

Fairview Beach Watershed Plan Final Public Meeting

May Sligh

Virginia Department of Environmental Quality

July 23, 2014

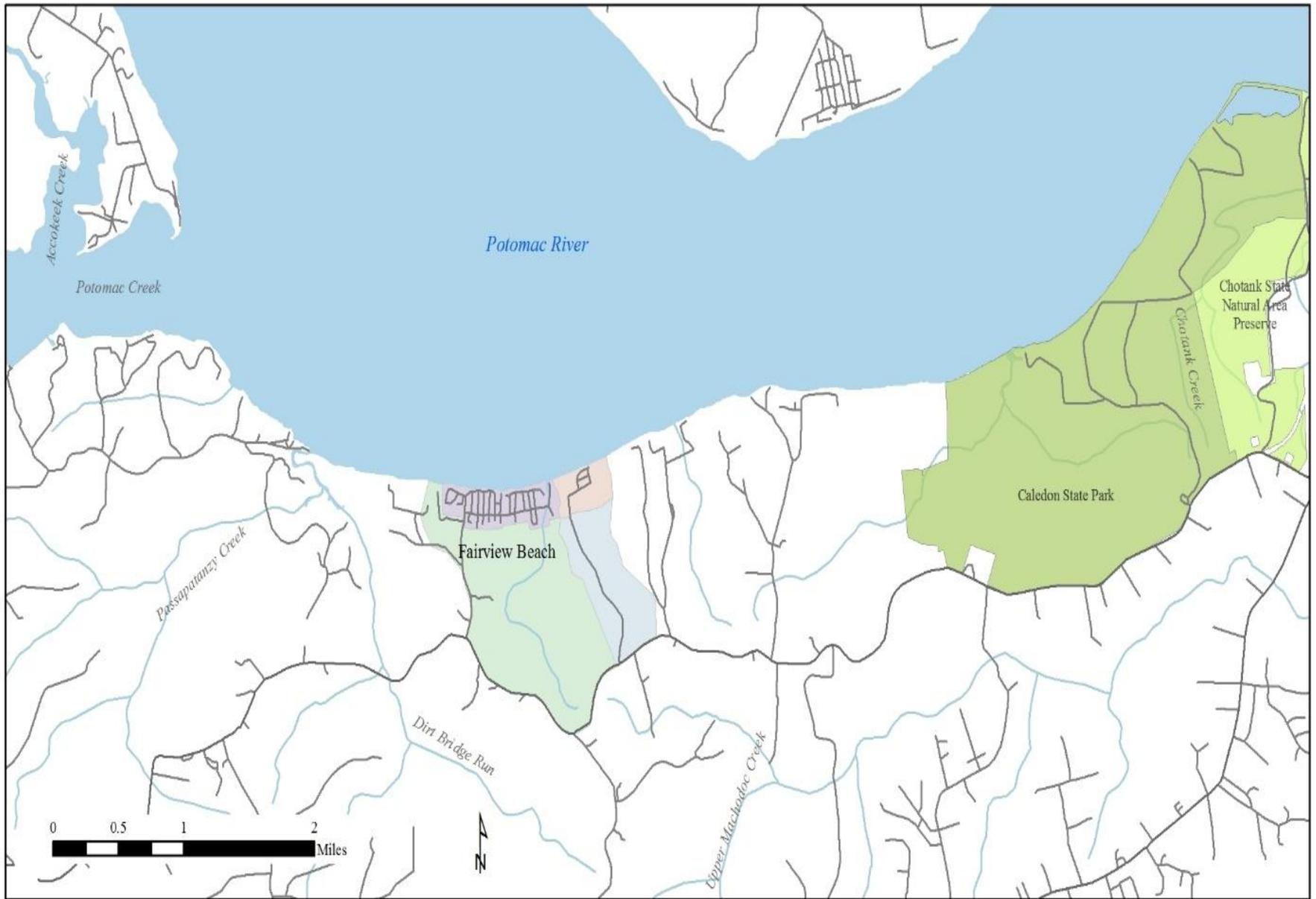


Acknowledgements

Steering Committee Members Working Group Members

Tri County City Soil and Water Conservation District
King George County Government
King George Service Authority
L. E. Smoot Memorial Library
VA Department of Conservation and Recreation
VA Department of Environmental Quality
VA Department of Health
George Washington Regional Commission
Virginia Tech
Fairview Beach Residents Association
Interstate Commission on the Potomac River Basin

Thanks for all of your help!

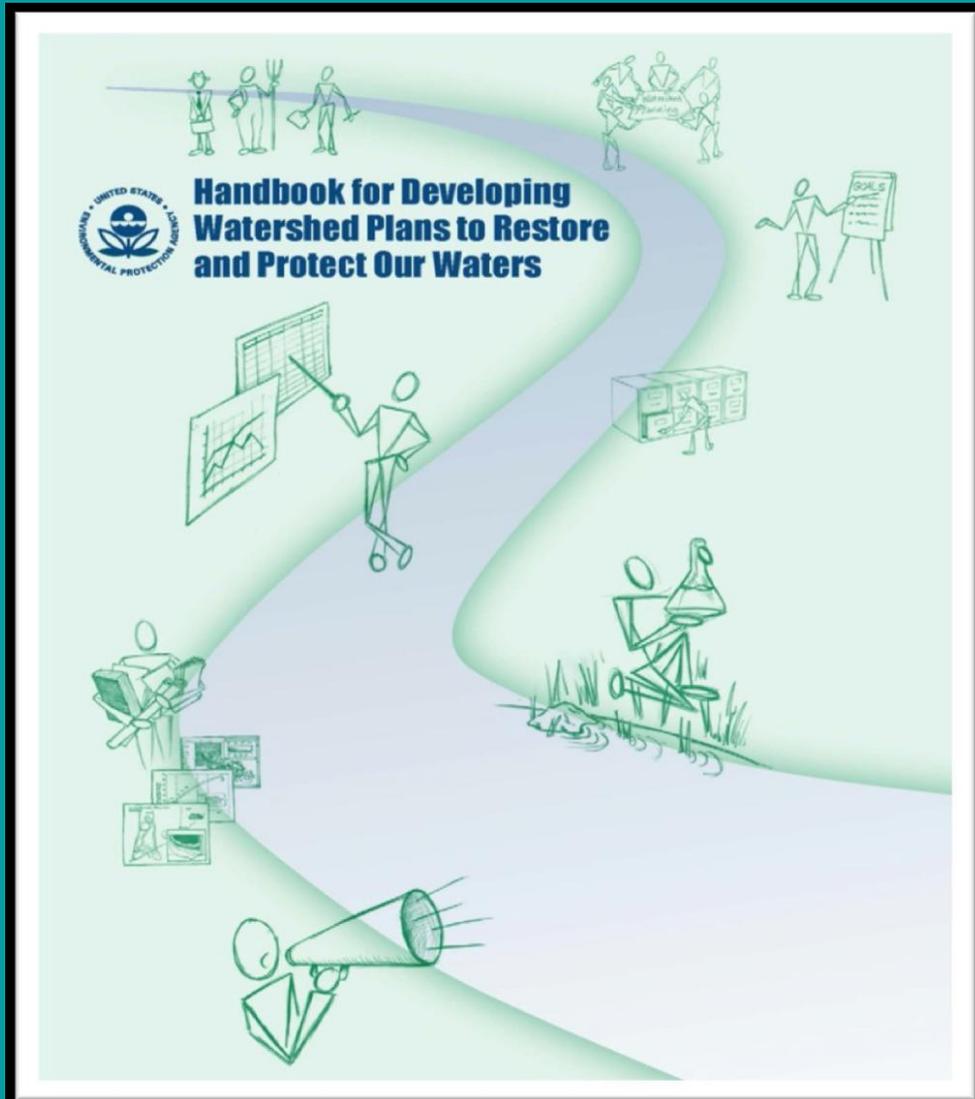


Watershed Plan Overview

Goals:

- Restore and protect water quality
- Address both point and non-point sources
- Scientifically defensible plan
- Watershed Plans can be completed without a TMDL

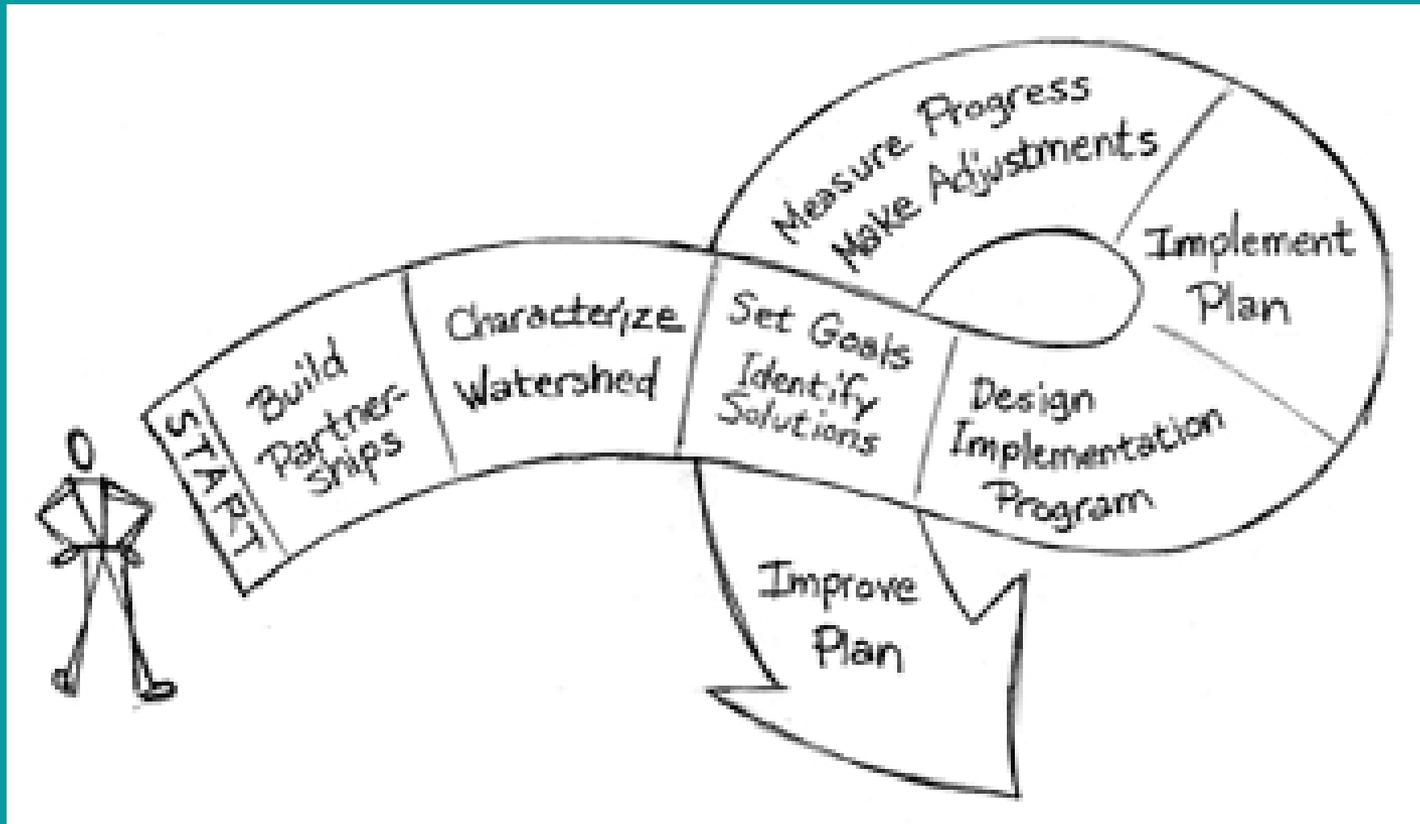
Watershed Plan Overview



- EPA released a manual in 2008
- Outlines 6 steps
- 9 important elements
- References, checklists, worksheets and planning guides

Watershed Planning

Outlines 6 Steps in Watershed Planning and Implementation Process



Watershed Plans

The 9 elements, with reference to draft watershed plan chapters:

1. Identify causes & sources of pollution (Ch. 4)
2. Determine load reductions needed (Ch. 5)
3. Develop management measures to achieve goals (Ch. 5)
4. Identify technical and financial assistance to implement plan (Ch. 5)
5. Develop information/education component (Ch. 3)
6. Develop implementation schedule (Ch. 6)
7. Develop interim milestones to track implementation of management measures (Ch. 8)
8. Develop criteria to measure progress towards meeting watershed goals (Ch. 10)
9. Develop monitoring component (Ch. 11)

Public Participation

- **Public Meetings**
 - Informational
 - Solicit public participation
 - Provide a forum for public comment
- **Steering Committee**
 - Direct the overall process
 - Considers input from Working Groups
 - May help prepare and review document
- **Working Groups**
 - Address “community” issues for Fairview Beach/concerns on specific topics



While there is already good work underway in the area, this plan provides a road map to direct efforts that improve impaired waters

Public Participation



How Citizens Have Helped During this Process

- Provide additional detail on watershed, including detailed observations of stormwater runoff and citizen water quality monitoring
- Identify potential implementation impediments
- Identify local funding sources/partnerships
- Commitment to assist with implementation projects, especially education programs (ie. Pet waste)
- Provide technical reviews of the draft watershed plan
- Provide review of presentation materials for final public meeting



Fairview Beach Watershed Plan Meetings

- Public/Community WG Meetings February 20th
- Government WG Meeting May 6th
- Community WG Meeting May 15th
- Steering Committee Meeting July 10th
- Developed load reduction spreadsheet: measures, units, % efficiencies, implementation locations, notes from meetings, costs
- Developed spreadsheets to gather specific local information, including additional local programs to enhance implementation, agency responsibilities, technical resources, etc
- Reviewed draft document and presentation and provided specific recommendations to project team

What is included in the Watershed Plan for Fairview Beach?

