How has the Federal Stormwater Program evolved and what does it mean for you?

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Presentation Overview

- Stormwater Program Evolution
- Stormwater Program Audits
- Common Compliance Concerns
- Pros and Cons of Audits
- Flood Control Perspective
- Environmental Protection Agency (EPA) Priority Areas
- Urban Flooding
- Tools and Technologies
- Summary
Discharge of pollutants to water of the United States from any point source is unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit.
MS4s: Phase I and Phase II

Municipal Separate Storm Sewer System (MS4)

- MS4 – conveyance owned by entity that discharges to waters of U.S., designed or used to collect or convey stormwater (storm drains, pipes, ditches)
  - Phase I MS4s – medium and large, populations 100K or more
    - Individual Permits
  - Phase II – regulated small MS4s
    - General Permits
What is an MS4 Audit?

- Evaluation of an MS4 program to:
  - Assess compliance with the NPDES/State permit
  - Evaluate the Stormwater Management Program
  - Assess current level of implementation of the Stormwater Management Program – by the permittee and/or regulator
  - May be comprehensive in scope or focused on particular components of the management program
Audit Process

- Implementation
- Regulatory Agency
- Stormwater Management Program
- Effectiveness Assessment
Who Conducts Audits

- Federal Regulator - USEPA
- State Environmental Regulator
- Permittees on their own operations
Most Common Program Elements Audited

(Minimum Control Measures)

- Training, education and outreach
- Non-stormwater identification and elimination (IDDE)
- Construction program
- Maintenance program
- Good Housekeeping
- Management and organization
- Program evaluation
- Reporting
Common Compliance Concerns

- Lack of basic permit knowledge
- Lack of Stormwater Management Plan (SWMP) review and modification
- Lack of Documentation – i.e. written procedures, checklists, inspection forms
- Improper waste and wastewater disposal
- Failure to conduct necessary inspections
Common Construction Concerns

- Good housekeeping
- Inconsistent use of liners in concrete washouts
- Improper selection, installation, and maintenance of Best Management Practices
- Lack of documentation of inspections and corrective action follow-up
- Incomplete delegation of authority
Concrete Waste

Concrete Washout Location
Maintenance Yard/Public Works Yard Concerns

- Good Housekeeping
- Lack of signatures on Stormwater Pollution Prevention Plans (SWPPPs)
- Inconsistent application of SWPPPs
- Inconsistent documentation of inspections and corrective action follow-up
- How to handle waste
Ripped and Uncovered Bags of Material

Covered
Potential impacts of an audit

- Administrative Order on consent
- Enforcement (fines)
- Escalation in enforcement
- More stringent permits
- Negative perception
Positive Effects of an Audit

✓ Greater understanding by permittee and management
✓ Greater understanding by regulator
✓ More focus on key program elements
✓ Potentially more funding and personnel where needed
✓ Identification of strengths and areas for program improvement
✓ More effective SWMP resulting in better water quality
Flood Control Perspective
National Association of Flood and Stormwater Management Agencies (NAFSMA) Position Paper

- Clean Water Act Standard of Compliance “municipal stormwater program .... reduction of stormwater pollutants to the maximum extent practicable . . .”
- Permits - often required to implement measures to achieve numeric water quality-based permit limitations
- Difficult to achieve and often with little or no water quality benefit
Communities Are Facing Many Challenges

- Trash and other stormwater pollutants degrade our waters
- Excess volume and velocity of stormwater cause flooding & erosion
- Drought conditions lead to water scarcity and high runoff rates when it eventually does rain
- Development often increases impervious cover and stormwater volumes leading to impacts for downstream impacts
What Do We Do About Stormwater?

**Goal: Incremental Progress (see how far we get)**

**Strategy**
- Keep improving the 6 minimum controls
- Encourage green infrastructure/low impact development
  - Requirements for new & redevelopment
- Pilot retrofits

**Stay the Course**

**Goal: Meet Water Quality Standards over Time**

**Strategy**
- 6 minimum controls and green infrastructure/low impact development
- Start down retrofit path – at a scale to achieve water quality standards
  - Address uncertainties and cost through schedules and adaptive management
Smarter Stormwater Management

Traditional Approach
- Convey stormwater quickly from site to waterbody or detention ponds
- Manage peak flows for flood control, drainage and large scale downstream erosion

New Approach
- View stormwater as a resource
- Slow down the flow, allow to infiltrate
- Reduces pollutant loads to waterbodies
- Obtain multiple community benefits
If We Don’t Take This New Direction
It Will Cost a Lot More

- If sites do not incorporate sustainable stormwater controls in growing communities, waterbodies will become impaired and these communities will face extremely high costs to restore the waters.

- If sites do not incorporate sustainable stormwater controls in areas that already discharge to impaired waters, the quality of our urban waters will worsen and the cost to restore these waters will grow.

- Communities will not realize the many other benefits of green infrastructure, including:
  - Reduced flooding
  - More liveable communities
  - Increased property values

- The cost of inaction is high and borne most by local governments.
Urban Stormwater Program
Looking Forward

Looking forward: Encourage communities to develop long-term, cost-effective stormwater strategies that provide multiple benefits

Guiding Principles

Catch and manage rain where it falls using green infrastructure approaches and emphasize retention as the preferred method for managing stormwater

Cities create a long-term vision for stormwater (e.g., 20-25 years) for communities to implement a plan

Incorporate long-term stormwater plan into other broader community planning efforts that are already being planned
Urban Flooding - Definition

- **Urban flooding** is the inundation of land or property in a built environment, particularly in more densely populated areas, caused by rainfall overwhelming the capacity of drainage systems, such as storm sewers.

- More details (AZ Case Studies) – see Session J8 (Thursday) – Swick, Plasencia and Brownell
Tools and Technologies for Stormwater Management

- Data Collection Apps
- Asset Management
- Light Detection and Ranging (LiDAR)
- Unmanned Aerial Vehicles (UAVs)
- iWATR (integrated Watershed Assessment Tool for Restoration)
Custom Data Collection Apps

- **ESRI Collector**
  - ArcGIS online account
  - $2,500/yr. for 5 users

- **MiCap (Mobile Information Capture Tool)**
  - Baker’s custom-built mobile data collector
  - Uses a fraction of the data vs Collector
Mobile LiDAR – Cost-effective way to collect engineering grade survey data

Survey of an interstate overpass by Mobile LiDAR
Stormdrain Inlets

Manholes
Technology Use for Asset Management

- Federal Aviation Administration Certification required to Operate Unmanned Aircraft Systems

- Advantages:
  - Safer than putting people in harm’s way
  - Efficient
  - Access
  - Applicable to stormwater engineering disciplines
A Planning Tool to Assist in Protecting America's Most Valuable Resource - Water
**Summary**

- Stormwater program audits will still occur.
- Audits can promote positive outcomes.
- Clean water is still going to be a priority.
- Stormwater should be seen as a resource.
- Flood Control Districts can play a key assistance role.
- Multiple tools are available to assist.
Questions?

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THANK YOU!