# CLEAN WATER ACT'S STORMWATER PROGRAM

# Stormwater is a leading cause of water quality impairment and its impact is growing



- Urban stormwater is a leading source of impairment
- Fast growing water quality concern
  - Approximately 800,000 acres being developed every year, growing to over 1.0 million acres by 2039
- Development increases the amount of impervious cover in the landscape
- Small increase in impervious cover leads to big impacts in receiving waters
- Development upstream can cause downstream impacts in communities

# Stormwater Impacts: Pollution, Flooding, and Property Losses

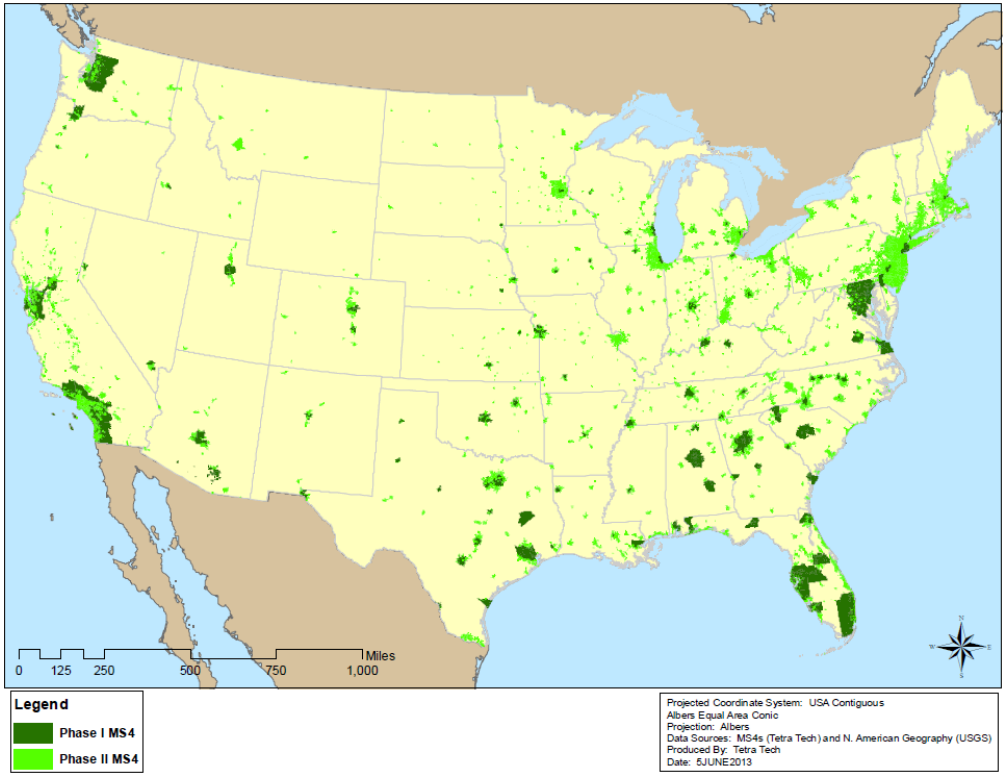


- Stormwater pollutants
  - Cause beach closures and swimming illnesses through bacterial contamination and algal blooms
  - Impact fisheries and shellfish harvesting through excess sedimentation, nutrients, bacteria, metals, and temperature
  - Increase the costs of treating drinking water supplies

- Stream impacts
  - Increase stormwater volume and velocity causing flooding, scouring and sewer overflows
  - Reduce groundwater recharge impacting water supplies

# Existing Program






Current coverage

- Primarily in urbanized area
- Accounts for much of the population
- Only about 2% of the land area

- Many communities have waterbodies that are already polluted by stormwater discharges from impervious areas
- Communities are working hard to address stormwater and are looking for cost-effective solutions moving forward
- Developers play an important role in finding these cost-effective stormwater solutions

