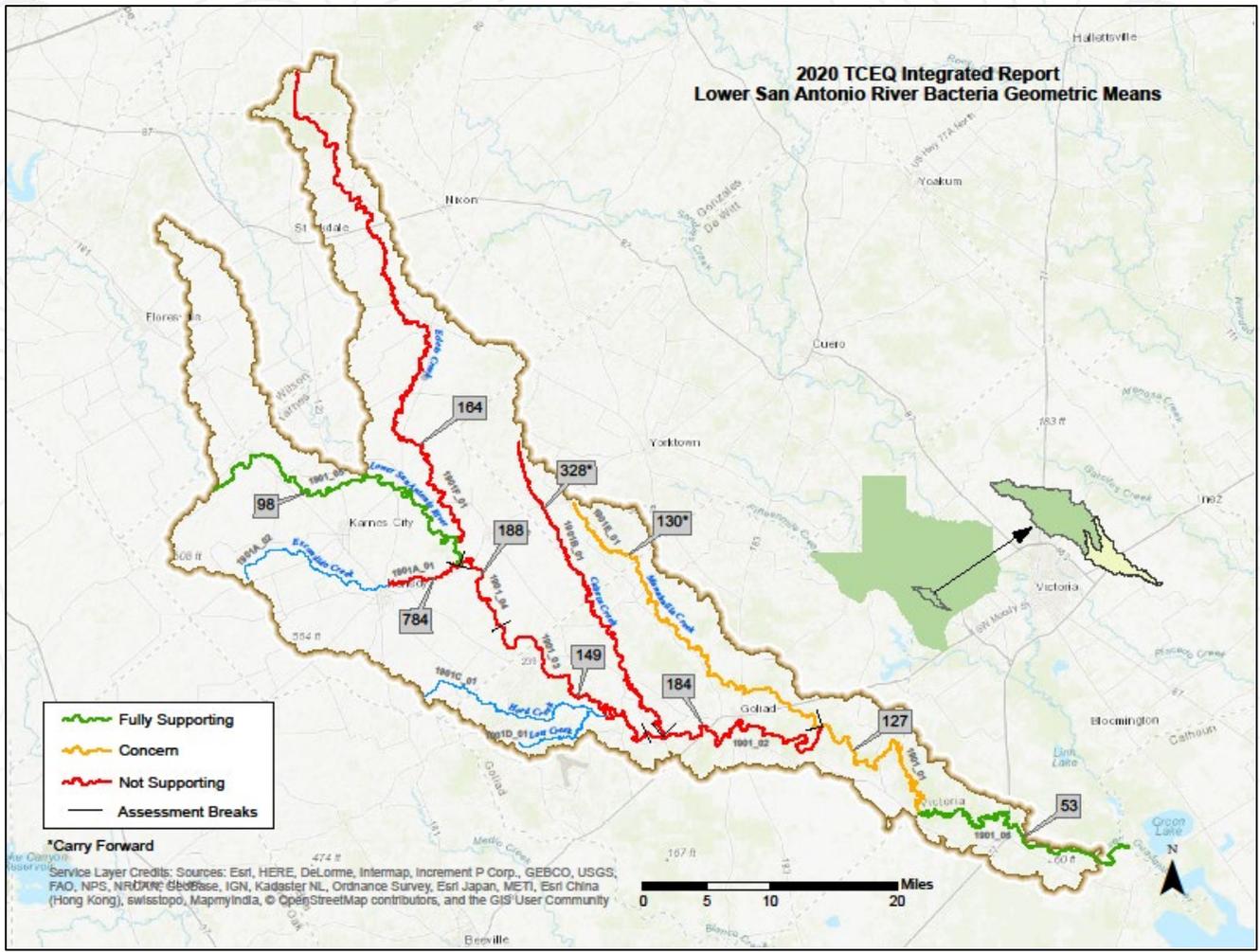
- Clean Rivers Program and SARA Stream Monitoring
  - 13 stations
  - Varying frequency
  - Bacterial analysis at all but one site





# 2014 LSAR

- Bacteria assessments from 2020 TCEQ Integrated Report
  - 10 AUs assessed
  - 5 AUs not supporting 126 cfu/100mL primary contact recreation standard



