

# Annual Update on Water Quality for the Rio Grande and the Clean Rivers Program



USIBWC CITIZENS' FORUM  
AND UPPER RIO GRANDE BASIN  
ADVISORY MEETING  
JULY 13, 2017

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U.S. SECTION,  
INTERNATIONAL BOUNDARY AND WATER COMMISSION



# Outline



- **Brief history of the IBWC's TX Clean Rivers Program**
- **What is the Texas Clean Rivers Program?**
- **Monitoring in the Rio Grande Basin in Texas**
- **Water Quality Issues in the Rio Grande**
- **Challenges in a Binational Basin**
- **Other studies and efforts in the Rio Grande Basin**
- **Contact Information**

# IBWC's TX Clean Rivers Program History



- IBWC began routine water quality monitoring after 1977 Joint Report of Engineers
- 1991 Texas Clean Rivers Act
- 1998 TCEQ-USIBWC partnership
- 2017 monitoring sites on Rio Grande:
  - **94 total sites**
    - ✦ CRP – 67 sites
    - ✦ TCEQ – 37 sites
    - ✦ USGS – 2 sites
    - ✦ Shared – 10 sites



# What is the Texas Clean Rivers Program?

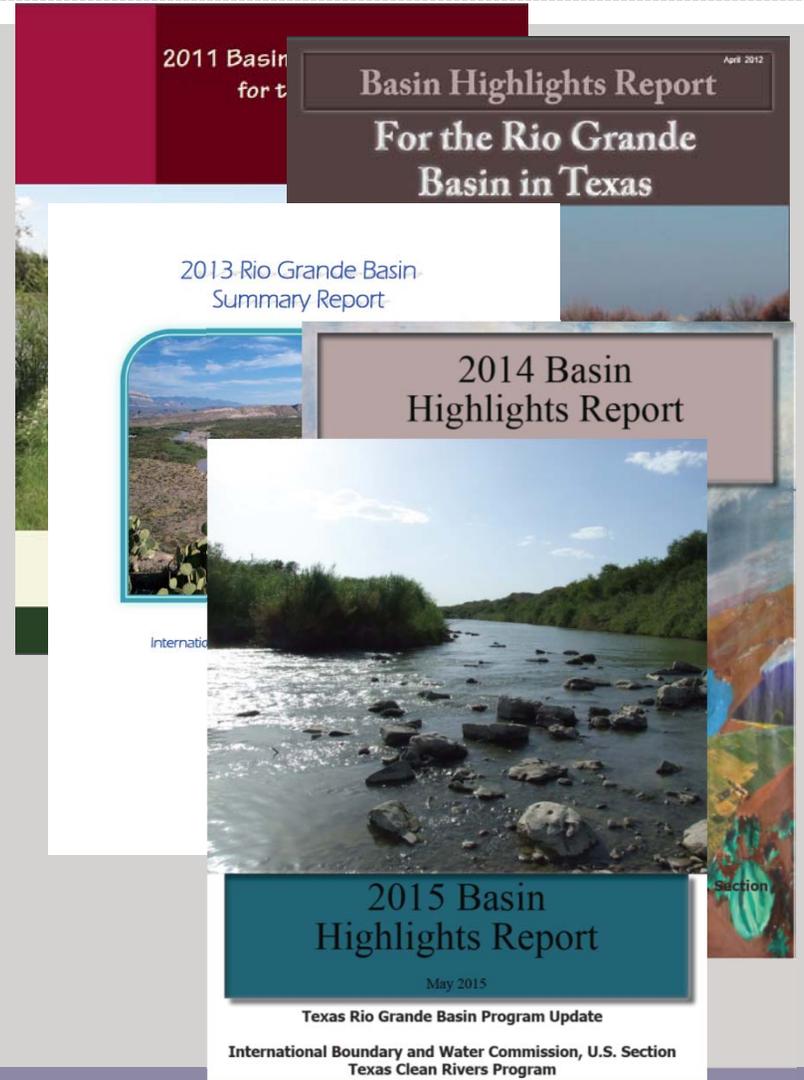


- A state fee-funded program
- Every major river basin in Texas has a Clean Rivers Program
- A group of federal, state and local organizations that have an interest in the health of our state's streams, rivers and lakes.
- The USIBWC Clean Rivers Program collects water quality data from the Rio Grande and Pecos Rivers.
- We then use that data to:
  - identify and evaluate water quality issues
  - establish priorities for corrective actions
  - work to implement those actions.



# CRP Activities

- **Water Quality Monitoring**
  - Routine monitoring
  - Special studies
- **Water Quality Assessment**
- **Publications**
  - Annual Basin Highlight Report
  - 5-year Basin Summary Report
- **Outreach**
- **Environmental Education**
- **Public Participation**
  - Basin Advisory Committee



# CRP Activities



Students at the EPWU Water Festival performing water quality experiments and learning about water quality.



