

The Effectiveness of Best Management Practices on Water Quality in the Attoyac Bayou Watershed of East Texas

By Cheryl Scott

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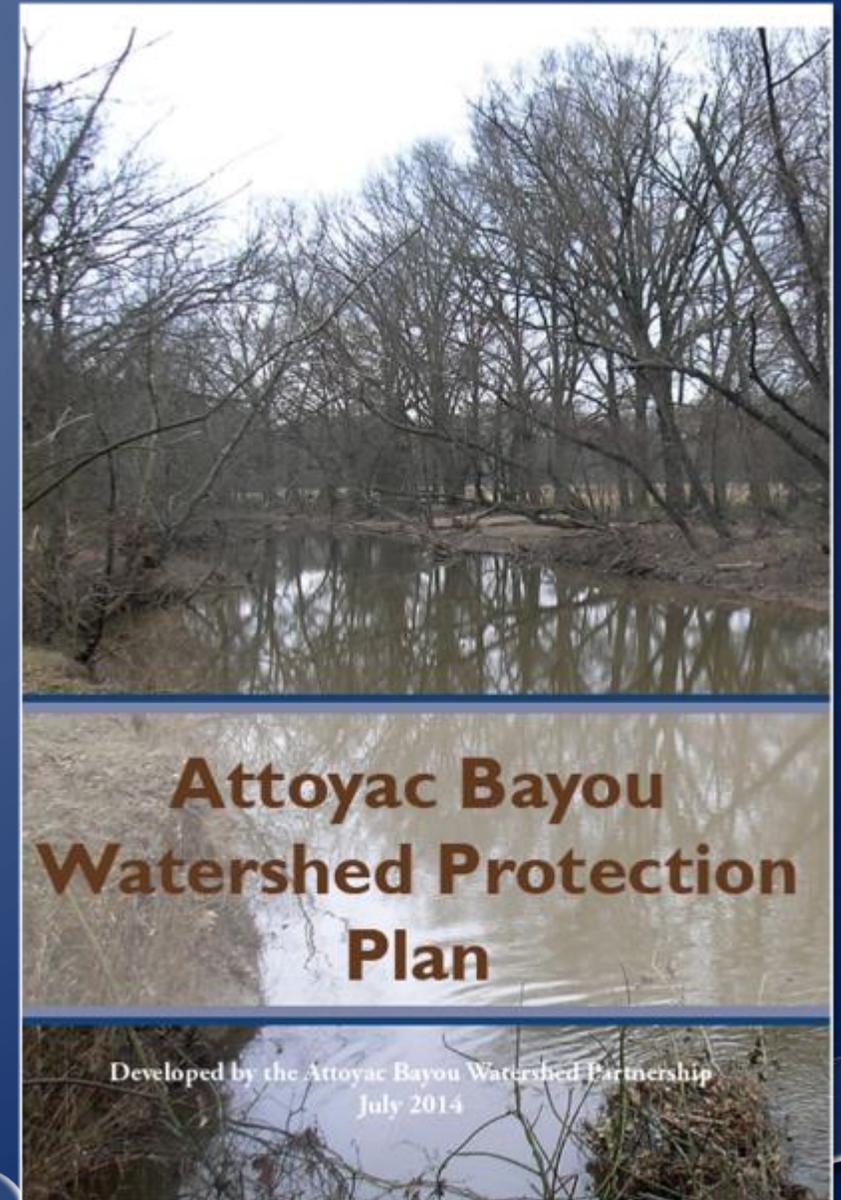


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Introduction

- ▶ 2004 – *303(d) List* for elevated bacteria
 - 2008 – Ammonia a concern
- ▶ 2014 – Attoyac Bayou Watershed Protection Plan
- ▶ Best management practices (BMPs) developed for:
 - Livestock and cattle
 - Feral hogs
 - On-site sewage facilities (OSSFs)



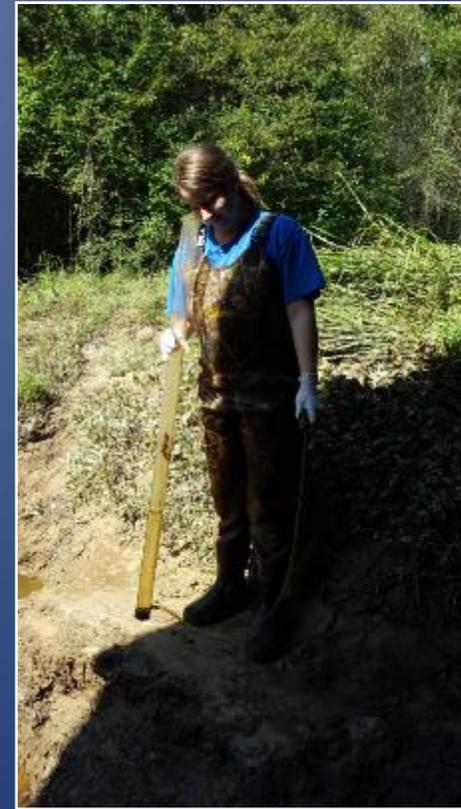
Objectives

1. To characterize water quality parameters, analyze for statistical differences, and compare them to state and federal water quality standards
2. To determine the sample location(s) with highest *Escherichia coli* (*E. coli*), nutrient, and sediment loadings
3. To conduct seasonal analysis of water quality data
4. To determine if proposed management practices resulted in improvement in water quality by analysis of past and newly collected data



