# Federal Storm Water Requirements

Potomac Drinking Water Source Water Protection Partnership

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# Overview of Federal Storm Water Requirements

- Introduction to the NPDES Storm Water Program
- Region III NPDES Storm Water Program
- Potomac River Storm Water Sources

# Clean Water

# Why is Storm Water a Problem?

- Pollutants discharged from developed and disturbed land
  - Quality
  - Quantity

- Other pollutants enter storm sewer system
  - Illicit discharges
  - Illicit connections

# Storm Water Pollutants

- Sediment
- Nutrients
- Bacteria
- Oxygen Demand
- Oil and Grease
- Trace Metals
- Toxic Chemicals
- Chlorides
- Thermal Impacts

# Sources of Impairment

**From EPA's 1998 summary report on the quality of State waters, the following impairment is due to urban runoff/storm sewers:**

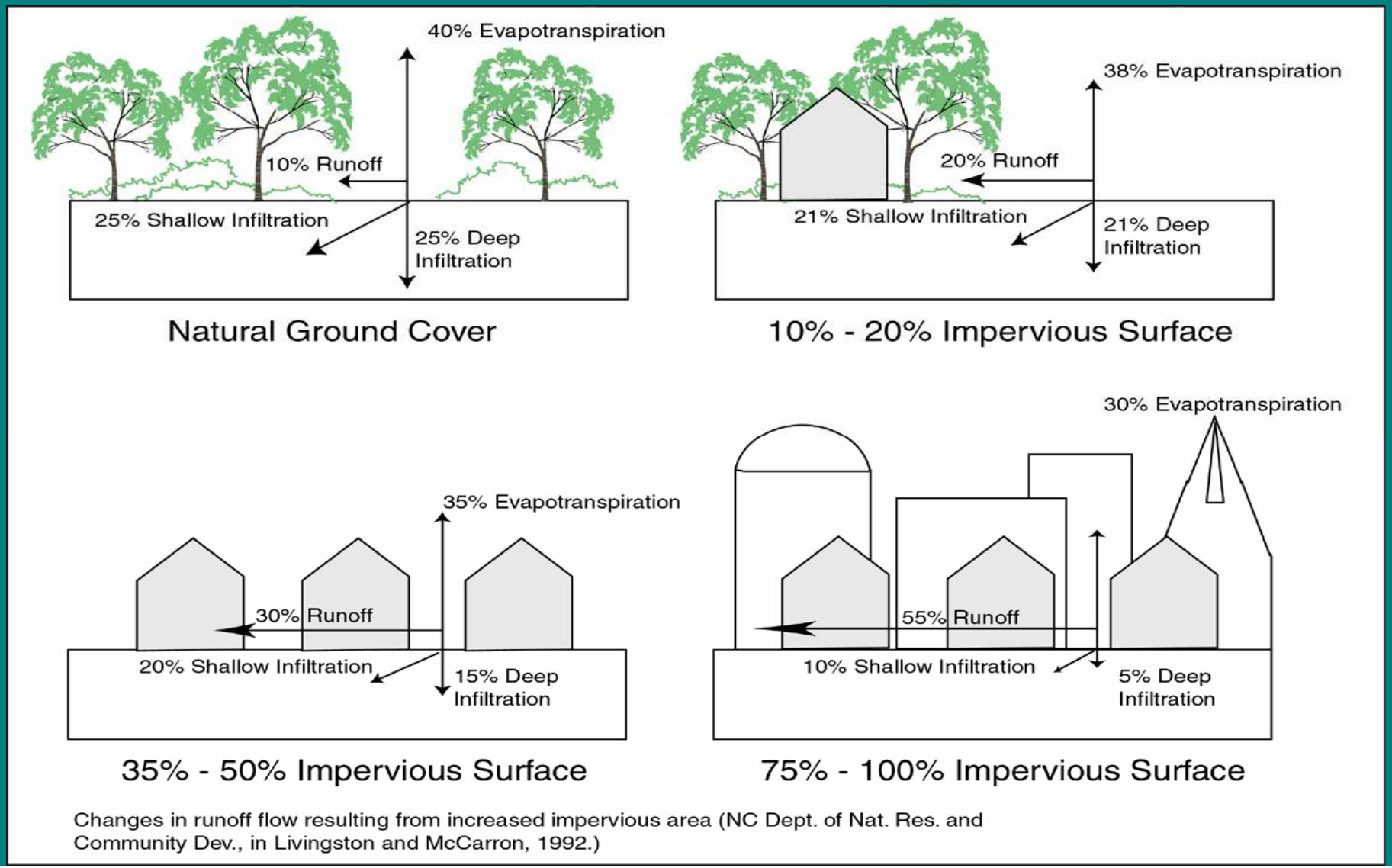
- **11% of impaired river miles**
- **12% of impaired lake acres**
- **28% of impaired estuarine square miles**

