One Water Trail

Concept Plan for Highland Park, 2019

Overview

The **One Water Trail** will lead people to the stories of water in our landscape, toward a greater appreciation of this precious substance in all its forms.

Both a philosophy and a policy framework, "One Water" breaks down barriers between rainwater, drinking water, and wastewater. Championed by national organizations such as the US Water Alliance, the Water Research Foundation, and numerous water and sewer authorities, One Water policies and practices take an integrated and inclusive view. Benefits of this approach include:

- Better human and ecological health;
- A more resilient and reliable water system;
- Optimized regional infrastructure;
- Environmentally sustainable community; development
- Economic growth; and
- Community and agency coordination.

Numerous stakeholders – led by Pittsburghers who live and work in the Negley Run Watershed – came together to develop this plan. It is the product of an exploratory hike and a creative workshop. Participants recognized that people have spent a lot of time disconnecting from water, even demonizing it as dreary rain, damp basements, and muddy puddles. Stakeholders support the One Water Trail as a chance to change negative thinking into knowledge and wonder.

As conceived, the trail unspools a plot line that people can follow, to sites in and around Highland Park, where different episodes of our water story can be discovered. The trail taps into the instinctive understanding of water that most people have, and presents moments of learning about the native ecosystem and how they are connected to it. While interpretive messaging will convey information, deep understanding will come from physical experience of water in its many forms and effects.

Each of these stations (numbered) will be highlighted with interpretive elements, using text, illustrations, and art. Signage will follow the City's design standards for regional parks, but may seek adaptations including a One Water insignia.

Some locations (lettered) present a need or opportunity to restore or improve how water functions within the site. Projects may include restoration, new construction, and artistic expressions. For example, Green Stormwater Infrastructure (GSI) can be integrated into a project that restores a historic path.

Elements of the One Water story are summarized in descriptions of each interpretive station. Themes to be integrated include: geology and soils; indigenous culture; historic development of Pittsburgh's water and sewer systems; ecological relationships; water quality; water conservation; and climate change. Stations will make clear that:

- Water is shaped by and shapes the land;
- Water is a source of sustenance, pleasure, play, and inspiration; and
- An urge to get to the water is fundamental to all life.

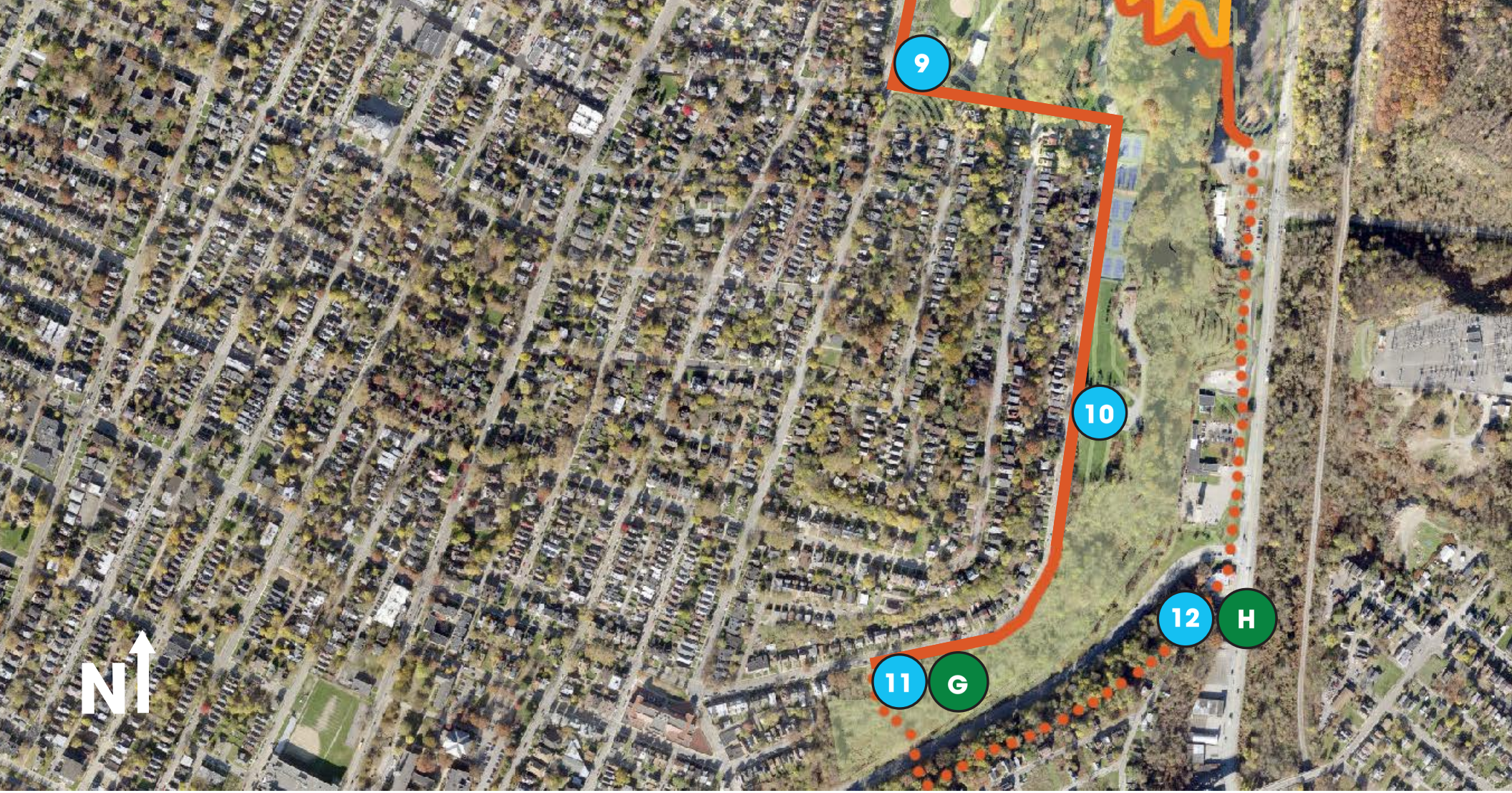
Ultimately, heightening its visibility will help people develop an eye for water in the landscape. In training people to notice the values and dynamics of water, the One Water Trail will excite a greater sense of responsibility for individual and collective action.