- Review of Fairview Beach studies
- Source Assessment/Implementation Actions & their estimated fecal coliform reduction benefits
- Cost & Benefits
- Measurable Goals and Milestones
- Stakeholder's Roles
- Potential Funding Sources
- Public Participation
- Water Quality Monitoring

Why we are concerned about bacteria in our waterways – understanding the health risks:

- Enterococci are bacteria that indicate the presence of fecal contamination, and therefore the presence of pathogens with a potential to cause waterborne illness
- Pathogens include: types of bacteria (*Shigella*, *Salmonella*), viruses (rotaviruses, norovirus), protozoan parasites (*Cryptosporidium*, *Giardia*), and other micro-organisms
- Illnesses may be gastrointestinal, but contact with contaminated water may also cause upper respiratory infections, wound infections and skin irritation
- Young children, the elderly, and those with weakened immune systems are particularly at risk



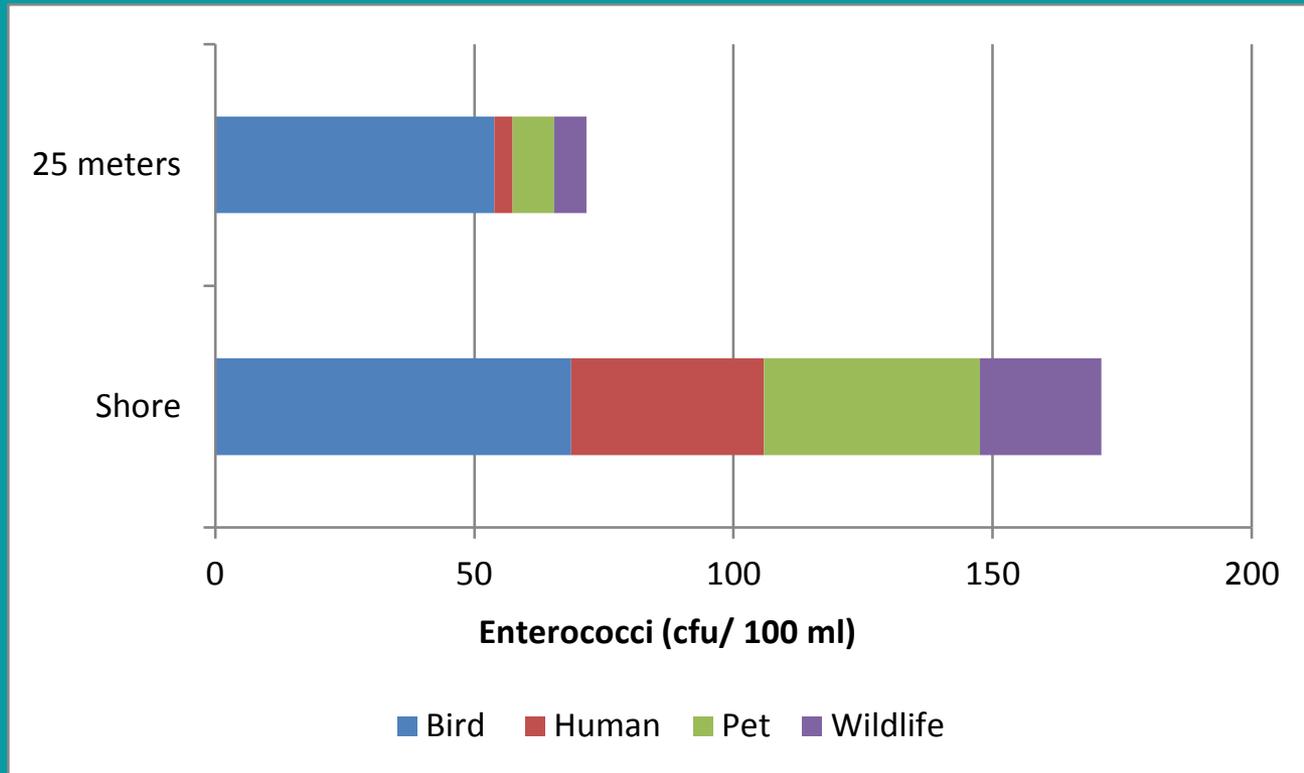
Fairview Beach Monitoring Programs

<p>Virginia Department of Health</p>	<p>Enterococci</p>	<ul style="list-style-type: none"> • Sample weekly May (Memorial Day) through September since 2004 • Swimming advisory issued if the arithmetic average Enterococci count exceeds the assessment threshold of 104 cfu/100 ml
<p>Virginia Tech</p>	<ul style="list-style-type: none"> • Enterococci • Microbial Source Tracking • Optical Brighteners 	<p>Targeted bacteria monitoring to identify sources:</p> <ul style="list-style-type: none"> • “hot spots” • Potomac River • boating events and marina • Caledon State Park
<p>Fairview Beach Residents Association</p>	<p>E. Coli (Coliscan kits)</p>	<ul style="list-style-type: none"> • Stormwater vs. dry conditions • Rough conditions vs. calm conditions • Drain pipes near Pavilion Drive

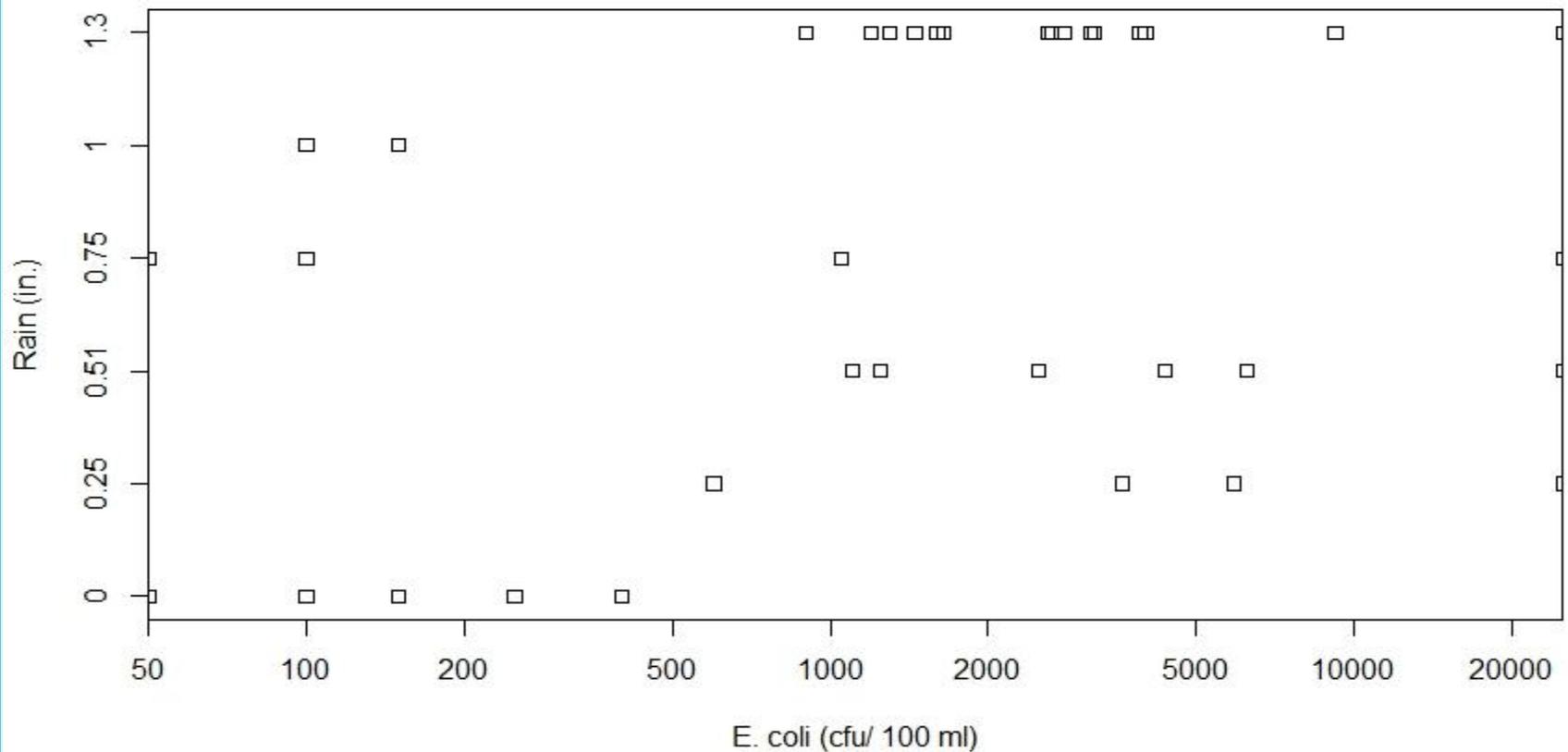
Swimming Advisories at Fairview Beach (VDH)

