



# Collaboration across Boundaries to Achieve Integrated Watershed Management

A Means to Affordable Water Quality for the Saw Mill Run Watershed

Great Lakes & St. Lawrence River Green Infrastructure  
Conference

May 31, 2017

# Saw Mill Run

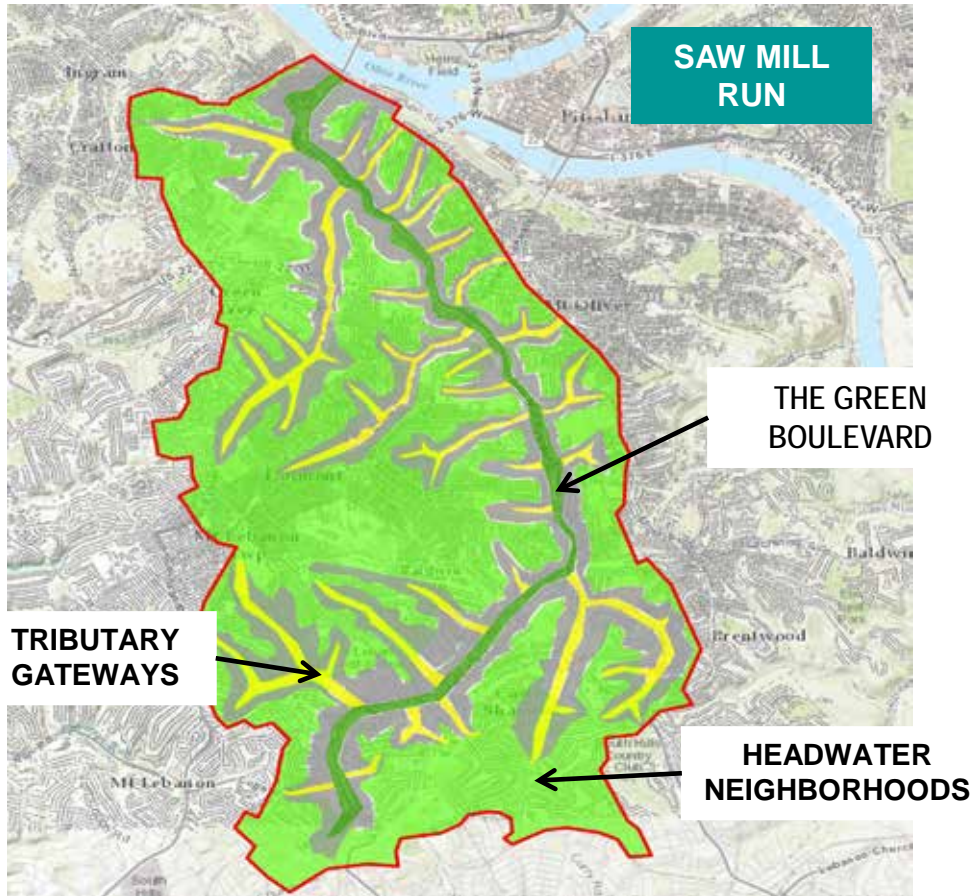
## The Challenge

- 12 Municipalities
- 434 M gallons CSO annually
- 270,000 gallons SSO annually
- 11 B gallons stormwater - MS4 Permit compliance
- Dry weather pollution
- Multiple other pollution sources
- TMDL requirements
- Flooding/Basement Backups
- Sewers that are 80 - 100 years old

**ALL THE SAME RATEPAYER!**



We need an **AFFORDABLE PLAN** to address ALL of these Issues



## Integrated Watershed Management Plan Goal

Replace traditional, end-of-pipe solution for the CSOs & SSOs in the watershed with a combination of green, gray and watershed-wide elements that will:

