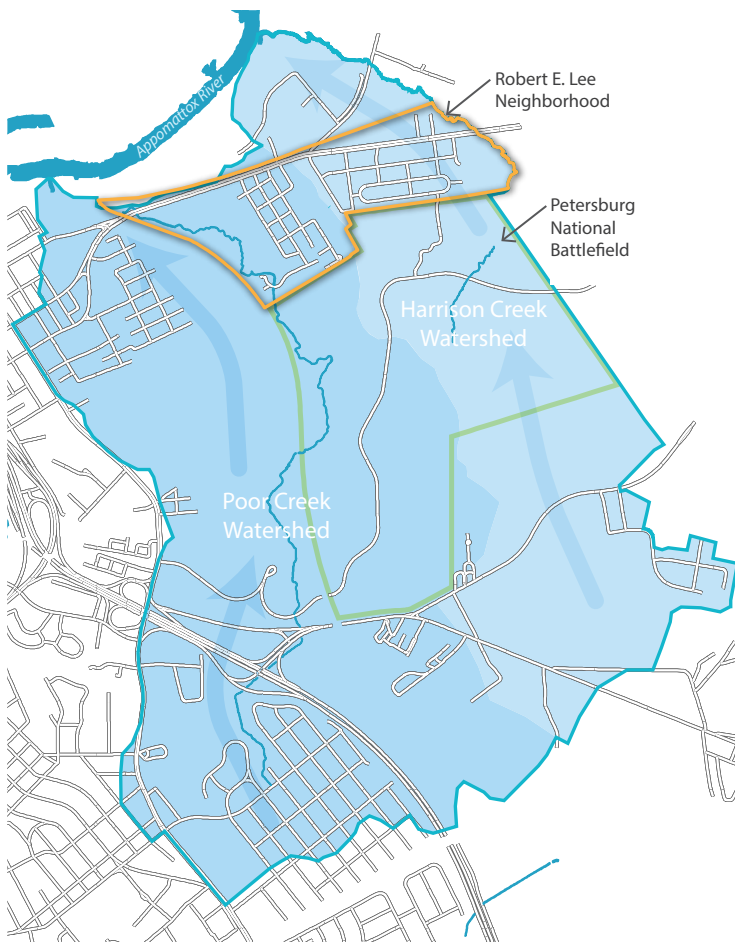




# Petersburg Walkable Watershed Concept Plan



## Overview

The Petersburg Walkable Watershed Concept Plan develops a shared vision and set of strategies to address flooding and improve quality of life for the Robert E. Lee (REL) neighborhood. This concept plan was developed in collaboration with the City of Petersburg, James River Association and the REL Neighborhood Watch Association.

The concept plan is based on a walkable watershed approach, which integrates the flow of water and people into a cohesive strategy to improve the overall health of a community and the surrounding watershed.

Through multiple community meetings, surveys, mapping and analysis and input from project partners, this plan identifies opportunities to:

- **Improve chronic flooding** in areas identified by residents.
- **Add on-street features** to reduce traffic speed, litter, and flooding.
- **Increase community connection** to nearby destination, parks and open space.
- **Engage and educate residents** to celebrate nearby waterways and natural resources.

Please visit: [www.walkablewatershed.com](http://www.walkablewatershed.com) or contact Darryl Walker, City of Petersburg at (804) 733-2355 or [dwalker@petersburg-va.org](mailto:dwalker@petersburg-va.org) for more information.

Rain that falls within Poor and Harrison Creek watersheds (shown in blue) flows to Poor Creek or Harrison Creek, then to the Appomattox River and ultimately the Chesapeake Bay.

In urban areas, the stormwater drainage system, which includes a series of underground pipes, open stream channels, street gutters and ditches, can carry pollutants from streets, yards and businesses to the creek.

A walkable watershed includes neighborhood features that improve stormwater and pedestrian safety simultaneously.



A special thanks to the Robert E. Lee Neighborhood Watch Association and Mr. Williams for their time and feedback.

## Project Background

The City of Petersburg partnered with James River Association, Center for Watershed Protection and Skeo Solutions on a Walkable Watershed process in the Robert E. Lee Neighborhood. Funded by the National Fish and Wildlife Foundation, the project focused on training for City staff and community-based planning to identify opportunities to address stormwater using green infrastructure strategies and address related community quality of life goals.