Year	Number of Advisories	Days Under Advisory
2004	4	13
2005	2	8
2006	3	33
2007	6	32
2008	5	24
2009	5	16
2010	4	18
2011	4	22
2012	5	10
2013	2	5
Average	4.0	18.1

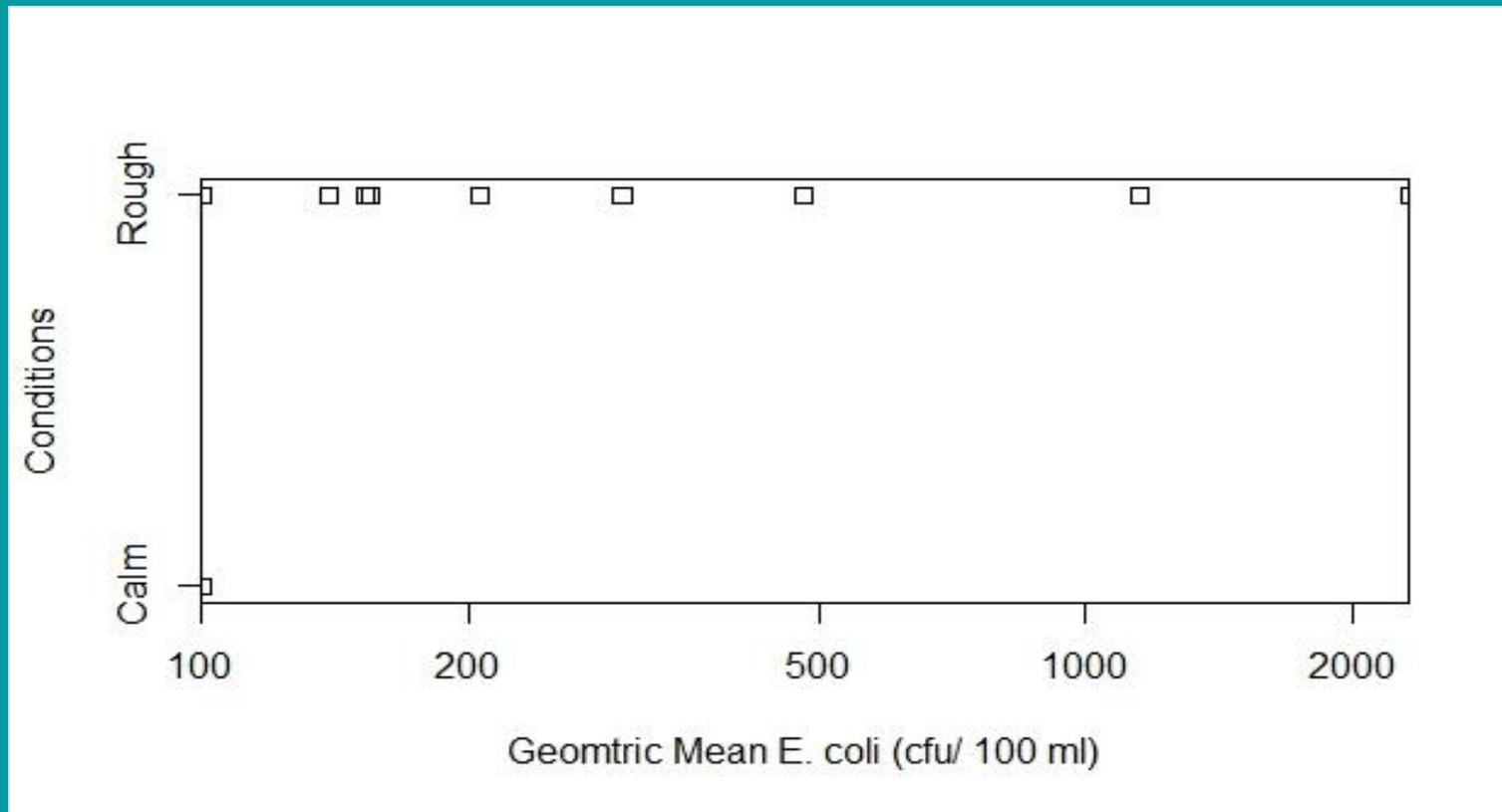
Average bacteria concentrations are higher near shore than 25 meters out (VT)