# 2020 LSAR

- Bacteria assessments from 2020 TCEQ Integrated Report
  - 10 AUs assessed
  - 8 AUs not supporting 126 cfu/100mL primary contact recreation standard

# LSAR Bacteria Summary Data

Assessment Unit	2014 IR Geomean (cfu/100mL)	2020 IR Geomean (cfu/100 mL)	% Change
1901_05	111	98	-11.7
1901_04	196	188	-4.1
1901_03	148	149	0.7
1901_02	183	184	0.5
1901_01	110	127	15.5
1901_06	74	53	-28.4

# LSAR Tributaries Bacteria Data Summary

Assessment Unit	2014 IR Geomean (cfu/100mL)	2020 IR Geomean (cfu/100 mL)	% Change
Escondido Creek – 1901A_01	917	784	-14.5
Cabeza Creek – 1901B_01	552	328	-40.6
Hord Creek – 1901C_01	21	No Data	NA
Lost Creek – 1901D_01	82	No Data	NA
Manahuilla Creek – 1901E_01	No Data	130	NA
Ecleto Creek – 1901F_01	No Data	164	NA

# LSAR I-Plan Overview

- Management Measures are related to managing nonpoint sources (unregulated), such as working to identify OSSFs
- Control Actions are related to point sources (regulated discharges), such as WWTF contributions

# Management Measure 1

- *Develop and implement conservation plans in priority areas of the watershed*
- Best management practices include:
  - Range and pasture planting, prescribed grazing, fencing, water development and nutrient and pest management
- These practices reduce animal waste, sediment, nutrients and pesticides flowing in the SAR

# Management Measure 1 Karnes County

- 2020:
  - Completed 20 conservation plans
  - Provided financial assistance for 17 contracts
  - Total of \$354,365.88 on 3,421.6 acres
  - 1 WPMP written and 45 WQMP status reviews
- 2019:
  - Completed 8 conservation plans
  - Provided financial assistance for 8 contracts
  - Total of \$143,338.44 on 587.5 acres

# Management Measure 1 Goliad County



Milestone	NRCS Goliad Field Office	Goliad Soil Conservation Office
Landowners Contacted	136	122
Conservation Plans Developed	11	4
Acres in Developed Plans	7,291	157
Education/Outreach Programs Delivered	1	2

# Management Measure 1 LSAR Basin

Milestone	2019	2020
Landowners Contacted	393	414
Conservation Plans Developed	57	35
Acres in Developed Plans	-	10,869.6
Education/Outreach Programs Delivered	4	3

# Management Measure 2

## Goliad County Wildlife Management Association

- Goliad County twice awarded the State Hog-Out Challenge grant
- BoarBuster trap currently deployed and being serviced by association members
- Aerial Surveys:
  - 2012 – one hog/30 acres, 2019 – one hog/34 acres
- Will conduct landowner surveys to gather more hog removal data

# Management Measure 2

- Goliad County Wildlife Management Association/  
River Authority partnership

Month	Hogs Trapped	Acres Serviced	Landowners
February 2020	38	189	1
March 2020	0	200	1
April 2020	0	250	1
May 2020	0	100	1
June 2020	21	200	1
July 2020	34	225	1
August 2020	0	0	0
September 2020	28	200	1
October 2020	40	245	1
November 2020	33		
Total	161	1609	8

# Management Measure 2, cont.

- River Authority loaner gates still being utilized by landowners
  - Deployed in Wilson and Goliad counties
  - 80 hogs removed through the loaner program



# Management Measure 3

- Karnes County on-site sewage facility (OSSF) Updates
- Goliad County OSSF Updates



# Management Measure 4

- Values reported are averages of the daily average of *E. coli* reported once/month
- Effluent standard of 126 cfu/100 mL

Facility	2019	2020	% Change
City of Kenedy WWTF	14.1	3.8	-73.0
Riddleville Street WWTP – Karnes City	87.1	85.1	-2.3
City of Goliad WWTF	3.4	<1	-100

Source: <https://echo.epa.gov/>

## Management Measure 4, cont.

- Goliad County reported one sanitary sewer overflow, March 17<sup>th</sup>:
  - 20-40 gallons of water
  - City of Goliad determined the root cause to be a poor service connection after televising the line
  - Line repaired on March 23<sup>rd</sup>