## Community Assets and Challenges

The project team conducted resident surveys in late 2015-early 2016 to identify neighborhood assets and challenges. The project team shared results from the survey and initial existing condition analysis with residents during the REL Neighborhood Watch Association's month meeting on April 12. As part of that meeting, residents were asked to identify and prioritize community assets and challenges - those highlighted in **bold** represent top priorities for participants:

### Assets:

- Quiet residential neighborhood
- **REL Elementary School and youth who are active in the neighborhood**
- **Neighborhood churches and businesses**
- **Neighborhood Watch Association**
- Harrison and Poor Creeks
- Proximity to Appomattox River, Petersburg National Battlefield and other natural areas

### Challenges

- Few sidewalks
- Few play areas
- **Flooding in streets and yards**
- Littering on streets
- Few areas to walk and interact with nature or the creeks
- Perception and awareness of creeks
- **Public safety**
- **Speed of traffic**
- Few public gathering places
- **Home ownership**
- **Street lighting**
- Distance to nearest grocery store
- Few trash cans

## Existing Conditions Summary

Resident input and analysis shows there is a strong connection between existing stormwater infrastructure and where chronic flooding occurs in the neighborhood. The map on the following page identifies:

- Areas prone to flooding as experienced by residents
- Existing stormwater infrastructure and sidewalks
- Neighborhood destinations and primary routes to those destinations

Residents reported that regular flooding during and after storm events cause flooding on many streets in the REL neighborhood, shown in the photos that residents took on the following page. A combination of clogged or under sized storm inlets and lack of sidewalks makes walking difficult in these conditions.

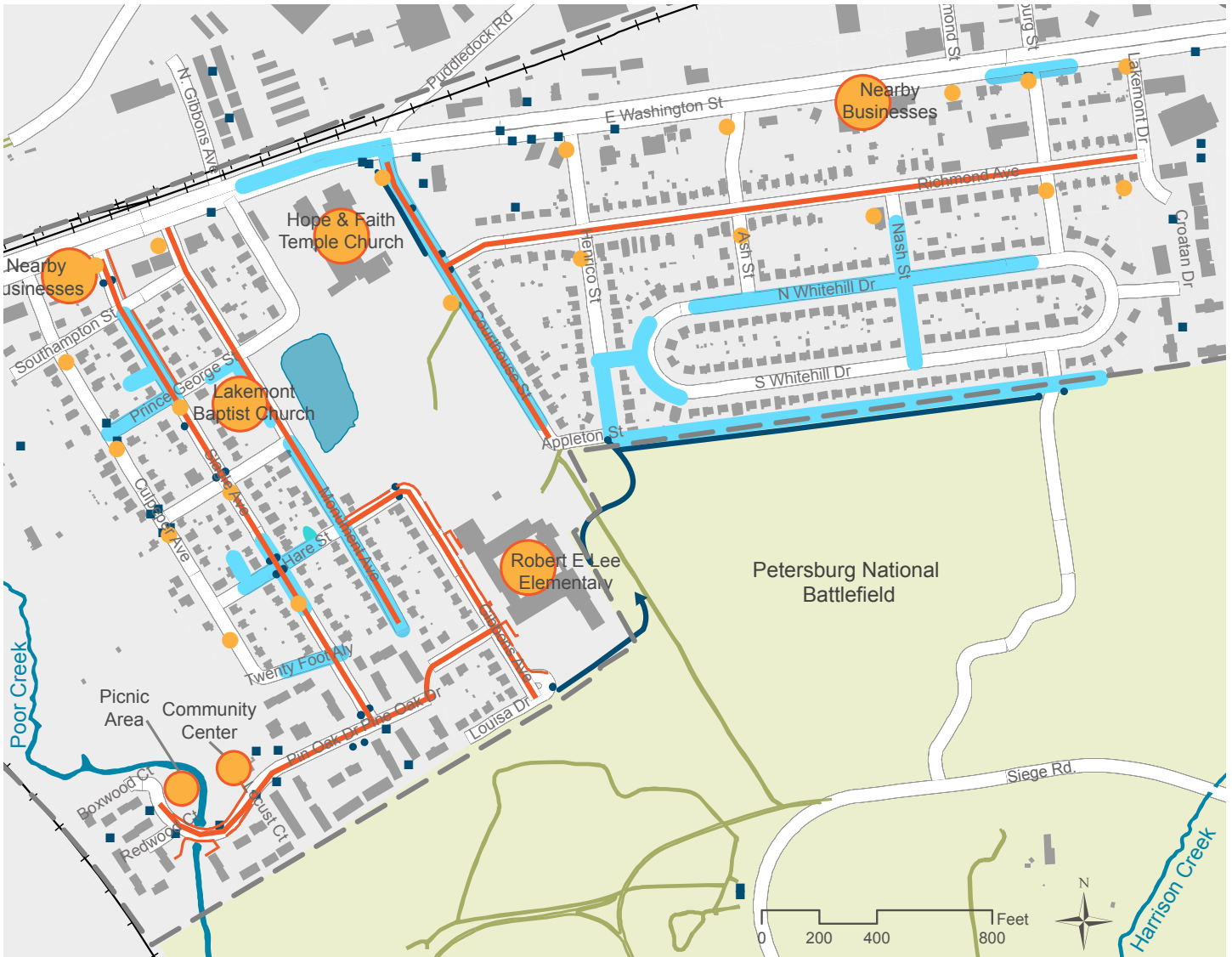
By gaining a better understanding of location specific issues, stormwater infrastructure can be improved using a combination of traditional and green infrastructure or natural drainage strategies. Draft strategies were shared with the REL Neighborhood Watch during their April 12 meeting and based on their input, a refined concept plan was shared on June 14.