# Storm Water Runoff Impairment in EPA Region III

Sources of River/Stream Impairment

| Source | 2004 | 2002 | 2000 | 1998 | % Change ('98 - '04) |
|---|---|---|---|---|---|
| Agriculture | **6153** | **6685** | **4,853** | **2,210** | **178** |
| Resource Extract | **10038** | **5741** | **3,854** | **2,097** | **377** |
| Unknown | **8784** | **6059** | **3,597** | **1,419** | **519** |
| Urban Runoff | **4376** | **3331** | **3,040** | **829** | **428** |
| Natural | **6341** | **2314** | **1,054** | **552** | **1049** |
| Other | **329** | **1036** | **301** | **215** | **53** |
| Hydro Mod | **1449** | **1546** | **1,561** | **137** | **957** |

# Imperviousness vs. Storm Water Runoff

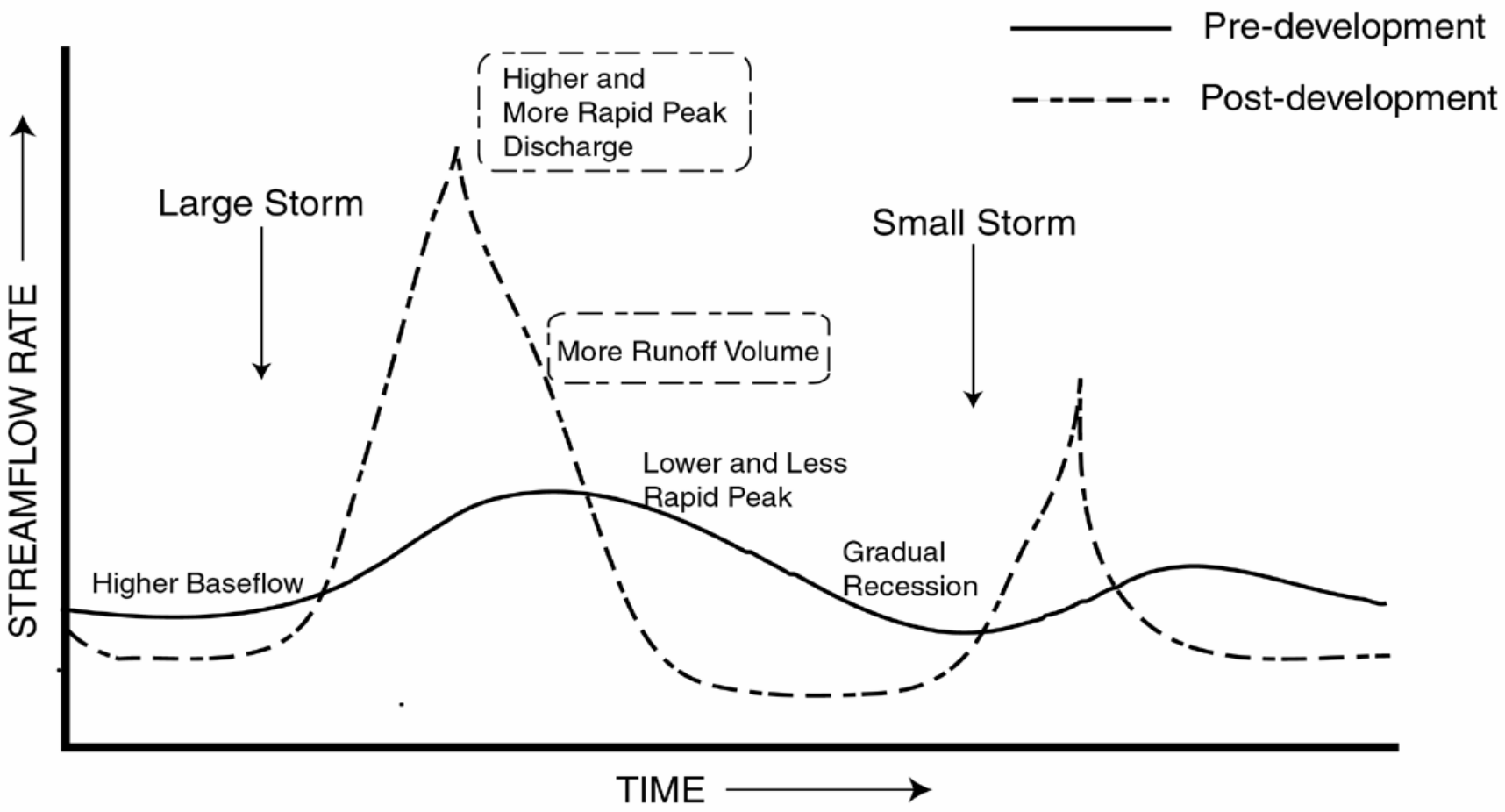



Changes in runoff flow resulting from increased impervious area (NC Dept. of Nat. Res. and Community Dev., in Livingston and McCarron, 1992.)

