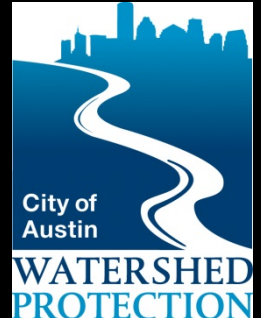


ISOLATING PATHOGENIC BACTERIA SOURCES IN URBAN STREAMS: A CASE STUDY

Stephen Davis
City of Austin

Watershed Protection Department
Environmental Resource Management



RIPARIAN RESTORATION

❖ Why do we restore?

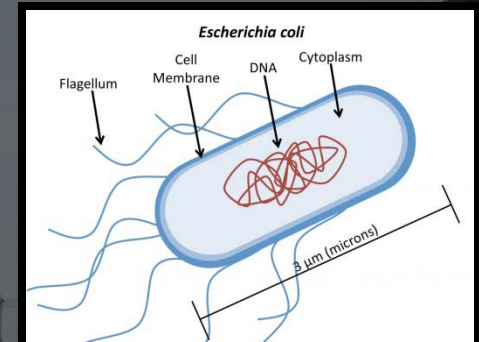
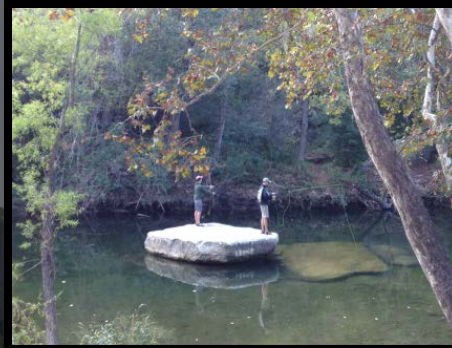
❖ Ecological function + channel stability = water quality, flood control

❖ Some water quality issues require more than traditional restoration

❖ e.g. Bacterial pollution



BACTERIAL POLLUTION: WHY DOES IT MATTER?



❖ *Escherichia coli*

- ❖ Indicator organism for instream pathogenic bacteria

- ❖ Common vector:



- ❖ State established criteria for maximum concentrations in water bodies of designated uses

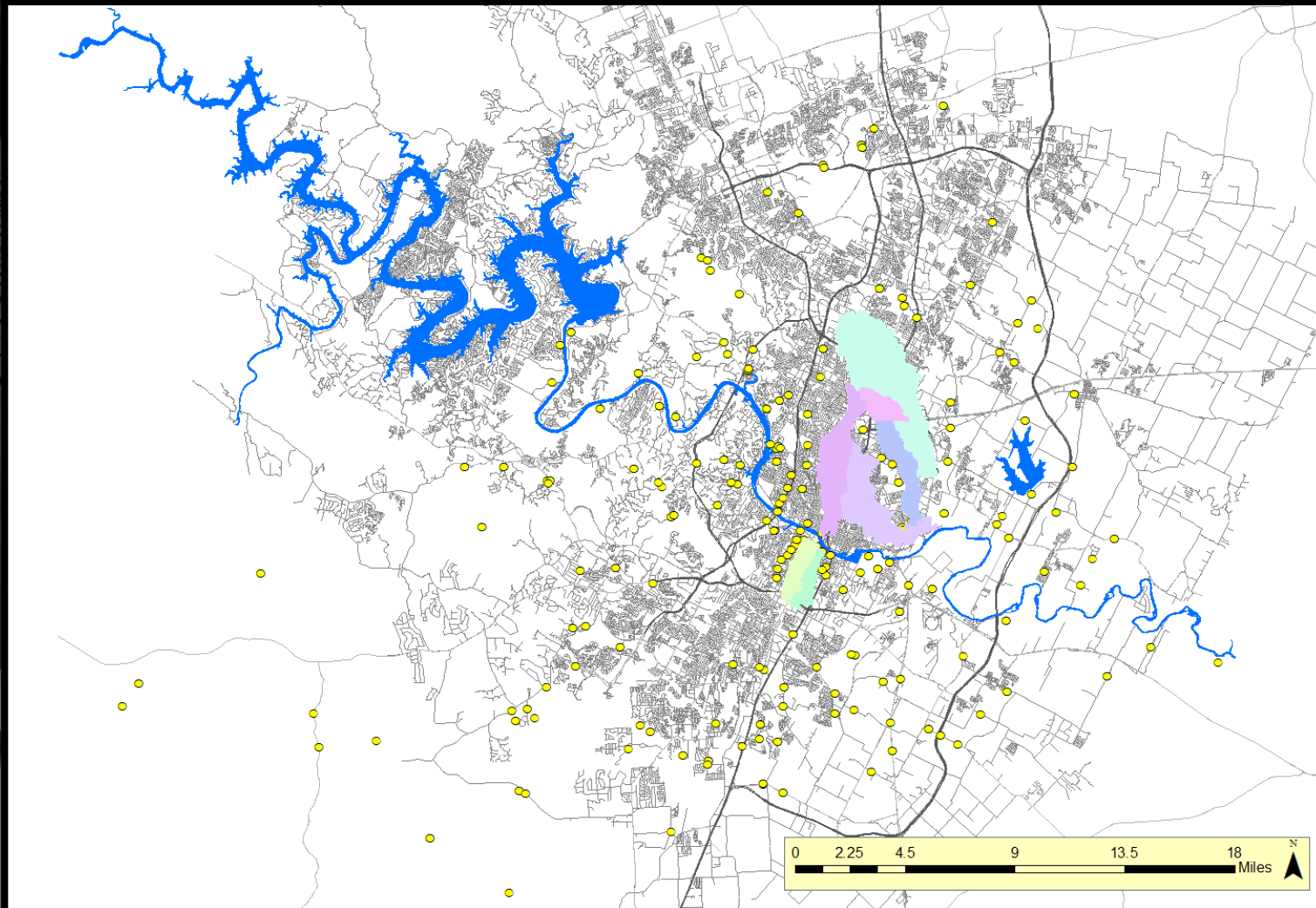
- ❖ Primary contact recreation 1: Single grab sample → 399 col/100 ml (30 TAC 307.7)

