

PITTSBURGH WATER AND SEWER AUTHORITY (PWSA) STRATEGIC PLAN FOR STORMWATER



Community Meeting
March 28, 2022

PITTSBURGH WATER AND SEWER AUTHORITY (PWSA) STRATEGIC PLANNING TEAM

PennPraxis + The Water Center at Penn

water systems analysis and planning, policy and partnership design, communication

AKRF Inc.

engineering and technical engagement

Grounded Strategies stakeholder engagement

Heather Sage local policy communication

Moonshot Missions water economics and equity strategies

Andropogon Associates land use planning and design

CMU Center for Engineering & Resilience for Climate Adaptation

local climate change modeling and resilience planning

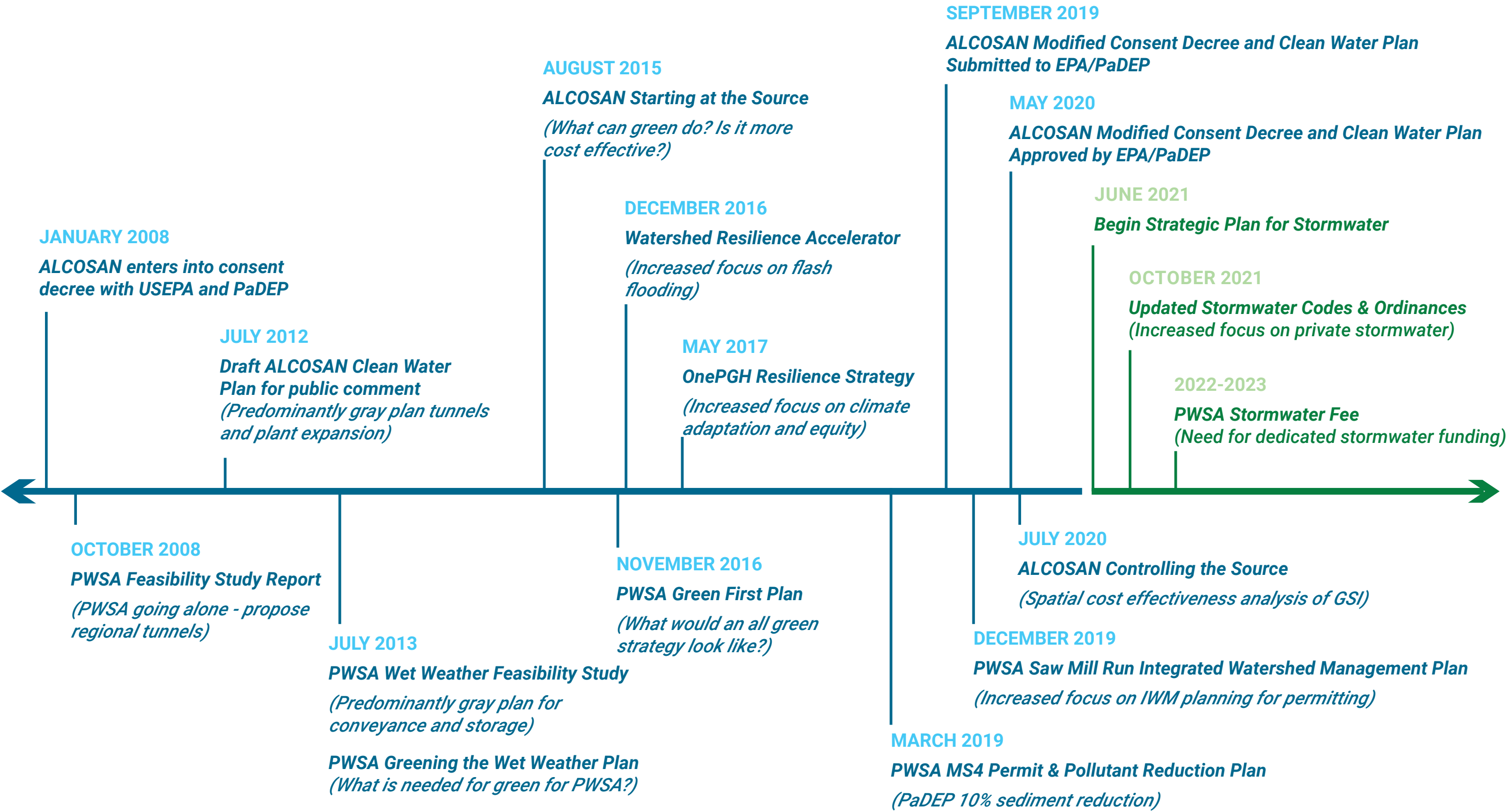
AGENDA

6:00 - 6:15	Strategic Planning Progress
6:15 - 6:20	People, Performance, and Planet in Places
-----	<i>Negley Run Visioning</i> -----
6:25 - 7:20	Past Plans + Current Visions
-----	<i>Negley Run Visioning</i> -----
7:20 - 7:24	Next Steps and Ambassador Kick-off
7:24 - 7:30	PWSA on Context for Strategic Planning



Strategic Planning Update

STORMWATER PLANNING TIMELINE

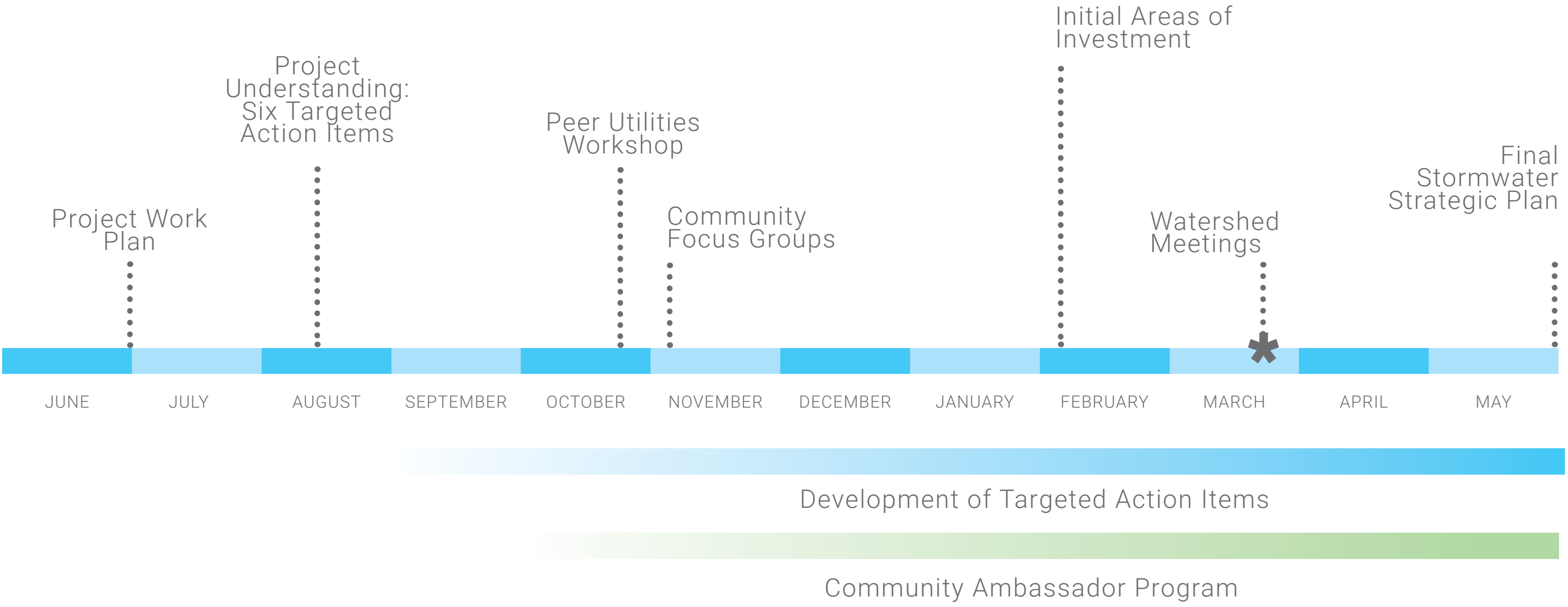


Why This Plan Now?



- Green First focused only on green infrastructure planning to improve water quality because the county's stormwater plan (still in development at the time) was going to concentrate on "gray" infrastructure upgrades--on pipes and tunnels.
- The county water authority (called ALCOSAN) has now finalized a plan for the construction of tunnels which will significantly reduce sewage overflow into the rivers when it rains. The plan will be implemented over the next ten years.
- This means the Pittsburgh Water and Sewer Authority (PWSA) can expand its focus to include residents' and businesses' concerns about flooding and basement backups, and consider equity and environmental justice in setting priorities for water investment.

PROJECT TIMELINE



TOP SIX PRIORITY ACTIONS

1

Analyze Priority Areas of Investment

2

Define Initial Investment Strategy & Illustrate It In a Few Places

3

Leverage Stormwater Fee Impact

4

Establish Guiding Principles to Level of Service & Flooding

5

Develop a Communication Framework to Increase Transparency

6

Develop a Framework for a Joint Task Force on Stormwater

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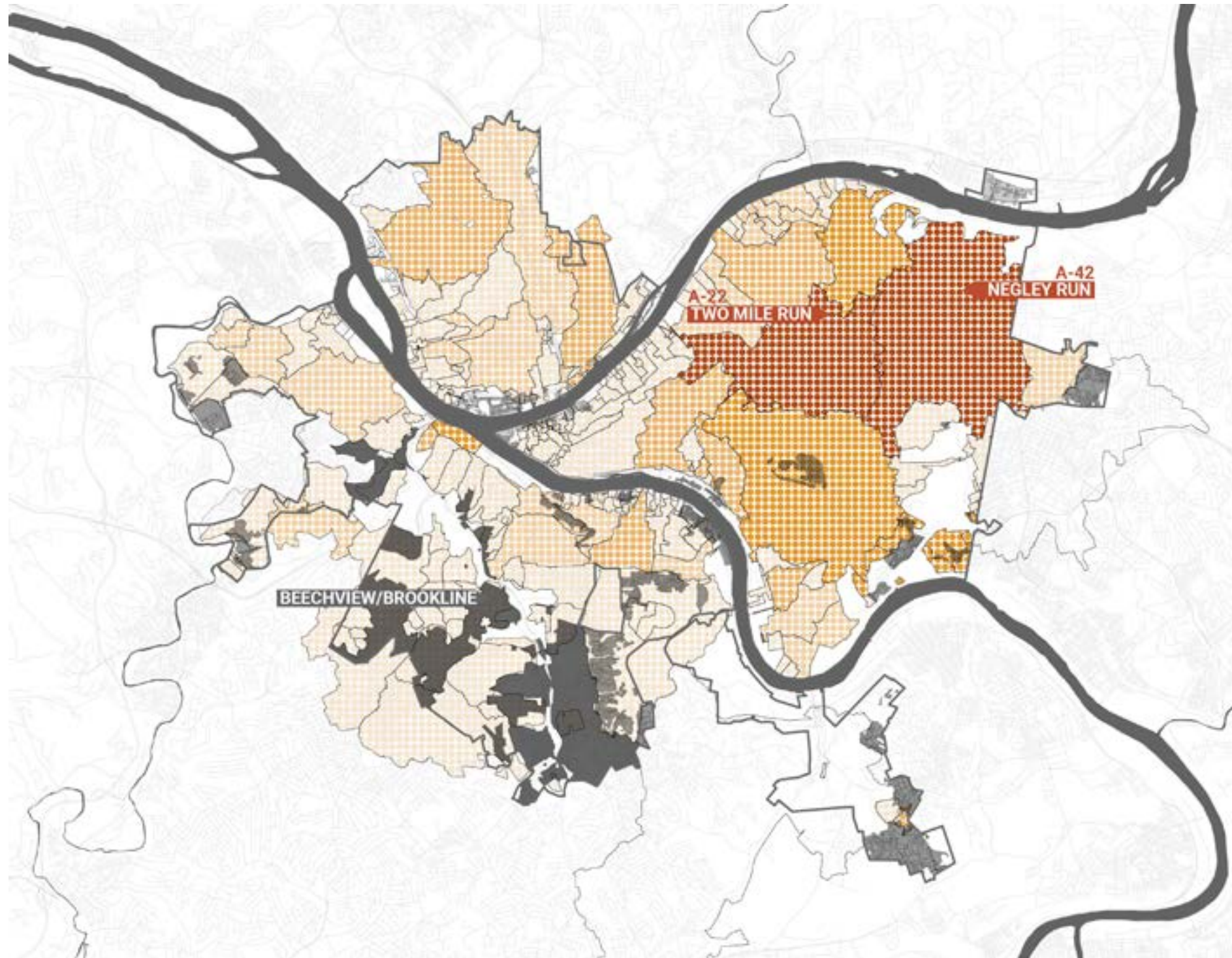
Develop a Framework for a Joint Task Force on Stormwater

1 Analyze Priority Areas for Investment

We will map many kinds of data to identify areas in the city where investment could have a major impact on local flooding and create community benefits.

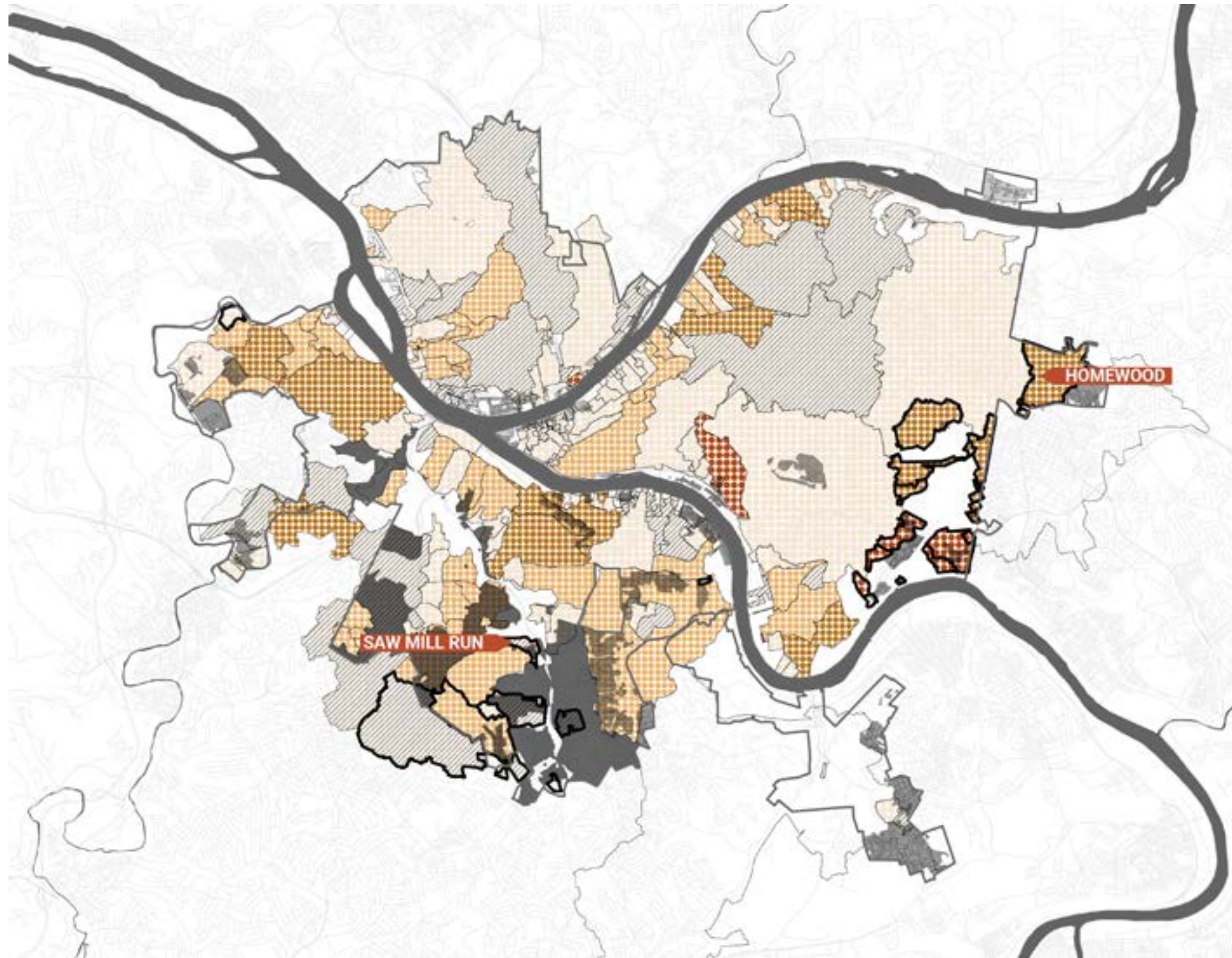
- Prioritize more kinds of water management, not only water quality and sewer overflows
- Map local flooding impacts, basement backups, and environmental justice areas for water investment
- Study geographic priorities with input from PWSA and other stakeholders
- Review good work being done in other cities to prioritize investment to create more kinds of benefit

