



Bacteria Reduction Plan

Year Two Update

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Natural Resources Coordinator
UGRA



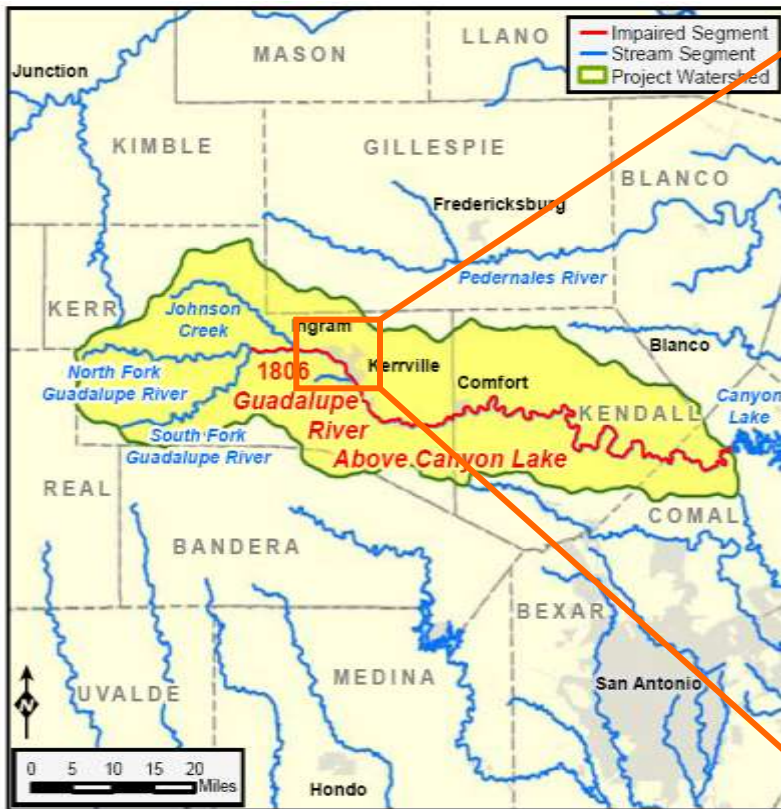
Welcome Stakeholders

- Provide input and feedback on Bacteria Reduction Plan activities
- Stay informed and apprised of all Bacteria Reduction Plan activities
- Assist in disseminating accurate information

Guadalupe River above Canyon Lake TMDL

- Bacteria impairment for contact recreation in a 3.5 mile reach of Guadalupe River in Kerrville
- Placed on 303(d) list in 2002
- TMDL approved in 2007
- Implementation Plan approved in 2011

Impaired Area



Ultimate Goal

- Reduce bacteria concentrations



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2012 Texas Integrated Report Index of Water Quality Impairments

General Information

SegID: 1806 **Guadalupe River Above Canyon Lake**
 From a point 2.7 km (1.7 miles) downstream of Rebecca Creek Road in Comal County to the confluence of North Fork Guadalupe River and the South Fork Guadalupe River in Kerr County

<u>Parameter(s)</u>	<u>Category</u>	<u>Carryforward</u>
bacteria		
1806_06 From RR 394 1 mile downstream.	4a	No
1806_08 From 25 miles upstream of lower end to confluence with Big Joshua Creek.	5c	No

SegID: 1806D **Quinlan Creek (unclassified water body)**
 From the confluence of the Guadalupe River in Kerrville in Kerr County to the upstream perennial portion of the stream north of Kerrville in Kerr County

<u>Parameter(s)</u>	<u>Category</u>	<u>Carryforward</u>
bacteria		
1806D_01 Entire water body	5a	No

SegID: 1806E **Town Creek (unclassified water body)**
 From the confluence of the Guadalupe River in Kerrville in Kerr County to the upstream perennial portion of the stream north of Kerrville in Kerr County

<u>Parameter(s)</u>	<u>Category</u>	<u>Carryforward</u>
bacteria		
1806E_01 From the confluence with segment 1806 of the Guadalupe River in Kerrville, Kerr County Texas up to the upper end of the segment (NHD RC 12100201000572)	5a	No

Category 4b - Other control requirements are reasonably expected to result in the attainment of all standards.





Bacteria Reduction Plan

- Funded by TCEQ Non Point Source Program
- \$475,201 Total Project
 - 60% Federal Funding (\$285,120)
 - 40% Local Match (\$190,081)
- October 15, 2011 – August 31, 2014
- Partners
 - UGRA
 - City of Kerrville
 - Kerr County
 - TXDOT

Amended

Why Amend Project?

- Insufficient funds budgeted for construction
- Amendment to scope of work
- Revision to project budget
- Creation of a second project scope of work and budget
- Initiate contract with TCEQ
- Two additional budget revisions to reclassify funds
- Revision of contract with engineer

Bacteria Reduction Plan

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- \$475,201 Total Project
 - 60% Federal Funding (\$285,121)
 - 40% Local Match (\$190,080)
- October 15, 2011 – August 31, 2014
- Partners
 - UGRA
 - City of Kerrville
 - Kerr County
 - TXDOT

Bacteria Reduction Plan - Supplemental

- Funded by TCEQ Non Point Source Program
- \$73,650 Total Project
 - 60% Federal Funding (\$44,190)
 - 40% Local Match (\$29,460)
- April 23, 2013 – August 31, 2014
- Partners
 - UGRA
 - City of Kerrville
 - Kerr County

Wildlife

- Install bird exclusion/deterrent structures
- Reduce bird feeding
- Manage waterfowl population
- Partners involved:
 - UGRA
 - City of Kerrville
 - Kerr County
 - TxDOT



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Wildlife Results

- Install bird exclusion/deterrent devices
 - Bird deterrent structures designed for SH 16 and SH 534 bridges
 - Plans reviewed by local partners
 - Comments incorporated
 - TXDOT utility installation agreement
 - Publically bid
 - Contractor selected (then reselected)
 - Construction 12/17/12 – 1/30/13



