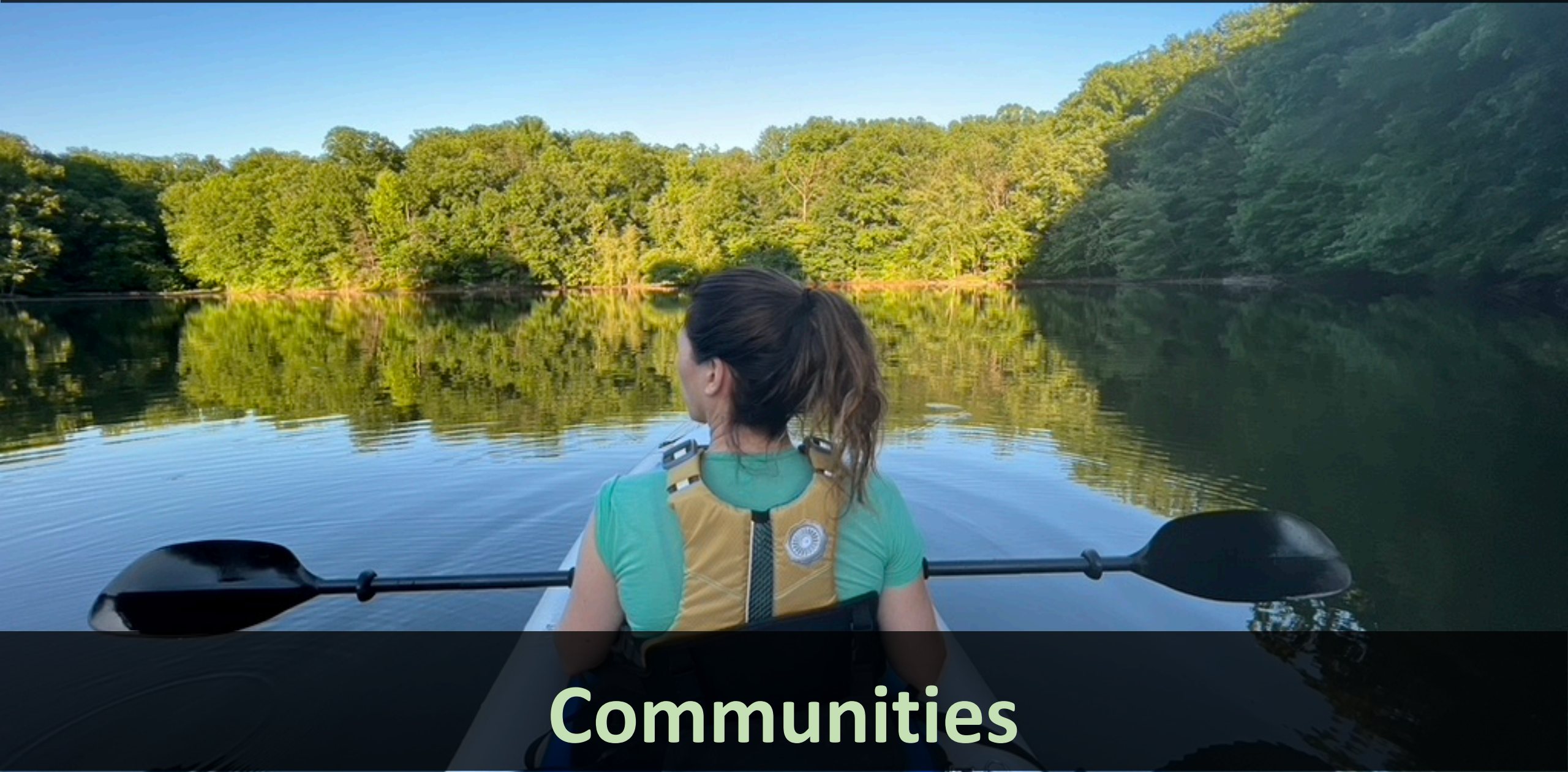




U.S. EPA's Green Infrastructure Program Resources

Robyn DeYoung,
U.S. EPA, Office of Water
Green Infrastructure Lead




Sustainable and Resilient



Communities



2022 State of Public Sector Green Stormwater Infrastructure Top Drivers

-  **Clean Water Regulations**
-  **Flood Resilience**
-  **Aging Infrastructure**
-  **Community - Quality of Life**



Using Green Infrastructure to meet MS4 Permit Requirements

- Serves as reference for permit writers when incorporating green infrastructure requirements into MS4 permits.
- Shows how municipalities have implemented those requirements.
- Provides a starting point for the variety of green infrastructure adoption within MS4 permits across the nation.

