Benthic Total Maximum Daily Load Study for the Accotink Creek Watershed

Potomac Watershed Roundtable
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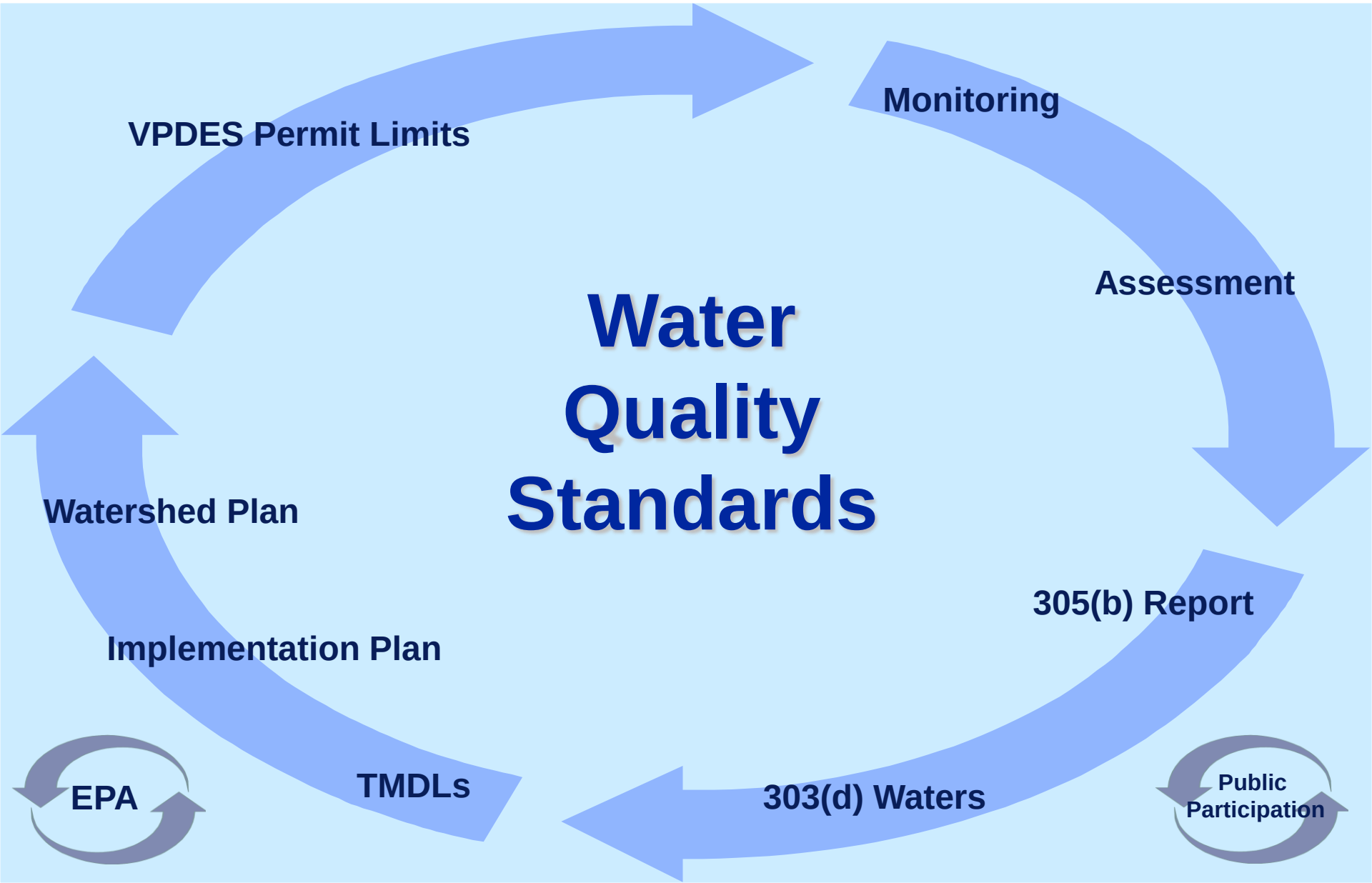
DEQ Northern Regional Office

DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Continuous Planning Process



Water Quality Standards

Water Quality Standards: Designated Uses

- Recreation
- Aquatic Life
- Wildlife
- Fish Consumption
- Shellfish
- Public Water Supply

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Accotink Creek and Long Branch do not meet the state's water quality standards for the aquatic life use because of poor health in the benthic macroinvertebrate community.