Water Quality: Current CSO Volumes

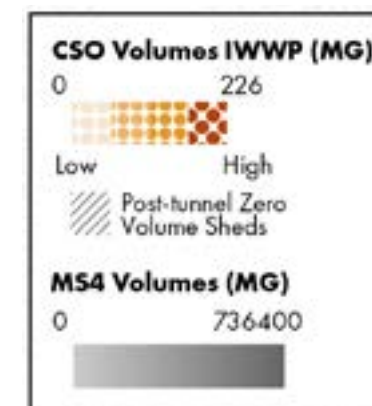


- Ongoing conversations with PWSA have provided updated information on CSO volumes
- Highest volumes are in Negley Run and Two Mile Run
- MS4 outfalls are shown to illustrate opportunities for intervention to meet MS4 compliance

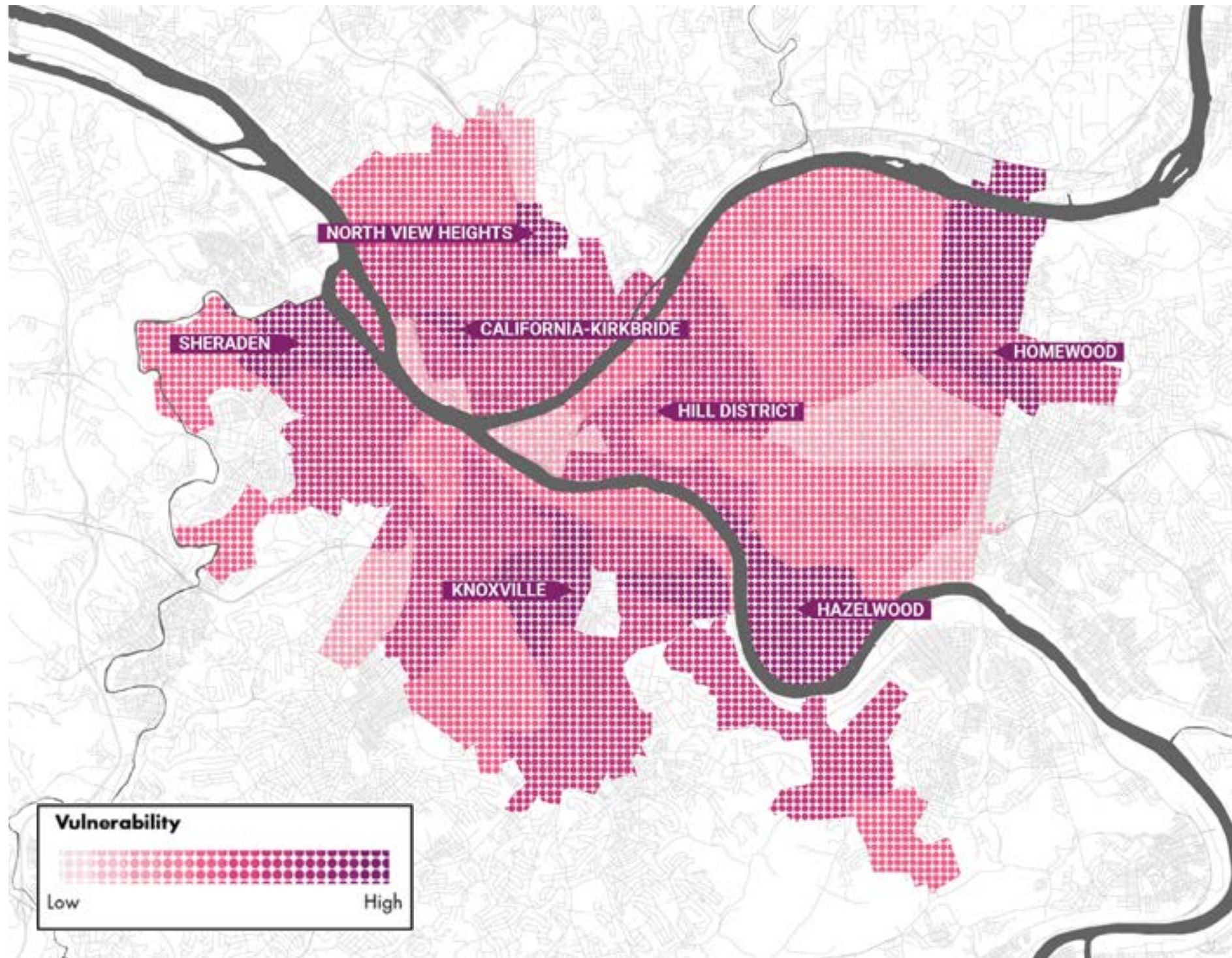
Water Quality: Post ALCOSAN Tunnel CSO Volumes



- Ongoing conversations with PWSA have provided updated information on outfall volume that will remain fully PWSA's responsibility. Those are highlighted here. Others are ongoing negotiation with ALCOSAN.
- The highest volume areas are found in Homewood/East Hills, Point Breeze/Regent Square/Squirrel Hill, and Beechview/Brookline in Saw Mill Run
- While volumes will be significantly reduced post-tunnel, there remain many opportunities for reduction in the near term



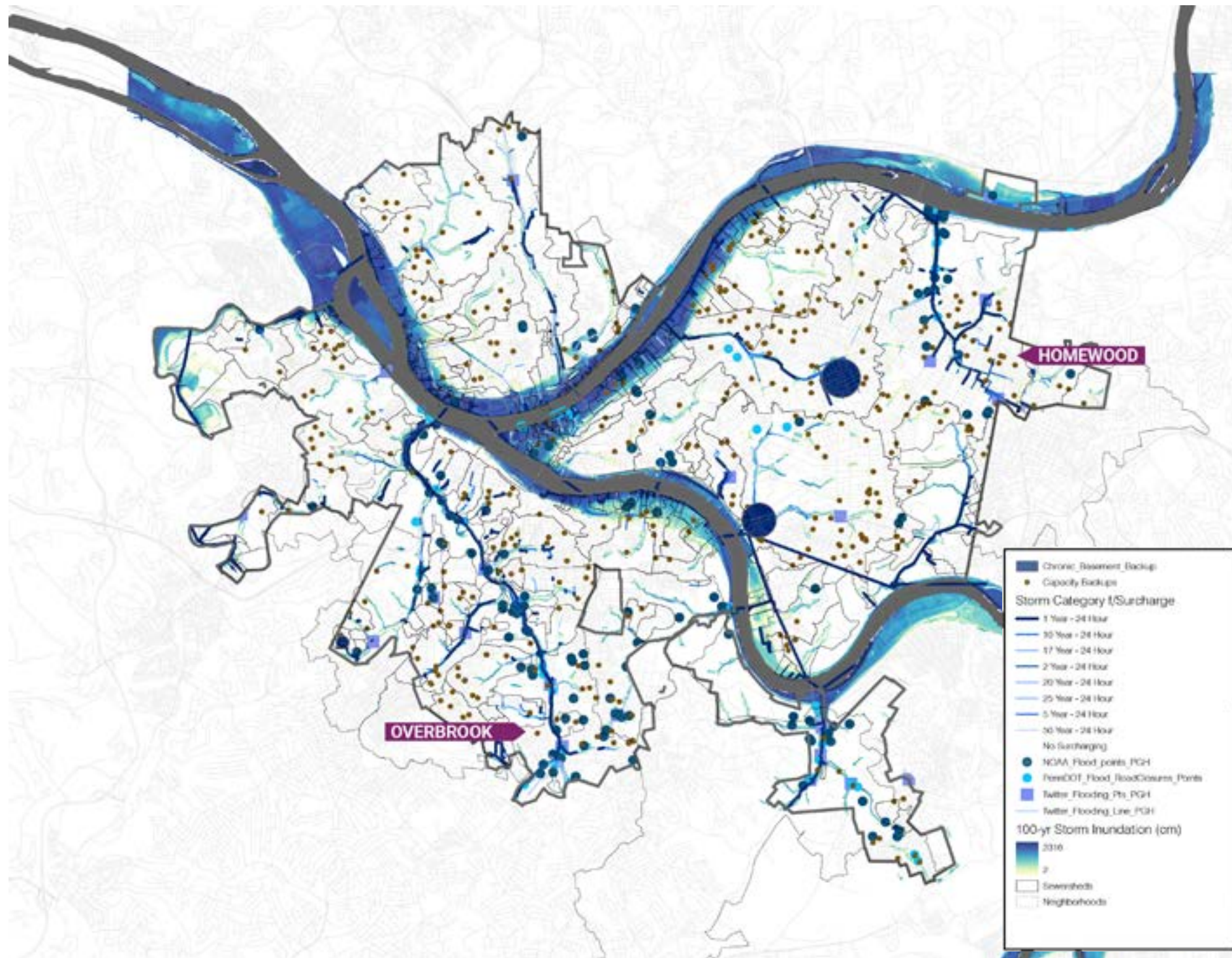
Environmental Justice: Allegheny County



Source: Allegheny County Health Department, 2018.

- Updated to include Allegheny County Environmental Justice Index which includes:
 - *Median Household Income*
 - *Diesel Particulate Matter*
 - *Particulate Matter $\leq 2.5 \mu m$*
 - *Percent Minority*
 - *Proximity to Green Space*
 - *Educational Attainment*
 - *Miles of Railroad Track Coverage*
 - *Housing Vacancy*

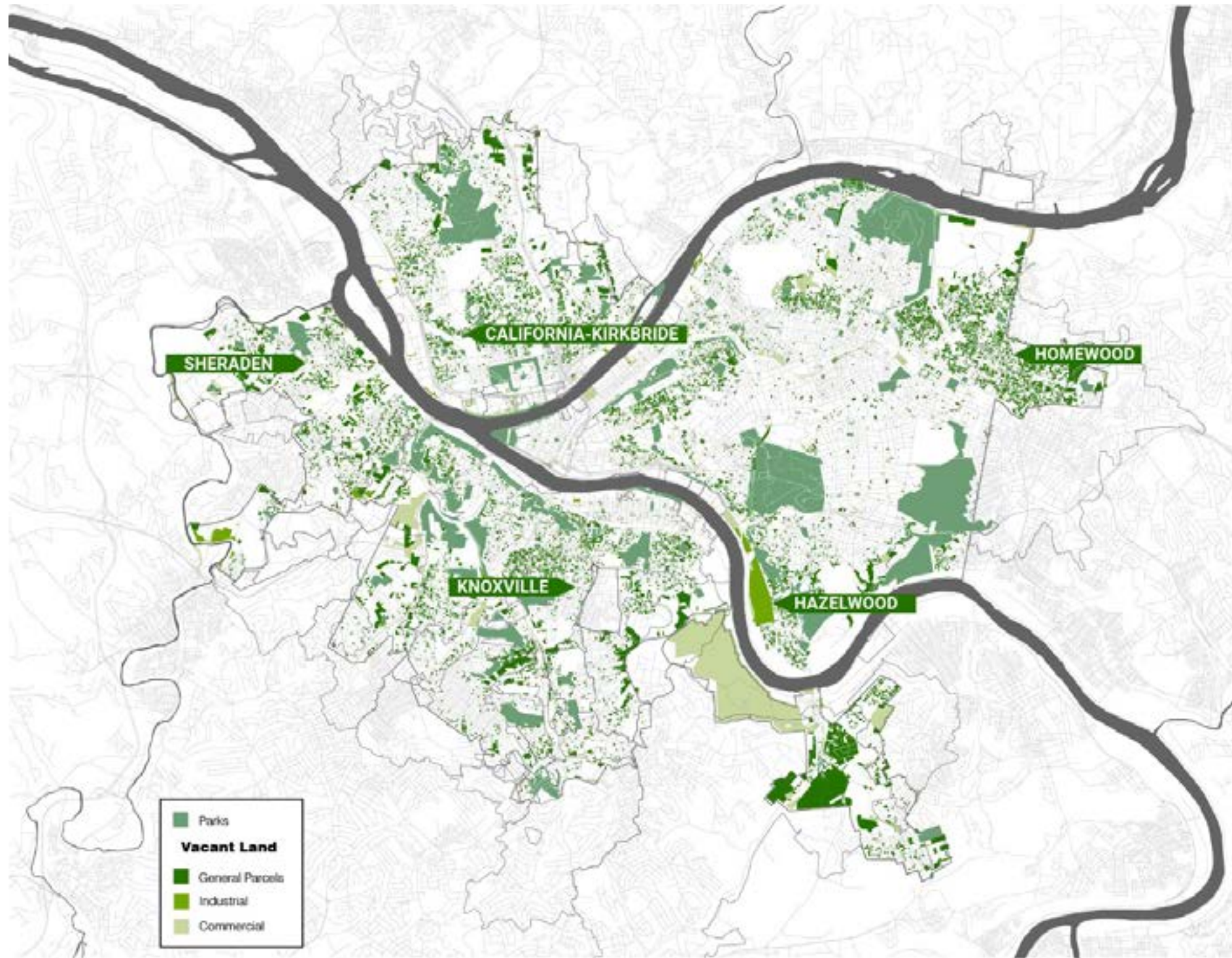
Local Flooding



- Flooding data updated to include First Street Foundation Flood Factor inundation forecast for 1-in-100 year storm event in 2020 climate conditions.
- PWSA investigated and confirmed capacity-related basement backup locations between 2020 and 2021.
- Other data includes:
 - *PennDOT Road Closures*
 - *NOAA Storm Events Flood and Flash Floods*
 - *Allegheny County Twitter Feed*

Source: First Street Foundation National Flood Risk Assessment, 2020.

Green Infrastructure Opportunity

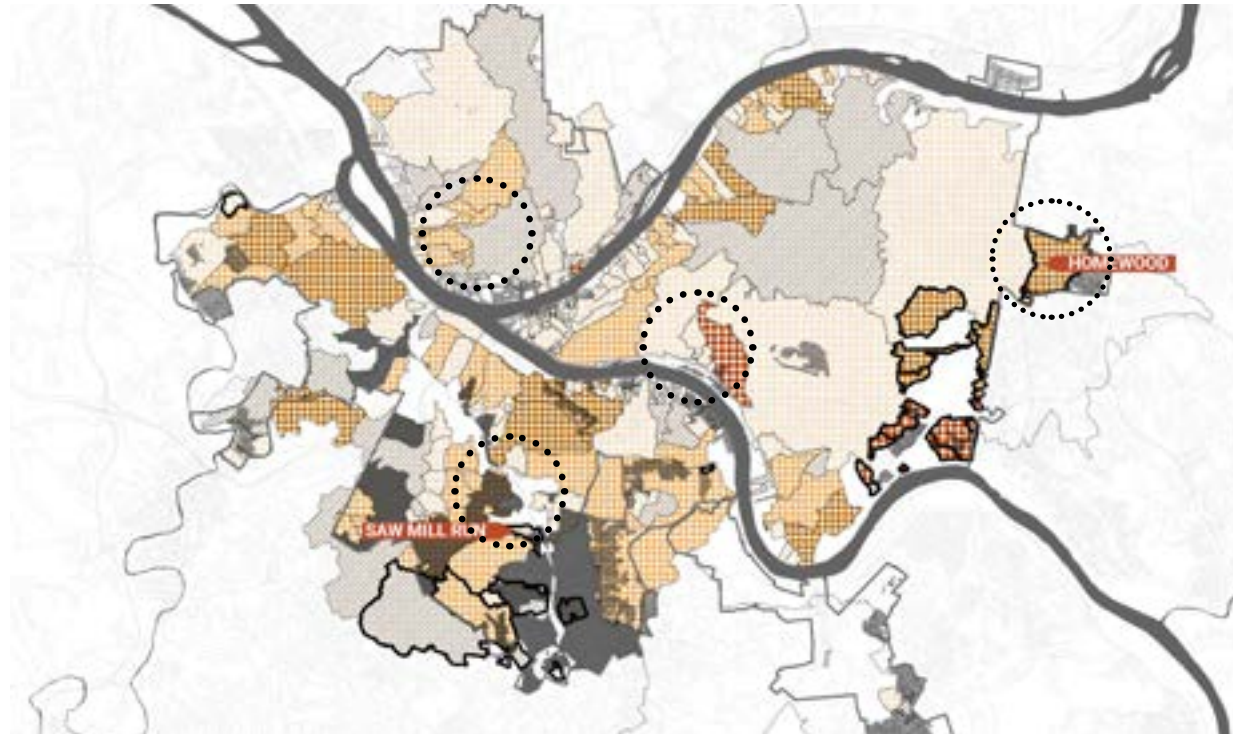


- Opportunities include known Parks + Greenways as of October 2021
- Vacant Parcels (general, industrial, commercial) added as opportunity areas since focus groups
- As of December 2021, six new parks to be transferred from Greenways for Pittsburgh Program to city ownership including: Bigelow, Fairhaven, Hazelwood, Knoxville Incline, Moore and Seldom Seen.