Wildlife Results

- Installation of bird deterrent structures on three sections of SH 16 bridge



- Lane closures – one lane in each direction
 - \$29,972.43



Bird Deterrent Construction



Bird Deterrent Construction

- Cable anchor installation



Bird Deterrent Construction

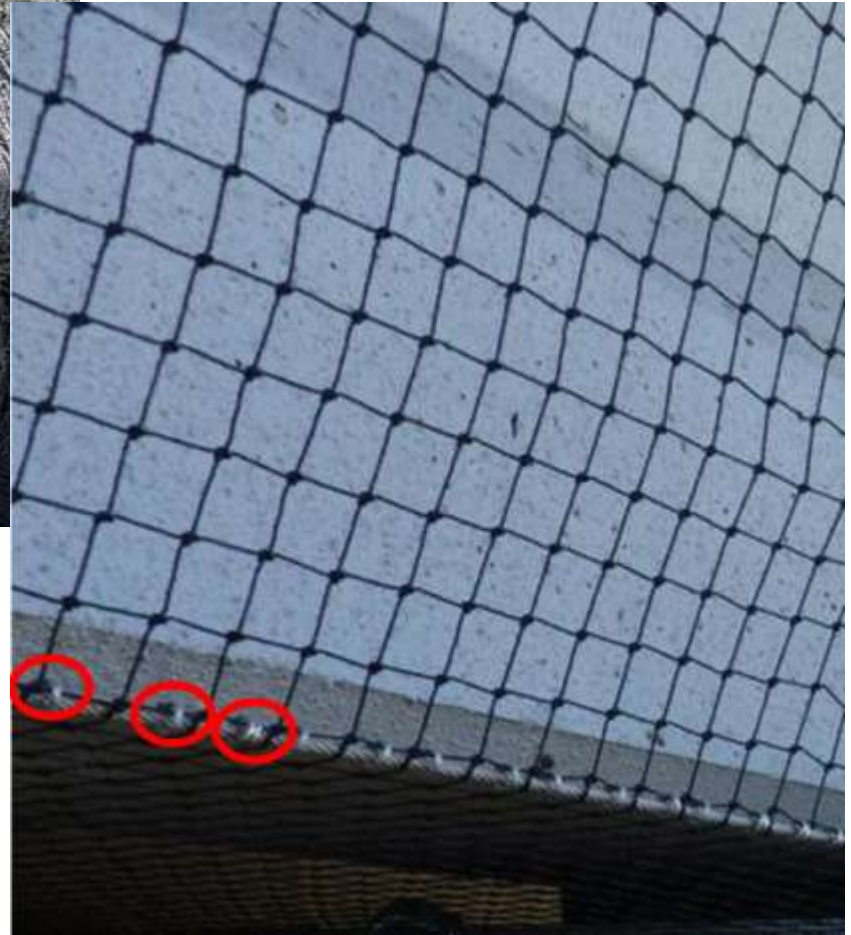
- Cable anchor installation



Bird Deterrent Construction



Bird Deterrent Construction



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Bird Deterrent Construction



Drain Modification



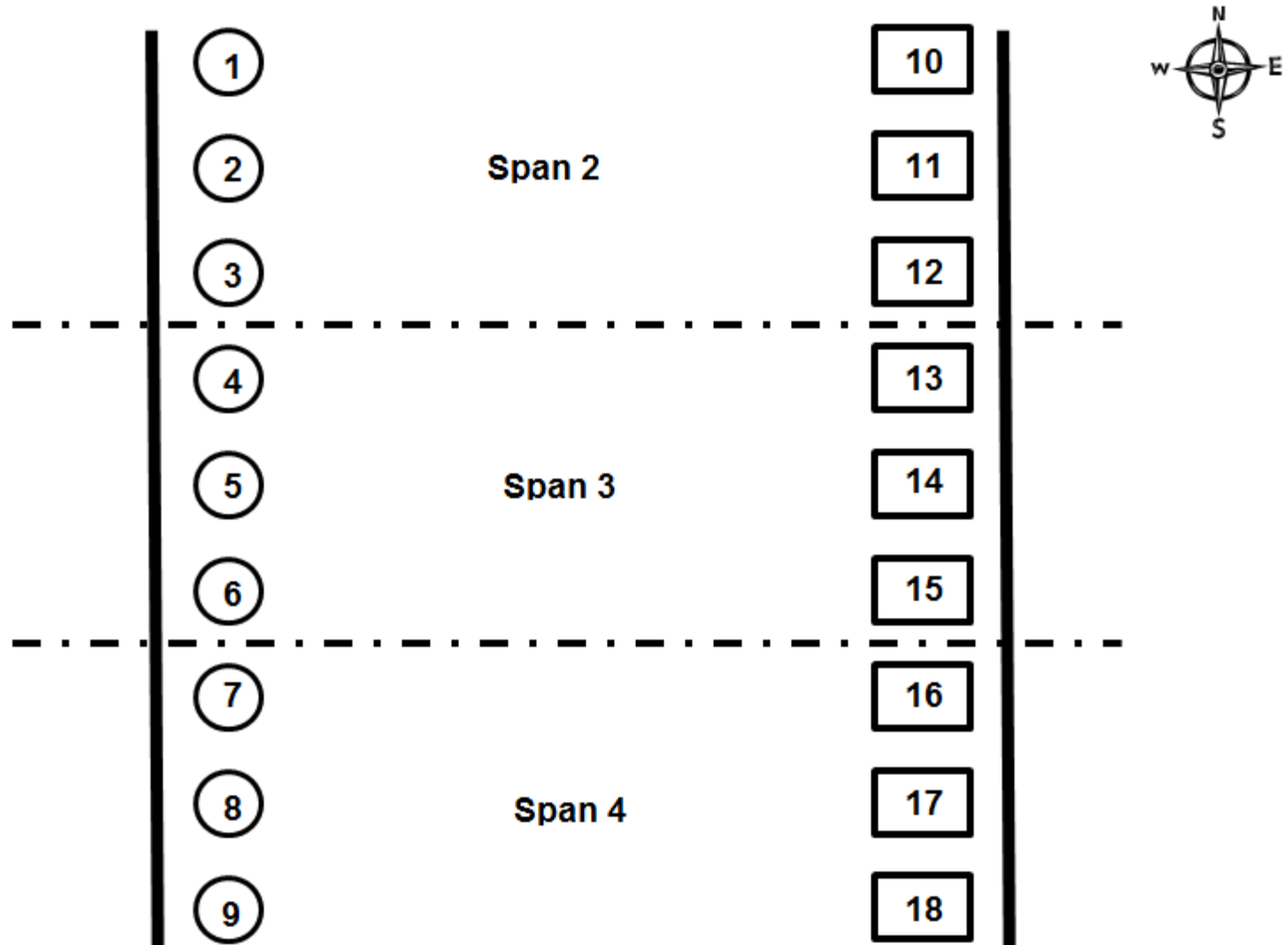
Drain Modification



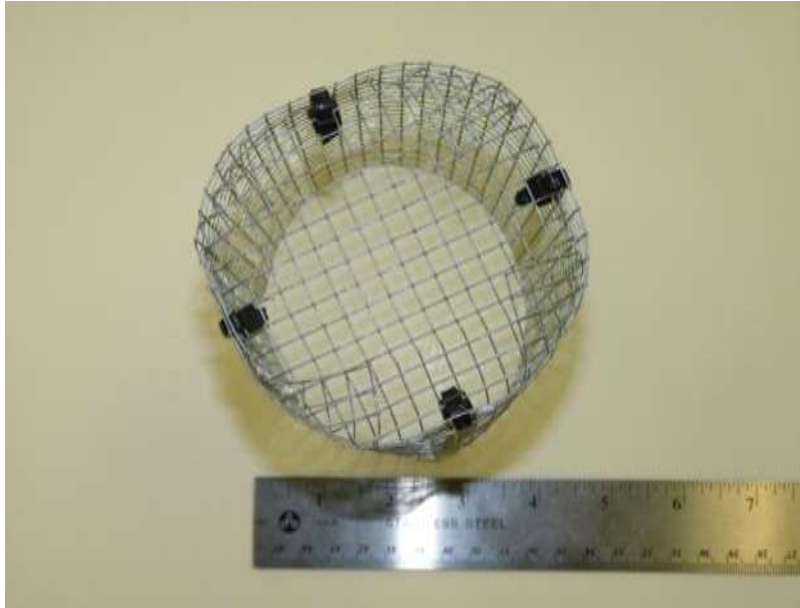
Drain Modification



Drain Modification



Drain Modification

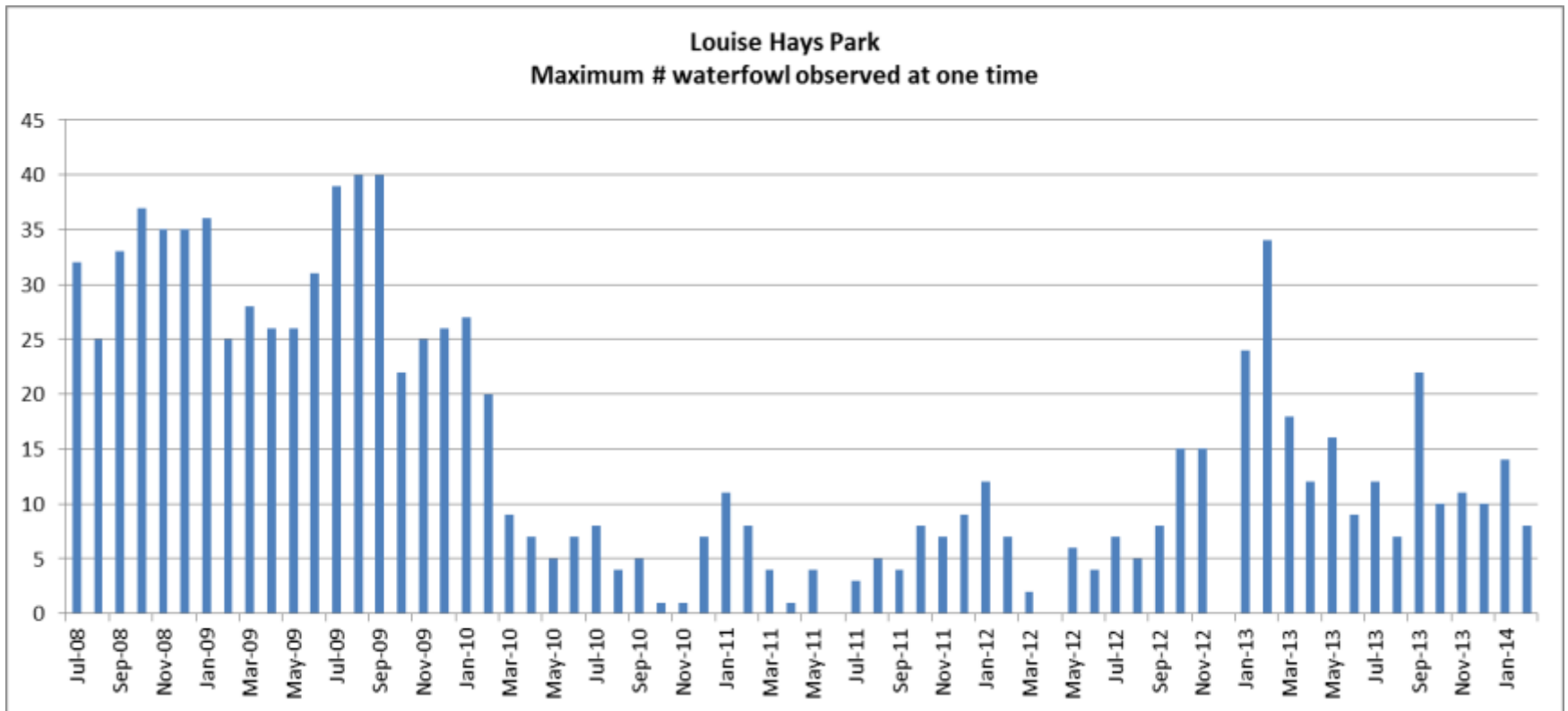


Drain Modification



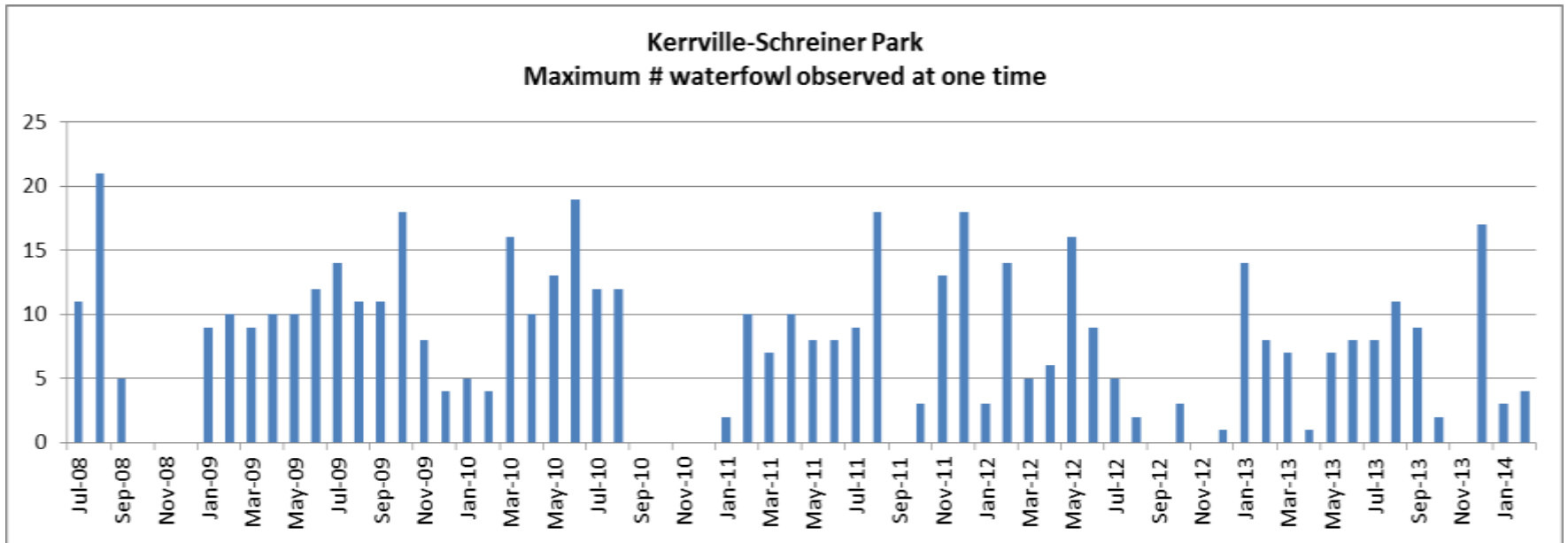
Wildlife Results

- Reduce bird feeding
- Manage waterfowl population



Wildlife Results

- Reduce bird feeding