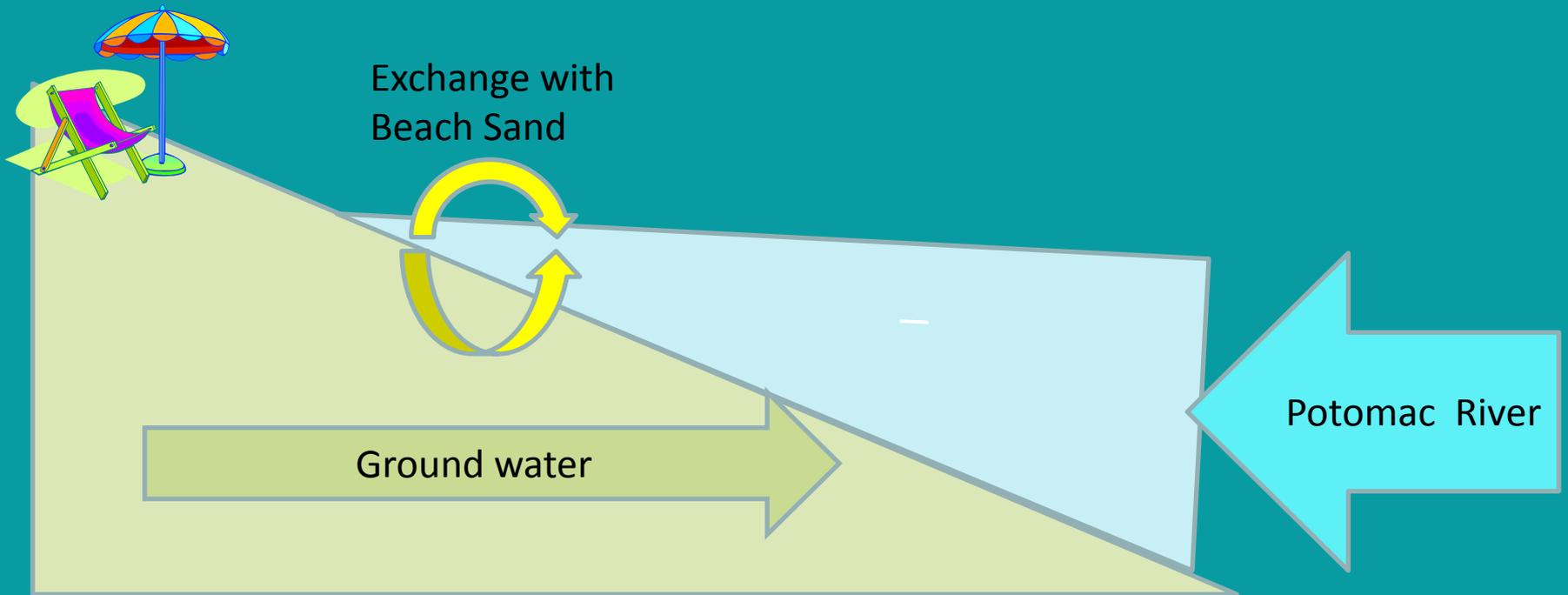
Bacteria concentrations in storm flow higher than dry weather flow (FBRA)



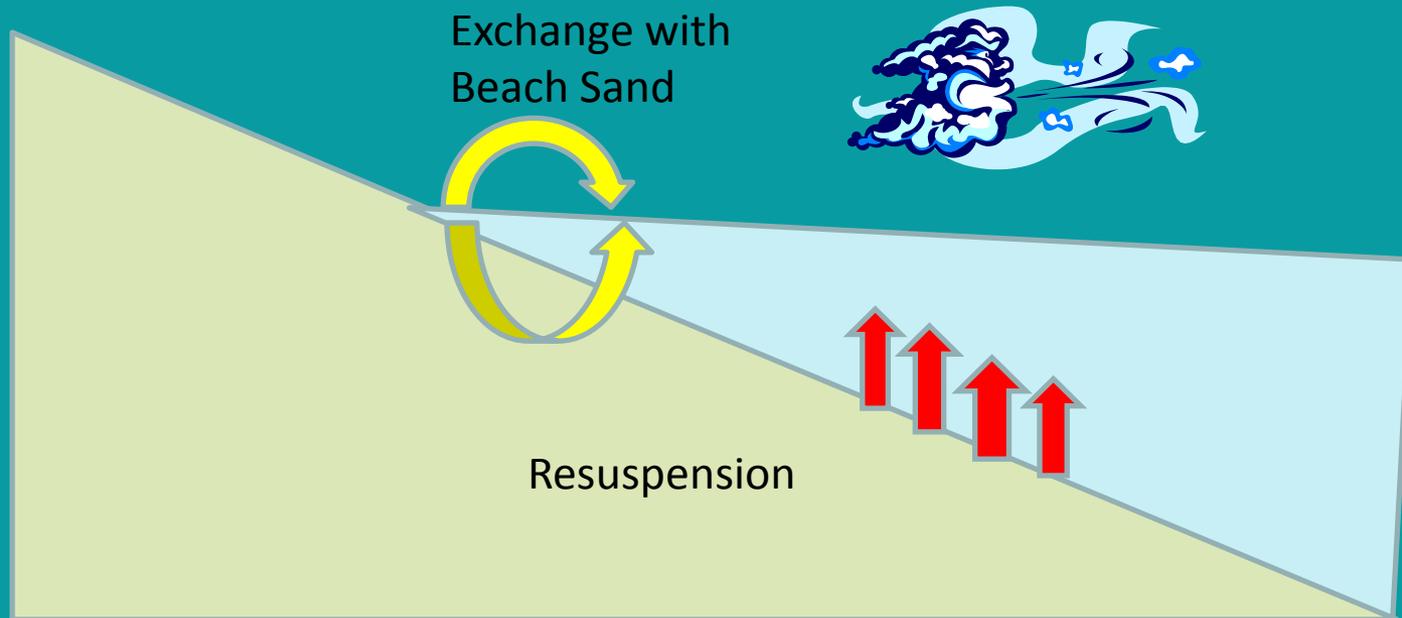
Bacteria concentrations are higher under rough conditions than calm conditions (FBRA)