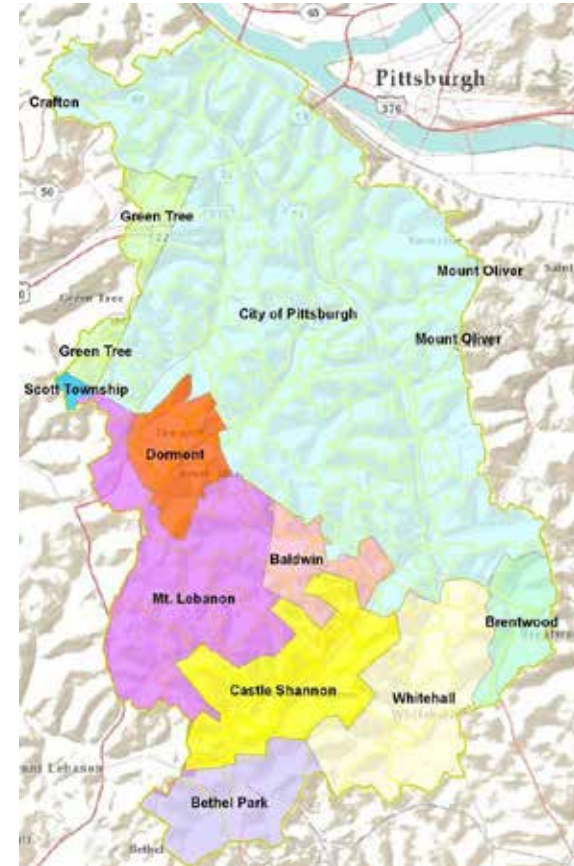
- Achieve PWSA's, ALCOSAN's, and the municipalities' consent order & Clean Water Act requirements
- Address other water quality & quantity issues, improve quality of life & contribute to economic development, wherever possible

