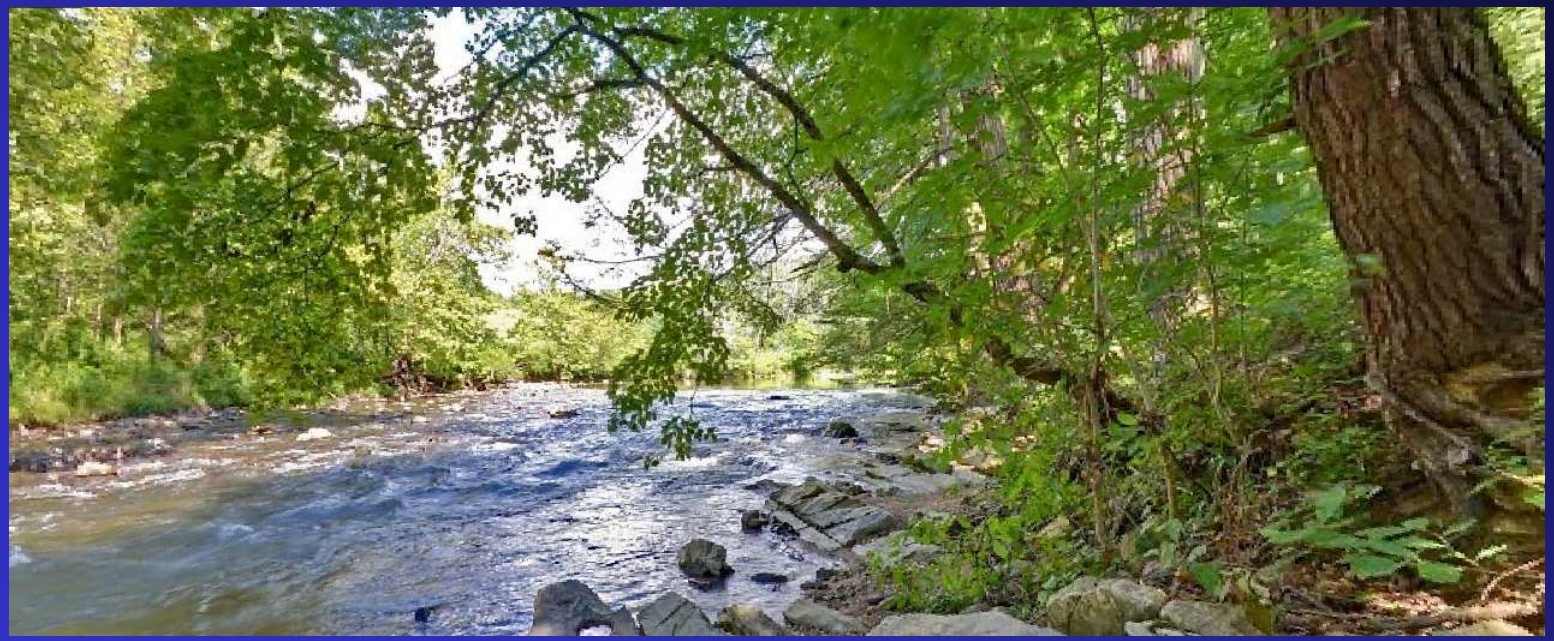
South Fork Holston River Watershed Total Maximum Load (TMDL) Final Public Meeting



Smyth and Washington Co., VA
August 27, 2015

Why Are We Here?

To discuss bacteria TMDLs for the South Fork Holston watershed

A TMDL is the maximum amount of a pollutant a water body can receive and still meet water quality standards;

a "Pollution Diet"