CRP staff sampling with students from EPCC



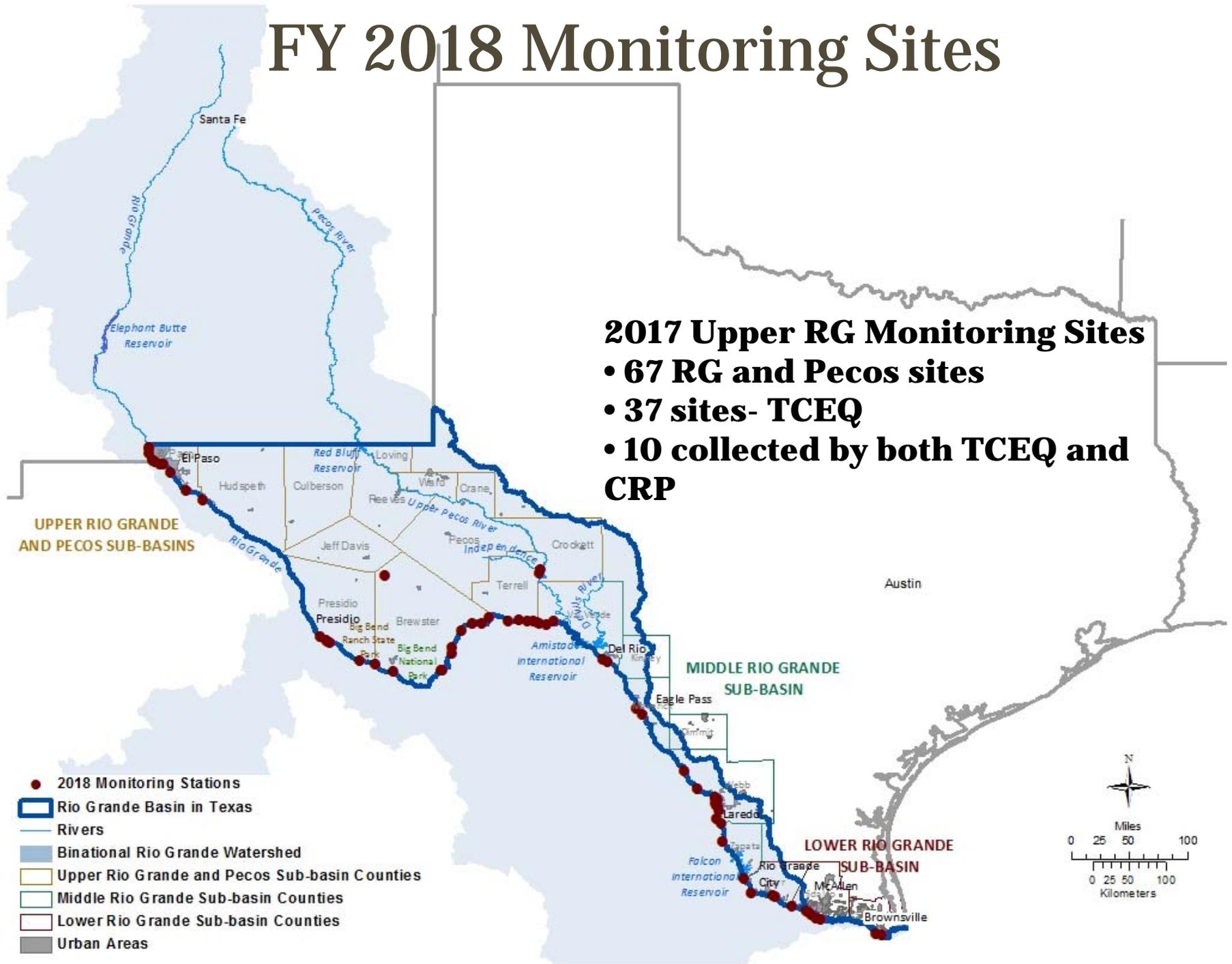
A river cleanup by one of the Adopt-a-River partners