- Manage waterfowl population



Wildlife Results

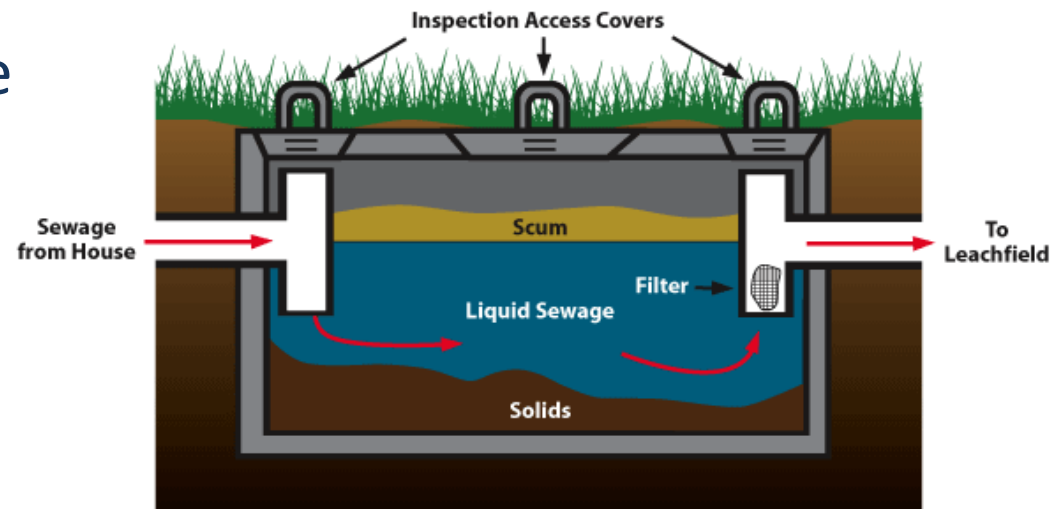
- Year Two increase in waterfowl at both sites
 - Average number of waterfowl observed during May to September

	Louise Hays Park	Kerrville-Schreiner Park
2009	35	11.6
2010	5.8	11.2
2011	3.2	8.6
2012	6	6.4
2013	13.2	8.6



Human Contributions

- Ongoing lateral sewage line replacement
- Sewer inspection and rehabilitation
- OSSFs
- Partners involved:
 - UGRA
 - City of Kerrville
 - Kerr County



Human Contributions Results

- Improvements to wastewater collection systems
 - \$7,120,038.22 spent on improvements
 - 303 feet of collection line system repaired/replaced
 - 1 lift station replaced
 - New Birkdale Lift Station – completed and in operation as of August 2013
 - 1 lift station in design phase for replacement
 - Jefferson Lift Station



Human Contributions Results

- Improvements to wastewater collection systems (con't)
 - Improvements or repairs at 9 lift stations
 - Upgraded pump level controls
 - Upgraded SCADA system
 - Added chemical odor control
 - Added emergency pump
 - Repaired pump sensors and other components
 - Replaced pumps and other components
 - Replaced sections of discharge piping
 - Suction piping replaced
 - Check valves replaced
 - Replaced alarm lights
 - Replaced pipe discharge manifold



Human Contributions Results

- Improvements to wastewater collection systems (con't)
 - 1 Sanitary manhole replaced
 - 25 customer clean outs repaired
 - Gravity main footage
 - 22,776 linear feet inspected via camera
 - 175,798 linear feet cleaned/vacuumed
 - 200 linear feet root sawed

WOW!



Human Contributions Results

- Mapping of On-site Sewage Facilities (OSSF)
 - Designate priority area – 300 feet from waterbody
 - Identify properties in area
 - Cross reference with OSSF database



