

WATER CAPTURE DISTRICTS

Across the watershed, Water Districts are where the city’s hard surfaces and hidden valleys intersect—places where stormwater challenges are most visible and where the greatest opportunities for change exist.

Structure and Issues

These districts include both the narrow valleys, where historic streams now run underground along collector roads, and the flatter East End Plateau neighborhoods characterized by extensive impervious cover. Many are commercial or mixed-use areas with large roofs, parking lots, and minimal green space. During heavy rainfall events, runoff exceeds the system’s capacity, leading to surface flooding and sewer backups that impact businesses and adjacent residential areas. The combination of low slopes, buried drainage routes, and high imperviousness creates chronic water management problems that degrade both public infrastructure and private property.

Green Stormwater Infrastructure Types

Opportunities within Water Districts range from localized, non-networked interventions—such as green roofs, rain gardens, and on-site detention—to networked systems that connect multiple sites through right-of-way improvements or shared open spaces. On public property, bioswales, tree trenches, and permeable pavements can capture and slow runoff

before it enters sewers. On private sites, retrofits such as parking lot basins or green courtyards can complement public systems. Together, these approaches can create layered water networks that restore some of the natural storage and conveyance once provided by the valley landscape.

Variables and Challenges

The potential for implementing these systems depends heavily on local conditions. In districts experiencing reinvestment or densification, redevelopment can support code-driven stormwater improvements and fund integrated systems. In areas with low market value or economic stress, large numbers of vacant parcels provide spatial opportunities but lack financial capacity for implementation. These areas will require significant public and philanthropic investment to ensure equitable outcomes. Across all contexts, cost, maintenance responsibility, and coordination among property owners remain key challenges—but also opportunities to demonstrate how water can shape more resilient, connected, and livable districts.

BELOW Neighbors making art at Dornbush Street Block Party event in East Hills (UpstreamPgh)

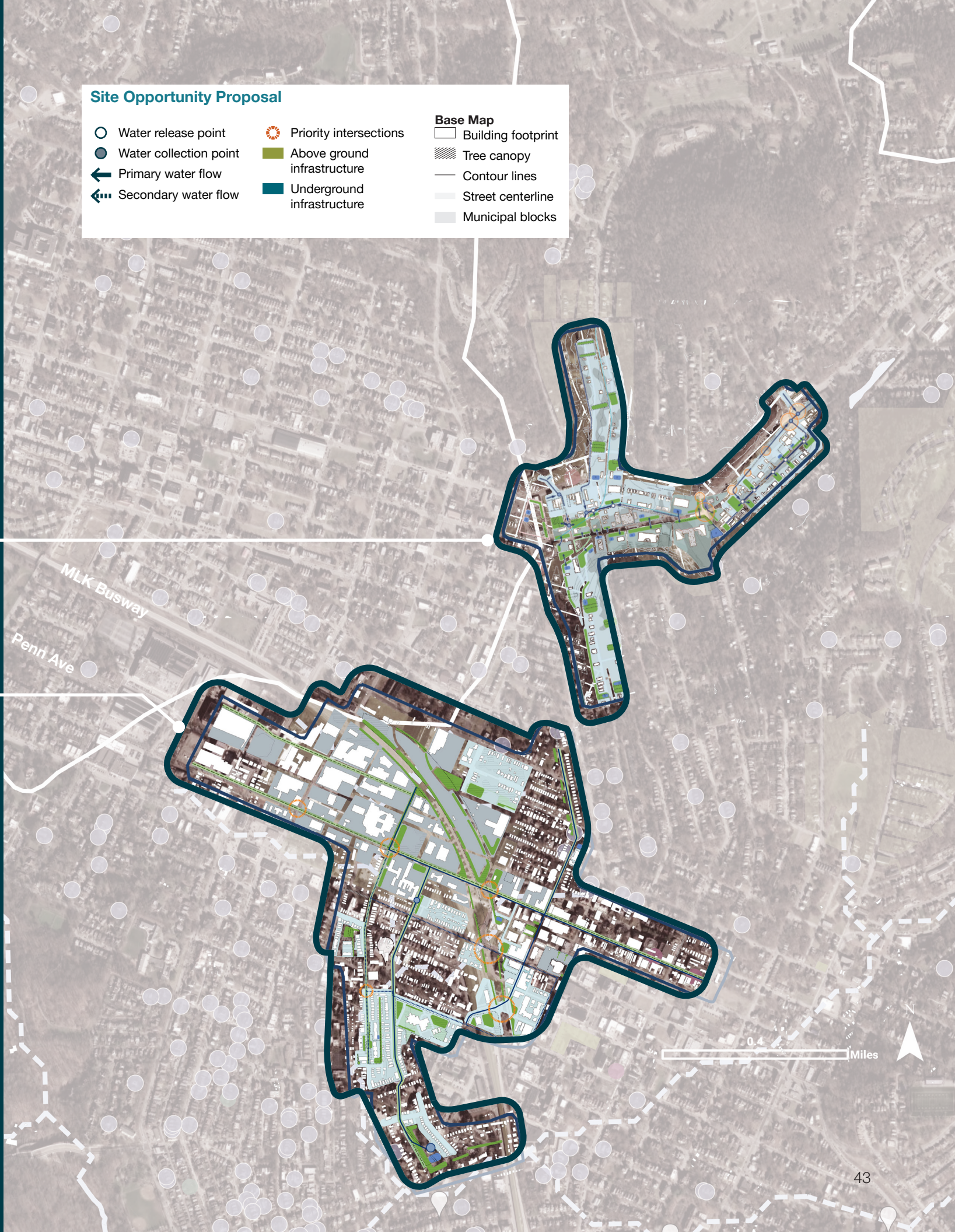


Frankstown-Bennett Water District

- Bennett Light Industrial
- Angoria Blackadore Street Stream Pairing
- Exley Way
- Conemaugh Street

Rockwell to Wilkinsburg Water District

- Park and Ride Rosedale Cluster
- Light Industrial District on lot GSI
- Whitney Park and Kelly School Micronetworks
- Light Industrial District Green Streets GSI
- Wilkinsburg Business District



Rockwell to Wilkinsburg Water District

What we heard

“It is impossible to bike along Pennwood Ave between South Ave and the Forbes Connector intersection no handicap sidewalk cuts and awful road patching. Cars avoid the potholes by driving in the wrong lane. Rainwater drips down through the train overpass at Rebecca Ave. It s difficult for pedestrians bikes and the handicapped to cross that 5 way intersection. More shade would be nice as well.”

“The sewers on West Street some of them need clean especially on the corner of South and West Street. Glendale avenue seems to be a basin for water”