Methods

- ▶ In-situ parameters:
 - Water temperature,
 - Dissolved oxygen,
 - pH,
 - Specific conductivity,
 - Discharge, and
 - Secchi depth



Methods

- ▶ Ex-situ parameters:
 - *E. coli*,
 - Ammonia-N,
 - Nitrate-N,
 - Nitrite-N,
 - Total phosphorus,
 - Total suspended solids,
 - Total dissolved solids,
 - Chloride, and
 - Sulfate



Results and Discussion – Objective 1

▶ Out of compliance:

◦ *E. coli*

- All locations

◦ pH

- 4 (6.67%) samples
 - 2 at AB and 2 at WC

◦ DO

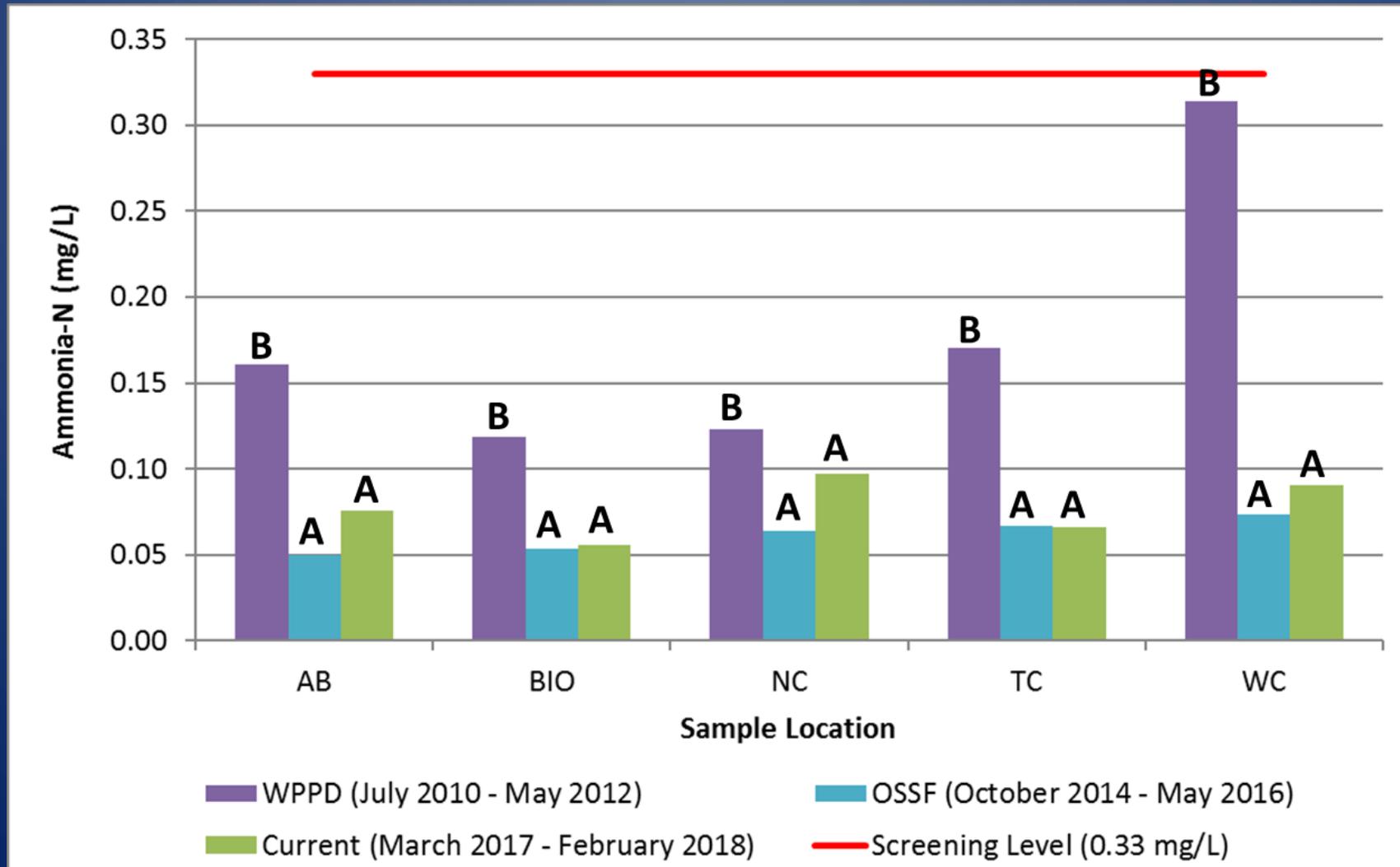
- 4 (6.67%) samples
 - 1 at AB and 3 at WC