# Saw Mill Run

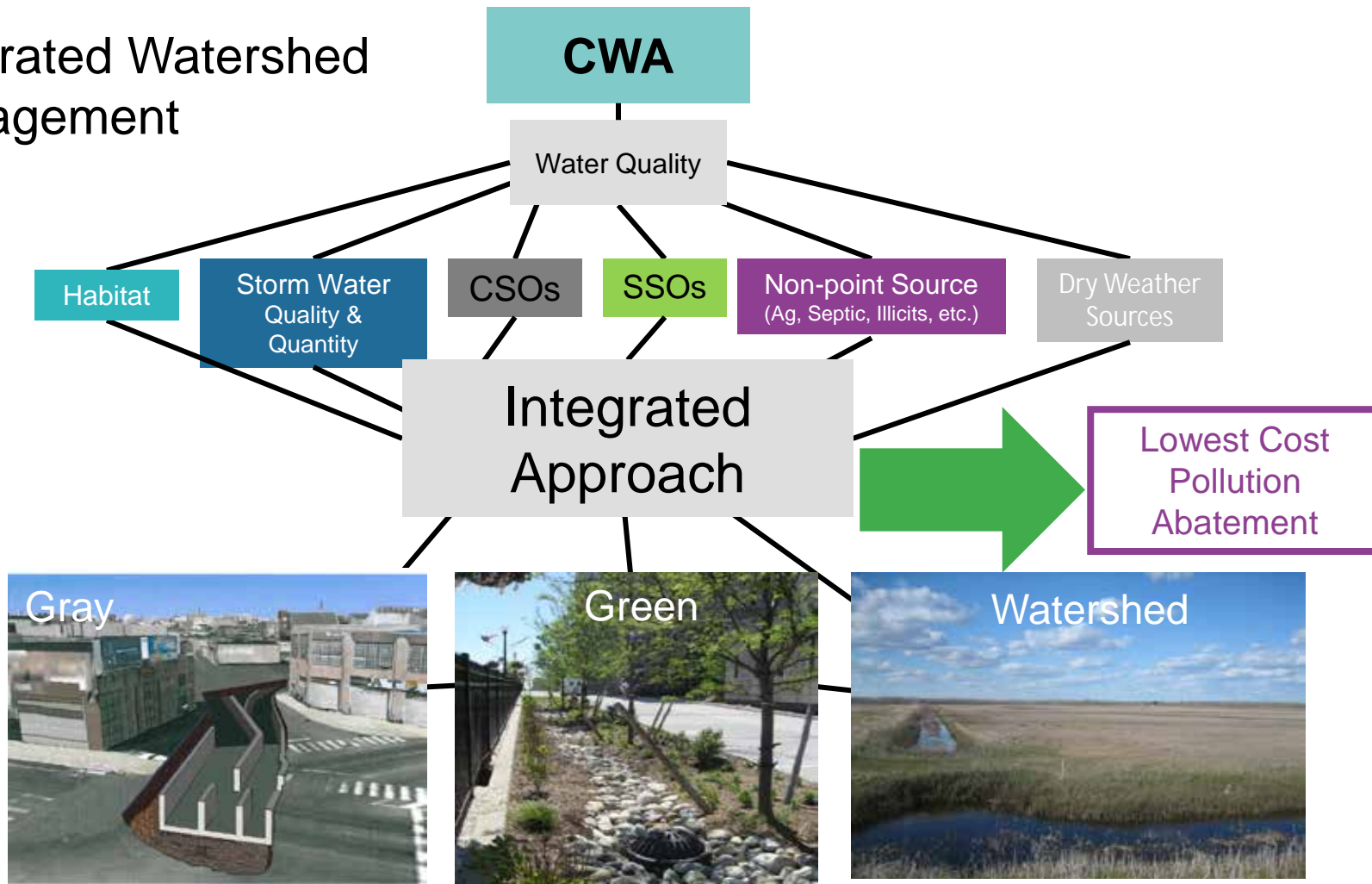
## Integrated Watershed Management



- Collaboration of ALL 12 municipalities
- Focus on **water quality**, using EPA framework
- Partnerships: Economic Development South, US Army Corps of Engineers
- DEP and regulatory buy-in throughout the process
- Joint TMDL planning and submittal



# Integrated Watershed Management



# Integrated Watershed Management can improve traditional CWA approaches by:

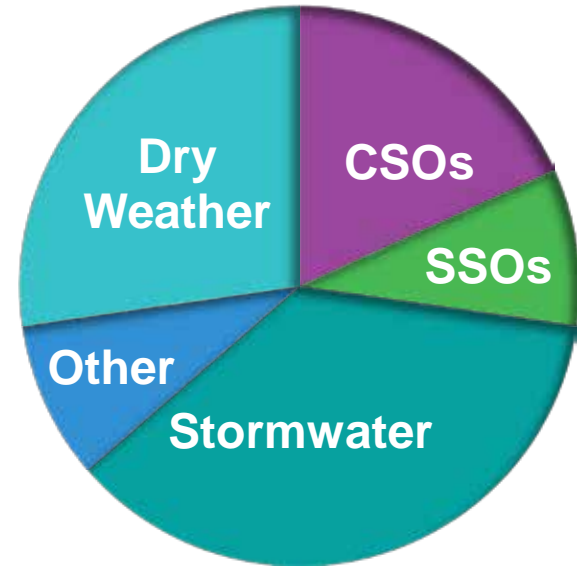
1. Integrating CWA requirements to save significant ratepayer dollars
2. Selecting water quality based solutions
3. Achieving greater improvement to water quality faster
4. Being more affordable for ratepayers