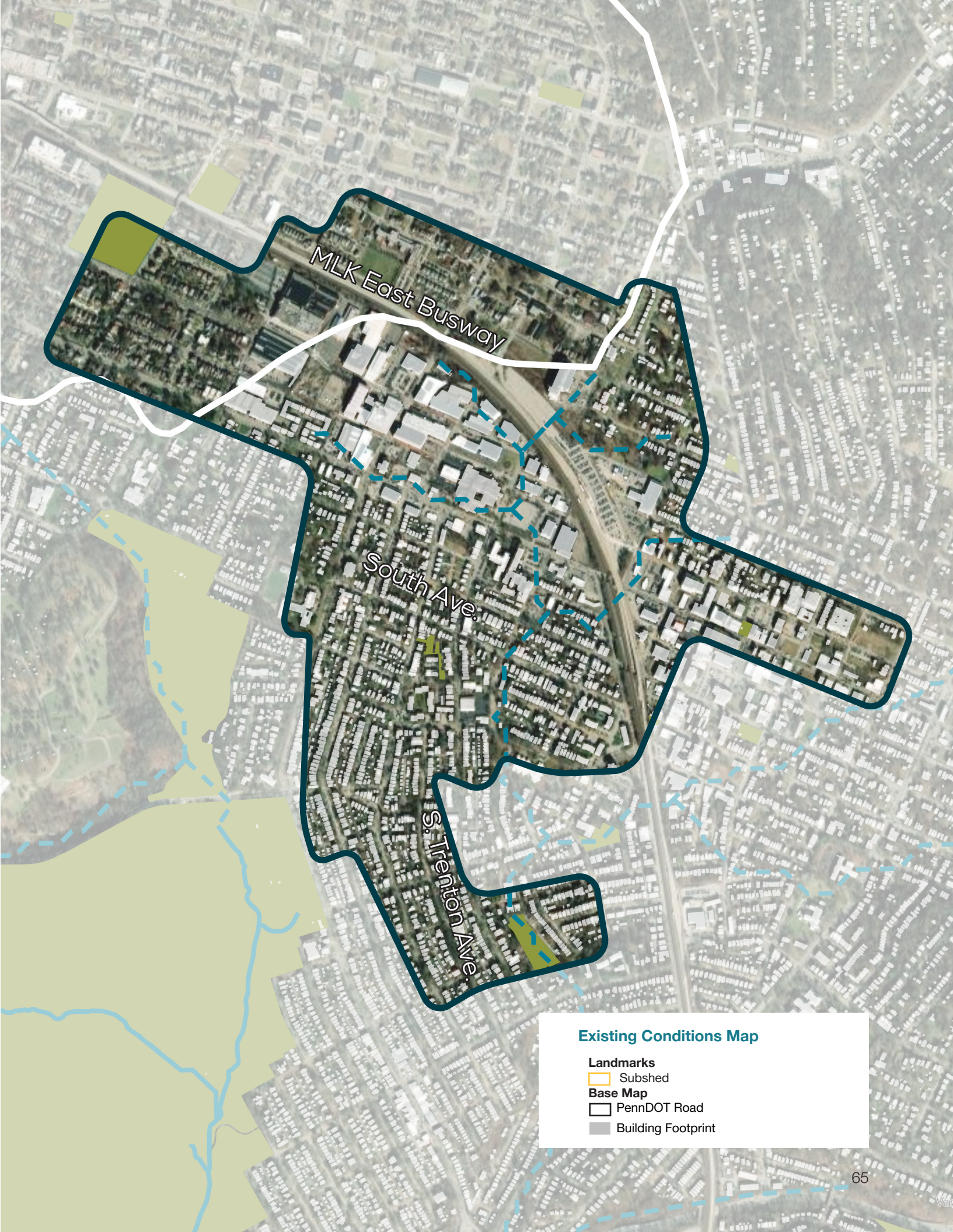
“The promotion of native and adapted edible plants is a key issue area for me that supports climate resilience. Managing water resources (through devices such as rain barrels and composting toilets) to navigate periods of drought and improve water quality is also important.”

“Most of the pollutants and garbage in Nine Mile Run come through this corridor. Consider a capture point that can collect the garbage before it continues down the run.”

“Right now my biggest desire is for the actually waterway of Nine Mile run to continue its restoration journey and become an area of recreation for the residents and a place that native plants and animals can return. The fish that UpstreamPgh has already counted are promising but we need to completely divert all raw sewage from entering this waterway and manage other contamination & refuse that finds its way to the water. I’m also very afraid of the consequences of the Parkway East bridge replacement project on the waterway surrounding woods.”

“The low part of Biddle Avenue where I reside floods with each heavy rain. The drains in the street are ineffective and filled with debris preventing the water from draining properly. My basement has flooded twice 2009 and 2018.”

BELOW Green infrastructure was installed at Wilkinsburg’s municipal parking lot (UpstreamPgh)





ABOVE Wilkinsburg Stormwater Resiliency Project in bloom, completed in 2024 (UpstreamPgh)

The Rockwell-Wilkinsburg Water District includes the recently renovated Rockwell Park complex, the light industrial area south of the Busway, and Wilkinsburg's historic business district. In the past, the three areas functioned independently, but with PRT bus station improvements and other investments, green infrastructure could stitch the area together.

Wilkinsburg Station Area: The Wilkinsburg - Brushton Station Areas will undergo great change if PRT can fund the transformation of the single station and park-and-ride to two stations and a development site. PRT's site partially drains to a bioswale today. In the future, it will have to comply with more strict standards and will likely be below grade technologies or integrated into a more urbanized landscape.

Urban Industrial District: The urban industrial business district south of the busway is mixed use and density. As the area experiences development pressure, parcel-based GSI systems will be installed with redevelopment and ongoing site improvements.

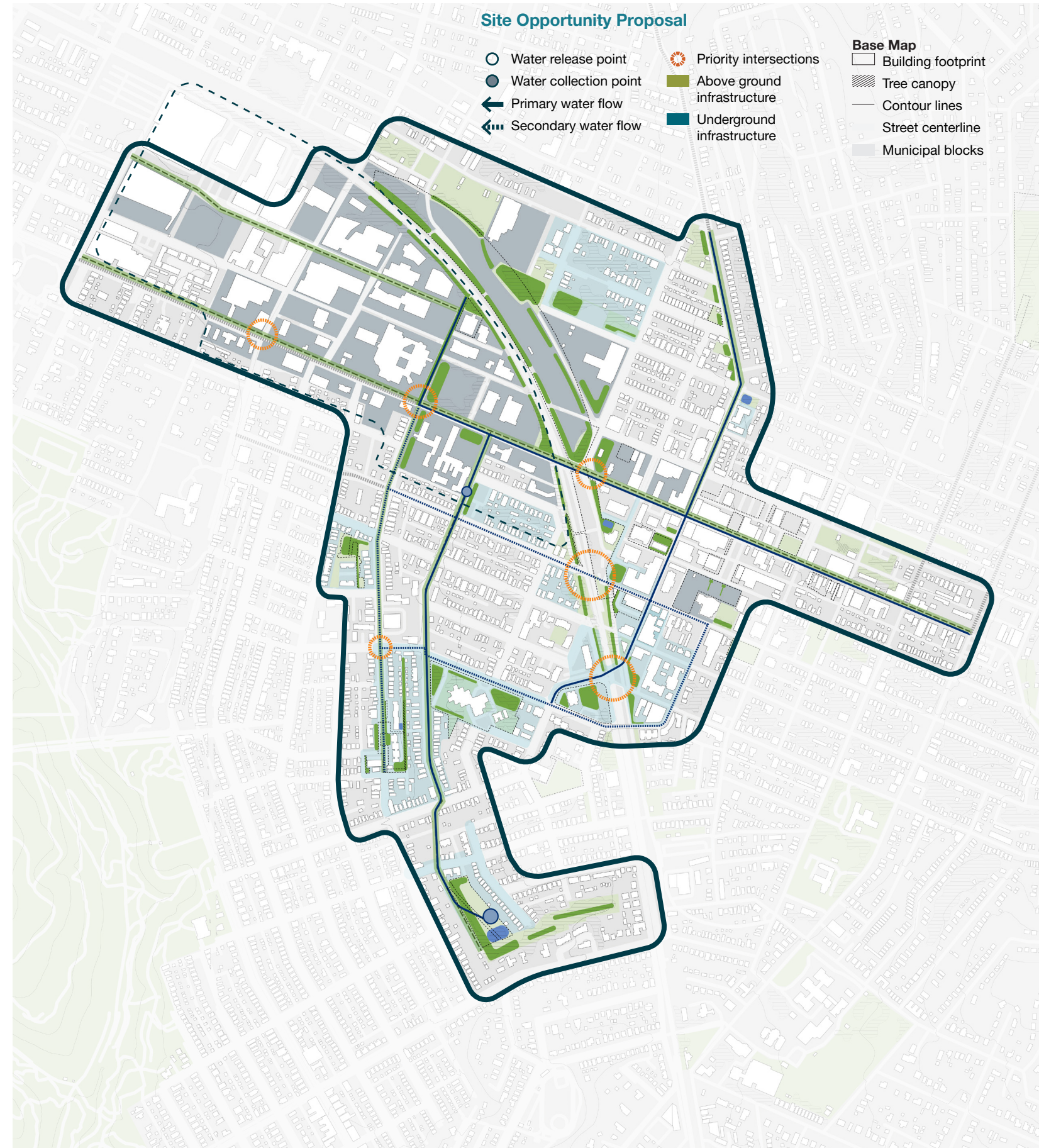
Wilkinsburg's regulations and a stormwater assistance program could require/incentivize private property GSI and be aligned with the City of Pittsburgh's regulations.