# Management Measure 5

- Restoration of Sulphur Creek (1795 linear ft) in 2017



Before

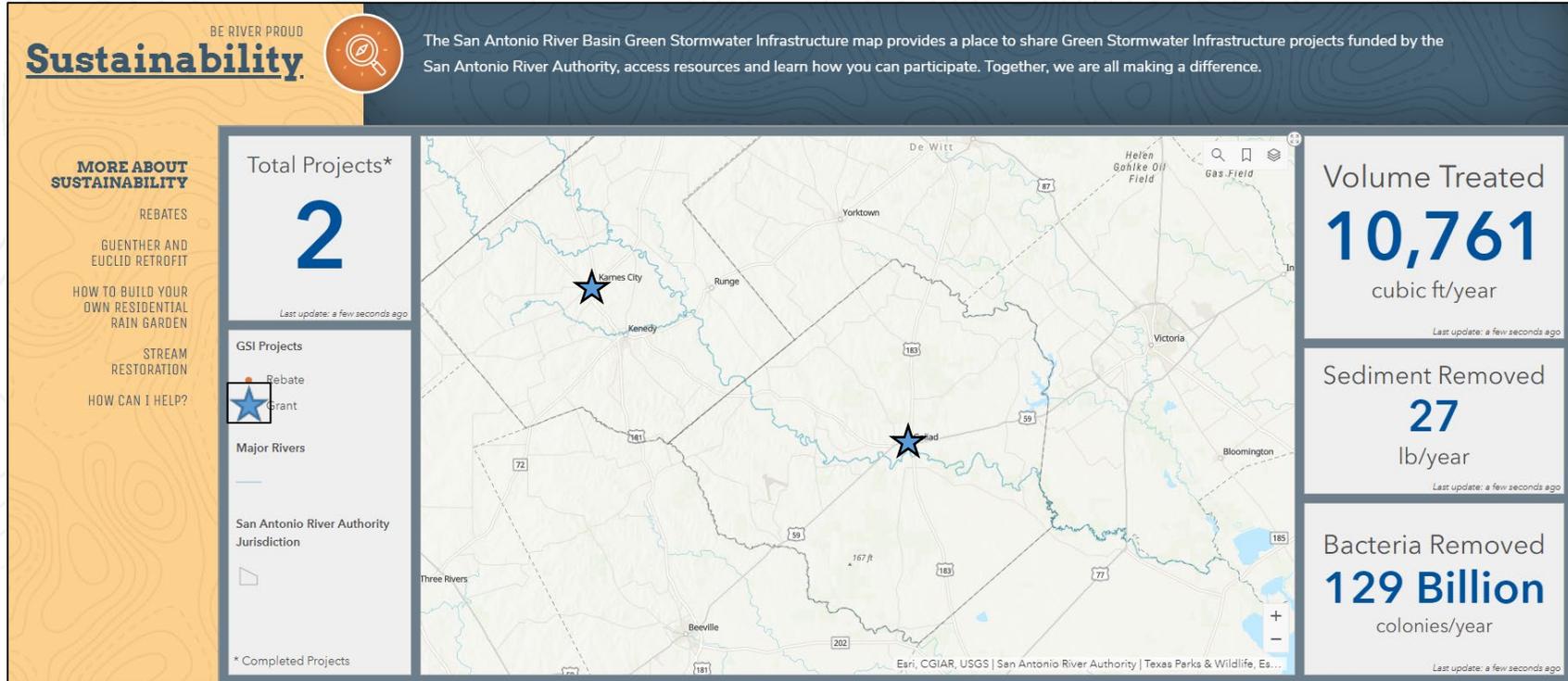


After

# Management Measure 5. cont.

- Contacted 40+ landowners to gauge interest in participation
- Two watershed focused education programs held:
  - Riparian and Stream Ecosystem Workshop – 2018
  - Soil Health Short Course - 2019
- One education program upcoming:
  - Riparian and Stream Ecosystems Workshop – December 8<sup>th</sup> @ 1000

# Management Measure 6



<https://www.sariverauthority.org/be-river-proud/sustainability>

# Karnes, Goliad County LID Grants



Roger E. Sides Elementary School  
Karnes County



Goliad Elementary School  
Goliad County

# Management Measure 6: Stormwater

- Educational Materials:

## LID Credential Courses

Site Assessment & Design

Construction Inspection

Annual Operations and Maintenance

New

All courses are going virtual as of November 2020

# Management Measure 6, cont.

- Presentations to River Authority's Four-county Environmental Advisory Committee:
  - Fall 2018: Impervious Cover Mitigation Project
  - Fall 2020: Sustainable Infrastructure Unit
    - Programs
    - Projects
    - Tools and Approaches

# Management Measure 6: Stormwater

## Web-based Learning Modules: Sustainability

GI Dashboard	<a href="https://www.sariverauthority.org/be-river-proud/sustainability">https://www.sariverauthority.org/be-river-proud/sustainability</a>
Rebates	<a href="https://www.sariverauthority.org/be-river-proud/sustainability/rebates">https://www.sariverauthority.org/be-river-proud/sustainability/rebates</a>
Guenther/Euclid Retrofits	<a href="https://www.sariverauthority.org/be-river-proud/sustainability/guenther-euclid-retrofit">https://www.sariverauthority.org/be-river-proud/sustainability/guenther-euclid-retrofit</a>
How To Build Residential Rain Gardens	<a href="https://www.sariverauthority.org/be-river-proud/sustainability/how-build-your-own-residential-rain-garden">https://www.sariverauthority.org/be-river-proud/sustainability/how-build-your-own-residential-rain-garden</a>
How Can I Help?	<a href="https://www.sariverauthority.org/be-river-proud/sustainability/how-can-i-help">https://www.sariverauthority.org/be-river-proud/sustainability/how-can-i-help</a>

# Management Measure 7

## Hazardous Household Waste (HHW) Events

### • HHW Events Results 2017

- 390 Households
- 20 tons of HHW waste
- 1,200 tires estimated
- 25,731 lbs. of e-waste

### • HHW Events Results 2018

- 482 Households
- 17 tons of HHW waste
- 1,300 tires estimated
- 27,376 lbs. of e-waste

### • HHW Events Results 2019

- 769 Households
- 37.2 tons of HHW waste
- 2,000 tires estimated
- 45,023 lbs. of e-waste



# HHW Events – Karnes County

- **HHW Events Results 2017**
  - 144 Households
  - 4 tons of HHW waste
  - 2,000 tires estimated
  - 5,147 lbs. of e-waste
- **HHW Events Results 2018**
  - 195 Households
  - 8 tons of HHW waste
  - 2,400 tires estimated
  - 12,575 lbs. of e-waste
- **HHW Events Results 2019**
  - 220 Households
  - 7.7 tons of HHW waste
  - 1,625 tires estimated
  - 8,598 lbs. of e-waste



# HHW Events – Karnes County 2020

- **HHW Events Results 2019**
  - 220 Households
  - 7.7 tons of HHW waste
  - 1,625 tires estimated
  - 8,598 lbs. of e-waste
- **HHW Events Results 2020**
  - 305 Households
  - 14 tons of HHW waste
  - 2,600 tires estimated
  - 18,469 lbs. of e-waste
- **Next Event Goliad  
December 5, 2020**



# HHW Events – Goliad County

- **HHW Events Results 2017**

- 80 Households
- 8 tons of HHW waste
- 580 tires estimated
- 5,385 lbs. of e-waste

- **HHW Events Results 2018**

- 93 Households
- 3 tons of HHW waste
- 480 tires estimated
- 8,000 lbs. of e-waste

- **HHW Events Results 2019**

- 169 Households
- 5.28 tons of HHW waste
- 600 tires estimated
- 10,187 lbs. of e-waste

- **Next event - December 5, 2020**



Photo Credit: Robin Alaniz

# Management Measure 7, cont.

## River Authority Environmental Investigators

- No complaints in LSAR watershed made to River Authority staff
- Camera surveillance and signage as deterrents



San Antonio River HWY 239

# Management Measure 8

- River Authority Watershed Monitoring staff assesses monitoring schedule yearly
- Coordinates with TCEQ and GBRA to monitor LSAR watershed
- Monitoring can include water and sediment quality, fish, aquatic insect and habitat surveys and dissolved oxygen profiles

# Management Measure 8, cont.

Assessment Unit	FY20 Monitoring Stations	FY21 Monitoring Stations
LSAR – 1901_05	2	2
LSAR – 1901_04	1	1
LSAR – 1901_03	1	1
LSAR – 1901_02	3	3
LSAR – 1901_01	1	1
LSAR – 1901_06	1	1
Escondido Creek – 1901A_01	1	1
Cabeza Creek – 1901B_01	1	1
Ecleto Creek – 1901F_01	1	1
<b>TOTAL</b>	<b>12</b>	<b>12</b>

# TCEQ Integrated Report

- The Texas Integrated Report satisfies the requirements of the federal Clean Water Act Sections 305(b) and 303(d). The TCEQ produces a new report every two years in even-numbered years, as required by law. The 303(d) List must be approved by the EPA before it is final.

