Virginia Stormwater, Chesapeake Bay TMDL, and BMP Verification

Virginia Department of Environmental Quality

Jaime Robb

Office of Stormwater Management

Overview

- Chesapeake Bay TMDL
- Post Development Stormwater Program
- MS4 TMDL requirements
- Verification

64,000 sq miles

- New York
- Pennsylvania
- Maryland
- DC
- West Virginia
- Delaware
- Virginia

Chesapeake Bay TMDL

- Approved December 29, 2010
- Reductions required for nitrogen, phosphorus, and sediment
- Various source sectors identified
  - Wastewater
  - Agriculture
  - Forest
  - Urban Stormwater
  - Septic
  - Air sources
- Load contribution for urban and suburban SW
  - 8% Nitrogen
  - 15% Phosphorus
  - 16% Sediment

Chesapeake Bay TMDL

- Nutrient _neutral_ development standards
- Redevelopment standards
- Retrofits on existing developed lands
- NMP for application of fertilizers on non-ag lands
  - State owned lands
  - Municipal owned lands
  - Golf courses

Chesapeake Bay TMDL

- Construction and Post-Construction Loads:
  - Erosion and Sediment Control Program
  - Post Development Stormwater Management
  - Chesapeake Bay Preservation Act
- Existing Loads:
  - MS4 retrofits
- Provide reasonable assurance that pollutant reductions necessary to meet TMDL will be achieved by MS4s

Post Development Stormwater Management

- Virginia Stormwater Management Program (VSMP)
- Mandatory statewide since 2011; revised 2014
- Administered by DEQ
- MS4 permittees required to implement VSMP on behalf of Commonwealth jurisdiction wide
  - Demonstrates compliance with MCM 4 and 5
- Other localities can opt-in
- Runoff reduction methods
- SWM plan review tied to CGP coverage

Post Development Stormwater Management

- Water quantity technical criteria
  - Channel and downstream flood protection
- Water quality technical criteria
  - Total Phosphorus as keystone pollutant
  - New development: 0.41 lb/acre/year
  - Redevelopment: Reduction in pre-development TP load
    - Projects < 1 acre: 10% reduction
    - Projects >/= 1 acre: 20% reduction

Post Development Stormwater Management

- Water Quality Compliance Options
  - BMP Clearinghouse
    - 15 non-proprietary
      - Traditional SW BMPs (ponds, infiltration, LID, etc.)
      - Design specifications
    - Several proprietary (manufactured treatment devices)
    - Assigned pollutant reduction efficiencies
    - Inspection and maintenance requirements

Post Development Stormwater Management

- Water Quality Compliance Options (cont.)
  - Offsite BMPs (including credit purchases)
    - Less than 5 acres and less than 10 lbs TP
    - >5 acre or > 10 lbs TP: 75% of reductions achieved onsite
- Long term operation & maintenance requirements
  - Signed agreements between VSMP authority and owner
  - Recorded in the local land records

Post Development Stormwater Management

- VSMP authority inspection requirements
  - Once per 5 years
- DEQ compliance review of local VSMPs
  - Once per 5 years

MS4 Chesapeake Bay TMDL Requirements

- 11 Large and Medium MS4s, 77 Small MS4s
- Existing source reductions

Pollutant	Impervious	Pervious
Total Nitrogen	9%	6%
Total Phosphorus	16%	7.25%
Total Sediment	20%	8.75%

- 3 permit 5 year permit cycles terms to achieve

MS4 Chesapeake Bay TMDL Requirements

- Loading rates based on model dropped in permit
  - River basin dependent
- Permittee calculates "WLAs" based on regulated service area
- TMDL Action Plans developed that show
  - Wasteload calculations
  - BMP identification
  - Reduction calculations

MS4 Chesapeake Bay TMDL Requirements

- Compliance options
  - Virginia's Stormwater BMP Clearinghouse
  - Chesapeake Bay Program approved BMPs
    - Some same as Virginia's stormwater BMP design specification but differing reduction efficiencies
    - Retrofit curves
    - Some annual practices (street sweeping, NMPs)
  - Nutrient credits

What does all of this mean?

Both Virginia's Post Development Stormwater Program and MS4 TMDL requirements result in A LOT of regulated water quality BMPS!

BMP Data Collection and Reporting

- Construction Stormwater General Permit Database
- MS4 annual reports
- BMP Warehouse
  - Comprehensive collection across all sectors
  - Collect info for reporting to EPA NEIEN and CBP
  - Loaded into the CB Watershed Model
  - Credit distributed in model based on location – could indicated whether or not an MS4 permittee is "demonstrating compliance" with WLA

Chesapeake Bay TMDL

- BMPs are plugged into the Chesapeake Bay Watershed Model to predict reductions of pollutant and assess progress
- Structural BMPs assigned "duration"
  - Practice based BMPs rely on annual reporting
- Credits only "renewed" if _verified_ to still be functioning
- Need all the credit we can get!

What is *Verification*?

Chesapeake Bay Program defines as:

The Process through which agency partners ensure practices, treatments and technologies resulting in reductions of nitrogen, phosphorus, and/or sediment pollutant locates are implemented and operating correctly.

Why is *Verification* important?

BMPs with no documented inspection, maintenance, or spot check to confirm continued function are dropped out of the record a the end of their credit duration.

Verification challenges

- Stormwater BMP monitoring is expensive!
  - $$$ better used for implementation and installation
- Not enough DEQ staff resources to inspect at a frequency necessary to physically verify every BMP
  - ~ 40 Stormwater plan reviewers and inspectors
  - Main focus CGP inspections and initial post development BMP installation
  - Program funded based on application fees and annual maintenance fees

Verification

- Programmatic approach as opposed to individual inspections
- VSMP inspections
  - Once per 5 years
- DEQ – VSMP Program Review
  - Once per 5 years
- MS4 BMP inspection requirement in permit
  - Publicly owned: Once per year
  - Privately owned: Once per 5 years
- Plan is to assume # of BMPs "renewed" based on program compliance rates
  - May need to adjust
  - Will require data manipulation of inspection dates that may not be accurate
  - May upset some more conscientious permittees
- DEQ MS4 Compliance Inspections & Desktop Audits
  - Once per 5 years

Questions ?

Contact info:

Jaime.Robb@deq.virginia.gov

804-698-4416