The Walkable Watershed Concept Plan on page 5 identifies opportunities to address stormwater management and flooding, improve walkability and access, and increase safety through traffic calming. A key next step will be to conduct a drainage study to better understand existing infrastructure capacity and evaluate the combination of traditional and green infrastructure strategies needed to address stormwater and flooding. The Concept Plan identifies opportunities to integrate walkability, safety, access, and amenities into these infrastructure improvements.



Residents discuss neighborhood assets and challenges.

# EXISTING CONDITIONS



## Existing Conditions

- Community Destinations
- Transit Stops
- Primary Routes
- Existing Sidewalks
- Storm Inlet
- Catch Basin
- Ditch or Concrete Channel
- Resident Reported Flooding

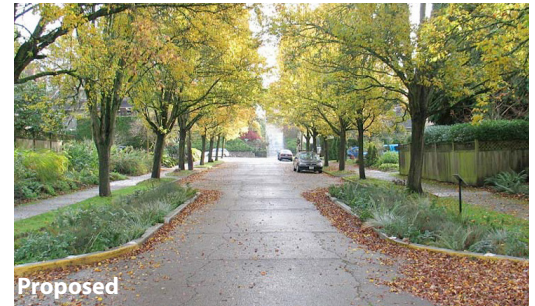


Photos taken by residents document the flooding that occurs during rain events. In the event of heavier rainfall, roads in the neighborhood can be hazardous to drive on due to the depth of stormwater flooding the streets. Especially when stormwater floods impervious areas, it can collect litter, debris and hazardous materials such as oil from roads. These hazardous materials, will eventually drain into storm inlets and ultimately reach the Chesapeake Bay and contribute to water pollution.

## Reduce Flooding through Natural Drainage and Complete Streets

### Primary Routes

- A Slagle Avenue** - Add sidewalk to connect with new sidewalk. Narrow traffic lanes to help slow traffic. Integrate natural drainage strip between sidewalk and streets to absorb stormwater. Include on-street parking on one or both sides of street.
- B Courthouse Avenue** - Widen swale on east side of road. Clean and maintain storm drains. Consider upgrading drainage pipe at Courthouse and Appleton.



Example of how curb extensions, street parking, and vegetation between sidewalk and street could be added along Slagle Avenue.

### Secondary Routes

- C Monument Avenue** - Consider installing a drainage swale on the west side of the street to allow stormwater to drain off the road and away from homes.
- D Richmond Avenue** - Add pedestrian safety amenities, such as sidewalks, or natural drainage strip where feasible.