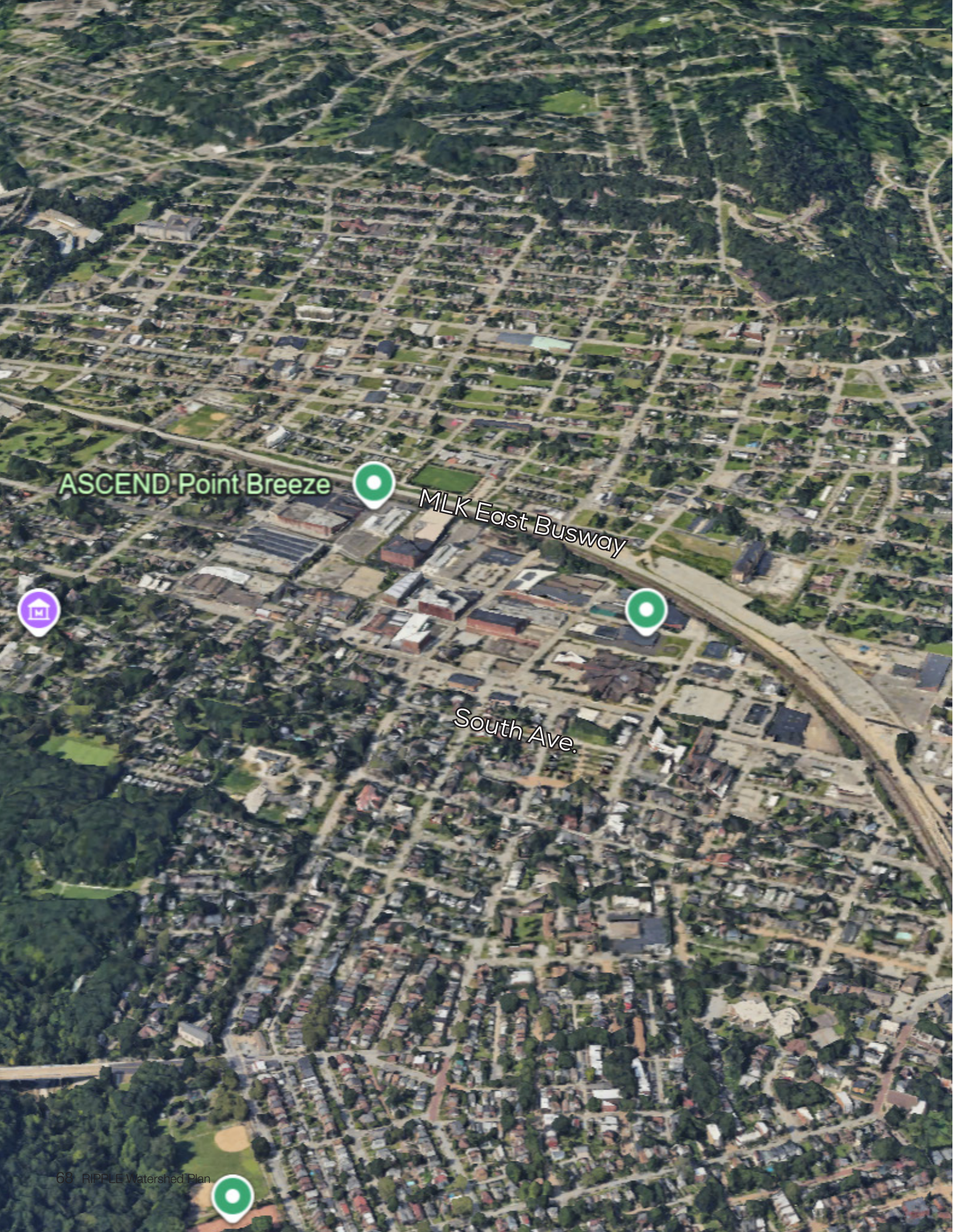
A district plan is needed to identify opportunities for public space/GSI streetscape improvements. Projects could be funded by a TRID.

Historic Business District: Wilkinsburg's historic main street and district has many buildings still intact with a streetscape that has been improved in some areas. There is some development pressure, in the form of renovations. Many parcels do not have open space to capture or store stormwater. There is a high level of impervious surfaces.

Updating Wilkinsburg's regulations and establishing a stormwater assistance program could require/incentivize private property GSI. Many parcels would still benefit from public right-of-way collection and storage as most buildings cover the entire lot area.

A district plan is needed to identify opportunities for public space/GSI streetscape improvements. Projects could be funded by a TRID.





WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG

Light Industrial District TOD

Time Frame
mid term

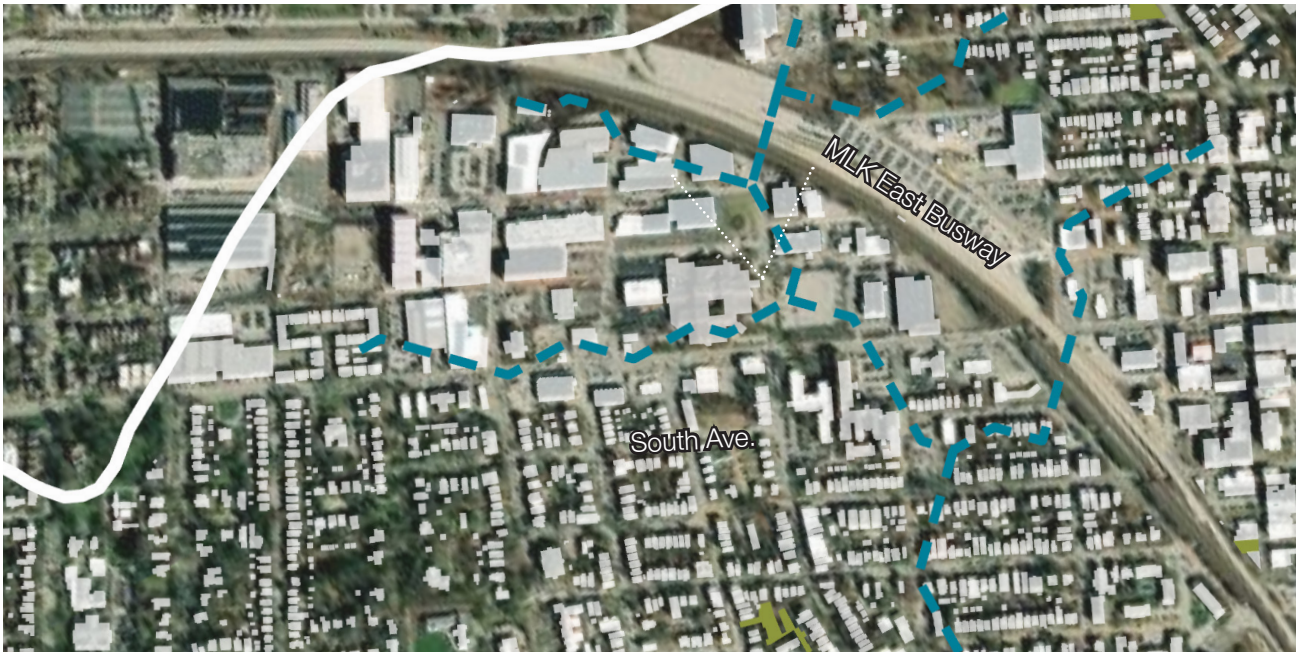
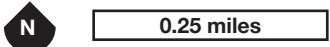
Location
The blocks south of the busway, from Rockwell Park on the western edge, to the railroad and busway underpass to the east.

GSI Strategy
Private parcel GSI, Public Right-of-Way Improvements

UpstreamPgh's Role
support, advocate, watchdog

Potential Partners
Business owners, business district group, City of Pittsburgh, Borough of Wilkinsburg, Wilkinsburg-Penn Joint Water Authority (WPJWA), PennDOT, PRT, Railroad, ALCOSAN

Further Investigation
Convene the City of Pittsburgh and the Borough of Wilkinsburg to discuss joint water planning.



LEFT Trenton Avenue is a connector to the residential areas south of Penn Avenue. PRT has examined the possibility of a below grade crossing of the railroad and busway, which would be at the location of a historic stream.

WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG

Light Industrial District TOD

Green stormwater infrastructure complements future transit investment and contributing to a multi-municipal transit-oriented district (TOD).