- ❖ “Activities that are presumed to involve a significant risk of ingestion of water (e.g. wading by children, swimming, water skiing, diving, tubing, surfing, and the following whitewater activities: kayaking, canoeing, and rafting).”- TCEQ *Recreational Use Attainability Analyses Procedures 2014*

- ❖ Some of Austin’s watersheds have historically high concentrations of *E. coli*

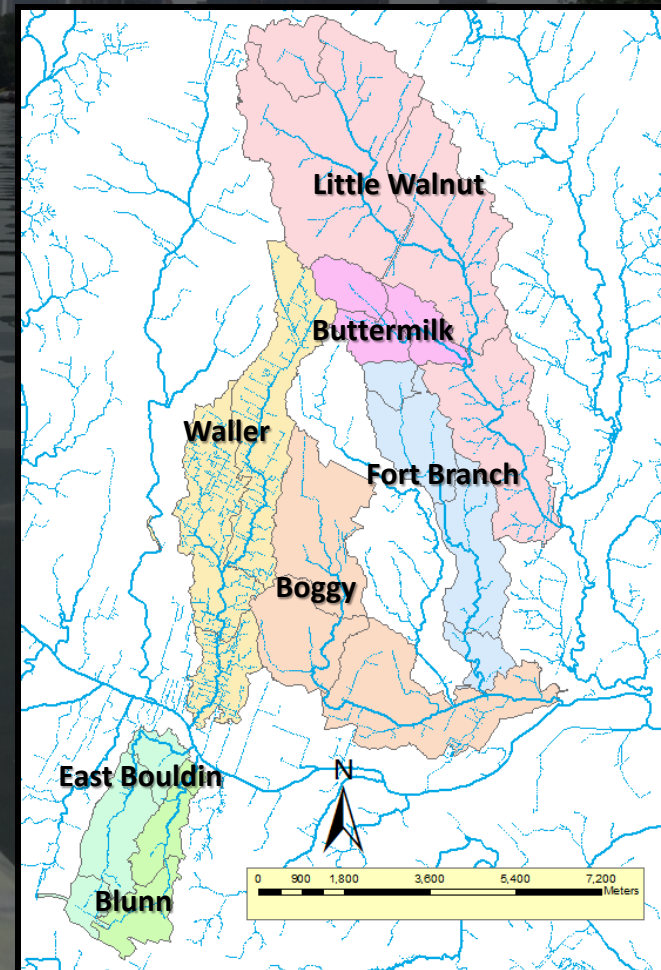
PARENT SITE PRIORITIZATION

- ❖ Analyzed historical *E. coli* dataset of Environmental Integrity Index (EII) sample sites (~162, 1994-2014)