Highland Park, one of Pittsburgh's five large regional parks, is without a doubt the city's most water-rich public space apart from the rivers themselves.

The City built Highland Park Reservoir #1 in 1872 and established Highland Park around it in 1889. In addition to a second reservoir, the park's other water resources include a microfiltration plant, a lake, a swimming pool, streams, seeps, sewers, views of the Allegheny River, and more. The diverse expressions of water in this park make it an ideal candidate for a One Water Trail in Pittsburgh.

The park's eastern portion lies within the Negley Run Watershed. Like many of Pittsburgh's watersheds, the name comes from the historic stream that carried flows to the Allegheny River. Today that stream runs in pipes beneath Washington Boulevard, which became infamous for its frequent flooding after fatalities in 1951 and 2011. The western portion of the park drains to what was once Heth's Run, a stream that ran through the valley that now serves as a parking lot for the Pittsburgh Zoo.

The Pittsburgh Water and Sewer Authority prioritized both watersheds in their "Green First" plan (the others are Four Mile Run, Soho Run, Southside/21st St., and Woods Run). Highland Park, in addition to its other water resources, represents one of the best opportunities for large-scale green infrastructure investments.



Legend

- Blue Line
- Lake Loop
- Mouth of Negley Run
- Little Negley Run
- Heth's Run
- ●●●●● = incomplete

Stations

1 Mellon Terrace
2 Fountain
3 Reservoir
4 Microfiltration Plant
5 Lake Carnegie
6 Allegheny Overlook
7 Grotto
8 Buried Bridge
9 Farmhouse
10 Forestry Division
11 Community Garden
12 Larimer Point

Interventions

A Mellon Terrace
B Orthophosphate
C Lake Carnegie
D Allegheny Overlook
E Seasonal Pools
F Buried Bridge
G Community Garden
H Larimer Point

One Water Trail Map

Lake Loop

Distance: 1 mile

Difficulty: Easy

Time: 20-30 minutes

The Lake Loop is a short, easy walk that richly displays water. It shares a route with the Blue Line to Lake Carnegie, then turns south toward the park's main entrance, passing by the Buried Bridge. This grassy hillside brims with opportunity -- to expose the historic structure and to reinstate a small stream through a naturalized landscape.