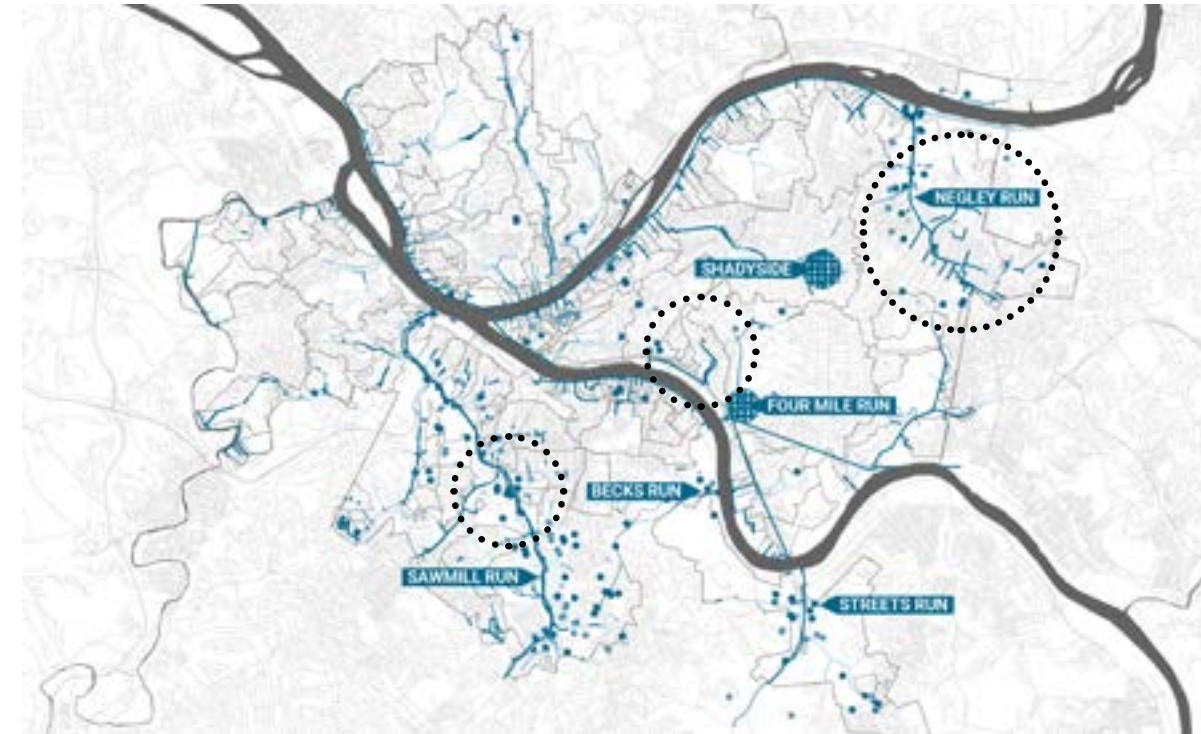
Source: Parcel Scale Cost Effectiveness and Siting Analysis - Micheal Blackhurst, University of Pittsburgh, and ALCOSAN Controlling the Source