# Integrated Watershed Management Overview

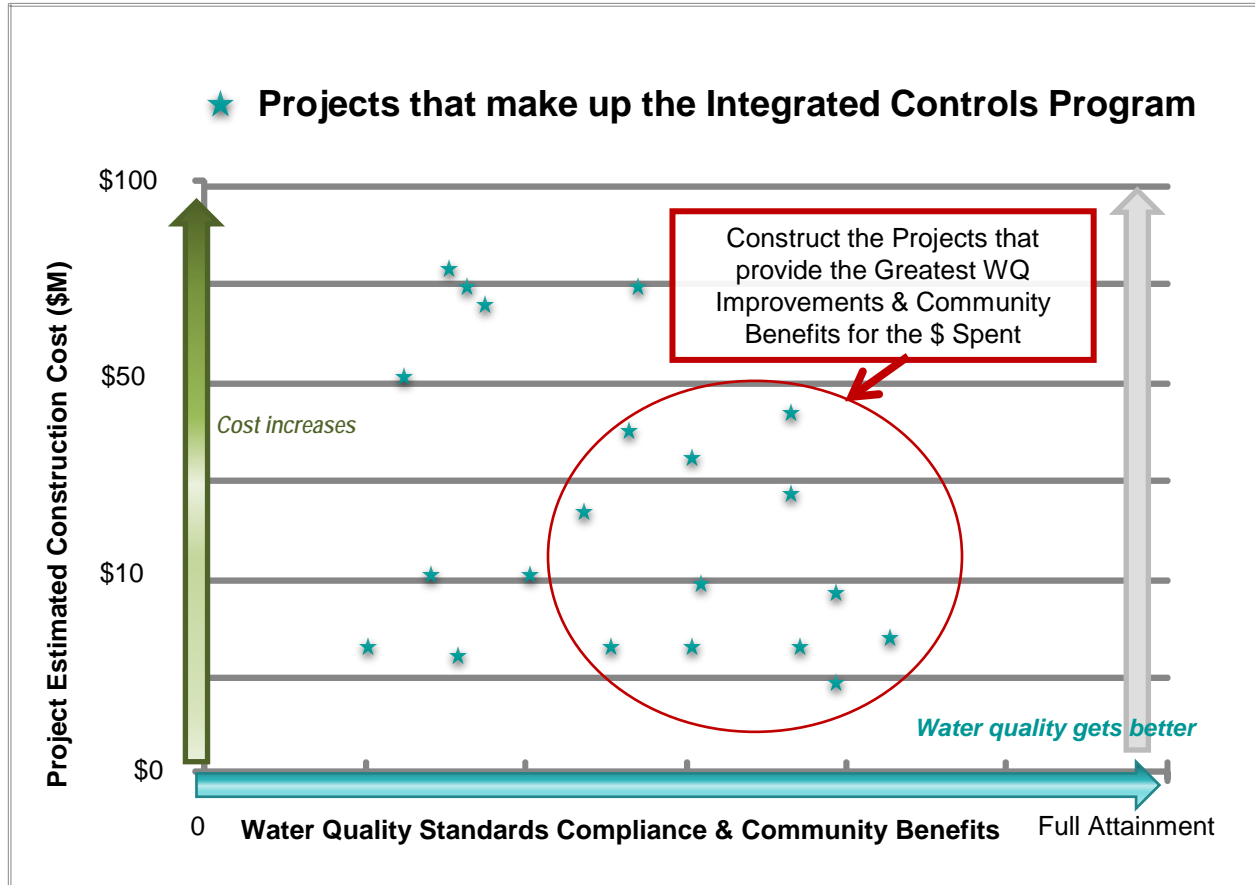
- Traditional plans already have the necessary building blocks
- Put combined separate sanitary overflows into with other point sources
- What are the water quality benefits of my projects?
  - Not cost per gallon or lb of pollutant, but **Cost Per Day of Increased WQS Compliance**
- Select a combined gray/green/water controls that improve water quality
- Tailored to local community

