



# **Roanoke County Stormwater Advisory Committee**

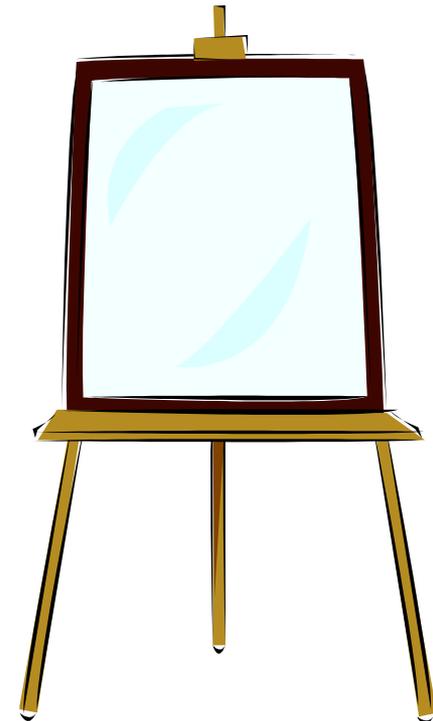


## **Meeting 3 – Level of Service Analysis**

**October 24, 2013**

# Agenda

- Welcome
- Recap of Meeting #2 - Questions
- Overview of Level of Service (LOS) Approach
- Discussion of LOS Options
- Identification of Information Needs
- Next Steps



# Meeting #2 Recap

- Overview of existing stormwater management programs and program gaps.
- MS4 & TMDLs
  - BMP Inspection Maintenance & Enforcement
  - Public Education & Outreach
  - Illicit Discharge Program
  - Stormwater Pollution Prevention Plans (SWPPPs)
  - Staff Training
  - Nutrient Management Plans (NMPs)
  - TMDL Action Plans



# Meeting #2 Recap

- **Development Services**
  - VSMP Construction Permit Administration
  - New Stormwater Management Regulations – Smaller Facilities
- **Information Technology**
  - Mapping Support
- **Infrastructure Maintenance & Improvements**
  - Equipment Replacement
  - Project Backlog
  - Storm Sewer System Maintenance
  - Maintenance of Streams



# Meeting #2 Recap

- Discussion of committee concerns and priorities:
  - Economic development/growth - competitiveness
  - Cost efficiency
  - Stewardship – public engagement
  - Good science
  - Equity
  - Reasonableness/balance
  - Simplicity and transparency
  - Meaningful incentives



# Meeting #2 Recap

- Minutes were distributed to the committee and posted on the website.
- Questions or feedback before we begin?



# Level of Service



# Levels of Service

- The levels of service matrix represents options for meeting gaps, needs, and objectives.
- Broken into three levels:
  - Basic (minimum needed to meet gap, need or objective)
  - Medium
  - High
- These are not the only options that can be considered by the committee.

# Levels of Service

- When considering levels of service:
  - Think about your own perspective, as well as what may be best for the community.
  - Treat levels of service like a menu.
  - Picking one LOS may affect another LOS.
  - Organizational efficiency decisions (staff versus contracted services) will be made once priorities are identified.
  - Program development is incremental – in some cases studies are suggested as a precursor to actual implementation.
  - Cost estimates are order of magnitude.

# Levels of Service

- Today we will discuss levels of service and get your feedback on:
  - Other options
  - Information you need to help make an informed decision
- Don't be afraid to jump in – your opinion matters.
- At Meeting #4, we will work through options and try to achieve consensus.

# Levels of Service – MS4

## ■ Staff Training

Gap or Need	Level of Service Options	Benefits/ Issues
<p>The County must implement a comprehensive program to train staff that are regularly in the community to be able to identify illicit discharges and other water quality issues.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Conduct biannual illicit discharge training (~420 employees every 2 years)</li> <li>2) Either purchase or prepare short 10 – 15 minute video to use for training. ~\$3,500 + staff time</li> </ol>	<p>Permit Compliance</p>

# Levels of Service – MS4

## ■ Nutrient Management Planning

Gap or Need	Level of Service Options	Benefits/ Issues
<p>The County must develop certified nutrient management plans (NMPs) for any County property one acre or greater where fertilizers are applied.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Hire certified planner to develop plans over 3 year period. (\$10,000/year).</li> <li>2) Implement nutrient management plans – train current staff ~ \$3,000.</li> </ol>	<p>Permit Compliance</p>

