Metropolitan Washington
Council of Governments

FLOOD RESILIENCE, ACTION, AND PREPAREDNESS

A Community Guide to Blue-Green Infrastructure

Explore this guide made for your community! Discover how Blue-Green Infrastructure (BGI) can reduce flooding risks, enhance resilience, and create greener, more sustainable neighborhoods.

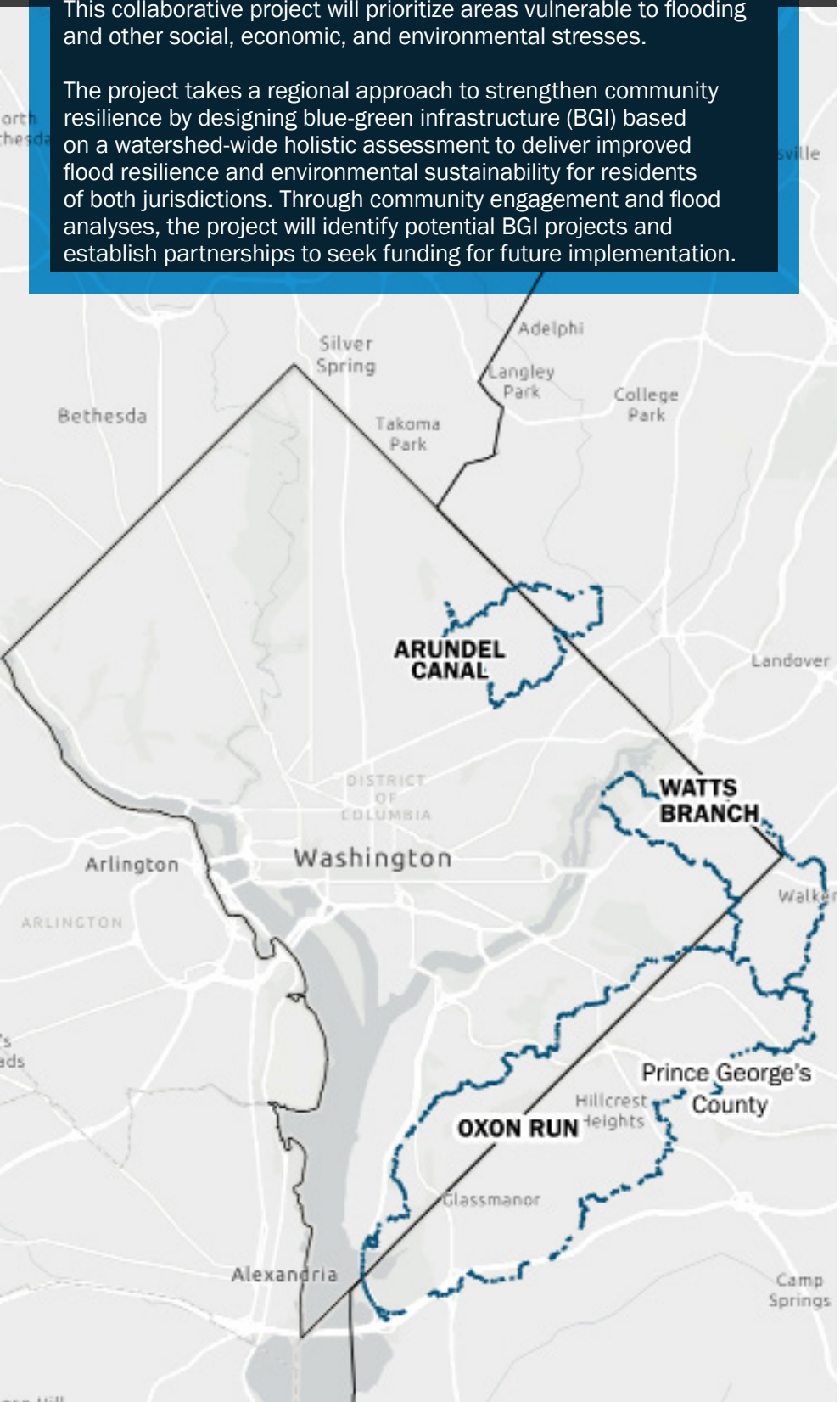
MWCOG.ORG/BGI

2024–25

WHAT IS THE REGIONAL BLUE-GREEN INFRASTRUCTURE (BGI) PROJECT?