## Watershed Pollution Sources



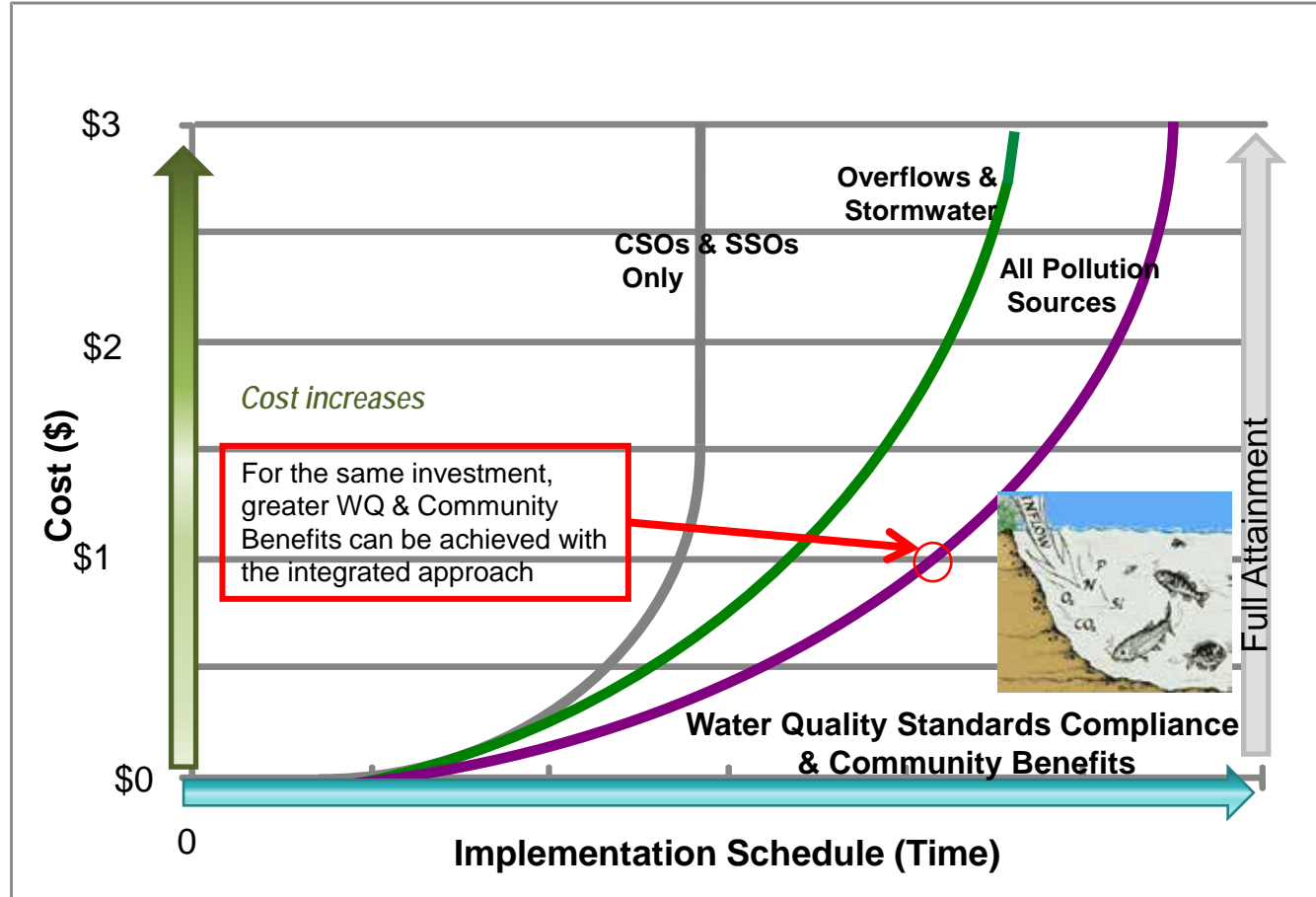
Dry & Wet Weather Sources

# Projects then developed based on Water Quality Improvements & other Community Benefits at lowest cost





# Integrated Watershed Approach delivers greater water quality & community benefits at lower cost

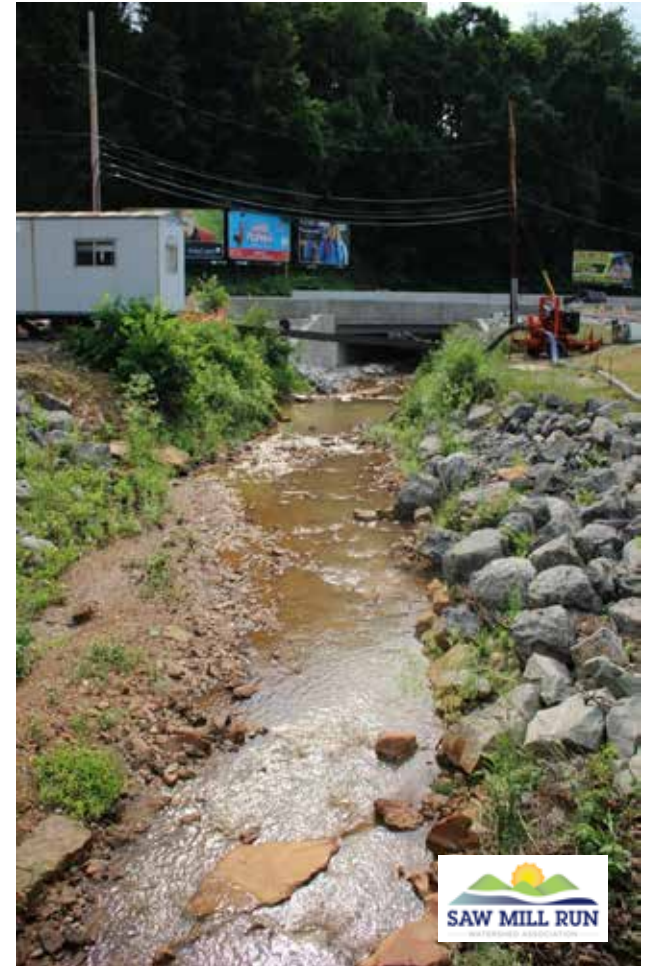


# Saw Mill Run

## Water Quality Sampling Program

### Water Quality Parameters

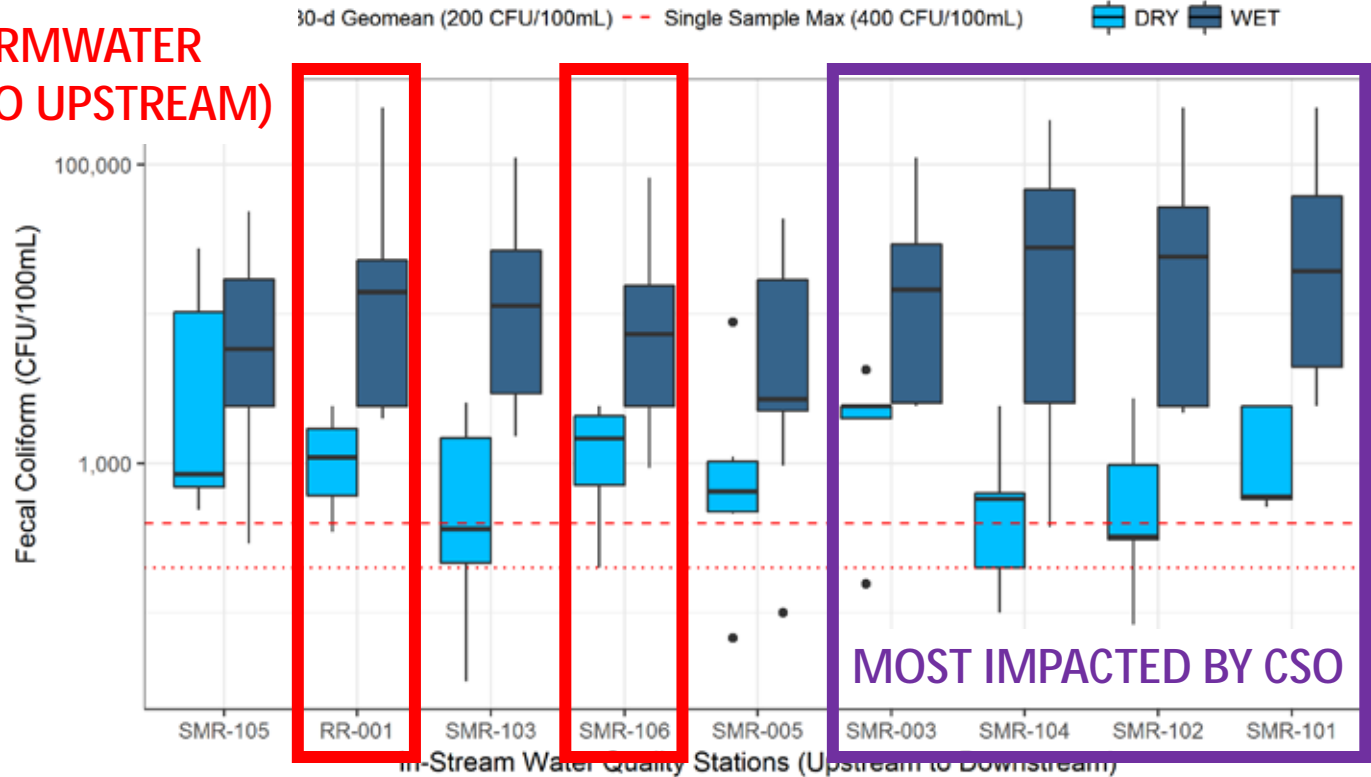
Escherichia coliform	Dissolved Copper
Fecal coliform	Total Zinc
Total suspended solids	Dissolved Zinc
Total dissolved solids	Sulfate
Total iron	5-day Carbonaceous Oxygen Demand
Dissolved Iron	Total ammonia (NH <sub>3</sub> )
Total Manganese	Nitrate plus nitrite (NO <sub>3</sub> +NO <sub>2</sub> )
Dissolved Manganese	Total Kjeldahl nitrogen
Total Aluminum	Total Phosphorus
Dissolved Aluminum	Ortho-Phosphate
Total Copper	



