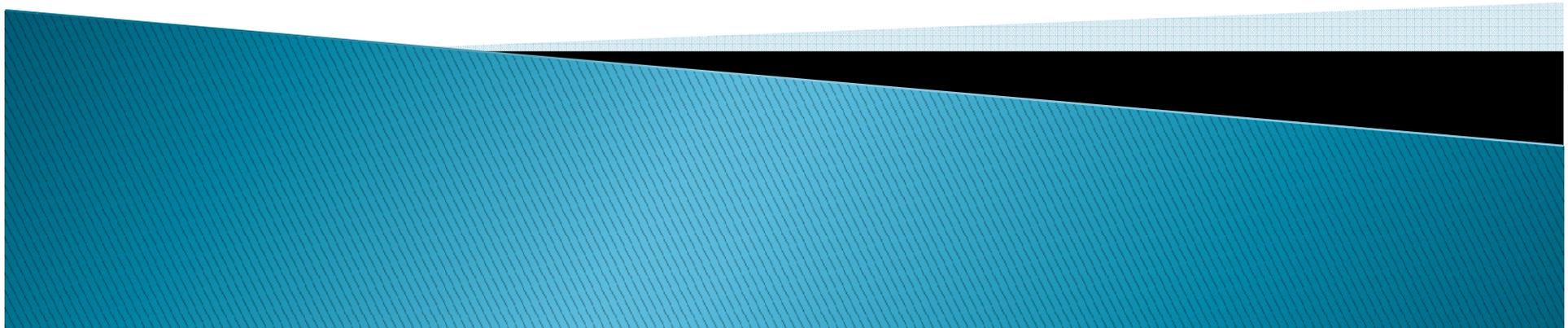
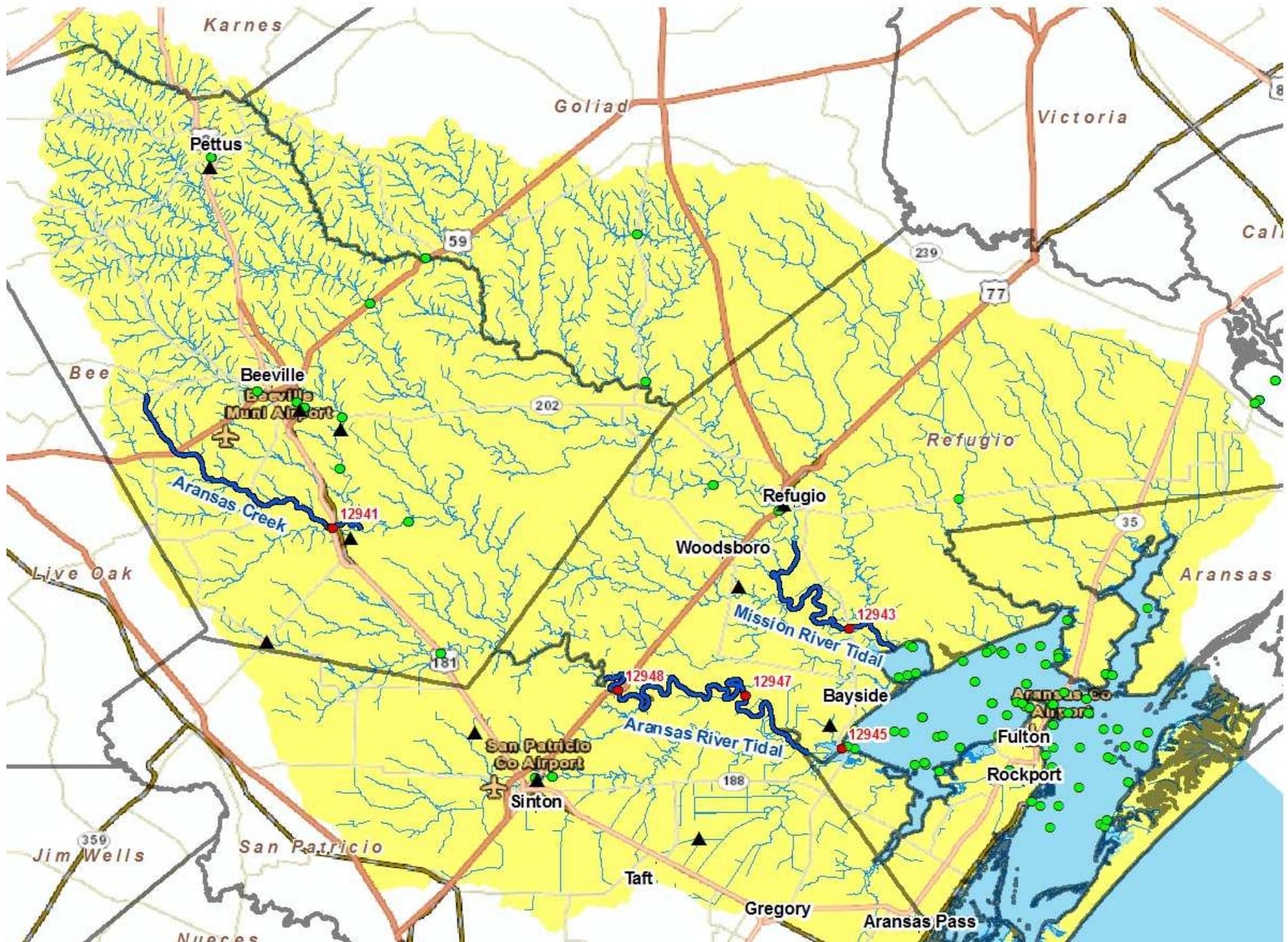