The Metropolitan Washington Council of Governments (COG), with funding from the Homeland Security and Emergency Management Agency (HSEMA), is working with the District of Columbia and Prince George's County on a project to address flood concerns across jurisdictional boundaries. This Regional Blue-Green Infrastructure Community Engagement and Planning Project looks to increase resilience in three subwatersheds that span between the District of Columbia and Prince George's County—**Watts Branch** and **Arundel Canal** (part of the Northwest Branch) of the Anacostia River, and **Oxon Run** which is part of the Potomac River watershed. This collaborative project will prioritize areas vulnerable to flooding and other social, economic, and environmental stresses.

The project takes a regional approach to strengthen community resilience by designing blue-green infrastructure (BGI) based on a watershed-wide holistic assessment to deliver improved flood resilience and environmental sustainability for residents of both jurisdictions. Through community engagement and flood analyses, the project will identify potential BGI projects and establish partnerships to seek funding for future implementation.



How to use this Booklet

This booklet is a practical guide for individuals, community groups, and residents. Together, we can build a resilient future where our neighborhoods thrive alongside nature. Here's how you can get the most out of it:

Learn
Start by reading through the Blue and Green Infrastructure (BGI) sections to understand what BGI is, and how BGI can benefit your community.

Explore
See real-life examples of BGI projects that have been successful in local communities.

Prepare
Participate in local workshops and community meetings to learn more about BGI solutions and share your own ideas.

Engage
Implement the strategies and tips provided in your own home and community to help mitigate flooding and improve resilience.

Act
Take action by adopting the suggested strategies in your neighborhood and supporting BGI initiatives to enhance flood preparedness.

Flooding, the problem

Flooding is one of the most common climate hazards Washington, D.C. and Prince George's County faces. Increases in extreme weather events, precipitation, and rising sea levels have shown that the consequences of flooding are far-reaching. Floods can strike suddenly, leaving little time for preparation, and their aftermath can be catastrophic, affecting homes, businesses, and human health. As the frequency and severity of flooding increases, so too does the urgency to understand its causes, impacts, and steps to mitigate the damage.

Flooding in urban areas like DC and Prince George's County isn't just water—it's a rising challenge that demands **resilient solutions**.

Types and Causes:

Flooding can occur for various reasons, including heavy rainfall, river overflow, coastal storms, and storm drain failures. Common types of flooding include riverine, coastal, and urban inland flooding.

Impact on Communities:

Flooding can devastate communities, causing property damage, displacement, health risks, and economic loss. It also disrupts essential services and infrastructure.

Introduction & Overview

Welcome to the Community Guide to Blue-Green Infrastructure. This booklet aims to equip you with the knowledge and tools necessary to understand and implement Blue-Green Infrastructure (BGI) solutions in your community. BGI represents nature-based solutions that blend natural and engineered systems, integrating water and green elements into our environments. By doing so, we can create safer, greener, and more resilient spaces that mitigate flood risks and enhance urban living.

Purpose and Goals

The primary purpose of this booklet is to raise awareness about the benefits and applications of Blue-Green Infrastructure. Our goals are to:

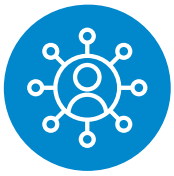
EDUCATE

Educate community members on the significance of BGI in managing stormwater and reducing flood impacts.

INFORM

Provide practical examples that showcase successful BGI projects.