COMPENDIUM OF MS4 PERMITTING APPROACHES



PART 6: GREEN INFRASTRUCTURE



Office of Wastewater Management
Water Permits Division
JUNE 2022
EPA-833-B-22-002



MS4 Permits Included in Compendium

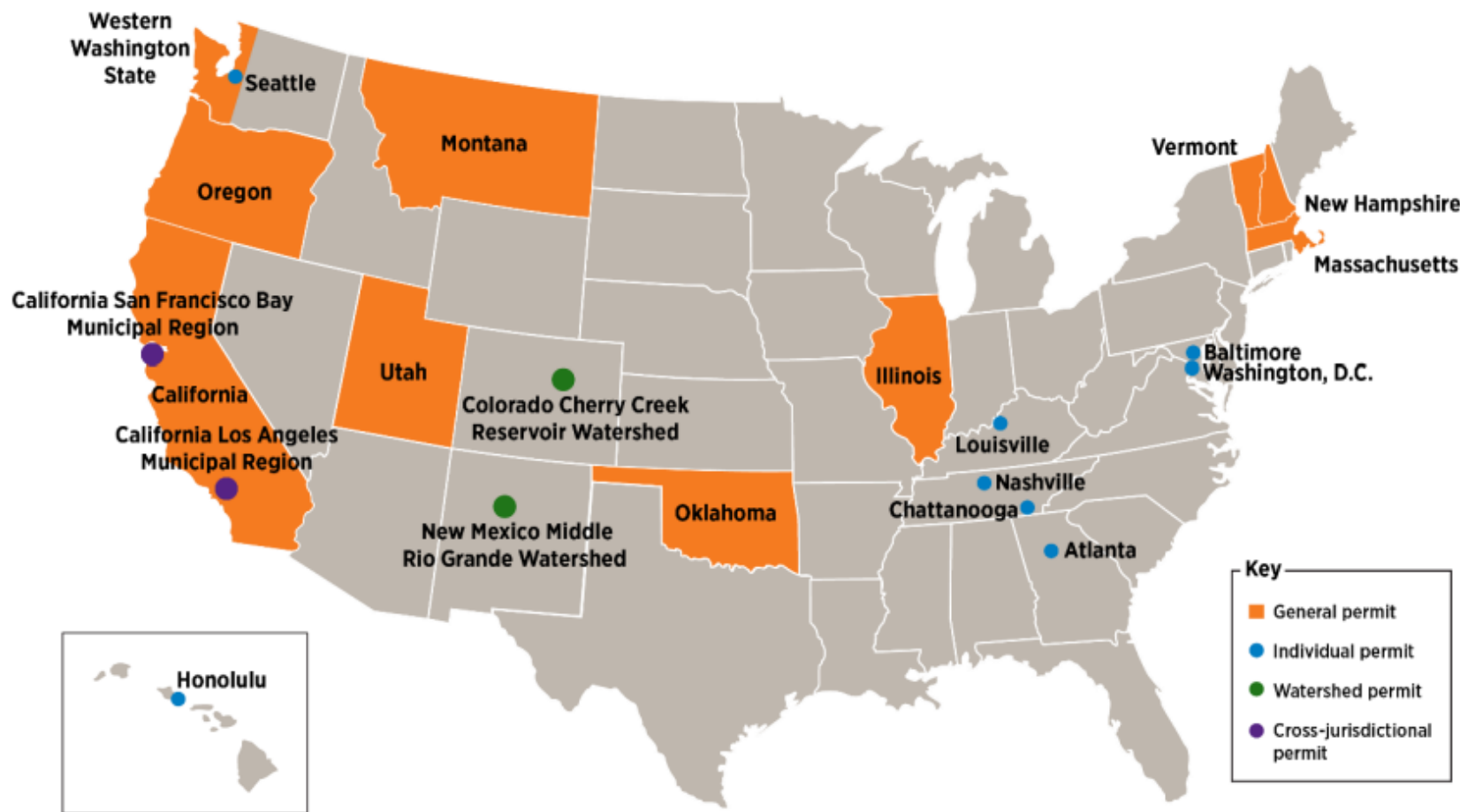


Figure 1. Map of permit excerpts included in the compendium.

Oklahoma Phase II MS4 Permit Conditions

Assessing Post-Construction Regulatory Mechanisms

- *The Oklahoma Department of Environmental Quality Water Quality Division issued a **Phase II MS4 general permit** that includes requirements to **review regulations for barriers to the use of green infrastructure, to develop a schedule to remove those barriers, and implement identified opportunities.***
- Part IV.C.5.a.iii Excerpt
- Review local ordinances, regulations, and engineering plans or specifications to identify any legal/regulatory barriers to LID as well as opportunities to promote LID. Develop a schedule to remove those barriers and implement identified opportunities. If a barrier is not removed or an opportunity is not implemented,





Louisville, Kentucky, Phase I Permit

- *The Kentucky Energy and Environment Cabinet issued a **Phase I MS4 individual permit** that includes requirements for **new development and redevelopment projects** to implement stormwater controls to **infiltrate, evapotranspire, harvest, or reuse stormwater from an 80th percentile storm event.***
- Section 2.2.5.4 Excerpt
- The permittee shall continue to conduct site plan reviews for compliance with stormwater management requirements including the on-site stormwater runoff treatment standard. **This standard requires all new development and redevelopment projects to, in combination or alone, implement management measures that are designed, built, and maintained to infiltrate, evapotranspire, harvest and reuse stormwater runoff produced from an 80th percentile precipitation event.**