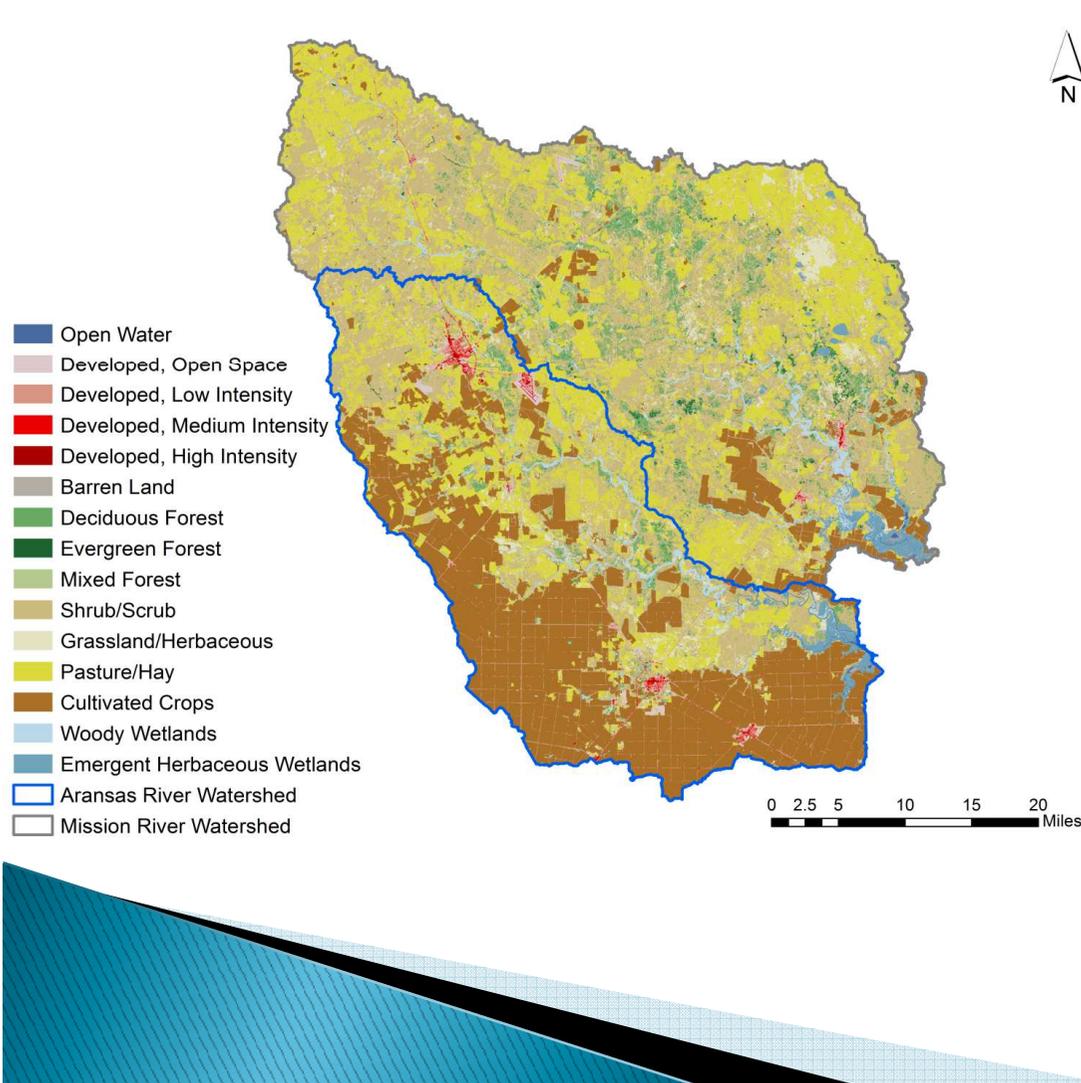
# Overview of Mission and Aransas TMDL and I-Plan

T. Allen Berthold





# LULC in Watershed



NLCD Class	Explanation	Area (km <sup>2</sup> )	%of Watershed
11	Open Water	57	1.01%
21	Low Intensity Residential	27	0.48%
22	High Intensity Residential	15	0.27%
23	Commerical/Industrial/Transportation	28	0.50%
31	Bare Rock/Sand/Clay	8	0.14%
32	Quarries/Strip Mines/Gravel Pits	2	0.03%
41	Deciduous Forest	733	13.04%
42	Evergreen Forest	241	4.28%
43	Mixed Forest	17	0.31%
51	Shrubland	1355	24.11%
71	Grasslands/Herbaceous	917	16.32%
81	Pasture/Hay	723	12.87%
82	Row Crops	1262	22.46%
83	Small Grains	8	0.15%
85	Urban/Recreational Grasses	11	0.19%
91	Woody Wetlands	19	0.34%
92	Emergent Herbaceous	197	3.51%
<i>Total</i>		<i>5620</i>	<i>100%</i>