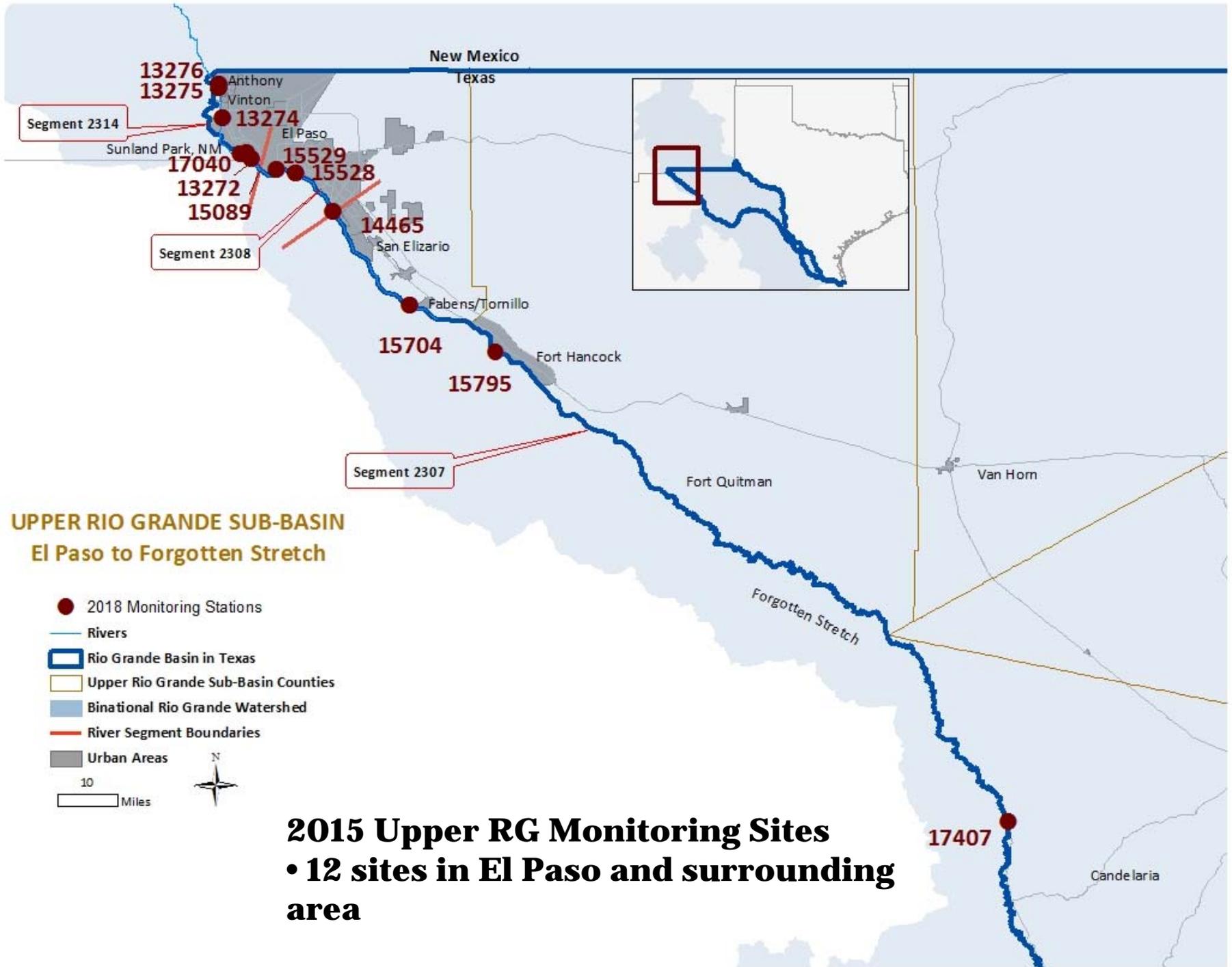
# Local Partnerships

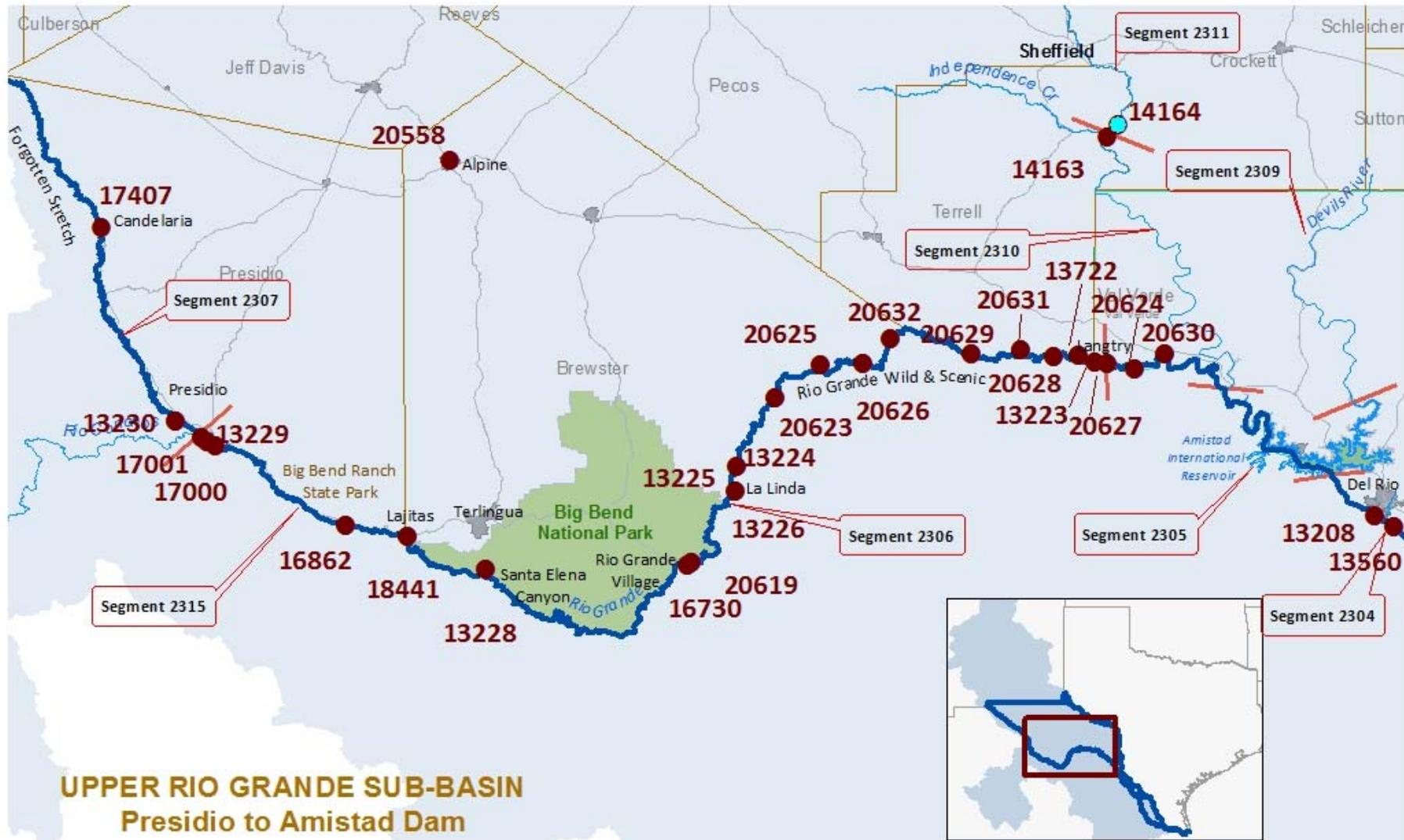


- **Partners in the Upper Rio Grande help monitor, collect, & analyze samples:**
  - USIBWC Field Offices in El Paso and Presidio
  - University of Texas at El Paso
  - El Paso Community College
  - El Paso Water Utilities
  - TCEQ El Paso Field Office
  - Big Bend National Park
  - Big Bend Ranch State Park
  - TCEQ Continuous Water Quality Monitoring Program
- **All use TCEQ sampling procedures and an accredited laboratory for analysis**