# TCEQ Integrated Report, cont.

- Seven-year period of record (POR)
- Assessment based on routine data, number of other data qualifiers
- 2014 Integrated Report POR:
  - December 1, 2005 – November 30, 2012
- 2020 Integrated Report POR:
  - December 1, 2011 – November 20, 2018

# “Real-Time” Bacteria Data

- Comparison of routine data from two monitoring years preceding adoption of LSAR I-Plan and two years following adoption:
  - Pre-Adoption – September 1, 2016 to August 31, 2018
  - Post-Adoption – September 1, 2018 to August 31, 2020

# LSAR Bacteria Data Summary

Assessment Unit	# of Monitoring Stations	Pre-Adoption Geomean (cfu/100mL)	Post-Adoption Geomean (cfu/100 mL)	% Change
1901_05	3	112.8	133.8	18.6
1901_04	1	181.5	164.7	-9.3
1901_03	2	221.3	194.1	-12.3
1901_02	1	169.2	211.6	25.1
1901_01	1	127.2	153.5	20.7
1901_06	1	39.2	45.6	16.3
Escondido Creek 1901A_01	1	541.3	540.2	-0.2
Ecleto Creek 1901F_01	1	315.1	133.1	-57.8

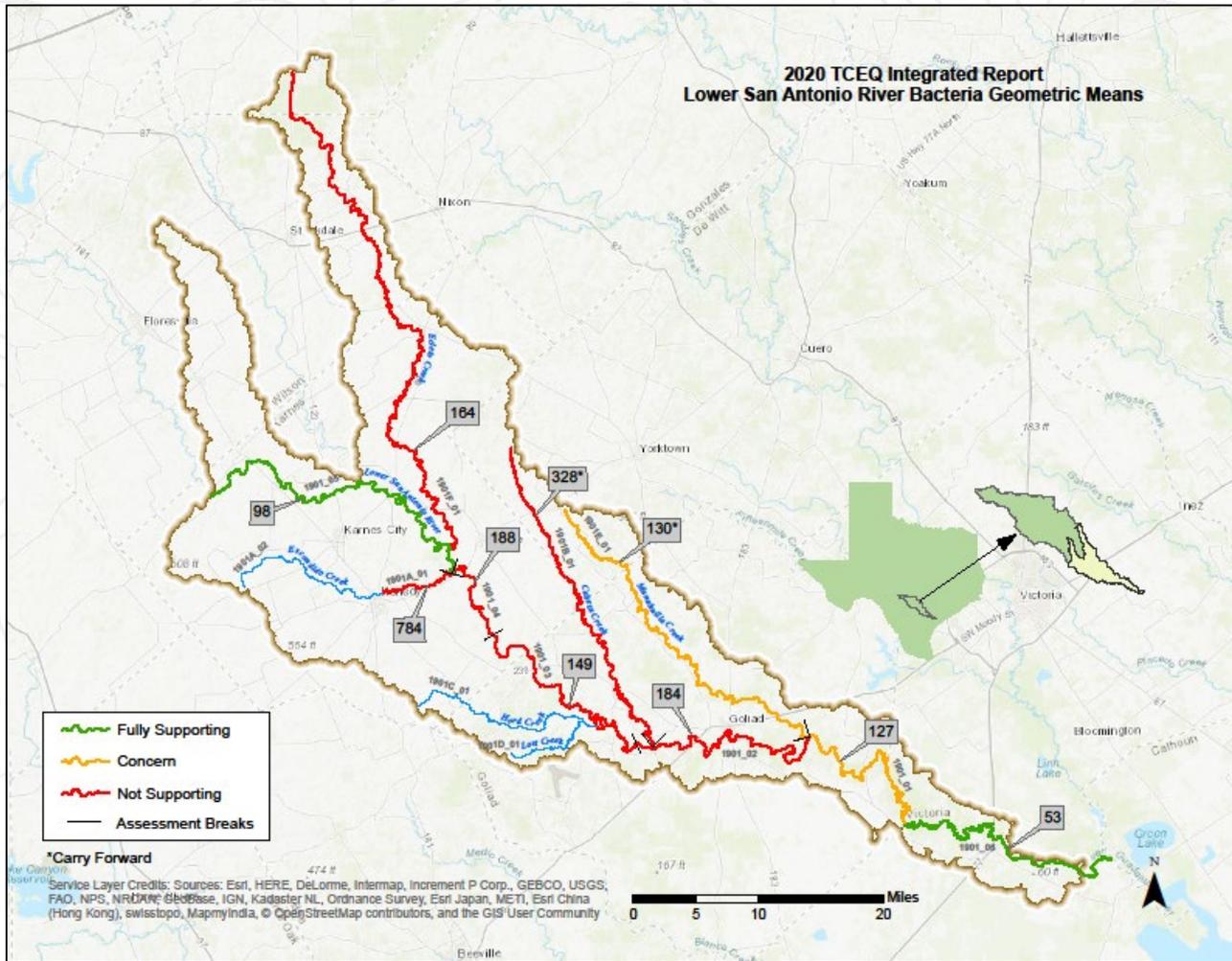
# LSAR Bacteria Data Summary, cont.