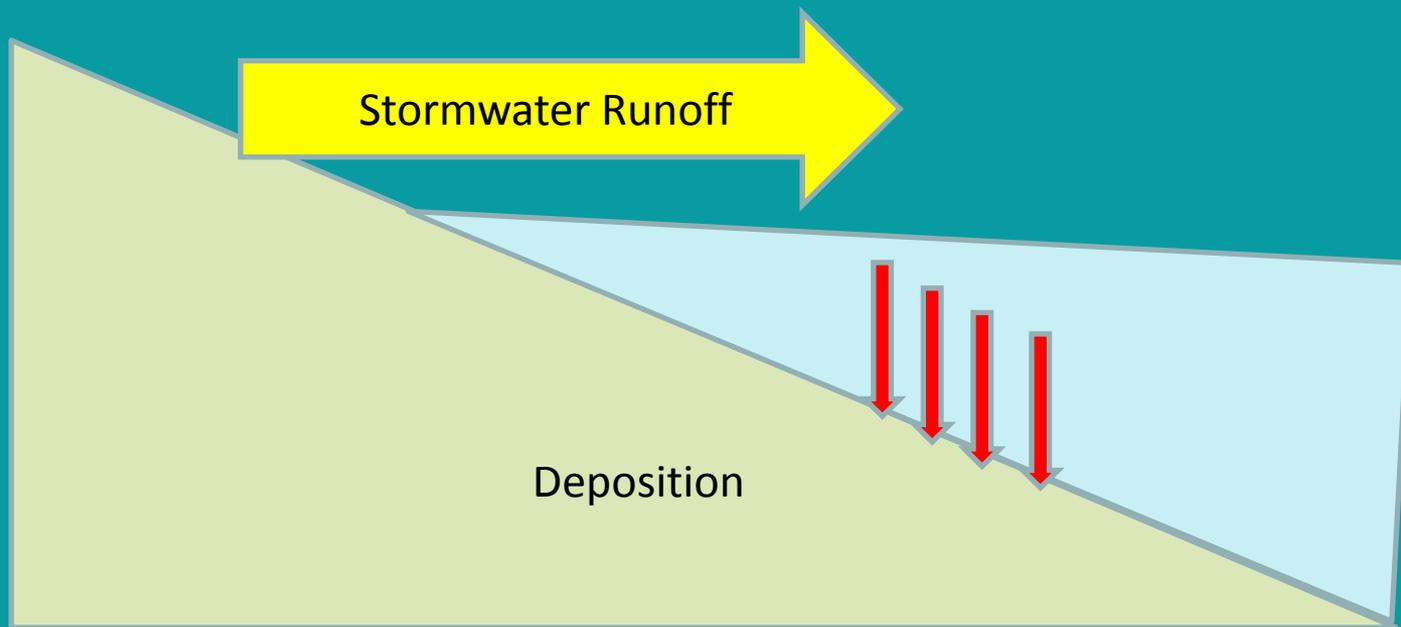
Calm Conditions



Rough Conditions



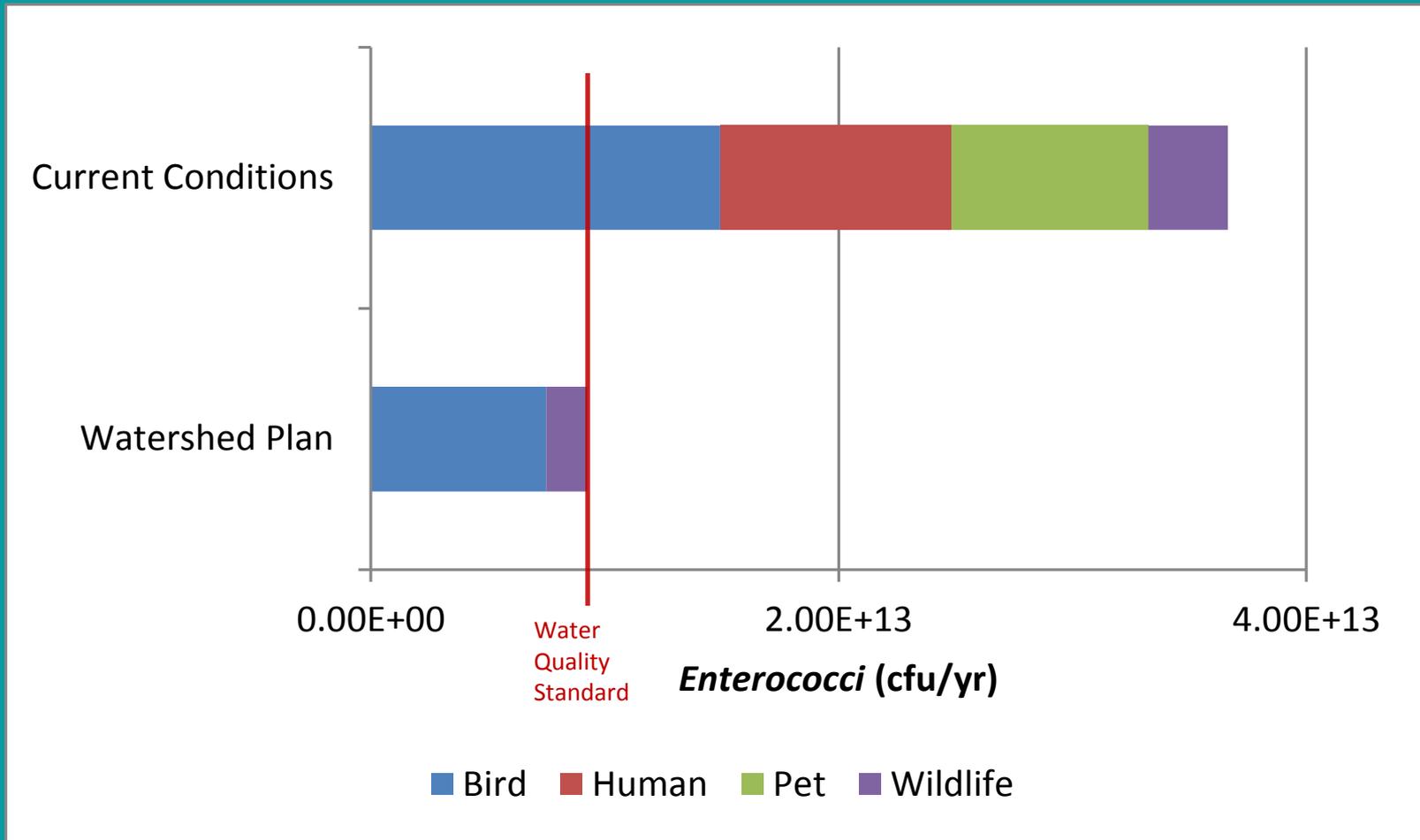
Precipitation



Target Watershed Plan Reductions

Transport Path	Bird	Human	Pet	Wildlife	Total
Surface	50%	100%	100%	50%	75%
Subsurface	0%	100%	100%	0%	42%
Total	50%	100%	100%	48%	75%

Watershed Plan Reductions by Source



Watershed, or Clean-Up Plan Strategy

Focus on human controlled actions:

Removing straight pipes

Repairing / replacing failing septic systems

Correcting sewer infrastructure problems

Managing pet waste



I need a little help here!



Straight Pipe



Failed Septic System

Potential Control Measures

Pet Waste and Stormwater BMPs



Educational Sign



Pervious Pavers



Rain Garden



Vegetative Buffer

Potential Control Measures

On-site Sewage Disposal Systems



Septic System Pump-out



Septic System Replacement



Septic System Repair



Alternative On-site Sewage Disposal System



Control Measure Quantification

- Spatial analysis (e.g., GIS, Google)
- Literature search for BMP efficiencies
- SWCD, VDH, & DEQ records
- Fairview Beach studies
- Input from Working Groups and Steering Committee on local conditions
- Testing sewer infrastructure: smoke, camera, etc. (still needed for specific properties)
- Calculation for reductions needed:

BMP reduction efficiency X area treated X loading rate for that area = Estimated Reductions



Infrastructure

Improve Sewer System by finding and fixing leaking laterals using dye/smoke testing

Improve Septic Systems in Trailer Park. Dye test septic systems to determine which ones are failing

Ensure that boat pump-out station at marina is maintained in working order

Contract Boat that collects waste from other boats during high traffic times

Pump & close old/unused septic tanks (RB-2, only w/concurrent sewer connection)

Hook up remaining septic users to sewer system (RB-2)

Address flooding drain fields

Repair workable septic systems (RB-3)

Septic tank pump-out (RB-1)

Repair septic systems with alternative systems (RB-5)

Pet Waste

Pet Waste Stations

Pet waste pick-up (volunteer or service)



Runoff Reduction

Install Rain barrels

Replace paved areas with porous pavement or permeable pavers

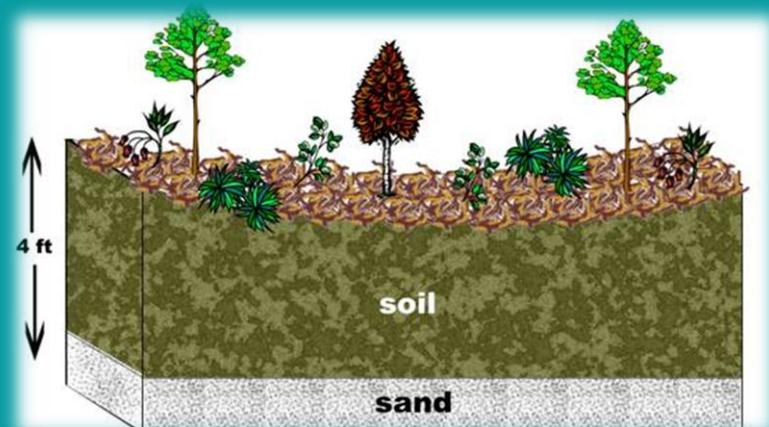
Evaluate redevelopment opportunities in the trailer park area