Parameter	Standard
<i>E. coli</i>	126 CFU/100 mL
pH	6.0 - 8.5
DO	≥ 5.0 mg/L



Photo by: Dr. Matthew McBroom on 10/25/2011

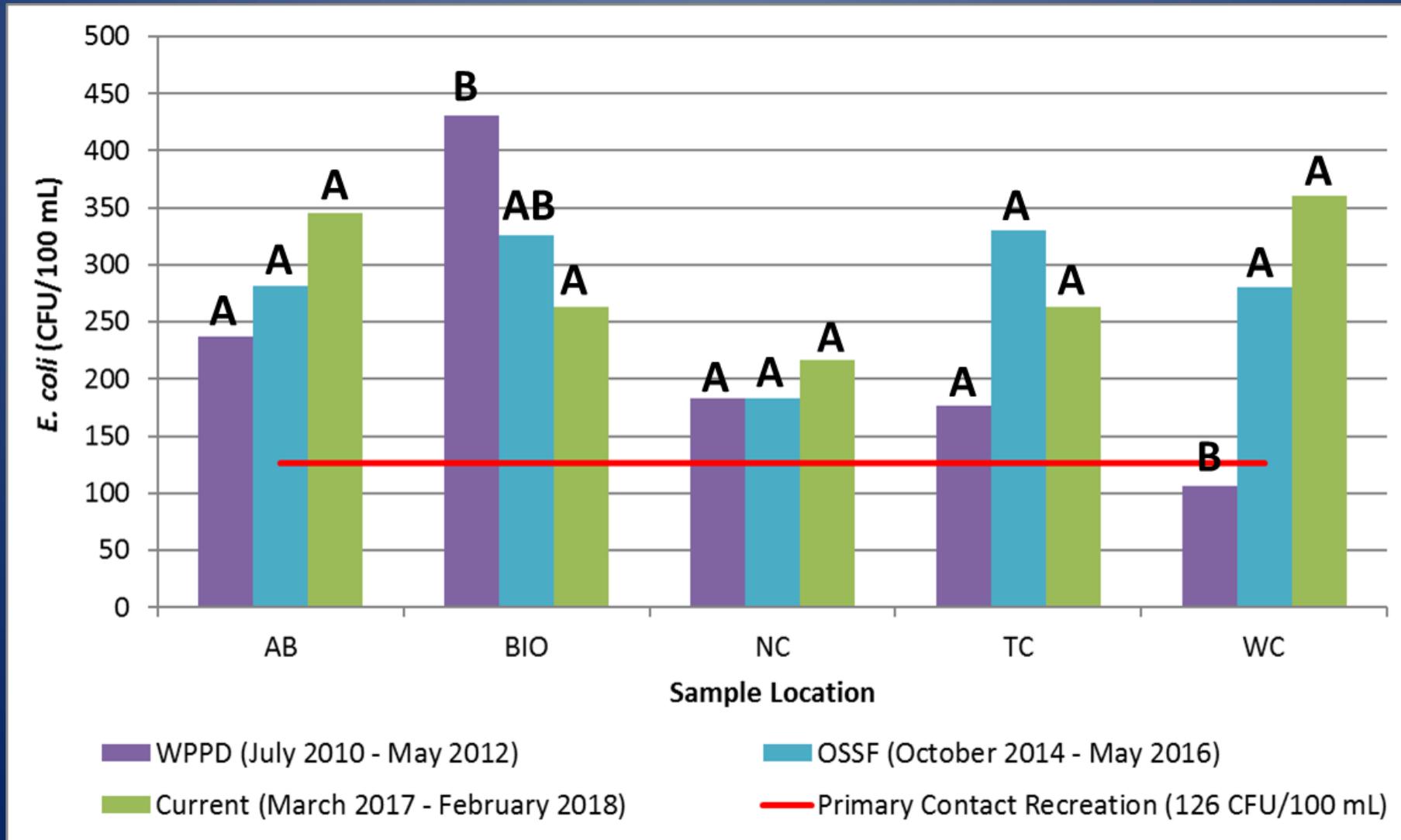
Results and Discussion – Objective 1



*Project period mean values among sample locations with the same letters are not significantly different at $\alpha=0.05$.