# Bacteria – Fecal Coliform

Fecal Coliform: All Dry and Wet Weather Events

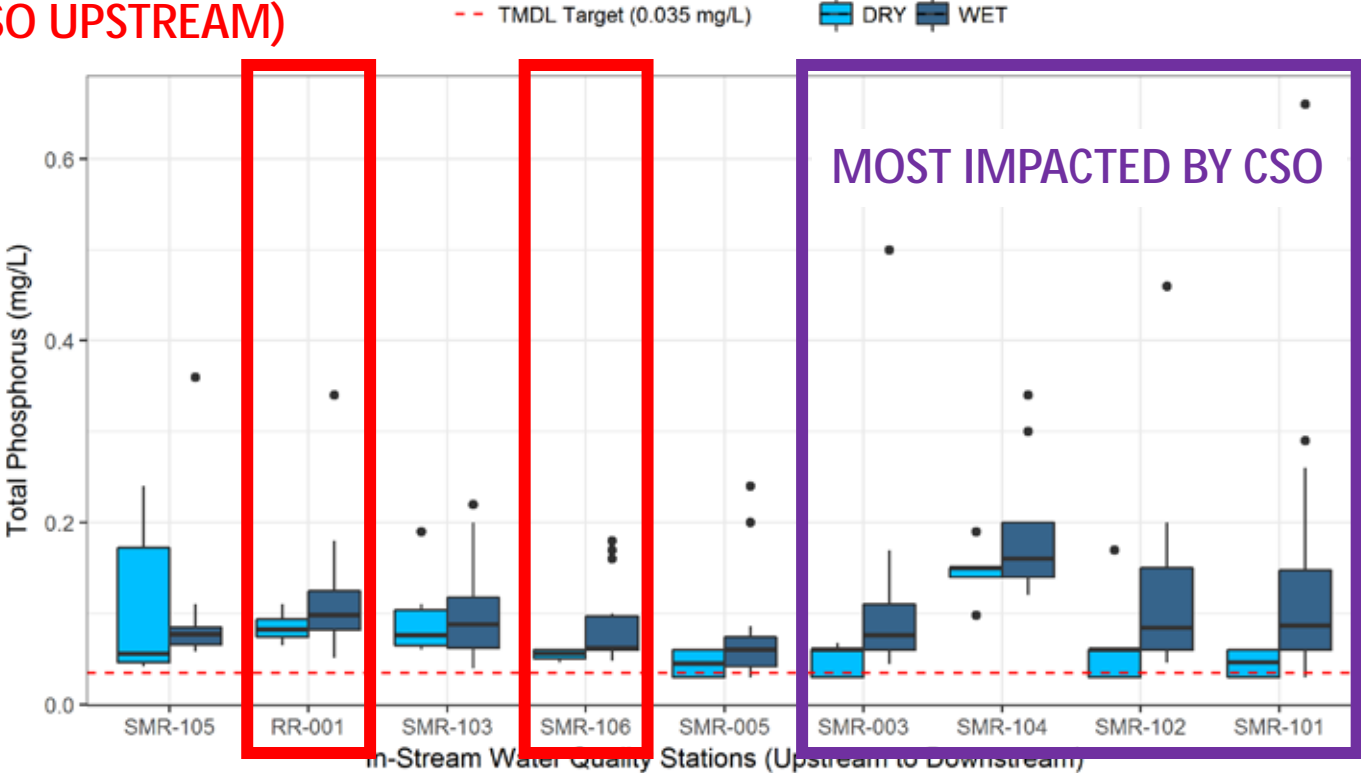
**“PURE” STORMWATER  
(NO CSO/SSO UPSTREAM)**



# Nutrients – Total Phosphorus

**“PURE” STORMWATER  
(NO CSO/SSO UPSTREAM)**

Total Phosphorus: All Dry and Wet Weather Events



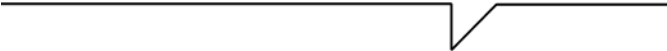
# Water Quality Sampling Program Takeaways

- Sampling Program Results Confirm the IWM Approach – Multiple Regulatory Issues / Impairments need to be Addressed to Restore Water Quality


Pollutant	Potential Sources
Bacteria – Dry & Wet Weather	Stormwater (SW), CSO/SSO, Dry Weather sources (DWS)
Metals/Toxics	AMD, SW, CSO/SSO
Nutrients (P)	SW, CSO/SSO, DWS
Dissolved Oxygen	AMD, SW, CSO/SSO, DWS

# Water Quality Sampling Program Takeaways

Existing Sediment & Phosphorus loads may not be as severe as indicated in TMDL. While important to address both pollutants, the end point in TMDL may be higher than necessary to meet CWA requirements. Further evaluation is needed.



A strategic, collaborative, watershed-based rehabilitation of the existing storm & sanitary sewer infrastructure to eliminate cross-connections & reduce I/I, could provide significant reductions to dry & wet weather pollutants across the stream length.