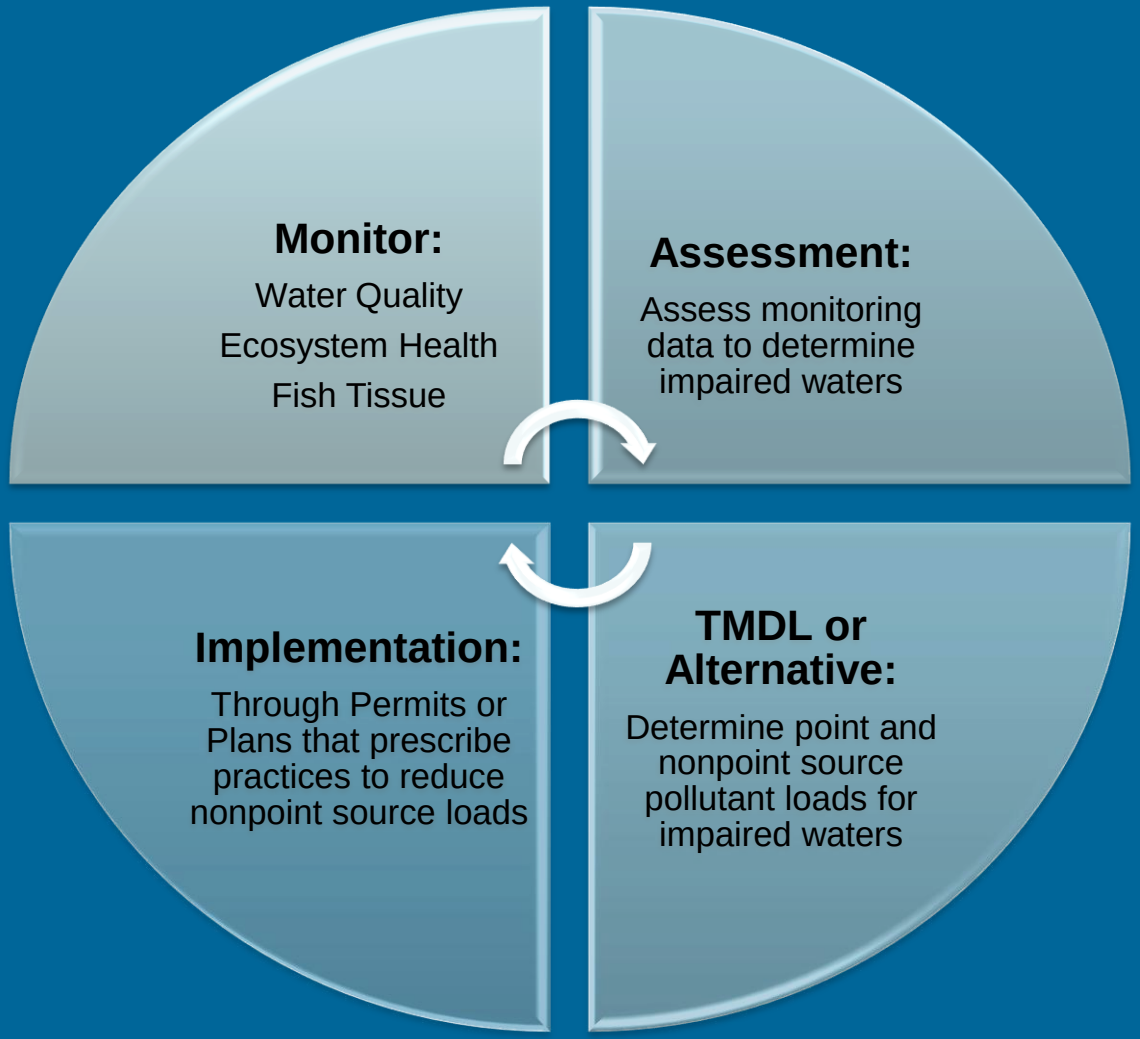
Aquatic Life Use: Benthic Macroinvertebrates

Aquatic invertebrates that live on the bottom of streams, rivers, and other bodies of water

- **Important food source for fish (important link in the food chain)**
- **Important cycling of nutrients**
- **Good indicators of overall stream health**

Categories:
- Pollution Intolerant
- Moderately Pollution Tolerant
- Pollution Tolerant