# Imperviousness and Water Quality

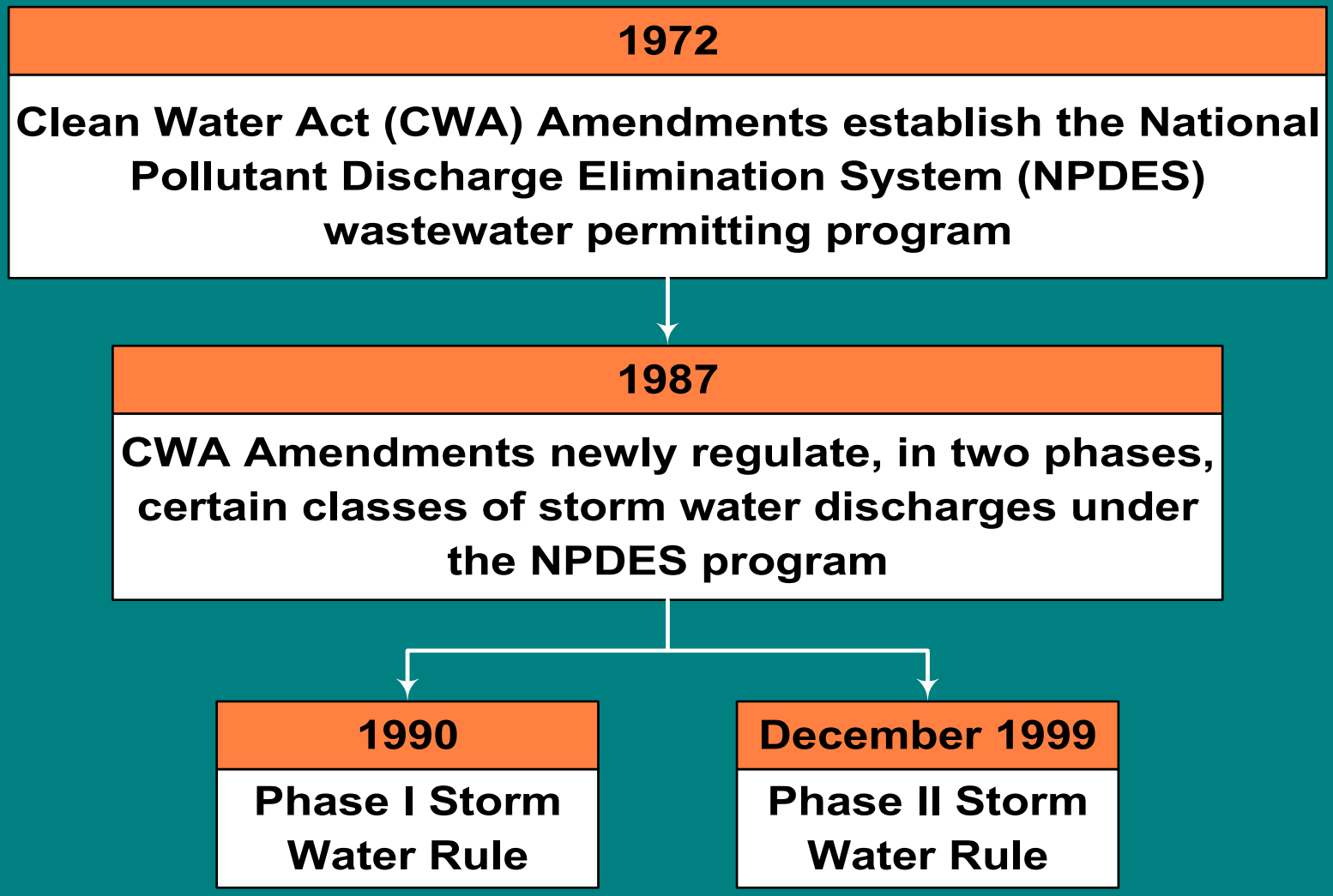
- Consequences of impervious land coverage:
  - Reduced infiltration of rainwater
  - Increased runoff volumes and velocity
  - Collects and concentrates pollutants
  - Increases ambient air and water temperature

# Changes in Hydrology After Development



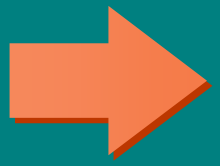

Changes in stream hydrology as a result of urbanization (Schueler, 1992).

# Storm Water Program Regulatory History



# NPDES Statutory Framework

- All point sources
- Discharging pollutants
- Into waters of the U.S.