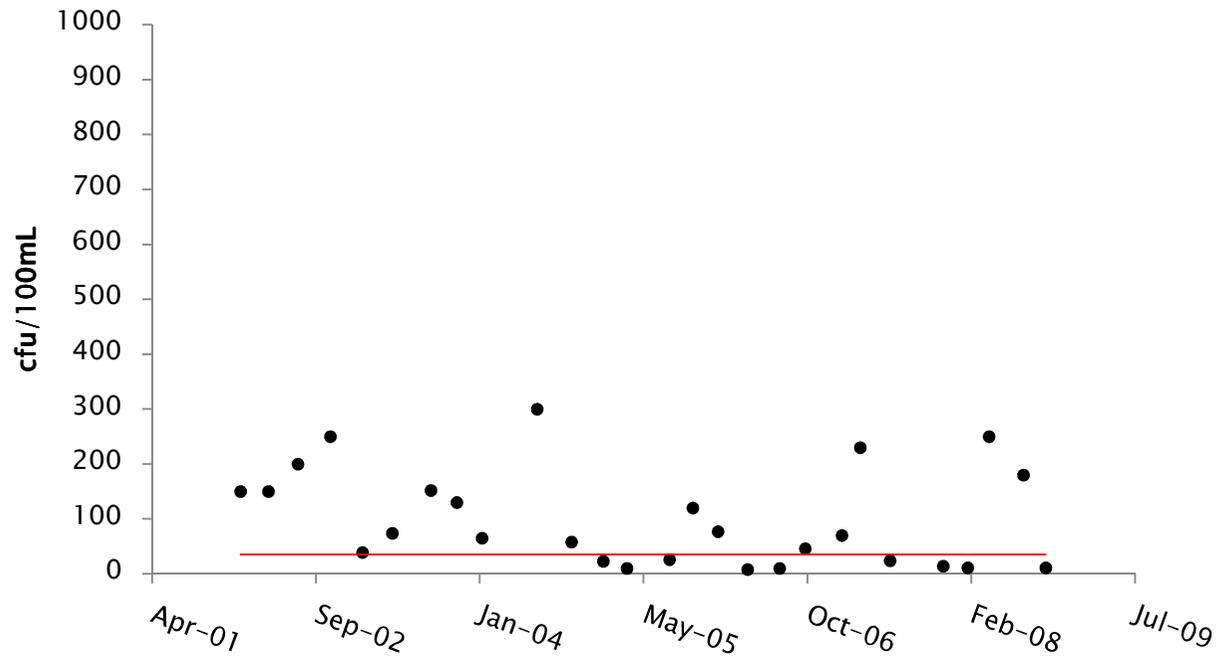
# Permitted Discharge

TPDES Permit No.	Facility	AU	Final Permitted Discharge (MGD)	Recent Discharge (MGD)
WQ0010124004	City of Beeville - Chase Field WWTF	2004	0.75	0.4155
WQ0010124002	City of Beeville - Moore Street WWTF	2004	3.0	0.0707
WQ0010055001	City of Sinton- Main WWTF	2003	0.80	0.3901
WQ0013641001	City of Sinton - Rod and Bessie Welder WWTF	2003	0.0086	0.0078
WQ0010705001	City of Taft WWTF	2003	0.90	0.3967
WQ0010748001	Pettus MUD WWTF	2002	0.105	0.0388
WQ0014112001	Skidmore WSC WWTF	2004	0.131	0.0457
WQ0014119001	St. Paul WSC WWTF	2003	0.05	0.0261
WQ0013412001	Texas Department of Transportation Sinton Engineering Building WWTF	2003	0.00038	0.0005
WQ0010255001	Town of Refugio WWTF	2002	0.576	0.2790
WQ0010156001	Town of Woodsboro WWTF	2001	0.25	0.0967
WQ0014123001	Tynan WSC WWTF	2004	0.045	0.0338

# Station 12943 – Mission River at FM 2678 (Tidal Stream)

Station	Parameter	N	Min	Max	N > Std	% > Std	Median	Geomean
12943	Enterococcus	28	8	4600	19	68%	72	68

## 12943 – Enterococcus (GM 68)

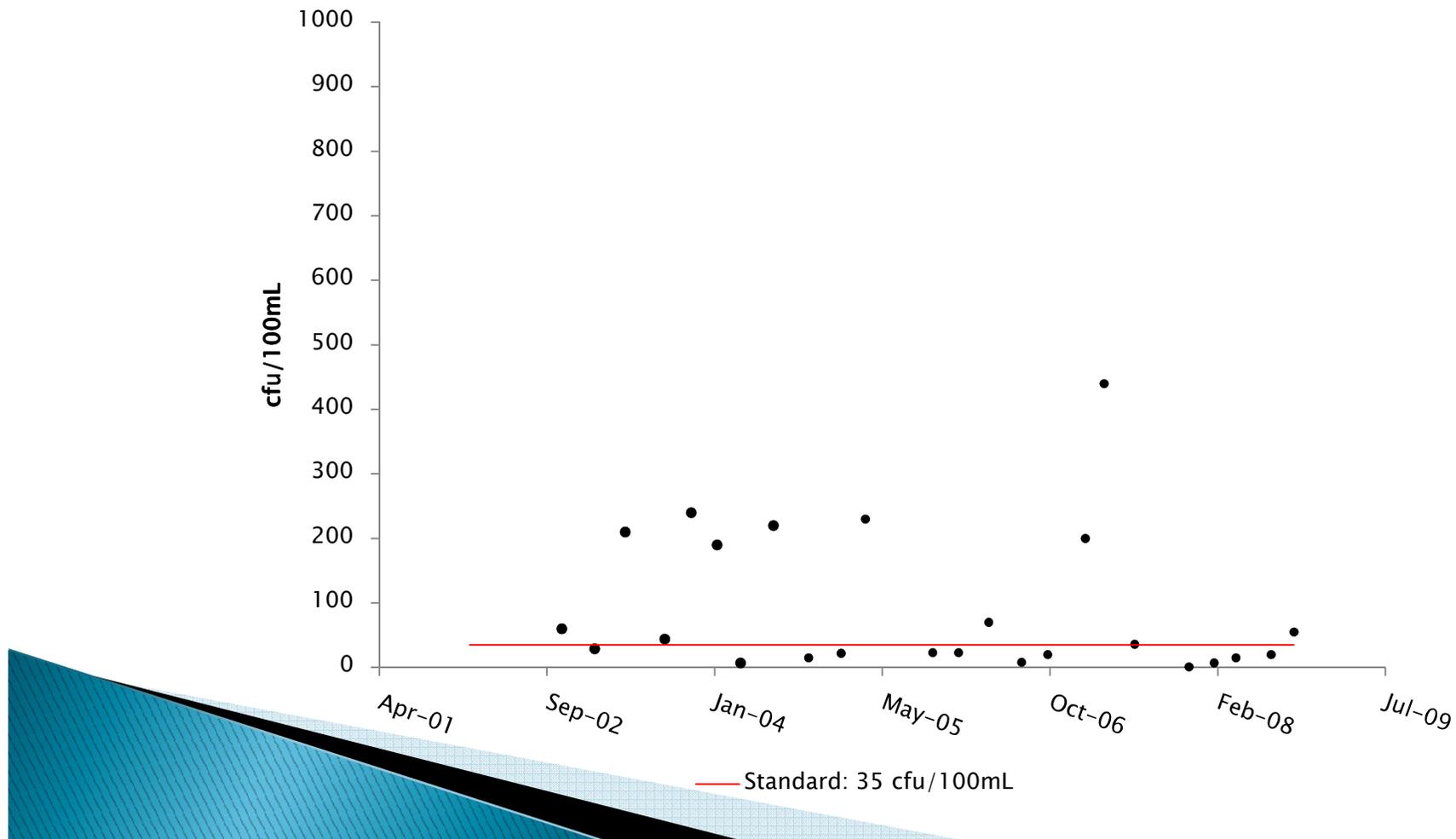


— Standard: 35 cfu/100mL

# Station 12947/8 – Aransas River Tidal at US 77 (Tidal Stream)

Station	Parameter	N	Min	Max	N > Std	% > Std	Median	Geomean
129478	Enteroc	28	1	3400	16	57%	49.5	66

