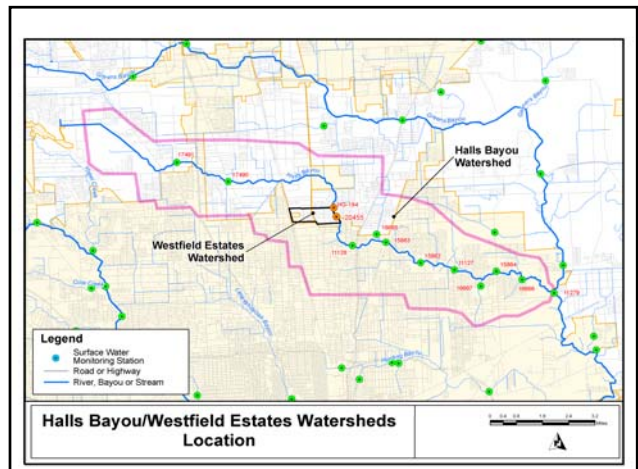


# Westfield Estates Watershed Protection Plan

Todd Running  
Houston-Galveston Area Council

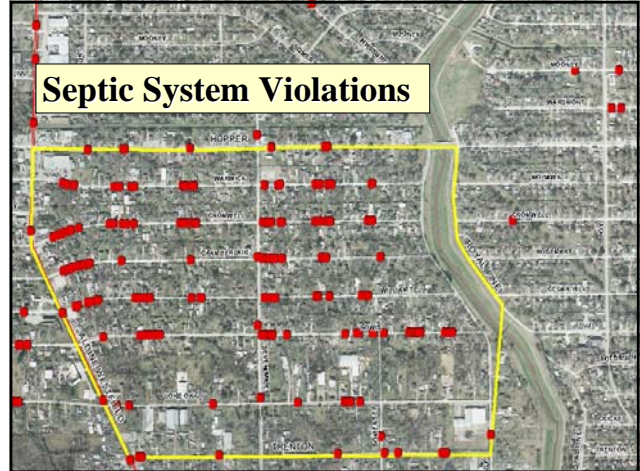
## Purpose

- Raise watershed stakeholder awareness on water quality issues
- Develop a plan to address all issues
- Identify and prioritize options
- Obtain consensus and commitment on how to manage issues
- Implementation of BMPs



## Westfield Estates Watershed

- Homes built in 1950s
- Homes all have on-site sewage systems
- Small lots, many have been subdivided with multiple residences
- Low Income
- Adjacent to Halls Bayou
- Black water standing in some ditches year round
- High population of dogs and chickens that roam freely





## Bacteria Levels Above State Standard For Contact Recreation

### Three Sampling Events

- Community - 12 of 22 ditch locations
- Halls Bayou - 3 of 5 locations
- No detectible *E. coli* at the wastewater treatment plant outfall on three occasions

## Bacterial Sources - Westfield Estates

- |           |      |
|-----------|------|
| ■ Human   | 19 % |
| ■ Dog     | 35 % |
| ■ Chicken | 11 % |
| ■ Unknown | 35 % |

## Current Plan Status

- Budget - \$1.2 million
- EPA 319(h) grant - \$750,000 (2009-2011)
- Contract is in signature process
- Draft WPP complete & comments received from TCEQ
- QAPP bacteria studies draft complete & comments received from TCEQ
- Stakeholders moving forward
  - ◆ Field study: 700 homes need inspection
  - ◆ Design phase & prioritization: 100 to 150 homes
  - ◆ Monitoring bacteria levels and sources

## Implementation

- Structural controls
  - ◆ OSSF installation/repair
- Non-structural controls
  - ◆ BMPs OSSFs
  - ◆ OSSF maintenance agreement
  - ◆ BMPs Dogs and Chickens
  - ◆ Public Education Outreach

## Westfield WPP Partners

- Harris County Precinct 2 –
  - Commissioner Sylvia Garcia & Staff
- Harris County PID
- East Aldine Management District
- Sunbelt FWSD
- Galveston Bay Estuary Program
- Texas A & M University at Galveston
- H-GAC Clean Rivers Program

## Keys to Successful Plans

- Stakeholder input
- Concerns balanced
- Consensus
- Policy, politics, and capital
- Water quality issues addressed
- Evaluation
- Continuity

## *E. coli* Levels Exceeding State Standard for Contact Recreation

- Variation
  - ◆ Weather conditions – Wet not always highest
  - ◆ Ambient Temperature – Cooler temperature higher
- *E. coli* may not exceed State criteria every sampling event
- Quantity bacteria varies at each site with different sampling event
- **Multiple sampling events needed to establish true picture of bacterial contamination at a single location**

## What is the Source of Bacteria?

- Human
- Dog
- Chicken
- Other Non-human

## Conclusions - Part I

- *E. coli* above State criteria at 12 of 22 locations septic system community
- *E. coli* in Halls Bayou at 3 of 5 sites
- Overall pattern of Enterococcus source
  - Human (19%)
  - Dog (35%)
  - Chicken (11%)
  - Unknown bacterial contamination (35%)

## Conclusions - Part II Biolog Microarray

- Flexible BST: identify bacteria from numerous sources local watershed
- Comparison of community and affected waterway under a variety of conditions
- Automated, inexpensive, quick
  - \$3,000 per species library
  - \$22,000 (30 sites x 3 events + 3 species library)
  - Four - Five months



# Sampling Locations