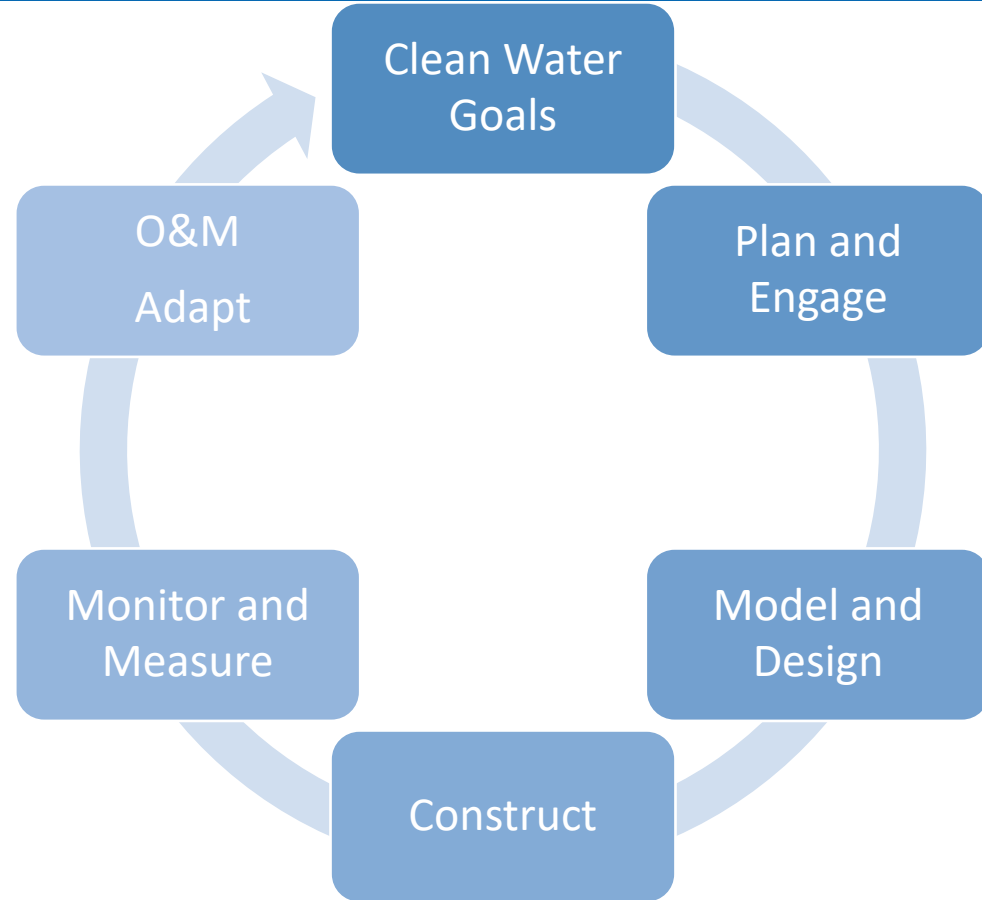
Green Infrastructure's Benefits - Environmental



- **Improves Water Quality** by removing pollutants, reduce likelihood of CSOs.
- **Reduces Localized Flooding** by capturing small storm volumes, slowing flow of water to treatment plants.
- **Captures Water for Reuse** by storing water for other uses.
- **Improves Air Quality** by directly filtering air pollutants and also slows down temperature-dependent reactions that contribute to smog.
- **Reduces Heat Island Effect** by shading surfaces, deflecting radiation from the sun, and releasing moisture into the atmosphere.
- **Improves Habitat Connectivity** by providing vegetation that is direct habitat of stream/river ecosystem.
- **Improves Climate Resiliency** by increasing adaptive capacity in communities experiencing flooding, heat waves, and water quality challenges.



