Presentation for
the Citizen's Advisory Committee to the
Chesapeake Executive Council
Baltimore, Maryland

A Overview of Stormwater Management in Maryland

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What We Will Learn

- How the Clean Water Act (CWA) is a basis for many of our current regulatory criteria
- How the CWA regulates water resources and stormwater at the site level
- How Maryland and localities apply stormwater management (SWM) criteria to new activities
- How Maryland and localities apply stormwater management criteria to existing built lands

Stormwater Management (SWM) and the Clean Water Act (CWA)

What is the CWA?

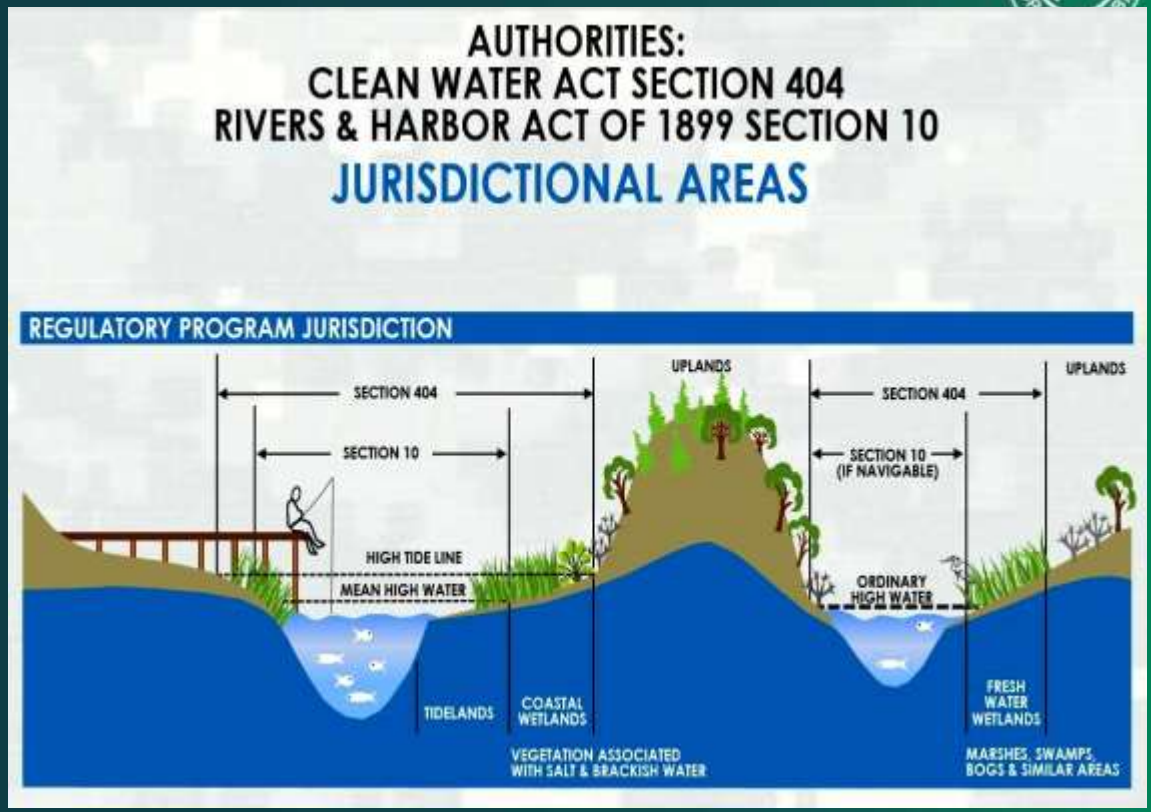
- 1948 Federal Water Pollution Control Act and 1972 amendments
- Most influential water law in history
- Prohibits “discharges” for first time
- *Catalyst for other state and local programs we have today*

CWA Regulation

- Establishes the means to regulate discharges into the Waters of the U. S. (WUS)
- Rules under debate now – and also affect SWM – ***why?***
- U. S. EPA through the Maryland Department of the Environment (MDE) implements point source discharges/pollution controls
- Gradually transitioned to also nonpoint source control – and farther upstream – ***this is key***