PARTICIPATE

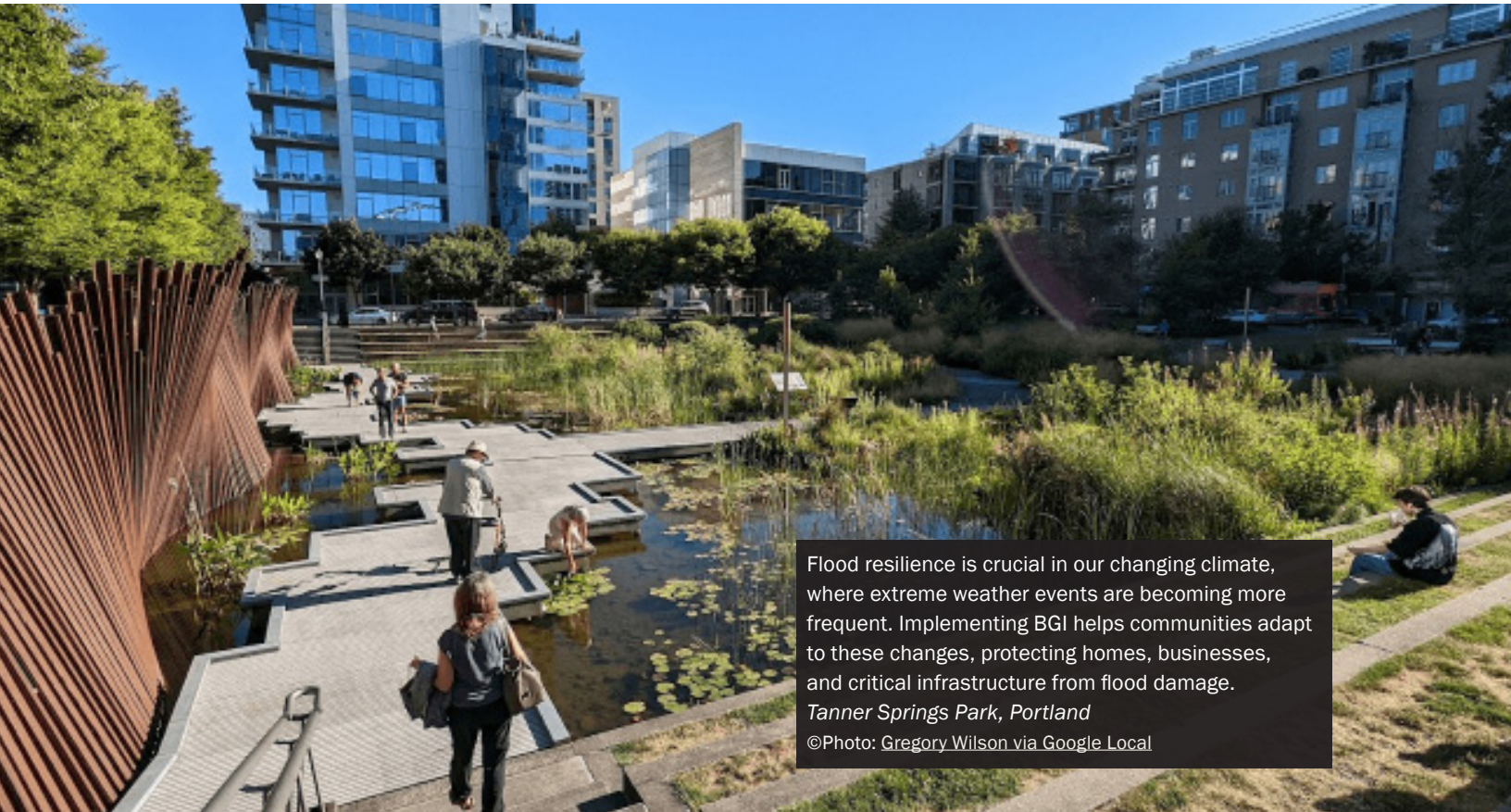


Strengthen community involvement in adopting and promoting BGI practices.

Importance of Blue-Green Infrastructure in Enhancing Flood Resilience & Community Co-benefits

Blue-Green Infrastructure (BGI) integrates natural landscapes and innovative engineering to manage water sustainably. It includes solutions like green roofs, rain gardens, wetlands, and multi-functional public amenities like floodable parks, playgrounds, public plazas, permeable hard surfaces such as sidewalks and parking areas. These and other types of BGI solutions provide co-benefits to the community like:

- Reducing flood risks by absorbing and slowing down stormwater runoff
- Improving air and water quality by filtering pollutants
- Enhancing urban biodiversity for vegetated and aquatic habitats
- Increasing community assets by expanding green spaces for both active and passive recreation
- Mitigating urban heat island effects, making cities more livable by reducing the risk of extreme heat
- Capturing rainwater for reuse as water features, to power heat pumps, or for floating solar farm



