

Rainwater Harvesting in Cincinnati: A Sewer District's Perspective

Andrew Reynolds

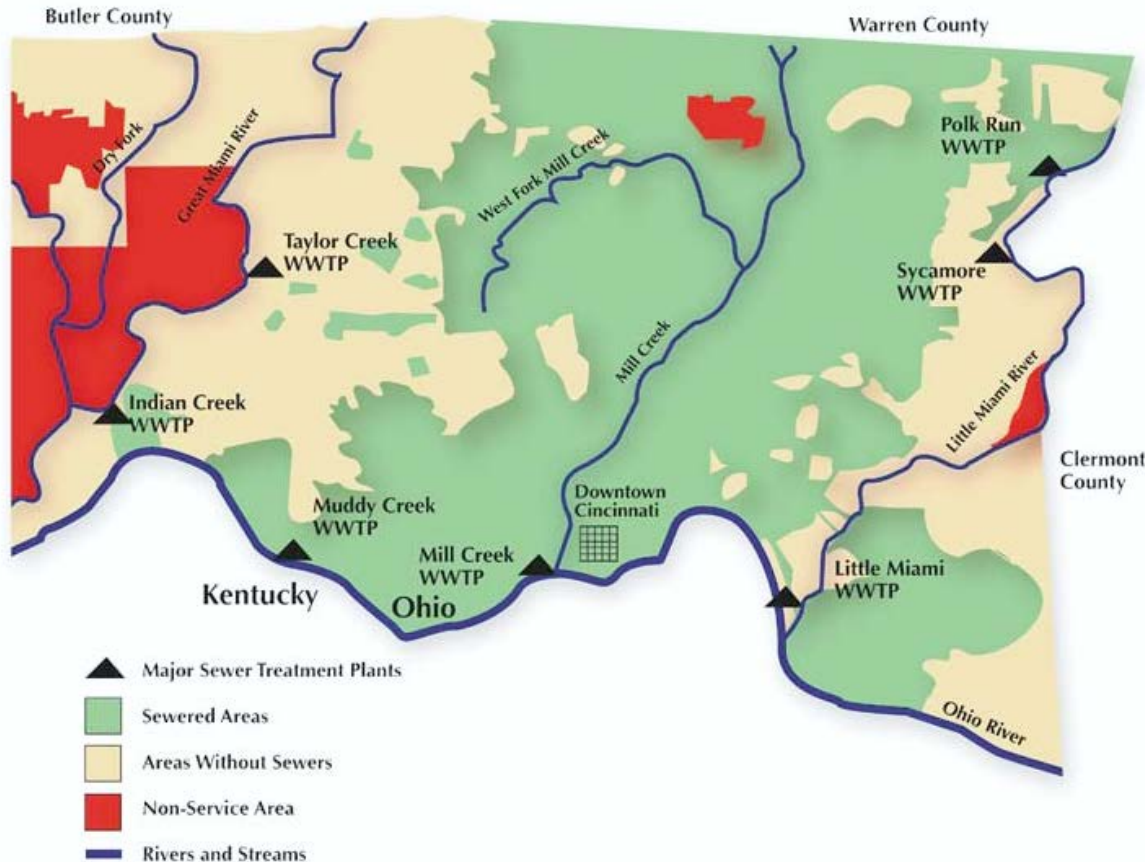
Environmental Planner

The Metropolitan Sewer District
of Greater Cincinnati

April 24, 2013

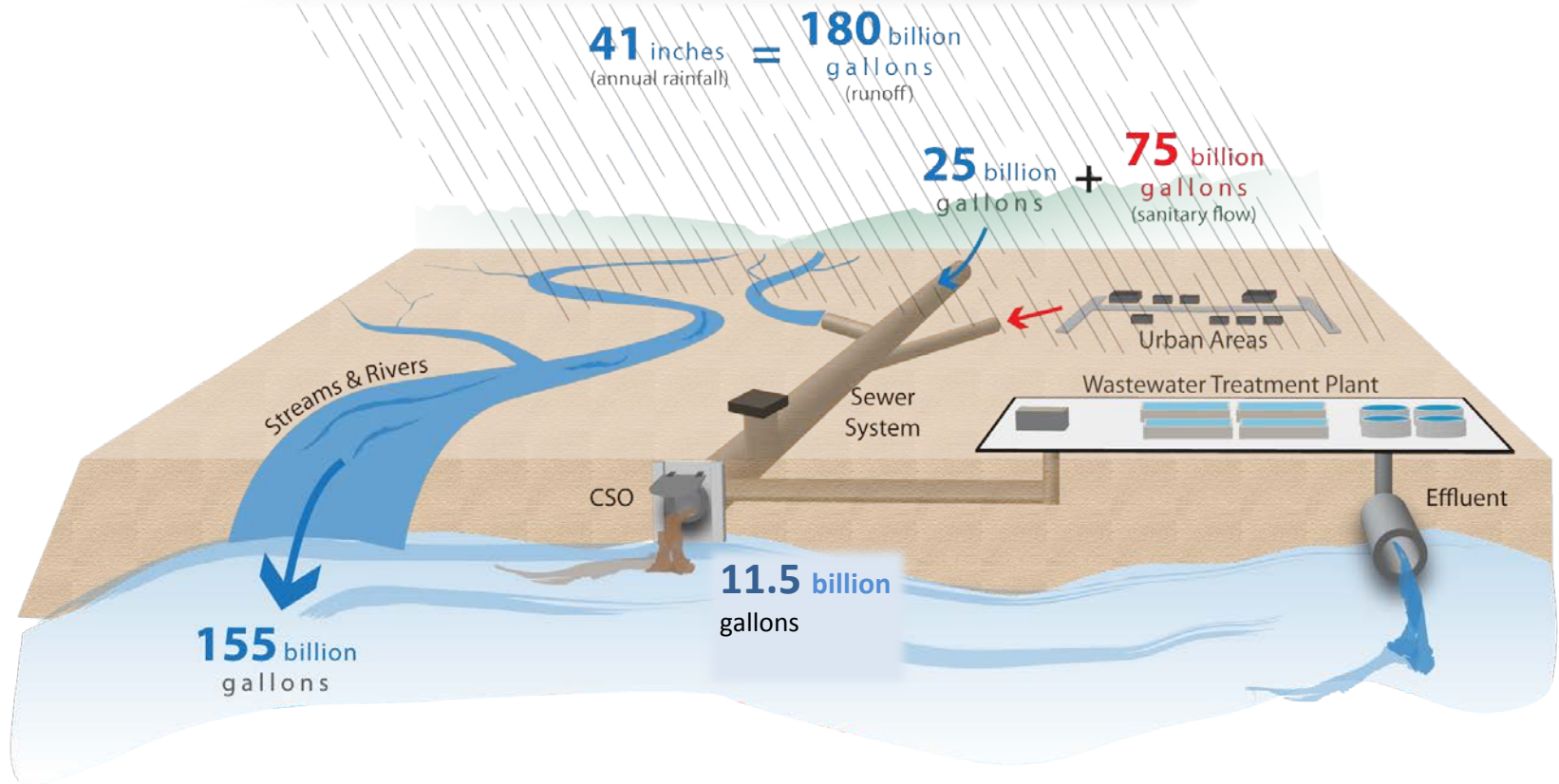


MSD's Sewer Network



- Publicly Owned & Operated Wastewater Utility Serving Southwest Ohio (Hamilton County)
- Serves a Population of about 855,000
 - 230,000 Residential and 250 Industrial Users
 - Operates 7 Wastewater Treatment Plants; treating 70 Billion Gallons/yr