Total Maximum Daily Load (TMDL) Equation

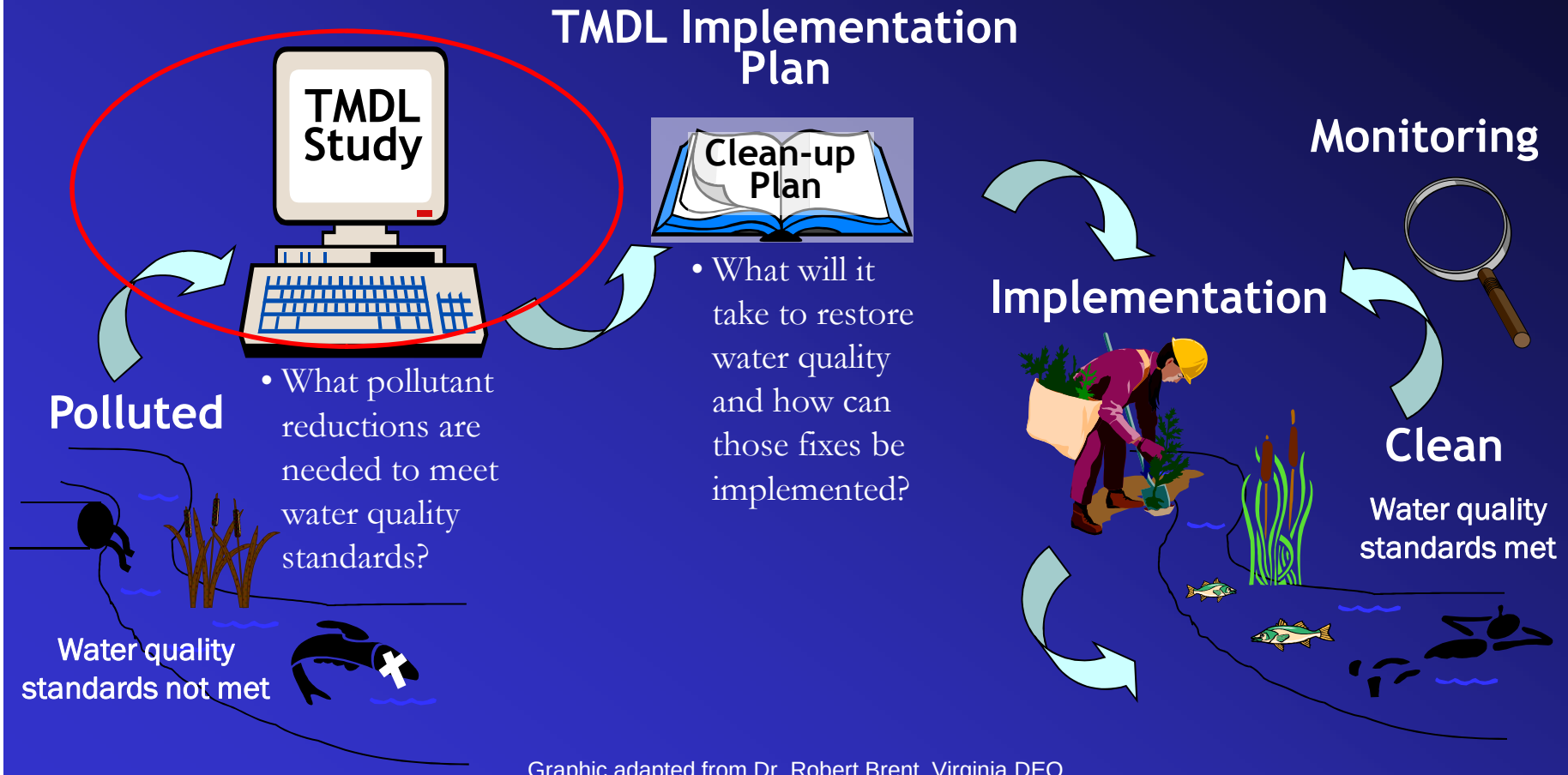
TMDL = Sum of WLA + Sum of LA + MOS

Where:

TMDL = Total Maximum Daily Load
WLA = Waste Load Allocation (point sources - permitted)
LA = Load Allocation (nonpoint sources)
MOS = Margin of Safety

A TMDL is the maximum amount of a pollutant a water body can receive and still meet water quality standards.

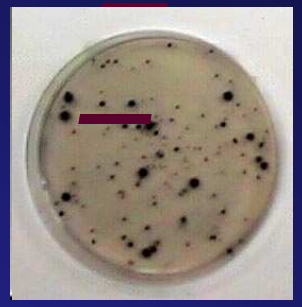
Overview of TMDL Process



Graphic adapted from Dr. Robert Brent, Virginia DEQ

Bacteria Impairment

- What are Fecal Bacteria?
  - Bacteria associated with feces from warm blooded animals (fecal coliform, *E. coli,* Enterococci)
- Why should we care?
  - Pathogens (including some strains of *E. coli)*
  - Parasites



Designated Uses

- **Recreational**
- **Public Water Suppl**
- **Wildlife**
- **Fish Consumption**
- **Shellfish**
- **Aquatic Life**