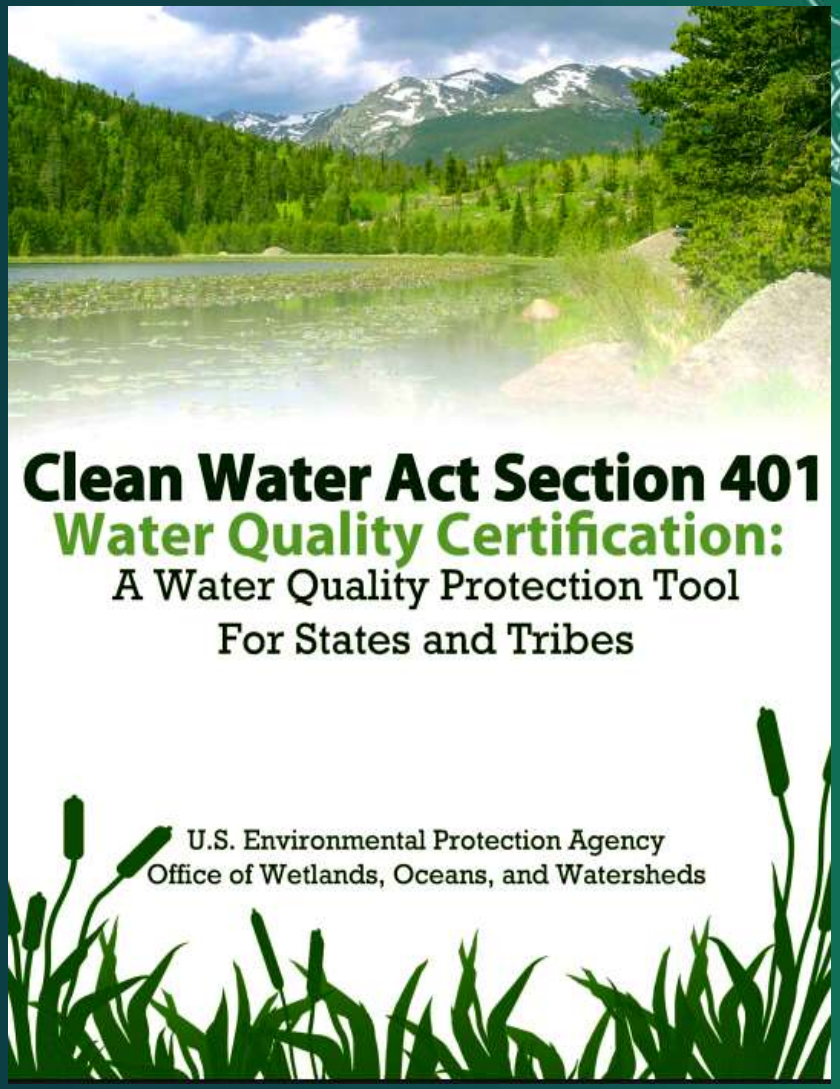
CWA Section 404

- Regulates discharges to WUS, including wetlands, at the site level
- Requires a U. S. Army Corps of Engineers (COE) and MDE permit
- ***SWM, TMDL restoration projects need this permit also***



CWA Section 401 (aka WQC)

- A Water Quality Certification must go with a Section 404 permit or FERC license
- Requires the applicable state (MDE) to issue a WQC
- 401 WQC certifies that a 404 permit will not violate state water quality standards
- This was also the first means to require true SWM in past
- A sleeping giant - ***gives MDE a state veto***



CWA Section 401 in the Past

- 401 WQC conveys numerical and narrative water quality standards including EPA Anti-degradation Policy (ADP)

- The ADP standard requires methods: "…to accomplish the objective of maintaining existing water quality…nonpoint sources shall achieve all cost effective and reasonable best management practices for nonpoint source control…"

- ***First SWM but only when a 404 permit***

CWA Section 401 in the Present

- What happened to the WQC?
- It's still there – now part of the joint COE/MDE tidal/nontidal wetland and waterway permit
- SWM now accomplished by Section 402 NPDES, State SWM law, Forest Conservation Act (and Bay Critical Areas)
- Except for (cue dramatic music) Conowingo Dam
- Section 401 is the only regulatory control the state has

CWA Section 402 (aka NPDES)