Flood resilience is crucial in our changing climate, where extreme weather events are becoming more frequent. Implementing BGI helps communities adapt to these changes, protecting homes, businesses, and critical infrastructure from flood damage.
Tanner Springs Park, Portland

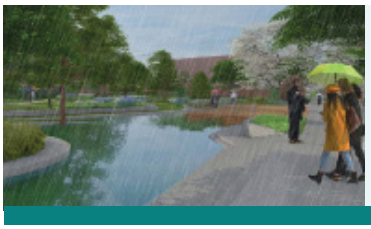
Blue-Green Infrastructure

"Blue-Green Infrastructure" (BGI) combines nature-based solutions for storm and floodwater management. Blue elements like ponds and rivers handle water above ground, while green infrastructure uses plants to reduce runoff. Gray infrastructure—like drains, pipes, and storage basins—supports both systems to prevent flooding.

Common BGI Strategies

The following are examples of standard BGI practices and strategies. These definitions are intentionally inclusive. BGI projects use multiple strategies in tandem across the watershed to maximize benefits.

WATER MANAGEMENT & RESILIENCE (WMR)



Multi-Purpose Floodable Recreational Spaces

Floodable public spaces, like parks, plazas, and athletic fields can store and release floodwater during extreme events, while serving as community areas when dry. Athletic fields, for example, can improve drainage for regular use and provide overflow storage during floods, reducing downstream risks. © Photo: Lansburgh Park Floodable Play Lawn Render, DOEE & Ramboll/ Moody Graham

Pond Retrofits

Stormwater ponds store and treat stormwater runoff. Existing facilities can often be modified to improve performance, function, and beauty. Depending on location and preference, ponds can take many forms, including dry, wet, and wetland ponds.
© Photo: Straughan Environmental, Inc.

Storm Drain Outfall Retrofits

In urban areas, stormwater exits drainage systems at "outfalls," which flow into ditches or streams near property boundaries. These outfalls are ideal for stormwater storage before reaching floodplains. Projects could include ponds, step-pool systems, or LID practices to slow and store runoff. © Photo: Straughan Environmental, Inc.

Bridge and Culvert Modifications

Bridges and culverts create "pinch-points" in floodplains, increasing flood risks. Many were built before watersheds expanded and may now be undersized. Modifying them can improve flood timing, storage, and flow. © Photo: Straughan Environmental, Inc.

Stormwater Reuse and Storage

Stormwater reuse and storage involve capturing and storing rainwater runoff for uses like irrigation, cooling, and replenishing groundwater. This method reduces strain on stormwater systems, mitigates flooding, and conserves water resources through techniques like rainwater harvesting, and retention basins. © Photo: Straughan Environmental, Inc.

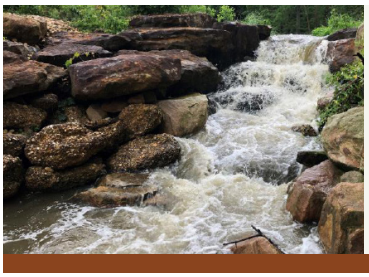
NATURAL SYSTEMS & ECOLOGICAL RESTORATION

Tree Planting

Trees serve an important role in flood management. Their branches and leaves intercept and hold rain, allowing it to evaporate. Their roots absorb water and reduce erosion during storms. In forested areas, decomposing leaves generate high-quality soils that absorb water. Tree planting impacts communities on small and large scales, such as street trees or establishing new forests. © Photo: Straughan Environmental, Inc.

Stream, Wetland, and Floodplain Restoration

Water runoff concentrates in valleys and streams, increasing the flood risk in low-lying areas near rivers, known as the "floodplain." In developed regions, infrastructure often lies within floodplains. Reconfiguring floodplains improves water storage and flow, typically involving resilient, native landscaping like wetlands and forests. © Photo: Straughan Environmental, Inc.