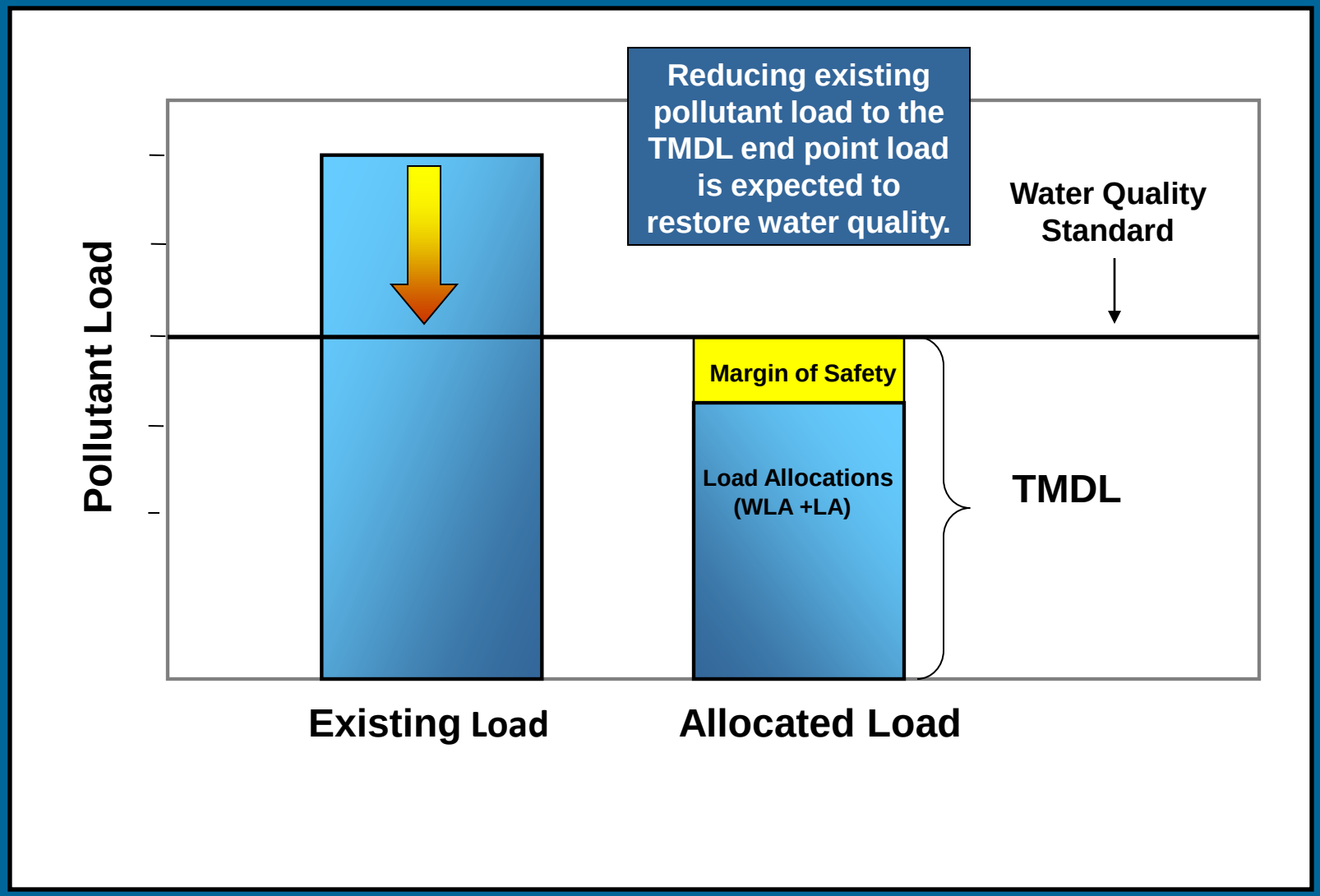
Assessment/TMDL Process



Total Maximum Daily Load

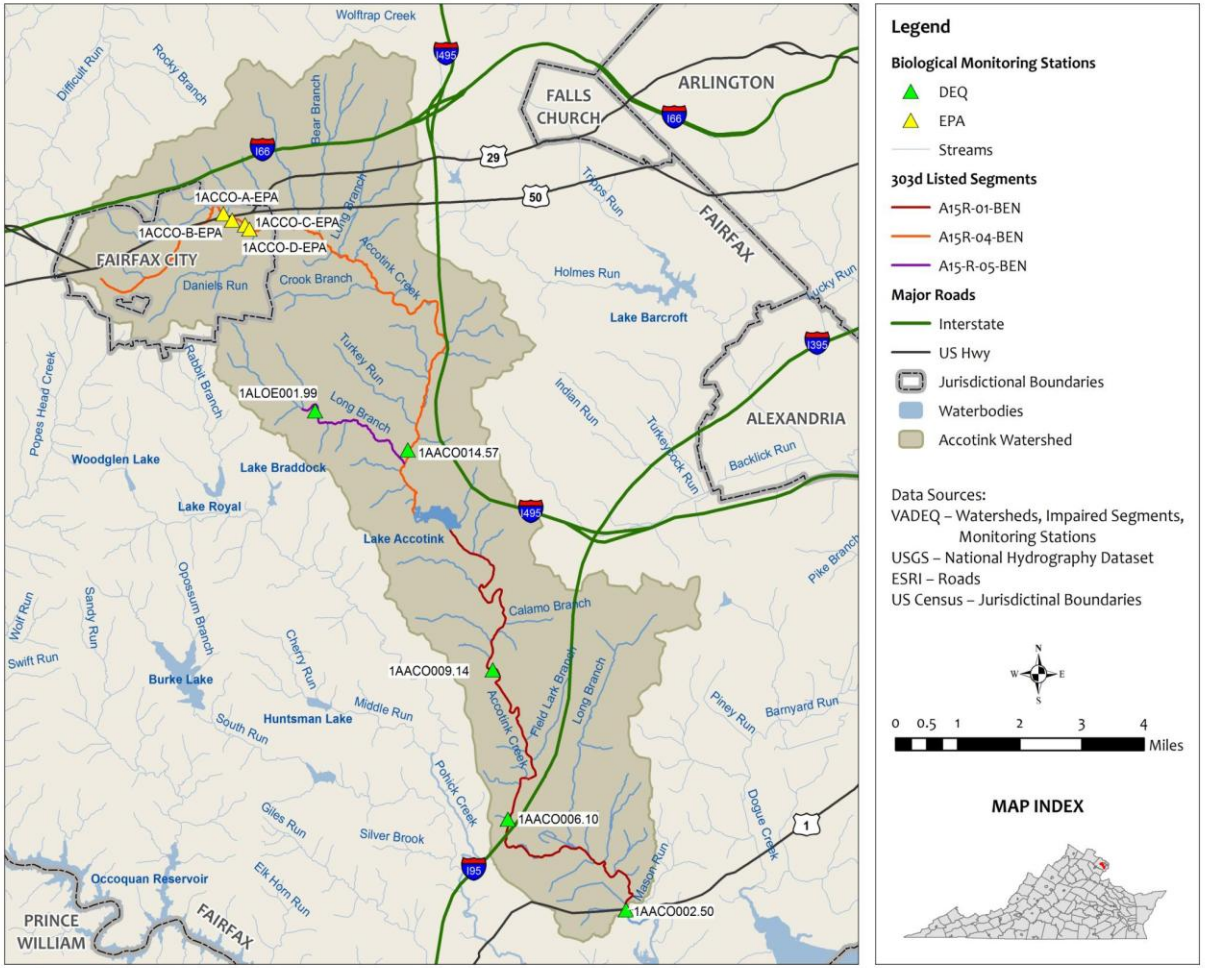
- A TMDL is the total amount of a pollutant a waterbody can receive and still not exceed water quality standards
- Required by federal and state law
- The Benthic TMDL Process
  - Phase I: Stressor Determination
    - Characterize watershed
    - Determine Stressor(s) Causing the Impairment
      - Pollutant, non-pollutant
  - Phase II: TMDL Development
    - Account for point and nonpoint sources
      - Assess pollutant sources
      - Model pollutant loadings
    - Calculate pollutant reductions to attain standards
    - Allocate allowable loadings
    - Include a margin of safety

TMDL = Sum of WLA + Sum of LA + MOS



Accotink TMDL: Aquatic Life Use Impairments

Name	Description	Size	Initial Listing
Accotink Creek	Begins at the outlet of Lake Accotink and continues downstream until the tidal waters of Accotink Bay.	10.09 mi	1996
Accotink Creek	Begins at the headwaters of Accotink Creek and continues downstream until the start of Lake Accotink	11.59 mi	2008
Long Branch	Begins at the confluence with an unnamed tributary to Long Branch, at the Route 651 (Guinea Road) bridge, and continues downstream until the confluence with Accotink Creek, just below Braddock Road.	2.37 mi	2008



Accotink TMDL: Project Plan

Stressor Analysis

- Data gathering and watershed information
- Identification of most probable stressors

TMDL

- Modeling and establishment of endpoints for pollutant stressors
- Determination of loads and reductions

Implementation

- TMDL requirements implemented through permits for point source discharges
- Plans may be developed to address non-point sources and help coordinate efforts of regulated stormwater discharges
  - Collaborative process between stakeholders
  - Identification of best management practices and funding sources to address TMDL reductions

Who is Involved?