Assessment Unit	Integrated Report % Change 2005-2012 vs. 2011-2018	Real-Time % Change 2016-2018 vs. 2018-2020
1901_05	-11.7	18.6
1901_04	-4.1	-9.3
1901_03	0.7	-12.3
1901_02	0.5	25.1
1901_01	15.5	20.7
1901_06	-28.4	16.3
Escondido Creek 1901A_01	-14.5	-0.2
Ecleto Creek 1901F_01	NA	-57.8

# Management Measure 9

- Cabeza Creek Re-designation
  - Waterbody historically treated as homogenous stream
  - Designated as intermittent w/pools
  - Stakeholder feedback initiated the process of stream flow re-designation

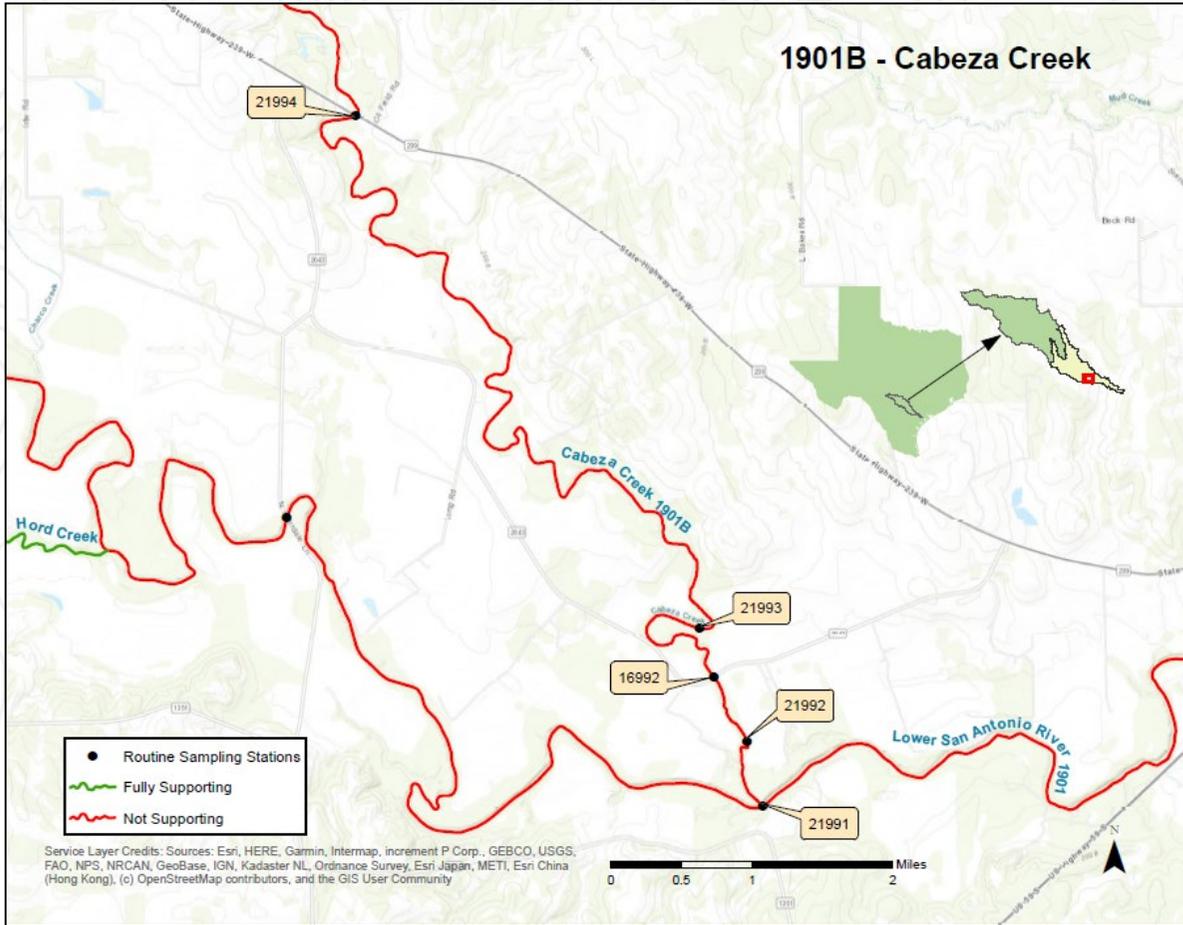
2020 TCEQ Integrated Report  
Lower San Antonio River Bacteria Geometric Means



