Developing a Salt Management Strategy (SaMS) for Northern Virginia

2018 National Capital Region Water Resources Symposium
April 6, 2018

Will Isenberg – Virginia Department of Environmental Quality

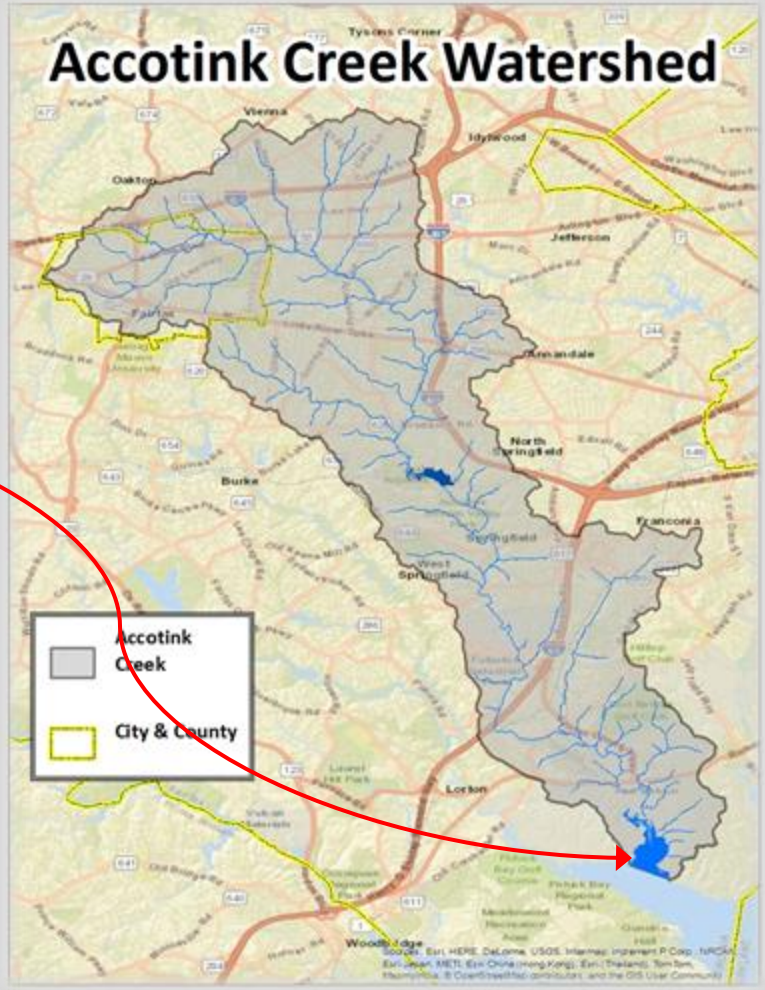
DEQ
VIRGINIA DEPARTMENT OF ENVIRONMENTAL QUALITY

Photo Credit: Jessie Williams

Presentation Overview

- Setting the context:
  - Accotink Creek
- Benefits and impacts of salt application
- Salt Management Strategy (SaMS)
  - Project Scope
  - Development framework