Green Infrastructure Implementation



Land Use and Green Infrastructure Scorecard

Low Impact Development Strategies to Protect Water Resources

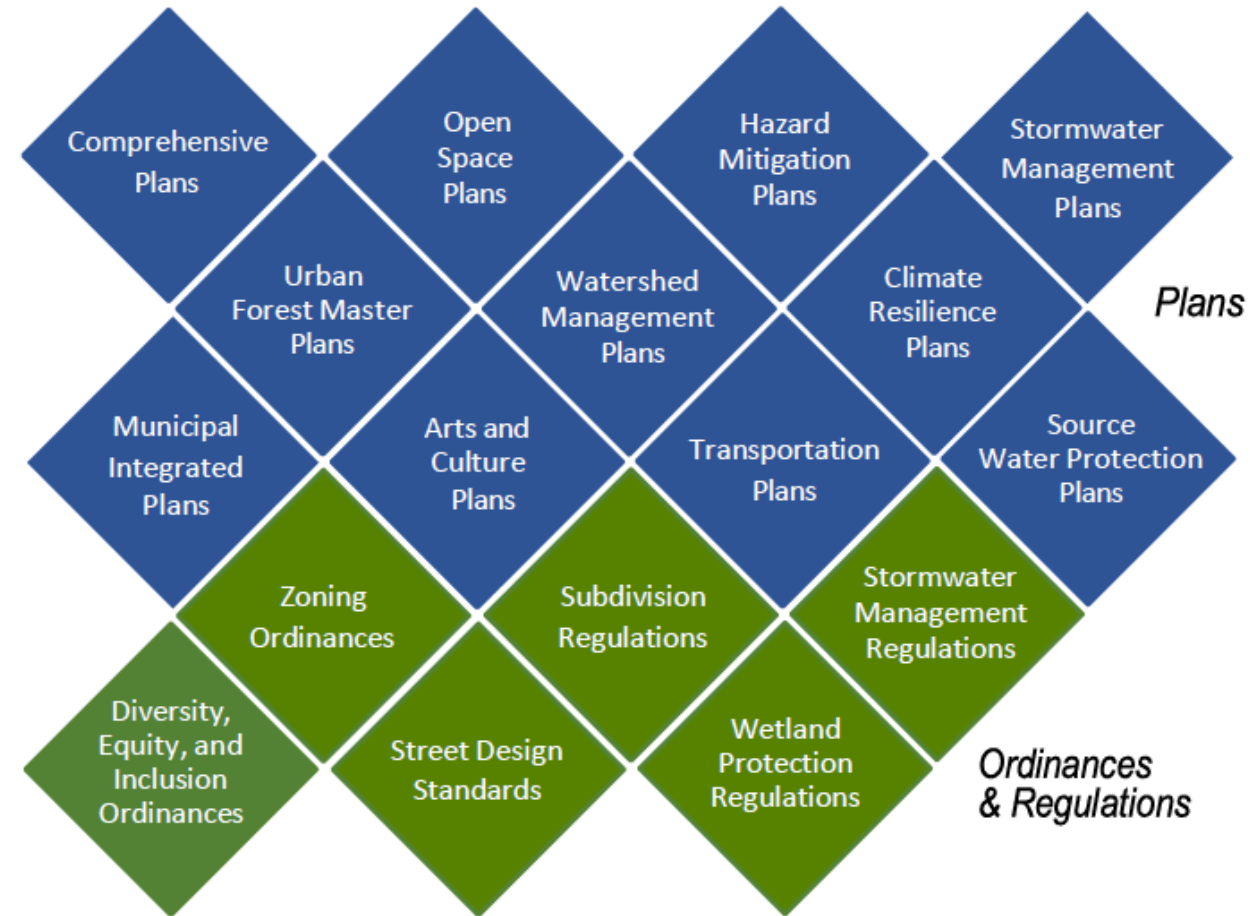


- A self assessment that guides municipalities through a review of plans, ordinances, and regulations to:
 - Protect water resources
 - Maximize green infrastructure
 - Reduce regulatory barriers

What is the Scorecard?