Infrastructure Opportunities

- Water release point
- Water collection point
- ←

Primary water flow
- ↙

Secondary water flow
- ⊗

Priority intersections
- Above ground infrastructure
- Underground infrastructure

□

Base Map

▤

Building footprint

▨

Tree canopy

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Contour lines

—

Street centerline

■

Municipal blocks

The blocks south of the busway has been home to light industrial and commercial uses but is likely to transition to a transit oriented district (TOD) as PRT builds two new busway stations. Some areas have seen recent reinvestment, including the restoration of the Rockwell industrial buildings as an office park and the addition of an ALDI's grocery store. Other large parcels are likely to change use or undergo redevelopment in the next ten to twenty years.

Developing an open-space network would enhance the district's desirability. This would likely be implemented through a district plan. UpstreamPgh would not lead the plan but would be an expert party to it.

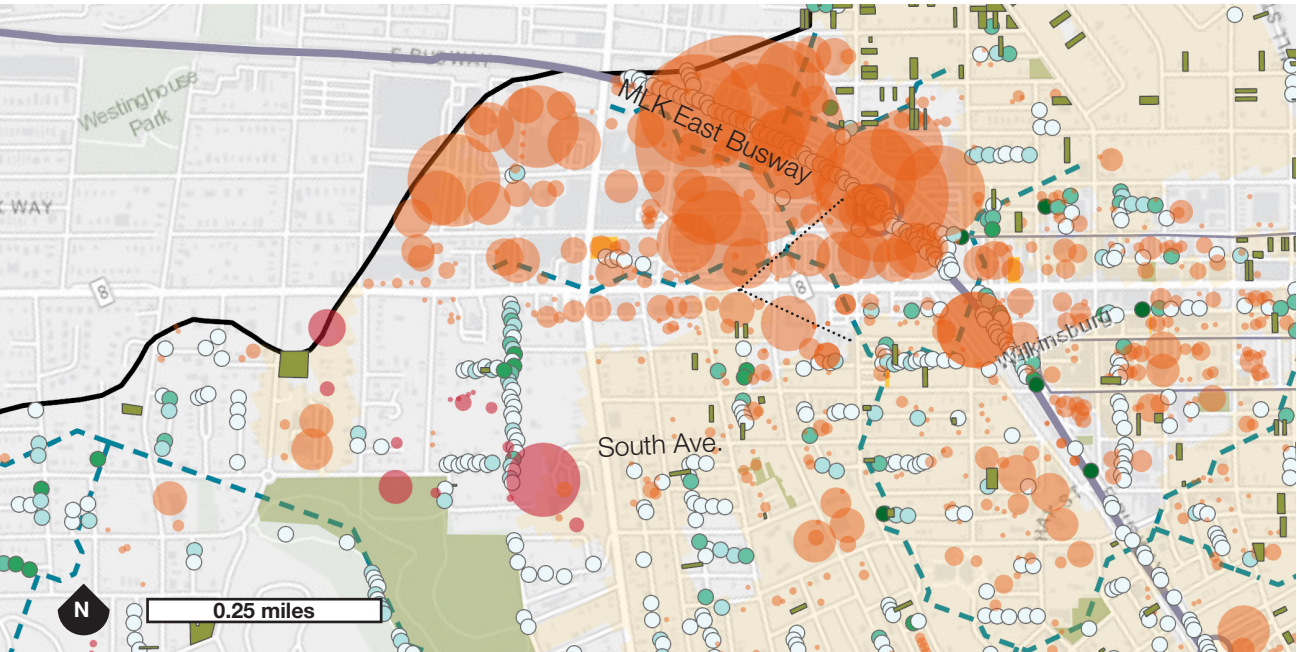
PRT has explored a concept that establishes a possible park/underpass to connect the south-of-the-busway district to PRT's park-and-ride lot and 7800 Susquehanna (Campbell Enterprise Center). This would mark the historic stream paths and create high-quality connections to benefit Homewood and Wilkinsburg. The

project would require funding well beyond what PRT can provide, such as a RAISE/BUILD/TIGER grant, and would require a high-capacity developer to be involved. UpstreamPgh should be actively involved in any application and should remain an advocate.

Redevelopment or significant upgrades in these areas will trigger newer, more stringent stormwater capture requirements. If the area were to experience development pressure, this would likely be the most effective way to improve stormwater performance on these properties.



LEFT GSI can be paired with safety improvements to Penn Avenue. Traffic calming and on-lot improvements can collect stormwater and make it more attractive to pedestrians, cyclists, and drivers.



Computational Map

- Impervious Area
- Depaving & Retrofits
- Rain Gardens
- Green Streets (Value)
- 0 - 0.04
- 0.04 - 0.14
- 0.14 - 0.30
- 0.30-0.61
- 0.61 - 1
- Rapid
- Historic Streams (Culverted)
- Nine Mile Run Watershed Boundary

Water Capture Opportunities

within a 5-minute walk of this project

0	0
Vacant lots	Parks & open space
351,733	2
Impervious area (sqft)	Parking lots
15,277	1
Streetscape (ft)	Parcels in Public Ownership

Environmental Justice Considerations

within a 5-minute walk of this project

58.8%	500
% Employed	# of Residents
61.6%	19.2%
% Renters	Cost Burdened
\$72,286	37.13%
Median Income	% of Area Historically Redlined



Bethany Baptist Church



MLK East Busway

Hill Ave

South Ave.

WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG Light Industrial District Green Streets



MLK East Busway

Susquehanna St.

Time Frame
mid term

Location
Penn Avenue, Thomas Street/Boulevard,
Trenton Street, West Street

GSI Strategy
Public Right-of-Way Improvements

UpstreamPgh's Role
support, advocate, watchdog

Potential Partners
Business owners, business district group,
City of Pittsburgh, PGH20, Borough of
Wilkesburg, Wilkesburg CDC, WPJWA,
PennDOT, PRT, Railroad, ALCOSAN

Further Investigation
Convene the City of Pittsburgh and the
Borough of Wilkesburg to discuss joint
water planning.



0.1 Miles



LEFT GSI could be incorporated into traffic calming and pedestrian improvements at intersections such as this one at Trenton and Penn Avenues.

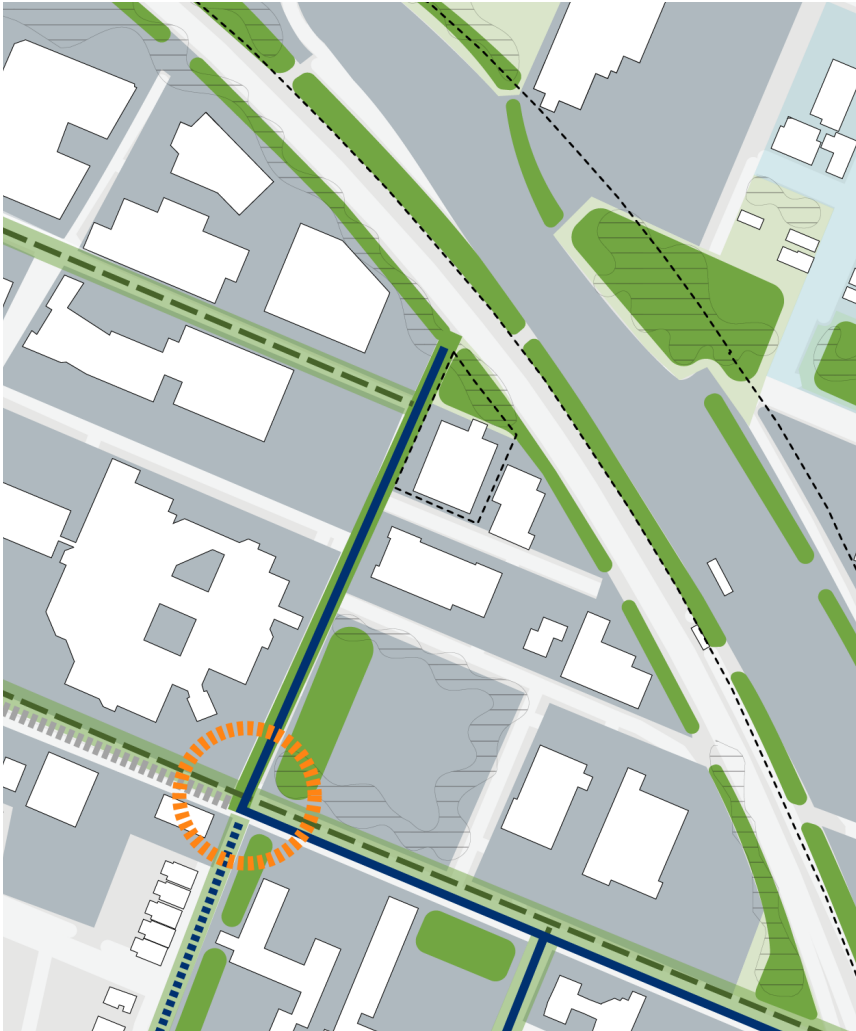
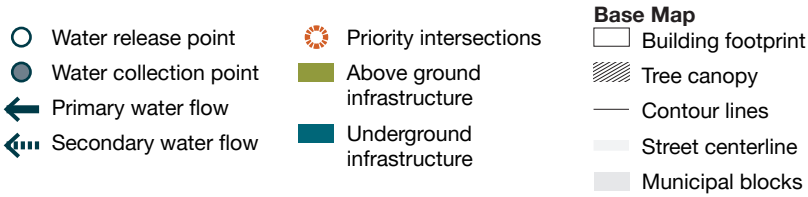
WATER CAPTURE DISTRICT
ROCKWELL - WILKINSBURG