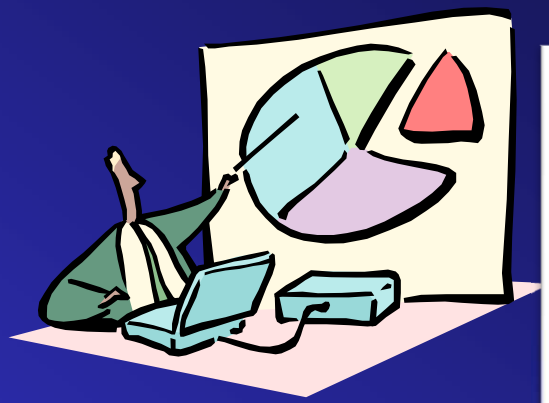
The attainment of the recreational use is evaluated by testing for the presence of E. coli bacteria in freshwater systems (and enterococci bacteria in transitional and salt waters).

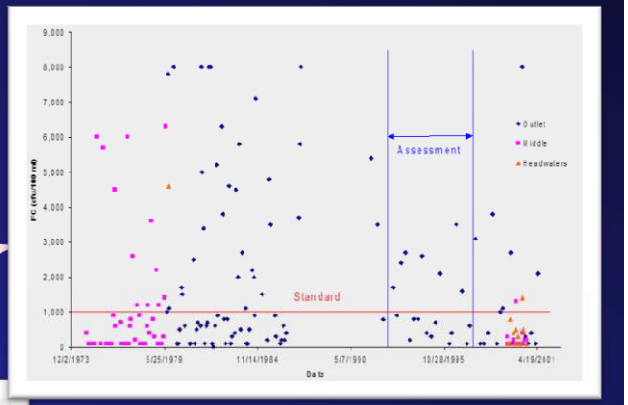
Study Approach

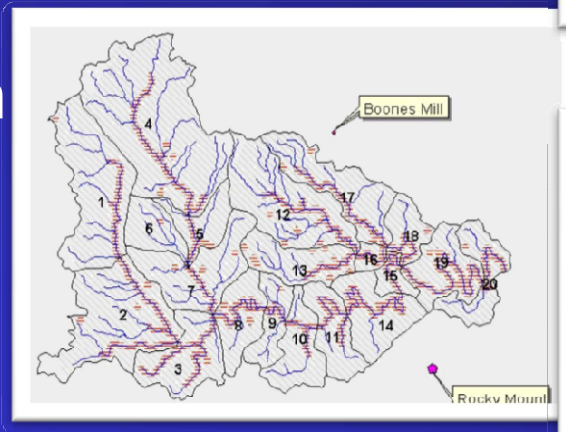
- **TMDL Watersheds**
  - impairments are evaluated and grouped within watersheds with similar characteristics (slope, land use, hydrology, etc.)
- **Identify and quantify sources of bacteria**
- **Incorporate watershed characteristics and estimated bacteria source loads** to establish the baseline for current bacteria load
- **Determine reductions needed for standards to be met**
  - (difference between current load and the standard)

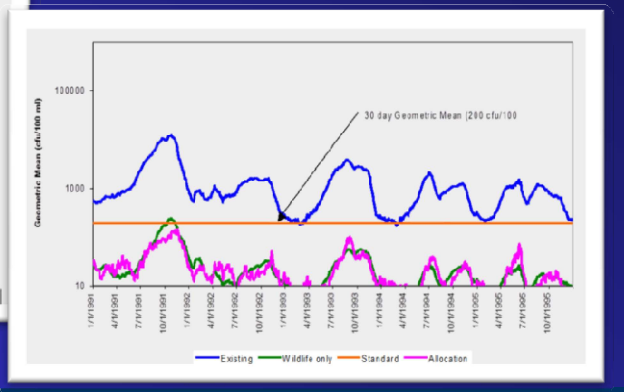
Major Components of the TMDL

- Source Assessment
- Modeling
  - Hydrology
  - Water Quality
  - Load Allocation
- Public Participation