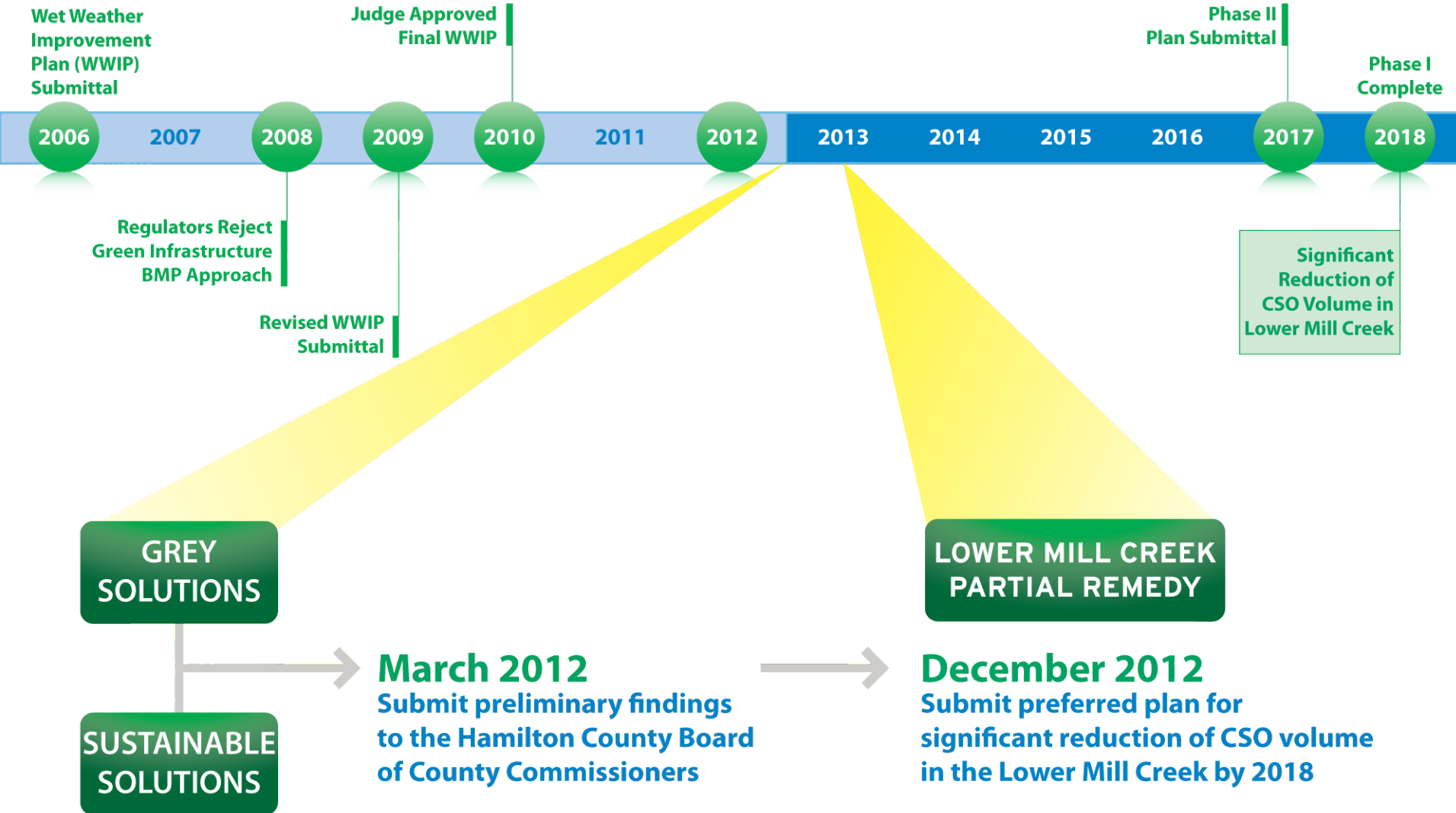
MSD's Environmental Challenge



212 Combined Sewer Overflow (CSO) Locations

78 Sanitary Sewer Overflows (SSOs) Locations

History of Consent Decree

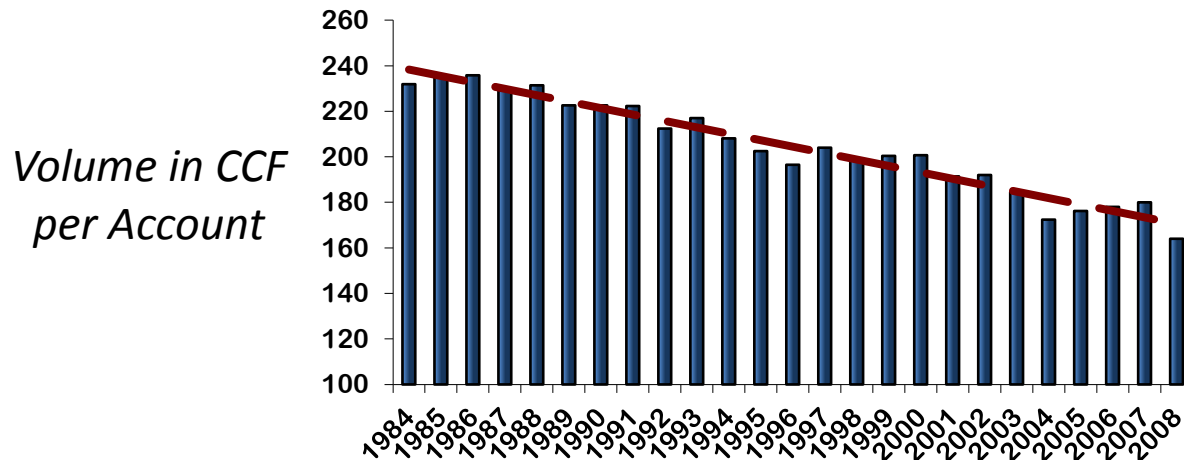


Why is Rainwater Harvesting Important to MSD?