# FY 2018 Monitoring Sites







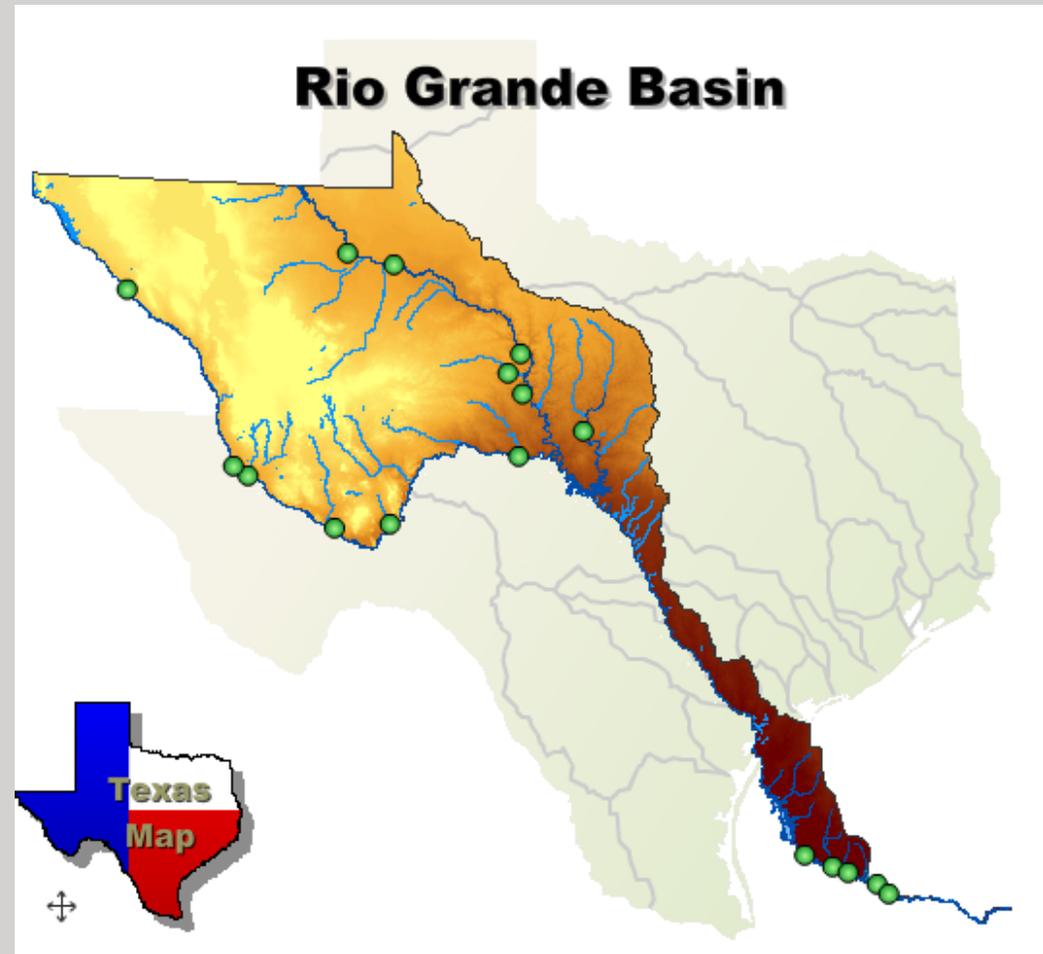
**2017 Upper RG Monitoring Sites**

- 27 sites from Presidio to Del Rio
- 2 sites along the Pecos River
- 1 site at Kokernot Springs in Alpine

# TCEQ Continuous Water Quality Monitoring



- [www.texaswaterdata.org](http://www.texaswaterdata.org)
- 16 CWQM stations in RGB
  - Temp
  - pH
  - sp cond
  - water level
  - TDS
  - DO



# 2014 Assessment (Integrated Report)



- States are required by the Clean Water Act to “assess” the health of the river basins, determine water quality standards, and determine whether the water bodies meet these established standards.
- Water bodies not meeting state water quality standards are listed on the impaired waters list (303d list)
  - Impairments → not meeting standards
  - Concerns → near non-attainment of standards, or → issues with parameters where standards don't exist
- Most Rio Grande impairments are for bacteria or salinity

TCEQ Impaired Waters List:

[http://www.tceq.texas.gov/waterquality/assessment/305\\_303.html](http://www.tceq.texas.gov/waterquality/assessment/305_303.html)



# 2014 Assessment Impaired Segments



- The 2014 assessment lists 9 out of the 14 established segments for the Rio Grande as impaired.
- 2014 assessment lists the following segments as impaired:
  - 2302: Rio Grande Below Falcon Reservoir, **bacteria**
  - 2304: Rio Grande Below Amistad Reservoir, **bacteria**
  - 2305: International Amistad Reservoir, chloride, total dissolved solids
  - 2306: Rio Grande Above Amistad Reservoir, chloride, sulfate, total dissolved solids
  - 2307: Rio Grande Below Riverside Diversion Dam, **bacteria**, chloride, total dissolved solids
  - 2308: Rio Grande Below International Dam, **bacteria**
  - 2311: Upper Pecos River, depressed dissolved oxygen
  - 2313: San Felipe Creek, **bacteria**
  - 2314: Rio Grande Above International Dam, **bacteria**
- The 2014 Texas Water Quality Standards must be adopted by the Texas Commission on Environmental Quality.
  - Must then be approved by the Environmental Protection Agency.