PARENT SITE PRIORITIZATION

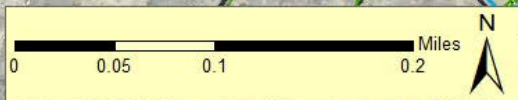
- ❖ Analyzed historical *E. coli* dataset of Environmental Integrity Index (EII) sample sites (~162, 1994-2014)
- ❖ Prioritized historical sample sites using:
 - ❖ Percent exceedance
 - ❖ Geometric mean
 - ❖ Other situational criteria (e.g. headwater segments, recent exceedances...)
- ❖ Chose 7 sites in 7 different creeks



SAMPLE SITE SELECTION

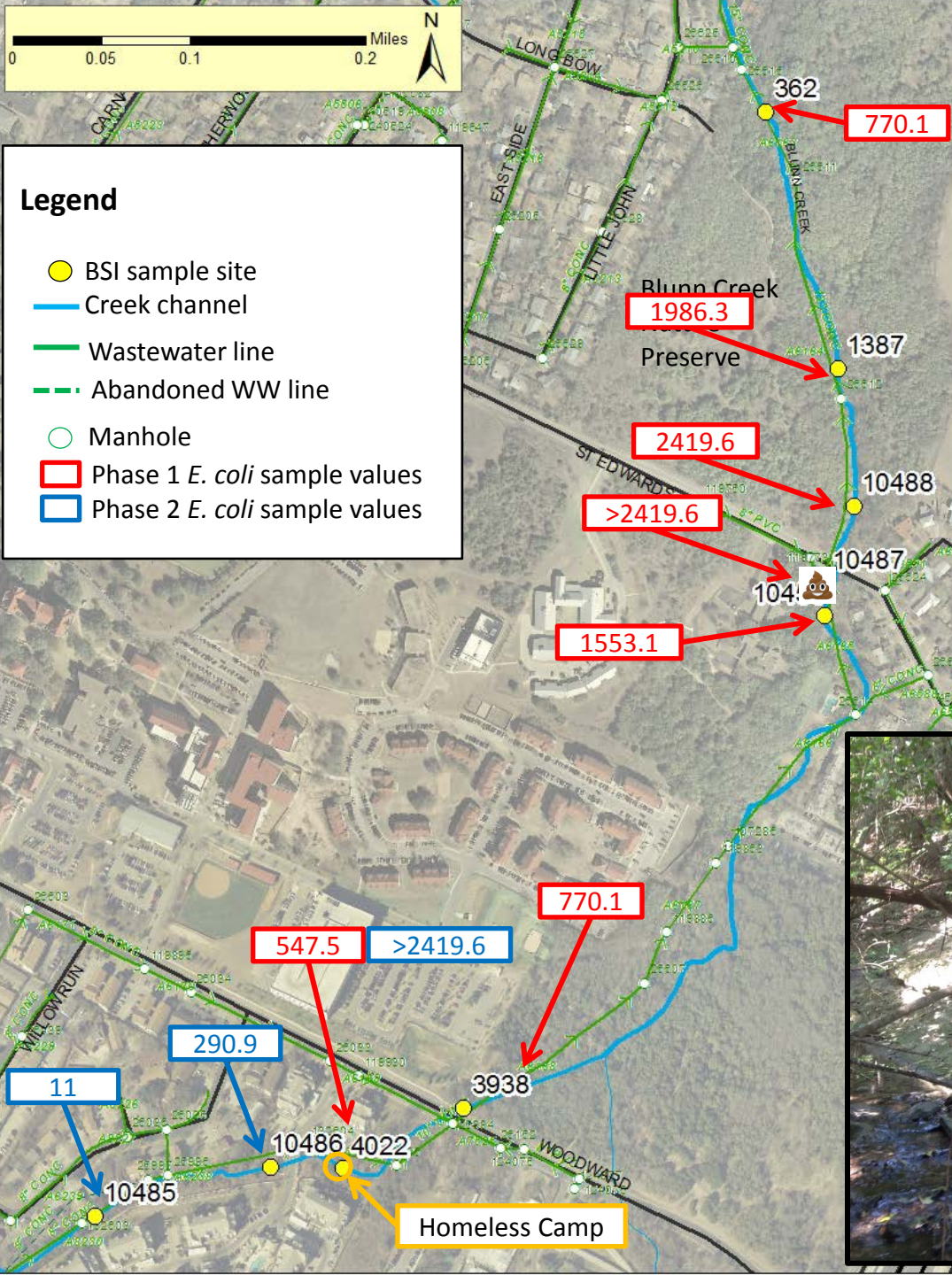
- ❖ Used 7 selected EII sites as parent sites
- ❖ Selected upstream sample sites based on:
 - ❖ Adjacent/intersecting wastewater infrastructure
 - ❖ Stormwater culverts
 - ❖ Tributaries
 - ❖ Homeless camps
 - ❖ Site specific knowledge