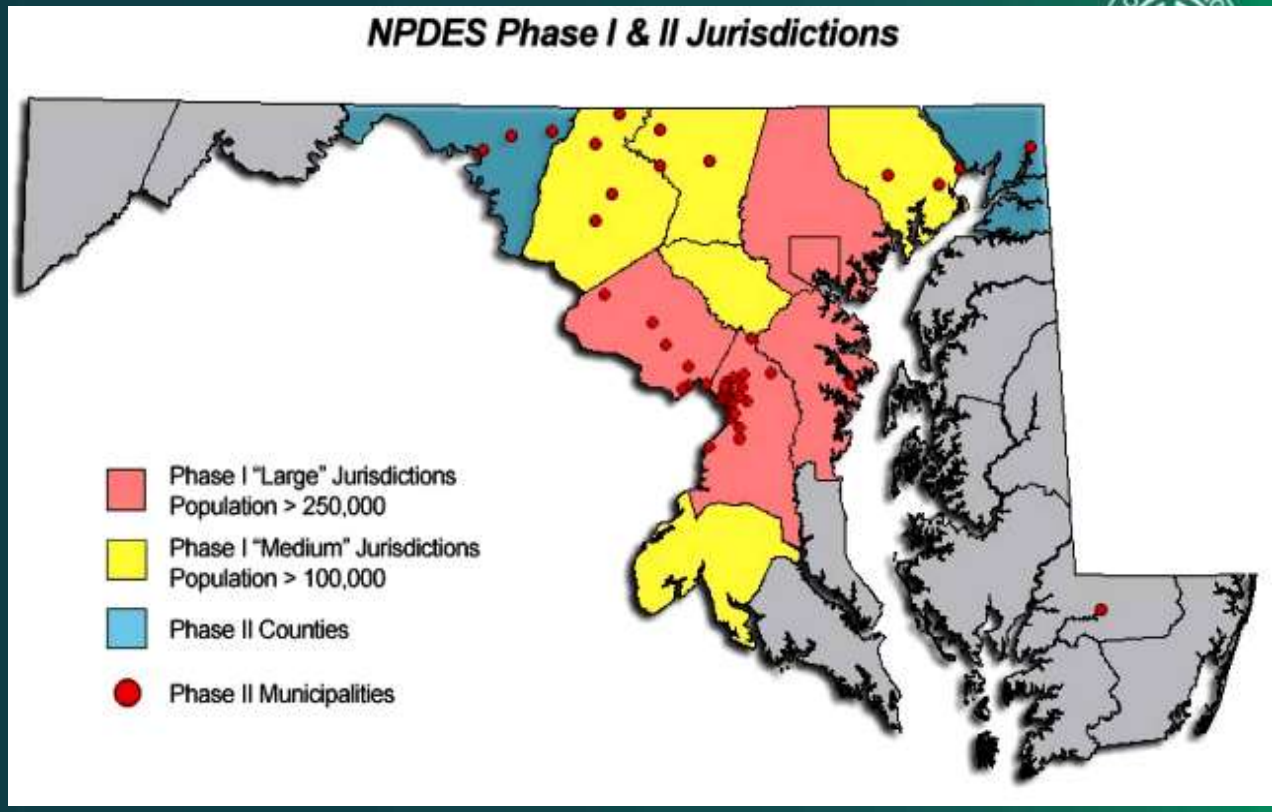
- This is the big one for SWM
- Referred to as National Pollutant Discharge Elimination System
- Originally permitted individual point sources and industrial discharges – and still does
- Over time, acknowledged stormwater discharges need regulation after NURP studies
- ***But how could all stormwater discharges be regulated realistically?***

CWA Section 402 Synopsis

•Administered by MDE programmatic permits in two phases every five years

• Phase I authorizes new construction discharge via a Construction General Permit (GP) - and existing built stormwater systems by a Municipal Separate Storm Sewer System (MS4) General Permit