Stream Daylighting

Gray infrastructure systems are often limited by the capacity of underground pipes, causing upstream flooding. Stream Daylighting refers to restoring underground pipe networks to the surface as "blue" drainage amenities or streams. The daylighting of surface streams in floodable areas increases the drainage network's capacity to store and convey water.
© Photo: Stream and Habitat Restoration (DOEE)

URBAN GREEN INFRASTRUCTURE & SUSTAINABLE DESIGN

Impervious Reduction

Impervious surfaces, such as roads, sidewalks, and parking lots, allow minimal water absorption, leading to more runoff and flooding. During rain, pollutants, trash, and waste on these surfaces often end up in water bodies. Replacing impervious surfaces with vegetation and underground storage reduces runoff. © Photo: City of Portland,OR

Green Stormwater Infrastructure (GSI)

GSI uses nature-based methods to store and treat stormwater close to where it falls. Examples include rain gardens, green roofs, bioswales, and permeable pavement. It's also called Low Impact Development (LID) or Best Management Practice (BMP).
© Photo: Straughan Environmental, Inc.

Blue-Green Streets

Green Streets divert stormwater from streets and parking lots into GSI practices, like bioretention areas and permeable pavement, to control floods and support native plants. Roads can also be redesigned to convey and detain larger amounts of water.
© Photo: District Department of Transportation

Flood Preparedness for Residents/Community

Non-Structural Solutions

Non-structural solutions complement structural measures, offering a cost-effective and immediate way to manage flood risk. These solutions don't require major construction, they can be quickly implemented, providing benefits while long-term structural projects are developed. BGI projects to address flooding in your area are still in the planning phase and will need additional funding and time to install. This makes your personal preparedness for flooding essential to staying safe and reducing risk. Simple planning and preparedness measures can help lower flood risks without major construction and preparedness measures. This section provides key resources and contacts. A more complete list of options is available on the FEMA website, along with local resources from the District and Prince George's County.

Sandbags

Sandbags create temporary barriers that block or divert water, reducing the risk of water entering your home during heavy rain or flood events.

Flood Insurance

Protect your property against flood damage. Check if you qualify for flood insurance through your insurance provider or the National Flood Insurance Program (NFIP).

Flood Warnings

Stay informed with systems that alert your community about potential flooding, giving you time to prepare and evacuate if necessary.

Evacuation Plans

Ensure you have pre-arranged plans for safe evacuation during a flood. Know your routes and gather essential supplies in advance.

Emergency Kits

Prepare an emergency kit with essential items like water, non-perishable food, medications, flashlights, batteries, and important documents in case you need to evacuate quickly.

Insurance & Personal Preparedness Checklist(s)

Insurance Checklist

Flood insurance helps mitigate damages to your property and assets from flood-related incidents, which are often not covered by standard homeowners' insurance policies.

VERIFY COVERAGE

- Confirm if your property is covered by flood insurance (not included in standard homeowner policies

EXPLORE FLOOD INSURANCE OPTIONS

- Contact the National Flood Insurance Program (NFIP) or your local insurance agent.
- Visit: FloodSmart.gov for details

UNDERSTAND COVERAGE

- Covers structural damage and personal property loss.Prepare for Claims

PREPARE FOR CLAIMS

- Keep a list of valuables and document any flood damage.

Personal Preparedness

BUILD AN EMERGENCY KIT

- Pack water, non-perishable food, medications, flashlights, and batteries.
- Store important documents in waterproof bags.

PRACTICE YOUR EVACUATION PLAN

- Identify safe routes and practice with your family.
- Keep emergency contact numbers accessible.

STAY INFORMED

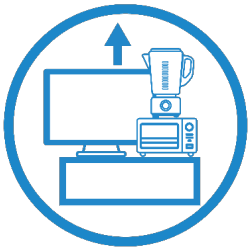
- Sign up for local alerts about flooding and severe weather.
  - » Sign Up: AlertDC Registration
  - » Sign Up: Alert Prince George's Registration

Home Preparation Tips

Prepare your home for potential flooding with these low-cost strategies, such as installing flood barriers or shields, keeping gutters clean of debris, using sandbags, elevating electrical appliances, and sealing cracks in foundations—all effective ways to minimize damage without breaking the bank.

Install flood barriers or shields.