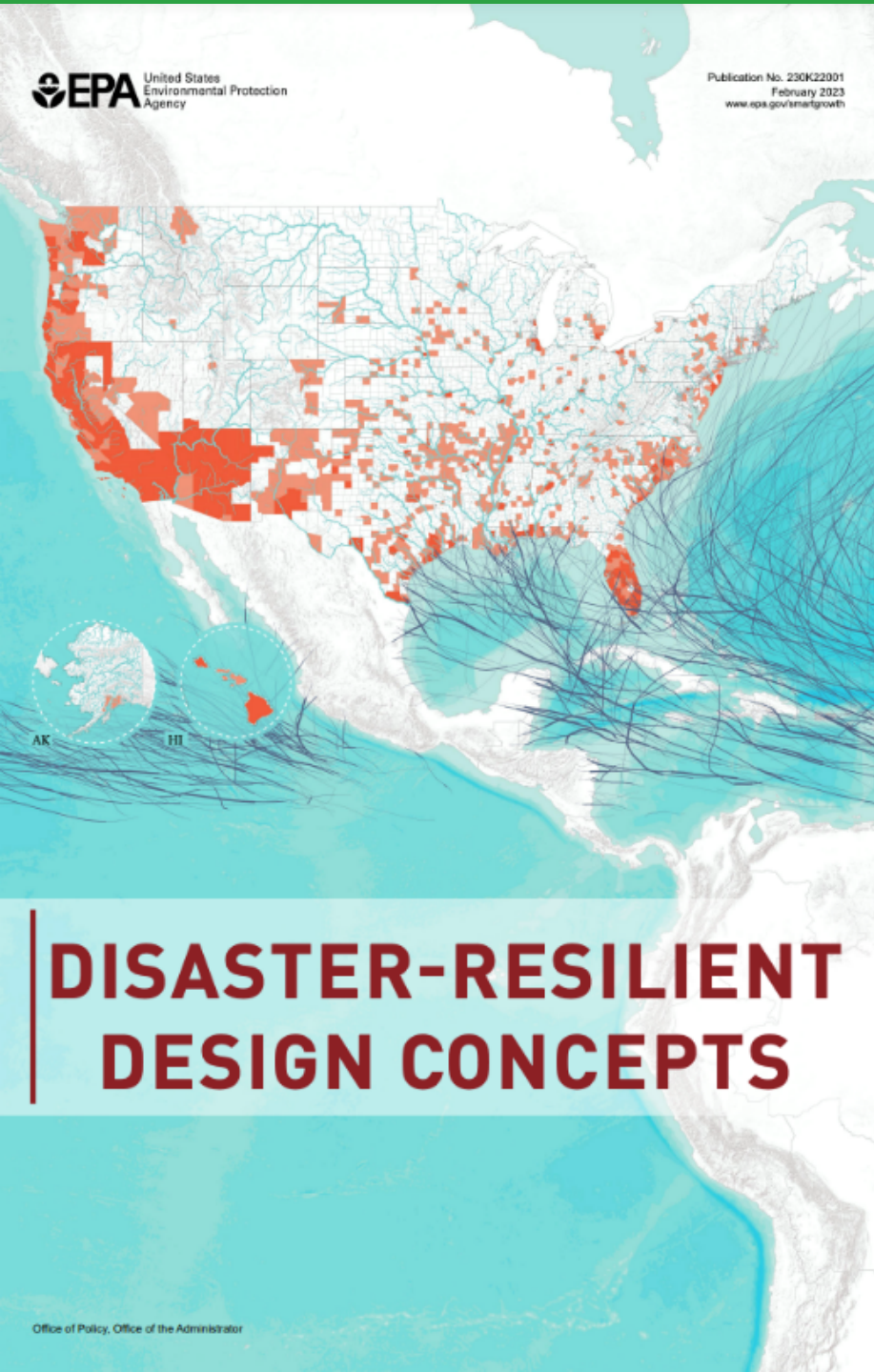


- Cuts across multiple departments and scales within a jurisdiction (municipal, neighborhood, and site)
- Includes an option to use a point system to evaluate and improve local programs
- Intended to be reviewed by staff from multiple municipal departments
- Set up as a series of questions that are recommendations/good practices



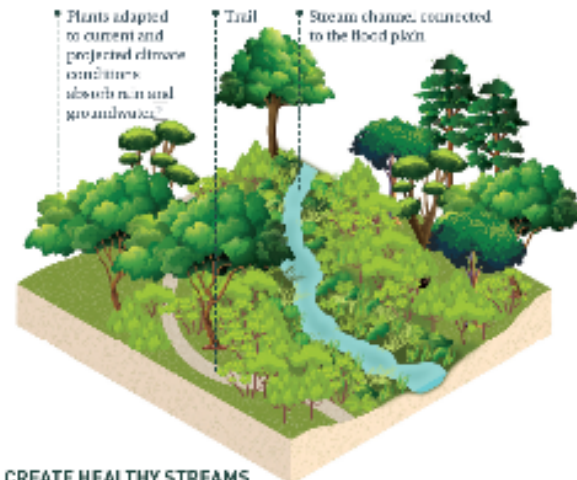
Modeling and Design





DISASTER-RESILIENT DESIGN CONCEPTS

- A set of **design concepts** that can help communities address natural hazards, adapt to climate change, and achieve a range of economic, environmental, and equity goals.
- Intended to be an engaging, easily accessible resource that complements more detailed policy guides and planning resources.



CREATE HEALTHY STREAMS

Use vegetated stream buffers to slow water during storm events, lowering downstream flood risk.



INCORPORATE GREEN INFRASTRUCTURE ON SITE

In developed areas, bioswales, rain gardens, and tree canopies help reduce runoff, which lessens flooding.

Estimating the Costs and Performance of Green Infrastructure



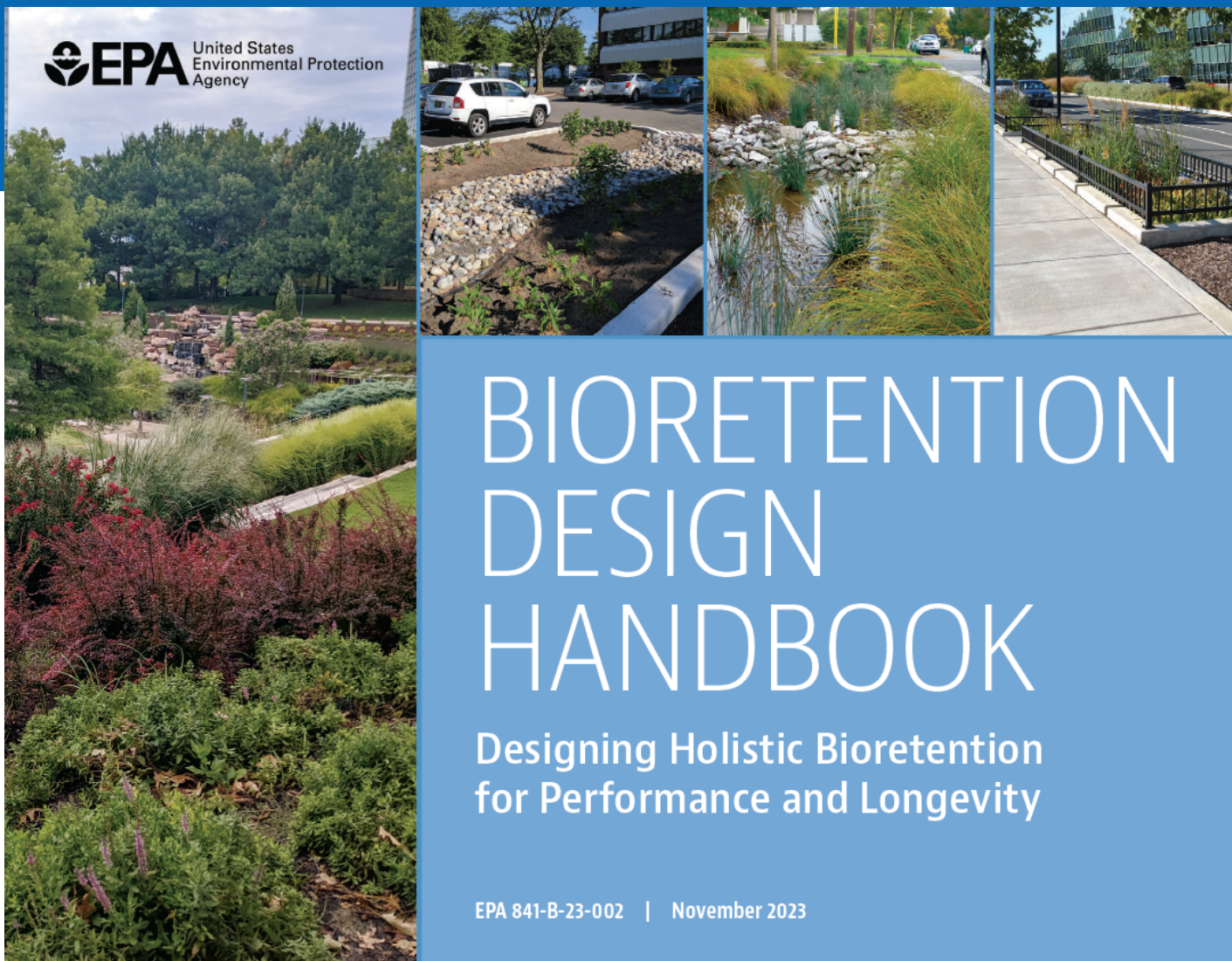
EPA's Green Infrastructure Modeling Toolkit