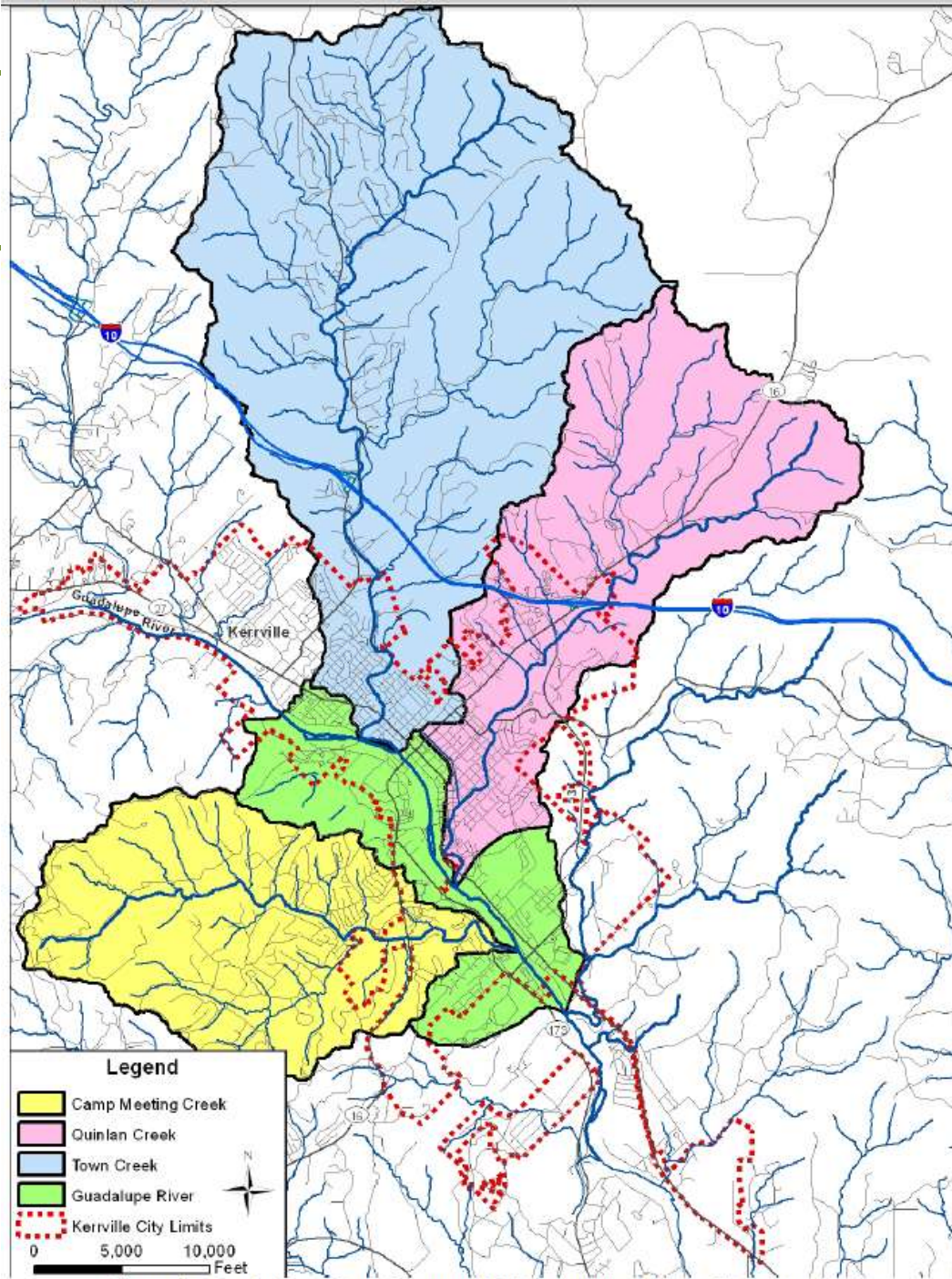


Figure 1: Guadalupe River (Segment 1806) and Study Area Subwatersheds



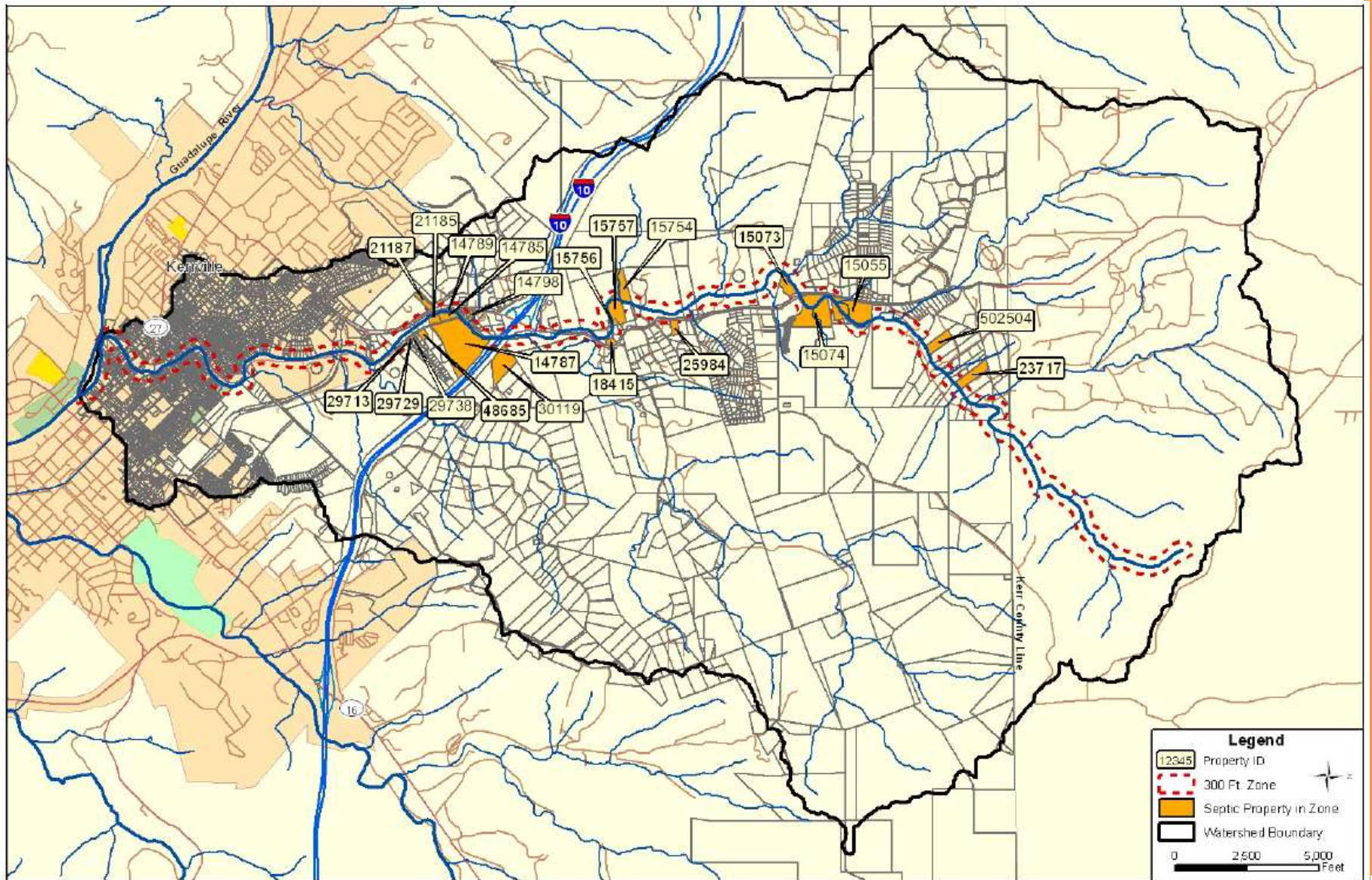


Figure 2: Town Creek Septic System Priority Zone



Human Contributions Results

- Summary of OSSFs in priority area

Watershed	Total Number of Septic Properties	Number of Septic Properties in Priority Area
Town Creek	276	21
Camp Meeting Creek	906	69
Quinlan Creek	121	9
Guadalupe River	84	6
Total	1390	105