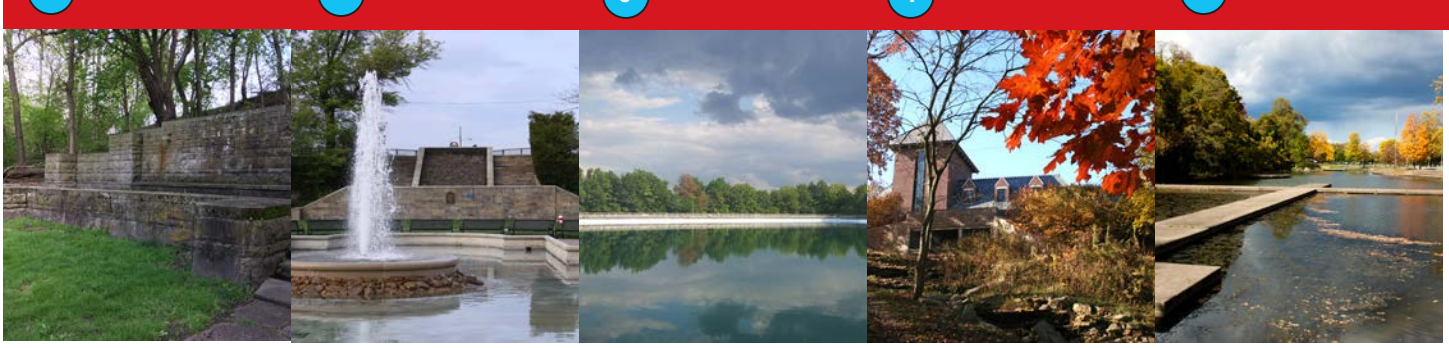
Little Negley Run

Distance: 2 miles

Difficulty: N/A

Time: N/A

While the Mouth of Negley Run trail roams the lower section of the one-time stream, the Little Negley Run trail aims to explore its upper reaches. Existing trails and sidewalks carry users past sites that focus on the cultural interface between people and water, from the Farmhouse, to the Community Garden. A portion of the trail, yet to be developed, would create a connection from Highland Park to the Larimer neighborhood. There, at Larimer Point, the trail would culminate in a view of the entire Negley Run valley.



Blue Line

Distance: 1 - 1.25 miles

Difficulty: Moderate

Time: 30 - 40 minutes

The Blue Line anchors the One Water Trail network. It takes Highland Park visitors on a journey from the dramatic entry Fountain, around the Reservoir, past the Microfiltration Plant and Lake Carnegie, culminating in a view of the river at the Allegheny Overlook. On this walk people will encounter most of the critical elements of Pittsburgh's drinking water infrastructure, including its source - the Allegheny River.

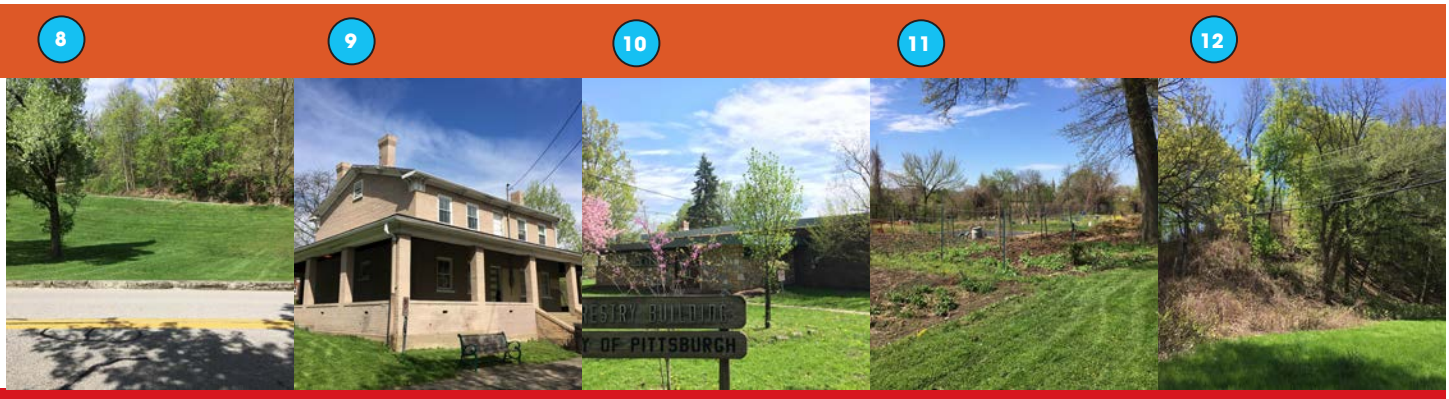
Mouth of Negley Run

Distance: 1.5 miles

Difficulty: Hard

Time: 45-60 minutes

Traversing the eastern edge of Highland Park, the Mouth of Negley Run loop is a challenging and exciting woodland trail. Named for the outlet of a historic stream that the community aims to bring back to the surface, this route offers a display of the shapes water can take in the landscape, from man-made Lake Carnegie to the Allegheny River, with hillside seeps, seasonal pools, and ephemeral streams in between.