Must obtain an NPDES permit from EPA or an authorized State

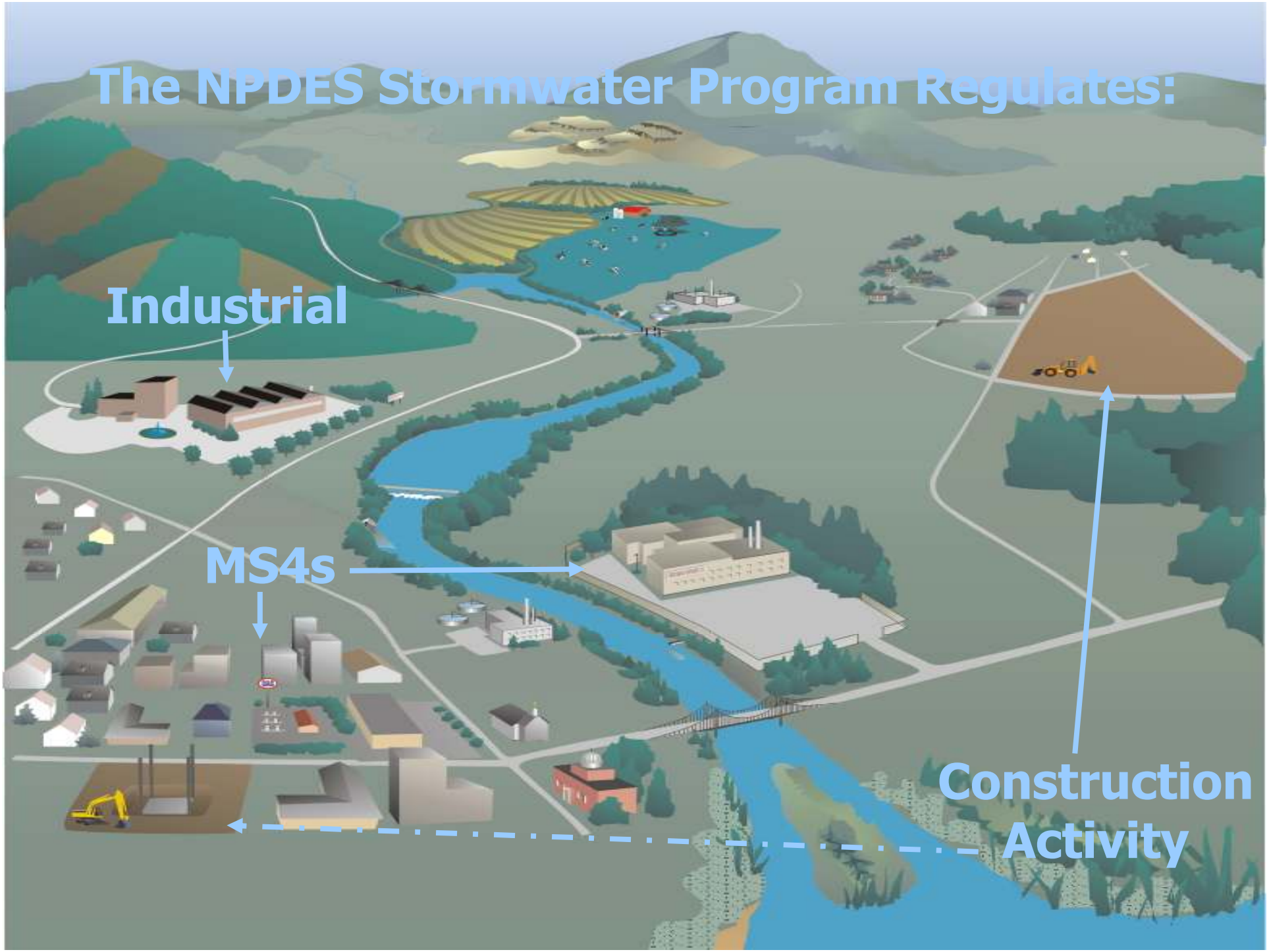
# Point Source vs. Nonpoint Source

## POINT Source

- Discharge of wastewater/ washwater/storm water from a discrete point into Waters of the U.S.
- NPDES Regulatory Program

## NONPOINT Source

- Any runoff that is not a point source
- Voluntary program at the Federal level


The NPDES Stormwater Program Regulates:
Industrial
MS4s
Construction Activity

# Overview of Storm Water Regulations

- **NPDES Storm Water Regulations Phase I (1990)**
  - **Large/Medium Municipal Separate Storm Sewer Systems (MS4s) - pop >100,000**
  - **Industrial - 11 categories includes large construction (>5 Ac)**
- **NPDES Storm Water Phase II (1999)**
  - **Small MS4s - pop>10,000 and density>1,000/mi $^2$**
  - **Small construction - disturbs 1-5 Ac**
  - **Industrial - no exposure exemption**