# 2014 Assessment Impaired Segments



- **2014 assessment lists 2306, 2307, 2308, 2311, 2313, 2314 as impaired**
  - 2306\_01-08 Chloride, Sulfate, TDS
  - 2307\_03-05 Bacteria; 01-05 Chloride and TDS
  - **2308\_01 Bacteria \*This impairment is new.**
  - 2311\_03 Depressed Dissolved Oxygen
  - **2313\_01 Bacteria \*This impairment is new.**
  - 2314\_01 Bacteria
  
- The 2014 Texas Water Quality Standards were adopted by the Texas Commission on Environmental Quality on February 12, 2014.
  - ✦ Effective for all state permits.
  - ✦ They have not been approved by the EPA at this time.
  - ✦ Until approved by the EPA, the 2010 standards still apply to all Federal permits.

# Draft 2014 Water Quality Standards

Texas Commission on Environmental Quality  
 Chapter 307 - Texas Surface Water Quality Standards  
 Rule Project No. 2012-001-307-OW

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## Rio Grande Basin Designated Uses and Numeric Criteria

Segment No.	Rio Grande Basin Segment Names	Recreation Use	Aquatic Life Use	Domestic Water Supply Use	Other Uses	Cl <sup>-1</sup> (mg/L)	SO <sub>4</sub> <sup>-2</sup> (mg/L)	TDS (mg/L)	Dissolved Oxygen (mg/L)	pH Range (SU)	Indicator Bacteria <sup>4</sup> #/100 mL	Temperature (degrees F)
2301	Rio Grande Tidal	PCR <sub>1</sub>	E						5.0	6.5-9.0	35	95
2302	Rio Grande Below Falcon Reservoir	PCR <sub>1</sub>	H	PS		270	350	880	5.0	6.5-9.0	126	90
2303	International Falcon Reservoir	PCR <sub>1</sub>	H	PS		200	300	1,000	5.0	6.5-9.0	126	93
2304	Rio Grande Below Amistad Reservoir	PCR <sub>1</sub>	H	PS		200	300	1,000	5.0	6.5-9.0	126	95
2305	International Amistad Reservoir	PCR <sub>1</sub>	H	PS		150	270	800	5.0	6.5-9.0	126	88
2306	Rio Grande Above Amistad Reservoir	PCR <sub>1</sub>	H	PS		200	450	1,400	5.0	6.5-9.0	126	93
2307	Rio Grande Below Riverside Diversion Dam	PCR <sub>1</sub>	H	PS		300	550	1,500	5.0 <sup>2</sup>	6.5-9.0	126	93
2308	Rio Grande Below International Dam	NCR	L			250	450	1,400	3.0	6.5-9.0	605	95
2309	Devils River <sup>3</sup>	PCR <sub>1</sub>	E	PS		50	50	300	6.0	6.5-9.0	126	90
2310	Lower Pecos River	PCR <sub>1</sub>	H	PS		1,700	1,000	4,000	5.0	6.5-9.0	126	92
2311	Upper Pecos River	PCR <sub>1</sub>	L			7,000	3,500	15,000	5.0 <sup>4</sup>	6.5-9.0	33	92
2312	Red Bluff Reservoir	PCR <sub>1</sub>	H			3,200	2,200	9,400	5.0	6.5-9.0	33	90
2313	San Felipe Creek <sup>3</sup>	PCR <sub>1</sub>	H	PS		50	50	400	5.0	6.5-9.0	126	90
2314	Rio Grande Above International Dam	PCR <sub>1</sub>	H	PS		340	600	1,800	5.0	6.5-9.0	126	92
2315	Rio Grande Below Rio Conchos	PCR <sub>1</sub>	H			450	750	2,100	5.0	6.5-9.0	126	93



# Main Rio Grande Water Quality Issues



- **Bacteria**
- **Nutrients**
- **Salts**
- **Depressed DO**
- **Fish kills**
- **Illegal discharging**
- **Trash**
- **Exotic species**