Four Lenses

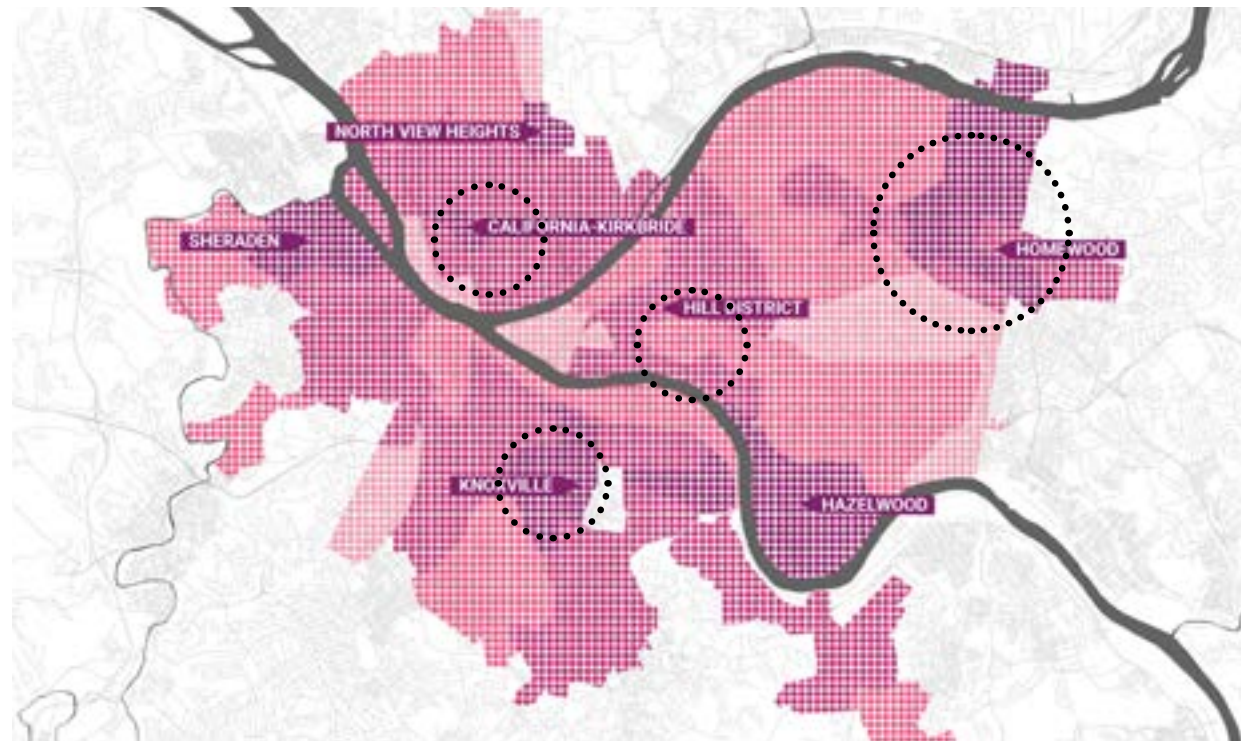
Water Quality



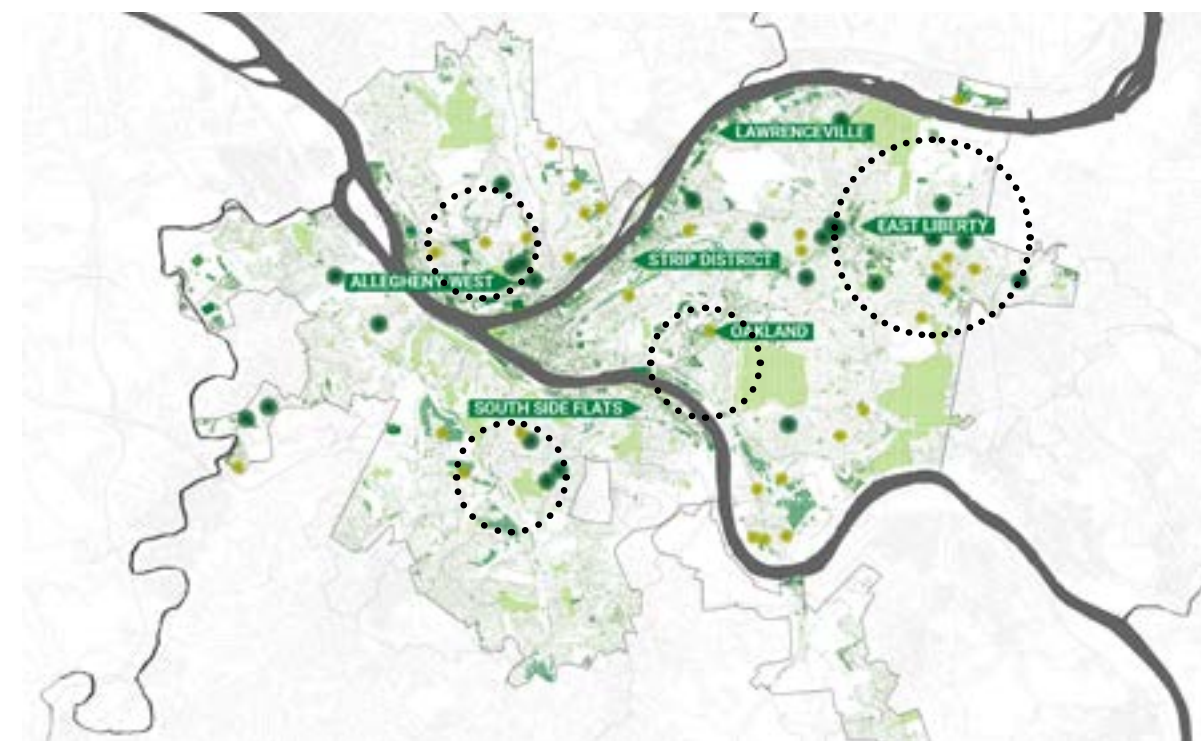
Localized Flooding



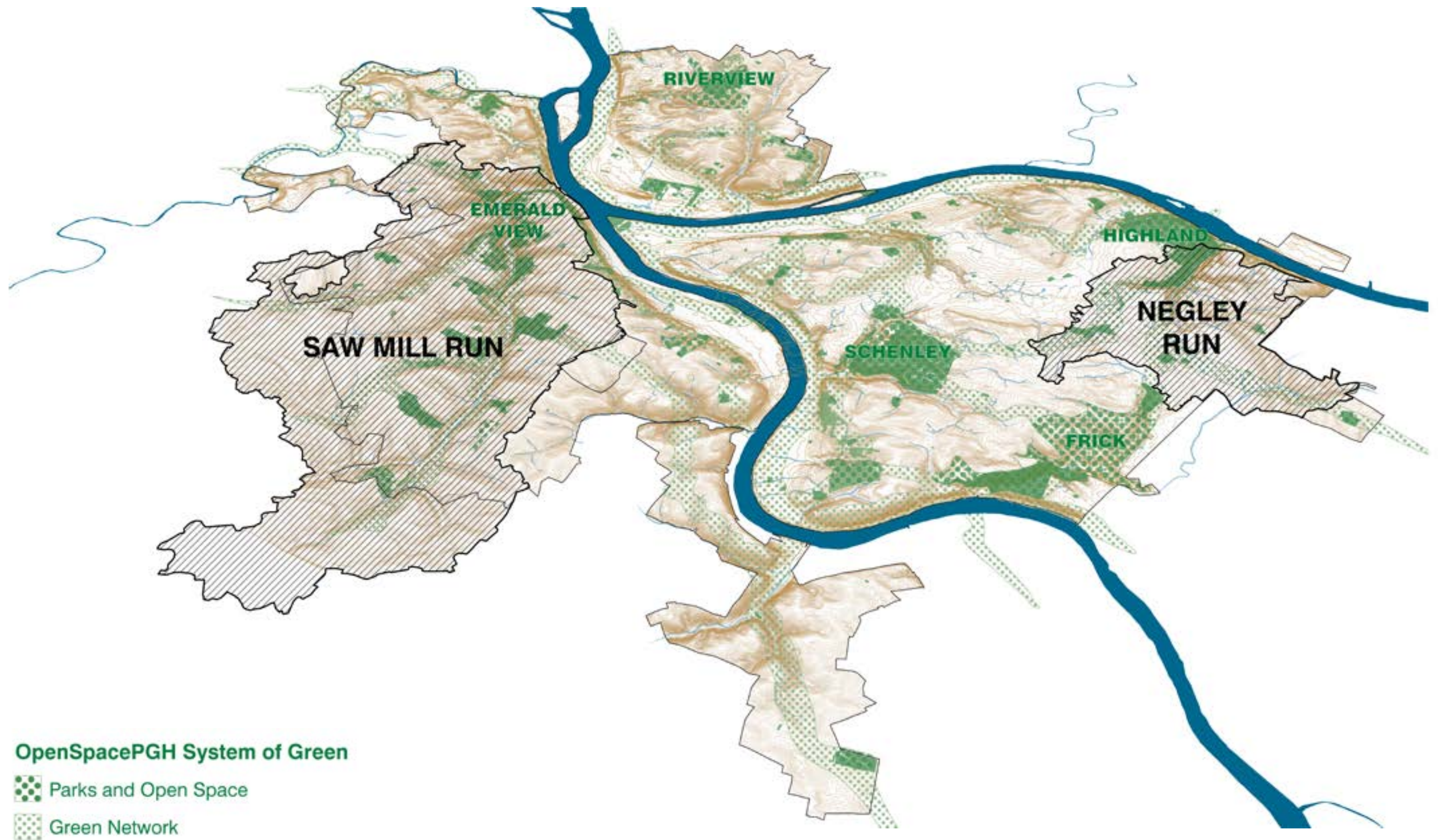
Socio-Economic & Environmental Justice



Areas of Opportunity

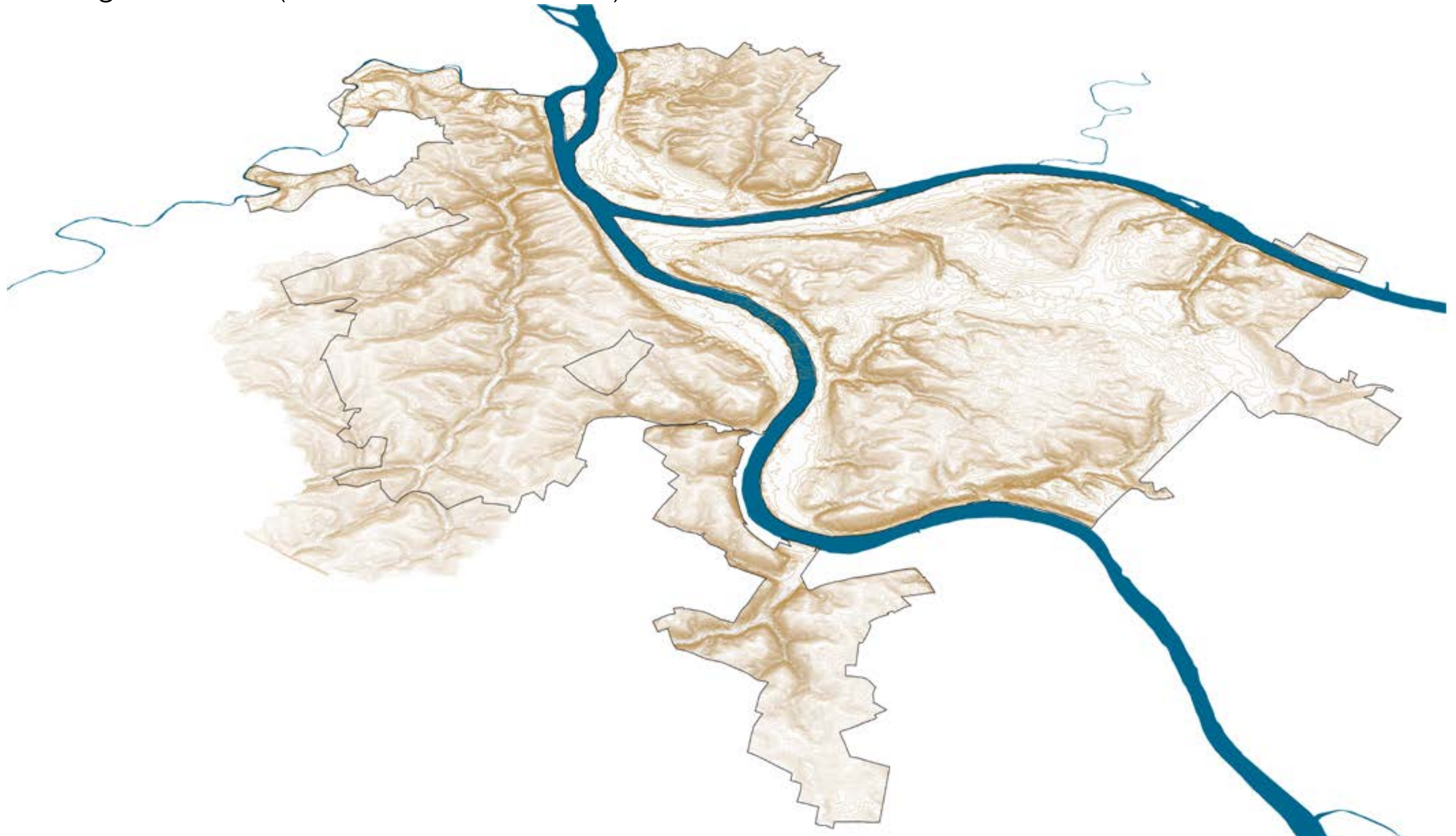


Priority Areas for Investment



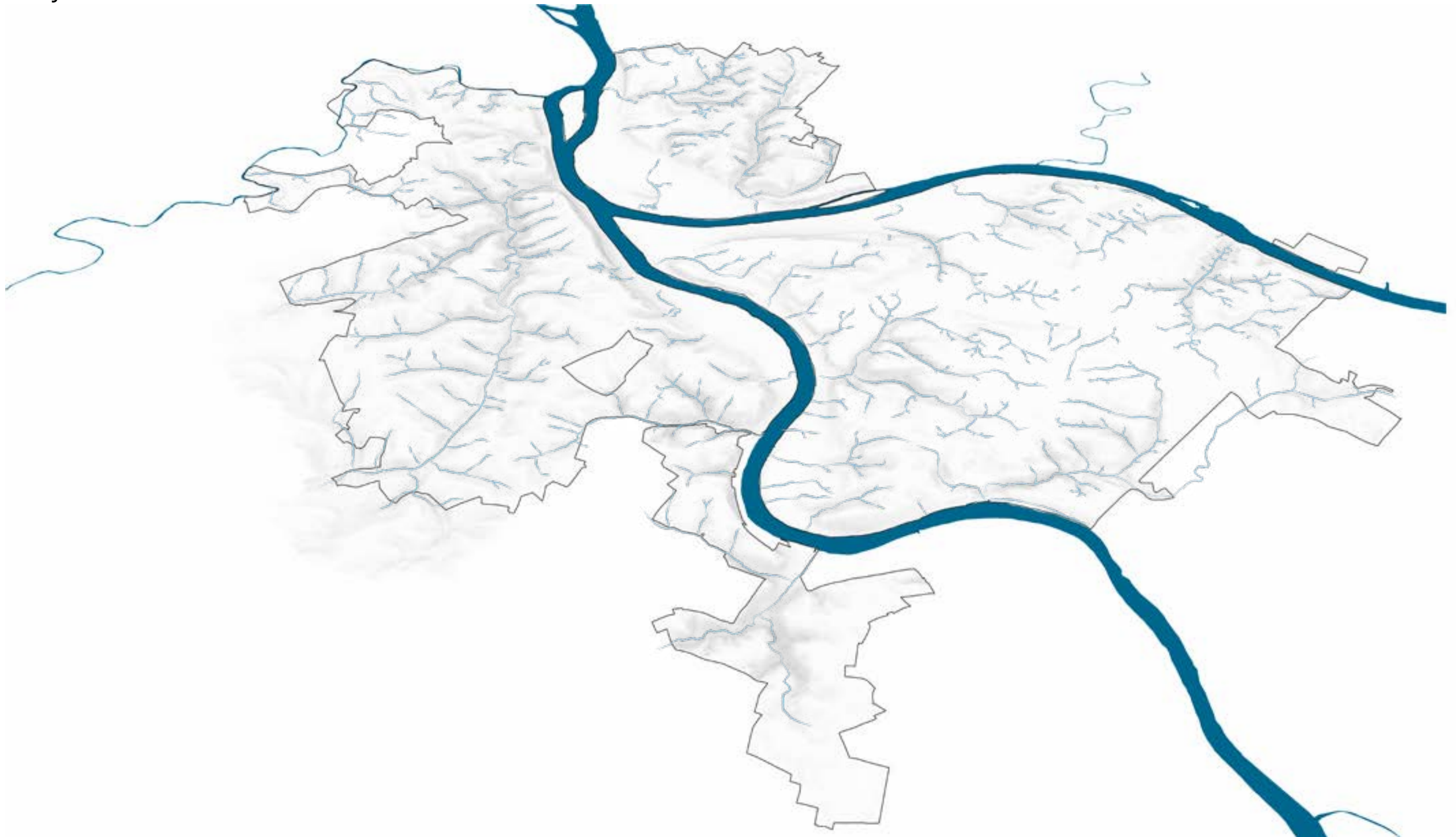
Citywide Terrain

Pittsburgh has hills! (shown in 10 ft contours)



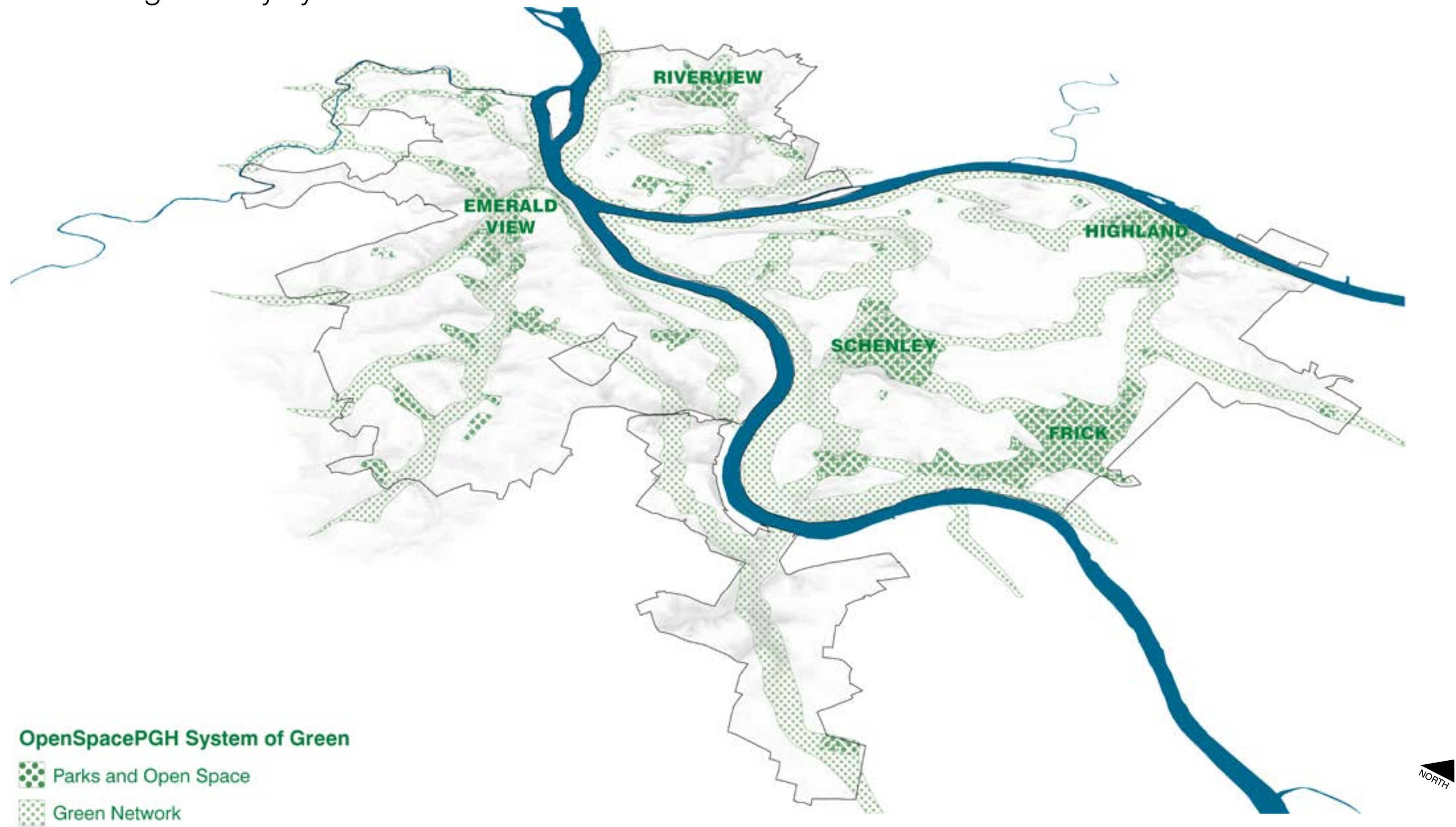
Citywide Networks

Many historical streams were buried



Citywide Networks

Thickened greenway system



2 Define Initial Investment Strategy and Illustrate It

We will define the options and a clear investment strategy, and then illustrate that strategy and communicate how money will be spent in exemplary places.

- Evaluate the current 5-Year Capital Plan
- Explore creative investment strategies that are in line with limited available funds and the city's bonding capacity
- Multiply the kinds of benefit each project generates for People, Place, Planet + Performance

"Four Ps"

People

- leverage the basic investments PWSA and other agencies are making in water to produce bigger, more comprehensive benefits for more people
- lift up community plans wherever possible
- create a place at the table for community members throughout the process
- increase collaboration of public and private partners to achieve the goals
- strengthen two-way communication and transparency of long-term process of change



"Four Ps"

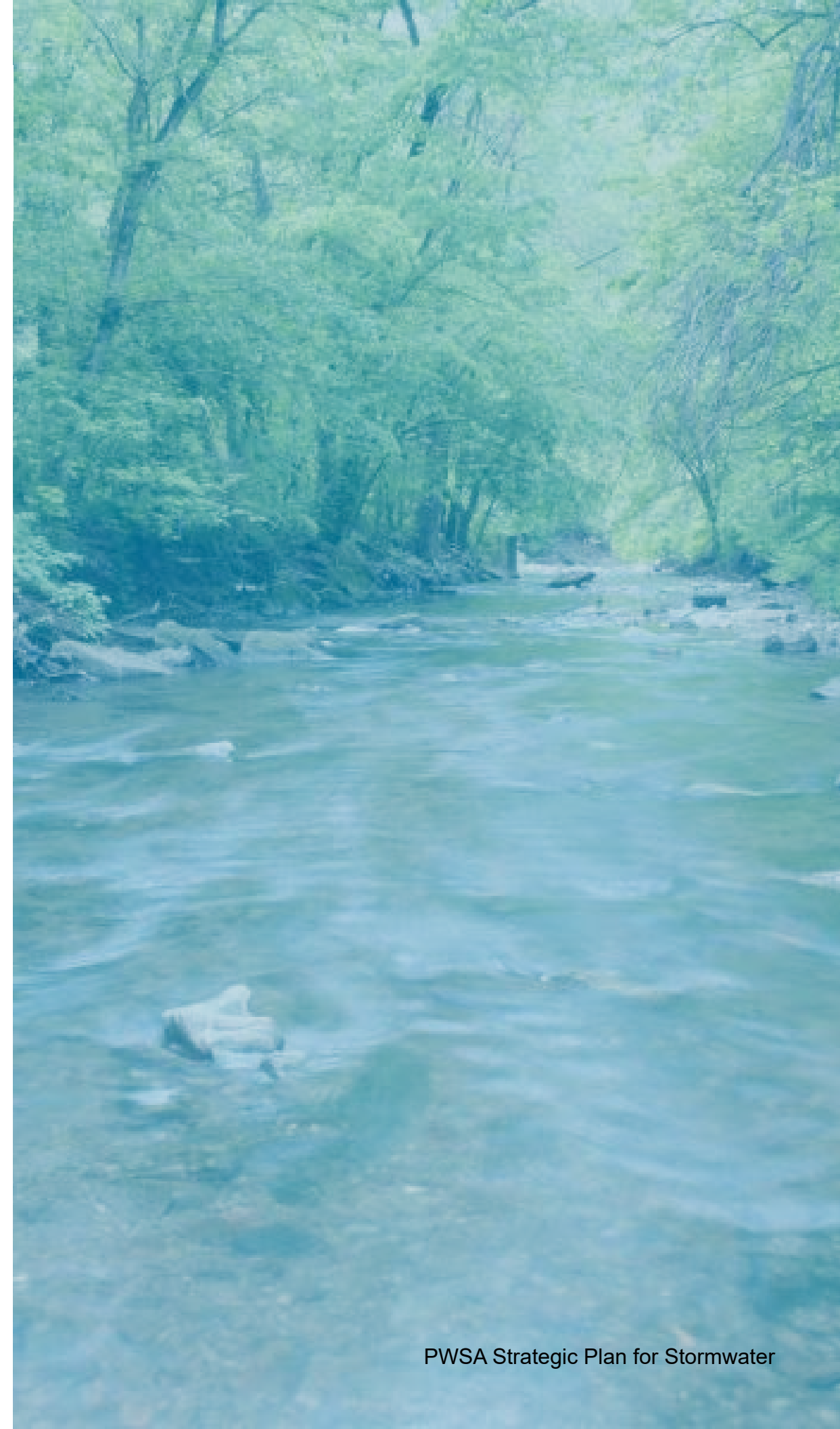
Performance

- incorporate more kinds of benefit into definition of performance
- layer or cluster projects to achieve bigger outcomes
- collect and analyze data for sound technical and policy thinking about delivery
- deliver more impact for the money (and more clarity about what impact fees and investments will produce)
- increase coordination and implementation speed and quality

"Four Ps"

Planet

- manage flooding
- anticipate climate change
- treat water as a resource, not waste
- promote biodiversity and health of natural systems through contributions to water quality
- increase the use of green infrastructure wherever possible



"Four Ps"

Place

- show what people, performance and planet can add up to in some exemplary places
- develop examples of catalytic projects centered on quality of life and place that resonate with people
- make water planning human and lift up local vision in a citywide plan