# Changing the Paradigm of Stormwater Management



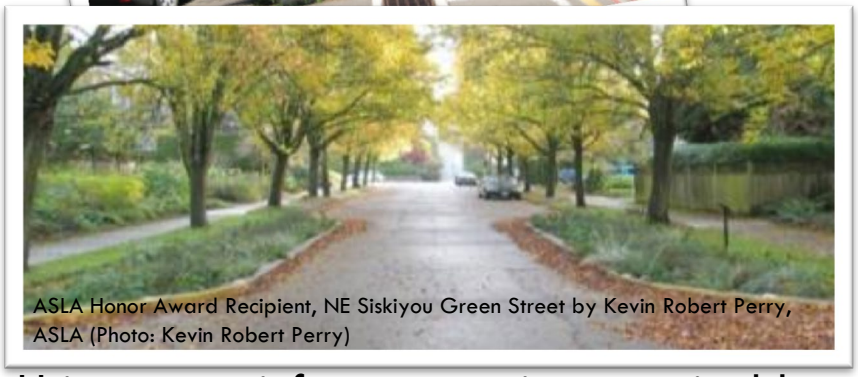
## Traditional approach

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

## New approach - Integrate green infrastructure in the design of the project

- View stormwater as a resource
- Slow down the flow, allow to infiltrate
- Manage stormwater on-site
- Reduces pollutant loads to waterbodies

# New Directions



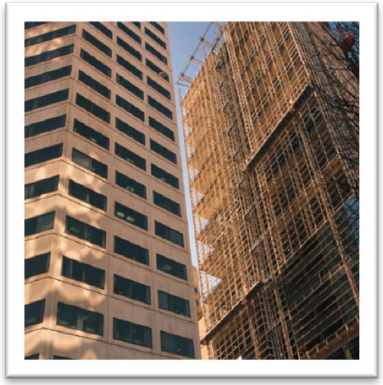
ASLA Honor Award Recipient, NE Siskiyou Green Street by Kevin Robert Perry, ASLA (Photo: Kevin Robert Perry)

Using green infrastructure is a sustainable way to control stormwater.

- Incorporate green infrastructure into sites as they are being developed and redeveloped
  - Provides most cost-effective opportunity to control stormwater at its source
  - Prevents water quality degradation in healthy waters
  - Helps restore impaired waters
- Looking at the problem on a watershed basis will be more cost effective
- Incentives for sustainable practices that provide numerous other economic and quality of life benefits to communities

The Cost of Doing Nothing

# 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 growing communities, the quality of our urban waters will worsen and the cities will be less appealing places to live
- Communities will not realize the many other benefits of green infrastructure, including:
  - Reduced flooding
  - More liveable communities
  - Increased property values

# Potential Focus of a Proposed Stormwater Rule



**Establish performance standards for discharges from newly developed and redeveloped sites**

- Builds upon innovative approaches developed by many communities and developers already
- Helps to revive urban streams
- Creates level playing field
- Prevents pollution
- Avoids costly stream restoration
- Reduces flooding
- Creates local jobs

# Potential Focus of a Proposed Stormwater Rule (Cont'd)



**Encourage watershed approaches for managing municipal stormwater discharges**

Helps ensure stormwater contro are properly implemented whic could reduce the need for expensive retrofits later

Considerations

# Performance Standards



- Considering a retention-based performance standard to require that sustainable stormwater controls be incorporated into sites as they are developed and redeveloped
  - Reduce pollutants
  - Reduce volume and velocity of discharges
- Considering a standard that varies according to an area's climate and other location-specific characteristics
  - e.g. certain percentile storm event

About 1/3 of states and many local communities already have some sort of treatment or retention-based performance standard

- Considering many flexibilities
  - For sites
  - For alternative local programs
- There are cost-effective ways to meet the standard
  - Incorporate controls in the site design by preserving vegetation and/or reducing impervious cover
  - Integrate green infrastructure practices into landscape or other common areas