### Safe Crossings - Intersection Retrofit

Add natural drainage strategies like a vegetated traffic circle and/or bioretention curb extensions. Integrate bus stop and amenities such as trash cans. Add crosswalks to slow traffic at intersections.

### Swales

Consider installing grassy or planted swales along the edge of the road right of way to catch and hold stormwater during major rain events to reduce flooding. Consider pedestrians and explore adding sidewalks as part of street improvements.



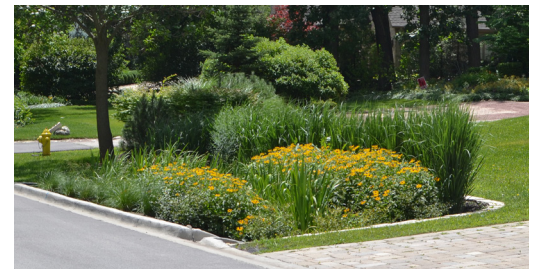
Example of a planted swale during rain event



### Stormwater Infrastructure Improvements

Inspect, repair and maintain storm inlets. Consider updating infrastructure to accommodate possible increase in runoff to reduce flooding.

- E Boxwood Court** - Consider moving trash dumpster to reduce trash and litter entering Poor Creek.



With dense vegetation, absorbent soils, and underground storage capacity, rain gardens help treat stormwater and prevent flooding of homes and streets. Photo courtesy of CNT/RainReady.

### Planted Buffer Along Improved Swale

- F** Coordinate with National Battlefield (NPS) to install a swale or buffer to address flooding in backyards along Whitehill Drive.



### Rain Garden

- G** Consider installing rain garden off Hare Street to reduce on-street stormwater flooding backyards and alley.

## Integrate Public Safety and Enhance Connectivity

### Trail Connecting Pin Oak and Gibbons

- H** Improve route amenities such as overhead lighting and connect to existing trails to create neighborhood walking loop.

### Connect to Existing Trails

Improve walkability and access to community amenities by improving existing trails and connections, including to REL Elementary and National Battlefield access area. Consider planting trees along trails.



Existing entrance into Petersburg National Battlefield at Appleton Street.



## On-Street Opportunities

### Sidewalks and Natural Drainage

- Primary Route
- Secondary Route

### Safe Crossing

- Intersection Retrofit

### Natural Drainage Retrofit

- Swales

### Existing Infrastructure

- Stormwater Infrastructure Improvements

- A** Specific Recommendations

## Off-Street Opportunities

### Natural Drainage Retrofit

- Planted Buffer and Improved Swale
- Rain Garden

### Trails

- Connect to Existing Trails
- On-Street Route
- Trailhead Access

- Existing Sidewalks
- Existing Trails



**Grassy Swale Example**

Grassy swales along streets without sidewalks could address street flooding by providing holding space for stormwater during rain events -- swales are designed to drain after rain event to avoid standing water. Swales can also be designed for ease of maintenance and to minimize trash collection.

## A Hare & Slagle Green Intersection Retrofit

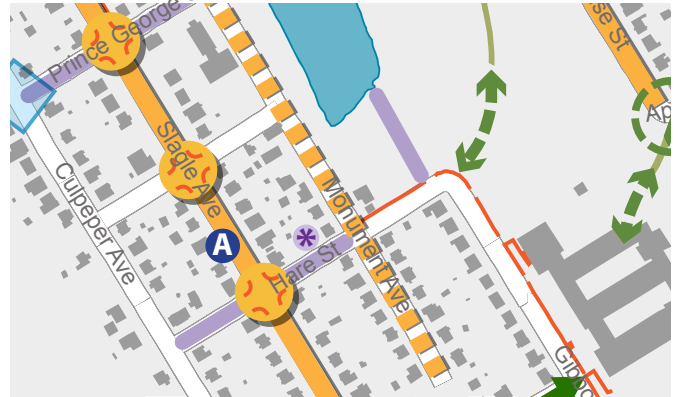
### Current Conditions

- Intersection floods regularly.
- Storm inlets regularly clogged with litter.
- No sidewalks, public trash cans or bus waiting areas.
- Cars regularly speed through intersection.