DEQ

- VA Department of Environmental Quality – Lead agency for TMDL projects

Contractor

- Accotink Project = Interstate Commission on the Potomac River Basin
- Technical Work for TMDL Development

Technical Advisory Committee (TAC)

- Representatives from state and local governments, watershed groups, planning district commission, soil and water conservation districts, permittees, etc.
- Provides technical input and information for TMDL development

Citizens

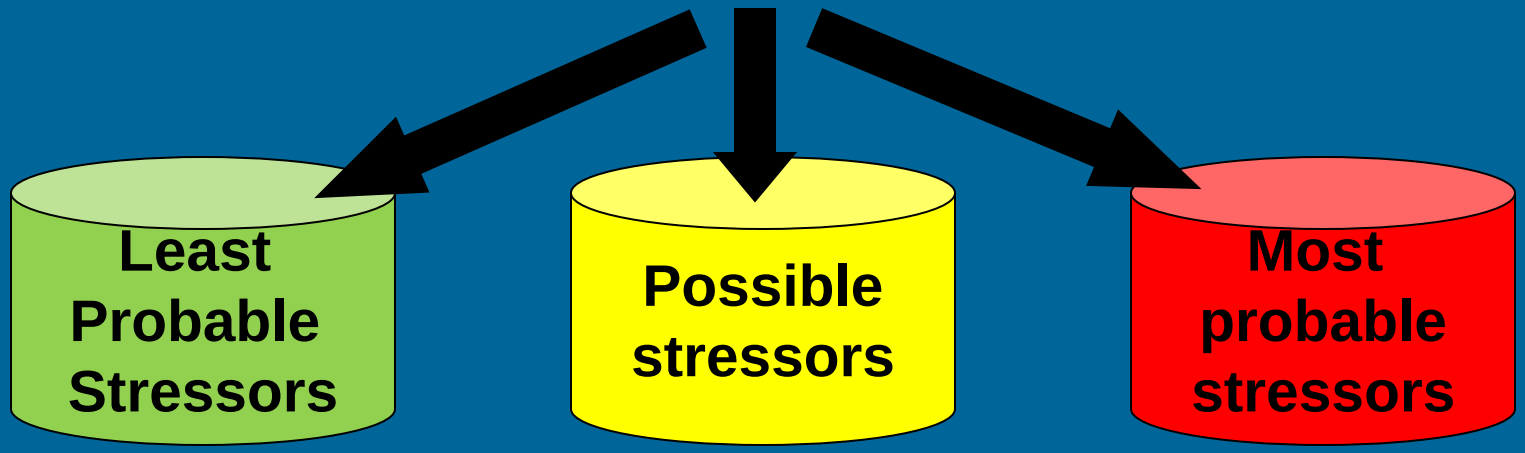
- Any citizen who wishes to participate
- Provide local knowledge and information

