

RIPPLE

Environmental Justice Watershed Plan



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Acknowledgments

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Pittsburgh Team
Mike Hiller, Executive Director
Lori Presto, Shared Chief Financial Officer
Aaron Birdy, Plan/Build Director
Sarah Carr, Operations & Communications Manager
Chavaysha Chaney, Water Equity Director
Ryan Ferrebee, Development Director
Erica Jackson, Community Engagement Manager
Keith Moore, Ecosystems Program Coordinator
Mary Nesby, Mon Valley Advocacy Manager
Jo Anne Tippet, Advocacy Coordinator
Chief Pomaj-Chakmam-Yajalaji, Advocacy Consultant

UpstreamPgh’s Board of Directors

Rayden Sorock, President	Tony Malogne
Adam Kidane, GISP Vice President	Claudia Saladin
Ana Bennett, PE, Secretary	Tacumba Turner
Robin Ryan, CPA, Treasurer	NaTisha Washington
Tom Batrone, P.E.	Claudia Saladin
Marion T. Divers, PhD, PG	Michael Hiller (ex officio)
Brian Hill	Lori Presto (ex officio)

Steering Committee

Claudia Saladin, (co-chair)
NaTisha Washington (co-chair)

Black Appalachian Coalition

Rayden Sorock (co-chair)

Kate Sphar Consulting LLC

Diane Daniels,

East Hills Consensus Group

Sergio Ruiz,

Borough of Wilkinsburg

Jonathon Burgess,

University of Pittsburgh, Water

Collaboratory

Kyla Prendergast,

Neighborhood Leaders

Betty Foster
Darya Kharabi
Donna Smith
Natalie Walsman
Ruth Boykin

Pgh Department of City Planning

Maria Natoli,

Pittsburgh Water

Megan Lange,

University of Pittsburgh Water

Collaboratory

Ryan Quinn, P.E.,

Pittsburgh Water

Timothy D. Prevost, P.E.,

ALCOSAN

Zinna Scott,

Operation Better Block

Consultant Team

evolve environment::architecture
ethos collaborative
black girl green world

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01

THE RIPPLE PLAN

This plan rebuilds the community's relationship with water by starting upstream, where it matters most.

UpstreamPgh recently completed a new 2024-2028 Strategic Plan with a big question of: How can UpstreamPgh's people-first approach to watershed restoration uplift climate justice and connect people to the natural environment? This question is central to the Nine Mile Run Environmental Justice Watershed Plan. This plan also upholds the core values identified in the Strategic Plan:

- Strive for all things UpstreamPgh to be regenerative.
- Act with urgency to address the environmental and climate injustice in the region.
- Think from a greatest potential perspective, recognizing possibilities rather than just solving problems.
- Institutionalize systems thinking across all programs.

Over the past few years, UpstreamPgh has transitioned towards a people-first approach that recognizes people are important components of all natural systems, just as much as flora and fauna. Placing environmental justice and climate preparedness for the most vulnerable neighborhoods as the top priority of project and program planning is now the foundation of the organization's work.

Rather than relying only on underground pipes, the plan highlights green stormwater infrastructure that captures rain in visible and meaningful ways. Parks, streets, schoolyards, and open spaces become part of a connected network that manages water while creating cared-for places within communities.

The Nine Mile Run Environmental Justice Watershed Plan, or the RIPPLE Plan, enables UpstreamPgh to engage communities of color that have suffered the most from injustices and inequities related to land use, environmental management, public health, and socio-economic issues. This plan describes seven (7) sub-shed, neighborhood-scale system plans for addressing water quality issues in the Nine Mile Run Watershed.

RIGHT Nine Mile Run is a small stream that flows, mostly underground, through Pittsburgh's East End (UpstreamPgh)



Caring for the Watershed and our Neighbors

Building on prior planning, the RIPPLE framework evolved from the 1998 Nine Mile Run River Conservation Plan, which identified the need for stream restoration in Frick Park, as well as sustained investment in the upper watershed. That plan identified that long-term success would depend on a dedicated watershed organization and a systems-based approach, catalyzing the start of UpstreamPgh. Since then, UpstreamPgh and its partners have made significant progress in the lower watershed, and are now turning attention to the upper part of the watershed where unresolved conditions continue to affect shed-wide performance. Recent events, including the Fern Hollow Bridge collapse, aging stormwater and sewer infrastructure, and more frequent intense rainfall, underscore the urgency of a coordinated, watershed-wide approach to renewal and resilience. The RIPPLE plan marks the next phase in restoring and strengthening the watershed.