Negley Run

Selection Criteria for Catalytic Sites

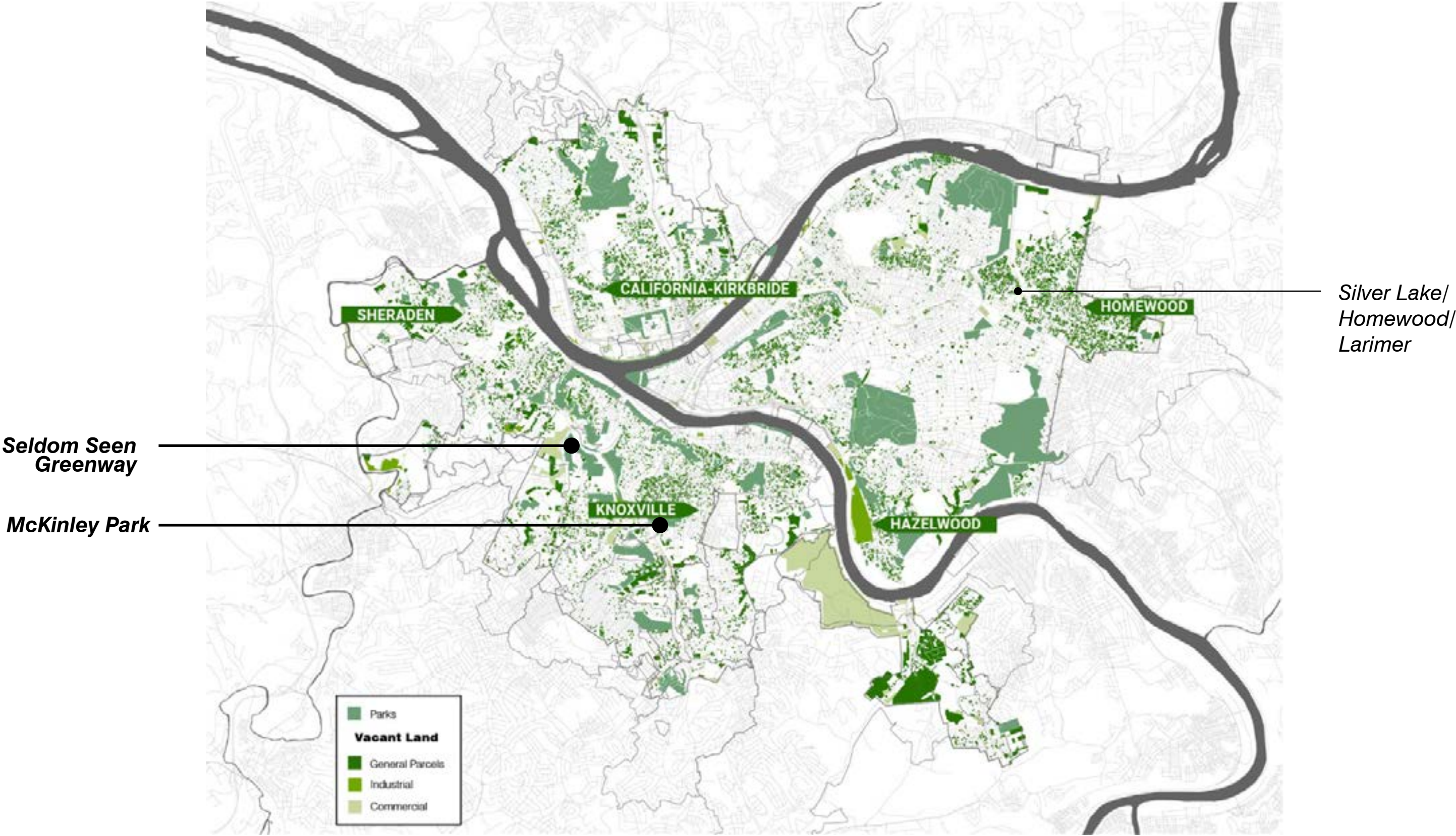
- ✓ Strong intersection of **flooding, water quality, equity** and **green space potential** (4 lenses)
- ✓ **Alignment with plans and advocacy** of community organizations, watershed taskforces, the Parks Conservancy, City agencies and other stakeholders and partners—we are building on the work of others and inviting collaboration
- ✓ High probability of achieving **measurable gains in performance** with modest investment (and no fatal flaw or high level feasibility issues)
- ✓ Site conditions and community goals allow for exciting examples of People, Place, Planet and Performance that **communicate vision and value to citizens paying water fees**.
- ✓ Visualization of wider potential in the same priority water/sewersheds can **catalyze future investment** and multiply the performance impact

3 Lenses: Flooding, Water Quality + Environmental Justice



Note: Flooding data will remain as individual vector data to guide priority selection rather than being combined in to a composite.

4th lens: Green Infrastructure Opportunity



Silver Lake / Homewood / Larimer Criteria

- ✓ **Strong intersection of 4 lenses**

Negley Run nexus with substantial flooding shared by Homewood and Larimer, adjacent to Westinghouse High School and YMCA

- ✓ **Measurable performance with modest investment**

Feasibility and quantification done by eDesign Dynamics (Negley Run Watershed Task Force Plan), mix of early action + bigger transformational projects

- ✓ **Alignment with plans and advocacy**

Restoration of Silver Lake is a major feature of Homewood and Negley Run Taskforce plans

- ✓ **Value proposition of People, Place, Planet and Performance.**

Rich site history and powerful physical presence, opportunity for art and design to elevate an African American cultural landscape

- ✓ **Future investment catalyst/ multiplying impact**

Longer term vision for new public space at Silver Lake can anchor investments upstream and downstream

Homewood Comprehensive Community Plan 2020

VISION STATEMENT

Homewood will be an African-American cultural destination where people choose to live, work, worship, and visit. It will be safe, green, healthy, and innovative. It will have quality schools. It will be a place that protects long-term and low-income residents and equips them to be engaged and informed.

Source: Homewood Community Development Collaborative.

The recent Homewood-based exhibition, **The People Are the Light** curated by Alisha B. Wormsley, was a series of public art installations and workshops running from September 16 to October 15, 2017 in various locations. The exhibition was a program of the Carnegie Museum of Art and centered on healing and cleansing and invited participants to reflect on Homewood's past, present, and future. With 12 artist-collaborators, The People Are the Light uplifted a citywide dialogue about Homewood and will result in photographs and a film premiering at Carnegie Museum of Art this December.

Figure 3.32 Murals in Homewood (right and below)



Figure 3.33 People Are the Light exhibition (below)



The exhibit brought significant positive attention to Homewood. Audience members, from Homewood and other parts of the city, spent time at formerly vacant lots, walked around the neighborhood to visit multiple installations, and patronized local businesses. This type of activity is significant for investment in Homewood. **The People Are the Light** bridged Culture - Institution, Public Space, and Now.



MURALS + ARTISTS.

Homewood has no shortage of local artists and craftsmen as evidenced by the People Are the Light exhibition (below). Murals are shown here and are throughout the walls of Homewood's buildings (left and top).

GOAL 6: Promote and preserve Homewood's African American heritage and culture

STRATEGY 6.1: PROMOTE HOMEWOOD'S PAST THROUGH INTERPRETIVE STORYTELLING, NEIGHBORHOOD BRANDING, MURALS AND PUBLIC ART AND THE REUSE OF VACANT PARCELS

TYPE	Project
TIMELINE	Short
CONNECTION TO PREVIOUS PLANS	N/A
ACTION TEAM	Culture and Recreation

Interpretative storytelling, community branding, public art and wayfinding has numerous benefits. It improves the commercial environment, promotes community pride, teaches community members and visitors the history of the neighborhood and improves the pedestrian environment, encouraging healthy living. A branding, wayfinding and storytelling master plan and a public art master plan should both be developed, potentially in coordination with each other.

Both projects should engage deeply with community members in order to incorporate local stories, memories and mementos in the final product. Local artists should be engaged to participate in the development of art, and any such development should include opportunities for participation from the community's youth. National grant opportunities, such as those from Artspace, should be pursued in order to make Homewood Pittsburgh's community of the arts.

GOAL 21: Encourage the expansion of stormwater management

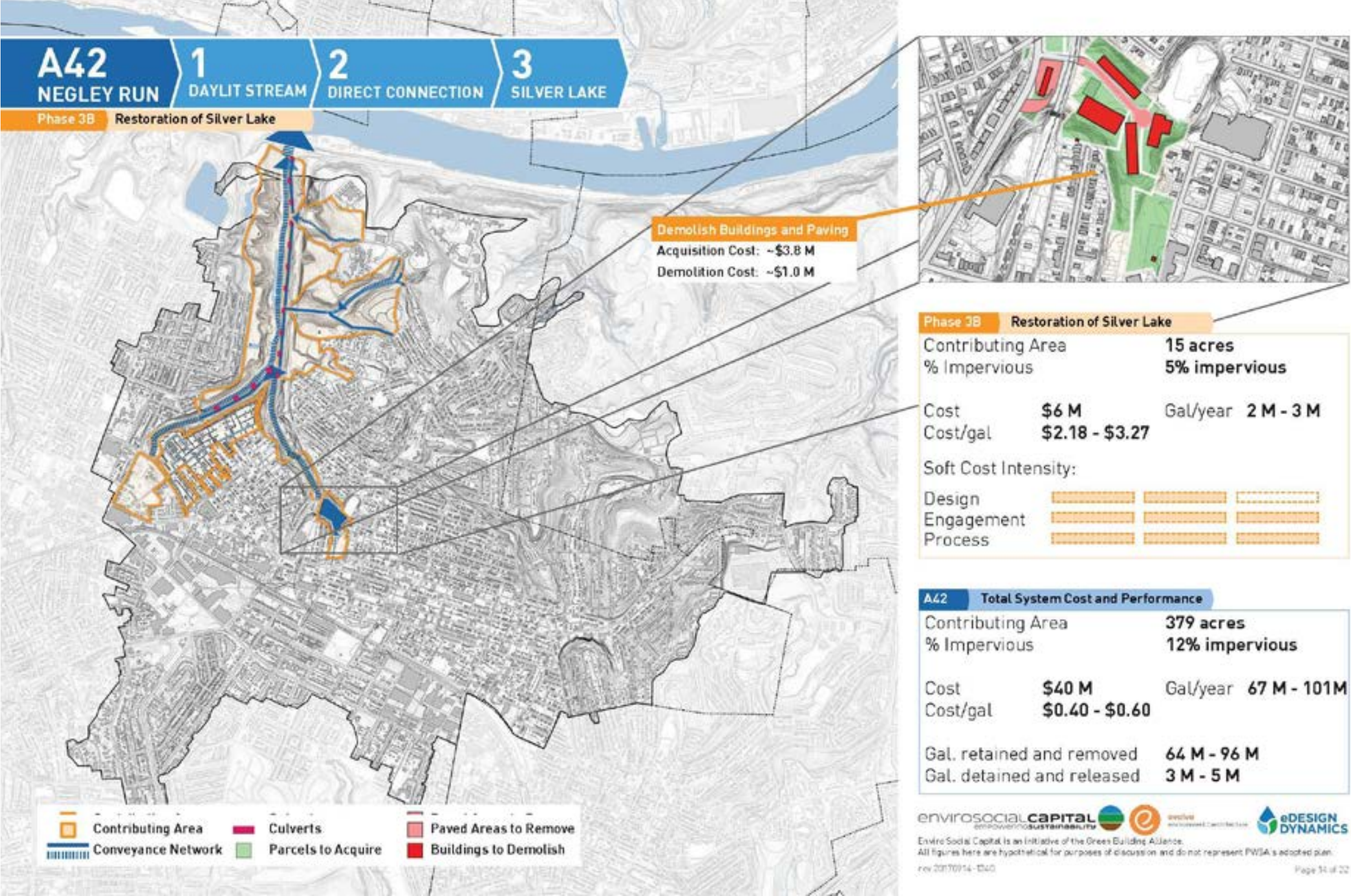
STRATEGY 21.1: ALIGN PLANNING AND REDEVELOPMENT EFFORTS TOWARD ESTABLISHING A NETWORK OF GREEN STORMWATER INFRASTRUCTURE PRACTICES THAT SAFELY ALLOW RUNOFF TO CONVEY TOWARD A RESTORED SILVER LAKE

TYPE	Project
TIMELINE	Long
CONNECTION TO PREVIOUS PLANS	Homewood-Brushton Community Coalition Organization Strategic Plan: Charting a New Future for Homewood-Brushton; Race Street 2020; City-Wide Green First Plan; Open Space PGH: Optimizing Pittsburgh's open space, parks, and recreation system; ONEPGH: Resilient Pittsburgh; Pittsburgh Climate Action Plan version 2.0; Homewood Urban Agenda Strategy: An Inner-City Model for Urban Revitalization; Pittsburgh Principles for Design & Planning
ACTION TEAM	Sustainability

Negley Run Watershed Association has begun visioning and planning work on the restoration of Silver Lake as a location that can act as detention for flood waters approaching Negley Run. While changes were made to the inflows of Silver Lake in the early 1870s, it was not until the 1930s that the lake was drained and filled to cover up the pollution accumulating. Not only could the restoration of the lake provide many hydrological benefits to both Homewood and the Negley

Run Watershed, but it would also provide an opportunity to add new open space to the western edge of Homewood. Finally, a network of green infrastructure in Homewood would aim to slow and retain water, though in large storm events could be oriented to convey water to Silver Lake as a large volume detention basin with both gray and green stormwater controls to ensure improved water quality before water is released into Negley Run and the Allegheny River.

Negley Run Watershed Task Force 2019 Plan



Source: Living Waters of Pittsburgh, Negley Run Watershed Task Force. 2019 Community Rainwater Management Plan. <http://www.livingwaterspgh.org/landing-page/living-watersheds/negley-run-a42/nrwtf-document-archive/>.

RAND GSI Study Cost Estimation for Silver Lake

Table E.7. Silver Lake Retention Basin (12 Acre-Feet Capacity) Cost Subestimate

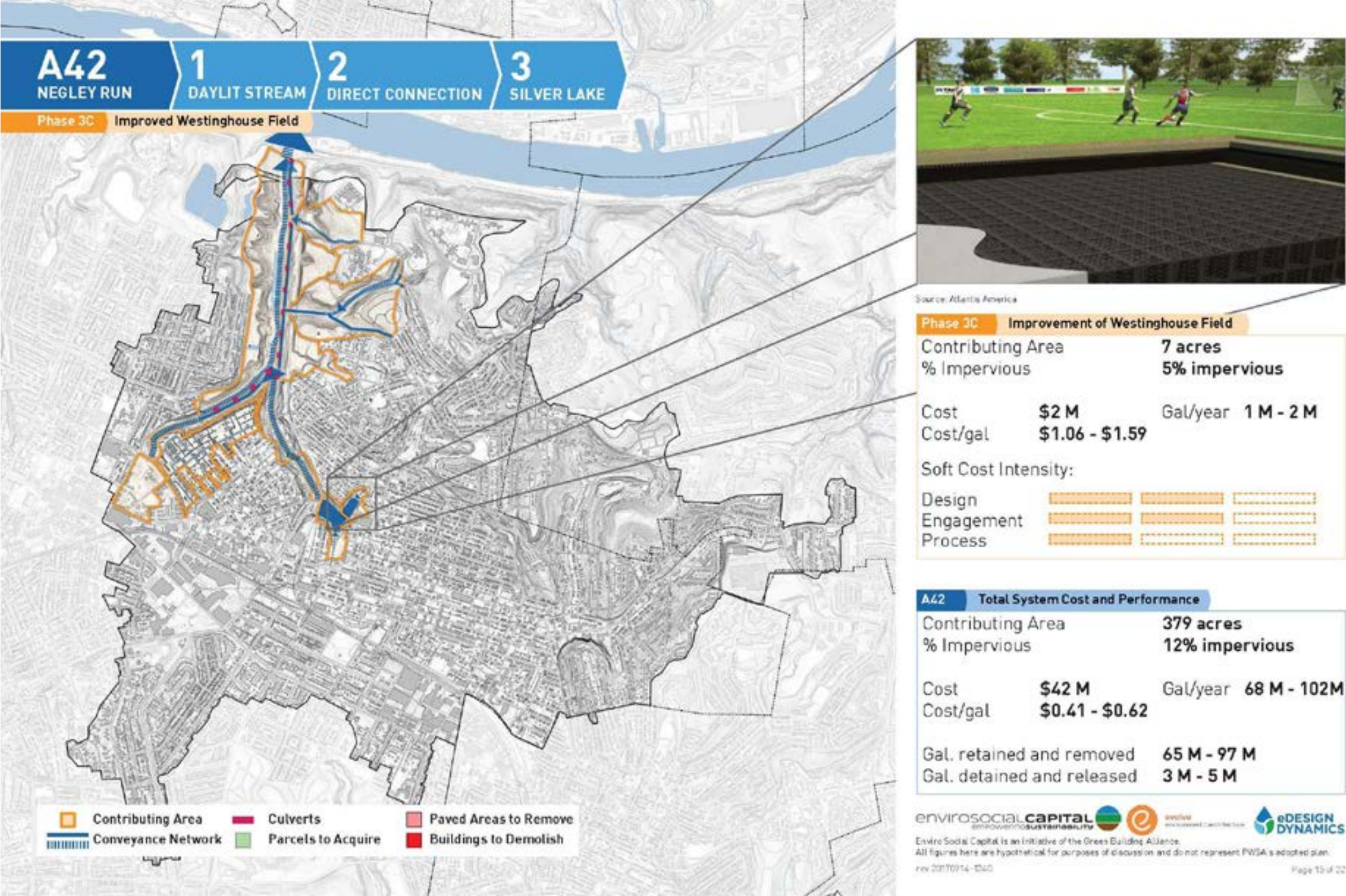
Description	Note	Qty	Unit	Unit Cost	Total
Silver Lake Expansion Site Preparation					
Clearing and grubbing		10	acre	\$8,750	\$87,500
Clearing and grubbing contingency		1	ea.	\$10,000	\$10,000
Remove existing pavement		28,000	yd ²	\$6	\$168,000
Building demolition		12,000	yd ²	\$50	\$600,000
Relocate existing utility		5	ea.	\$20,000	\$100,000
Temporary construction fence		4,000	LF	\$6	\$25,600
Excavation	Assume 6' average depth	42,500	BCY	\$20	\$850,000
Backfill	Assume 2' average depth	15,000	ECY	\$6	\$90,000
Hauling (within 10 miles)		65,000	LCY	\$16	\$1,040,000
Silver Lake Expansion					
Sand layer fill		3,600	LCY	\$35	\$126,000
Mulching		90	MSF	\$340	\$30,600
Sand layer compaction		3,600	ECY	\$5	\$19,260
Filter fabric		10,000	yd ²	\$2	\$19,000
Cobble (5"–10" bulk river rock)		80	tons	\$95	\$7,600
Riprap (>18" thickness)		120	tons	\$160	\$19,200
Boulders (>24" thickness)		1,200	tons	\$280	\$336,000

Source: Managing Heavy Rainfall with Green Infrastructure: An Evaluation in Pittsburgh's Negley Run Watershed, 2020. RAND Corporation. https://www.rand.org/content/dam/rand/pubs/research_reports/RR500/RR564-1/RAND_RRA564-1.pdf. Appendixes B-F. https://www.rand.org/content/dam/rand/pubs/research_reports/RR500/RR564-1/RAND_RRA564-3-appendixB-F.pdf.