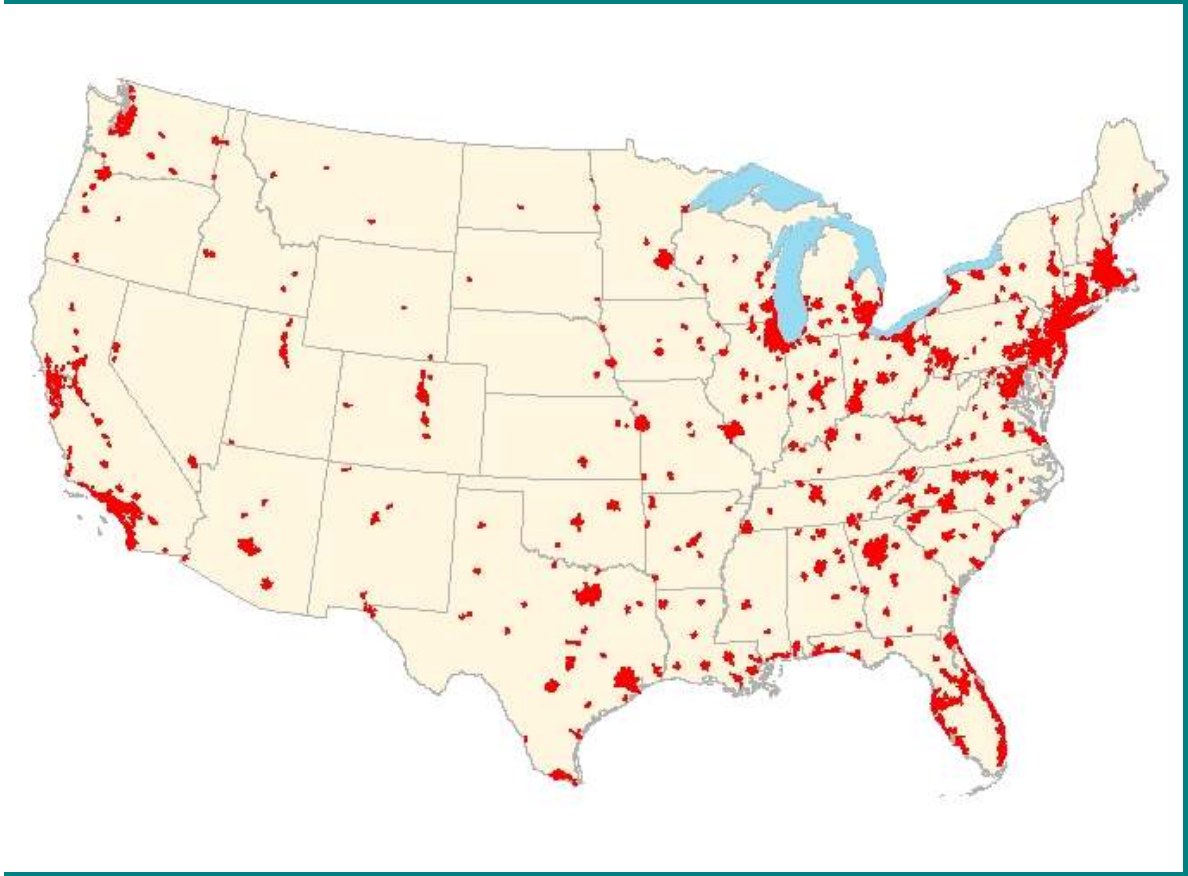
# Types of NPDES Permits

- **Individual (tend to be Phase I)**
  - 1 application submitted → 1 permit issued
- **General (tend to be Phase II)**
  - 1 permit issued → many applications submitted by many permittees
  - similar operations or same wastes
  - Issued on an area-wide (State, watershed, urbanized area, etc.) basis

# Medium and Large MS4 Program
## *Permit Requirements*

- **Storm Water Management Program:**
  - **Identify major outfalls and pollutant loadings**
  - **Detect and eliminate non-storm water discharges to the storm sewer system**
  - **Reduce pollutants in runoff from industrial, commercial and residential areas**
  - **Control storm water discharges from new development & redevelopment areas**
- **Conduct analytical and visual monitoring**
- **Submit annual program assessment reports**

# Urbanized Areas in the U.S.
# Municipal Separate Storm Sewer Systems



- 464 Urbanized Areas
- 5,000+ Communities
- 197 million people
- 70% of the population
- 2% of the land area

# Industrial Categories

- Heavy manufacturing (lumber mills, chemical plants, petroleum refineries leather tanners, concrete plants etc)
- Mining and oil and gas exploration.
- Hazardous waste treatment, storage, or disposal facilities.
- Landfills,
- Recycling of materials, including metal scrapyards, battery reclaimers, salvage yards, and automobile junkyards.
- Steam electric power generation
- Transportation facilities that have vehicle maintenance shops, equipment cleaning operations, or airport deicing operations

# Industrial Storm Water Program Requirements

- **Develop and implement Storm Water Pollution Prevention Plan (SWPPP)**
  - **Planning and organization**
  - **Site evaluation - ID potential pollutant sources**
  - **BMP identification**
  - **BMP implementation and maintenance**
  - **Evaluation and monitoring**
- **Industry-specific requirements**
  - **Special drainage area site maps, additional good housekeeping, inspections etc**
- **Benchmark concentrations as guides and numeric effluent limitations for certain industries**

# "No Exposure" Provision

- **no exposure exclusion**
  - **No exposure now applies to all categories, except Category (x) construction**
  - **No permit needed for those activities not exposed to storm water**
  - **Requires a certification of no exposure**