The Accotink Creek Watershed

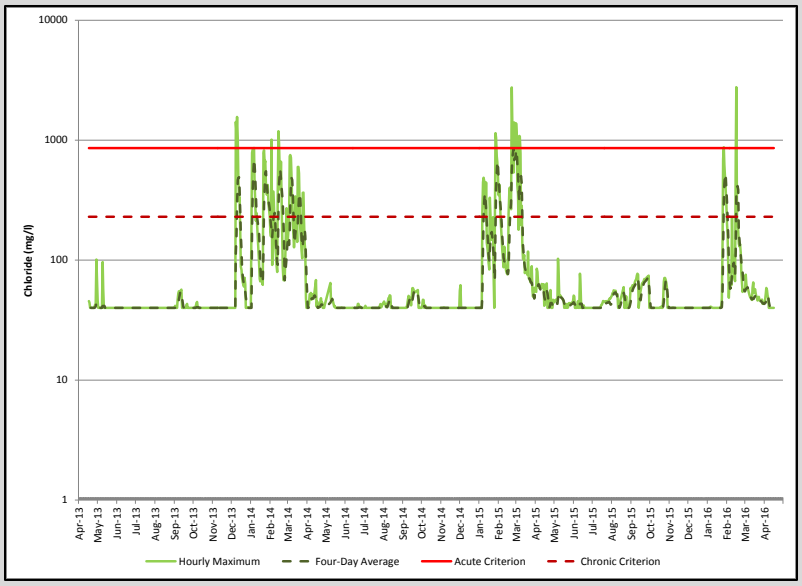


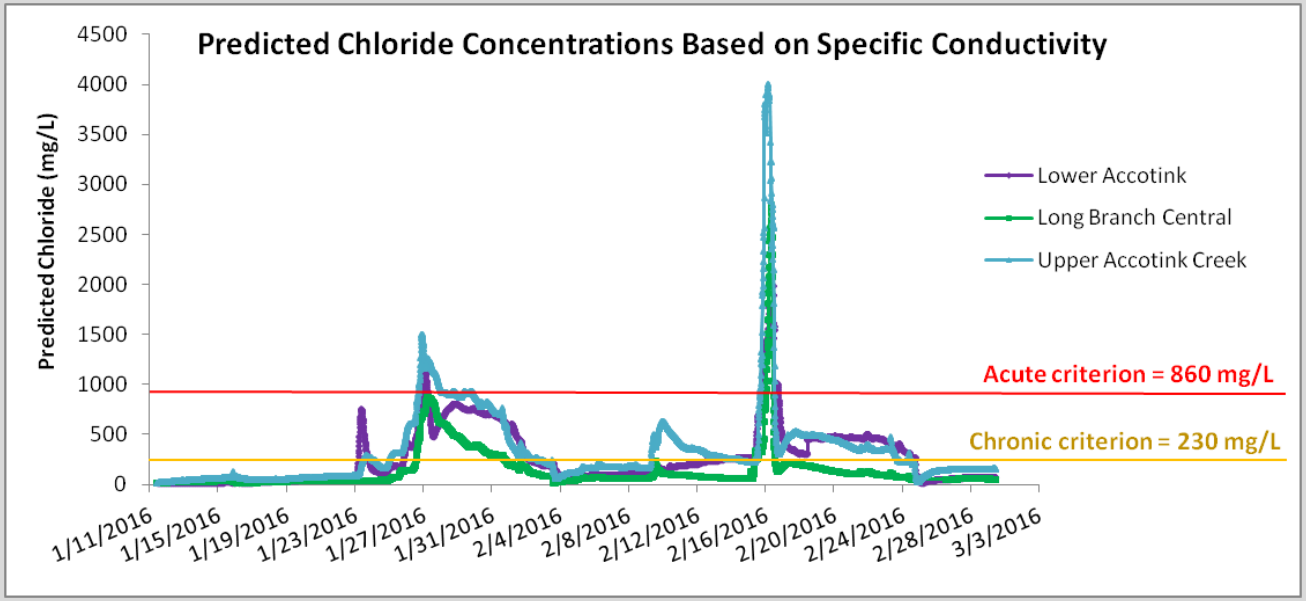
- 52 square miles
- 28% impervious

- Poor Biological Health: Chloride is a cause of stress

Chloride and Winter Storm Events

- WQ monitoring identified:
  - Elevated levels in winter months
  - Concentrations typically spike after winter precipitation events
- Chloride pollution is a winter stormwater issue
- Each storm event is unique
- Total Maximum Daily Loads (TMDLs) were developed for Stormwater sources of Chloride





Salt, why it matters…

- Salt application provides benefits while also presenting impacts
- Salt application benefits:
  - Slip and fall reduction
  - Crash reduction (88-95% reduction)[1, 2]
  - Maintaining access during winter
    - Commerce (1-day statewide event = $300-$700 million in direct and indirect costs)[3]
    - Impact on workers, especially hourly workers
- Salt impacts
  - Toxic to fish and bugs
  - Corrosive to infrastructure
  - Affects public health
- Is there a balance? YES!
  - There are a variety of ways to meet winter safety objectives with less salt use

[1]University of Waterloo: http://www.saltinstitute.org/wp-content/uploads/2014/01/Final-Report-L-Fu-Taimur.pdf
[2]Marquette University: http://www.trc.marquette.edu/publications/IceControl/ice-control-1992.pdf
[3]Global Insight: http://www.saltinstitute.org/wp-content/uploads/2013/10/economic-costs-of-snowstorms.pdf

Salt Management Strategy (SaMS)