Description	Note	Qty	Unit	Unit Cost	Total
Stone armoring contingency		1	ea.	\$10,000	\$10,000
Fine grading		12,000	yd ²	\$3	\$33,600
Topsoil preparation		8,000	yd ²	\$51	\$408,000
Turf reinforcement mat		1,000	yd ²	\$10	\$10,000
Temporary seeding		4,000	yd ²	\$1	\$2,000
Permanent seeding		4,000	yd ²	\$1	\$3,000
Permanent wetland seeding		1	acre	\$5,000	\$5,000
Wetland planting		50,000	ft ²	\$3	\$125,000
Herbaceous groundcover		2,000	ea.	\$20	\$39,800
Shrubs		1,000	ea.	\$69	\$68,500
Trees		200	ea.	\$150	\$30,000
Additional planting cost		2,400	ea.	\$11	\$26,400
Vegetation contingency		1	ea.	\$15,000	\$15,000
Silver Lake Expansion Structures and Other Infrastructure					
72" RCP		800	LF	\$450	\$360,000
Replace pavement	Paths, access, and trails	3,000	yd ²	\$30	\$90,000
Replace curb and gutter		500	LF	\$35	\$17,500
Catch basin modifications		3	ea.	\$10,000	\$30,000
Manhole structure		4	ea.	\$3,800	\$15,200
Diversion structure		3	ea.	\$30,000	\$90,000
Inlet/outlet structure		3	ea.	\$2,500	\$7,500
				Total	\$4,915,260

NOTE: Cost were modeled with range of –30 percent to +50 percent of subtotal shown. Strategy cost shown is additive and contingent on prior phase conveyance construction.

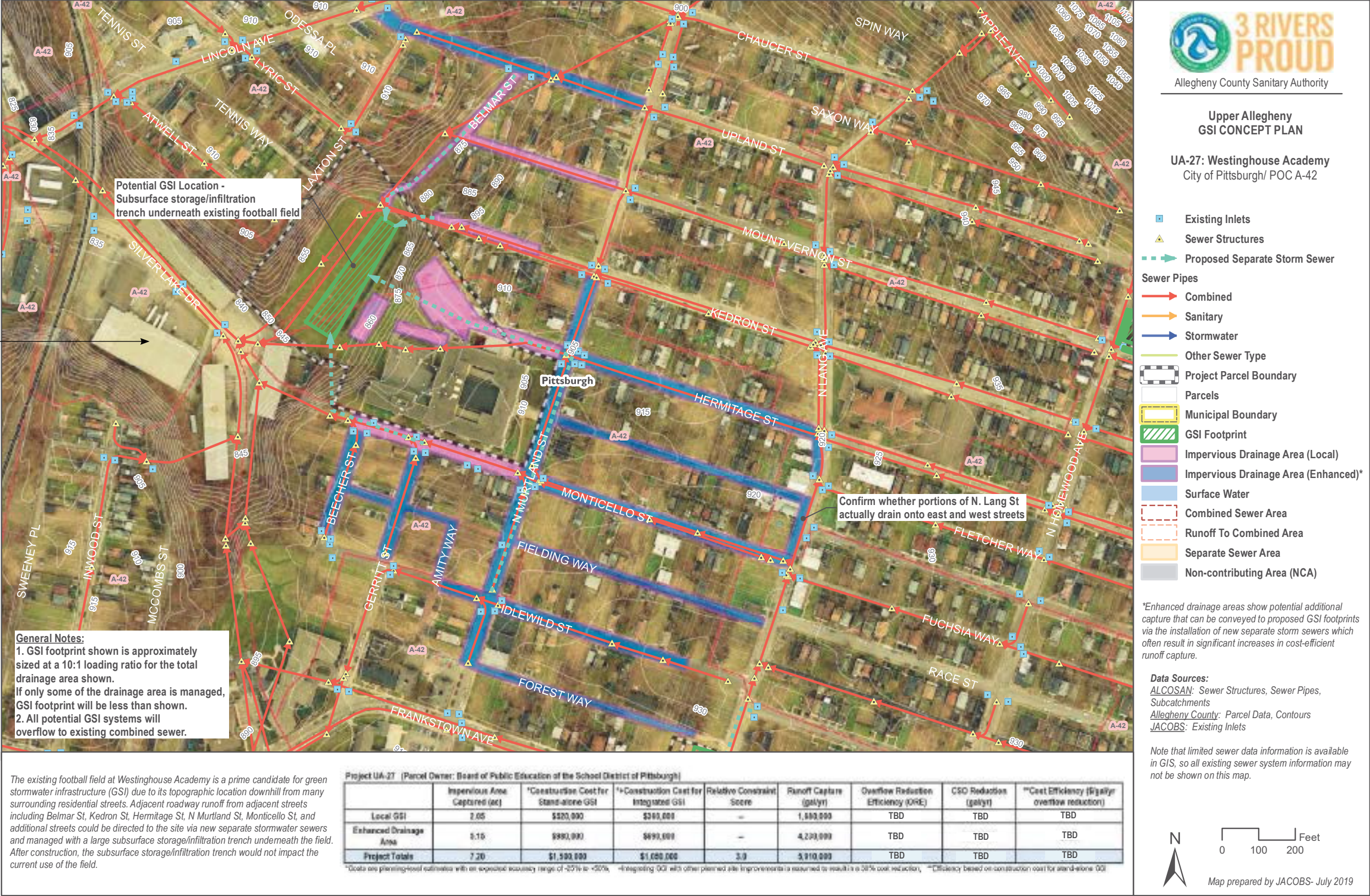
Negley Run Watershed Task Force 2019 Plan



Source: Living Waters of Pittsburgh, Negley Run Watershed Task Force. 2019 Community Rainwater Management Plan. <http://www.livingwaterspgh.org/landing-page/living-watersheds/negley-run-a42/nrwtf-document-archive/>.

Westinghouse Field GSI Concept

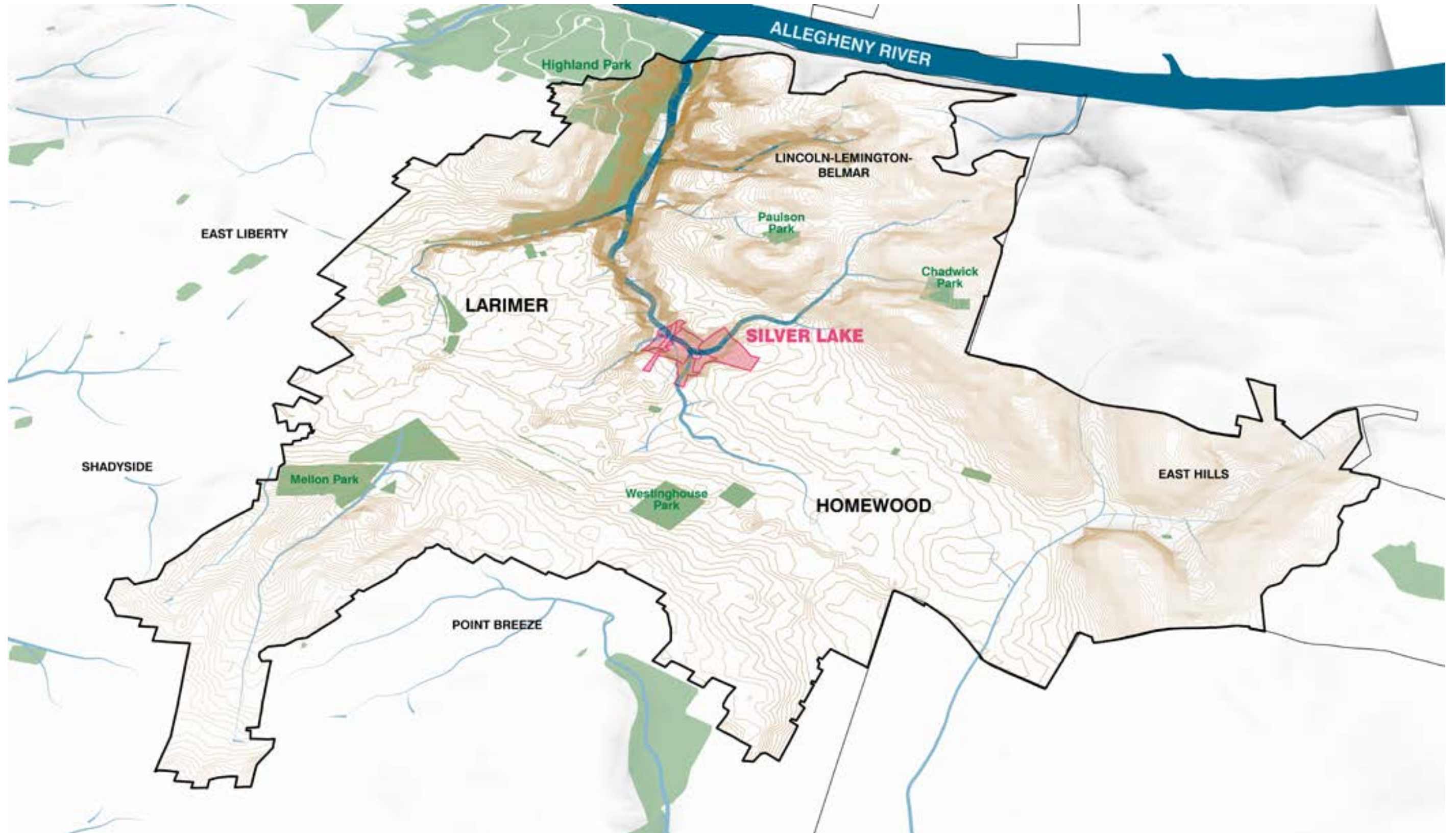
Silver Lake



Source: Living Waters of Pittsburgh. A-42 Negley Run. <http://www.livingwaterspgh.org/landing-page/living-watersheds/negley-run-a42/>