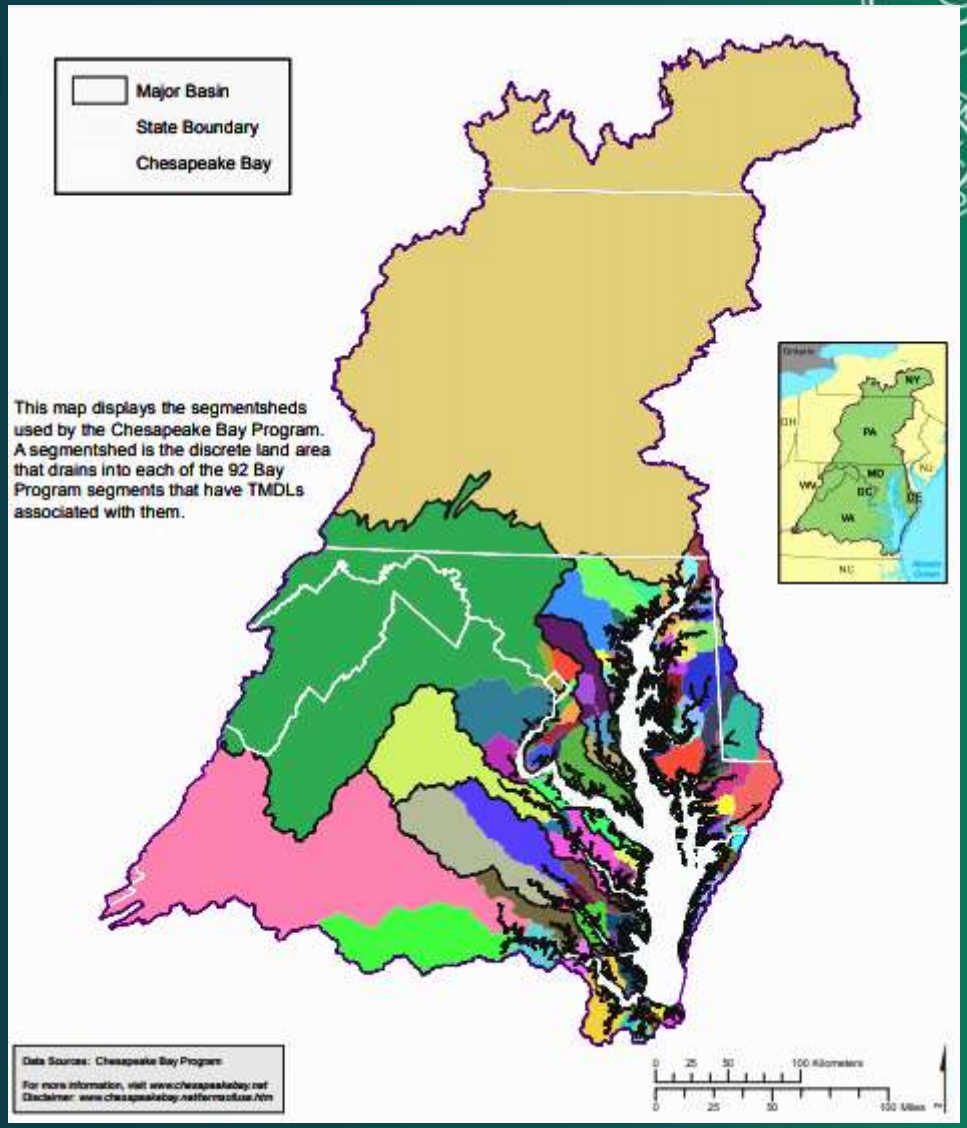
• Phase II authorizes smaller disturbance thresholds for new construction discharges - and smaller MS4 localities and entities (MDTA, WSSC, WMATA



Some rural regions of Maryland (gray) not regulated and state-only SWM (or ag management) criteria applies

Clean Water Act Section 303 (aka TMDL)

- After the state lists their impaired waters, a Total Maximum Daily Load establishes the maximum pollutant level for restoring water
- Been around for smaller segments – the Bay TMDL switches reference to include entire watershed - largest in the country (Conowingo newest)
- MS4 compliance is a means for TMDL compliance through 3 Phases of Watershed Implementation Plans (WIP)
- Non-MS4 jurisdictions have other challenges



SWM at the State and Local Level – Getting it On the Ground

New Construction and Stormwater

How is SWM Applied at State Level?

Maryland's SWM programs integrate ecological and resource with engineering criteria in context of limits of waters, including wetlands

- MDE administers the CWA Sec 402 NPDES Construction General Permit criteria concurrently with local SWM ordinance

- Compliance is achieved by a Stormwater Pollution Prevention Plan (SWPPP) but in Maryland not usually required if an approved MDE SWM plan - may still apply to industrial activities

- Certain DoD and federal facilities may have own SWM mandate

How is SWM Applied Locally?