Light Industrial District Green Streets

Green streets could improve multimodal safety, increasing access to adjacent neighborhoods, and create a positive identity for the district.

This emerging commercial district is intersected by a few major thoroughfares including Penn Avenue and Braddock Avenue. As the district continues to reinvent itself, other minor streets could be augmented for increased pedestrian use, including signalized crossings and bike infrastructure at Penn Avenue.

Infrastructure Opportunities



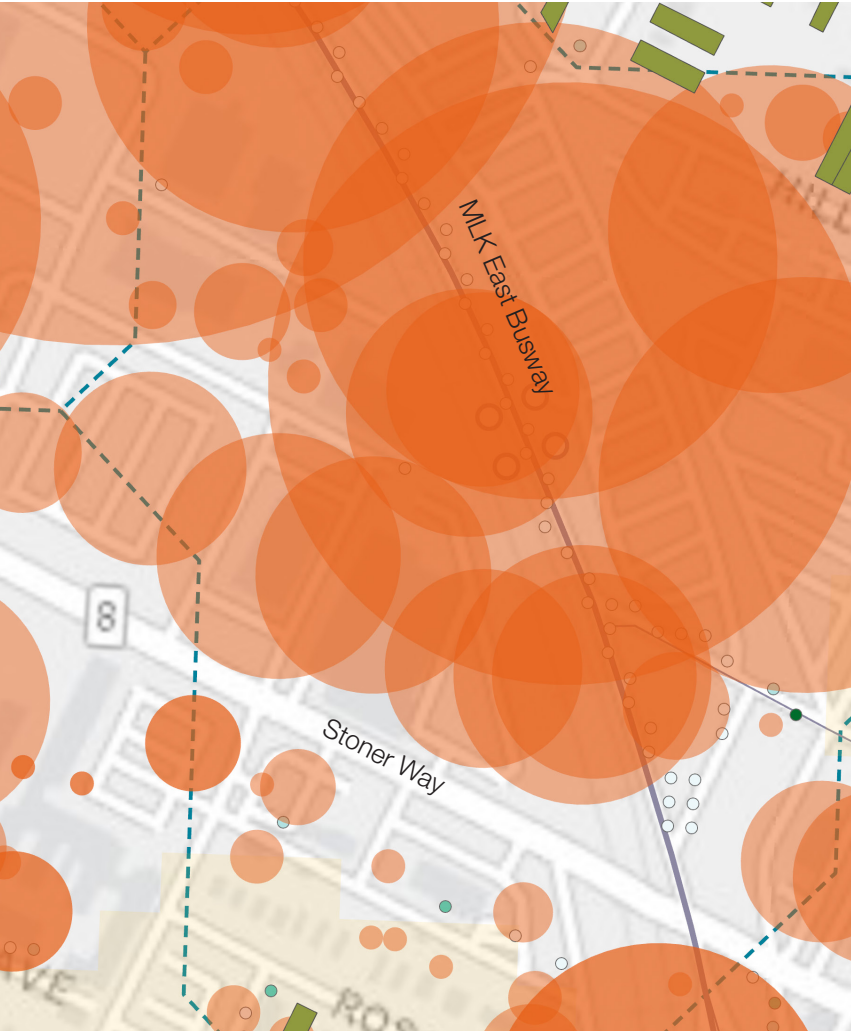
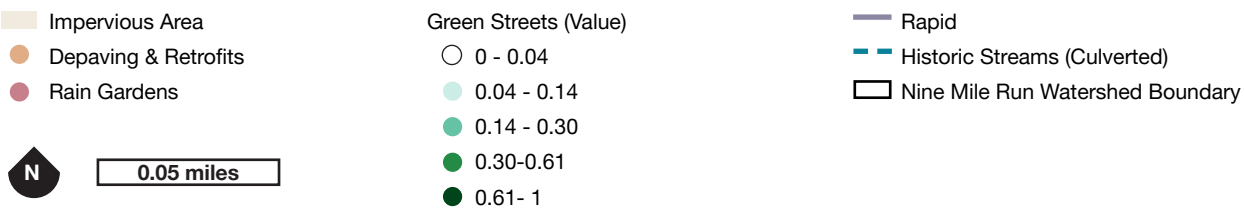
Strategies include GSI integrated with active transportation best practices such as better crosswalks, road diets, public transit stops, and improved signal technology.

PennDOT manages Penn Ave, and the City of Pittsburgh and Wilksburg control the remainder of the streets. The project will need a coordinated district strategy for improvements, well-articulated in a district plan or an active transportation plan. The planning

effort needs to be led jointly by the municipalities, by one or more community development groups. Given the lack of coordination, this might be best led by a yet-to-be-formed or identified district business or development group. UpstreamPgh can be a partner in those efforts.

If done well, streetscape improvements would improve safety, support existing businesses, and attract new ones.

Computational Map



Environmental Justice Considerations

within a 5-minute walk of this project

Null	Null
Employment	# of Residents
Null	Null
Renter/ Homeowner	% of Area Historically Redlined
Null	Null
Median Income	Cost Burdened

Null outcomes stem from data scarcity or the complete absence of information on the site.

Water Capture Opportunities

within a 5-minute walk of this project

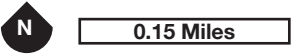
0	0
Vacant lots	Parks & open space
18,766	0
Impervious area (sqft)	Parking lots
2,994	1
Streetscape (ft)	Parcels in Public Ownership

LEFT Street view of Rockwell Park and Satellite University Offices on Thomas Boulevard looking towards North Lexington Street (Google Maps)



WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG
Park-and-Ride Renewal @ Rosedale

Time Frame long term Location Commercial and residential areas north of the busway, including residential parcels, commercial parcels, and PRT's Park-and-Ride GSI Strategy Public Right-of-Way Improvements, Private parcel GSI, Public Parcel Integrated GSI, Vacant Lot GSI	UpstreamPgh's Role support, advocate, watchdog Potential Partners Business owners, business district group residents in Pittsburgh and Wilkinsburg, City of Pittsburgh, PGH20, Borough of Wilkinsburg, WPJWA, Wilkinsburg CDC, Operation Better Block, PennDOT, PRT, Railroad, ALCOSAN Further Investigation Convene Pittsburgh and Wilkinsburg to discuss joint water planning. Investigate the nature of stormwater issues in the residential fabric, while investigating mobility issues to tie the two together. Gauge interest of Bridgeway Capital for possible below-grade connection to see if they would lead on the project.
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LEFT Green infrastructure will be incorporated into PRT's station area improvements. It will be a good opportunity to extend previous GSI projects in Homewood, such as this project by Operation Better Block.

WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG

Park-and-Ride Renewal @ Rosedale

Stormwater infrastructure can connect people to history and, more importantly, to transit options and amenities.

