Stormwater Management and Surface Water/Ground Water Integration

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The Big Picture: Wet Weather Discharges

- Wet weather discharges are point source discharges that result from precipitation events, such as rainfall and snowmelt.
- Wet weather discharges include stormwater runoff, combined sewer overflows (CSOs), and wet weather sanitary sewer overflows (SSOs).
Wet Weather Discharges: Defined

- **Stormwater runoff** is rainwater or snowmelt that flows over land, and can carry sediment and contaminants from streets, rooftops, parking lots, lawns and other places to surface water bodies or infiltrate through the soil to ground water; it can also be directed to Class V UIC wells such as dry wells, French drains, and seepage pits and be discharged into USDWs with little or no pretreatment.

- **CSOs** are overflows of excess wastewater from combined sewer systems (those that collect runoff, domestic sewage, & industrial wastewater in the same pipe) that occur during periods of heavy precipitation; they can carry stormwater, untreated human and industrial wastes, toxic materials and debris directly into water bodies.

- **SSOs** are unintentional discharges of raw sewage from municipal sanitary sewers into our waters (and basements) due to severe weather, improper system operation & maintenance, & vandalism.
Coordination in Managing Wet Weather Discharges

• Although stormwater management and ground water protection is the focus of this talk, and each of these three wet weather discharges are managed under separate NPDES programs, they should be addressed in a coordinated and comprehensive fashion since they share cross-cutting issues and, in many cases, affect a similar group of stakeholders.

• For example, reducing stormwater runoff will result in fewer or smaller CSOs and SSOs.
Stormwater Challenges

- Although progress has been made, significant challenges remain to protect water bodies from impact of stormwater discharges
- Urban stormwater is the primary source of water quality impairment
  -- 13% of all rivers and streams
  -- 18% of all lakes
  -- 32% of all estuaries
EPA’s NPDES Stormwater Program

- The National Pollutant Discharge Elimination System (NPDES) Stormwater Program regulates stormwater discharges from three potential sources: municipal separate storm sewer systems (MS4s), construction activities, and industrial activities.
- Most stormwater discharges are considered point sources, and operators of these sources may be required to receive a permit to discharge.
- The permit is designed to prevent stormwater runoff from polluting surface waters.
- Most states have primacy for the NPDES Stormwater Program and administer their own permitting programs; EPA remains as the permitting authority in a few states, territories, and on most tribal lands, and provides oversight and issues stormwater permits.
Other EPA Stormwater Programs/Resources

- EPA has a wide variety of programs, materials, and websites to help stormwater management programs.
- For example, the Nonpoint Source Program, the Green Infrastructure Initiative, and Low Impact Development provide information and guidance on stormwater BMPs & other management approaches.
- Websites on these and other stormwater management activities are linked at:
Definitions of NPDES-Permitted Sources of Stormwater Discharges

- Municipal Separate Storm Sewer Systems (MS4s)—a conveyance or system of conveyances that is: owned by a state, city, town, village, or other public entity that discharges to waters of the U.S.; designed or used to collect or convey stormwater (including storm drains, pipes, ditches, etc.); not a combined sewer; and not part of a Publicly Owned Treatment Works
- Construction Activities—construction site operators engaged in clearing, grading, and excavating activities that disturb 1 acre or more, including smaller sites in a larger common plan of development or sale
- Industrial Facilities—includes 10 categories of industrial activities: facilities subject to federal stormwater effluent discharge standards in 40 CFR, Pts. 405-471; heavy manufacturing (steel mills, chemical plants, etc.); coal and mineral mining and oil and gas exploration and processing; hazardous waste treatment, storage, or disposal; landfills, land application sites, and open dumps with industrial wastes; metal scrapyards, salvage yards, automotive junkyards, and battery reclaimers; steam electric power generating plants; transportation facilities that have vehicle maintenance, equipment cleaning, or airport deicing operations; treatment works treating domestic wastewater with a design flow of 1 million gallons a day or more; and light manufacturing (food processing, printing and publishing, etc.)
# Federal Stormwater Regulations

## Phase I
- Finalized in 1990
- Regulates medium & large municipal separate storm sewer systems or MS4s (defined as areas that serve 100,000 or more people) for 10 categories of industrial operations and active construction sites of 5 acres min.
- Requires MS4s to develop & implement a stormwater management plan (SWMP) to find & eliminate illicit discharges and control discharges from its system by addressing runoff from active construction sites, new development & redevelopment, industrial program
- Construction & industrial stormwater dischargers to develop/implement Stormwater Pollution Prevention Plan