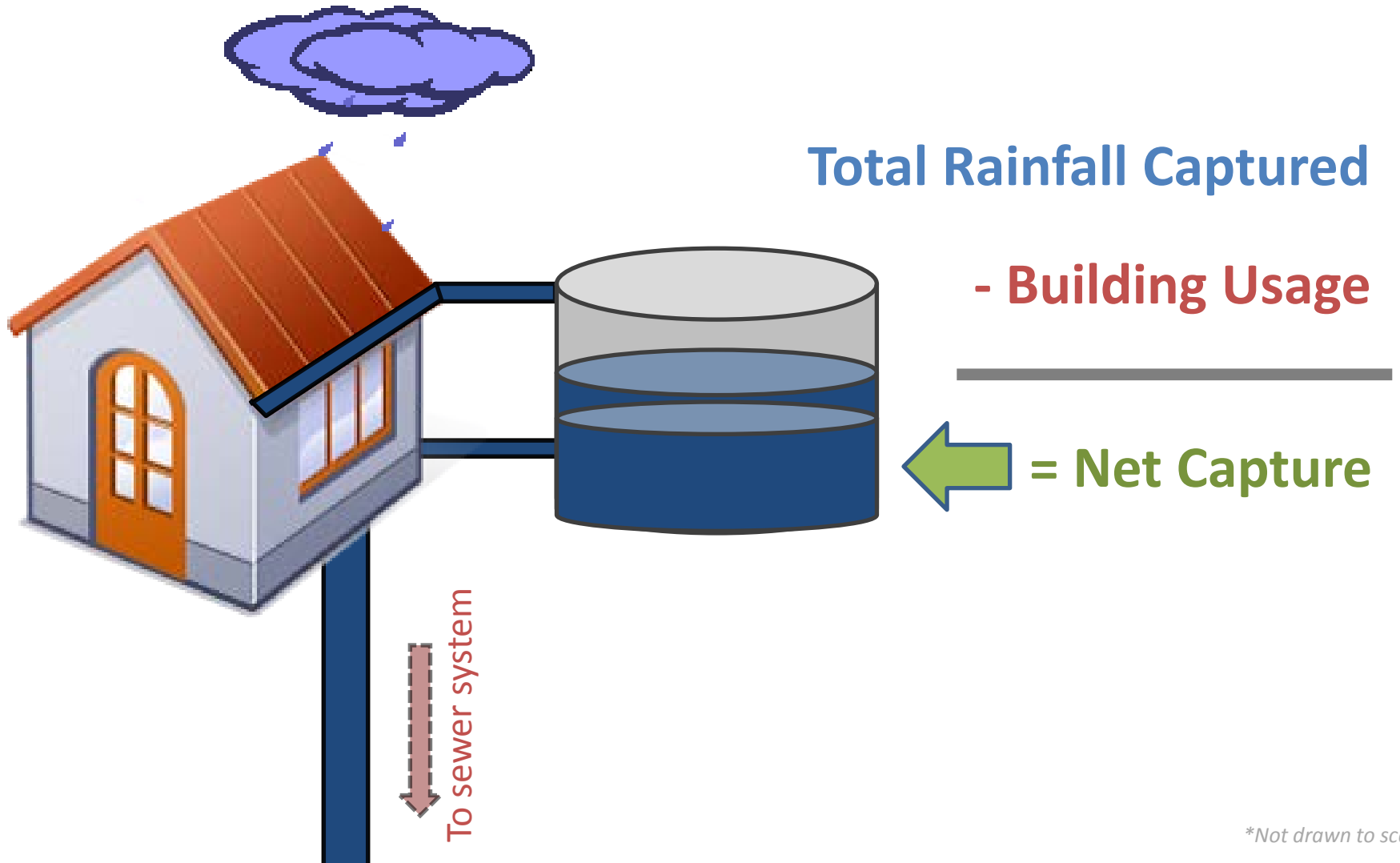
- Capturing some or all of the rainwater that hits a building's roof or other on-site impervious surfaces reduces peak stormwater flows in the combined sewer system
- Reduced peak flows lessen the strain on MSD's collection system during rain events, which can reduce the likelihood of CSOs and thereby reduce total overflow volume
- MSD is under a federal consent decree to reduce CSOs
- Potential for public-private partnerships and raising community awareness about stormwater