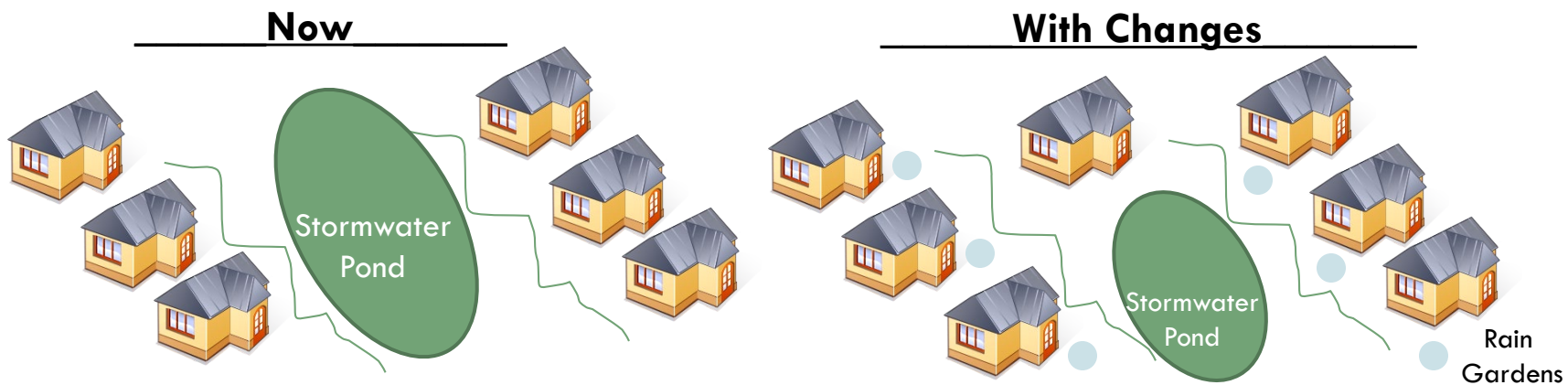
# Performance Standards (Cont'd)



Applying the standard nationwide would create a level playing field for developers among municipalities and protect downstream communities from upstream development.

- Considering relaxed standard for redevelopment
  - Recognizes site constraints and benefits to reusing already developed site
  - Encourages redevelopment to revitalize urban communities
  - Considering additional incentives for smart growth and brownfields development

- The standard could be directly applied to newly developed and redeveloped sites nationwide or only those sites discharging to regulated MS4s or watersheds including MS4s



Flexibilities

# Performance Standards (Cont'd)



- Could accommodate site constraints (including water rights laws)
  - Managed through treatment
  - Off-site mitigation
  - Payment-in-lieu
  - Banking or trading programs
- Allow sites to do their own analyses based on site-specific information
- Allow phased implementation
- Allow watershed plans that control pollutants/flows
- Would credit alternative programs that are better suited to their needs, but that are as protective as the national standard
- Allow alternative green infrastructure plan in-lieu-of a new and/or redevelopment standard

# Benefits of a Proposed Stormwater Rule



## Water-Based Benefits

Improved recreational, aesthetic and non-use values

Lower drinking water treatment costs

Lower dredging costs for navigational channels

Reduced siltation of water storage reservoirs

Reduced downstream flooding damage

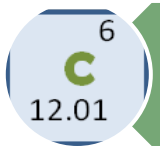
Groundwater recharge

Small stream erosion and water quality impacts

## Vegetation-Based Benefits

Improved air quality and reduced human health impacts

Higher off-site property values associated with green infrastructure




Carbon uptake by plants

Reduced energy use by buildings and associated air quality and carbon footprint benefits

Innovative communities across the U.S. already have on-site retention standards in place and are seeing the benefits.