Infrastructure Opportunities

- Water release point

●

Water collection point

←

Primary water flow

↔

Secondary water flow
- ⊗

Priority intersections

■

Above ground infrastructure

■

Underground infrastructure
- Base Map

□

Building footprint

▨

Tree canopy

—

Contour lines

—

Street centerline

■

Municipal blocks



This area has distinct uses such as a large parking lot, large light industrial buildings, and single family homes, each with their own strategies. It is relatively disconnected from main thoroughfares and has much lower development pressure than south of the busway.

Redevelopment or significant upgrades in this area will trigger newer, more stringent stormwater capture requirements. If the area were to experience development pressure, this would likely be the most effective way to improve stormwater performance on large parcels. PRT's property will be subject to Wilkinsburg's stormwater requirements, which are less stringent than Pittsburgh's. All

municipalities in the project area should adopt the most stringent code in the cohort. On the PRT parcel, GSI can be part of an open space strategy and incorporated into the station design and the TOD development area. This includes a bike-ped trail parallel to the busway and last-mile connections to the neighborhood. PRT's current GSI location could become a park that serves as a below-grade RR crossing and,

Computational Map

- Impervious Area
- Depaving & Retrofits
- Rain Gardens
- Green Streets (Value)
- 0 - 0.04
- 0.04 - 0.14
- 0.14 - 0.30
- 0.30-0.61
- 0.61- 1
- Rapid
- Historic Streams (Culverted)
- Nine Mile Run Watershed Boundary

N

0.15 Miles

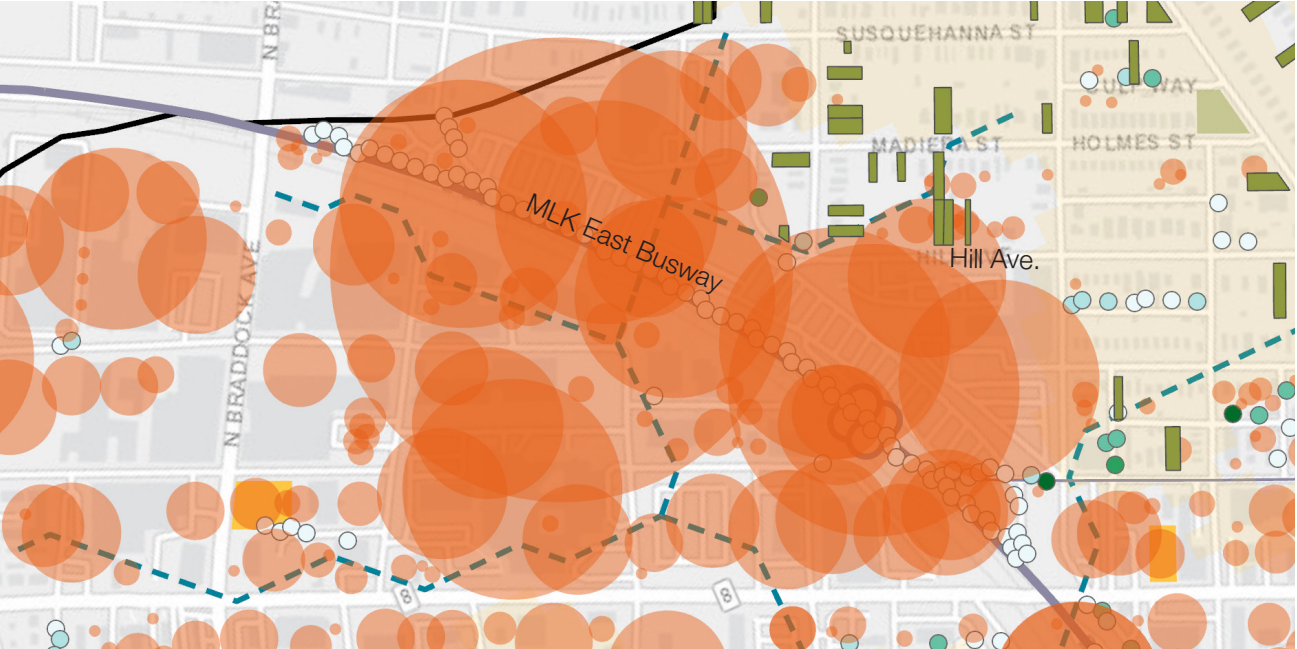
Water Capture Opportunities within a 5-minute walk of this project

19	0
Vacant lots	Parks & open space
236,313	1
Impervious area (sqft)	Parking lots
7,470	3
Streetscape (ft)	Parcels in Public Ownership

Null outcomes stem from data scarcity or the complete absence of information on the site.

Environmental Justice Considerations within a 5-minute walk of this project

Null	Null
%Employment	# of Residents
Null	9.2%
% Renter	% of Area Historically Redlined
Null	Null
Median Income	Cost Burdened



although this has been explored by PRT in the past, its scope would exceed what PRT could do alone. Advocate for this crossing as a ped-stormwater crossing and assist in aligning partners. This crossing could connect to a new Trenton Street parklet and serve as an essential link for the community to reach the growing amenities in the district south of the busway. This is a large, multi-million-dollar project that cannot be justified solely by

stormwater but must be part of an accessibility strategy. GSI should be included in PRT's station areas and PRT-owned properties. There is a PRT precedent for GSI near Homewood Station. GSI is included in PRT's Landscape Design Guidelines, which can guide UpstreamPgh's advocacy. Public ROW improvements might include improved crosswalks

that capture rainwater, address pedestrian safety, and create safe multimodal routes to transit. The area near 7800 Susquehanna could host an entrance to a trail network that redirects water from the parking lot. Additional public right-of-way improvements are needed. Coordinate with UpstreamPgh's street tree pits. Consider road safety and the integration of intersection improvements.



WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG
Wilkinsburg Business District

Time Frame
mid term

Location
This area includes the Penn Avenue main street district, as well as sidestreets to the south of Penn Avenue. The Penn Avenue infrastructure can extend east to Ardmore Boulevard, but the district core should be the focus.

GSI Strategy
Private parcel GSI, Public Right-of-Way Improvements, Public Parcel Integrated GSI, Vacant Lot GSI

UpstreamPgh's Role
support, advocate, watchdog, partner, lead

Potential Partners
Business owners, business district group, Borough of Wilkinsburg, WPJWA, Wilkinsburg CDC, PennDOT, PRT, Railroad, ALCOSAN

Further Investigation
Understand redevelopment strategy emerging from the Comprehensive Plan process



LEFT Green infrastructure can be incorporated into business district streetscape renewal and safety improvements. Individual property owners, like the one on the right, are planning for stormwater improvements.

WATER CAPTURE DISTRICT ROCKWELL - WILKINSBURG

Wilkinsburg Business District

Green stormwater infrastructure can become a signature element of Wilkinsburg’s renewed business district identity.

Infrastructure Opportunities

- Water release point

●

Water collection point

→

Primary water flow

→

Secondary water flow

⊙

Priority intersections
- Above ground infrastructure

■

Underground infrastructure

●

Previous Projects
- Building footprint

▨

Tree canopy

—

Contour lines

—

Street centerline

■

Municipal blocks



The blocks east of the busway are home to a traditional main street district with historic buildings and a grid of gently sloped streets. GSI networks could inform a more comprehensive open space strategy that creates destinations throughout the district.

Developing an open-space network would enhance the district’s desirability. This would likely be implemented through a district plan. UpstreamPgh would not lead the plan but would be an expert party to it.

Redevelopment or significant upgrades in these areas will trigger newer, more stringent stormwater capture requirements, but given the amount of historic properties, the opportunities are more limited than in other areas. GSI could help create beloved spaces at historic properties such as vacant churches or the grounds of the train station and the adjacent Hay Street.