Install Rain Gardens

Redirect downspouts onto grassy areas

Encourage low impact development techniques

Install vegetative buffers or turf to trees



Education Programs

Participate in Virginia Clean Marina Program

Send mailings to trailer park owner to determine where problems exist

Develop general education program

Develop a proper septic maintenance education program, including educational materials, technical advice

Distribute leash bag holders for pet owners

Provide information for recreational boater education programs

Encourage more inspections of boats by the Coast Guard Auxiliary

Provide a feral cat population control education program

Create new ordinance that requires records of old septic systems during property transfer or hook-up of system to sewer

Beach

Repair bulkheads and enhance with vegetation

Increase width of beach by 10 – 15 yards

Wildlife Management

Discourage birds from visiting the beach



Monitoring

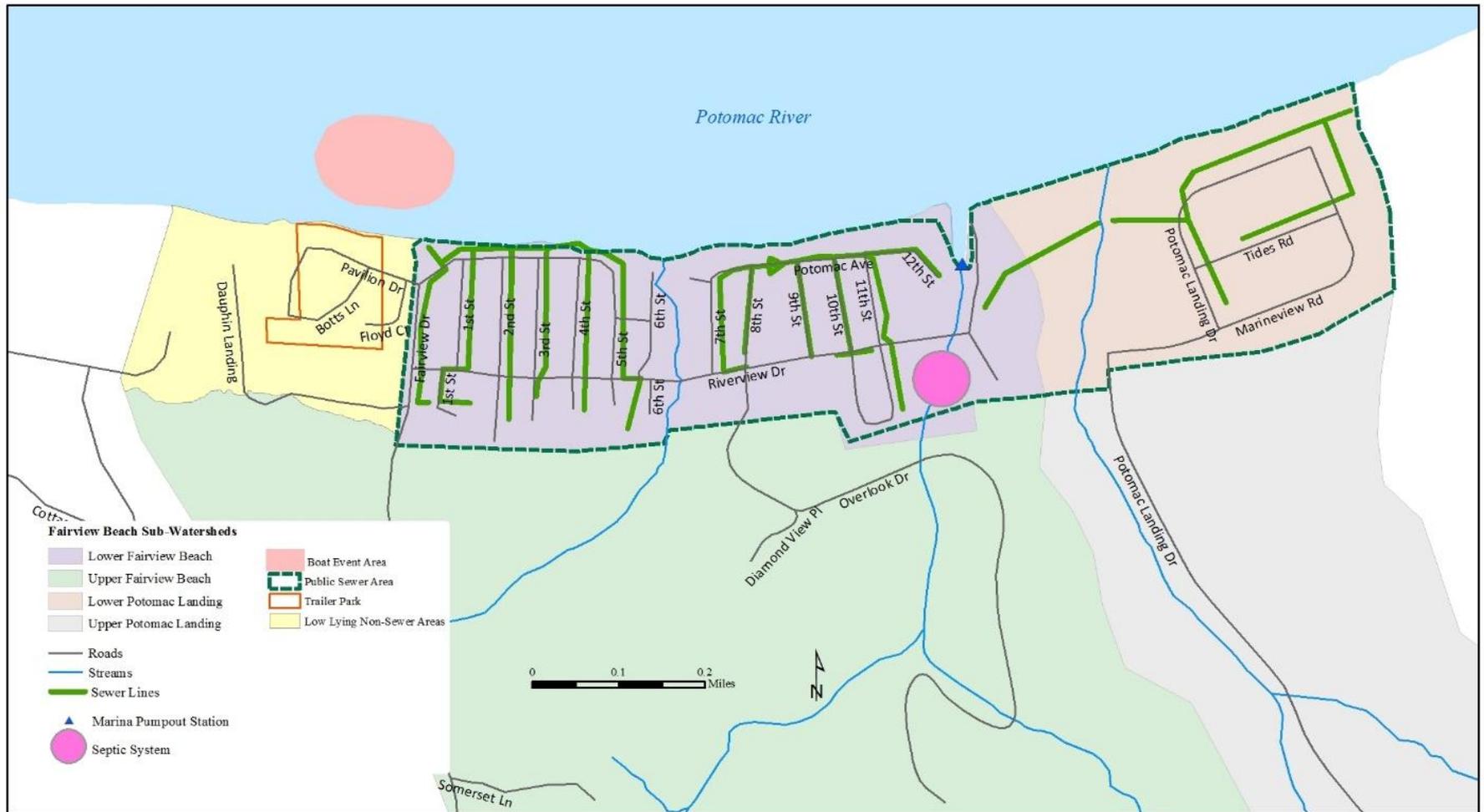
Continue VDH monitoring and if necessary posting of swimming advisories

Conduct pre-post BMP monitoring for installed BMPs

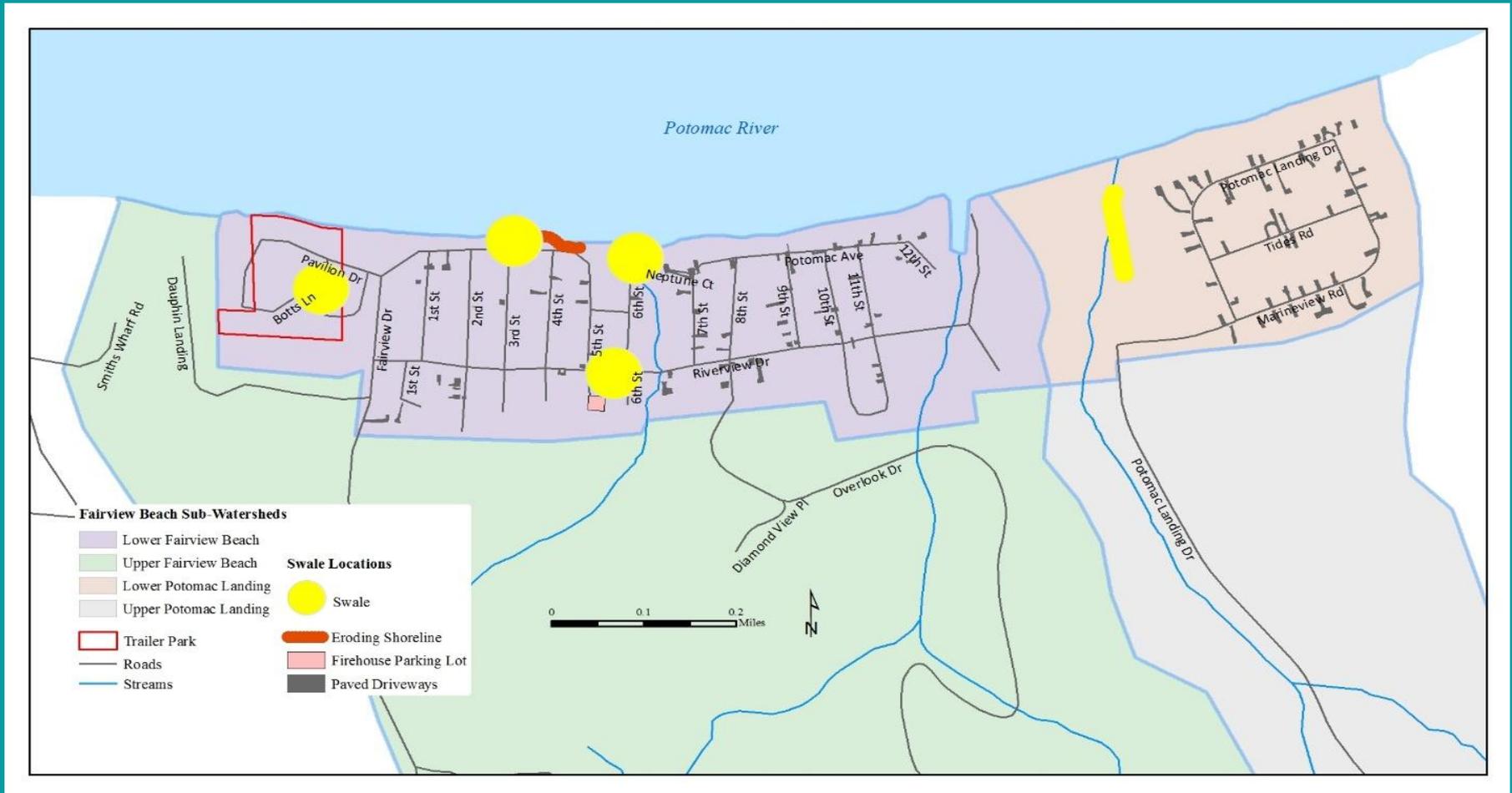
Continue to conduct hot-spot monitoring by citizen monitors