## Phase II
- Finalized in 1999
- Regulates small MS4s located in an “urbanized area” (UA) as defined by the Bureau of Census
- Additional MS4s outside of UAs designated by NPDES permitting authority: active construction activities disturbing between one & five acres
- MS4 SWMP must include 6 minimum control measures: public ed. & outreach; public participation; illicit discharge detection & elimination; construction site runoff control; post-construction runoff control, and; pollution prevention/good housekeeping
The 2008 NRC report (*Urban Stormwater Management in the United States*) was critical of EPA’s urban stormwater management approach. One of its key recommendations was to put emphasis on reducing stormwater flow to automatically achieve reductions in pollutant loading. Another recommendation: “stormwater control measures that harvest, infiltrate, and evapotranspirate stormwater are critical to reducing the volume and pollutant loading of small storms”
Key Concern for Ground Water Protection

Balancing the reduction of contaminated runoff to surface waters and the desirability of increased recharge of ground waters through infiltration of stormwater or its discharge to the subsurface via Class V UIC wells with the protection of sensitive ground waters
Recent & Current Surface Water/Ground Water Stormwater Integration Efforts

- 6/13/08 memo from Steve Heare of OGWDW and Linda Boornazian of OWM clarifying which stormwater infiltration practices may potentially be regulated as Class V UIC wells
- Revised and re-formatted Source Water Protection Practice Bulletin on Stormwater Management
- Draft General Permit for Discharges from Large and Small Construction Activities
- Post-Construction Stormwater Rulemaking
Heare/Boornazian Clarification Memo

- Includes a reference guide that clarifies which specific types of stormwater infiltration practices have the potential to be regulated as Class V UIC wells.
- Encourages State or Regional stormwater and nonpoint source control programs, developers, and others to contact the State or Regional UIC program director with primacy for the Class V program when considering the use of practices that have been or could be identified as Class V wells.
- Also encourages UIC program managers to consider proximity to sensitive ground water areas when reviewing infiltration practices; these areas include where ground water is a source of drinking water or other areas identified by federal, state, or local governments as sensitive.
Effluent Limitations Guidelines & Standards for the Construction & Development Point Source Category Rule

- Published in the Federal Register (40 CFR Part 450, v. 74, no. 229, p. 62996+, 12/01/09)
- Subjects owners/operators of construction sites disturbing 10 acres or more to national non-numeric effluent limits affecting erosion & sediment control, site stabilization, and pollution prevention
- The Preamble (p. 63052, *E. Safe Drinking Water Act Requirements*) notes that certain type of infiltration practices might be subject to UIC regulation as Class V wells, describes these types in some detail, and recommends contacting the state or regional UIC program director with primacy for Class V wells when these types of practices are planned
- Also cautions about potential infiltration impacts on highly sensitive geologic settings and references source water assessments and our source water practices bulletin on managing stormwater runoff to prevent contamination of drinking water as good sources of information
Source Water Protection Practices Bulletin:
Managing Stormwater Runoff to Prevent Contamination of Drinking Water

• Bulletin was revised this past August based on collaboration with OWM and OWOW as well as comments from EPA regional UIC and Source Water Coordinators

• Includes a lengthy new section on ground water sensitivity and considerations for selecting & implementing infiltration practices in sensitive areas

• The revised bulletin is posted at:
  http://www.epa.gov/safewater/sourcewater/pubs/fs_swpp_stormwater.pdf
General Permit for Discharges from Construction Activities

- EPA is drafting a new Construction General Permit to regulate stormwater discharges from construction activities for 4 states (MA, NH, ID, NM), DC, Puerto Rico, U.S. Territories, tribal lands, and federal facilities in a few states that do not have primacy for the NPDES stormwater permitting program; the permit is scheduled to be issued as final by June 30, 2011

- EPA is considering a requirement in the draft permit to require that developers consult with their State or EPA Regional UIC Program Director with primacy for Class V wells when using specific types of stormwater infiltration practices
Post-Construction Stormwater Rulemaking

- EPA is developing a rule to strengthen the stormwater program, particularly post construction stormwater discharges from newly developed and redeveloped sites of a certain size (long term control of stormwater discharges from sites after the active phase of construction is over)

- Options for the standard could include matching pre-development hydrology at certain sized sites by retaining a certain size storm or reducing impervious cover or other options

- EPA is considering exceptions or alternatives to meeting performance standards at specific sites with constraints, such as sensitive ground water areas

- Other Rulemaking Considerations:
  - Developing compliance tool: site specific stormwater calculator
  - Redefining regulated MS4s
  - Developing specific requirements for transportation
  - Addressing discharges from existing development through retrofits

- The rule is scheduled to be proposed in Sept. 2011 and go final in Nov. 2012; it is in the pre-proposal stage: defining terms, developing options, analyzing impacts of the options, etc.