The Borough has limited funds for infrastructure investment and limited project management capacity. Their capacity will need to

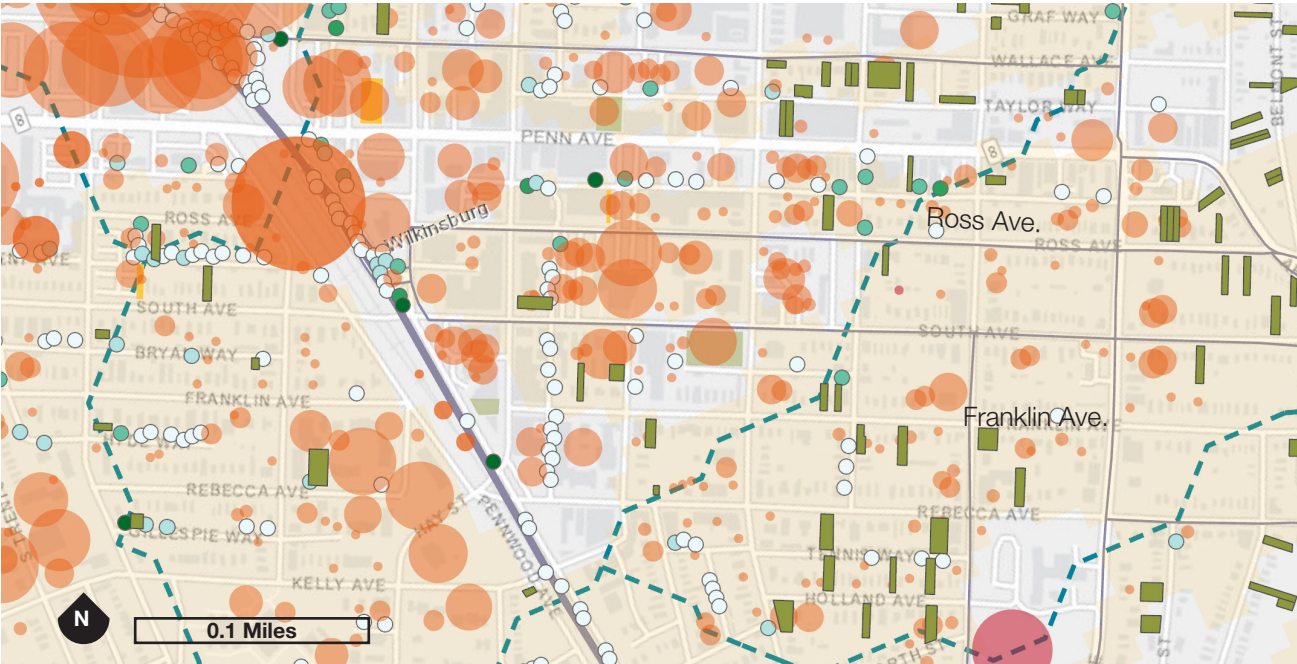
be augmented to create a plan and see it implemented over a number of years.

Augmenting Wilkinsburg’s stormwater code would help guide best practices, but it will add costs to projects with already-weak proformas. UpstreamPgh could be essential in finding funding and bringing these projects to fruition.

Green alleys may be a solution. Align with future Active Transportation implementation projects.



LEFT The construction of the railroad truncated the historic stream, yet stormwater still flows across large paved areas. Stormwater can be incorporated into intersection improvements. The adjacent property sits at a natural low spot and could also serve a stormwater function.



Computational Map

- Impervious Area
- Depaving & Retrofits
- Rain Gardens
- Green Streets (Value)
- 0 - 0.04
- 0.04 - 0.14
- 0.14 - 0.30
- 0.30-0.61
- 0.61 - 1
- Rapid
- Historic Streams (Culverted)
- Nine Mile Run Watershed Boundary

Water Capture Opportunities

within a 5-minute walk of this project

13	3
Vacant lots	Parks & open space
394,589	1
Impervious area (sqft)	Parking lots
18,105	18
Streetscape (ft)	Parcels in Public Ownership

Environmental Justice Considerations

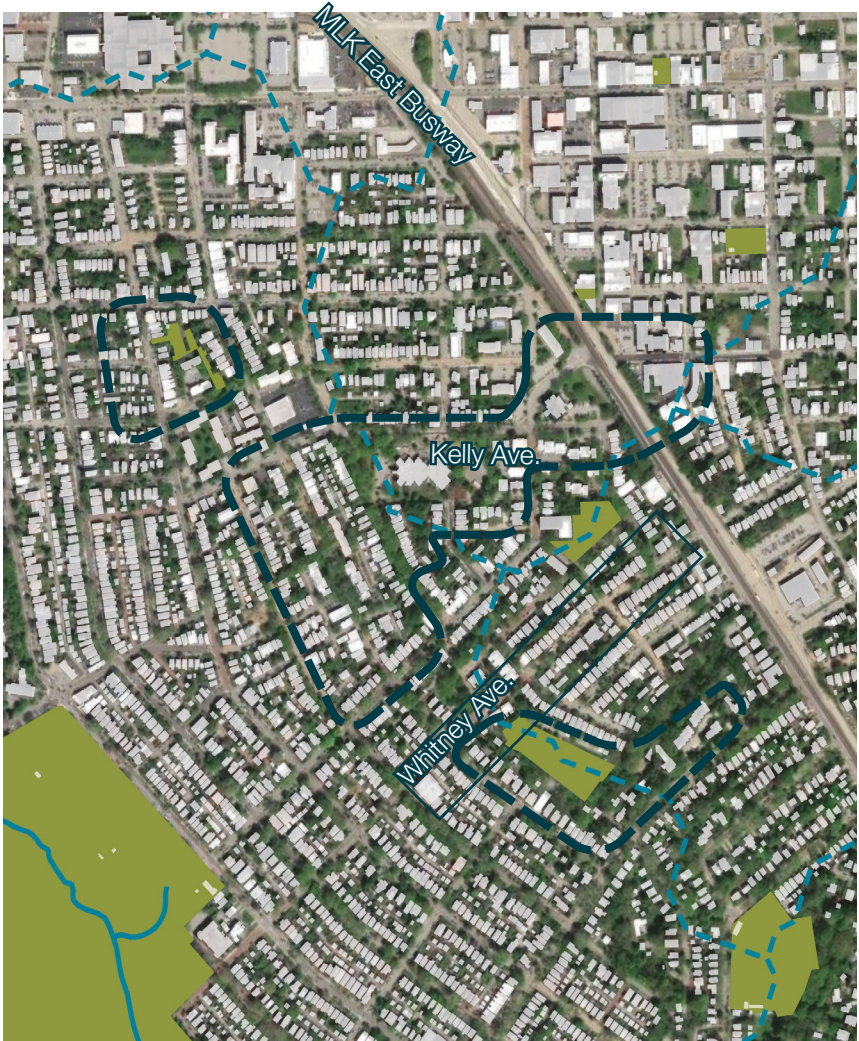
within a 5-minute walk of this project

51.3%	119
% Employment	# of Residents
91%	95.5%
% Renters	% of Area Historically Redlined
\$40,000	24.4%
Median Income	Cost Burdened



WATER CAPTURE DISTRICT
ROCKWELL - WILKINSBURG

Whitney Park and Kelly School Micronetworks



Time Frame
short term

Location
Two micro-networks that direct water to the publicly owned properties at Whitney Park and the Kelly Elementary School

GSI Strategy
Private parcel GSI, Public Right-of-Way Improvements, Public Parcel Integrated GSI

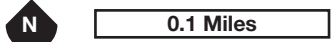
UpstreamPgh's Role
support, advocate, partner

Potential Partners
Residents and the general community, Borough of Wilkinsburg, WPJWA, ALCOSAN"

Further Investigation
Water modeling (eventually)

Existing Conditions Map

- Landmarks**
- Subshed
- Base Map**
- PennDOT Road
 - Building Footprint



LEFT While not within environmental justice areas, low lying greenspaces and paved areas throughout the neighborhood can be an amenity and store stormwater, like this parking area near Whitney Park.