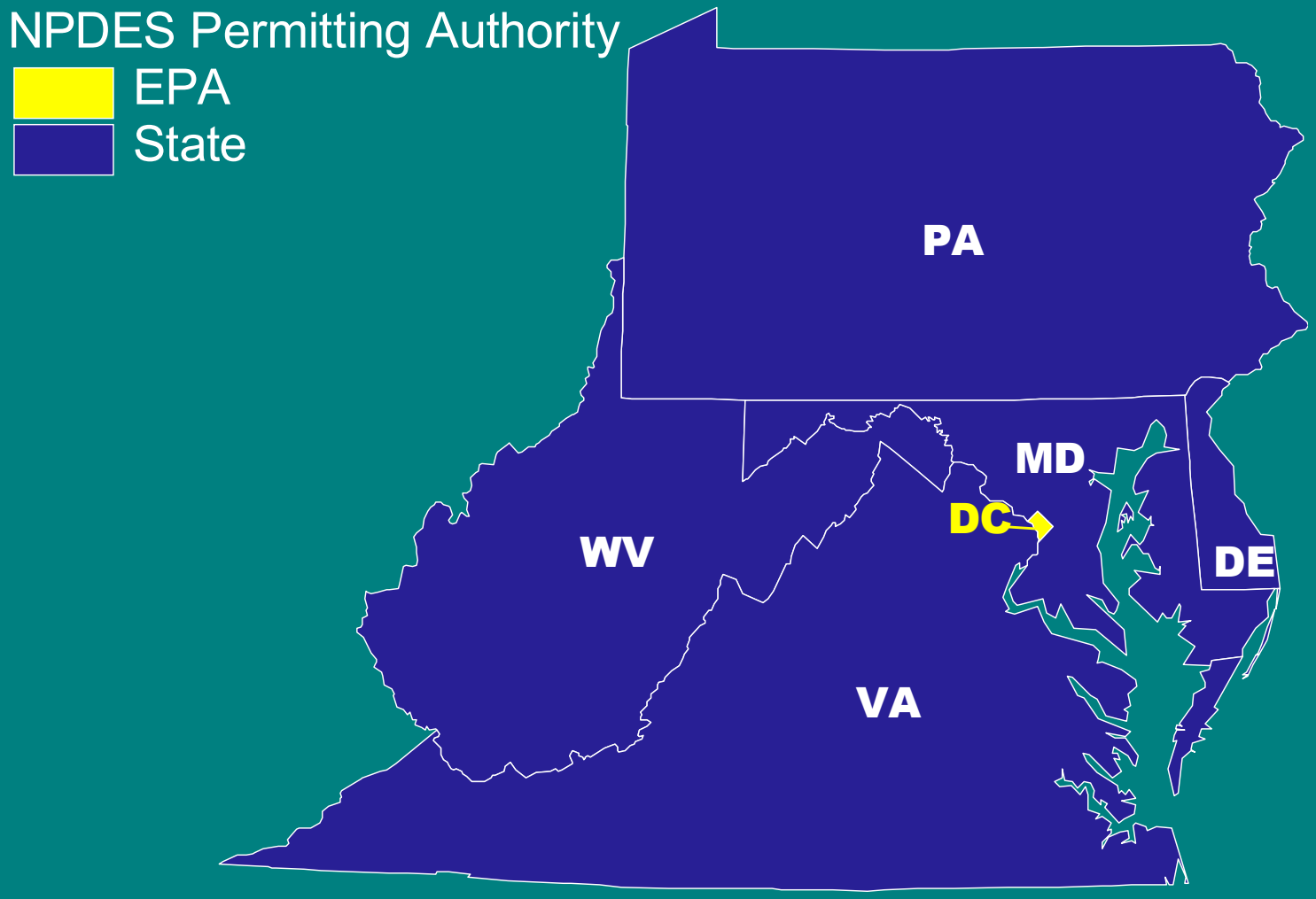
# Construction Permitting Requirements:

- General Permit NOI/NOT
- Storm Water Pollution Prevention Plan
  - Site Description
  - E & S Control Measures (BMPs)
  - Inspections
  - Maintenance
  - Accessibility

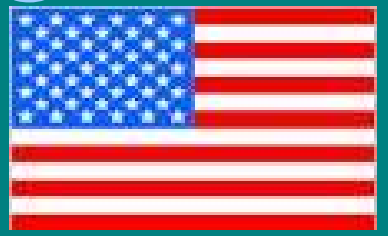
# Small MS4 Program Permit Requirements

- Regulated small MS4 operator required to develop, implement, and enforce a program to:
  - Reduce the discharge of pollutants to the maximum extent practicable (MEP)
  - Protect water quality
- Storm Water Management Plan:
  - Six minimum control measures
    - Public Ed and Outreach, Eliminate Illicit Discharges, Construction and Post construction Controls, Good Housekeeping
  - Evaluation/assessment efforts & record keeping