Heth's Run

Distance: 3 miles

Difficulty: N/A

Time: N/A

The final and most ambitious leg of the proposed Water Trail is the Heth's Run Loop. Like Negley Run, Heth's Run once carried water from the neighborhoods around the western portion of the park to the Allegheny River. The valley was buried by industrial fill and capped, before becoming the Zoo's parking lot. This loop would be the longest and most varied of the five, taking residents from the Highland Park neighborhood at Mellon Terrace, through the Heth's Run valley and around the wooded northern edge of the park, along the Blue Spine back to its starting point.

1 Rising Main and Pump House – Mellon Terrace

This site lies within the Heth's Run watershed. When built, the new pump station will move water from this location up to the higher elevation of Reservoir #1. Water is a commodity. In contrast with dry parts of the United States, Pittsburgh enjoys an abundance of water, but that doesn't mean we should be wasteful. It takes energy to clean and pump it for use throughout the city. Being thoughtful about using water, especially during periods of rain, reduces treatment and pumping costs, while decreasing sewage overflows into the rivers.

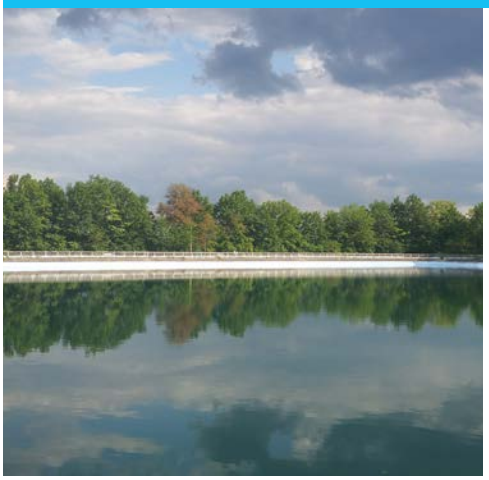
A *Interventions*

Restore historic WPA 1938 stone terrace as a place to rest and relax, and as a focal point for the termination of Negley Avenue and entry into Highland Park. Install plantings to enrich site and absorb stormwater; add drinking fountain with natural filtration as a demonstration project to establish alternative to draining into the sewer system. Integrate One Water thinking into Bus Rapid Transit and PWSA Pumping Station designs for this location.

2 Ornamental Fountain – Entry Garden

In purely celebrating water, a fountain attracts people to a cooling and relaxing microclimate that benefits body and mind and lifts the spirit. But fountains also expend fresh water and energy. Any explanation of the fountain's workings should point out the opportunity to convert the fountain to solar power. [NOTE: May add description to existing interpretive sign].

3 Reservoir – Reservoir #1



Establishing the City's first reservoirs turned Edward Bigelow into the father of Pittsburgh's park system. As director of the Department of Public Works between 1888 and 1906 (intermittently), Bigelow applied his training as a civil engineer to the nation's thirst for public breathing places during the Industrial Revolution. He purchased land to build a reservoir that would hold drinking water to distribute to surrounding neighborhoods. It quickly became a popular place for pleasure driving, strolling, and picnicking, and within 10 years of purchase, the land became Highland Park. Over time, the Reservoir has changed its appearance somewhat, but its magnetic attraction continues. [NOTE: May add to existing interpretive sign on site].

4 Drinking Water – Microfiltration Plant/Orthosphate

PWSA built the microfiltration plant (MFP) in 2002, after Highland Park residents and park users organized and succeeded in keeping Reservoir #1 uncovered. Other reservoirs have been capped out of concerns for contamination, and the state required a higher level of treatment for the open body of water. The plant works by sending water through molecular filters, sand filters, chlorine treatment, and UV treatment to achieve mandated water quality levels. Across the street, PWSA added an orthophosphate treatment facility to coat aging pipes and prevent lead from leaching into our water. Architects designed the Shelter for a dual purpose: housing the treatment room while providing recreational and rental space. In 10 years, when lead lines have all been replaced, the brick room can be repurposed for park uses or removed to enlarge the picnic shelter. The new shelter also functions as a trailhead to the Babbling Brook, which was created in 2004 to aerate and remove chlorine from MFP wastewater.