Concerns & Future Challenges

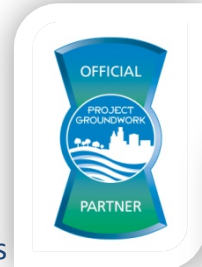
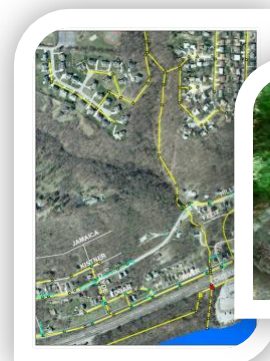
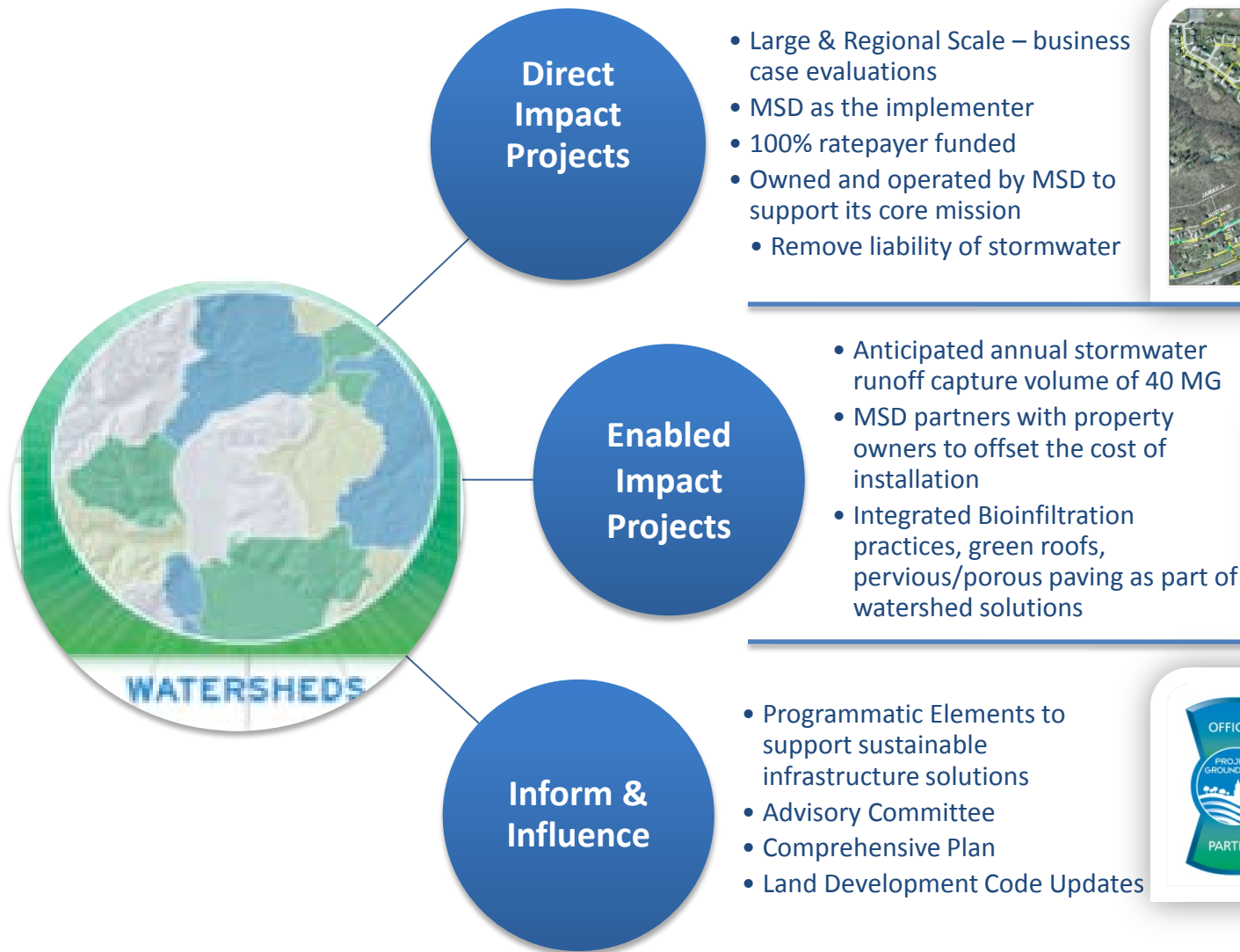
- Trends of declining number of accounts and declining usage per account (revenue stability)
- When rainwater harvesting is implemented, need to ensure accurate billing for sewer treatment services provided (revenue stability and treatment capacity)