Pet Waste

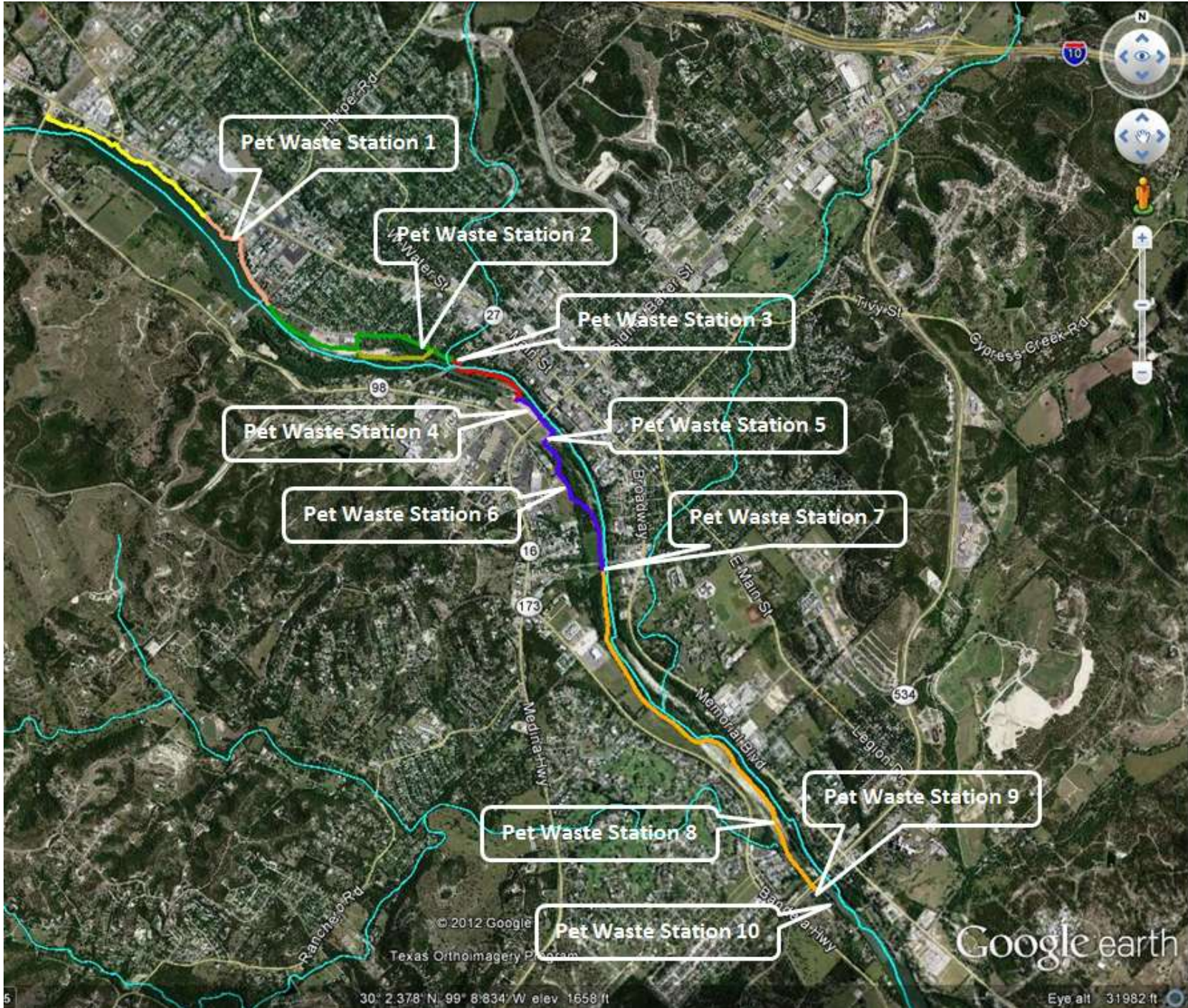
- Implement education program
- Install pet waste stations
- Partners involved:
 - UGRA
 - City of Kerrville
 - Kerr County



Pet Waste Results

- Seven active stations in Flat Rock Park
- Five active stations in Kerrville Parks
- Ten stations purchased for along River Trail





Pet Waste Results

- Education materials in Years 2 and 3
- Effectiveness monitoring
 - Weekly monitoring
 - 110 pounds average waste/month
 - **4,375 pounds removed since November 2010**
 - 1,032 pounds removed in Year Two
 - Kerr County 104 hours maintaining pet waste stations in Year Two



Urban Runoff

- Storm water education programs
- River clean ups
- Street sweeping
- Partners involved:
 - UGRA
 - City of Kerrville



Urban Runoff Results

- Interactive kiosk in use since January 2013
 - Riverside Nature Center January – June
 - Year Two total
 - 508 modules in English
 - 26 modules in Spanish
 - Butt-Holdsworth Memorial Library July – present
 - Year Two total
 - 863 modules in English
 - 190 modules in Spanish



Interactive Kiosk



Urban Runoff Results

- Watershed model presentations
- Clean ups
 - 2013 UGRA Annual River Clean Up 6,830 pounds
 - UGRA Annual River Crossing Clean Up Program 18,065 pounds
 - Town Creek Clean Up Team
 - Kerrville South CAG
- City of Kerrville 322 hours of street sweeping







Wastewater

- Monitor and report *E. coli* concentrations
- Partners involved:
 - Local WWTFs
 - TCEQ TMDL Program



Wastewater Results

- WWTFs
- TCEQ TMDL Program
 - Review water quality data
 - Single WWTF not currently operating



What's Next?

- Year 3
 - Continuation of Year 1 and 2 activities
 - Waterfowl management
 - OSSF
 - Education
 - Evaluating effectiveness
 - Summary Reports



Water Quality Model

- Better understand how bacteria sources contribute to instream bacteria levels
- To predict the effectiveness of BMPs for reducing instream bacteria loads
- Hydrologic Simulation Program Fortran (HSPF) software