# Levels of Service – MS4

## ■ Public Education & Outreach

Gap or Need	Level of Service Options	Benefits/ Issues
<p>The County’s public education and outreach efforts are required to identify a minimum of 3 high priority issues and target audiences; and to reach 20% of each audience annually (must be documented).</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Continue general outreach with CVC.</li> <li>2) Add additional outreach to targeted audiences. \$21,250 for additional \$0.25/person.</li> </ol>	<p>Permit Compliance</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Basic +</li> <li>2) Add 0.25 FTE to perform additional outreach and administer targeted business education program and coordinate with Clean Valley Council.</li> <li>3) \$38,250 - \$0.45/person</li> </ol>	<p>Increased citizen awareness and support.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) Basic +</li> <li>2) Add 0.25 FTE to perform additional outreach and administer targeted business education program and coordinate with Clean Valley Council.</li> <li>3) \$81,000 - \$0.95/person</li> </ol>	<p>High citizen awareness of program that leads to increased citizen voluntary actions.</p>



# Levels of Service – MS4

## ■ Illicit Discharge Program

Gap or Need	Level of Service Options	Benefits/Issues
<p>The County's current program to address illicit discharges (dumping, leaking equipment, swimming pool discharges, etc.) is primarily reactive.</p>	<p><b>BASIC</b>                      Use existing staff to:</p> <ol style="list-style-type: none"> <li>1) Continue current dry weather screening program.</li> <li>2) Respond to citizen reports/complaints.</li> <li>3) Develop written program procedures.</li> <li>4) Improve record keeping.</li> </ol>	<p>Permit Compliance</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Basic +</li> <li>2) Add 0.10 FTE to proactively search for illicit discharges, educate dischargers, and engage in enforcement.</li> </ol>	<p>Increased community awareness, more effective program.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) Basic +</li> <li>2) Add 0.25 FTE to proactively search for illicit discharges, educate dischargers, and engage in enforcement.</li> </ol>	<p>Increased community awareness, more effective program, and more opportunity for interaction with citizens and businesses for education.</p>



# Levels of Service – MS4

- Example of aggressive IDDE program – Wayne County, Michigan:
  - Aggressive promotion of complaint hotline.
  - Prioritization of areas based on monitoring data, history of complaints, land use (commercial/industrial), and priority facility-types (auto related, dry cleaners, restaurants, etc.).
  - Proactive visual surveys and responses to complaints.
  - Between 1987 and 2003, 5,753 facilities were investigated, and 1,483 illicit connections were found at 417 facilities.



# Levels of Service – MS4

## ■ Stormwater Pollution Prevention Plans (SWPPPs)

Gap or Need	Level of Service Options	Benefits/ Issues
<p>The County must develop Stormwater Pollution Prevention Plans (SWPPPs) for all “high priority facilities” and standard operating procedures (SOP) for work activities that could potentially impact stormwater.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Develop SWPPPs for high priority facilities (3-5 County facilities) ~ 1/year @ \$7,000/year.</li> <li>2) Departments develop standard operating procedures with assistance from Community Development with current staff.</li> <li>3) Conduct biennial (minimum standard) SWPPP and SOP training and implementation (~125 employees every 2 years) ~ \$5,000/year + staff time.</li> </ol>	<p>Permit Compliance</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Develop SWPPPs twice as fast ~ 2/year @ \$14,000/year</li> <li>2) Conduct annual SWPPP and SOP training and implementation (~125 employees every year) ~ \$10,000/year + staff time.</li> </ol>	<p>Quicker implementation and better trained employees.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) Same as Medium +</li> <li>2) Develop SWPPPs for other facilities with stormwater pollution concerns.</li> </ol>	<p>Quicker implementation and more engaged employees.</p>



# Levels of Service – MS4

- What is involved in a SWPPP?
  - A site description that includes a site map identifying all outfalls, direction of flows, existing source controls, and receiving water bodies.
  - A discussion of potential pollutants and pollution sources.
  - A discussion of all potential non-stormwater discharges.
  - Written procedures designed to reduce and prevent pollutant discharge.
  - A description of applicable training.
  - Procedures to conduct an annual site compliance evaluation.
  - An inspection and maintenance schedule for site-specific source controls.