A focus in the upper watershed.

These areas play a critical role in shaping downstream conditions, as stormwater runoff and infrastructure performance upstream directly affect flooding and sewer capacity throughout the system. While much attention has been given to the lower Nine Mile Run, this plan focuses on the upper watershed, including the Borough of Wilkinsburg and the Pittsburgh neighborhoods of Homewood and East Hills.

Responding to upstream needs. The upper watershed includes neighborhoods that have experienced population decline, disinvestment, vacant land, and aging housing stock. These communities have often been left behind in stormwater improvements and broader reinvestment efforts. Many are identified by the Pennsylvania Department of Environmental Protection as Environmental Justice Areas.

A commitment to environmental justice.

Environmental justice is central to this plan. Projects are intentionally prioritized in communities where environmental impacts and historic underinvestment overlap. The goal is not only to reduce risk, but to ensure that public investment delivers meaningful benefits to neighborhoods that have experienced long-standing inequities.

By prioritizing upstream action, the plan emphasizes prevention rather than reaction. Managing stormwater closer to where it falls improves water quality, reduces pressure on infrastructure, and supports more resilient outcomes across the entire watershed.

UpstreamPgh action is especially important where residents face flooding, sewer backups, aging infrastructure, and limited investment, making stormwater management an issue that directly affects daily life and community stability.

Managing water-related issues improves neighborhood quality of life and addresses long-standing disparities in infrastructure and environmental conditions.

An integrated watershed framework.

What distinguishes this report is its integrated approach. Equity, landscape structure, and infrastructure typology are considered together within a watershed-scale framework. Rather than treating stormwater projects as isolated technical fixes, the plan views the watershed as a connected system shaped by physical conditions, social context, and governance structures.

Green stormwater infrastructure as a networked system. The plan uses a range of green stormwater infrastructure strategies, including both networked and non-networked systems. Different tools are matched to specific landscape conditions, land ownership patterns, and community capacity for long-term stewardship.

Regenerating places with data and community knowledge. Regenerating places through data and community knowledge is central to this plan. Analysis of flooding, sewer backups, and infrastructure stress is paired with community insight to identify where targeted interventions can have lasting impact. These conditions are considered alongside land use, zoning, vacancy, and past investment patterns to reveal opportunities for coordinated action.

This plan is generational. Strategic investments in green stormwater infrastructure will restore watershed function, improve public spaces, and reduce risk disparities. While implementation will take time, these coordinated efforts will strengthen neighborhoods and watershed health for decades to come.

Water infrastructure needs to be managed as a network, requiring governance that is coordinated across public agencies, private property owners, local institutions, and community organizations.

Networked systems include projects in the public right-of-way and on private property that work together to manage stormwater and provide visible neighborhood benefits.

Data and community knowledge are essential to managing distributed systems and understanding where flooding, infrastructure stress, and community priorities intersect.

Watershed restoration is more than an environmental project — it is a platform for neighborhood revitalization and long-term resilience.

BELOW UpstreamPgh volunteering team event



The RIPPLE Values



Increase economic opportunity. Protect infrastructure from water-related impacts while creating opportunities for income generation.



Create culturally restorative places. Create water-focused public spaces that build neighborhood identity and increase access to green space.



Solve multiple problems at one time. Stack solutions that deliver multiple benefits through coordinated investment.



Improve downstream water issues. Improve water quality and reduce stormwater entering Nine Mile Run, the sewer system, the Monongahela River and Ohio River Basin.



Solve adverse upstream water-related issues. Minimize flooding, eliminate basement backups, and reduce risk of landslides.



Improve human and ecological health cobenefits. Minimize heat island, improve air quality, and increase vegetative health.

The RIPPLE Plan

The RIPPLE Plan is organized around three types of projects that share similar settings, strategies, and decision-making structures. Organizing projects this way helps UpstreamPgh focus its efforts, communicate more clearly with communities and partners, and better coordinate services and resources.