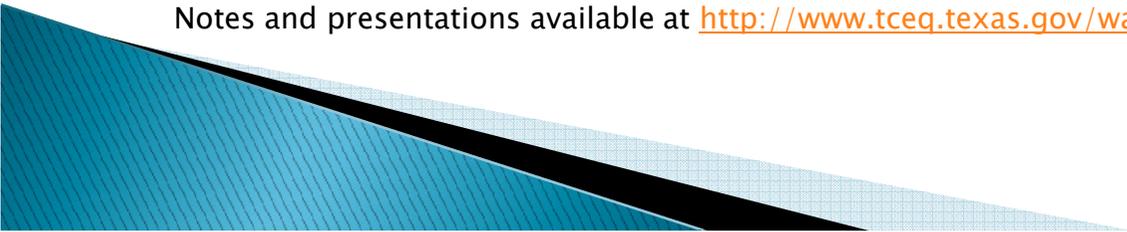
## 12947/12948 – Enterococcus (GM 66)



# Attempts to Address the Bacteria Impairment

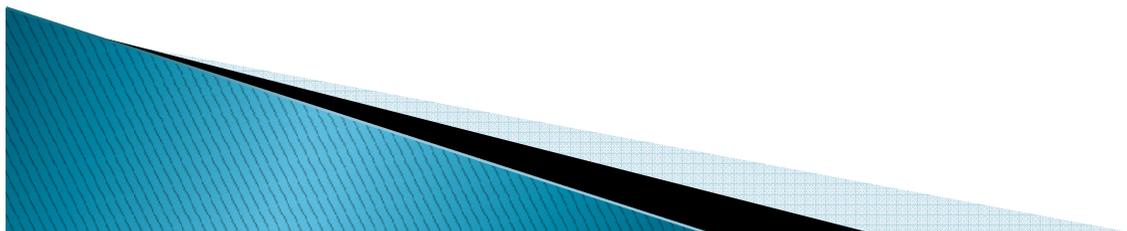
- ▶ Seven Public Meetings from November 2005 – December 2010
- ▶ Covered various topics including:
  - Overview of TMDLs
  - Bacterial Source Tracking (phases I and II)
  - Modeling results (and revised results)
  - Additional monitoring results
  - Attempts to form a Watershed Advisory Group (WAG)

Notes and presentations available at <http://www.tceq.texas.gov/waterquality/tmdl/42-copano.html#info>

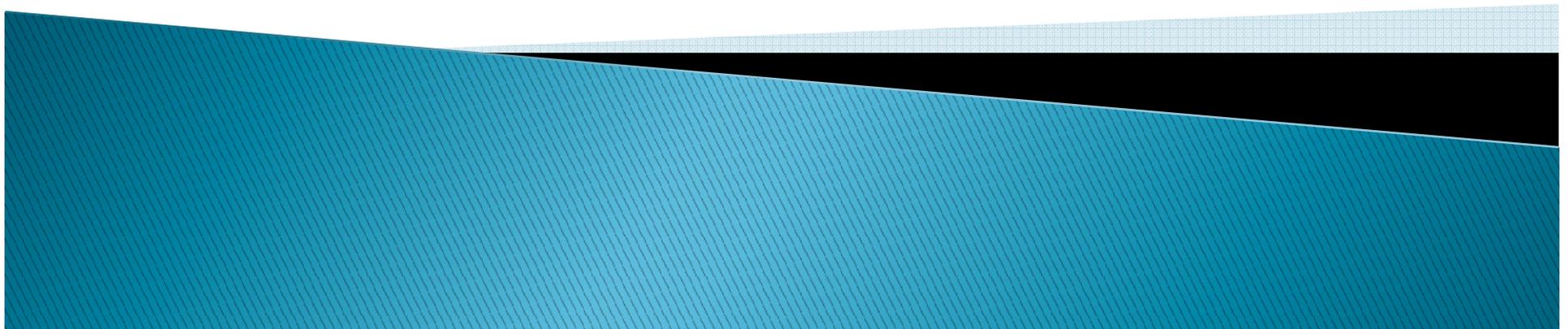


# TWRI Role

- ▶ Stakeholder Facilitation
  - September 1, 2011 – August 31, 2012
- ▶ TMDL and I-Plan Development
  - September 1, 2012 – August 31, 2013
- ▶ TMDL and I-Plan Refinement
  - September 1, 2013 – August 31, 2014