# Levels of Service – MS4

## ■ BMP Inspections, Maintenance & Enforcement

Gap or Need	Level of Service Options	Benefits/ Issues
<p>County staff is unable to meet the current inspection schedule (annually for County owned facilities and 1/5 year for private facilities) and to work closely with property owners to address maintenance issues.</p> <p>Many HOAs are struggling with maintenance of facilities that were installed as a condition of development.</p> <p>Enforcement is a very difficult issue The number of facilities will increase under new regulations.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Budget for County owned BMP annual maintenance and replacement cost, ~\$140,000 (combination employee and direct costs)</li> <li>2) Eliminate County provided inspections for non-residential facilities. Require non-residential facility owners to provide periodic inspections by authorized 3rd parties.</li> <li>3) Cut back technical support to HOAs, current inspector will perform residential inspections only.</li> <li>4) Add enforcement time for attorney – 30 facilities annually</li> </ol>	<p>Permit Compliance; provide less direct service than present.</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) County to provide inspections every 5 years for all facilities and continue high level of technical support to citizens. Requires additional 1.0 FTE.</li> <li>2) Add enforcement time for attorney – 30 facilities annually</li> </ol>	<p>Maintain current level of citizen service.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) County assumes responsibility for maintenance and operation of residential facilities that serve more than 1 lot (approx. 425). Cost to County ~\$1,500,000/year (combination employee and direct costs). Costs to increase over time with increased development.</li> <li>2) (2) County to provide inspections every 5 years for all other facilities (approx. 225) and continue high level of technical support to citizens. Use existing staff</li> <li>3) (3) Add enforcement time for attorney – 5 facilities annually (without residential facilities, enforcement requirements drop drastically).</li> </ol>	<p>Assure proper maintenance is occurring. Improve aesthetics. Assist with complying with TMDL WLAs requirements. Additional citizen service.</p>



# Levels of Service – MS4

- Examples of BMP inspection/maintenance approaches:
  - Henrico County – For BMPs in subdivisions for which the County collected \$100 per lot prior to recordation, the County will provide long term maintenance (i.e. dredging) of extended detention basins and shallow marsh basins. Short term maintenance (grass cutting, trash pick-up) is the responsibility of the HOA.
  - Fairfax County (proposed as of July 24, 2013) -- Expand the County maintenance program to the following BMPs in residential areas:
    - Constructed Wetland
    - Infiltration practices
    - Wet pond
    - Bioretention/rain gardens
    - Extended detention ponds
    - Vegetated swales
    - Filtering practices



# Levels of Service – MS4

- Examples of BMP inspection/maintenance approaches:
  - Spotsylvania County – requires the property owner to maintain the facility and to submit an engineer certification with an inspection report verifying the BMP is functioning as designed.
  - Stafford County – Property owner required to perform maintenance with options to comply with the inspection requirement:
    - 1. Provide the County records of maintenance and inspection during the prior 2 year time period.
    - 2. Complete a self inspection by the owner. (County staff usually does an inspection on these to confirm the owner information is accurate).
    - 3. Complete a self inspection certified by a qualified professional (County staff reviews a report from the engineer and typically accepts it at face value).
    - 4. County staff complete an inspection, in lieu of the first three options



# Levels of Service – TMDLs

## ■ TMDL Action Plans

Gap or Need	Level of Service Options	Benefits/Issues
<p>The County must develop individual TMDL Action Plans to identify best management practices (BMPs) that the County and Town will implement to address each of its 13 TMDL wasteload allocations (WLAs). The plans must include implementation schedules. The County has 6 bacteria, 1 sediment, and 6 PCBs TMDL WLAs that must be addressed in the plans.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Develop TMDL Action Plans ~ \$20,000 each for bacteria and sediment TMDLs. Assume that PCBs will be deferred. Total for plans ~\$140,000.</li> <li>2) Cost per year to implement BMPs is unknown, but is anticipated to be significant (further discussion next meeting).</li> </ol>	<p>Permit Compliance</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Same as Basic +</li> <li>2) Add 0.5 FTE for community outreach to develop community partnerships to assist homeowners with voluntary BMP construction.</li> </ol>	<p>Involvement of community in improving water quality. Foster shared public/private efforts. May improve cost-effectiveness of compliance.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) Same as Basic+</li> <li>2) Add 1.0 FTE for community outreach to develop community partnerships to assist homeowners with voluntary BMP construction.</li> </ol>	<p>Enhanced involvement of community in improving water quality. Stronger public/private efforts. May improve cost-effectiveness of compliance.</p>