# Main Issues



**An example of discharging.**



**An example of an invasive species, in this case aquatic weeds.**

# Main Issues



**A large fish kill**

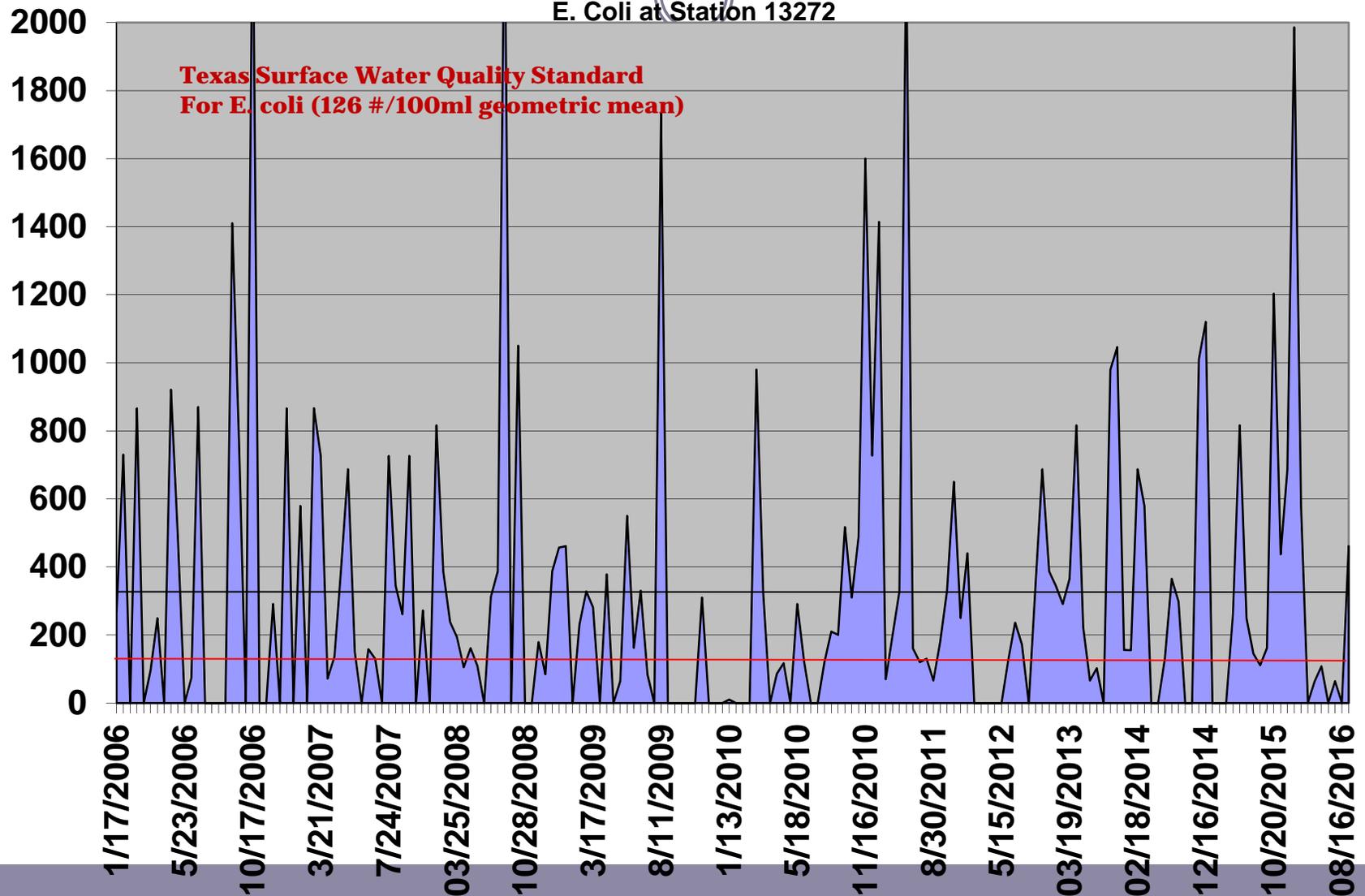


**Fish kill in Presidio, TX,  
June 2011**



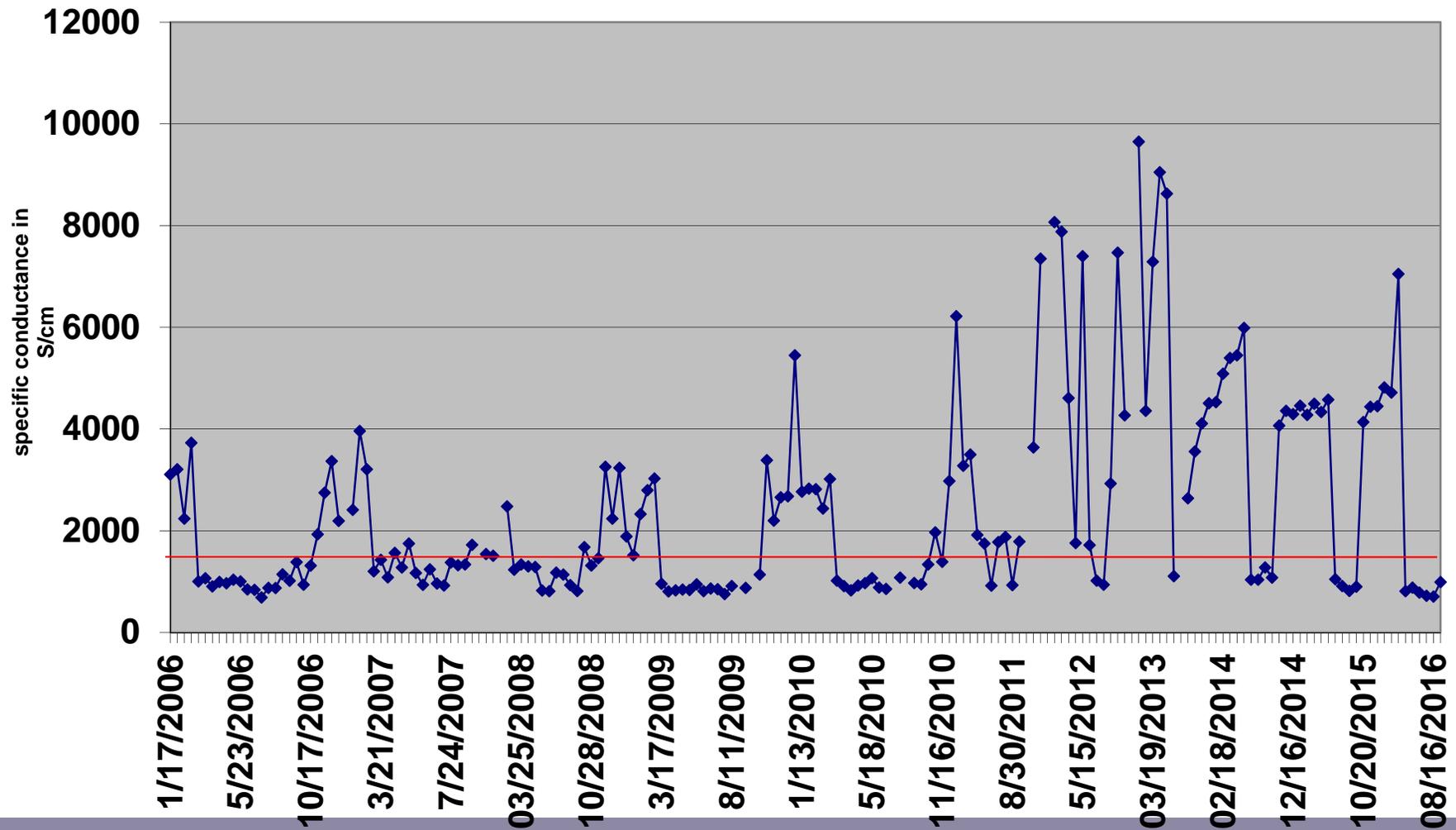
**Foam in the Rio Grande, possibly due to  
high phosphate levels.**