B *Interventions*

Use the side of the new shelter to install an interpretive piece depicting the drinking water system, from source to treatments to tap. Improve Babbling Brook entrance and trail condition. Collect road drainage while taking less direct flow from the Microfiltration Plant; add a small ponding feature to stream.

5 The Lake – Lake Carnegie

Lake Carnegie was created as a reservoir mid-way up the hill because pumps weren't strong enough yet to raise water from the pipe under the river to the top of Highland Park. By the time the lake was built, technology had caught up to the need, so the hillside reservoir was converted to a recreational lake. The original lake was more than double its present size; half was later taken to build the pool complex. This swimming pool was the site of major social change when it became a focus for racial integration efforts. Today, the lake is not a healthy ecosystem, and it is supplied by drinking water, which enters the sewer system when it overflows.

C *Interventions*

Make the lake more welcoming, accessible and beautiful. Rehabilitate as an ecological aquatic niche with greater benefits and functions, primarily fed by stormwater and reducing sewer system impact. Remove old concrete, redesign access points, and naturalize the edges. Make it functional for learning, fishing, and light watercraft skills. Explore the feasibility of making it the treatment space for a natural swimming pool.

6 River – Allegheny River Overlook

From the Allegheny River Overlook, a dramatic view of the valley helps to situate the One Water story of Highland Park within its larger watershed. This is the culminating experience of the "Blue Line" that begins at the fountain, carries across the reservoir, runs downhill to Lake Carnegie, and then follows the promontory out to the vista. Our drinking water is taken from the river, treated on the opposite shore in Aspinwall, then piped under the river to the reservoirs at the top of Highland Park. There was a time not so long ago when rivers and streams were openly used to carry untreated waste away. Abused as garbage disposals, streams and rivers became unsafe for human contact. Much progress has been made, but unfortunately, sewage still enters the rivers with 1/8th inch of rainfall.

D *Interventions*

According to the Regional Parks Master Plan, "The former Public Works dump site should be reclaimed as a usable public space. The area should be regraded as a grand meadow with level areas large enough for informal field sports." Pollution art is uncomfortably compelling and may be fitting for this location. Also consider introducing Guyasuta as the Native American leader who lived in this area and worked for peace (note Giuseppe Moretti's commission for a sculpture of Guyasuta near this location).

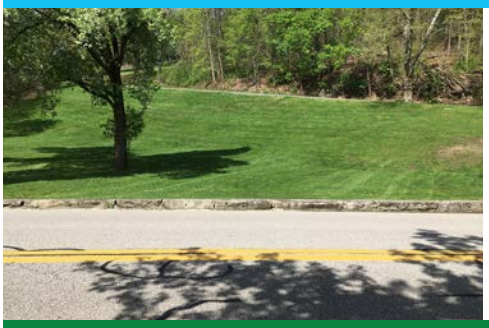
7 Grotto

Rock outcroppings create a very special niche in the landscape for plants and wildlife. The shale bedrock creates a route for water; groundwater hits the shale and follows it until it is exposed. Rock outcroppings are often dripping with exposed groundwater. They also are a unique environment where you can find plants such as rock polypody – a native fern.

E *Interventions*

Seasonal pools are found in low-lying places where groundwater and surface water collect, flow, evaporate and eventually soak in. These pools were created to receive stormwater coursing downhill. Rather than being piped away, the water now supports a rich plant habitat for insects, birds, and animal life. Red winged blackbirds and turkeys are often found here.

8 Hillside Seep and Little Stream



Seeps are a bit mysterious. Water soaks into the ground, where it hits a shelf of clay or rock, and flows out between the exposed layers. This is often the starting point for a bog or a stream. On the hillside below the Negley Farmhouse, numerous seeps once combined to form a little stream. A bridge was built on Lake Road to allow the stream to flow through, but in later years the bridge was buried due to structural concerns.

F *Interventions*

Make water more visible. Seeps are opportunities for an enormous bloom of plant life – native species, mosses, etc. Plantings, such as yellow twig dogwood, can indicate the path of ephemeral streams. Allow the streams to find each other and create a new course to a small wetland or detention pond before flowing under the restored bridge and on downhill to join Negley Run. Place stones for seating on the slopes.