Maryland applies own state SWM standards – triggered by - land - rather than WUS disturbance

- Federal and state property regulated directly by MDE SWM, DNR Forest Conservation, and Bay Critical Area Commission

- MDE SWM Law delegated to localities and administered by local ordinance

- Forest Conservation Act delegated to localities and administer waters buffers by local ordinance

- In Critical Area, waters buffers, impervious limits, and IDA SWM overlay administered by local planning criteria

What is Maryland's SWM Law?

• 2012 Maryland Erosion and Sediment Control Law - temporary conditions – incorporates E/S Manual

• 2007 Maryland Stormwater Management Act – permanent conditions - incorporates Maryland Stormwater Design Manual for BMPs

– Formalizes Environmental Site Design (ESD) to the Maximum Extent Practicable (MEP) – to maintain channel stability and mimic "woods in good condition" to receiving waters

– Structural stormwater practices may be used if determined to be necessary

– BMPs updated as applicable by CBP Expert Panels assisted by Chesapeake Stormwater Network and WQGIT

Best Management Practices

BMPs are not just structural

- Early Planning
- Environmental site design
- Maximize stream buffer and sheet flow - disconnect impervious surfaces
- Re-development criteria
- ***Urban redevelopment of legacy land and unmanaged stormwater done under criteria requires retrofit of existing unmanaged runoff as well as offsite runoff – and can be net gain and contribute to MS4 goals***

Structural BMP Synopsis

Smaller Volumes - try first

"First Flush" is preferred and most compatible with ESD at-source and/or pretreatment quality control

- Infiltration
  - trench/basin
- Filtering
  - sand filter/bioretention
- Hydrodynamic Devices above or underground
  - Curb & gutter vortex/filter basin
- "Newer" Technology
  - pervious surfaces/green roofs

Larger Volumes – if needed

When preferred is Insufficient for quantity and quality

- Stormwater Ponds
  - wet pond
  - wet ED pond
  - dry ED pond (for cold water w/ pre-treatment)
  - multiple pond system
- Stormwater Wetlands
  - shallow marsh
  - ED shallow wetland
  - pond/wetland systems

Developed Urban Areas and pre-existing Stormwater – Our Biggest Challenge

How is SWM Applied?

Phase I and Phase II NPDES MS4 Permits - only permitting to "clean up the past" - how can existing unmanaged stormwater be managed?

Fundamental MS4 permit requirements:

- Identify stormwater/pollutant sources – biggest regulatory GIS mandate ever
- Map stormwater infrastructure, outfalls, BMPs with drainage areas
- Map impervious surfaces, water quality monitoring, improvement projects
- Maintain an E/S Control and SWM Program
- Implement an Illicit Discharge Detection and Elimination enforcement program
- Identify sources of litter and floatables and implement education program
- ***Public education and outreach – only means for existing non-managed areas – can be a means for CAC Land Use and Urban Stormwater Subcommittee***

Additional MS4 Compliance

More substantial MS4 SWM commitments

Uses the reporting information to supplement WIPs - untreated impervious GIS acreage becomes the baseline impervious from which restoration is measured

By the end of the five year permit term, complete 20% restoration of the baseline impervious area that has not already been restored to the MEP – most formidable

This is how Maryland has committed to EPA to address the Bay TMDL WIP – other Bay states rely on BMPs alone

Each treated acre is one “imperious acre credit” and must be tracked with an annual report to MDE per MDE stormwater wasteload allocation guidance

Alternative MS4 BMP Strategies

Permittees can use a variety of offsets for built environments

Street sweeping
Reforestation/tree planting
Removing impervious
End-of-pipe step pool storm conveyance and outfall stabilization
Catch basin cleaning
Stormdrain vacuuming
Shoreline management
Septic upgrades
Stream restoration – big one – is it too big?

Compliance with new 2018 MDE water quality trading regulations - Anne Arundel and Baltimore Counties already requested modification to their NPDES MS4 permit 20% impervious reduction requirements as a compliance option

Will MS4 Compliance be Achieved?

Are counties meeting MS4 permit goals?
Will compliance be desktop-based?

Many MS4s having difficulty – and compliance can be trading credits from wastewater programs

Likely: Anne Arundel County and SHA - expects to meet goal

Maybe/yes: Baltimore City - proposing trash and street sweeping

Maybe: Frederick County - may be close

No: Montgomery County is under Consent Decree and Prince George's County may or may not head there

All MS4 General Permits are here https://mde.maryland.gov/programs/Water/StormwaterManagementProgram/Pages/storm_gen_permit.aspx

Questions/Discussion