- **A Strategy to reduce salt in stormwater & maintain public safety**
- **Focus on improved best management practice (BMP) awareness and implementation**
- Strong stakeholder-driven focus
  - Field experts' input important for suitable BMPs
  - Sensitive to public safety concerns
  - Stakeholder buy-in important for success
- Stakeholder Engagement goals
  - Increase public awareness of the issue and ways they can make a difference
  - Invite a broad representation of stakeholders intimately related to salts and their benefits and impacts

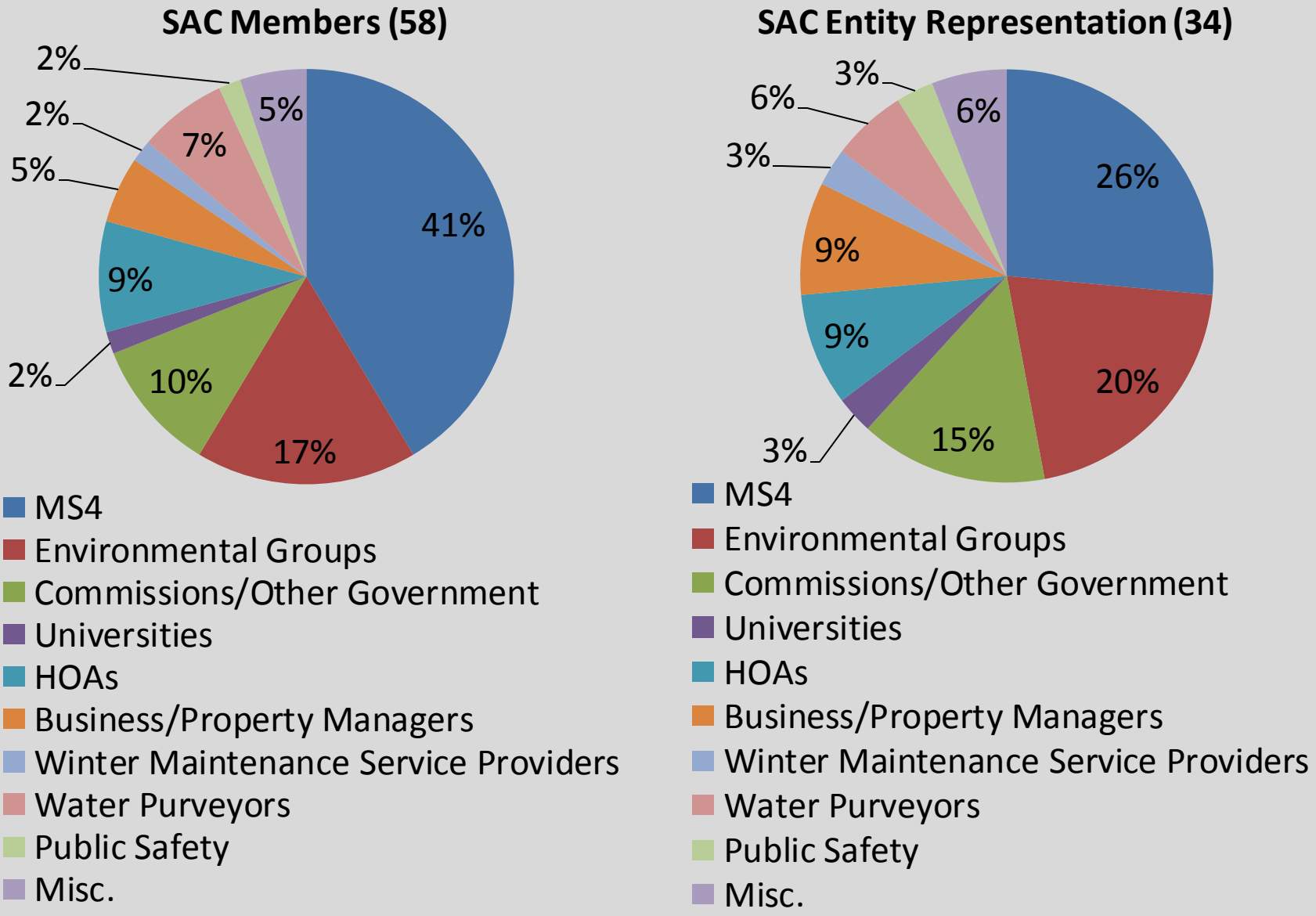
Invited Stakeholders

- Municipal Separate Storm Sewer System (MS4) Permittees
  - Municipal: Fairfax City and County, Vienna, Arlington and Prince Wm Counties
  - Institutional: Ft. Belvoir, NVCC, FCPS, VDOT
- Environmental Groups
  - Local: Friend of Accotink Creek, Friends of Lake Accotink Park, Sierra Club chapters
  - Regional: Chesapeake Bay Foundation
- Commissions/Other Government
  - Virginia Department of Health
  - NVRC, ICPRB, Potomac River Watershed Roundtable
  - USGS
  - DGIF/DCR
- Universities
- Homeowners Associations