# Cabeza Creek

- Bacteria assessment from 2020 TCEQ Integrated Report
  - 328 cfu/100 mL
  - Entire waterbody Not Supporting (NS) primary contact recreation standard

# Current Impairment



Cabeza Creek at SH 239

# Cabeza Creek Monitoring Plan

- Five sites were visited 6x between September 2017 and August 2018 under CRP.
- Flow data was recorded, and water chemistry was collected as available.
- Sampling at one site was extended to FY20.
- Flow behavior of the stream would potentially be used to split the waterbody into two assessment units and reduce the footprint of a bacteria impairment.

# Cabeza Creek Monitoring Stations

- FY19 (September 2018-August 2019)
  - 21911 – Cabeza Creek at SAR Confluence
  - 21992 – Cabeza Creek approx. 0.86 km downstream of FM 2043
  - 16992 – Cabeza Creek at FM 2043
  - 21993 – Cabeza Creek approx. 2.05 km upstream of FM 2043
  - 21994 – Cabeza Creek at SH 239
- FY20-21 (September 2019-August 2021)
  - 16992 – Cabeza Creek at FM 2043

# Cabeza Creek Monitoring Stations, cont.

Cabeza Creek Discharge Summary by Site (FY19)			
Site	Dry	Pooled	Flowing
21991	2	3	1
21992	2	1	3
16992	2	4	0
21993	5	1	0
21994	5	1	0
Cabeza Creek Discharge Summary by Site (FY20)			
Site	Dry	Pooled	Flowing
16992	4	2	0

# Cabeza Creek Re-designation

- TCEQ split the waterbody into two units based on flow data
- 1901B\_01 Cabeza Ck from the confluence of 1901 (SAR) to approximately 600 m upstream of FM 2043
  - Intermittent w/ pools
- 1901B\_02 Cabeza Ck from approximately 600 m upstream of FM 2043 to end of water body
  - Intermittent