Legend

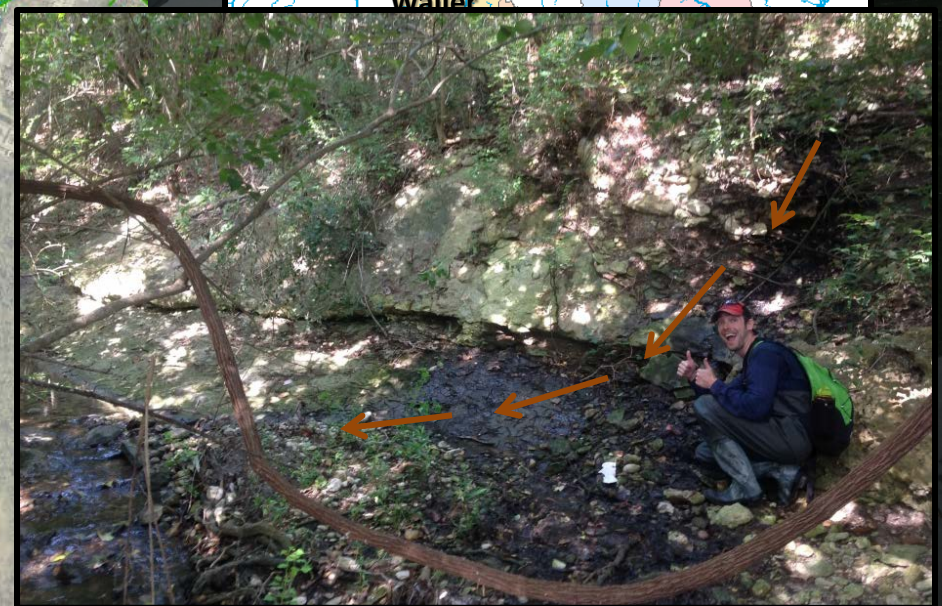
- BSI sample site
- Creek channel
- Wastewater line
- Abandoned WW line
- Manhole
- Phase 1 *E. coli* sample values
- Phase 2 *E. coli* sample values



BLUNN CREEK

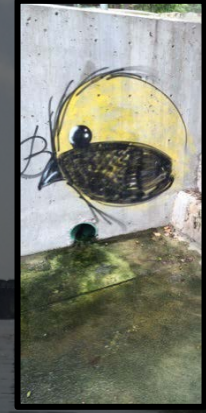


Waller



MOVING FORWARD

❖ Most notable contamination contributors in urban areas:



❖ How do we manage the human element?

- ❖ Education/outreach
- ❖ Public restrooms in hotspot areas

❖ Private wastewater connections

- ❖ Private WW connection audit outreach program targeted towards residents

❖ Continued monitoring and investigation



Questions?

MOVING FORWARD



Approved January 21, 2015

Implementation Plan for Five Total Maximum Daily Loads for Bacteria in Four Austin Streams

Spicewood Tributary to Shoal Creek, Segment 1403J

Assessment Unit 1403J_01

Taylor Slough South, Segment 1403K

Assessment Unit 1403K_01

Walnut Creek, Segment 1428B

Assessment Units 1428B_01, 1428B_02, 1428B_03, 1428B_04 and 1428B_05

Waller Creek, Segment 1429C

Assessment Units 1429C_02 and 1429C_03

Produced by the Improving Austin Streams Coordination Committee in cooperation with the Total Maximum Daily Load Program, Office of Water, Texas Commission on Environmental Quality