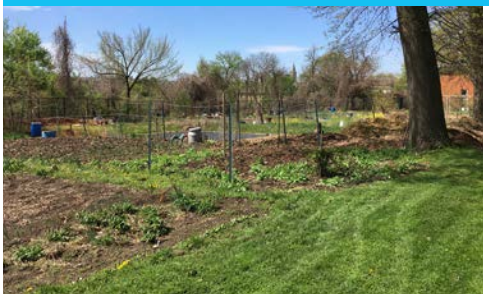
9 Farmhouse

The last residence of the Negley family in Highland Park, the Farmhouse stands at a water crossroads. From this point you can see the odd arrangement of drives and median spaces that have evolved over time without the benefit of a stormwater management plan. Significant soil erosion and frequent high water on the roads endanger both the park and its users. The Farmhouse presents an opportunity to interpret home water use, today and in the past.

10 Forestry – DPW Forestry Division

Forestry services for the City of Pittsburgh are housed in this compound. Their work is essential to protecting public safety, while managing and expanding a healthy urban forest. Trees absorb water and help it soak in to soils, keeping water in the natural cycle where it belongs, cooling the city, retaining hillsides, and providing sheltering shade.

11 Food – Community Garden



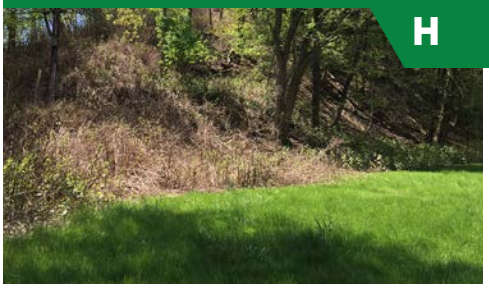
No water, no food. It's a simple equation. Community gardens provide a low-cost way for people to grow their own vegetables, fruits, herbs, and flowers. Members form a community of urban farmers who share their wit and wisdom with newcomers to gardening. In this way, traditions of growing and using water wisely can be handed down from generation to generation, while improving health and strengthening community along the way.

G Interventions

Explore potential to capture, filter, and use rainwater for garden irrigation. Consider adding an art piece or water feature to express the relationship of food and water.

12 Larimer Point

The future Larimer Greenway Overlook has a commanding view of the confluence of Little Negley Run and Negley Run, at the intersection of the boulevards.



H Interventions

Here is an opportunity for steps to connect the trail to the valley floor and loop back to the Water Trail in lower Highland Park. Interpretive points can include the geological formation of the stream valley, and physical changes over time, while pointing to the three neighborhoods that surround it.

Related Projects

- Explore water theme for replacement destination playground to be designed in 2019.

- Restore Heth's and Negley Runs.

Implementation

Planning

- Reconvene working group to develop a list of prioritized projects based on criteria that includes: synergy with neighborhood, City, and utility development plans; fulfillment of the park master plan; and affordability.

Programming

- Could be formatted as a listening tour, with headphone sets, QR codes, phone app, etc.
- To encourage play, may incorporate scavenger hunt theme with wayfinding clues to the next point.
- Involve City with developing a guided tour. Train young people to lead tours.
- Provide waterproof trail maps at key locations.
- Coordinate pop-up activities that can happen when it's raining such as twig and leaf boats going down a waterway.
- Use Lake Carnegie as a site for performance pieces.
- Provide supplies for water play and art.
- Issue a call for seasonal art installations highlighting water, such as ice sculpture in winter.

Content Development

- Collect materials: maps, diagrams, historic photographs, oral histories, etc. Work with the schools to interview students about water. Involve youth in collecting stories from elders.
- Illuminate the complicated history of park and water usage (including the story of the desegregation that occurred in city pools).
- Explore the water cycle in our urban environment from past to future, including necessary adaptations due to aging infrastructure and the climate crisis.

Signs and Markings

- Develop messaging and install interpretive signs at each station.
- Provide maps on signs at pavilions.
- Develop a "One Water" marker to indicate boundaries of the sewershed and watersheds. Mark the "watershed divide" throughout Highland Park.

Engagement

Walkshop 11/17/18

Forty people attended a cool, crisp walk around Highland Park to explore and brainstorm initial concepts for a One Water Trail. Attendees hiked from the Highland Park Entry Garden through the "Blue Line" to Lake Carnegie, then up past the Buried Bridge and Farmhouse and back to the entrance, stopping at proposed stations along the way to here from experts about water, history, and ecology. Thoughts generated along the walk are listed below. Speakers are listed to the right.