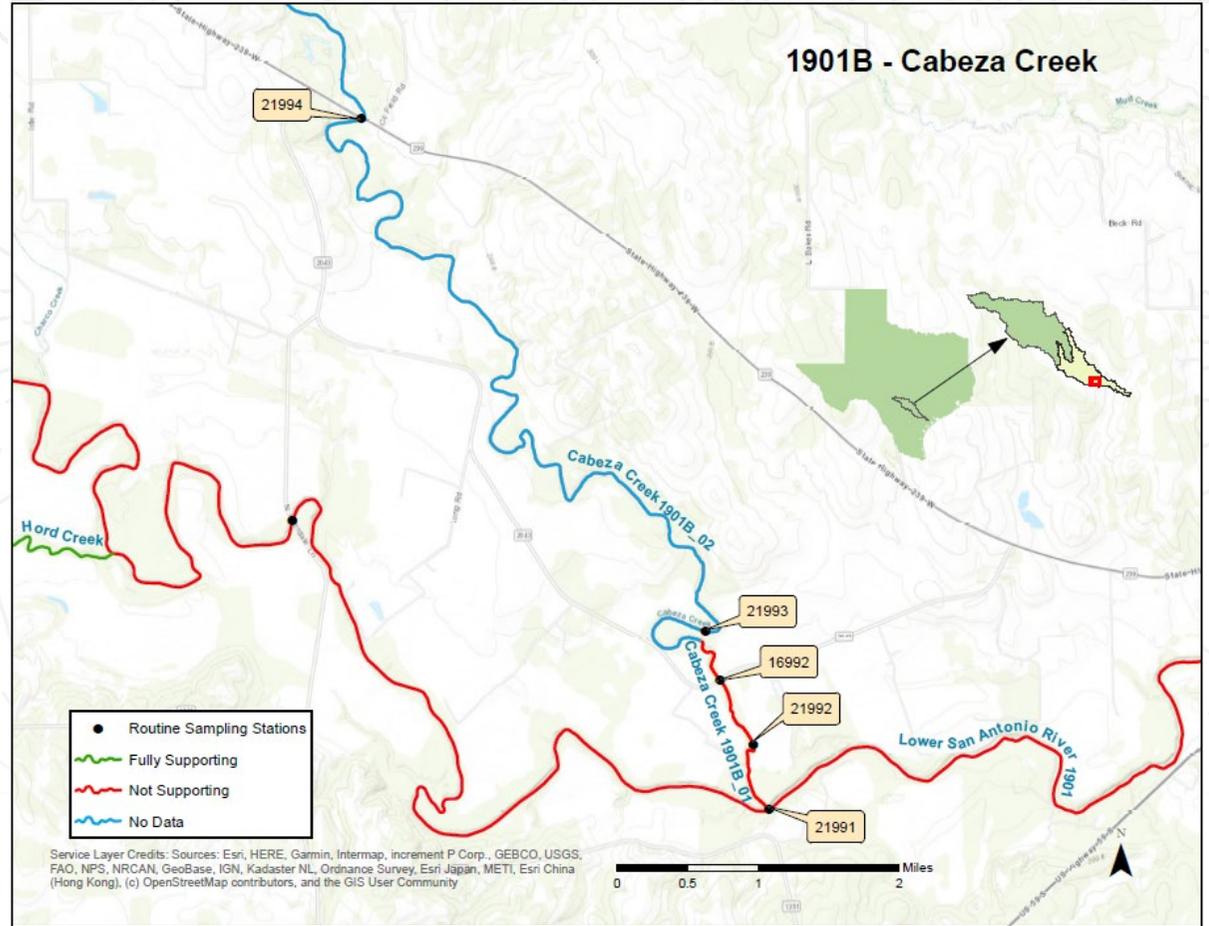
# Water Quality Impairment

- 1901B\_01 is NS for bacteria with a geomean of 328.17 (2020 IR)
- This assessment is from data collected from 16992 which now falls into 1901B\_01
- 1901B\_02 will not carry forward a NS for bacteria

# 2022 IR Impairment



Cabeza Creek at FM 2043



# Control Measures 1 & 2

- Data sourced from EPA Enforcement & Compliance History Online (ECHO) - <https://echo.epa.gov/>

Facility	FY19-20 Violations	Description of Violations	In-Compliance	Permit Expiration*
Goliad WWTP	0	NA	Yes	7/31/2025
City of Falls City WWTP	4 – Facility	Failure to Report – DMR not Received	No	11/15/2023
Kenedy WWTF	4 – Facility	Compliance/Permit Schedule	No	7/30/2025
Riddleville Street WWTP – Karnes City	4 – Facility	Failure to Report – DMR not Received	No	5/14/2025

\*NPDES Permit – National Pollution Discharge Elimination System

# Thank You!!!



Goliad County Wildlife  
Management Association



Enforcement and  
Compliance History Online



SAN ANTONIO  
RIVER AUTHORITY

# Questions?