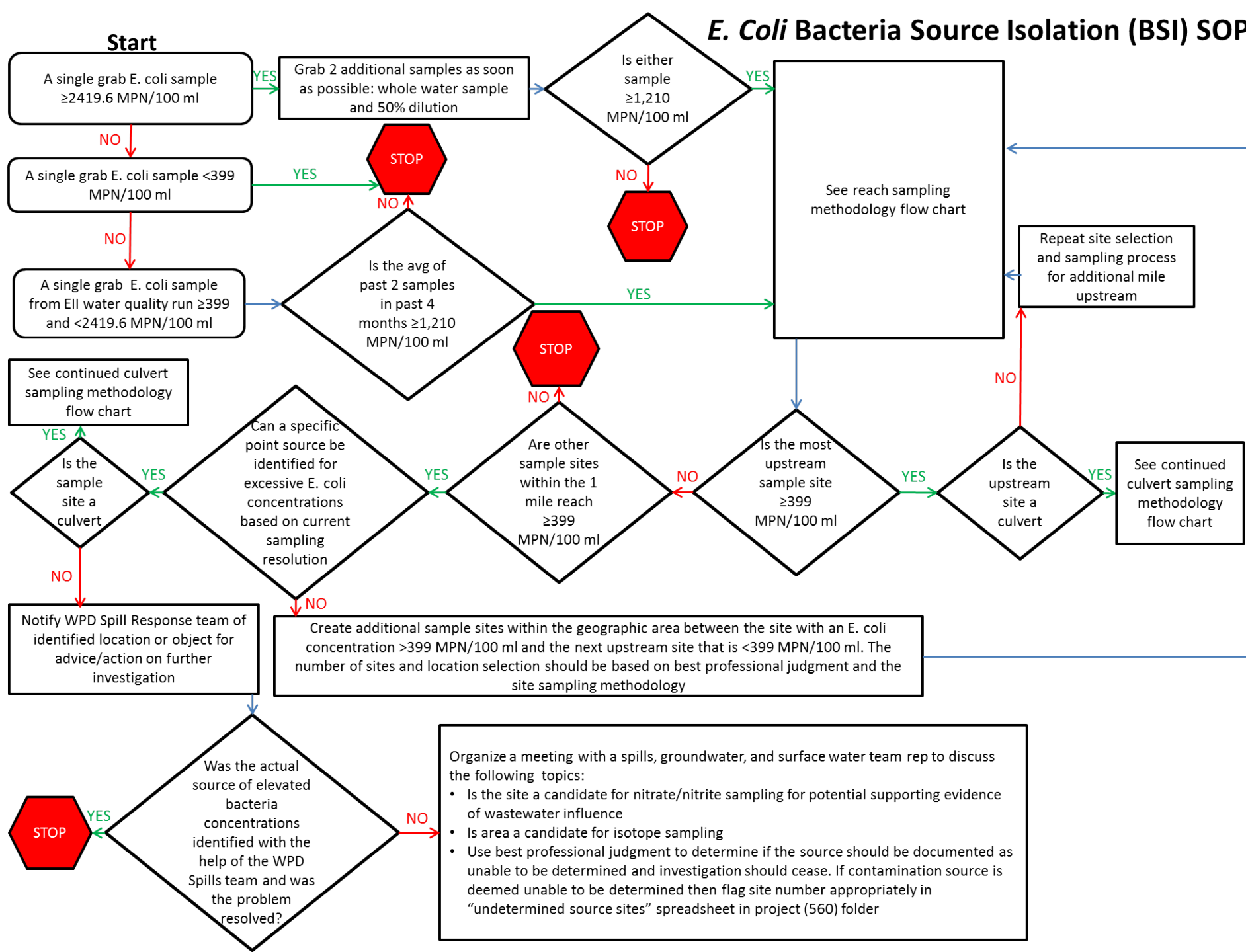
Implementation Plan for Five TMDLs for Bacteria in Four Austin Streams

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E. Coli Bacteria Source Isolation (BSI) SOP

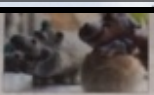
Start



In the public eye

Texas football: What effect Shipley's injury will have on UT

The collectors: Meet a retiree with a vast hippo collection



What rising home prices could mean for Austin's growth

Today: Mostly sunny and breezy 95/75
Friday: Mostly sunny and breezy 95/75
Saturday: A chance of rain 95/75
Sunday: Mostly sunny and hot 95/75
Monday: Mostly sunny and hot 95/75

Austin American-Statesman

Thursday, August 7, 2014

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FEEDING A NEED

NEW DETAILS AUSTIN RAIL PROPOSAL

Rail ballot vague on road money

Austin City Council poised to vote on language authorizing rail bonds, but promising road funds.