Water Capture Districts

The watershed's flatter commercial areas provide opportunities to capture stormwater through projects in streets, sidewalks, and on private property.

- 1 Frankstown-Bennett Water District [p. 44]**
A mixed-use valley corridor with flooding risks suited to coordinated, networked green infrastructure.
- 2 Rockwell to Wilkinsburg Water District [p. 64]**
A highly impervious commercial district suited to improvements in the public right-of-way and on private lots.

Valley Park Projects

Parks targeted for reinvestment can integrate on-site and off-site stormwater capture into recreational and landscape features.

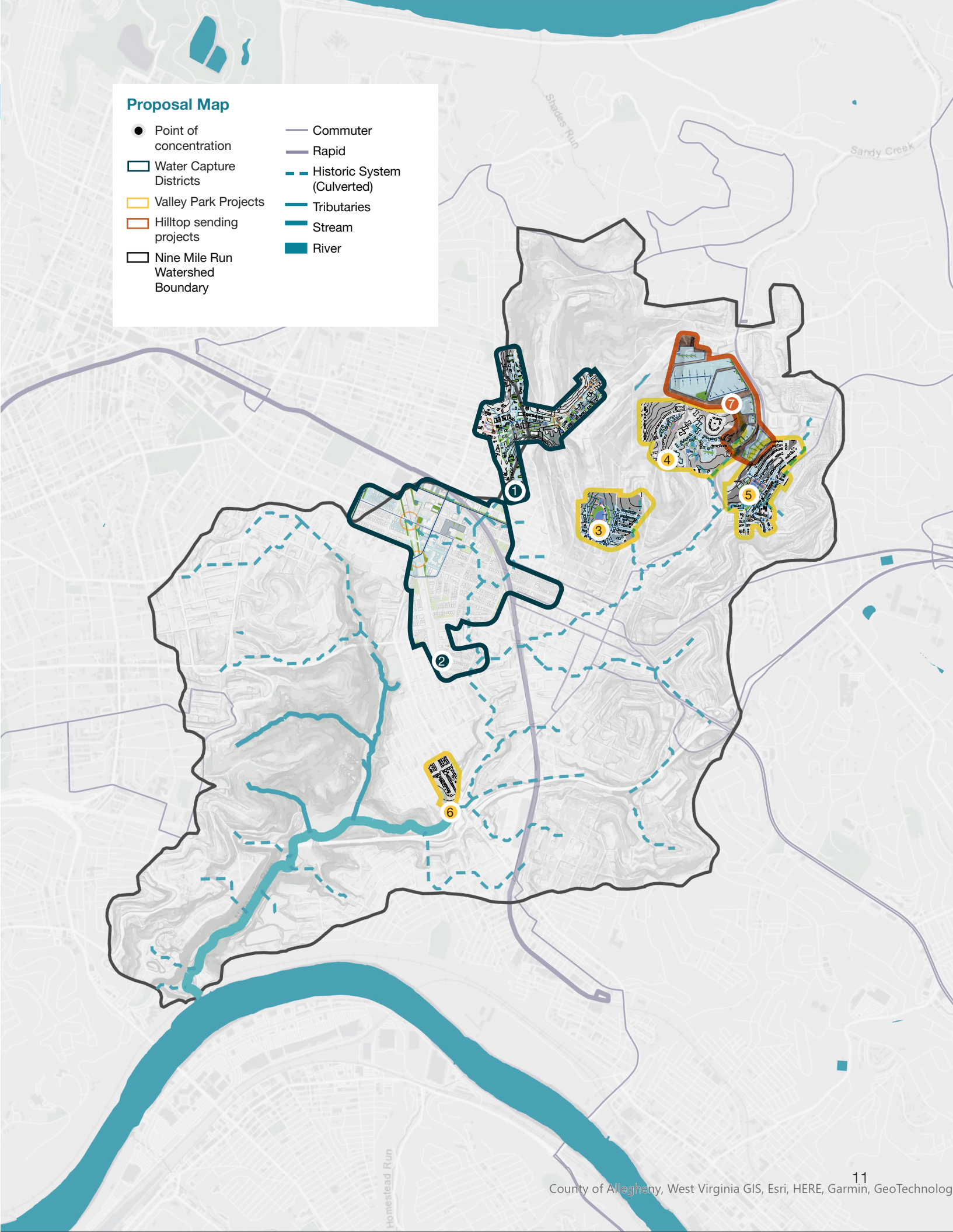
- 3 Hunter Park [p. 93]**
A community park where stormwater management can be integrated with recreation and neighborhood use.
- 4 Turner Intermediate School [p. 97]**
School grounds and a public park campus with potential for on-site stormwater management and education.
- 5 East Hills Park and Park Hill Drive [p. 101]**
A school, park, and neighborhood where coordinated green infrastructure can manage runoff & support community use.
- 6 Nine Mile Run Outflow [p. 105]**
Where the sewer becomes the stream and upstream stormwater impacts converge to affect storm and sanitary systems.