Simplified Rainwater Harvesting Diagram

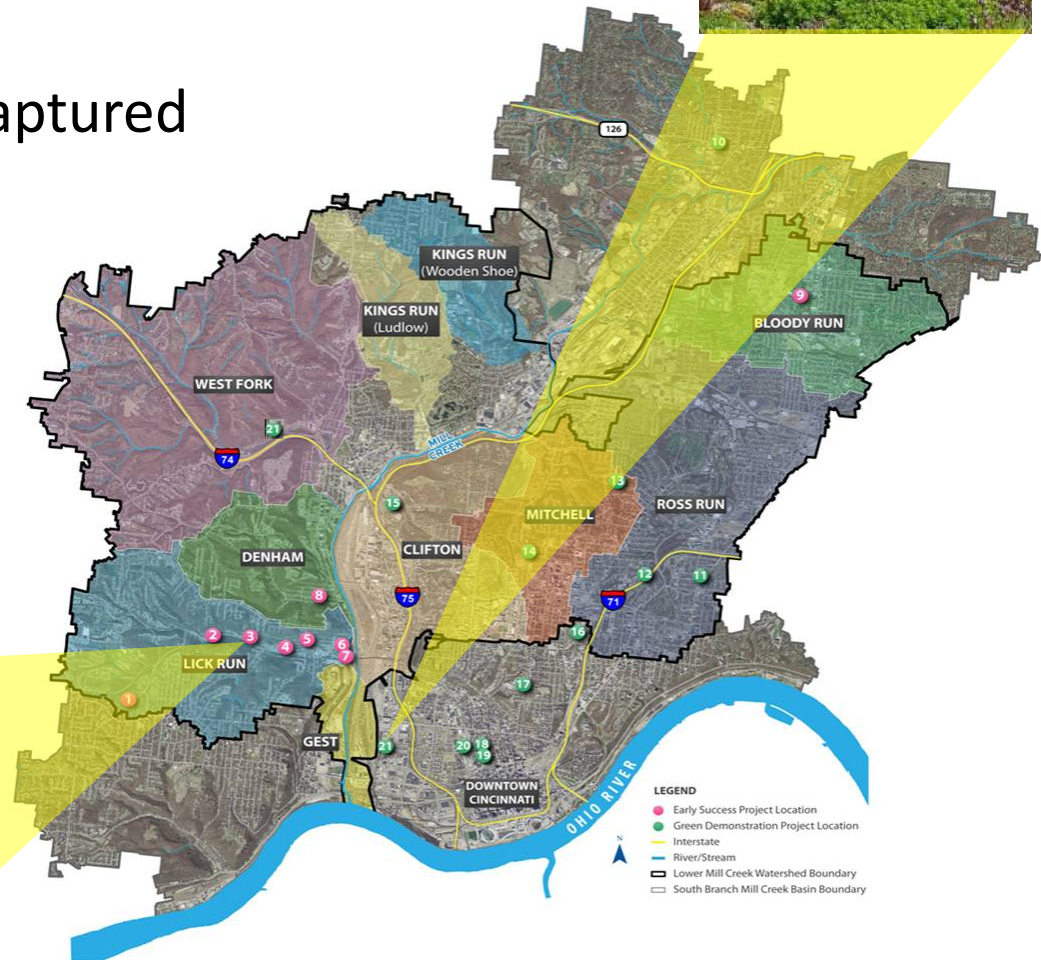


MSD's 3 Prong Approach to Sustainable Infrastructure Solutions



Enabled Impact Projects

- Over 30 public/private green infrastructure projects throughout the Lower Mill Creek watershed
- Over 40 MG stormwater captured per year (already installed)
- Example of how public and private benefits can be realized by sustainable projects



Rainwater Harvesting- Complementary Programs

○ Green Roof Loan Program

- Partnership with Cincinnati Office of Environmental Quality (OEQ) and Ohio Environmental Protection Agency (OEPA)
- Low-interest loans for green roof construction

○ Rain Barrels

- 55-gallon barrels available for purchase through MSD



Taft Information Technology High School: A 32,000-square foot shallow vegetative roof was installed on the roof of the Taft Information Technology High School.

Sustainability LENS

Currently developing planning tools to help facilitate private investments

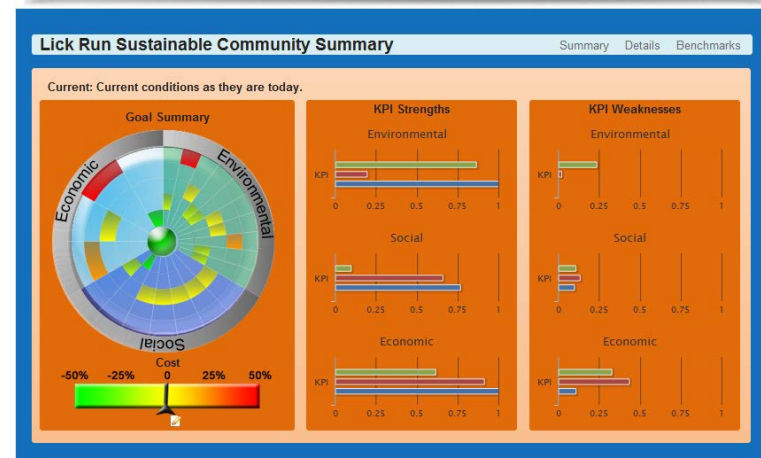
- Screening and benchmarking tool
- Promotes integrated planning solutions within a watershed context in support of sustainable separation
- Evaluation of green and gray infrastructure for wet weather improvement program using sustainability
 - Economic viability
 - Environmental stewardship
 - Social values
- Sustainable LENS will include:
 - Integration of water quality & quantity goals & needs
 - Maintain or enhance environment through a technology-based solutions
 - Promotes environment protection, economic growth, and enhance quality of life