Visit: <https://www.epa.gov/water-research/green-infrastructure-modeling-toolkit>

Construct for Performance





- Offers recommendations for design, construction, inspection, and O&M practices
- Helps practitioners achieve performance goals, reduce project costs, and effectively integrate bioretention into your built environments
- Intended for a multidisciplinary audience, including design professionals, municipal officials, developers, planners, contractors and Tribes.

Stormwater Post-Construction BMP Fact Sheets



•Municipal Program Elements

- [Ordinances for Post-construction Runoff \(pdf\)](#)
- [Post-construction Plan Review \(pdf\)](#)
- [Zoning \(pdf\)](#)

•Innovative BMPs for Site Plans

- [Conservation Easements \(pdf\)](#)
- [Stormwater Management for Development Districts \(pdf\)](#)
- [Green Parking \(pdf\)](#)
- [Green Roofs \(pdf\)](#)
- [Open Space Design \(pdf\)](#)
- [Protection of Natural Features \(pdf\)](#)
- [Redevelopment \(pdf\)](#)
- [Riparian/Forested Buffer \(pdf\)](#)
- [Urban Forestry \(pdf\)](#)

•Infiltration

- [Grassed Swales \(pdf\)](#)
- [Infiltration Basin \(pdf\)](#)
- [Infiltration Trench \(pdf\)](#)
- [Permeable Pavements \(pdf\)](#)

•Filtration

- [Bioretention \(Rain Gardens\)](#)
- [Sand and Organic Filters \(pdf\)](#)
- [Vegetated Filter Strip \(pdf\)](#)

•Retention/Detention

- [On-Lot Treatment \(pdf\)](#)
- [Stormwater Wetland \(pdf\)](#)
- [Wet Ponds \(pdf\)](#)



Stormwater Best Management Practice
Bioretention (Rain Gardens)

Minimum Measure: Post Construction Stormwater Management in New Development and Redevelopment
Subcategory: Filtration



Description

Bioretention practices, such as rain gardens, are landscaped depressions that treat on-site stormwater discharge from impervious surfaces such as roofs, driveways, sidewalks, parking lots and compacted lawns. They are used to collect stormwater and filter it through a mixture of soil, sand and/or gravel. The designs of bioretention practices mimic volume reduction and pollutant removal mechanisms that work in natural systems. The filtered stormwater soaks into the ground, provides water to plants and can help recharge the local groundwater supply. Through these processes, bioretention practices reduce peak flows within downstream sewer systems and allow pollutant removal through filtration and plant uptake.

Applicability



Funding and Financing





Bipartisan Infrastructure Law \$50B

State & Tribal Grants	Total = \$55.426 billion
Clean Water State Revolving Fund Traditional	\$11.713 billion
Drinking Water State Revolving Fund Traditional	\$11.713 billion
Lead Service Lines Drinking Water State Revolving Fund	\$15 billion
PFAS Clean Water State Revolving Fund	\$1 billion
PFAS Drinking Water State Revolving Fund	\$4 billion
PFAS Small & Disadvantaged	\$5 billion
Underground Injection Control Grants	\$50 million
Brownfields	\$1.5 billion
Pollution Prevention	\$100 million
Save Our Seas 2.0	\$275 million
RECYCLE Act	\$75 million
Clean School Buses	\$5 billion

Environmental Programs & Management	Total = \$1.959 billion
Geographic Programs	\$1.717 billion
<i>Great Lakes Restoration</i>	\$1 billion
<i>Chesapeake Bay</i>	\$238 million
<i>San Francisco Bay</i>	\$24 million
<i>Puget Sound</i>	\$89 million
<i>Long Island Sound</i>	\$106 million
<i>Gulf of Mexico</i>	\$53 million
<i>South Florida</i>	\$16 million
<i>Lake Champlain</i>	\$40 million
<i>Lake Pontchartrain</i>	\$53 million
<i>Southern New England Estuaries</i>	\$15 million
<i>Columbia River Basin</i>	\$79 million
<i>Other, Pacific Northwest</i>	\$4 million
National Estuary Program	\$132 million
Gulf of Mexico and MS and OH Rivers Hypoxia	\$60 million
Class VI Wells/Underground Injection Control	\$25 million
Battery Recycling Best Practices	\$10 million
Battery Recycling Labeling	\$15 million
Superfund	Total = \$3.5 billion
Remedial Cleanups	\$3.5 billion

Inflation Reduction Act Summary

EPA received **\$41.5 billion in appropriations** to support 24 new and existing programs. This makes EPA the second largest recipient of discretionary funding after USDA. Additionally, Superfund will receive ~\$11.7+ billion in tax revenues.