Erin Copeland, *Senior Restoration Ecologist*
Pittsburgh Parks Conservancy
David Hance, *Executive Director*
Highland Park Community Development Corp.
Barry King, *Interim Director of Engineering*
Pittsburgh Water and Sewer Authority
Ian Lipsky, *Hydrologist*
E Design Dynamics
Susan Rademacher, *Parks Curator*
Pittsburgh Parks Conservancy

Reservoir

- Restore the reservoir walkway.
- Engage local state leaders to help familiarize them with DEP challenges with respect to reservoir issues.
- Redo parapet wall, liner; recoat railing; no fence.
- Color options for reservoir lining.
- Do bollards impede handicap access?

MFP/ Orthophosphate

- Open view to systems within.
- Add mural to new 10x12 structure.
- Is it feasible to install a solar farm or rooftop panels to power filtration systems?

Buried Bridge

- Stop mowing hillsides. Meadow!
- A more natural/nature/sustainable environment.
- Make seeps into stormwater features.
- Find old bridge.
- Reestablish wildlife habitat.
- In "wet grass" triangle, extend woodland stream walk (this area is not used - too wet, lawnmowers tear it up).

Lake Carnegie

- Deeper end for fishing and shallower area for stormwater wetland - natural edge with key access areas.
- Coffee shop/ wine bar near Carnegie Lake.
- Replicate topography in layered seating area between lake and road.
- Needs TLC - piers are ugly and it gets full of algae, sediment near edges is very polluted.
- Could be used for more water recreation - paddle boats, ice skating.
- Extend pond/ build wetlands along road toward park entrance near tennis courts.

Other

- Catch water off roads and buildings.
- Use the terraces for stormwater.
- Don't forget the hillsides! Make them natural, functional features.
- The pool building color is unappealing.
- More streams and small ponds.
- Host a photo safari.
- Babbling Brook: less direct flow, add ponding features.
- What's the environmental impact of salt?
- Recognize volunteers for their work throughout the park.
- Highland Park could maintain its own goat herd to address invasive species.
- The park needs more drinking fountains - much more sustainable than disposable water bottles.
- Create water features for water play.
- Use ecofriendly de-icer.
- Pollinator gardens in the park.

Workshop 11/28/18

Twenty of the Highland Park Hike attendees returned the following week for a workshop to delve into the ideas generated on the walk and in the interim. Small groups had deep discussions about three different themes. Their thoughts are enumerated below.

Art and Interpretation

Facilitated by Gavin White

Be sure to involve people (not just water).

- Include indigenous histories
- Focus on those communities or people who are not well represented
- Don't make the installation trivial – not just a bench (see Hood Design's installation: Charleston, SC)

The trail doesn't necessarily need to be physical to be interesting.

- It could be online or a scavenger hunt or train kids to take folks on a hike.
- Have maps that show the trails – possibly stage at the shelters.

Installations can also be temporary.

- Waller Creek Show – Austin, TX – cool event with water-based installation art.
- Water Fire – Sharon PA.
- Could be a more seasonal festival.

Find creative ways to make water visible in the landscape.

- Natural techniques such as plants or leaching of minerals on stone.
- No plastic indicators.
- How do you make water visible in the winter? See Bryant Park in NYC.

Stories

Facilitated by Susan Rademacher

Explore water in all its states – running, still, ice, dams, icicles - interpret the process of water.

- Make it clear that the water that we're paying attention to is inseparable from the plants and animals.

Water is demonized. Rain is dreary. Mud season is yucky – one of the purposes of the water trail should be to switch that thinking of water being bad – it's great.

- At what point in our lives does water go from happy to nuisance?
- Childhood memories about listening to a babbling brook and the comfort of that.
- Woods Wandering; the streams were the wild places.
- Water drops on the surface of water.

We don't get to see where water should be. Let the water finish the job.

- Open ended design that allows water to work.
- Shine a light on the mysteries of water – water infiltrates, hits a shelf and flows out – this is a mystery – how do we get people to think of this some more?

Water is a commodity – pollution art, art or interpretation that might be confrontational.

- In Pittsburgh we are profligate and ½ of the water disappears between water treatment and tap. Build stories around this.

Water is a place to play.

- Swimming, running in puddles, cooling off, floating boats down streams – range of imaginative and playful interactions.
- Leave the Department Training tower, make it a lookout/climbing wall.