# E coli at 13272 in El Paso, 2006-2017



# Conductivity at 13272 in El Paso, 2006-2016

Conductivity at 13272



# Concerns for El Paso Reach of the Rio Grande



- **Routine monitoring still shows high levels of bacteria in the El Paso area.**
  - Specifically around the Sunland Park, NM/ El Paso, TX area
- **Station 17040, about a mile upstream from Station 13272, has shown bacteria levels of up to 24,000 cfu**
  - Higher when flows are low, but there have been instances of high levels even when there is water in the river from releases, rain, etc.
- **The Clean Rivers Program has alerted the NM Environmental Department and TCEQ Region 6 of the problem.**
  - Working together to find a solution to the problem.
  - Monitoring continues.

# Fish Kill in Sunland Park, NM, January 2017



- On January 12, 2017, CRP was out with EPCC and came upon a large fish kill in the river at Sunland Park, NM
  - Staff noticed dead fish upon arrival.
  - Walking along the river bank, became evident that there had been a fish kill.
- CRP and USIBWC Env Management Div. staff returned that afternoon to do a full count and collect samples.
  - Dead fish began about .25 miles upstream of the bridge at Racetrack Dr and McNutt, continued about  $\frac{3}{4}$  mile downstream of the bridge.
  - Counted 560 dead or dying fish in a 1 mile stretch of the river.

## Fish Kill Continued...



- Dead fish were mainly catfish, but carp, minnows and tadpoles were also seen.
- Water was very foul-smelling and a dark gray color.
- Samples were collected upstream of the bridge near the Sunland Park WWTP, and downstream of the bridge near one of the larger groups of dead fish.
- Sent for analysis to the EPW laboratory.
- Results showed high COD and BOD levels.
  - Unable to collect bacteria samples due to holding time restrictions.
  - However, routine samples taken earlier that week slightly downstream showed high bacteria levels.
- Environmental Complaint filed with NMED.



# Video, January 2017 Fish Kill



# Nutrient Criteria



- EPA has mandated that states create **Numeric Nutrient Criteria**
  - TCEQ is tasked with this.
- **2013 Standards:**
  - Chlorophyll-a criteria for 75 Reservoirs
  - Nothing new since 2013
- **Still in development:**
  - Criteria for rivers and streams
- → will impact WWTP effluent limits
- → agriculture
  - USDA 2010 report estimates 65% of farmers are not optimizing nutrient management

Total Phosphorus  
Total Nitrogen  
Chlorophyll-a  
Turbidity

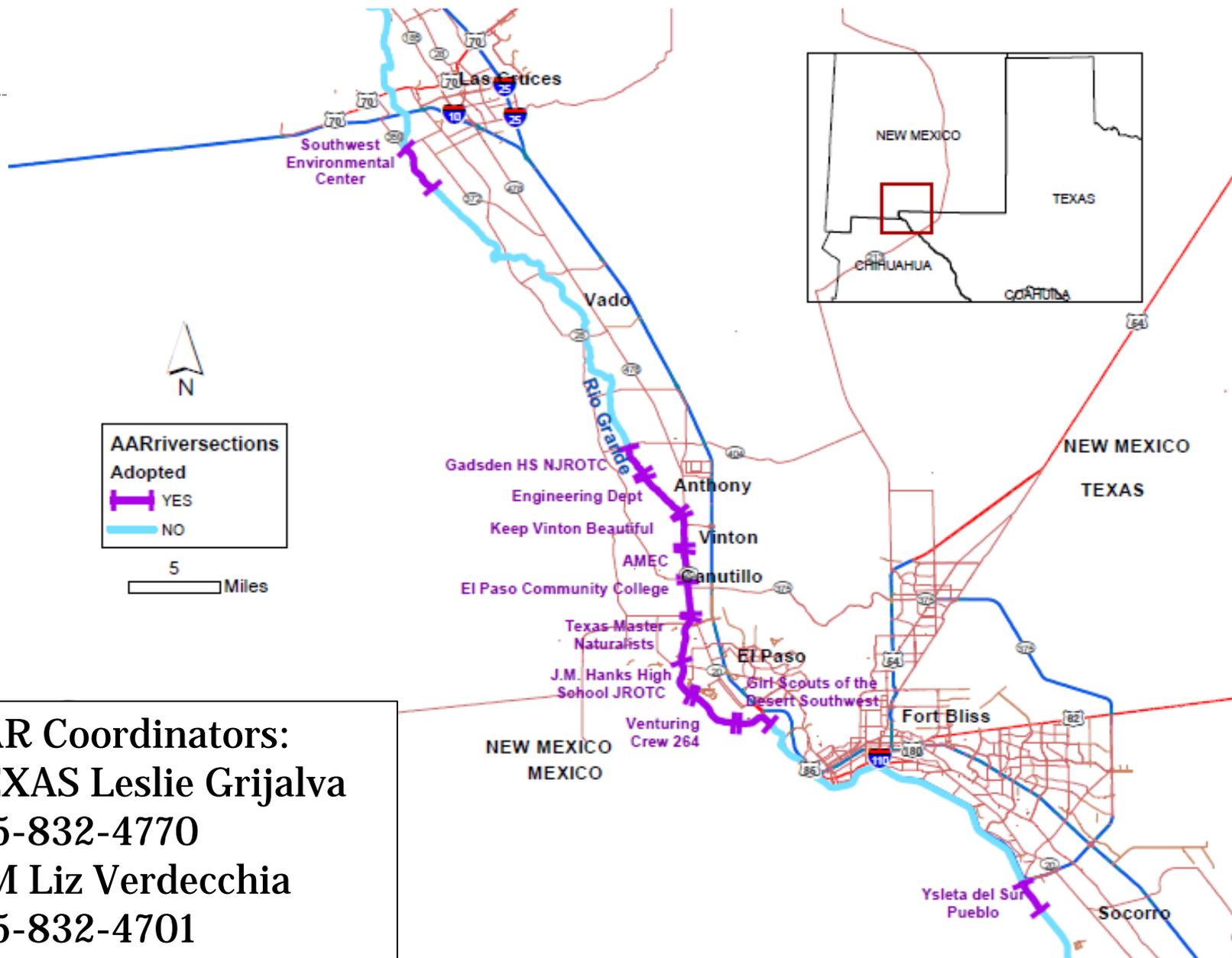
Historical conditions  
Stressor Response