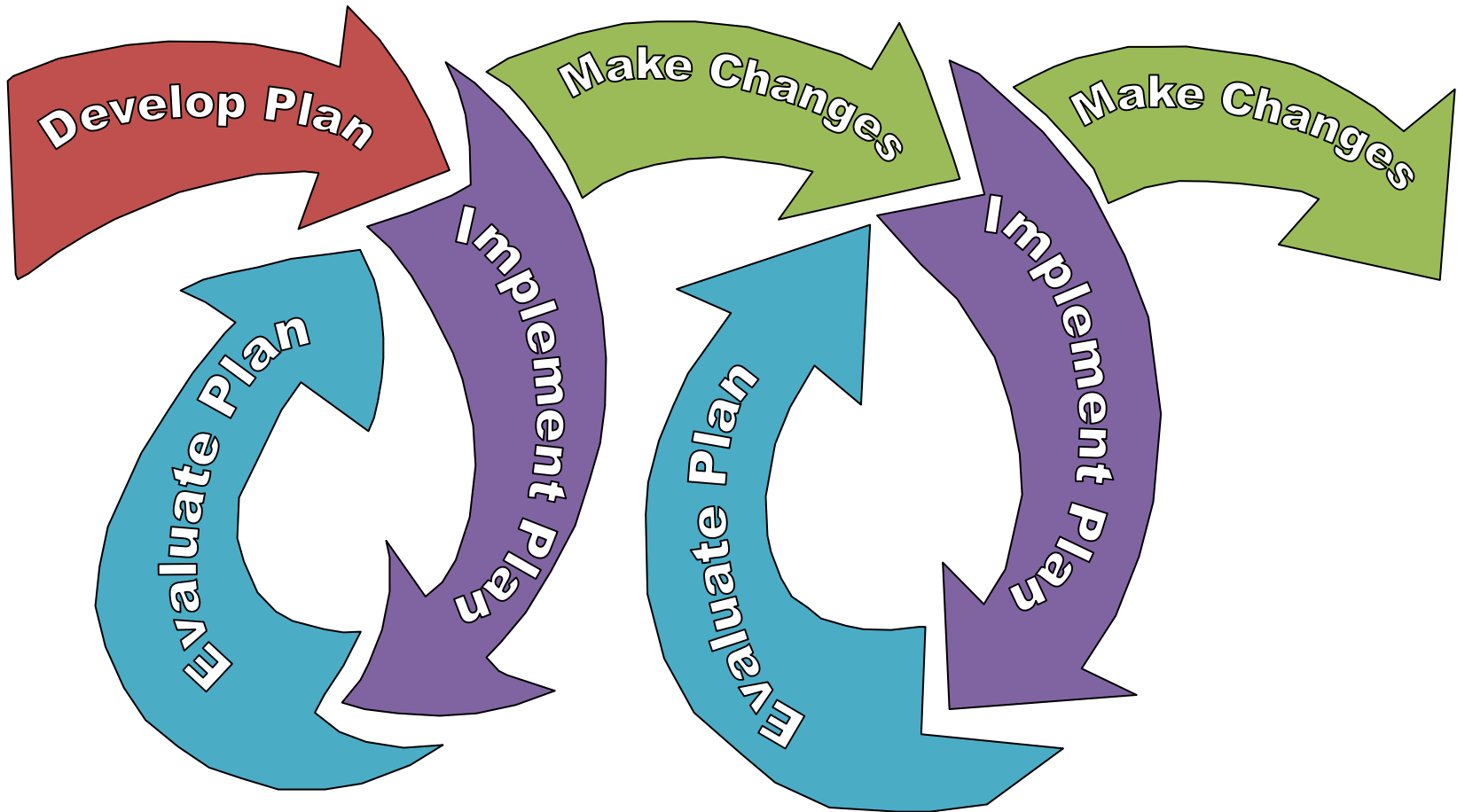


Water Quality Model

- Update the existing HSPF model
 - Extend modeling period
 - Update streamflow and precipitation data
 - Include recent bacteria data
 - The model calibration can be checked and modified if warranted
 - The model can be applied to explore effects of additional or contemplated BMPs.



Adaptive Management







Site Navigation

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

You are here: Home / Water Quality / Total Maximum Daily Load Program / Projects / Guadalupe River Above Canyon

>> Questions or Comments: tmdl@tceq.texas.gov

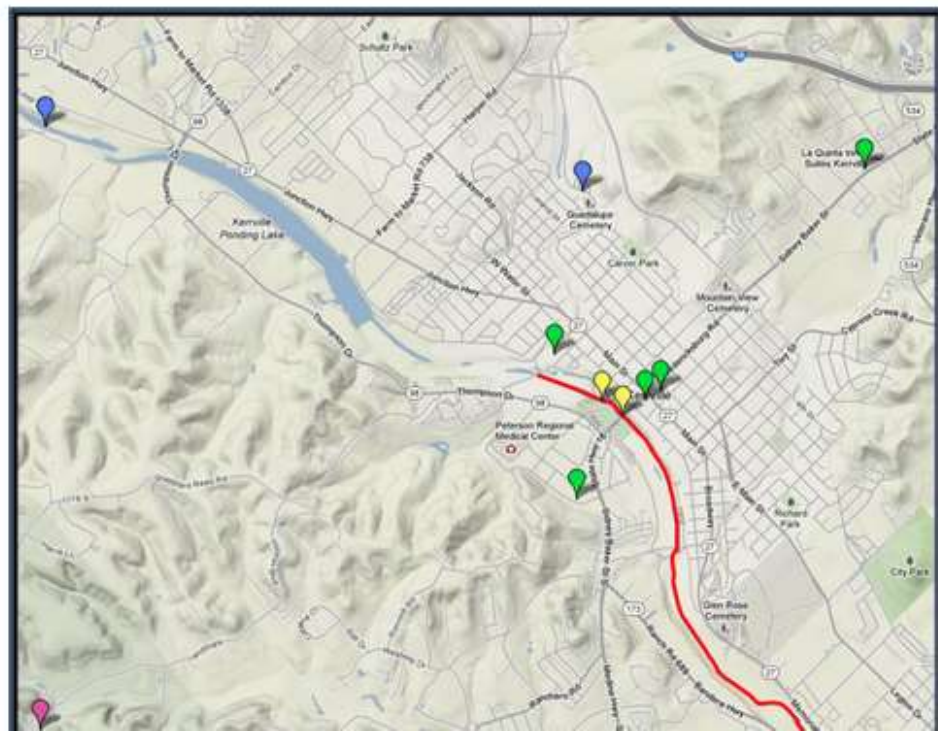
Guadalupe River Above Canyon Lake: Implementing a Plan to Protect Recreational Uses

The goal of this current project is to keep recreation safe in this segment of the river by reducing bacteria levels. The adopted TMDL and the approved I-Plan combined are the road map to improving water quality in the creek.

[Back to TMDL Projects](#)

County: Kerr
Parameter: Bacteria
River Basin: Guadalupe
Segments: 1806

- Overview
- Get Involved
- Partners
- Status and Activities
- News, Maps, and Photos
- Reports and Other Documents
- TMDLs and I-Plan
The road maps for restoring