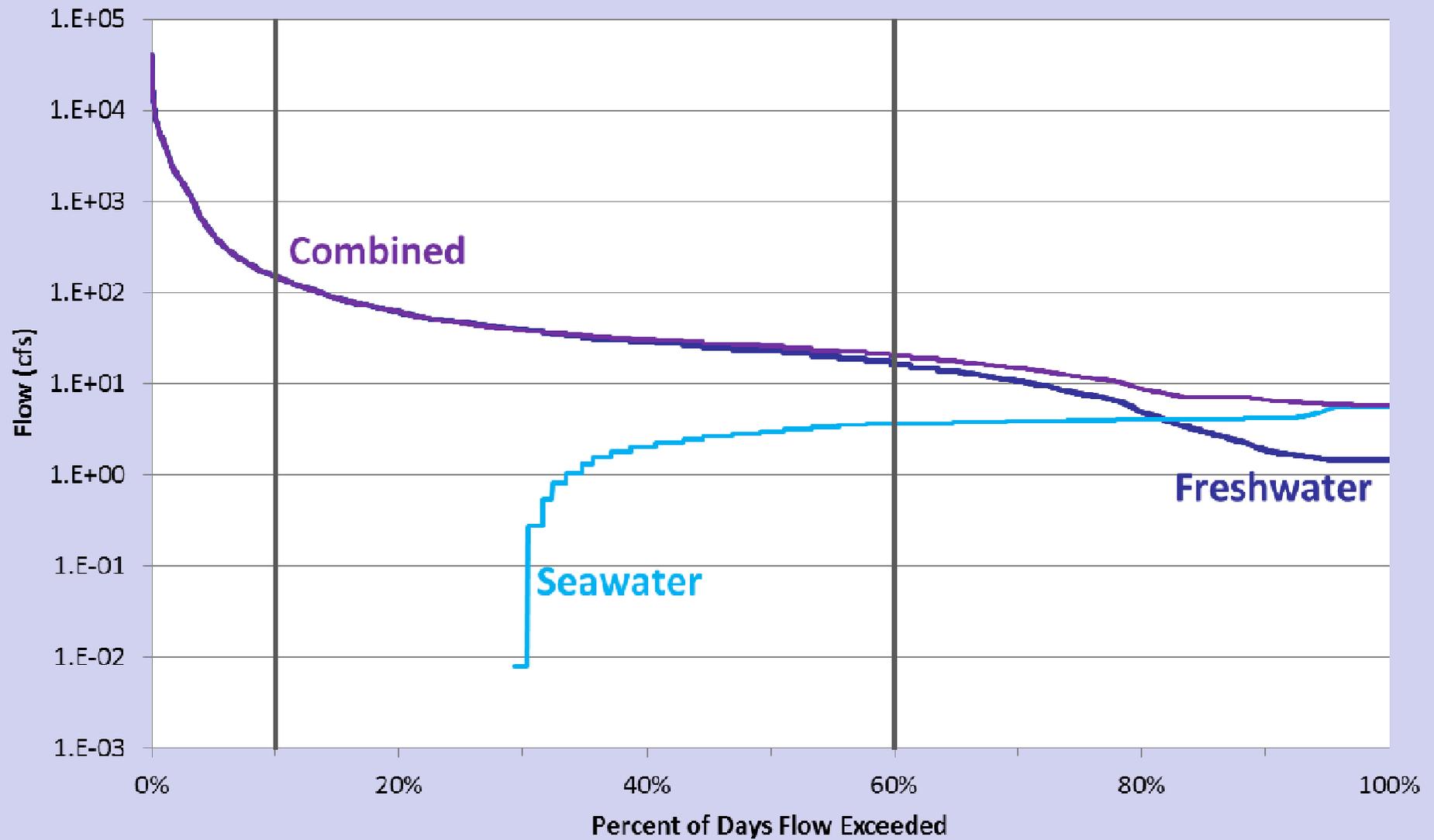


# Mission and Aransas TMDL Development

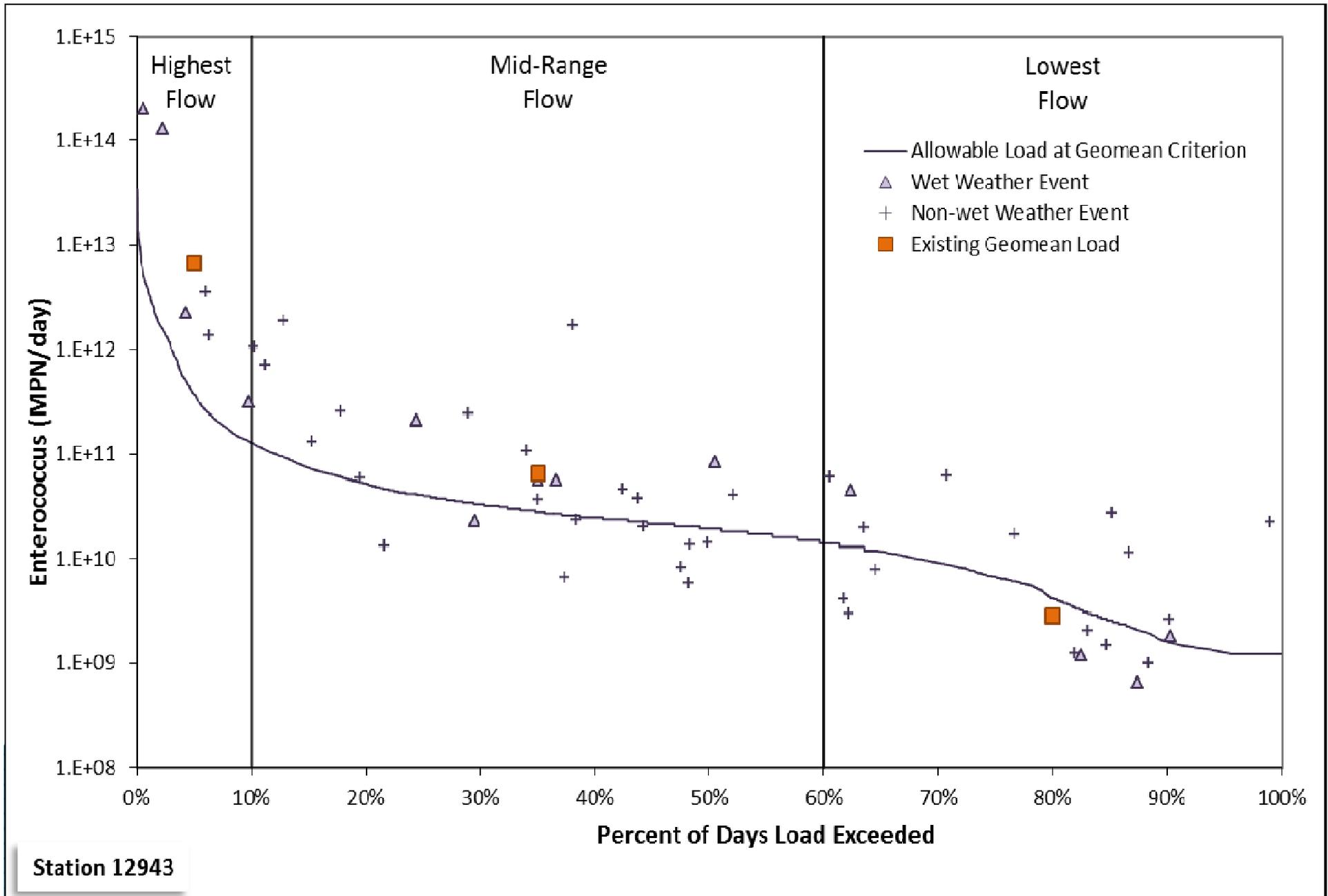


# Preliminary Results for Station 12943, Mission River Tidal

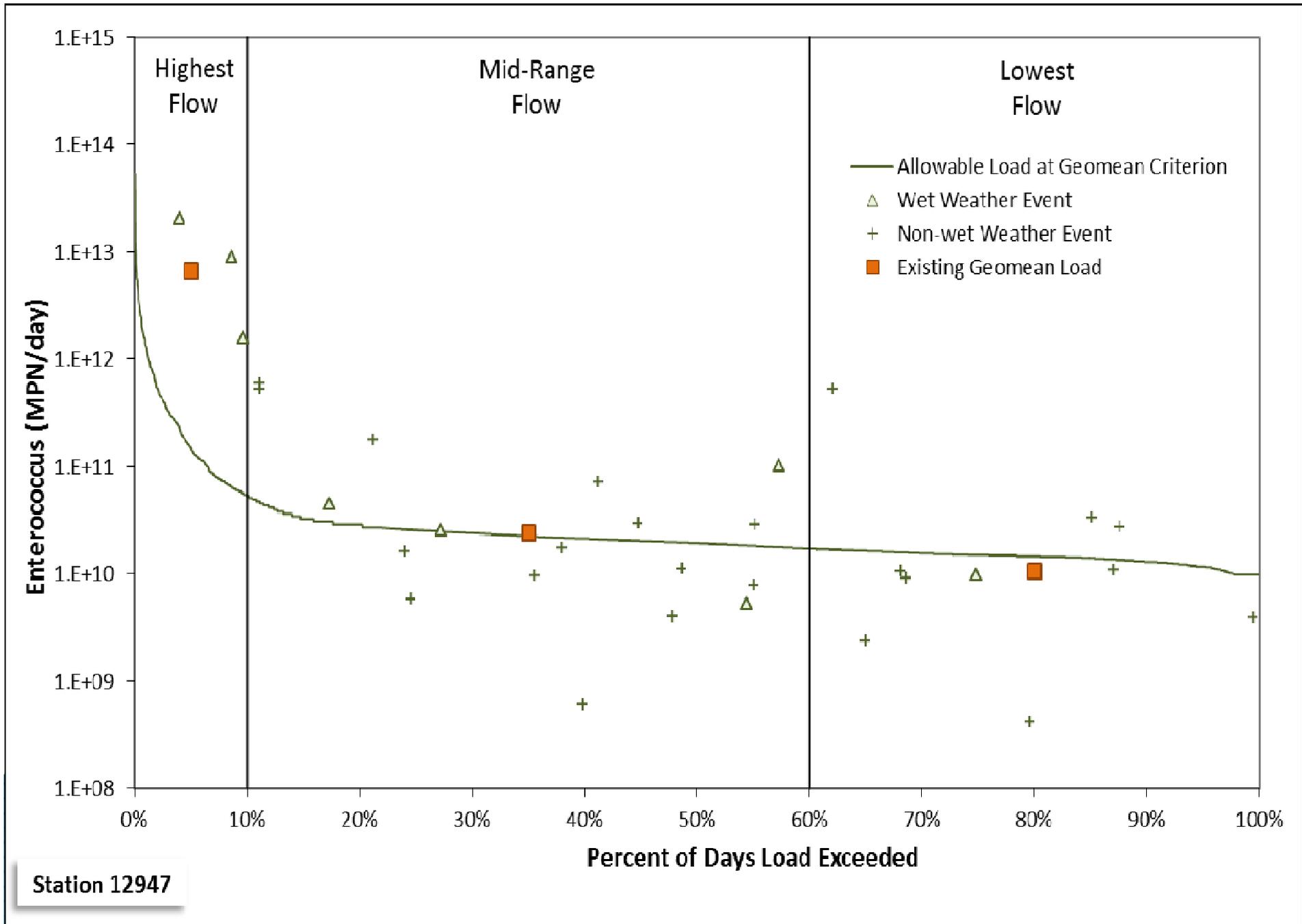
## Modified Flow Duration Curve



# Preliminary Results for Station 12943, Mission River Tidal

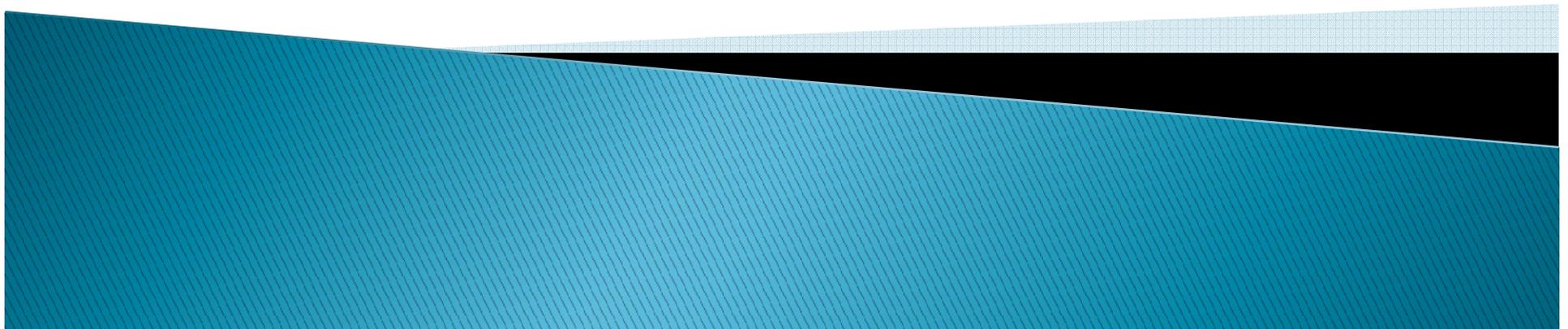


# Preliminary Results for Station 12947, Aransas River Tidal



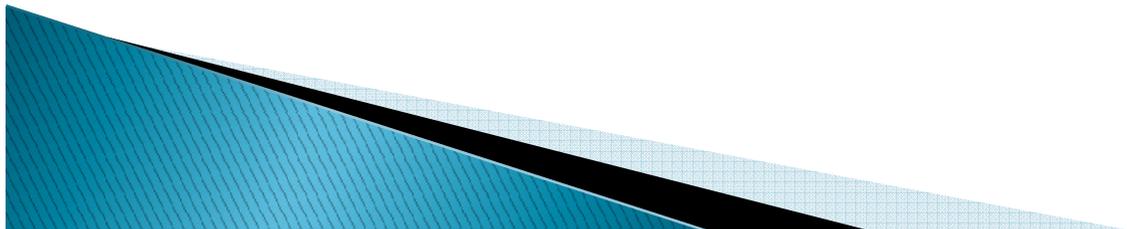
Station 12947

# Mission and Aransas I- Plan Development



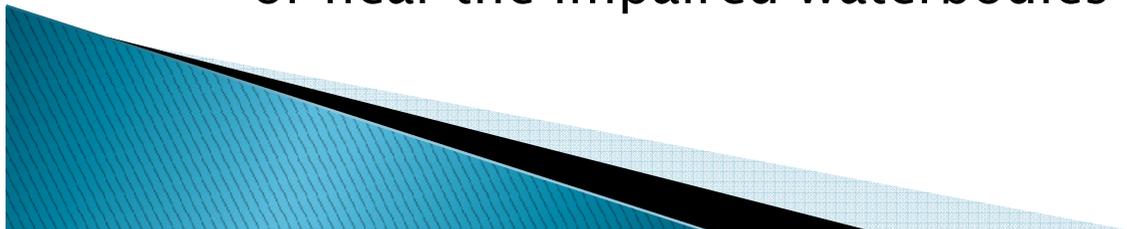
# Control Action 1 – *Monitoring WWTF Effluent to Ensure Permit Compliance*

- ▶ **Description**
  - Monitor according to permit to ensure compliance with permit
- ▶ **Education**
  - City personnel and elected officials
- ▶ **Priority Areas**
  - All WWTFs but especially those that discharge into or near impaired waters

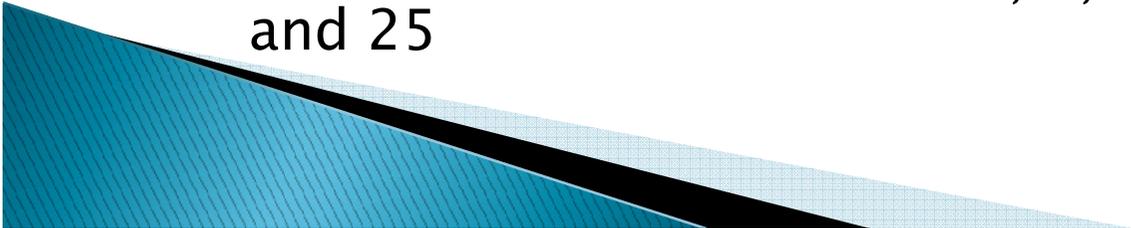


# Control Action 2 – *Improve and Upgrade WWTFs*

- ▶ Description
  - Updated WWTFs that are not currently treating for bacteria
  - Improve/upgrade facilities to more efficiently treat effluent
  - Expand capacity when permit limits are being reached
- ▶ Education Component
  - Train staff to identify malfunctioning equipment needing upgraded and to recognize when capacity is being reached