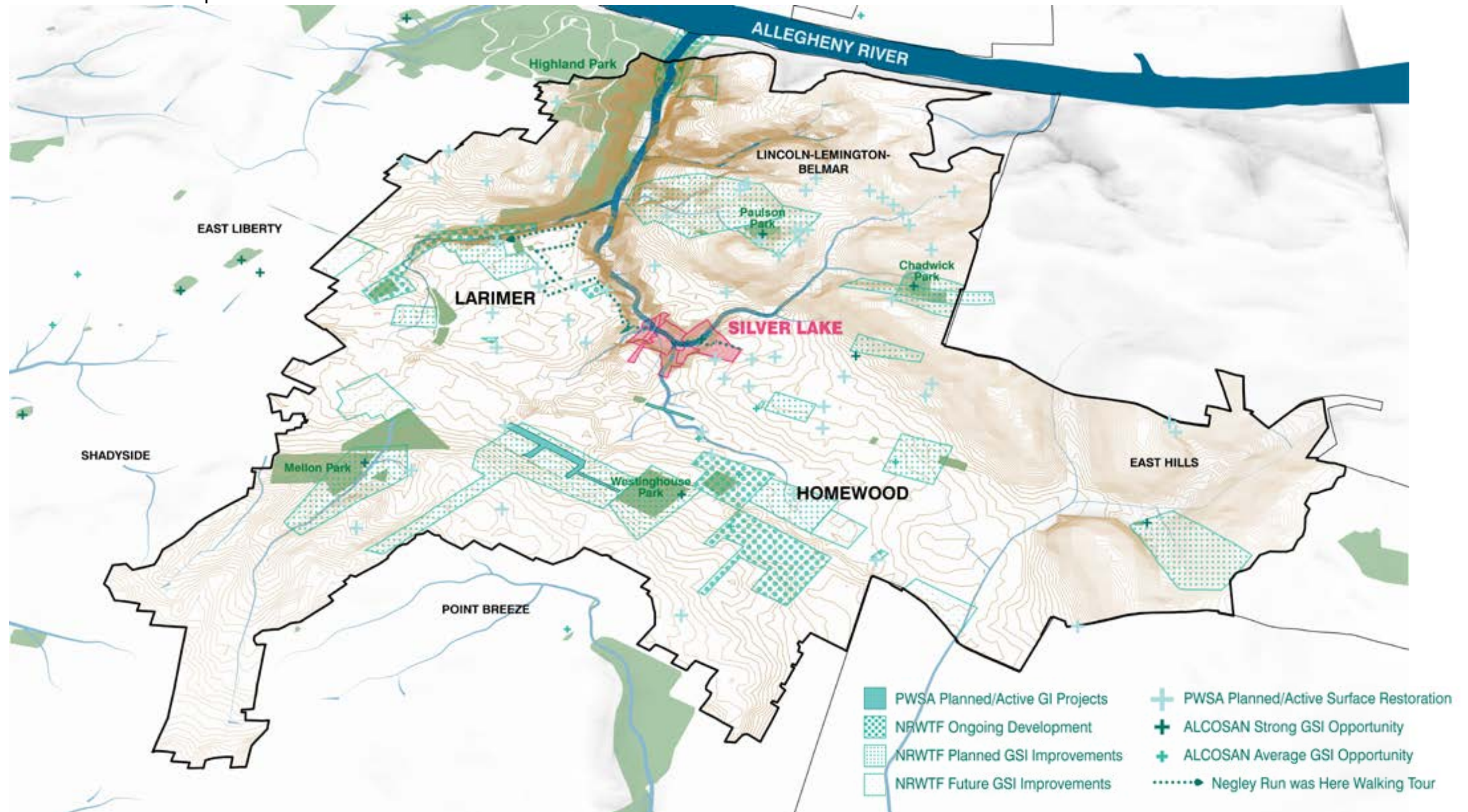
A-42 Negley Run

10ft Contours + Parks + Historic/Buried Streams

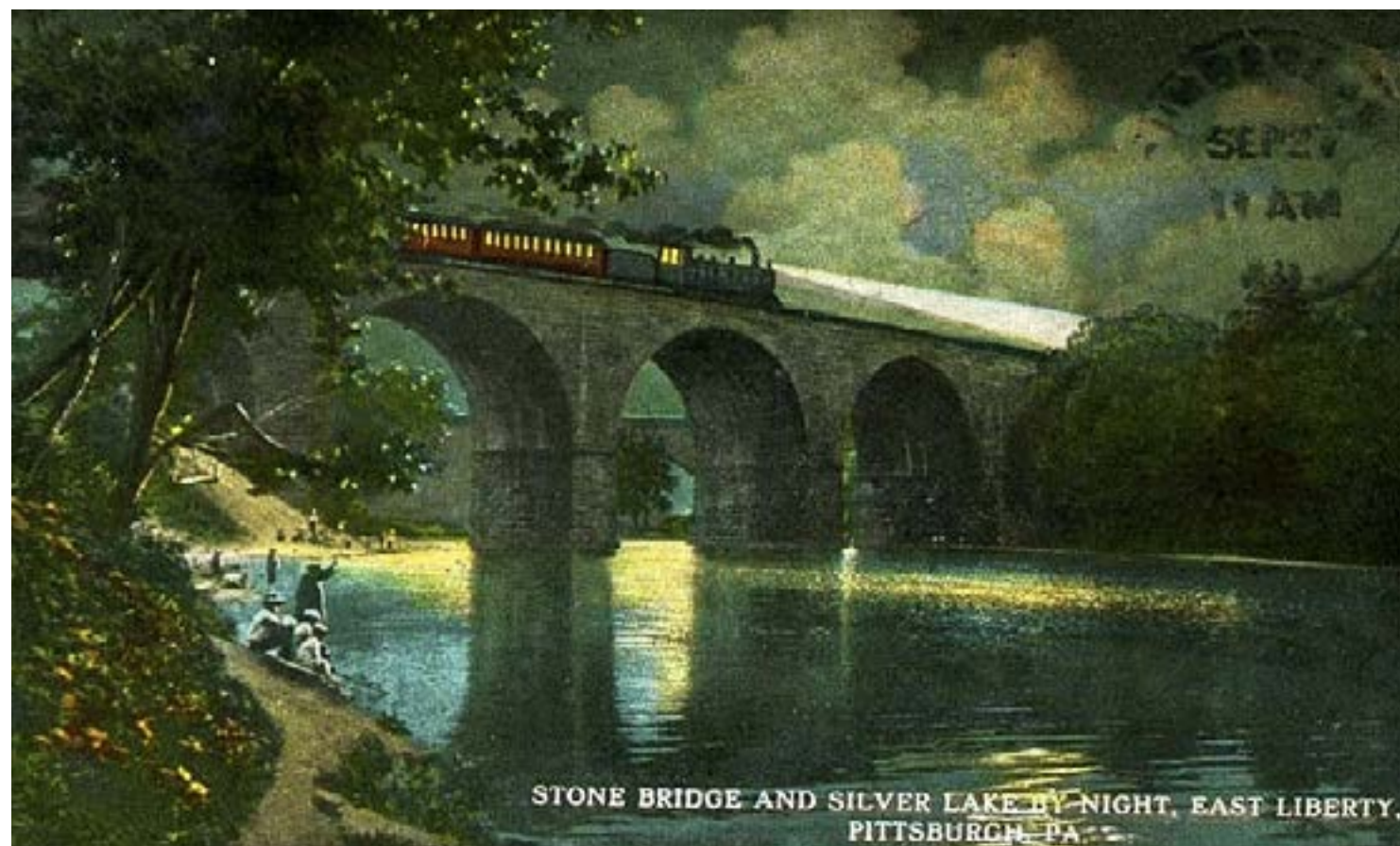
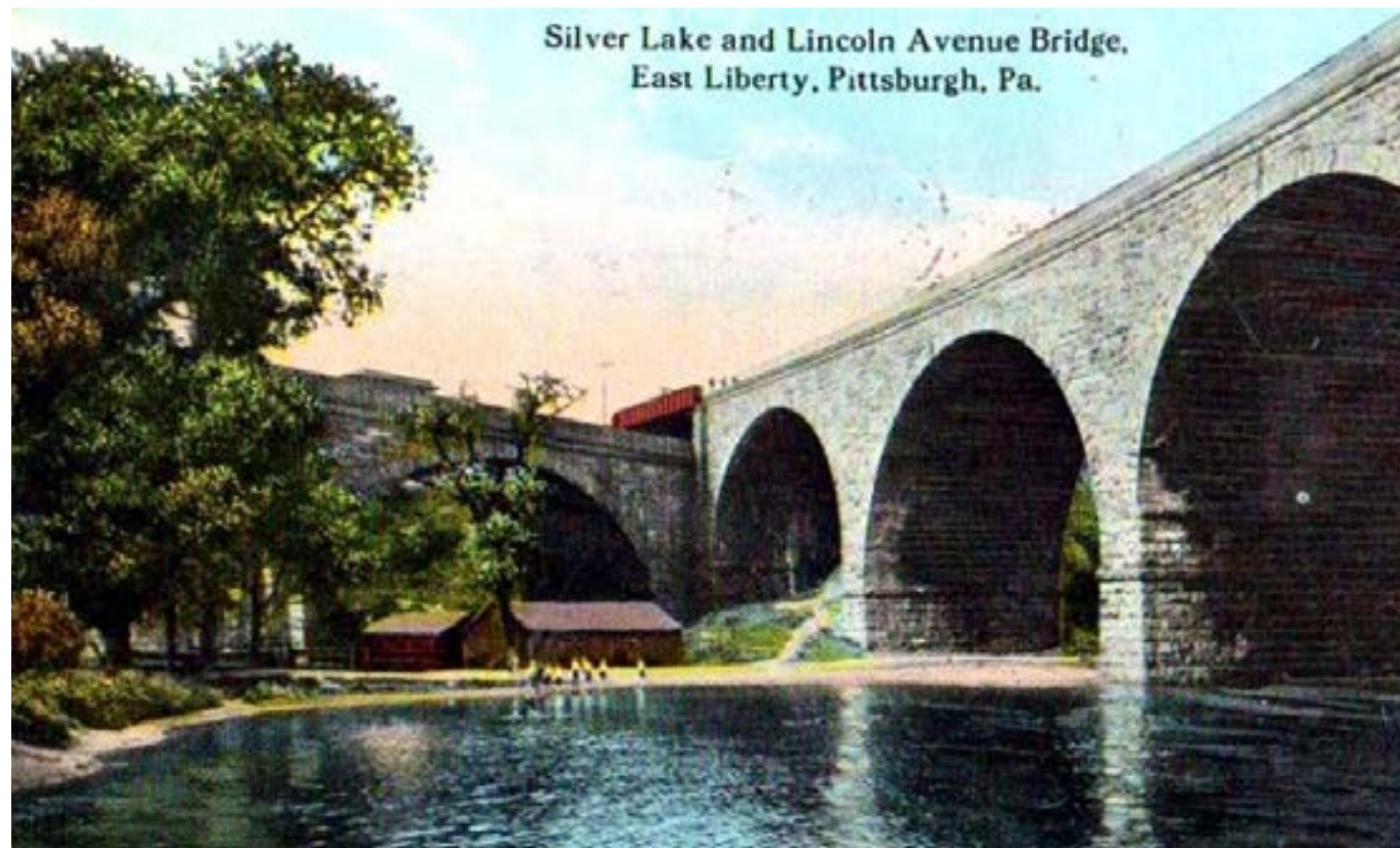


A-42 Negley Run

Watershed/GI Improvements



Silver Lake



Source: Brilliant Cutoff Viaduct and Silver Lake, www.brooklineconnection.com/history/Facts/Brilliant.html

GRAND OPENING TONIGHT!
BOX OFFICE OPENS 7:00 P. M. — LATE SHOW 11:00 O'CLOCK

Silver Lake

DRIVE-IN THEATRE

- ONLY OUTDOOR THEATRE LOCATED WITHIN CITY OF PITTSBURGH!
- ON WASHINGTON BLVD. JUST BELOW FRANKSTOWN AVE., EAST END!
- 10 MINUTES FROM DOWNTOWN PGH.!
- MODERN IN-A-CAR SPEAKERS
- FAST ENTRANCE AND EXITS

2 SHOWS NIGHTLY
RAIN OR CLEAR

SAY GOODBYE TO PARKING WORRIES AND BABY SITTERS
Load Up the Family — Drive Over!

SMOKE IF YOU LIKE!
No Restrictions!

DON'T DRESS UP!
Come as you are—No one sees you... Solid Comfort is the Idea!

MOVIES UNDER THE STARS

CHILDREN FREE

BRING THE KIDS THEY'LL LOVE IT!

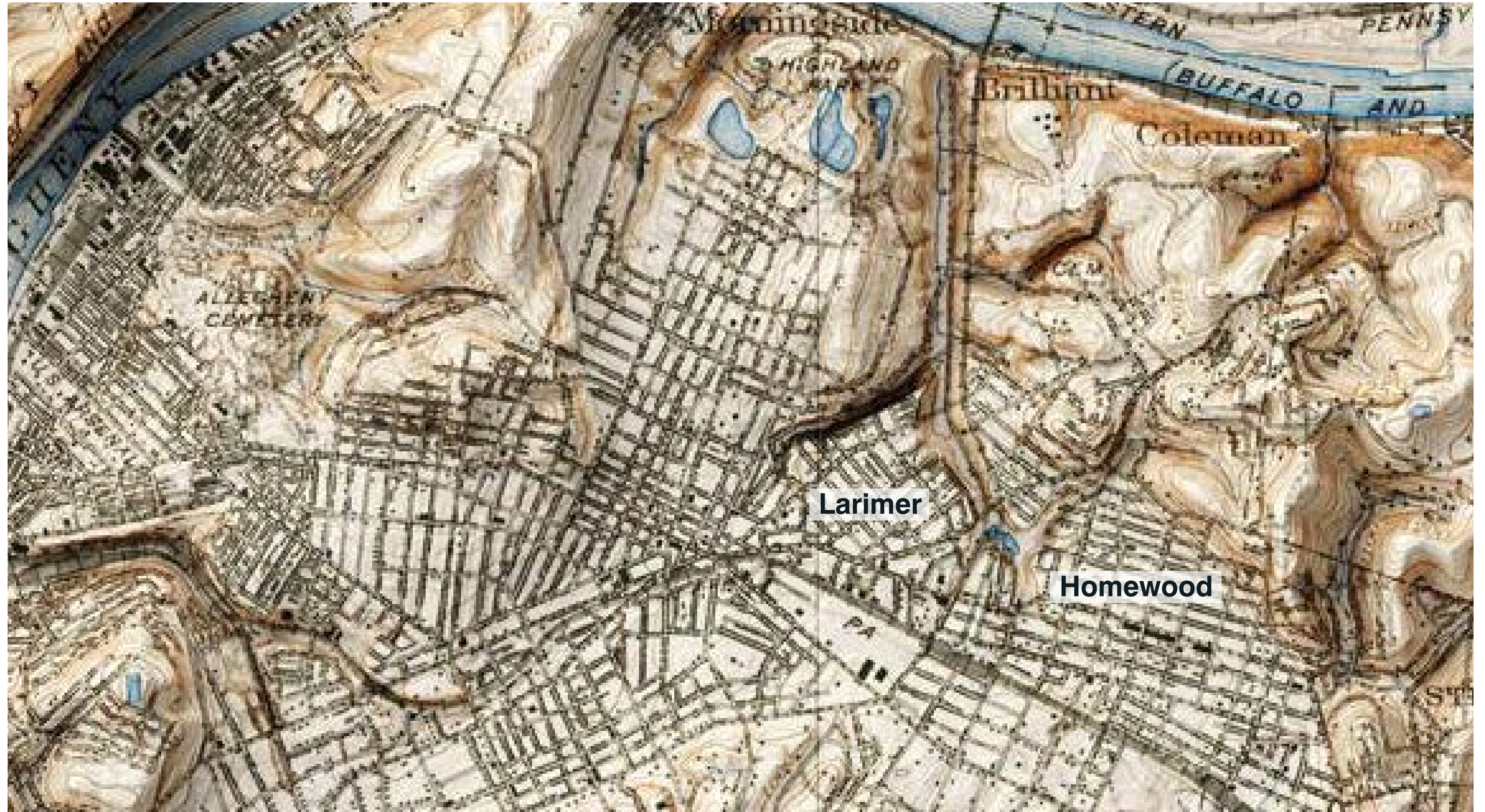
OPENING ATTRACTION!
2 DAYS!
FRIDAY & SATURDAY
"CALIFORNIA"
Color By Technicolor
STARRING
BARBARA STANWYCK RAY MILLAND
BARRY FITZGERALD

FREE Souvenirs
For the Kiddies

Silver Lake / Homewood / Larimer Site Area



Silver Lake / Homewood / Larimer Site Area



Silver Lake Footprint, 1910 and 2022



Source: Pittsburgh Historic Maps. <https://www.arcgis.com/apps/View/index.html?appid=63f24d1466f24695bf9dfc5bf6828126#!>