Potential location of BMPs to control human sources



Potential location of BMPs to control stormwater



Implementation Costs

- Control Measure Cost
 - Number of units multiplied by unit cost
- Technical Assistance (TA) Cost
 - Full time equivalents multiplied by unit cost
- Total Cost = Control Measure Cost + TA Cost

Costs of Implementation

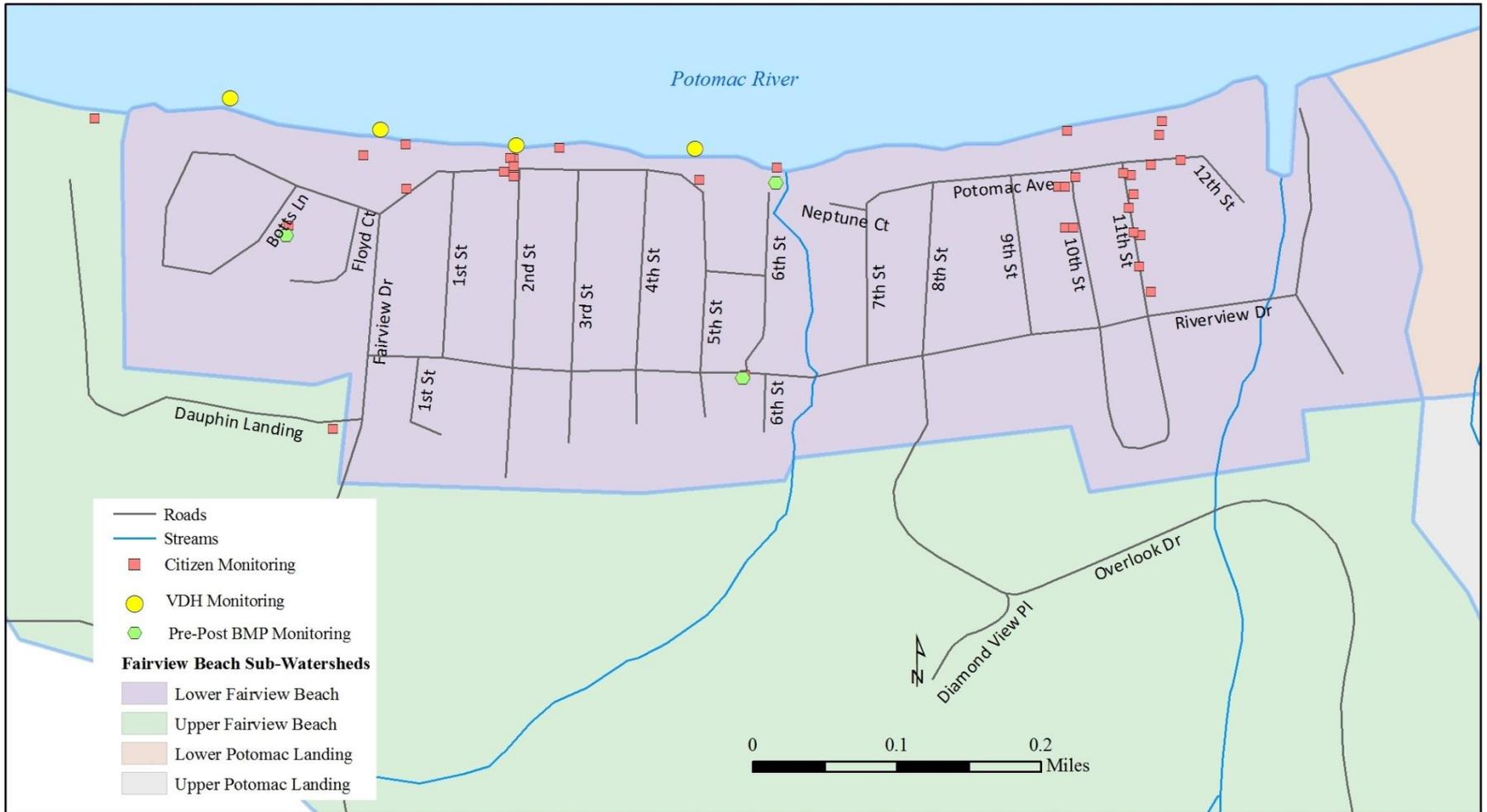
Total Phase 1 (years 1-5) implementation cost estimates:
\$908,884

Additional Phase 2 (years 6-10) implementation could be considered in order to fully implement load reductions:
\$266,342

**Before beginning Phase 2, the steering committee will evaluate program/partner success and target further efforts.
Agencies and localities will track BMP installations during both phases**

Total cost for implementation of this watershed plan:
\$1,175,227

Monitoring Locations



Funding Sources

- Water Quality Improvement Fund
- EPA 319 Funds
- US Army Corps of Engineers
- State Revolving Loan Funds
- VA Small Business Environmental Assistance Loan
- Community Development Block Grant
- Virginia Environmental Endowment
- National Fish and Wildlife Foundation
- SE Rural Community Assistance Project
- VDOF Trees for Clean Water Program
- Community Foundation of the Rappahannock River Region



Comments are due August 25, 2014

see the following link to review the document:

<http://www.deq.virginia.gov/Programs/Water/WaterQualityInformationTMDLs/TMDL/TMDLImplementation/TMDLImplementationProgress.aspx>

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