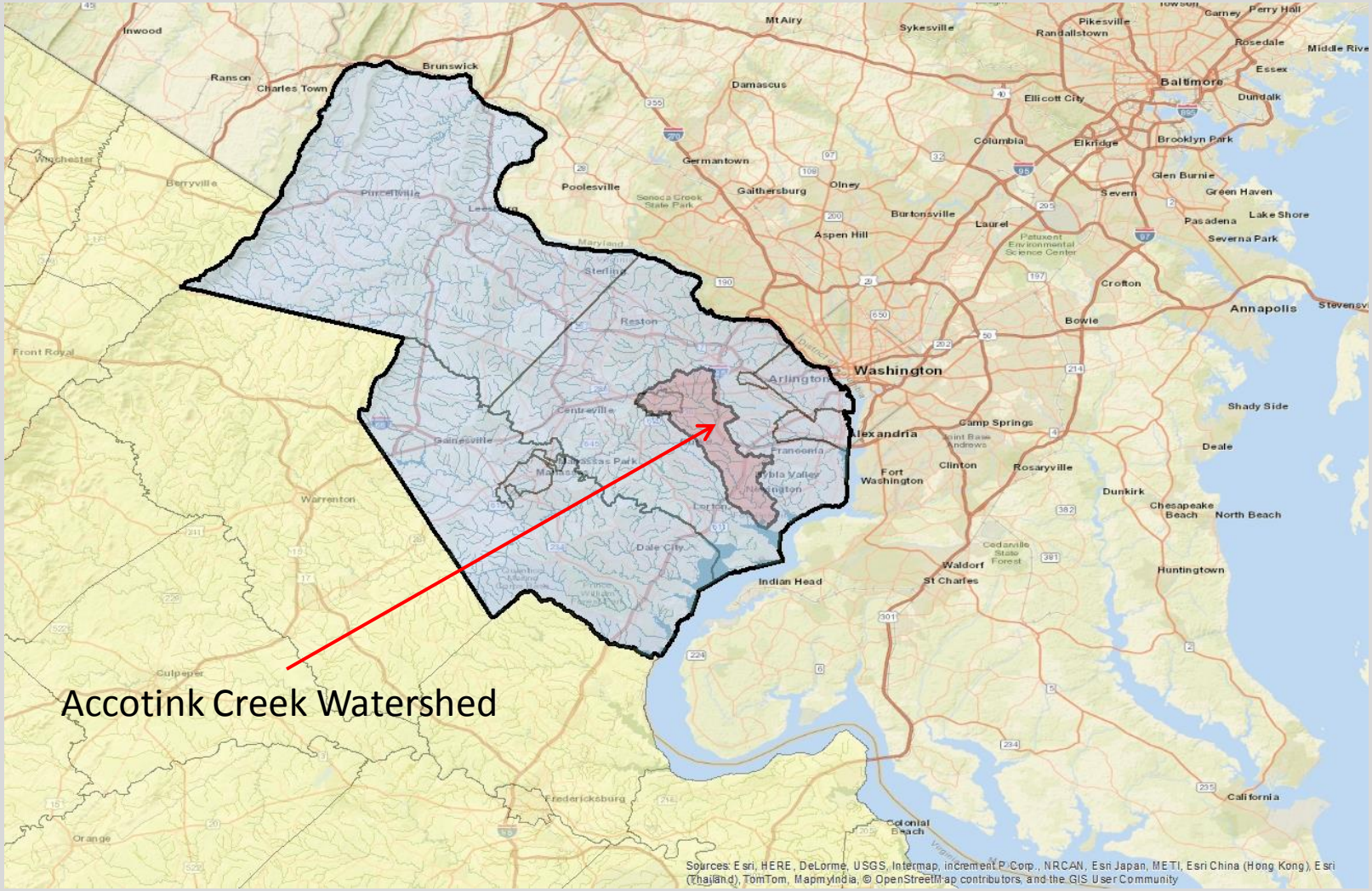
- **Property Owners and Managers**
  - **Commercial properties**
  - **Government properties**
  - **Public roads**
  - **Institutional properties**
- **Winter Maintenance Services**
  - **Applicators**
  - **Equipment/Supplies**
  - **Associations (i.e. SIMA)**
- **Water Purveyors**
  - **Fairfax Water**
  - **Loudoun Water**
- **Public Safety**
  - **Police/Sheriff**
  - **EMT/Fire**