Collect oral histories.

- Catching crayfish, playing around seeps, etc.
- Use historic photographs and possibly walking tours with headsets.

Trail

Facilitated by Erin Copeland

Highlight the watershed divide.

Extend the trail beyond the park.

- Take trail to old Breckenridge pumping station (museum, kayak rental, etc.)
- Trail should go to the point of Larimer.
- Improve pedestrian experience along Negley Run Boulevard.

Not everybody can see water in the landscape, or what it does – help people develop an eye for water.

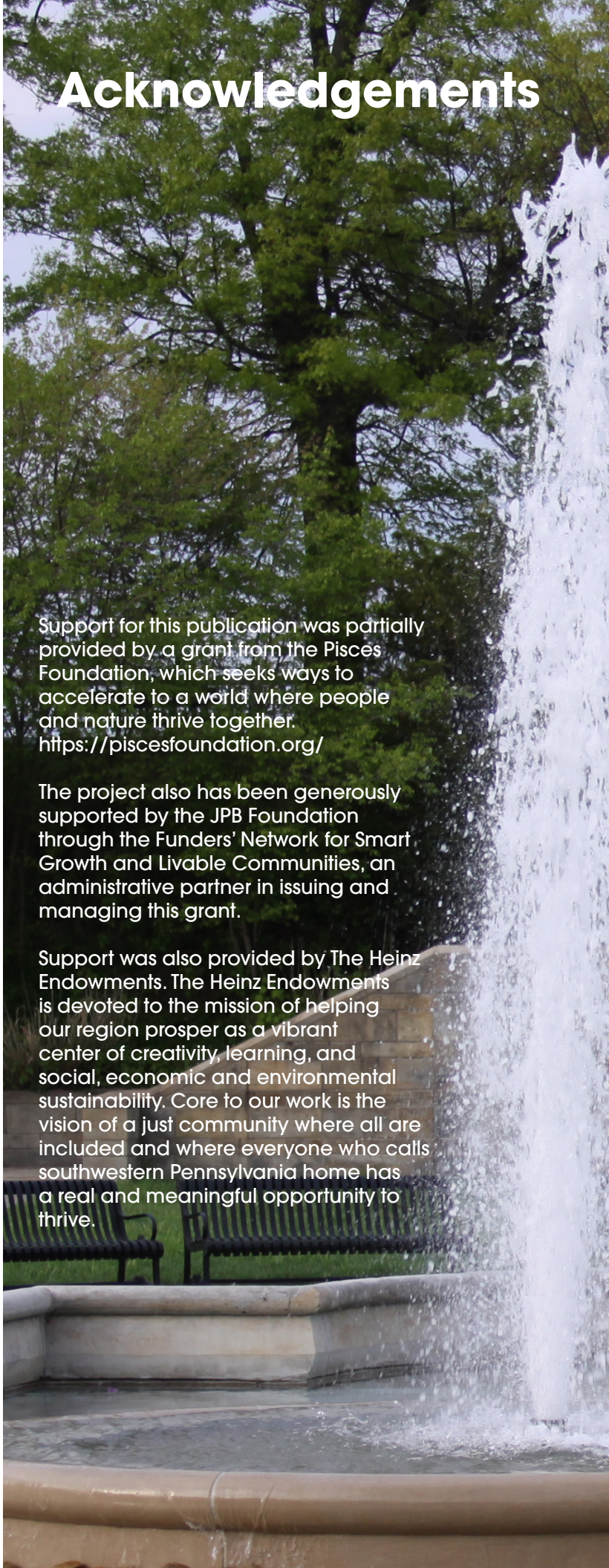
- People have an intuitive body of water-knowledge internal to them, but it's hard to speak about – allow perception of landscape to open these opportunities.
- Interpret buried and daylit streams.

Make the other side of the river a part of the conversation.

- Brilliant Bridge opportunity.

Neighborhoods that have a harder time getting to Highland Park should really be a focus.

Could the Forestry Department and the community garden be more visible and open to the public? Currently, it doesn't feel very welcoming.



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Support was also provided by The Heinz Endowments. The Heinz Endowments is devoted to the mission of helping our region prosper as a vibrant center of creativity, learning, and social, economic and environmental sustainability. Core to our work is the vision of a just community where all are included and where everyone who calls southwestern Pennsylvania home has a real and meaningful opportunity to thrive.

Cover artwork by Anne Watkins