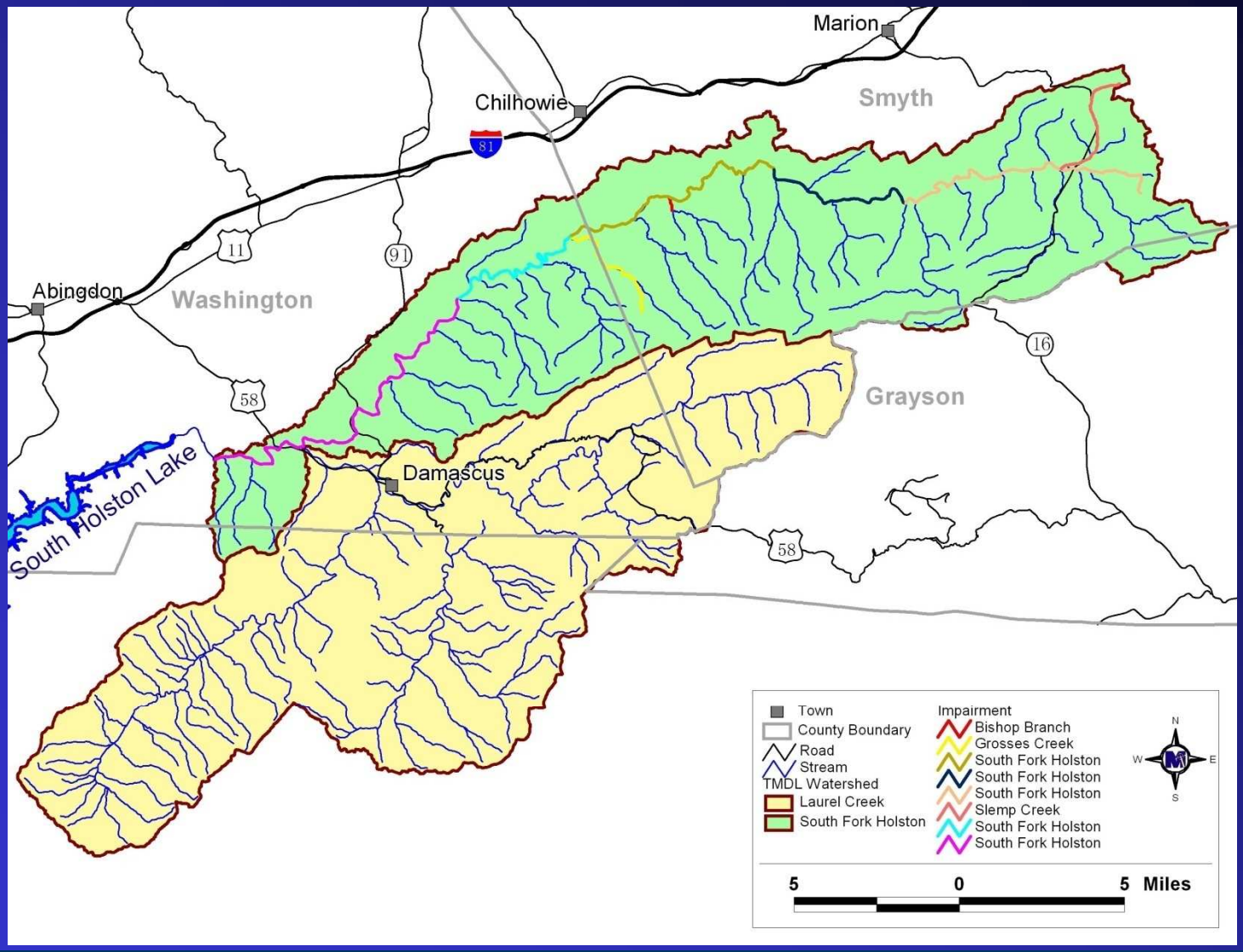








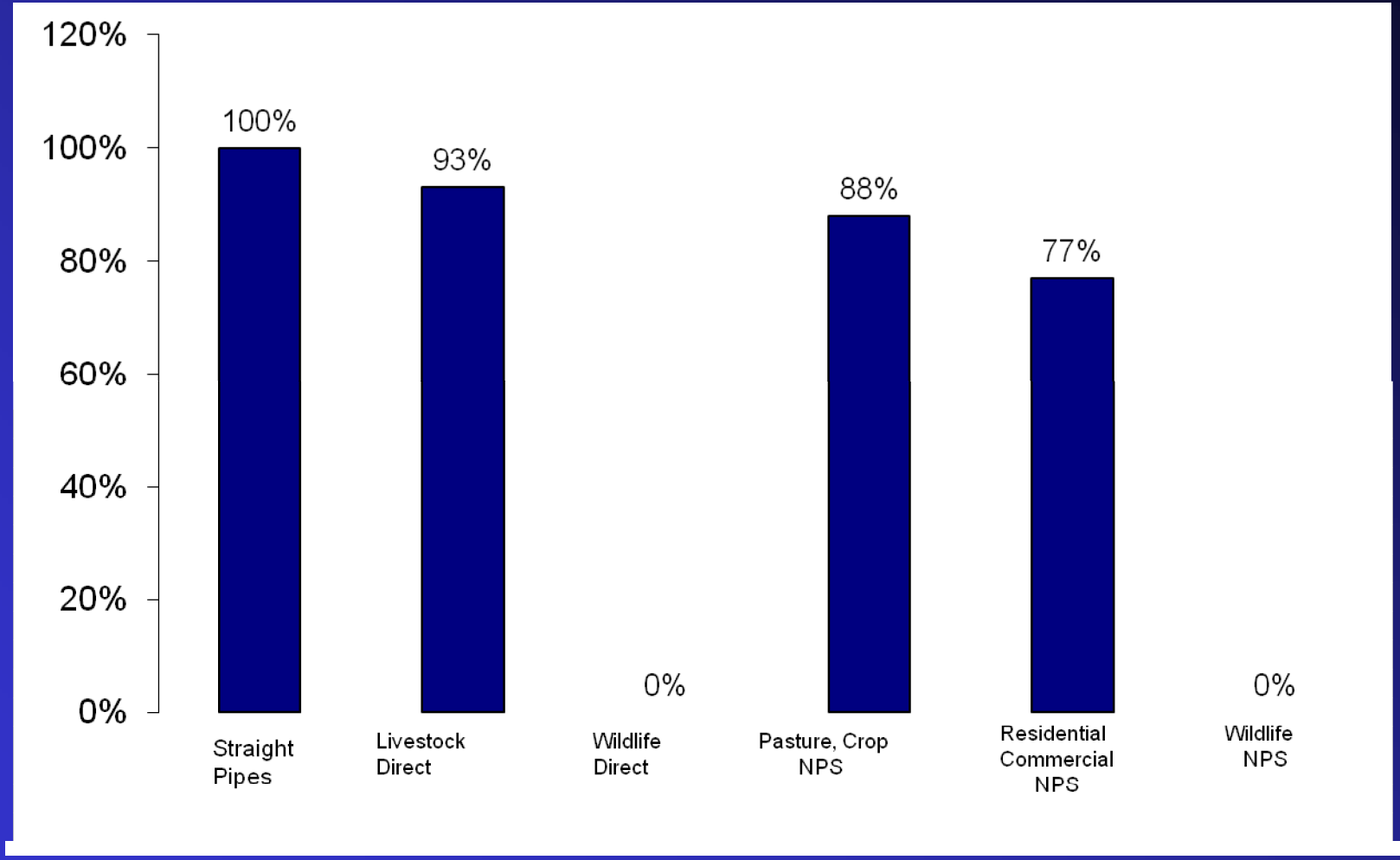
Impairment Locations



Water Quality Endpoint Goal

- **Primary Contact Recreational Use**
  - *E. coli* Bacteria Endpoint
    - 126 cfu/100mL monthly geometric mean
    - <10% 235 cfu/100mL instantaneous