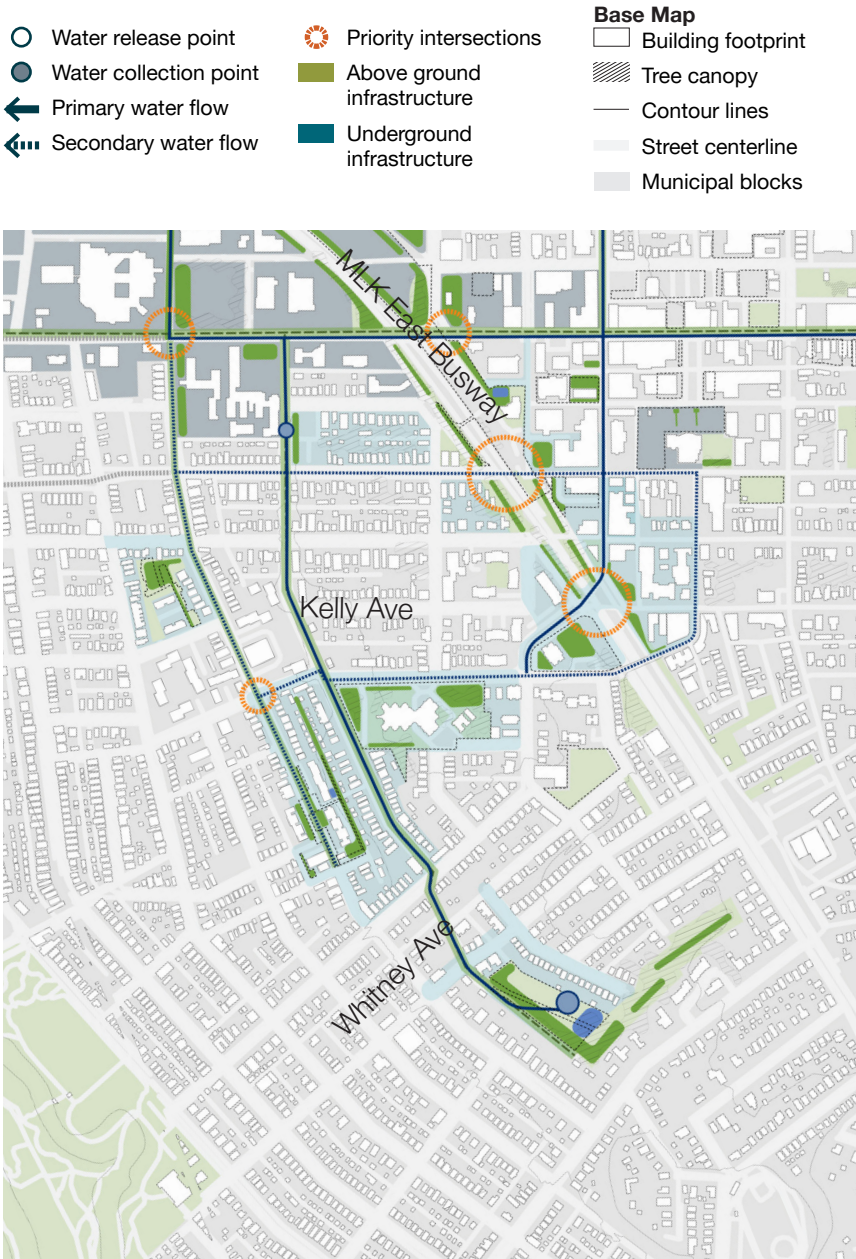
WATER CAPTURE DISTRICT
ROCKWELL - WILKINSBURG

Whitney Park and Kelly School Micronetworks

While not within the study’s Environmental Justice focus areas, publicly owned properties present opportunities for GSI that benefit the community in general.

Several publicly owned properties could anchor a green street network extending toward Penn Avenue. The catchment area consists primarily of small-lot single-family homes, with stormwater contributed largely from the public right-of-way.

Site Opportunity Proposal

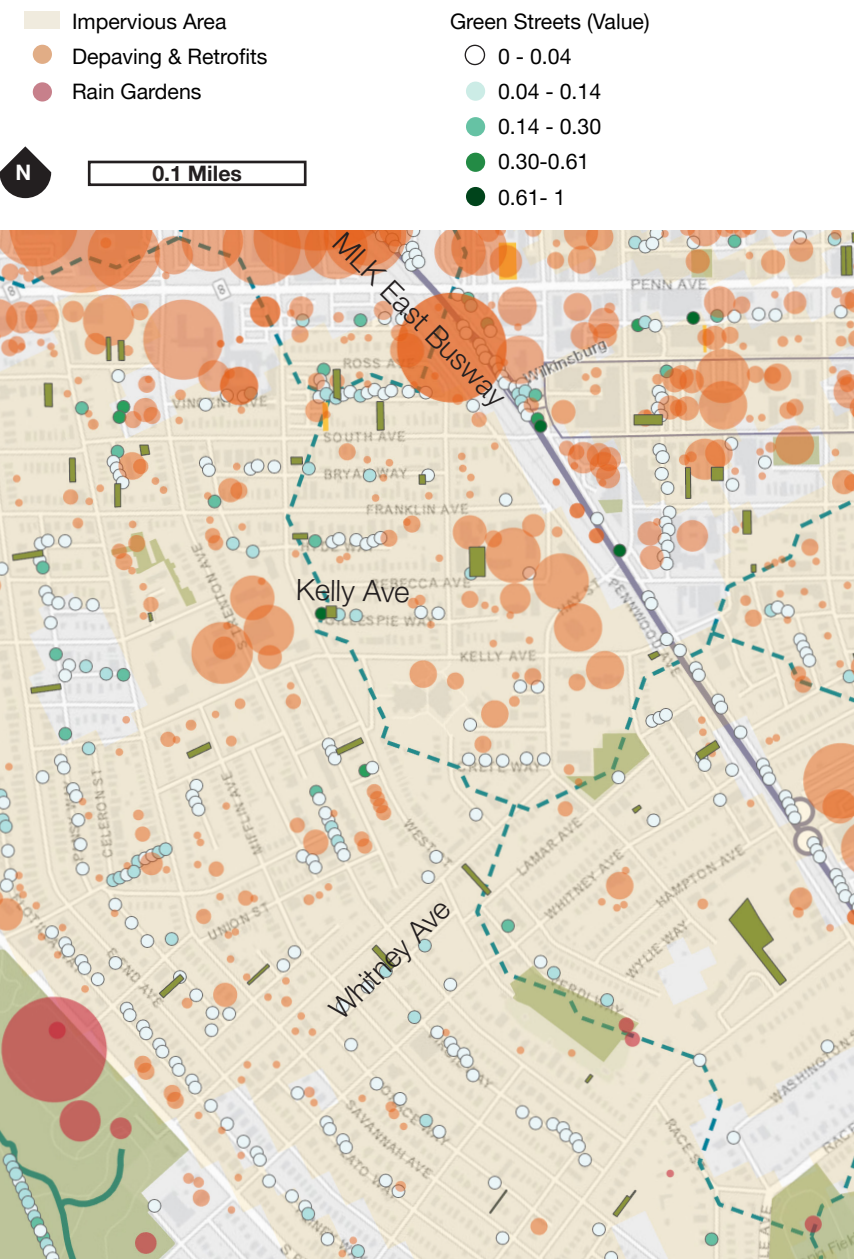


These projects mirror the park initiatives further upslope, though at a smaller scale. Park improvements can enhance on-site stormwater management through planted conveyance and both above- and below-grade storage. Research shows that combining below-grade storage with a bioswale in the same area—can increase the effectiveness and longevity of both systems.

In addition to managing on-site runoff, parks can receive water from the public right-of-way and adjacent parcels. Storage and retention infrastructure should be constructed first, followed by streetscape improvements to capture and convey runoff into the system.

As functional infrastructure, these systems require maintenance routines that differ from those the municipality currently performs.

Computational Map



The Borough already faces challenges in maintaining existing infrastructure, so design alone is only the first step. Long-term care and maintenance of community-integrated GSI must be built into any project that moves forward. These projects are likely to attract the most community interest and engagement, even though their contribution to overall stormwater retention may be relatively modest.

The Borough will soon undertake a comprehensive review and planning study of all its parks. Participating in and supporting this effort will provide an important opportunity to explore stormwater management possibilities within these parks in greater detail. UpstreamPgh could be exceptionally valuable if it could tap GSI funding sources for the improvement projects.

Environmental Justice Considerations
within a 5-minute walk of this project

69.1% % Employed	858 # of Residents
85.9% % Renter	80.3% % of Area Historically Redlined
\$52,196 Median Income	16.2% Cost Burdened

Water Capture Opportunities
within a 5-minute walk of this project

13 Vacant lots	3 Parks & open space
6,979 Impervious area (sqft)	1 Parking lots
11,727 Streetscape (ft)	12 Parcels in Public Ownership