# USIBWC's Adopt-a-River Program

- Community groups adopt a 2-mile section of river for 2 years
- Commit to 2-3 cleanups per year
- Community groups leave trash bags on levee
- IBWC picks up and disposes of trash
- Sign acknowledging group posted
- Sections in NM still available for adoption



# Adopted River Sections



# EPCC and UTEP work with CRP



- **The CRP is partnered with EPCC's Service Learning Program**
  - Program integrates community service or special projects into the professor's curriculum.
  - Students have helped the CRP by analyzing data and making graphs, entering data, helping during a river clean-up, and helping with water sampling.
- **RISE (Research Initiative for Scientific Enhancement) Program**
  - Program is aimed at providing underrepresented students research opportunities and encourage them to pursue graduate degrees and biomedical research.
  - EPCC program chapter is a CRP partner
  - Students come with CRP staff and collect water samples.
- **UTEP's Biology and Env. Science classes collect samples for the CRP.**
  - Students gain experience in the field and in water collection techniques
- **The CRP is always looking for ways to help students learn about the environmental science field, and help them gain exposure to field and sampling techniques.**
  - CRP staff provide training in the field and with water quality monitoring equipment.

# CRP Website

## [www.ibwc.gov/CRP/Index.htm](http://www.ibwc.gov/CRP/Index.htm)



- RECOVERY.gov
- Home
- About Us
- Employment Opportunities
- Organization
- Mission Operations
  - Flood Control Levee Systems
  - Diversion Dams & Related Structures
  - Storage Dams (Reservoirs) / Power Plants
  - Wastewater Treatment Plants
  - Field Offices
    - TEXAS CLEAN RIVERS
    - Emergency Management
- Treaties / Minutes
- Permits / Licenses
- Water Data
- GIS / Maps
- News / Publications
- Citizens Forums
- Reports / Studies
- Links
- Contact Us



The International Boundary and Water Commission, U.S. Section (USIBWC) Texas Clean Rivers Program (CRP) is responsible for collecting water quality data throughout the Texas portion of the Rio Grande Basin. CRP is a state fee-funded program for water quality monitoring, assessment, and public outreach, and aims to maintain and improve the quality of water within each river basin in Texas through partnerships with the Texas Commission on Environmental Quality (TCEQ) and participating entities. [More...](#)



**OCTOBER/NOVEMBER 2013:**  
LOWER RIO GRANDE CITIZENS FORUM AND BASIN ADVISORY COMMITTEE MEETING RESCHEDULED 11/6/13  
2013 RIO GRANDE BASIN SUMMARY REPORT NOW AVAILABLE  
PLEASE CHECK THE [CALENDAR](#) FOR THE DATES FOR ANY UPCOMING MEETINGS.

<b>Study Area</b> Locate IBWC stream gages, data and other useful map information using the USIBWC GIS Interactive Map page. Also has static maps of the Rio Grande Basin	<b>Monitoring Station Data</b> View a list of monitoring stations by segment in the Rio Grande basin. Click on the station ID to view an Excel file with water quality data for that station from 1995 to present
<b>Calendar / Current Activities</b> Learn about upcoming events and current activities of the Clean Rivers Program	<b>Publications</b> View the CRP Basin Reports, outreach publications, administrative docs, and QAPP
<b>Media Gallery</b> See photos and videos of past CRP events and monitoring activities	<b>Participation</b> Learn about the CRP Basin Advisory Committee and ways to get involved
<b>Partner Links</b> Access links to the Clean Rivers Program partners and planning agencies and links for	<b>Adopt-a-River</b> Info about USIBWC's Adopt-a-River cleanup

- Data
- Maps
- Calendar
- Publications
- Projects & studies
- Outreach
- RG info
- Photos & videos
- Links, etc

# Questions?



USIBWC – CRP

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Or send an email to [crp@ibwc.gov](mailto:crp@ibwc.gov)

CRP Website

[www.ibwc.gov/CRP/Index.htm](http://www.ibwc.gov/CRP/Index.htm)