### Potential Opportunities

*Opportunities to reduce flooding, calm traffic and provide public amenities:*

- Add residential scale traffic circle with vegetation to slow traffic and collect stormwater to reduce flooding.
- Add sidewalks and public transportation waiting area to increase pedestrian safety.
- Include crosswalks at intersection of Slagle and Hare Streets.
- Add public trash can at all public transportation waiting areas to reduce neighborhood litter.



Example of a vegetated traffic circle in a residential neighborhood that slows traffic, collects stormwater and adds aesthetic value. A drainage study will identify whether there is adequate road width and right of way to accommodate a traffic circle.

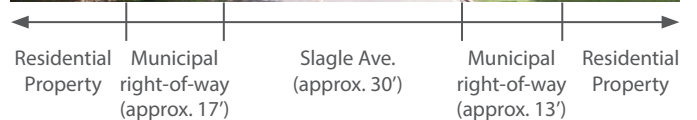
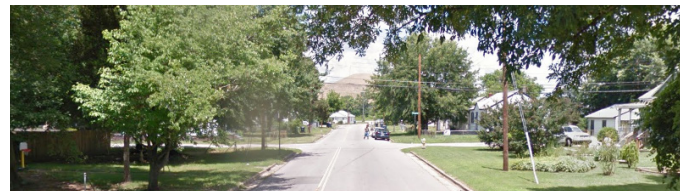
## Complete Street on Slagle and Courthouse

### Current Conditions

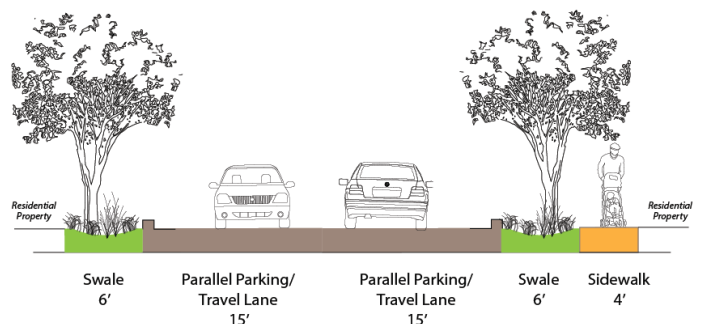
- Main roads lack sidewalks.
- Cars regularly speed on residential roads.
- Regular flooding makes walking, biking and driving unsafe after major storm events.
- Wide residential streets, parking on one or both sides and municipal right-of-way on both sides of street.

### Potential Opportunities

- Add sidewalks on one side of street, crosswalks at intersections, and include additional storm inlets where appropriate.
- Include vegetated bump-outs or swales in municipal right-of-way where appropriate to collect stormwater off-street and calm traffic. For example, with approximately 60' of public right-of-way on Slagle Avenue, there is potential to re-design main roadways to incorporate sidewalks and green infrastructure practices.



Existing Street Dimensions - Slagle Avenue



Example of how a sidewalk and stormwater swales can be incorporated within a portion of the right-of-way.

## F Planted Buffer and Improved Swale

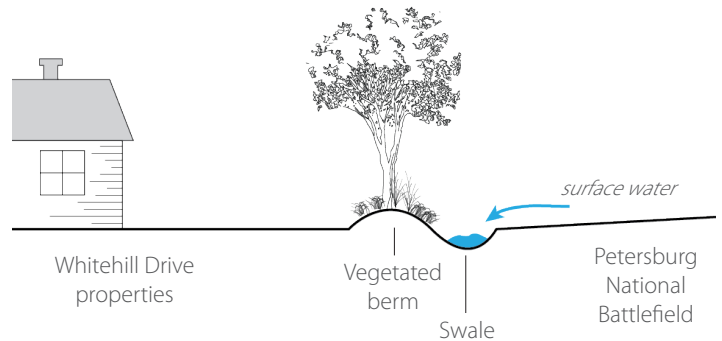
### Current Conditions

- Existing swale on Petersburg National Battlefield is undersized and filled in with tree roots.
- Residential backyards along swale regularly flood, sometimes up to homes.
- Existing stormwater pipe at Henrico Street for swale is undersized.
- Petersburg National Battlefield needs to maintain vegetative buffer for park aesthetics.

### Potential Opportunities

#### *Opportunities to reduce flooding and improve aesthetics:*

- Resize existing swale to increase capacity to hold and move water during storm events.
- Redesign swale to include a vegetated berm on the northern side to prevent flooding in residential backyards.
- Consider planting native evergreen water tolerant shrubs to provide a buffer between park and homes.