By Ben Wear
benwear@statesman.com

The city of Austin in November would ask voters for authorization to issue bonds for \$600 million for light rail, according to ballot language.

up for approval Thursday by the Austin City Council, while only promising additional funding for roads.
Business interests this summer have made it clear that their support for the overall program is contingent on \$400 million in road funding, 40 percent of what the city plans to spend on rail. But instead of including road bonds in the ballot language, city officials would make the rail bonds contingent on finding unspecified sources for road money.
The move follows the view of the Texas attorney general's office that combining roads and rail in one bond issue isn't legal.

In addition, the proposed ballot's open-ended language, which city officials said Wednesday will be tightened, would appear to allow the city to proceed with the rail project even if a hoped-for 50 percent match from the federal government fails to materialize.
Mayor Lee Leffingwell, Rail continued on A7

CONTINUING COVERAGE ENVIRONMENT

The dirty truth: Creeks have too much bacteria



Scientists Stephen Davis and Bobbie Renfro, interns with the Austin Watershed Protection Department, collect water samples from Waller Creek on Wednesday. Officials will host a hearing Thursday evening to brief Austinites on contaminated city waterways. PHOTOS BY LAURA SWEDING / AMERICAN-STATESMAN

City considers new toilets, waste bags to fight E. coli.

By Asher Price
asherprice@statesman.com

City officials blame faulty sewage infrastructure, left-behind dog droppings, wildlife feces and human waste for high levels of harmful bacteria in the waters.

Contaminated watersheds
Area creeks that have exceeded state limits. A10

City and nonprofit officials, will get a public hearing at 7:30 p.m. Thursday.
For years, the streams have



NEW DETAILS DISTRICT ATTORNEY



District Attorney Rosemary Lehmberg is being sued by a prosecutor she fired in June.

Outside attorney hired for county

Wrongful-termination case against Lehmberg spurs high county cost

By Tony Pichetski
tpichetski@statesman.com

Instead of using county staff lawyers, Travis County officials will pay an outside lawyer \$600 an hour to represent the county and District Attorney Rosemary Lehmberg in a wrongful-termination lawsuit brought by a recently fired felony prosecutor.

It is unclear whether the county will cap the fees to attorney Stephen McConnelly. County commissioners voted 3-4 at their regular meeting Tuesday to hire McConnelly from a list of several less costly lawyers compiled by the county attorney's office.

County Judge Sam Biscoe said Wednesday that commissioners chose an outside attorney.

Legal continued on A7

GE: ENVIRONMENT

Creeks

continued from A1

While officials have no overall estimate of costs, the proposed plan hints at how much some of the individual strategies will cost to implement.

Water-free bathrooms recently built in Portland, Ore., for example, cost about \$60,000 apiece and require approximately \$12,000 per unit in annual maintenance, according to the proposal. (Seattle spent \$5 million in 2004 to install automated public toilets; they were removed in 2008 after complaints from citizens that they were dirty and dangerous, according to the proposal plan.)

The city of Austin hasn't chosen a design or cost for the proposed toilets, though the plan indicates it will partner with the private Waller Creek Conservancy to evaluate their feasibility. Currently, there are two public toilets in parks in the

Waller Creek watershed. The proposal also raises the possibility of installing public showers with the toilets "to reduce use of waterways for bathing (thus promoting general stream quality) and also making the toilet facilities more attractive to use and hence reducing E-coli contamination."

A 2012 analysis by Austin's watershed protection division linked the odors in one portion of Waller creek to a homeless encampment. "Strong odors



Scientist Stephen Davis, who is interning with the Austin Watershed Protection Department, collects a water sample Wednesday from a storm drain in North Austin off Metric Boulevard. PHOTOS BY LAURA SWEDING / AMERICAN-STATESMAN

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CONTINUING COVERAGE: ENVIRONMENT



Public restrooms proposed to tamp down fecal matter in streams

By Asher Price - American-Statesman Staff

City officials blame faulty sewage infrastructure, left-behind dog droppings, wildlife feces and human waste for high levels of harmful bacteria in Austin streams.

New public toilets downtown, pet-waste-bag dispensers at all city parks, and more

water infrastructure, domestic pets, urban wildlife, this is always a challenge," Herrington said.
The proposed strategies also get into the nitty-gritty of the homeless issue.

The plan notes, for instance, that Austin does "not currently have educational materials for distribution to the homeless that relates the negative water quality impacts of defecation near creeks."

Waller is one of at least four creeks in violation of state rules: Spicewood Creek in Northwest Austin and Taylor Slough South Creek in West Austin have been on the list since 2002, Waller since 2004 and Walnut Creek in North and East Austin since 2006.

Herrington estimates that half the estimated