Accotink TMDL: Recent Project History

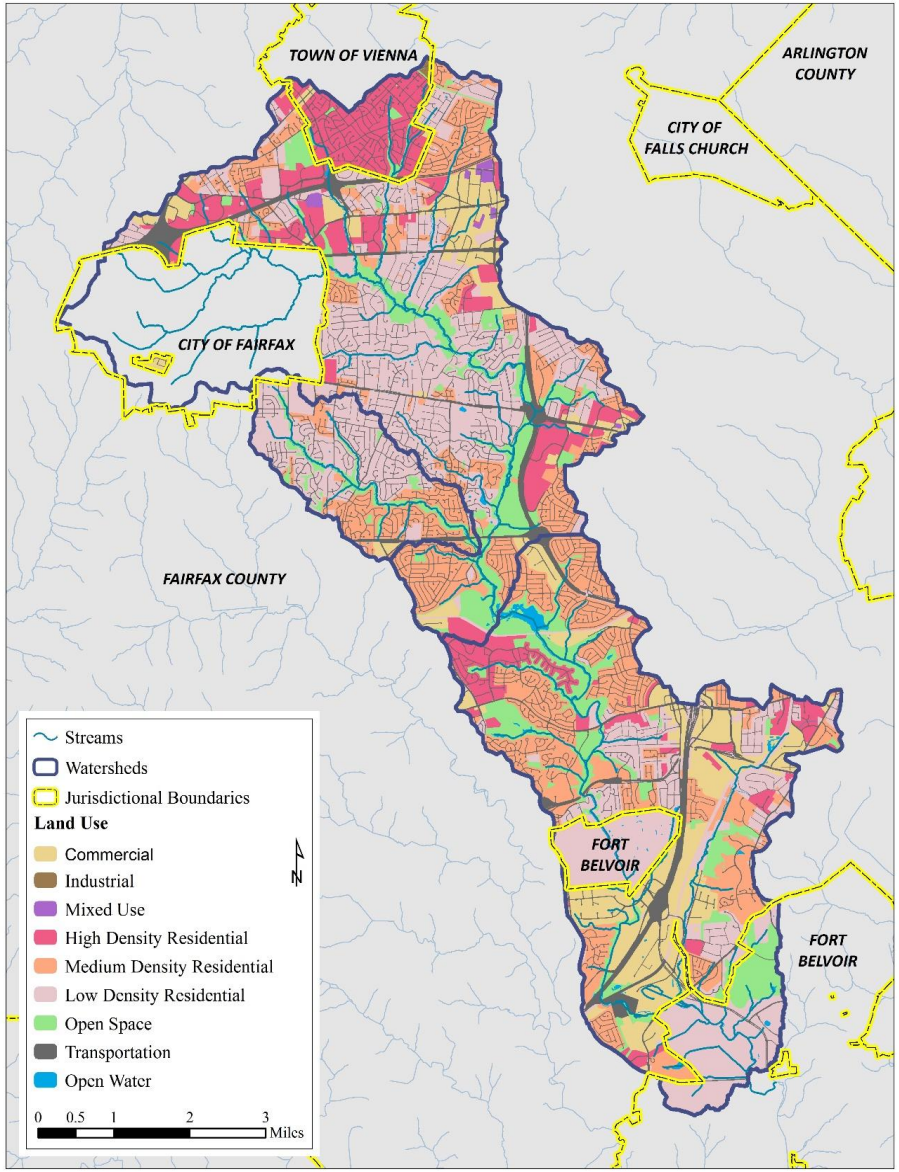
Stressor Analysis

What is causing the aquatic life impairment?

1. List all potential causes, for example:
   Dissolved oxygen, nutrients, pH, sediment, temperature, toxics, etc.
2. Analyze the evidence for and against each cause:
   Biological, habitat, water quality, historic data, etc.
3. Categorize each of the causes as being one of the following:



Accotink TMDL: Land Use



87% of the Accotink Creek watershed is in commercial, industrial, residential, or transportation land uses

29% impervious cover (generally see negative impacts >10%)

Accotink Creek is suffering from "Urban Stream Syndrome"

- Flashier flows
- Elevated nutrient and/or contaminant concentrations
- Fewer smaller streams and lower stream density
- Altered channel morphology
- Reduction in biological diversity with increases in pollution-tolerant taxa