  - Educate elected officials about the importance of treating effluent
- ▶ Priority Areas
  - First, those WWTFs that do not currently treat for bacteria and those nearing their permitted discharge limits
  - Priority is at all WWTFs but especially those discharging into or near the impaired waterbodies



# Management Measure 1 – *Develop and implement conservation plans in priority areas of the watershed*

- ▶ Description
    - Contact landowners in priority areas about conservation plans
    - Provide necessary technical and financial assistance to implement conservation practices
    - Develop conservation plans
  - ▶ Educational Component
    - Deliver education and outreach programs to promote adoption of management practices and raise awareness
  - ▶ Priority Areas
    - Aransas River Watershed – 4, 8, 10, 11, 12, 13, 15, 17, 18, 19, and 20
    - Mission River Watershed – 2, 5, 7, 8, 9, 14, 17, 22, 24, and 25
- 

# Management Measure 2 – *Explore Feasibility of Altering Tax Exemption Requirements for Small Acreage Landowners*

## ▶ Description

- Explore alternatives for property tax exemptions that would promote water quality practices instead of overstocking by:
  - Holding discussions
  - Developing a framework
  - Presenting framework to responsible parties

## ▶ Education Component

- Educate elected officials about small acreage impacts on water quality
- Educate small acreage landowners on the impacts of overstocking and encourage the adoption of conservation plans outlined in management measure 1



# Management Measure 3 – *Promote the Management of and Control Feral Hog Populations*

## ▶ Description

- Manage the current population of feral hogs such that it does not increase to a level that is unmanageable

## ▶ Education Component

- Education and outreach for landowners regarding economic losses from feral hog damage and population dynamics of feral hogs

## ▶ Priority Areas

- Aransas River Watershed – 1, 2, 3, 4, 6, 7, 9, and 11
  - Mission River Watershed – 2, 4, 5, 8, 9, and 10
- 

# Management Measure 4 – *Promote the Reduction of Illicit Dumping and Proper Disposal of Animal Carcasses*

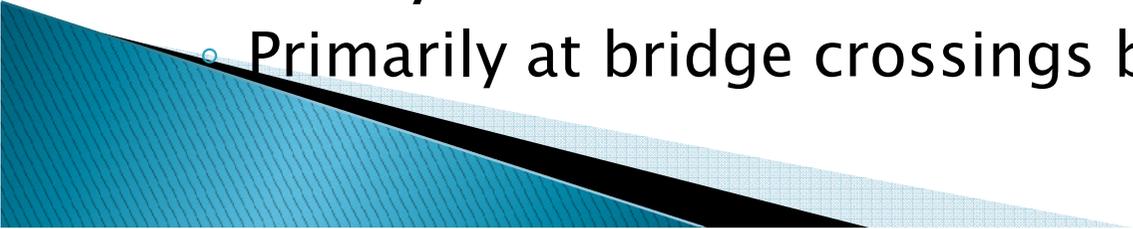
## ▶ Description

- Reduce illicit dumping in waterways, including RV waste disposal, and properly dispose animal carcasses

## ▶ Education Component

- Education for both local residents and elected officials regarding illicit dumping
- Education for recreational hunters and landowners about the proper disposal of animal carcasses