# Who are the NPDES Storm Water Permitting Authorities in EPA Region 3?



# Role in Implementing the Program
## Federal Government



- Develops regulations under the Clean Water Act
- Reviews permits issued by Permitting Authority
- Acts as Permitting Authority in non-authorized States and Territories (DC)
- Conducts Compliance Assistance and Enforcement

# EPA Region III
# Storm Water Program Goal(PE)

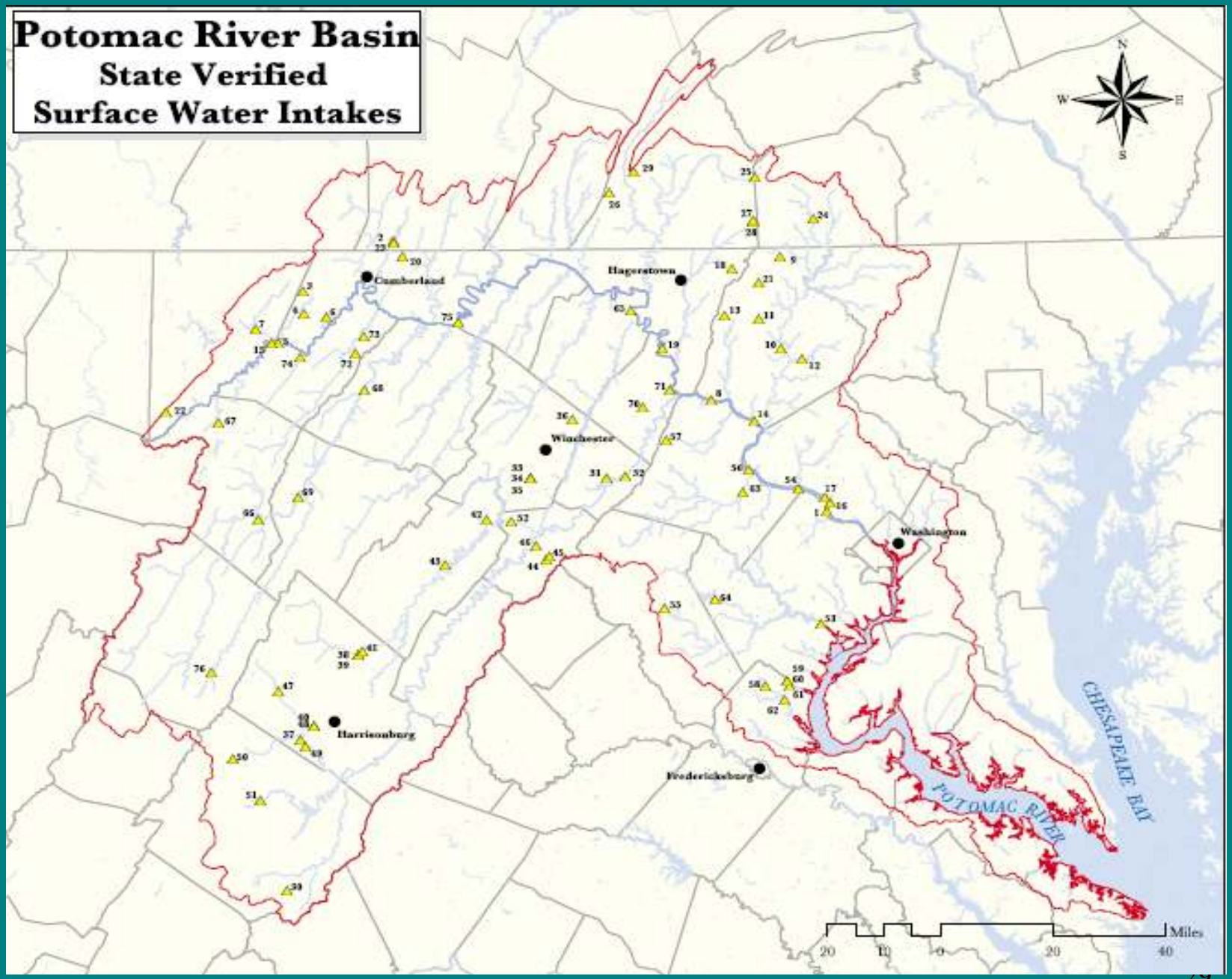
**Reduce runoff – flow and pollutant loads – in target urban areas through implementation of regulatory and non-regulatory approaches and better enable states and local governments do the same.**

# Strategy to meet the Goal

- Lead by Example - **Lead Partnership and Watershed Restoration Projects in impaired stream segments to promote Low Impact Development (LID) techniques or Environmentally Sensitive Design (ESD) measures in Chesapeake Bay and Delaware River basins.**
- Improve Regulatory Program Effectiveness - **Develop model MS4 permits and conduct enforcement against major developers to ensure regulatory compliance on a wide scale and greater application of LID/ESD.**
- Disseminate Information to Motivate Behavior Change - **Conduct LID/ESD incentive, award and outreach campaigns to target audiences including regulators, regulated community, and the public.**