Six new EPA programs account for 98% of this total funding:

Climate Pollution Reduction Grants (\$5 billion) – Provide grants to states, territories, municipalities, and Tribes to develop plans to reduce greenhouse gas emissions and implement those plans. At least one grant will go to an eligible entity in every state.

Greenhouse Gas Reduction Fund (\$27 billion) – Capitalize existing and new grantees that will invest in emission reduction projects at the state and local level.

Environmental and Climate Justice Block Grants (\$3 billion) – Fund community-based nonprofit organizations to support a wide range of climate and environmental justice activities.

- **Grants to Reduce Air Pollution at Ports (\$3 billion)** – Award rebates and grants for ports to purchase and install zero-emission technology and develop climate action plans.
- **Methane Emissions Reduction Program (\$1.5 billion)** – Fund grants and technical assistance to accelerate emissions reduction from petroleum and natural gas systems. Also establish a methane waste emissions charge starting at \$900 per ton in 2024 and increasing to \$1,500 per ton by 2026.
- **Clean Heavy-Duty Vehicles (\$1 billion)** – Provide grants, rebates, and contract support to replace heavy-duty vehicles with zero emission alternatives. \$400 million is specifically for nonattainment areas.



Centers of Excellence for Stormwater Infrastructure Technologies Grant



On January 18, 2024, EPA announced BIL Funded Grant Opportunity

Approximately \$3 million in grant funding will support three to five awards to:

- Establish and maintain regional Centers of Excellence for Stormwater Infrastructure
- Conduct research on new and emerging stormwater control infrastructure technologies and alternative funding approaches;
- Provide technical assistance and collaborate with regional institutions, among other eligible activities.

Funding will also support one award to create and maintain a national electronic clearinghouse that contains information relating to new and emerging stormwater control infrastructure technologies.

Eligible applicants include institutions of higher education, research institutions, and nonprofit organizations.

- **Proposals are due March 18, 2024**
- <https://www.epa.gov/npdes/stormwater-centers-excellence-grant>



Green Infrastructure Federal Collaborative



FEMA



U.S. Small Business Administration



US Army Corps of Engineers®



U.S. Global Change Research Program



Funding Opportunities for Green Infrastructure

Stacking Funding and Financing Options



Navigating Federal Funding for Green Infrastructure and Nature-Based Solutions

AGENCY	PROGRAM	PLANNING & DESIGN	IMPLEMENTATION OR CONSTRUCTION	OPERATIONS & MAINTENANCE	MONITORING
EDA	American Rescue Plan Program: Economic Adjustment Assistance Funds	YES	YES	NO	NO
EDA	Public Works and Economic Adjustment Assistance Funds	YES	YES	NO	NO
EPA	Clean Water State Revolving Fund (CWSRF)¹	YES	YES	NO	NO
EPA	Environmental Justice Collaborative Problem-Solving Cooperative Agreement Program	YES	YES	NO	YES
EPA	Environmental Justice Government-to-Government (EJG2G) Program	YES	YES	NO	YES
EPA	Brownfields Grants	YES	YES	NO	NO
EPA	Great Lakes Restoration Initiative (GLRI) Funds	YES	YES	NO	NO
EPA	Green Streets, Green Jobs, Green Towns (G3) Grant Program	YES	YES	NO	NO
EPA	Sewer Overflow and Stormwater Reuse Municipal Grants (OSG)	YES	YES	NO	NO
EPA	Section 319 Nonpoint Source Grants	YES	YES	YES	YES
EPA	Water Infrastructure Finance and Innovation Act (WIFIA)	YES	YES	NO	NO
FEMA	Building Resilient Infrastructure and Communities (BRIC)²	YES	YES	NO	NO
FHWA	Surface Transportation Block Grant (STBG) Program – Transportation Alternatives	YES	YES	YES	NO
FHWA	Promoting Resilient Operations for Transformative, Efficient, and	YES	YES	NO	NO





Learning Module: https://clearinghouse.epa.gov/ords/wfc/f?p=165:9:2756175854864:::9:P9_MODULE:FIN_STORM
Funding examples in New England <https://www3.epa.gov/region1/npdes/stormwater/assets/pdfs/FundingStormwater.pdf>

Getting Community Buy-in for Stormwater Funding: A Four-Session Participatory Workshop: Participant Workbook <https://nepis.epa.gov/Exe/ZyPURL.cgi?Dockey=P100X2ID.txt>



Environmental Justice Thriving Communities Technical Assistance Centers (TCTACs)

There are 17 regionally and nationally based TCTACs to provide assistance benefiting overburdened communities throughout the US.

This network of Regional and National Technical Assistance (TA) Centers will provide **free technical assistance, training, and capacity-building** support to communities and stakeholders who need it most.