- Data
- Forms
- Maps
- Public Notices

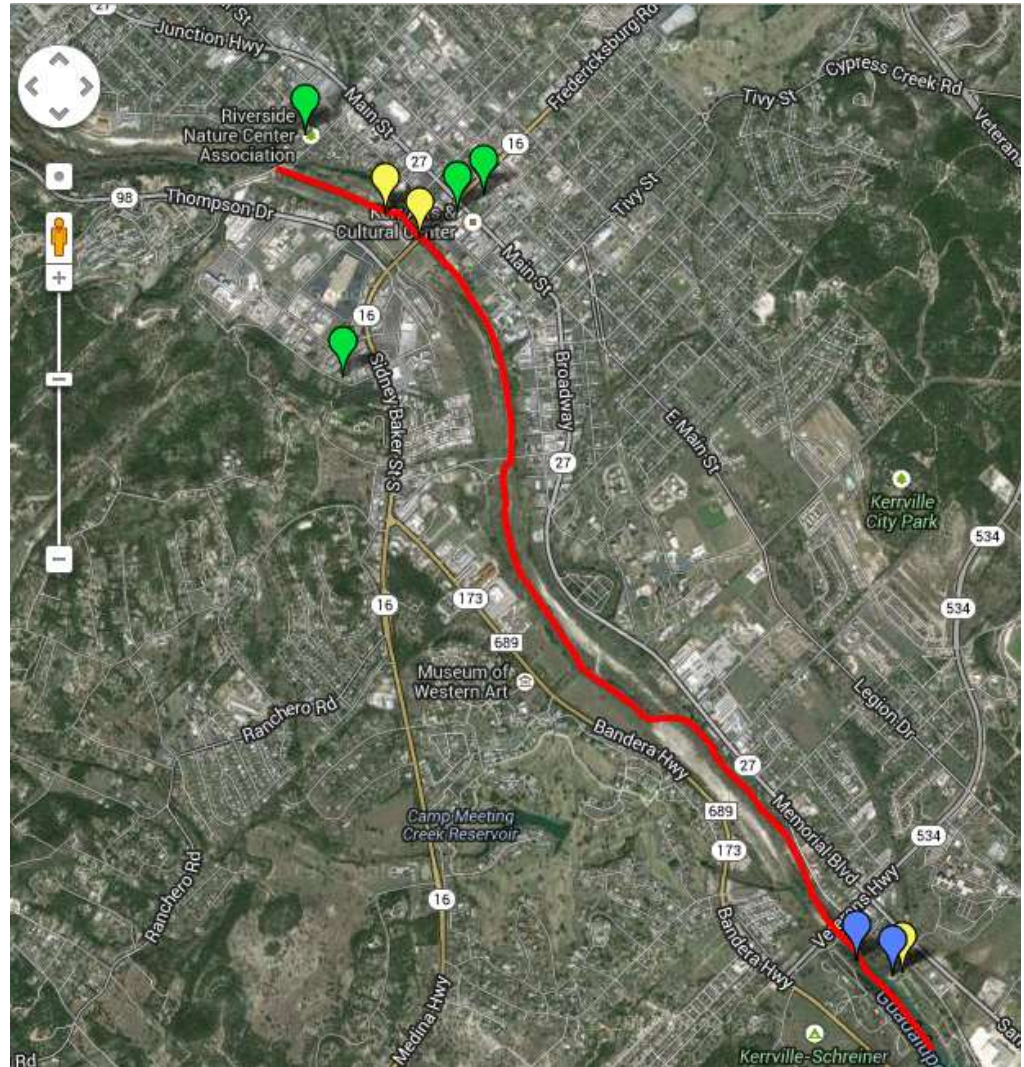
Google maps

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- UGRA Annual River Clean Up
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- Domesticated Waterfowl
 - Domesticated Waterfowl Primary Domesticated Waterfowl Population Locations
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- Pet Waste Stations
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- TxDOT
 - TxDOT Texas Department of Transportation Prima



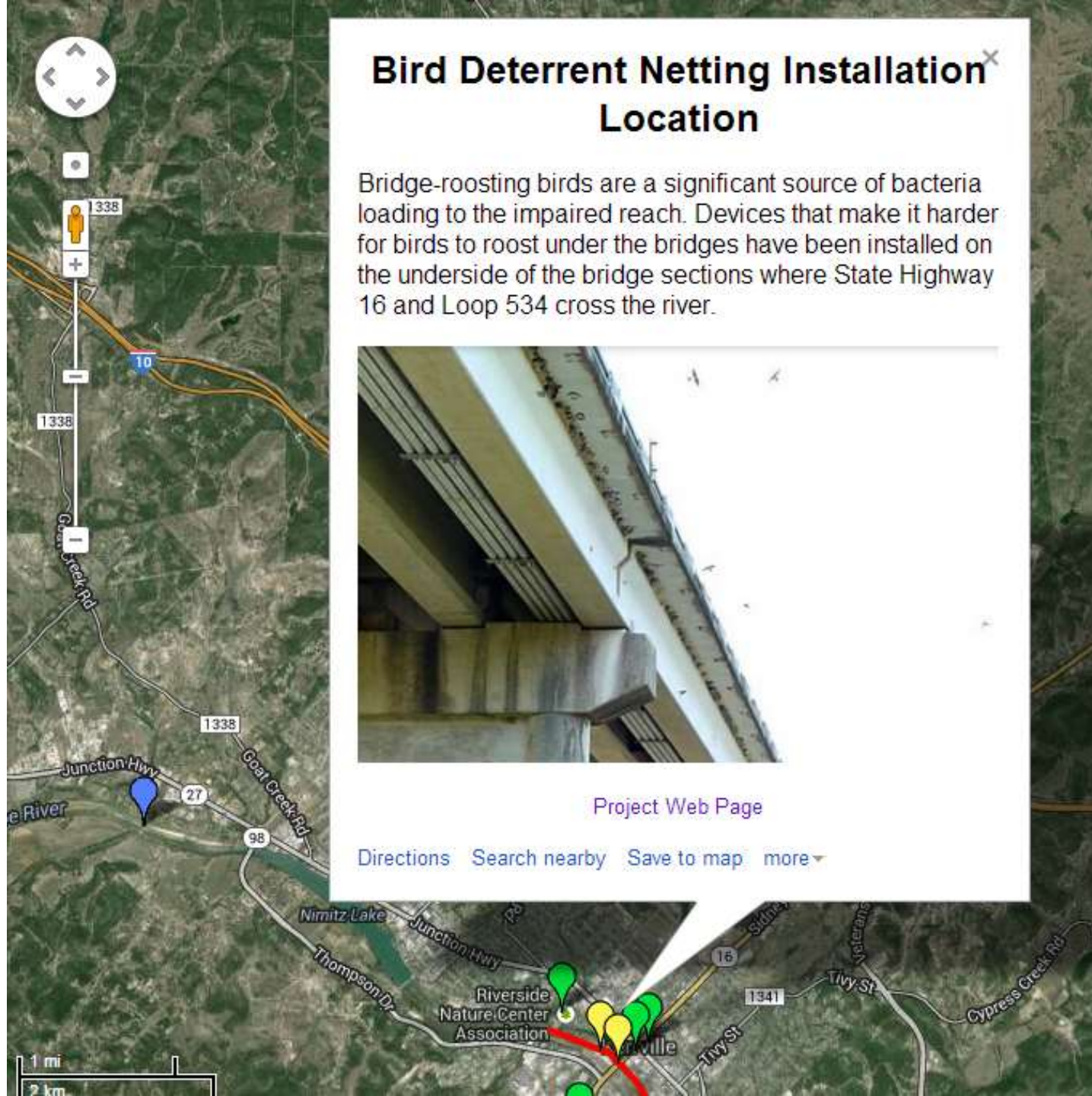
Bird Deterrent Netting Installation^x Location

Bridge-roosting birds are a significant source of bacteria loading to the impaired reach. Devices that make it harder for birds to roost under the bridges have been installed on the underside of the bridge sections where State Highway 16 and Loop 534 cross the river.



[Project Web Page](#)

[Directions](#) [Search nearby](#) [Save to map](#) [more](#)



Questions?

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