Silver Lake Current Condition



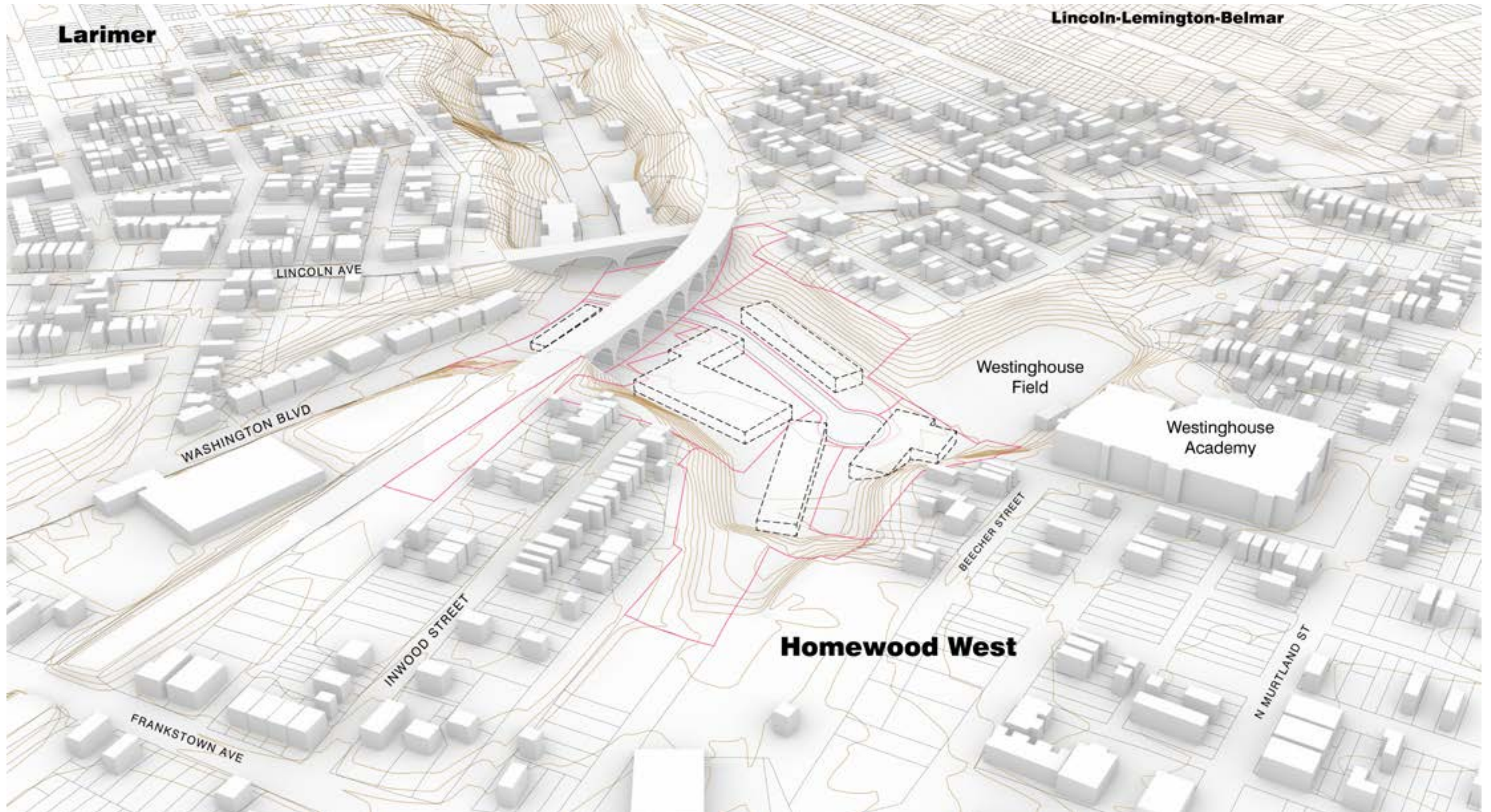
Silver Lake Current Condition



Early action on Westinghouse High School next to Silver Lake



Silver Lake



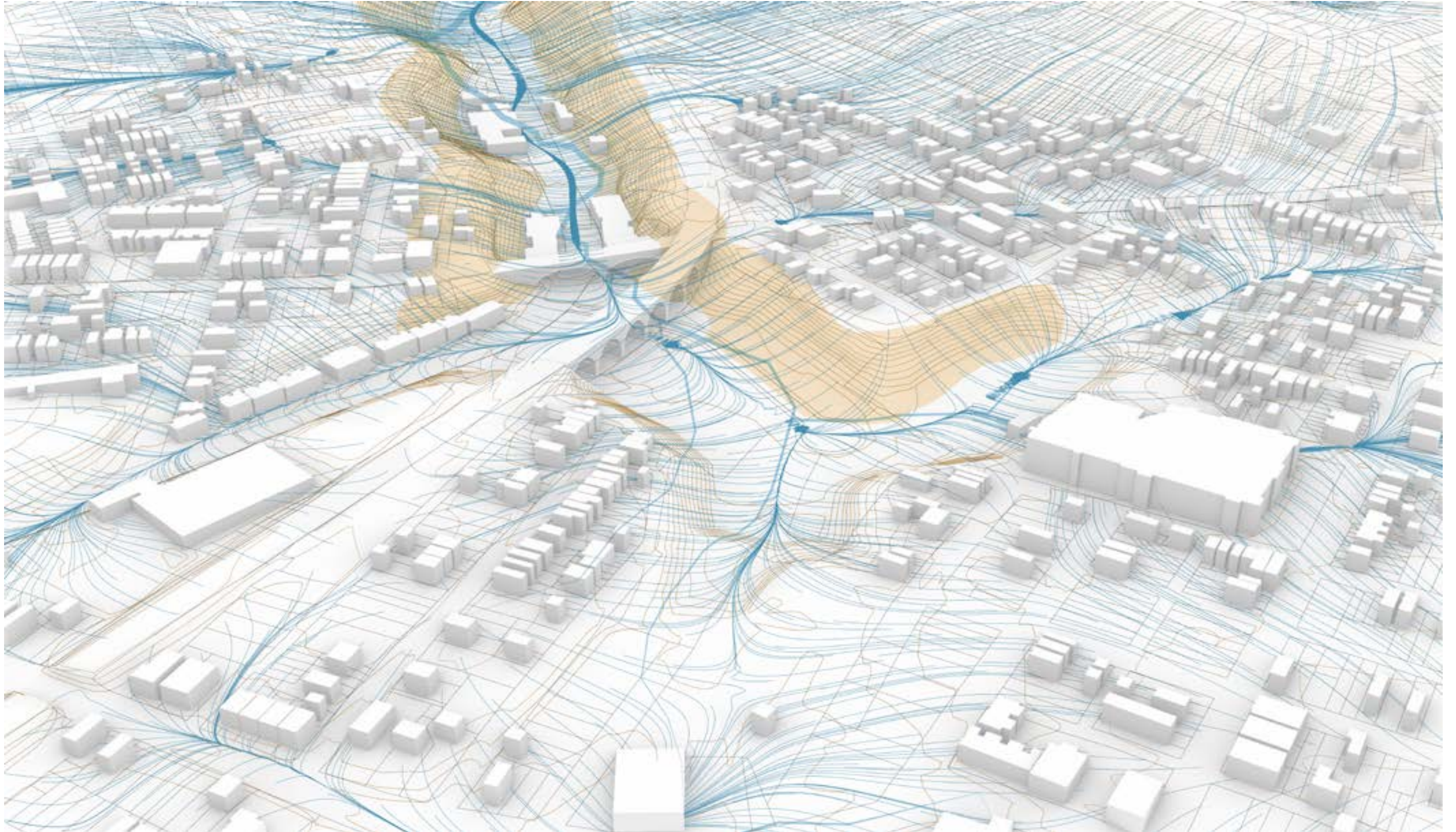
Silver Lake

Satellite View



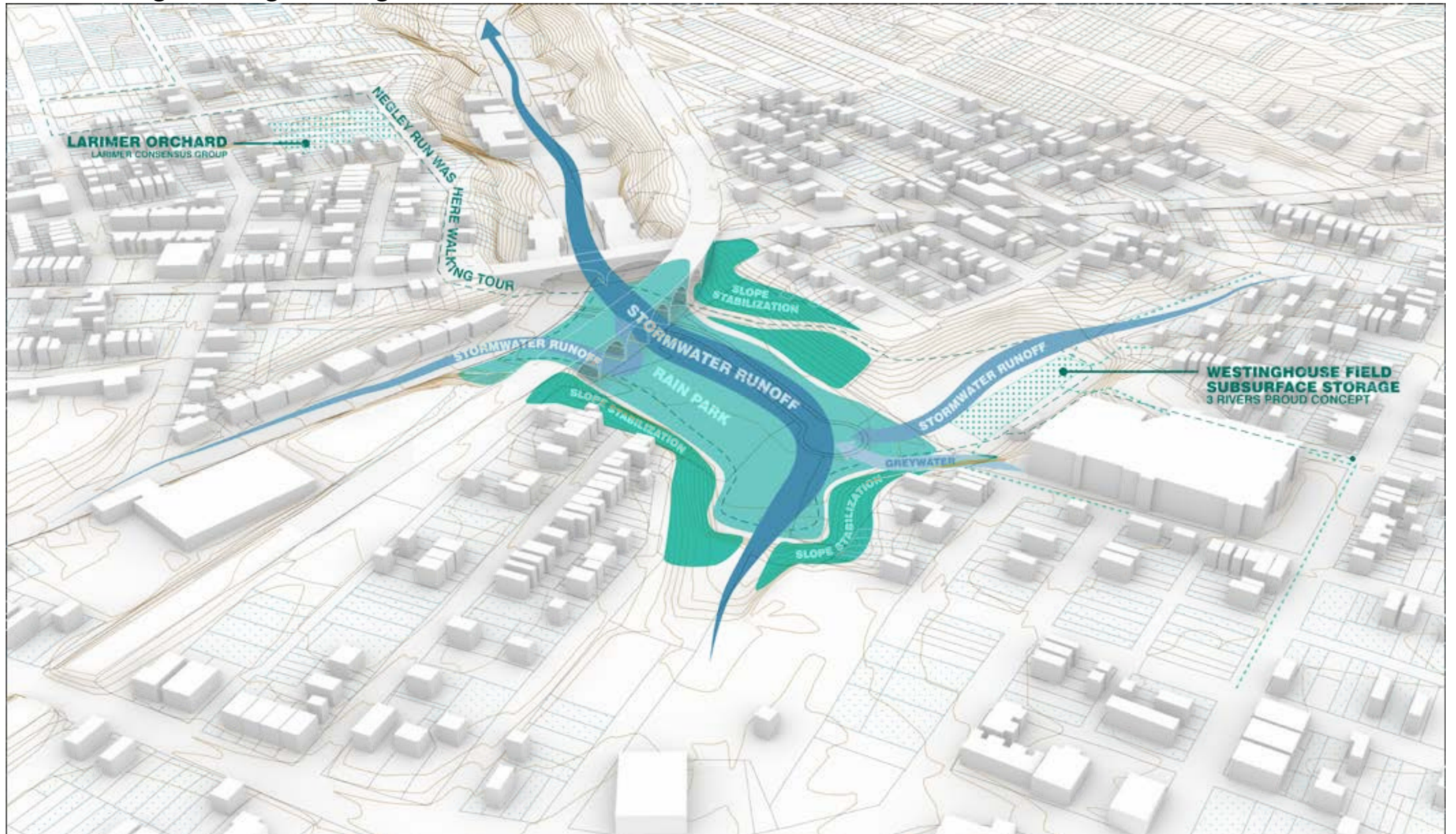
Silver Lake

Site Conditions: Buried Streams + Landslide Prone Areas + Stormwater Runoff



Silver Lake

Potential Engineering Strategies



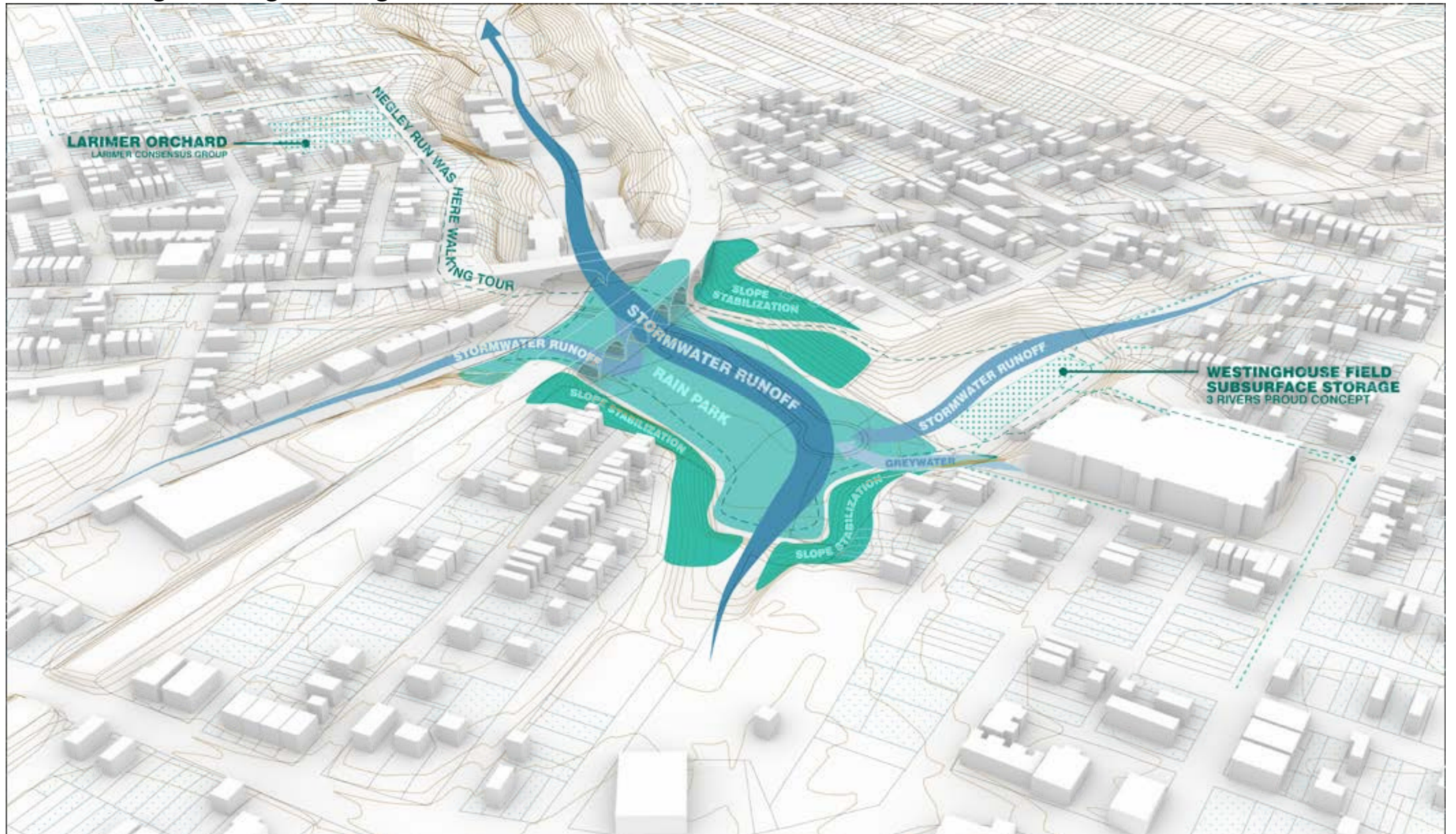
**ANIMATION
SLIDE**

What would you like to see happen at Silver Lake and Westinghouse HS?

What should we know about past plans or current community visions for this place?

Silver Lake

Potential Engineering Strategies



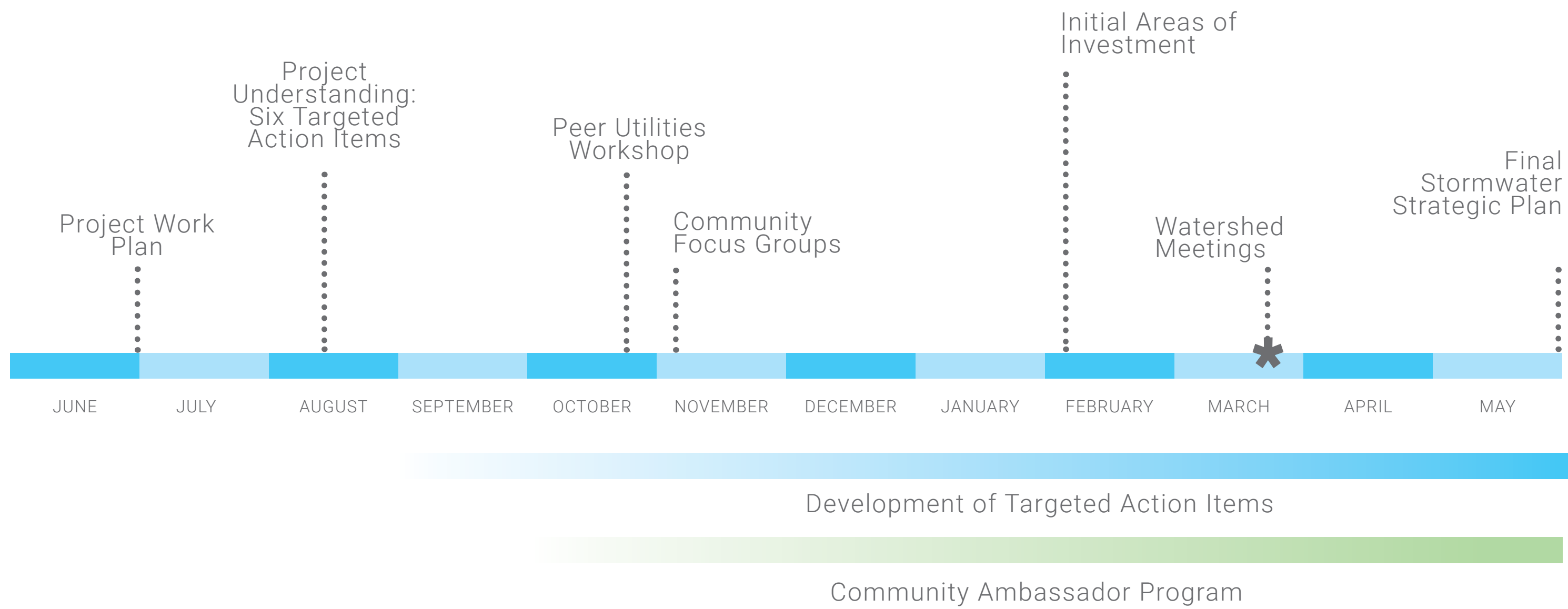
Do you think this is a good place to create a catalytic project that integrates environmental justice, flood management, and green infrastructure to achieve performance and quality of life for people?

Are there other places and projects in Negley Run you want to tell us about?



Next Steps

PROJECT TIMELINE





PWSA Next Steps