Keep gutters and drains clear and install backflow preventers



Elevate electrical appliances and utilities in flood-prone areas of the home.

Agencies & Support Resources

Federal Agency/Service

UNDERSTANDING FLOOD RISK AND PREPARING FOR FLOODS
READY.GOV - FLOODS

FLOOD RISK MAPS AND ZONES
FEMA FLOOD MAP SERVICE CENTER
CUSTOMER CARE: +1 (877) 336-2627

FEMA DISASTER ASSISTANCE (APPLY FOR AID POST-FLOODING)
DISASTER ASSISTANCE - FEMA
HELPLINE: +1 (800) 621-3362
INQUIRIES: ASKIA@FEMA.DHS.GOV

NATIONAL FLOOD INSURANCE PROGRAM (NFIP)
EMAIL: FEMA-FMIX@FEMA.DHS.GOV
PHONE: +1 (877) 336-2627
NFIP (FEMA)

Maryland/Prince George's County

FLOOD PREPAREDNESS & ALERTS
MD READY - FLOOD PREPAREDNESS & ALERTS

FLOOD RISK MAPS
MARYLAND FLOOD RISK MAPS (MDEM)

EMERGENCY MANAGEMENT
MARYLAND DEPARTMENT OF EMERGENCY MANAGEMENT (MDEM)
EMAIL: MJOC.MDEM@MARYLAND.GOV
GENERAL: +1 (410) 517-3600
TOLL-FREE: +1 (877) 636-2872

LOCAL FLOOD INFORMATION
PRINCE GEORGE'S COUNTY DEPARTMENT OF THE ENVIRONMENT (DOE)
EMAIL: DOECARES@CO.PG.MD.US
+1 (301) 883-5810

FLOOD MANAGEMENT AND OUTREACH
FLOOD MANAGEMENT & SUSTAINABILITY
PUBLIC OUTREACH: +1 (301) 883-6211

FLOOD INSURANCE (NFIP FOR MARYLAND RESIDENTS)
MARYLAND FLOOD INSURANCE INFORMATION

EMERGENCY RESPONSE
FLOOD RESPONSE SERVICES
FOR OUTSIDE OR INSIDE FLOOD EMERGENCY, DIAL 911

FOR NON-EMERGENCY INSIDE FLOODING,
HELPLINE: +1 (301) 325-1200 OR
REPORT HERE: ON-LINE NON-EMERGENCY DISPATCH REPORTING | PRINCE GEORGE'S COUNTY

District of Columbia (DC) Agency/Service

FLOOD PREPAREDNESS & EMERGENCY ALERTS
READY DC - FLOOD PREPAREDNESS

FLOOD RISK MAPS
DC FLOOD RISK MAP

DISTRICT OF COLUMBIA DEPARTMENT OF ENERGY AND ENVIRONMENT (DOEE)
FLOOD RISK MANAGEMENT
EMAIL: FLOOD.RISK@DC.GOV

FLOOD INSURANCE INFO FOR DC RESIDENTS NFIP:
FLOOD INSURANCE AND COVERAGE - DOEE

DISTRICT DEPARTMENT OF INSURANCE, SECURITIES AND BANKING (DISB):
DISB WEBSITE
FLOOD COMPLAINTS: FLOODCOMPLAINTS@DC.GOV
LICENSED AGENTS: +1 (202) 727-8000
INSURANCE TIPS: +1 (202) 442-7828

DRAINAGE & WATER MANAGEMENT
REPORT A PROBLEM - DC WATER
STORM DRAIN CLEANING: +1 (202) 612-3400
GENERAL ASSISTANCE FOR FLOODING: CALL 311

Key Partners

The project is a collaboration between COG, the District, and Prince George's County. The project is funded through a $1.4M grant received from the District of Columbia's Homeland Security and Emergency Management Agency through the Federal Emergency and Management Agency's Regional Catastrophic Preparedness Grant Program. Consultant support is provided by ICF, Straughan Environmental Inc., and CHPlanning.

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FIND OUT MORE ABOUT THE PROJECT AND WORKSHOPS

WWW.MWCOG.ORG/BGI

EMAIL: BGI@MWCOG.ORG