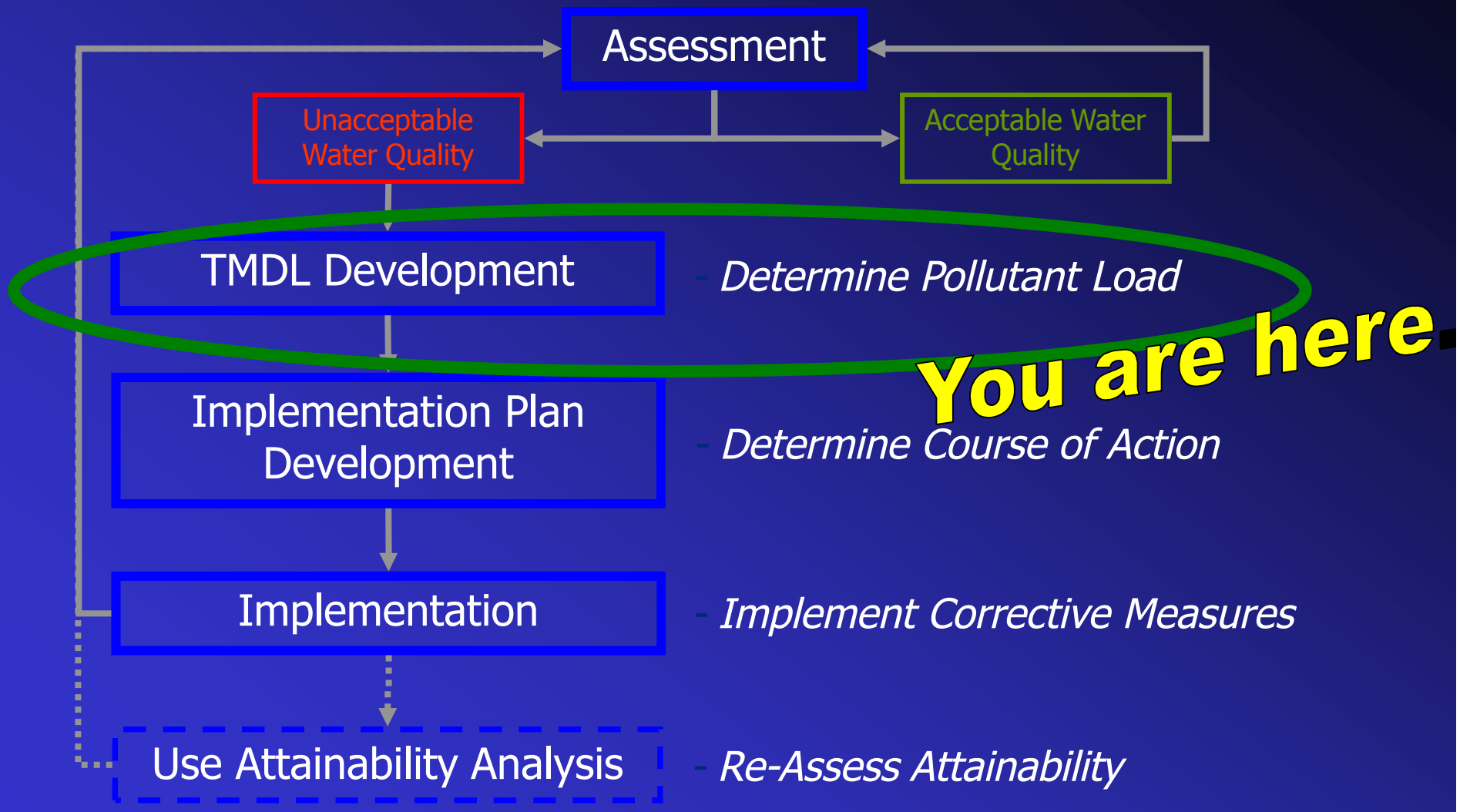
% Bacteria Removal Needed to Meet TMDL in the S.F. Holston R. Watershed



S. F. Holston R. Final *E. coli* TMDL Table

Permit	WLA	LA	MOS	TMDL
S.F. Holston R.	$7.52x10^{+12}$	$6.96x10^{+14}$	Implicit	$7.03 \times 10^{+14}$
VA0021130	$4.36x10^{+11}$			
VA0022993	$2.96x10^{+10}$			
VA0026778	$1.39x10^{+10}$			
VAG400882	$1.74x10^{+09}$			
VAG400817	$1.74x10^{+09}$			
VAG400841	$1.74x10^{+09}$			
VAG400816	$1.74x10^{+09}$			
VAG400616	$1.74x10^{+09}$			
VAG400194	$1.74x10^{+09}$			
VAG400009	$1.74x10^{+09}$			
Future Load	$7.03x10^{+12}$			

TMDL Process



What's Next?

- 30 day comment period ends September 28, 2015:
  - Send comments to Martha Chapman, DEQ
  - 30 day comment period
- TMDL submitted to EPA then SWCB
- On list for Implementation Plan development

Comment Period:
August 27 through September 28, 2015

Comments To:

Martha Chapman

TMDL Projects Coordinator

Dept. of Environmental Quality

Martha.Chapman@deq.virginia.gov

Phone: (276) 676-4845

Fax: (276) 676-4899

Extras

Special Considerations - Bears

- 218 bears in the watershed (Virginia Dept. of Game & Inland Fisheries).
- A bear produces 0.004 x 10^{10} cfu/day fecal bacteria (published data, information from the Knoxville Zoo).
- A single beef cow produces 3.30 x 10^{10} cfu/day of fecal bacteria.
- 218 bears are equivalent to 1/4 of a beef cow (1 beef cow = 825 bears).