***Purple – non-typical stakeholders**

Current Stakeholder Advisory Committee (SAC) Composition



Project Scope: Accotink Cr. Watershed and NoVA



- Accotink Creek watershed conditions not unique
- Best management practices not limited to watershed boundaries

Goals (draft) of SaMS Effort

The aim of this effort is to develop a salt management strategy for Northern Virginia, that:

- Uses a **stakeholder-driven** process to **proactively** address salt loads in the **region** and address the Accotink Creek TMDLs.

- Generates **increased public awareness, and long-term support** for the continual improvement of deicing/anti-icing practices and actions.

- **Protects public safety**, **improves** aquatic and terrestrial habitat, and **lessens the effects** of deicing/anti-icing salts on drinking water resources, property and road infrastructure through **outreach and implementation of best practices** over time.

Bridge corrosion. Photo by Jim Palmer.

Objectives (draft) of SaMS Effort

1. Comprehensively **describe the effects** of deicing/anti-icing salt use and identify and **summarize the costs and benefits** of winter storm operations.
2. Collaboratively develop a **suite of best management practices** and other actions to **minimize the negative effects** of deicing/anti-icing salts.
3. Develop a comprehensive **education and outreach campaign** for both the public and political leaders to **increase awareness** of the benefits and impacts of winter salt use and **promote positive behavioral changes**.
4. Explore **funding opportunities,** operational **cost savings,** and broader **incentives**, such as certification requirements/tort reform, to **support implementation**.
5. Develop a **monitoring and research program** to better understand water quality patterns related to salt application throughout Northern Virginia.
6. Develop options to **assess effectiveness** and **methods to track and report** salt usage.

Process Framework

2 Year Process

- 1st public meeting & comment period
- 3 -4 Stakeholder Advisory Committee (SAC) meetings
  - Comprised of all workgroup members
  - May include a Steering Committee
- Work Group meetings
  - Plan for 3 each, for 6 workgroups (see right)
- Final public meeting & comment period
  - Present the final document

Anticipated Work Groups

1. Traditional BMPs
2. Non-traditional Practices
3. Education & Outreach
4. Monitoring
5. Salt Tracking & Reporting
6. Government Coordination

For Reference: Potential BMP Options*

- Traditional
  - Remove snow manually ASAP
  - Equipment Calibration
  - Integrate liquids
  - Reduce bounce and scatter of salt
  - Anti-ice before events
  - Use ground speed controllers
  - Upgrade to equipment
  - Develop a Winter Maintenance Plan
  - Training
  - Better storage
  - Tailor product usage and application rates based on pavement temperatures and conditions
  - Refine application rate charts and continually test lower rates
- Non-traditional
  - Lower levels of service
  - Alternative pavement types and urban designs
  - Driver behavior changes (i.e., teleworking)
  - Non-chloride deicers
- Legislative
  - Winter weather speed limits
  - Ordinances/administrative code that addresses certification of winter maintenance applicators
  - Slip and fall liability protection for certified applicators
  - Required commercial applicator training
  - Salt tax to annual vehicle registrations

*Pulled from MPCA's Twin Cities Metro Area Chloride Management Plan

Next Steps

- Planning SAC training:
  - ½ day w/ optional afternoon panel/informal session
  - Provide basic level of knowledge
  - Speakers: VDOT, VT-Transportation Institute, and professionals in snow and ice management field

- Obtain SAC feedback on:
  - Revised Goals & Objectives and Participation Guidelines
  - Work groups proposed and their desired participation

- Planning 2nd SAC Meeting:
  - Discuss work groups' focus and composition
  - Break-out in workgroups to discuss and refine focus

Questions?

Project Team

David Evans
703-583-3835
David.Evans@deq.virginia.gov

Will Isenberg
804-698-4228
William.Isenberg@deq.virginia.gov

Sarah Sivers
703-583-3898
Sarah.Sivers@deq.virginia.gov

Webpage:
http://www.deq.virginia.gov/SaMS.aspx

Contains:

- Background Resources
- Sign up for newsletters
- Project updates
- Meeting materials