Cincinnati MSD

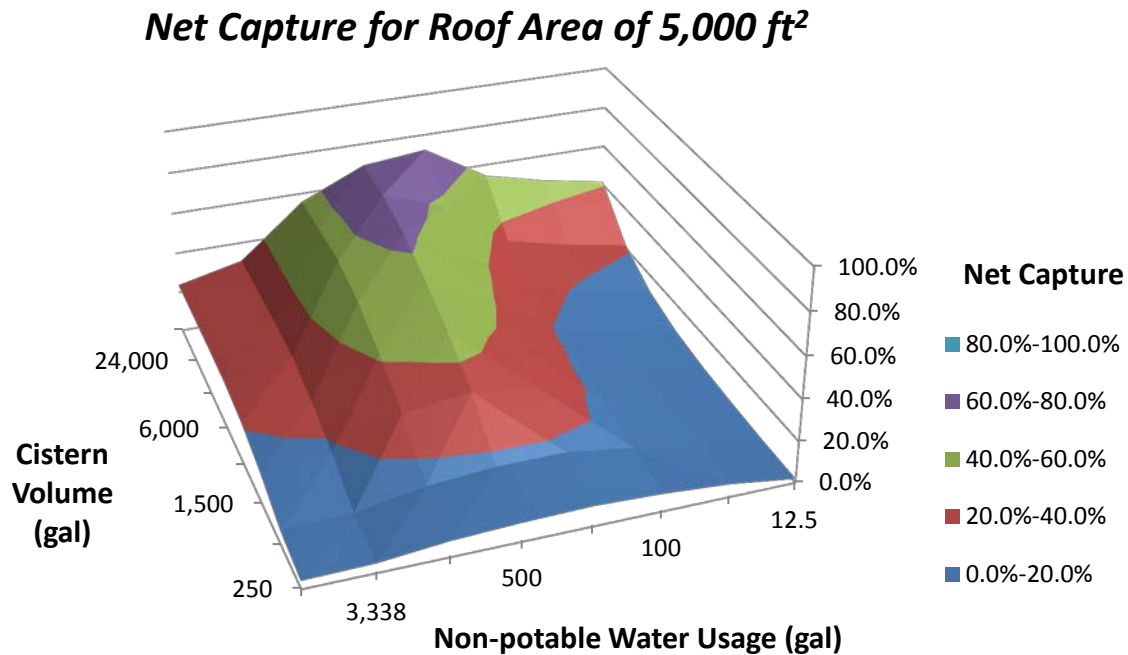
Cincinnati MSD Sustainable Community Index is being developed to include:

- Integration of state and federal water quality standards,
- To maintain or enhance Community ecology through a technology based solutions.
- Use Sustainable Community Index to promote use of integrated resource management and activities to improve the environment, promote economic growth, and to enhance quality of life.
- Help identify solutions and developing management strategies to achieve desired goals



Modeling Effectiveness & Maximizing Benefits

- Currently developing planning tool/model to simulate peak flow reduction benefits paired with private benefits of rainwater harvesting systems
- Sample (Excel) model output based on user inputs of roof size, daily non-potable water use, and proposed cistern size
- Can help minimize \$/gallon invested by building owners



Axes not to scale

Rainwater Harvesting Legislation Process

- GCWW, the City Planning and Buildings and City Health Departments, and other stakeholders w/ MSD
 - Task force led to the adoption of the new rainwater harvesting legislation

Considerations for broader use

- Rainwater harvesting systems
 - Potentially removing metering requirements and establishing a flat billing structure for single-family homes
- Commercial users
 - Specifications for ensuring adequate billing of use – i.e. require user to install and maintain calibrated metering system



Moving Forward

- MSD along with other stakeholders will continue to educate residents and business owners about the joint benefits to them and to MSD that can be realized through rainwater harvesting
- Assistance is available to anyone who has questions about the new legislation and what opportunities are available for their home or business



THANK YOU



PROJECT GROUNDWORK
your pipeline to clean water

Contact Information:
andrew.reynolds@cincinnati-oh.gov
513-244-5572

www.projectgroundwork.org