# Levels of Service – Development Services



## ■ VSMP Construction Permit Administration

Gap or Need	Level of Service Options	Benefits/Issues
<p>The County will be required to administer the state's VSMP construction permit starting in July 2014.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Use existing staff to perform review and processing necessary.</li> <li>2) During peak periods may need to extend plan review time to allow current staff to cover VSMP plan review and permitting.</li> </ol>	<p>Does not add staff.</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Add 0.5 FTE to ensure that current review times can be maintained.</li> </ol>	<p>Ensures that current review times are maintained.</p>



# Levels of Service – Development Services



## ■ New Stormwater Requirements – Smaller Facilities

Gap or Need	Level of Service Options	Benefits/Issues
Stringent new stormwater management standards will result in a larger number of smaller stormwater management facilities located throughout a new development.	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Use existing staff to perform necessary inspections.</li> <li>2) During peak periods there may be more of a wait for inspectors at construction sites.</li> </ol>	Does not add staff.
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Add 0.5 FTE for inspection of smaller SWM facilities during construction. (Could be combined with 0.5 FTE proposed above for reviews to provide combination 1.0 FTE)</li> </ol>	Maintain response time to construction sites.



# Levels of Service – Information Technology

## ■ Mapping Support

Gap or Need	Level of Service Options	Benefits/Issues
<p>Community Development does not have staff to routinely update stormwater mapping, track inspection and enforcement data, maintain records, and to perform GIS analyses on pollutant loadings and reductions required for DEQ reporting.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Continue to obtain support as available from Communications and Information Technology.</li> <li>2) Periodically use interns to catch up with routine data entry.</li> <li>3) Add 0.5 FTE to allow mapping updates and analyses on a continuing basis.</li> </ol>	<p>Permit Compliance</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Same as above but add 1 FTE (instead of 0.5 FTE) to allow for more current robust mapping updates and analyses, assistance from Communications &amp; Information Technology only for programming and enterprise support.</li> </ol>	<p>Able to more effectively maintain GIS systems and records, and releases Com IT resources for other County priorities.</p>

# Levels of Service – Infrastructure Maintenance and Improvements



## ■ Equipment Replacement

Gap or Need	Level of Service Options	Benefits/Issues
<p>Much of the County's existing equipment for drainage system maintenance has exceeded its planned life expectancy. The County currently does not amortize the cost to replace this equipment; rather the County must pay the full cost all at once.</p>	<p><b>BASIC</b></p> <p>1) Continue existing procedure of asking for appropriation when equipment is worn out.</p>	<p>Appropriation is often not funded resulting in inefficiencies due to worn out equipment.</p>
	<p><b>MEDIUM</b></p> <p>1) Amortize equipment costs for replacement over next 10 years. (\$120,000/year)</p>	<p>Able to maintain minimum effective equipment with level funding.</p>
	<p><b>HIGH</b></p> <p>1) Amortize equipment costs for replacement over next 7 years. (\$175,000/year)</p>	<p>Able to increase field efficiency with better equipment.</p>



# Levels of Service – Infrastructure Maintenance and Improvements



## ■ Stormwater Project Backlog

Gap or Need	Level of Service Options	Benefits/Issues
<p>The County has a significant backlog of drainage projects that have been identified.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Detail project costs and prioritize – update to the County’s stormwater drainage plan.</li> <li>2) Provide additional storm drain crew, cost approximately \$250,000/year.</li> </ol>	<p>Can provide current level of service and stop growth of storm drainage project backlog.</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Same as Basic +</li> <li>2) Provide additional storm drain crew, ~ \$250,000/year. (Total of 2 additional crews)</li> </ol>	<p>Clear backlog over 10 year period. By the time the backlog is cleared, system will have expanded to point that crew is needed for routine maintenance.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) Same as Medium +</li> <li>2) Use contractors to clear backlog in 5 years (approximate \$400,000/year for 5 years)</li> </ol>	<p>Clear backlog in 5 years. Provide responsive citizen service.</p>