Results and Discussion – Objective 4



*Project period mean values among sample locations with the same letters are not significantly different at $\alpha=0.05$.

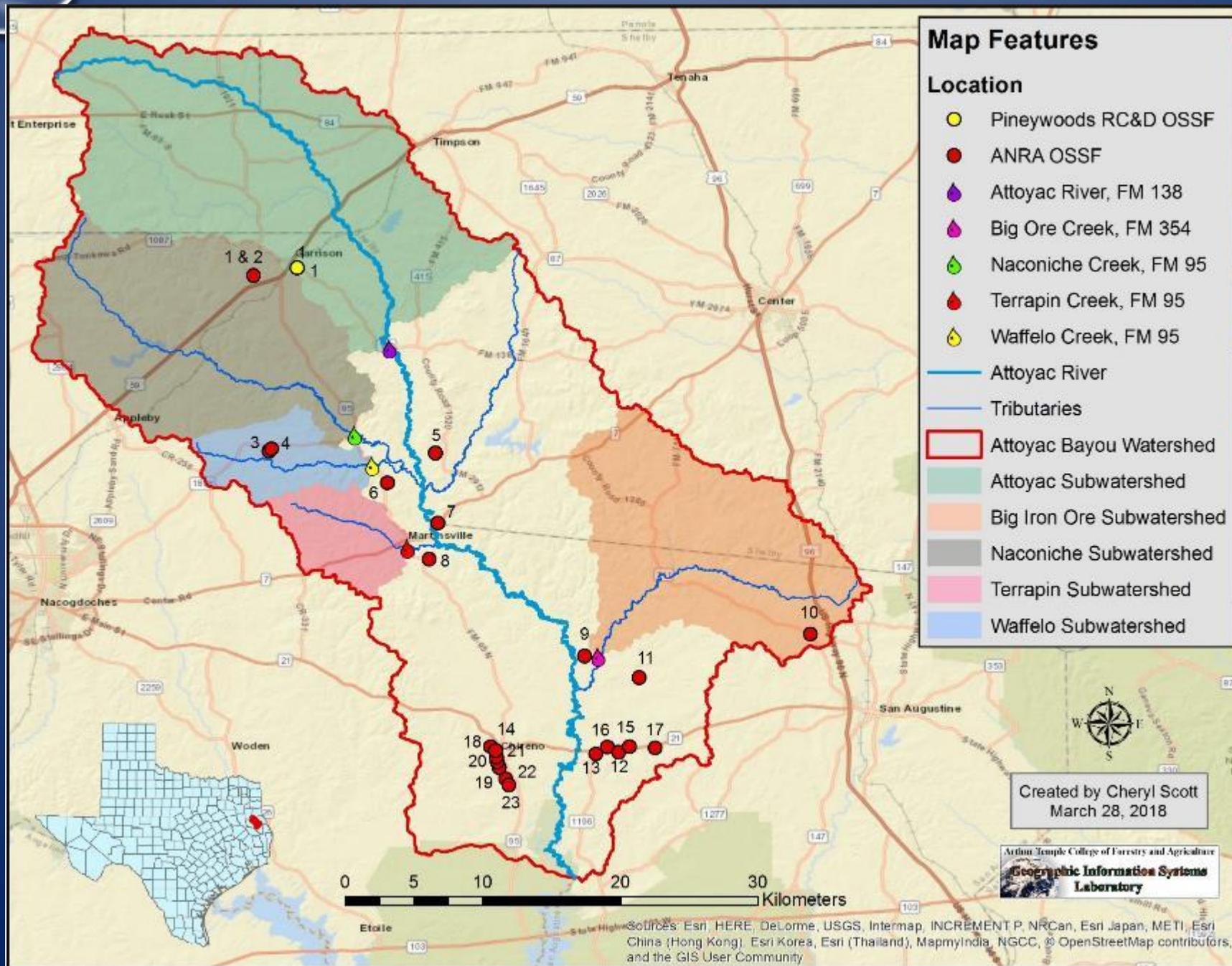
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Results and Discussion – Objective 4

▶ BMPs implemented

Date	Title
09/29/2016	Riparian Stream Ecosystem Workshop
07/13/2017	Attoyac Bayou Stakeholder Meeting
09/07/2017	Homeowner Septic System Training
11/07/2017	Texas Watershed Stewards Workshop



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Summary and Conclusion

▶ Additional BMPs:

- Feral hog bounty program
- OSSFs installation
- Increased educational awareness



<http://plumcreek.tamu.edu/feral-hogs>

▶ Future studies suggestions:

- BST
- Survey landowners
- Continued monitoring



<http://plumcreek.tamu.edu/feral-hogs>



Questions?