## ▶ Priority Areas

- Primarily at bridge crossings but also RV sites
- 

# Management Measure 5 – *Identify OSSFs, Prioritize Problem Areas, and Systematically Work to Bring Systems into Compliance*

## ▶ Description

- Identify locations of septic systems, contact owners, inspect systems, and replace/upgrade failing systems

## ▶ Education Component

- Develop a program for OSSF owners to learn about maintenance of septic systems and how to care for the system

## ▶ Priority Areas

- Aransas River Watershed – 1, 2, 3, 5, 6, 7, 10, and 11
  - Mission River Watershed – 2 and 3
- 

# Management Measure 6 – *Promote the Improved Quality of and Management of Urban Storm water*

## ▶ Description

- Public education on home practices to improve storm water quality
- Location identification and instillation of structural urban storm water BMPs

## ▶ Education Component

- Target both homeowners and elected officials to highlight practices that treat bacteria. Education campaign can consist of various methods

## ▶ Priority Areas

- Consist of all urban areas in the watersheds but primarily those that discharge in or near the impaired waterbodies



# Management Measure 7 – *Coordinate Efforts for Reducing Unauthorized Discharges*

## ▶ Description

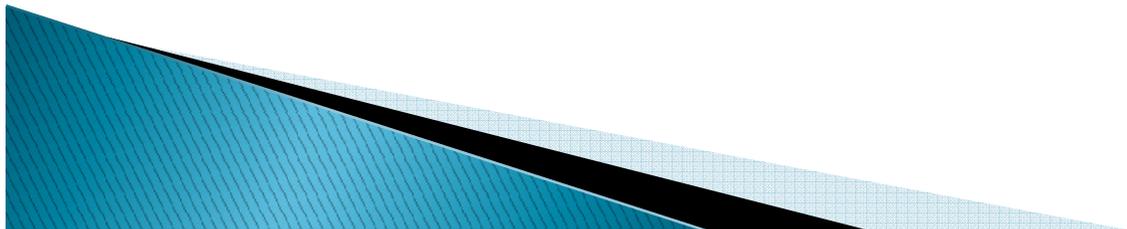
- Continue reducing unauthorized discharges by conducting routine inspections, prioritizing upcoming years repairs, tracking repairs

## ▶ Education Component

- Both elected officials and residents should be educated on how to identify unauthorized discharges

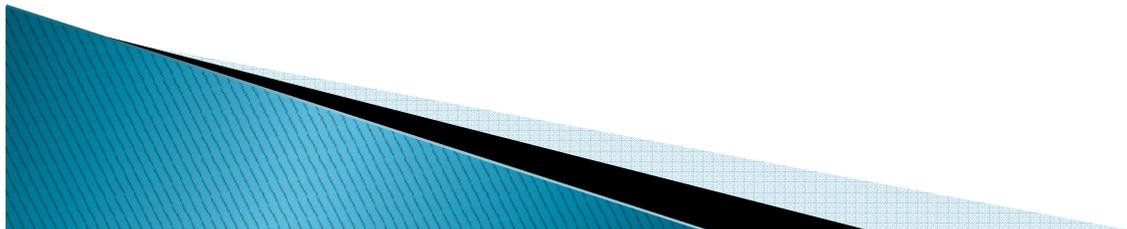
## ▶ Priority Areas

- Within CCNs of each watershed but primarily those near the impaired waterbodies



# Management Measure 8 – *Reduce WWTF Contributions by Meeting Half of the Permitted Bacteria Limit*

- ▶ Description
  - Evaluate the option to adopt half permitted limit
- ▶ Education Component
  - Both elected officials and city personnel
- ▶ Priority Areas
  - All WWTFs



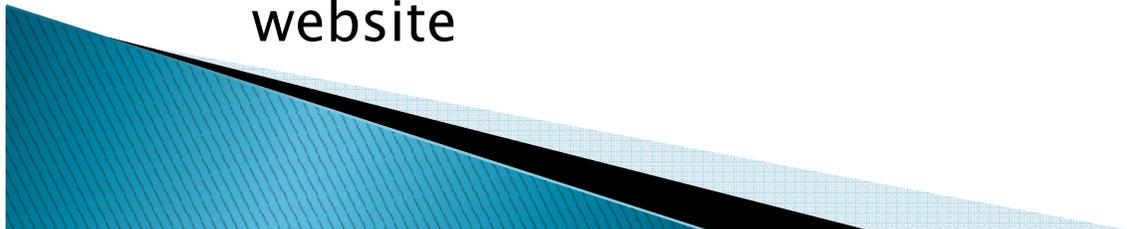
# Management Measure 9 – *Coordinate and Expand Existing Water Quality Monitoring in the Watershed*

## ▶ Description

- Expand monitoring to:
  - Better define where problem areas are in the watershed
  - Monitor long term trends in water quality prior to and post BMP implementation
- Further evaluate potential sources in the watershed as needed
- Establish a volunteer monitoring
- Assess the population of dung beetles that break down manure on the landscape

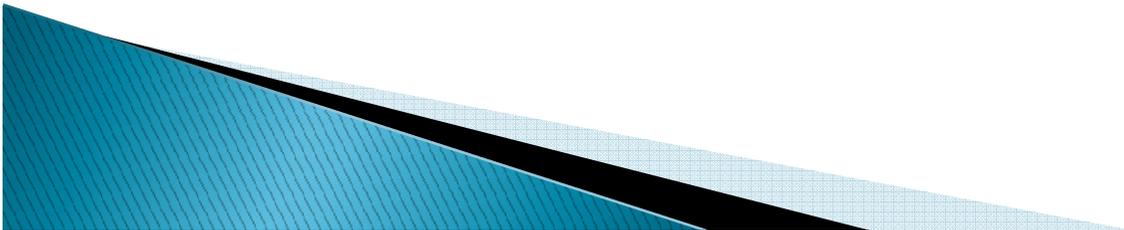
## ▶ Education Component

- Educate stakeholders on various types of data quality objectives
- Present monitoring data to stakeholders
- Have data readily available for stakeholders to view on website



# Next Steps

- ▶ Public comment period
- ▶ Address comments
- ▶ Send to Commissioners



Questions?