# Levels of Service – Infrastructure Maintenance and Improvements

- Project backlog examples

**P-331 1708 Innsbrooke Dr.**

Problem:  
Construct Adequate Channel



Roanoke County  
Department of  
Community Development

Project Number: P-331  
Owner Agency: West Middle (P004)  
Project Address: 1708 Innsbrooke Dr.  
Tax Map Number: 052-04-04-03-02

# Levels of Service – Infrastructure Maintenance and Improvements



## ■ Storm Sewer System Maintenance

Gap or Need	Level of Service Options	Benefits/Issues
<p>System maintenance is currently conducted on a complaint basis rather than systematically planning for the rehabilitation based on age and condition.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Maintain current complaint driven program.</li> <li>2) Conduct system-wide comprehensive assessment of conditions to allow long-term planning and budgeting.</li> </ol>	<p>System will continue to deteriorate, but the County will better understand status. Creating a larger future problem.</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Same as Basic +</li> <li>2) Budget 1.0% of system replacement value annually for repair/replacement of failing infrastructure (\$1,000,000) (some cost overlap with Project Backlog above)</li> </ol>	<p>Can slow system deterioration and provide some routine channel cleaning. Lessen the need for emergency driven projects.</p>
	<p><b>HIGH</b></p> <ol style="list-style-type: none"> <li>1) Same as Basic +</li> <li>2) Budget 2% of system replacement value annually for repair/replacement of failing infrastructure (\$2,000,000). (some cost overlap with Project Backlog above)</li> </ol>	<p>Can provide more routine inspection, cleaning, maintenance, and replacement. Less emergency projects.</p>



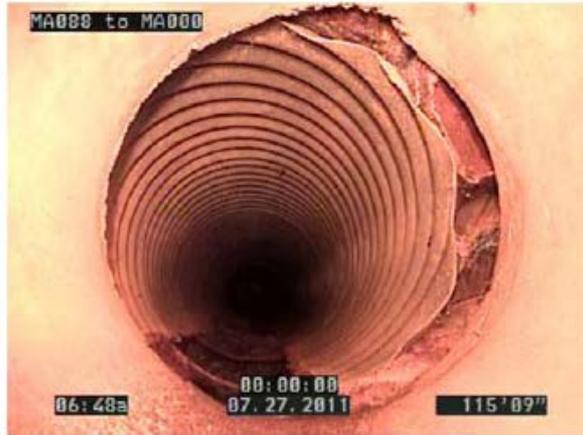
# Levels of Service – Infrastructure Maintenance and Improvements

## Sink Holes Caused by Pipe Failure



# Levels of Service – Infrastructure Maintenance and Improvements

## Pipe Failure Under Sink Holes



# Levels of Service – Infrastructure Maintenance and Improvements



## ■ Maintenance of Streams

Gap or Need	Level of Service Options	Benefits/Issues
<p>The County conducts maintenance as needed of streams within the County right-of-way typically based on complaints. Most County work consists of clearing streams of debris. Many of the County's streams are significantly degraded.</p>	<p><b>BASIC</b></p> <ol style="list-style-type: none"> <li>1) Maintain current complaint driven program.</li> <li>2) Improvements as driven by TMDL WLA program.</li> </ol>	<p>Permit Compliance</p>
	<p><b>MEDIUM</b></p> <ol style="list-style-type: none"> <li>1) Develop comprehensive watershed management plan to better understand overall stream conditions and to help identify and prioritize stream restoration projects. Cost depends on level and detail of analysis. This planning can be performed in conjunction with the TMDL action plans. Estimated cost: ±\$500,000.</li> </ol>	<p>Provides a tool to select projects that have the most benefit in terms of meeting regulatory targets and local goals.</p>



# Levels of Service – Infrastructure Maintenance and Improvements



# Levels of Service

- **Additional thoughts, options, or information needs?**

## Next Steps



# Next Steps

- Next meeting:
  - Thursday, November 7<sup>th</sup>
  - Green Ridge Recreation Center
- Levels of Service Continued...
  - What level of service is appropriate for each gap?
  - Where would you spend your stormwater dollars?
- Materials at least a week ahead of time.
- Final questions?



**Thank You!**