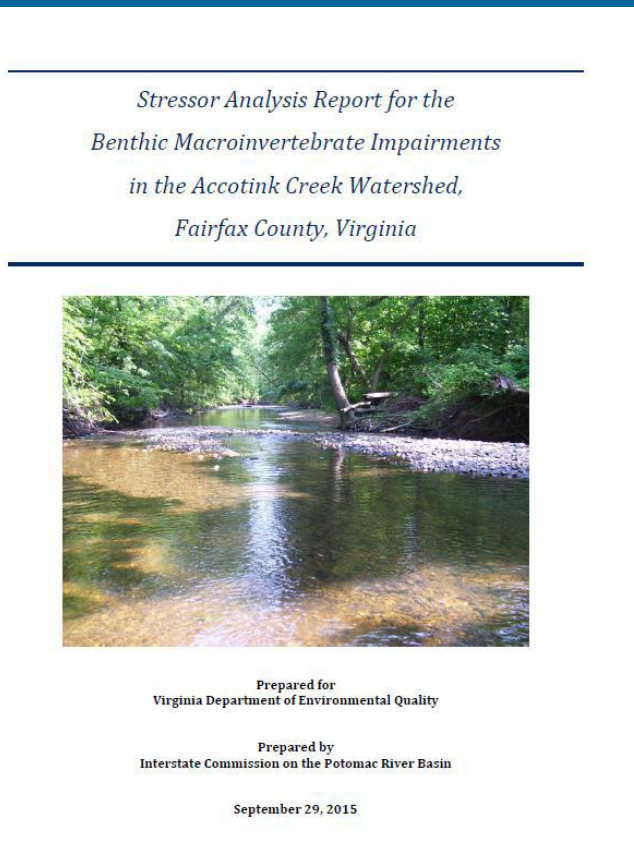
Accotink TMDL: Stressor Analysis

Stressor Analysis

- August 2014: TAC project kickoff meeting
- September 2014: public kickoff meeting
- June 2015: 2nd TAC meeting
- July 2015: 2nd public meeting presenting draft report
- July – August 2015: Public Comment Period
- September 2015: Report complete

Category	Stressor	
Least Probable Stressors	Temperature	pH
	Dissolved Oxygen	Metals
Possible Stressors	Nutrients	Toxics
Most Probable Stressors	**Sediment**	*Hydromodification*
	Chloride	*Habitat Modification*

"Urban Stream Syndrome"



Accotink TMDL: Stressor Analysis Conclusions

- Address the benthic impairments by developing TMDLs for pollutant stressors
  - Sediment
  - Chloride (in upper watershed)

- Non-pollutant stressors may be addressed through implementation practices
  - Hydromodification
  - Habitat Modification

Accotink TMDL Development

- Phase II – TMDL Development
  - TAC meeting held December 2015
  - Sediment TMDLs for all impaired segments
  - Chloride TMDL for Upper Accotink Creek
  - Chloride TMDLs for Lower Accotink Creek and Long Branch if data and analysis warrant

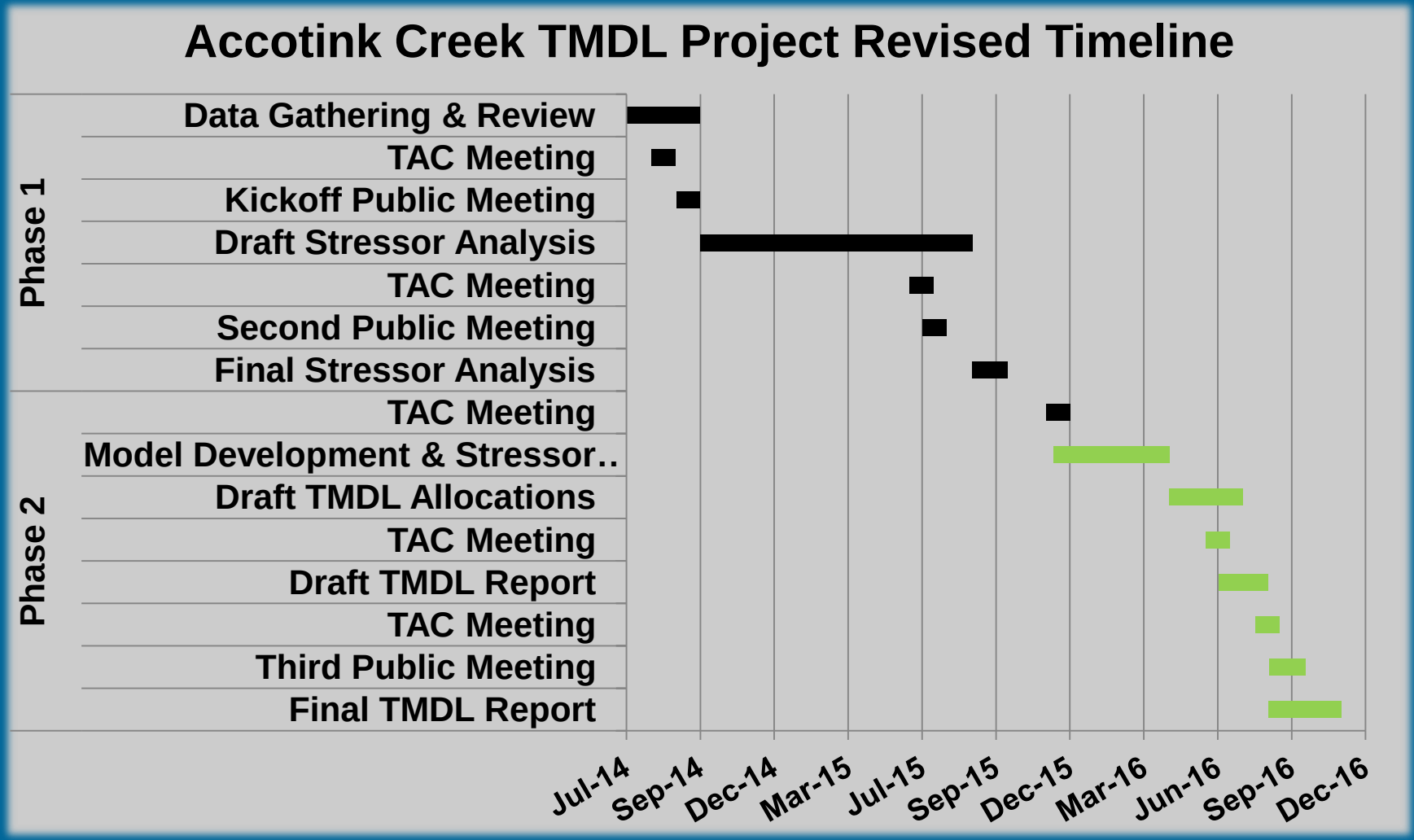
- Chloride and Conductance Monitoring (Winter 2015-16)
  - Lower Accotink Creek - DEQ monitoring
  - Long Branch - USGS monitoring and DEQ Grab sampling
  - Analysis to verify relationship between chloride and specific conductance