# Saw Mill Run IWM Plan

## Demonstration Projects

- Worked with Municipal Partners to Identify representative projects for early implementation
- Criteria:

Pollutant Reduction	CSO & SSO Volume Reduction
Types of Pollutants (single, multiple)	Stormwater Volume / Peak Flow Reduction
Cost efficiency of removal	Funding Opportunities
Economic, Social Considerations	Partnership/Coordination Opportunities



# IWM Can Provide Economic Benefit While Solving Watershed & Water Quality Challenges





# Integrated watershed management delivers greater water quality & community benefits at a lower cost to your community

- Win-Win-Win – primary goal of continuous WQ improvement & WQS compliance at an affordable rate
- Move away from the traditional approach of “spend money and the WQ may get better”

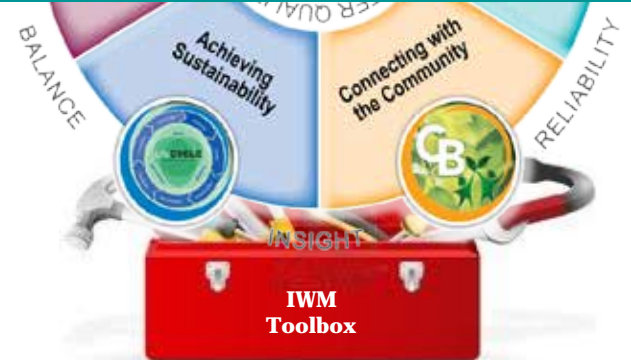


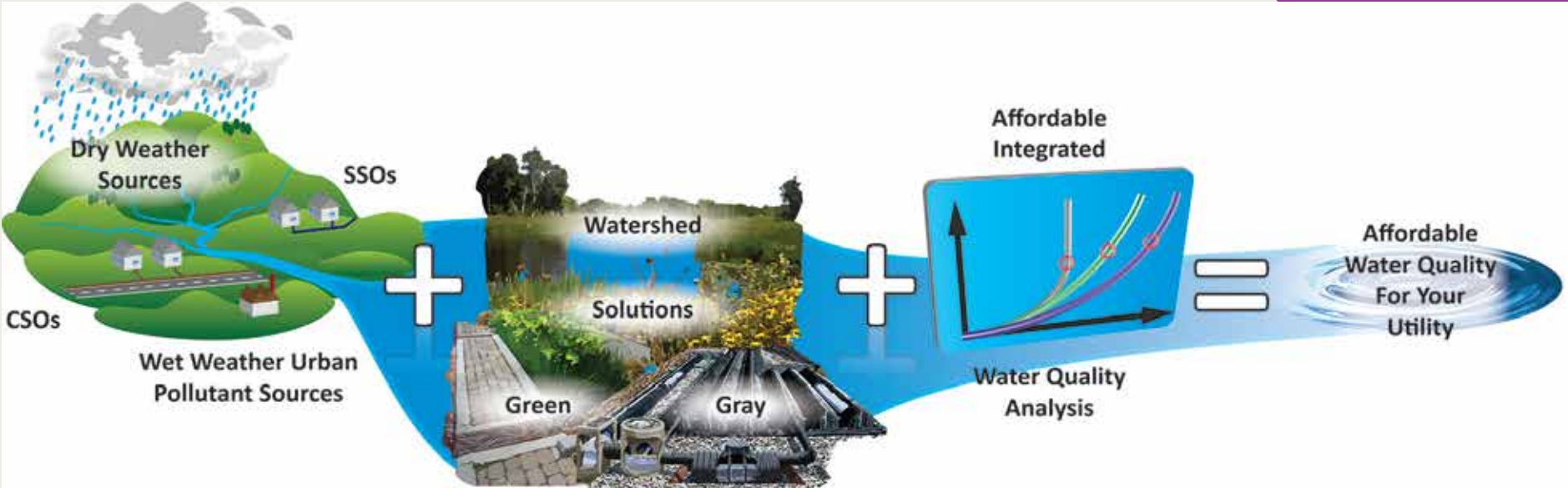
We know what we need to spend at an affordable rate in order to maximize improvements to in-stream water quality & our communities

**Well, we know now...**

**Today, our generation has the opportunity to holistically & affordably address our legacy water pollution.**

**We need to seize it!**





Thank You