Visit: <https://www.epa.gov/environmentaljustice/environmental-justice-thriving-communities-technical-assistance-centers>

Examples of EJ Technical Assistance

Grant proposal preparation assistance

Manage federal grants (e.g., accounting, policies, controls)

Identify funding sources to apply for (federal, state, local, private)

Navigate SAM.gov and Grants.gov registration process and other portals related to grants

Provide capacity building to engage with decisionmakers at all levels of government

Stormwater and Green Infrastructure BIL Technical Assistance

Planning and Asset Management Technical Assistance

Plan Development

- Assist with identifying infrastructure projects in a holistic, sustainable approach, tailored to community needs:
 - Municipal Integrated Plans
 - Green infrastructure opportunities analyses
 - Vulnerability and Risk Assessments
 - Watershed Management Plans
- Coordinate and stack other community improvement efforts.

Asset Management

- Develop maps of stormwater, and wastewater systems.
- Assist water systems in locating assets and developing inventories.
- Develop an asset management plan
- Develop O&M plans
- How to factor in plant establishment period using CW SRF Funding

Contact: WaterTA@epa.gov

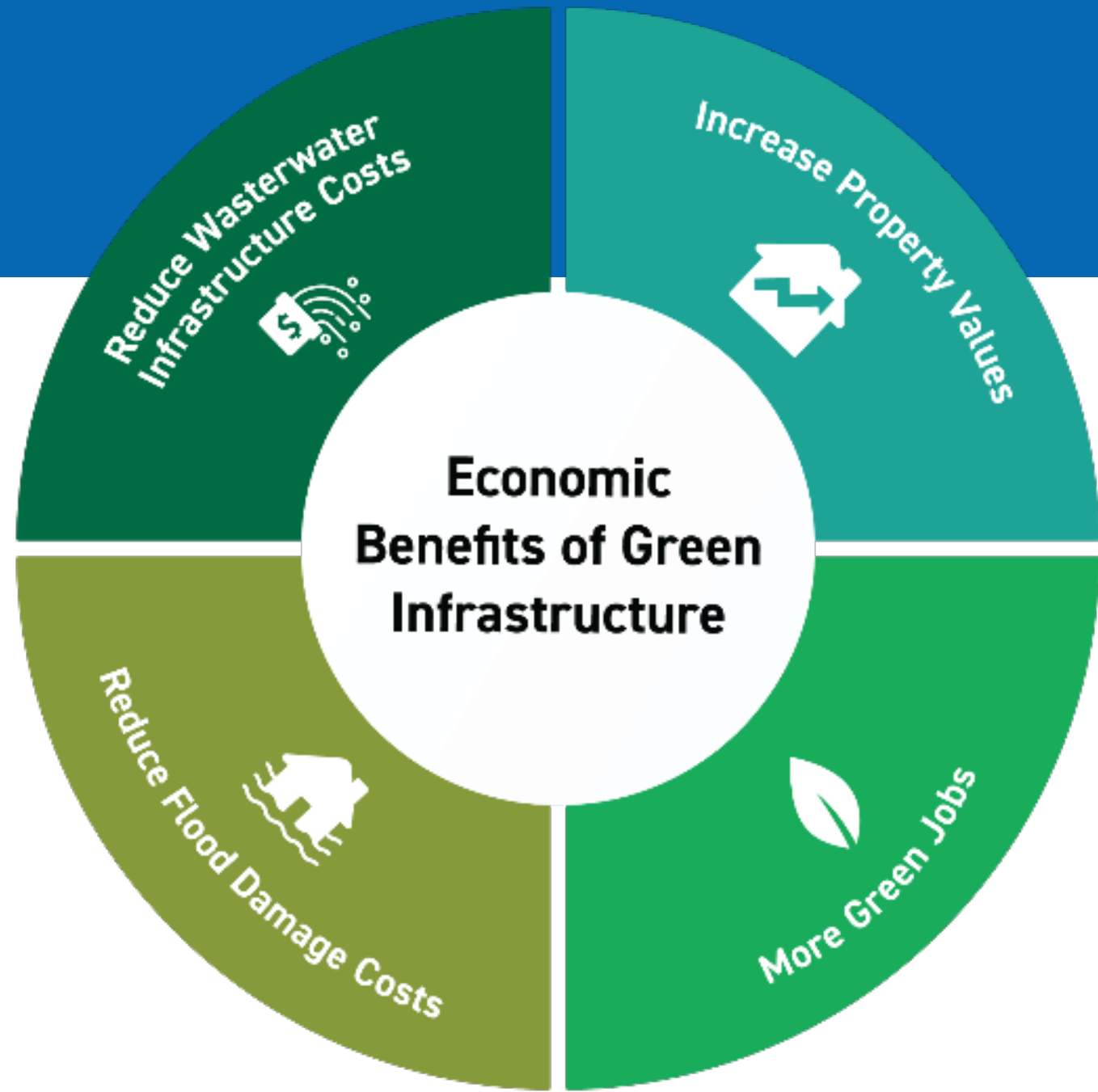
Community Benefits





Creating green space within a community can provide:

- Attractive peaceful places for people
- Enjoyable trails for physical activity
- Public space to strengthen social interaction
- Educational opportunity to learn local plants, birds and ecosystem
- **Creates opportunity to engage with public** by involving residents in building an authentic vision for their community that is cohesive, accessible and equitable.





Thank you!

Robyn DeYoung

U.S. EPA Green Infrastructure Lead

Deyoung.robyn@epa.gov

Get updates from us!

Join greenstream, an EPA listserv featuring updates on green infrastructure publications, training, and funding opportunities, send an email to join-greenstream@lists.epa.gov