A planted buffer along an expanded swale will allow surface water draining from the Petersburg National Battlefield to be collected without flooding residential properties and maintain a visual buffer between residential neighborhood and the park.

## Potential Community Programs

### Adopt a Drain Program

Develop an 'Adopt a Drain' program, modeled from other programs around the country. Residents adopt a drain and help keep it clear of trash and debris and report any issues to the City. The program connects residents with their local utility staff. The neighborhood's ~70 drains could be adopted by resident volunteers. Tools could be provided including rakes, brooms, trash bags, safety vests and shovels could be requested via grants. Program could be expanded to include swales or other natural drainage features.



### Litter and Debris Reduction

Coordinate with community organizations on education and outreach on:

- promoting litter prevention and removal
- organizing community clean up days
- installing public trash cans and signs that celebrate Poor Creek, Harrison Creek and the Appomattox River.

### Public Art as Cue to Care/Education

Work with local artists to design storm drain art to illustrate that rainwater drains to local waterways. Engage residents in the design and identifying key locations for storm drain art and/or storm drain markers.



Photos: (top) residents can Adopt-a-Drain and place medallions on top to educate the community about where stormwater goes; (bottom) public art can be an educational tool to promote awareness and stewardship.

## Next Steps

Key next steps include securing funding for a drainage study to better understand infrastructure capacity and design solutions. The following principles for implementation can guide next steps for moving forward.

- **Build Partnerships** - Strengthen existing and develop new partnerships between federal, state and local governments and community organizations for implementation and stewardship.
- **Grow Community Stewardship** - Continue to grow and foster community stewardship through outreach, education and opportunities for community involvement.
- **Engage Youth** - Build on existing youth programs and initiatives to engage youth in environmental education opportunities. As projects move forward, invite youth to participate in the design process and in the designing and building of outdoor play and learning areas.
- **Seek Funding** - Develop a plan to seek funding, including a list of potential grants and associated deadlines. Assemble teams early to develop winning proposals. Continue to seek opportunities that cross programs and initiatives to leverage funding for projects.
- **Phase Projects Over Time** - While some recommendations may be implemented in the near term, some projects will need to be phased over time. Develop an action list to coordinate initiatives and projects among partners. Continue to refine ideas during the design process.
- **Celebrate Successes!** - Sustain momentum and support by celebrating successes along the way.

## Potential Partners and Funding Sources

The following organizations have been identified as potential partners and collaborators with the REL Neighborhood to address community goals and address stormwater concerns:

- City of Petersburg (Department of Parks & Leisure, Public Works, Department of Health)
- National Parks Conservation Association
- National Park Service
- Robert E Lee Elementary Parent Teacher Association
- Friends of the Lower Appomattox River
- Fort Lee - Corps Volunteer Coordinator
- Habitat for Humanity
- Project Home
- Petersburg Area Community Development Corporation
- Crater Planning District
- Cameron Foundation
- Faith & Hope Baptist Church
- WOW Camp
- Boy Scouts of America - Area troops
- Petersburg City Council - Ward 1 Councilperson

Potential Funding Sources	Deadlines and Funding
National Fish and Wildlife Foundation <i>Innovative Nutrient and Sediment Reduction Grant</i>	Up to \$750,000. The proposal submitted by James River Association in May 2016 for drainage study, coalition building, and adopt a drain pilot program was not awarded. Reapply in Spring 2017.
National Park Service <i>Park Project Planning</i>	As part of their annual budget planning, Petersburg National Battlefield can apply to NPS for funding for specific projects, this could include funds to address the swale project (see H on Concept Plan). A drainage study or further assessment of this area could inform the design of this drainage system.
City of Petersburg <i>Community Development Block Grant</i>	Up to \$600,000 is awarded to Petersburg each year from U.S. Housing and Urban Development. Deadline for proposals is the second Friday in January each year.

For more information about the project, please visit: [www.walkablewatershed.com](http://www.walkablewatershed.com) or contact Darryl Walker, City of Petersburg at (804) 733-2355 or [dwalker@petersburg-va.org](mailto:dwalker@petersburg-va.org).