Hilltop Sending Properties

- Private properties where on-site source control can reduce stormwater runoff at its origin.
- 7 Hilltop Properties [p. 110]**
Upland areas where on-lot green infrastructure can reduce runoff at its source.

Proposal Map

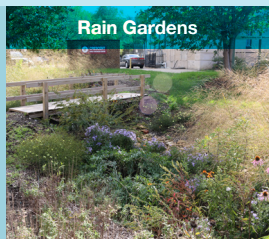
- Point of concentration
- Water Capture Districts
- Valley Park Projects
- Hilltop sending projects
- Nine Mile Run Watershed Boundary
- Commuter
- Rapid
- - - Historic System (Culverted)
- Tributaries
- Stream
- River



The RIPPLE Tools

Green stormwater infrastructure uses a combination of above- and below-ground, planted, and built elements. They are often layered together to manage stormwater where it falls and support everyday use of streets, parks, and buildings.

ON-LOT INFRASTRUCTURE



PUBLIC RIGHT-OF-WAY INFRASTRUCTURE

The RIPPLE Projects

Each project utilizes 10 squares corresponding to Green Stormwater Infrastructure Tools. Dark blue squares indicate the best-suited tools for that project.

Water Capture Districts

- Frankstown-Bennett Water District**
- Frankstown-Bennett is a busy corridor where roads, businesses, and buried streams concentrate stormwater, contributing to flooding and sewer backups. Improvements along streets, parking areas, and nearby open spaces can extend UpstreamPgh's existing efforts to manage stormwater and can make a safer, more walkable district.

- Rockwell Park to Wilkinsburg Water District**
- Rockwell Park to Wilkinsburg is a relatively flat area with light industrial and main street commercial uses and is the largest impervious area in the shed. Increased investment and redevelopment can be directed to support new open spaces, street improvements, and private property upgrades to create a connected network of green stormwater infrastructure.

Valley Park Projects

- Hunter Park**
- Hunter Park is a neighborhood park where rainwater naturally flows, making it an ideal place to manage stormwater in ways people can see and enjoy. The park is slated for investment, where the community can engage in the design of play areas and fields that capture on site stormwater as well as water from the adjacent properties and right-of-ways.

- East Hills Park & Park Hill Drive**
- East Hills Park and Park Hill Drive include a school campus, park space, and surrounding homes where rainwater moves quickly downhill, contributing to erosion and flooding. The community is engaged in planning improvements to school grounds, park areas, and streets. This project can capture stormwater on site and from nearby roads and properties.

- Turner Intermediate School**
- Improvements to the schoolyard and fields, and parking areas can store on-site rain as well as capture runoff from nearby roads. The community has identified a need for field upgrades, making this an ideal opportunity for visible learning and environmental benefits for students and the surrounding neighborhood.

- Nine Mile Run Outflow**
- The Nine Mile Run Outflow is where stormwater from across the watershed exits the culvert and becomes an open-channel stream within Frick Park. Improvements at and upstream of this location can reduce concentrated discharges that contribute to infrastructure damage while creating a more welcoming and visible entry to the park and celebrate the restored Nine Mile Run.

Hilltop Sending Properties

- Hilltop "Sending" Properties are private properties at the highest points of the watershed that generate significant stormwater runoff, including large parking lots, vacant parcels, and vehicle storage areas. Private investment in green infrastructure reduces runoff at its source and helps relieve pressure on sewers and flooding downstream.