Accotink TMDL: Current Project Status

Data Needs

- Deicing and anti-icing salt application data
- Land use by impervious type (roads, driveways, sidewalks, parking lots, building footprints)
- Current level of BMP Implementation
  - Types
  - Location
  - Acres treated
- Lake Accotink:
  - Bathymetry
  - Dredging history
  - Management

Accotink TMDL: Project Timeline



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Accotink TMDL: Permittees

General Permits – various types of dischargers

Watershed	Facility Name	GP Type
Upper Accotink	Enterprise Rent A Car-3055 Nutley St	Car Wash
	Ravensworth Collision Center	Car Wash
Lower Accotink	Virginia Concrete Company Inc-Newington Plant 1	Concrete
	VA Concrete Co-Mid Atlantic Materials-Newington	Concrete
	Enterprise Rent A Car-6536 Backli/ck Rd	Car Wash
	US Army-Fort Belvoir	Petroleum
	AT&T Oakton Office Park	Cooling Water

General Permits – Construction

Watershed	Number of Permits	Total Area of Sites (acres)	Total Disturbed Area (acres)
Upper Accotink	107	599	1,338
Lower Accotink	34	386	11,987
Long Branch	7	11	103

Accotink TMDL: Permittees

General Permits – Industrial Stormwater

Watershed	Facility	Acres of Industrial Activity	SIC (Standard Industrial Classification Code) Description
Upper Accotink	US Postal Service – Merrifield Vehicle Maintenance	2	United States Postal Service
	Fairfax County – Jermantown	12.4	Local and Suburban Transit
	Milestone Metals	1.5	Scrap and Waste Materials
Lower Accotink	SICPA Securink Corporation	1.1	Printing Ink
	Fairfax County – Connector Bus Yard	6.25	Local and Suburban Transit
	US Army-Fort Belvoir – Building 1442	70	National Security
	Rolling Frito Lay Sales LP – South Potomac DC	1.2	Trucking, Except Local
	Fairfax County – Newington Maintenance Facility	25.4	Local and Suburban Transit
	Fairfax County-DVS – Alban Maintenance Facility	5.5	Local and Suburban Transit
	HD Supply-White Cap	1	Brick, Stone, and Related Materials
	United Parcel Service – Newington	9.1	Courier Services, Except Air
	Newington Solid Waste Vehicle Facility	4.9	Local Trucking without Storage

Accotink TMDL: Permittees

Municipal Separate Storm Sewer Systems (MS4)

Watershed	Facility Name	Phase
All	Fairfax County	I
All	Virginia Department of Transportation	II
All	Fairfax County Public Schools	II
Upper Accotink	City of Fairfax	II
	Town of Vienna	II
	George Mason University	II
Lower Accotink	Fort Belvoir	II
Upper and Lower Accotink	Northern Virginia Community College	II

Questions? Comments?

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