# EPA Region III
# NPDES Storm Water Permits

| Permit Authority | Phase I / II MS4 Permits | Phase II MS4 Permittees | Estimated Construction Permittees |
|---|---|---|---|
| DC – EPA | 1 Phase I (IP) | NA | Included in MS4 |
| DE | 1 Phase I (IP)<br>3 Phase II (IP) | 3 | 1190 |
| MD | 11 Phase I (IP)<br>2 Phase II (GP) | 79 | 1500-2000 |
| PA | 2 Phase I (IP)<br>3 Phase II (GP) | 923 | 2500 |
| VA | 11 Phase I (IP)<br>1 Phase II (GP) | 99 | 2000 |
| WV | 1 Phase II (GP) | 40 | 1000 |


Potomac River Basin
State Verified
Surface Water Intakes
N
W
E
S
Cumberland
Hagerstown
Winchester
Harrisonburg
Fredericksburg
Washington
CHESAPEAKE BAY
POTOMAC RIVER
Miles
20
0
20
40

# Land Use in Potomac River Basin

Table 3 - Land Use in the Potomac River Basin (square miles)

| Watershed | Developed | Agriculture | Forested | Open Water | Wetland | Barren | Total |
|---|---|---|---|---|---|---|---|
| Potomac (entire watershed)* | 701 | 4,663 | 8,451 | 579 | 165 | 120 | 14,679 |
| Middle Potomac (DC, MD, VA)* | 437 | 913 | 1,037 | 63 | 39 | 29 | 2,518 |
| Battery Kemble Creek | 96 | | 143 | | | | 239 |
| Foundry Branch | 134 | | 34 | | | | 168 |
| Dalecarlia Tributary | 834 | | 277 | | | | 1,111 |

* *Chesapeake Bay Program* web site

# TMDL Requirements

The TMDL Report requires the following reductions in fecal coliform loads:

1. 91.7 percent reduction in CSO loads
2. 50 percent reduction is upstream loads from Maryland
3. 50 percent reduction in storm water loads discharging directly to the Potomac River from the District, Maryland, and Virginia (overland flow)
4. 50 percent reduction in loads from storm sewers
5. 50 percent reduction in tributary storm water loads
6. No reduction is Blue Plains' or Virginia's WWTP loads

# MD MS4 permits

- Anne Arundle County MD0068306 11/8/04 11/08/09
- Baltimore City MD0068292 1/3/05 01/03/10
- Harford County MD0068268 8/13/99 08/13/04
- Prince George's County MD0068284 10/13/04 10/13/09
- Baltimore County MD0068314 6/15/05 06/15/10
- Carroll County MD0068331 7/14/05 07/14/10
- Charles County MD0068365 7/31/02 07/31/07
- Frederick County MD0068357 3/11/02 3/11/07
- Howard County MD0068322 6/15/00 06/15/05
- Montgomery County MD0068349 7/5/01 07/05/06
- State Highway Admin MD0068276 11/12/04 11/12/09
- Statewide Small MS4 MDR055500 4/14/03 04/14/08
- Statewide Small MS4 (State and Federal Facilities) MDR055501 11/12/200411/12/09

# VA MS4 permits

| | | | |
|---|---|---|---|
| Arlington County | VA0088579 | 8/27/02 | 08/27/07 |
| Fairfax County | VA0088587 | 1/24/02 | 01/24/07 |
| Prince William County | VA0088595 | 2/5/03 | 02/04/08 |
| Chesterfield County | VA0088609 | 3/24/04 | 03/24/09 |
| Henrico County | VA0088617 | 3/18/03 | 03/18/08 |
| Chesapeake City | VA0088625 | 3/8/01 | 04/10/06 |
| Hampton City | VA0088633 | 3/8/01 | 03/08/06 |
| Newport News | VA0088641 | 3/8/01 | 04/10/06 |
| Norfolk City | VA0088650 | 3/8/01 | 03/08/06 |
| Portsmouth City | VA0088668 | 3/8/01 | 03/08/06 |
| Virginia Beach City | VA0088676 | 3/8/01 | 03/08/06 |
| Statewide Small MS4 | VAR06 | 12/09/02 | 12/09/07 |

# Expected Benefits of the Storm Water Program

- Enhanced commercial, recreational and subsistence fishing
- Enhanced opportunities for swimming, boating and noncontact recreation
- Reduced flood damage
- Drinking water benefits
- Navigational benefits
- Reduced illness from contaminated seafood & contaminated water
- Enhanced aesthetic value

# For More Information

- **USEPA Region 3**
  - **Paula Estornell**

    **email: estornell.paula@epa.gov**

    **phone: (215) 814-5632**

- **USEPA Headquarters**
  - **web: http://cfpub.epa.gov/npdes/home.cfm?program_id=6**
  - **http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm**
  - **email: singelis.nikos @epa.gov**