# Cost-Effective Solutions in Residential Areas



- Pervious pavement
- Bioswales, raingardens
- Curb cuts, green streets
- Downspout disconnection
- Narrower streets, driveways, roads

# Commercial Cost-Effective Solutions



- Integrate curb cuts into parking islands to allow water to infiltrate
- Smaller parking lots
- Pervious pavement
- Cisterns

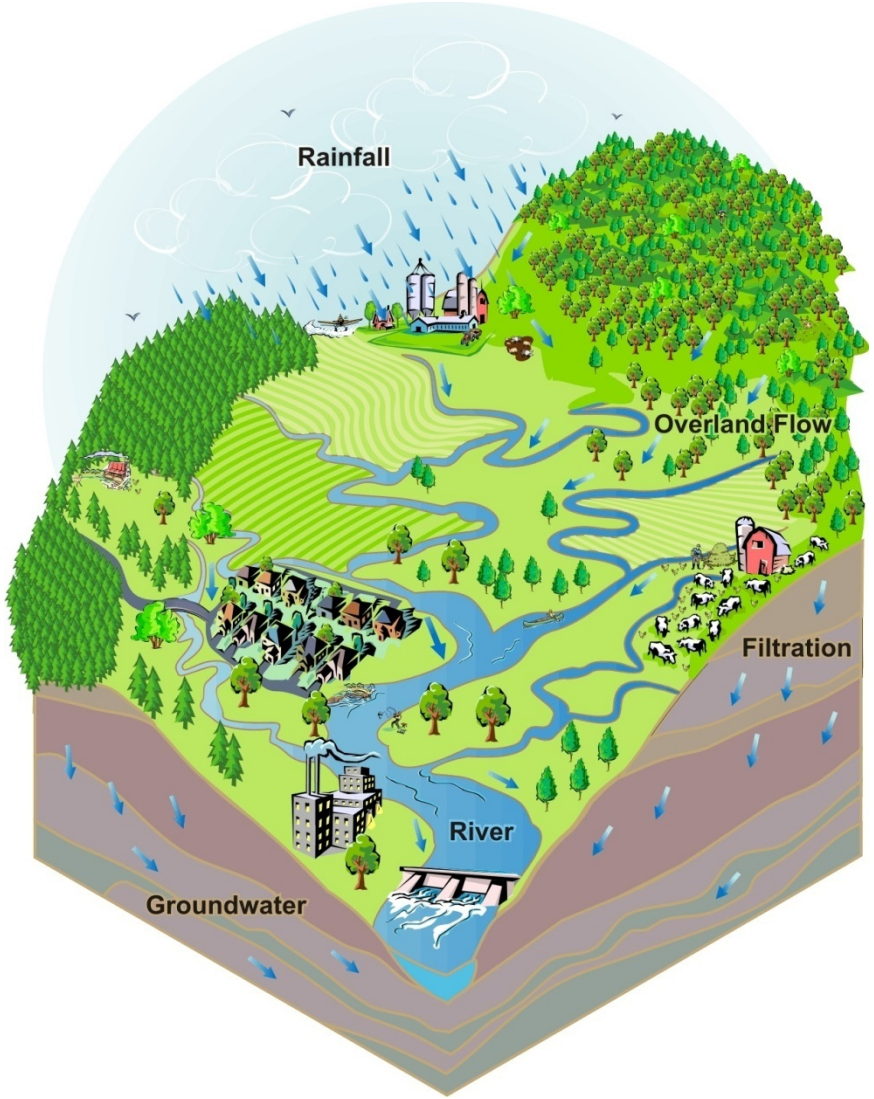
# Complete Street Cost-Effective Solutions



Green infrastructure stormwater controls like rain gardens and vegetated curb bump-outs can be part of complete street designs

This sustainable, complete street is welcoming for pedestrians, bicyclists, and transit while maintaining plentiful street greenery and managing stormwater.
*Photo: Dan Burden, Walkable and Livable Communities Institute.*

# Encourage Watershed Approaches



- Encourage MS4s in same watershed to work together
  - Watersheds surrounding existing regulated MS4s
- Encourage sound stormwater programs as growth occurs
- Population threshold 10,000
- MS4 light, watershed permits, guidelines, recognition/certification