

# **Stormwater Utility and Flood Mitigation Advisory Committee**

November 20, 2024 Meeting

# Tonight's Agenda

1. Welcome remarks (7pm, 5 mins)
2. Review of minutes of last meeting (7:05pm, 5 mins)
3. Program Update from City Staff (7:10pm, 60 mins)
  - Large capacity projects: Commonwealth/Ashby/Glebe; Hooffs Run Culvert Bypass, Pitt & Gibbon
  - Spot Improvements
  - Sanitary Sewer Upgrades
  - Sanitary Sewer Renewal program
  - Communications
  - Maintenance
  - Flood Mitigation Grant program
  - SWU Credit Application Window Opens December 1st – February 15
4. Review and approval of Committee charter & bylaws (8:10pm, 15 mins)
5. Discussion of planned outreach events (8:25pm, 15 mins)
6. Other topics (8:40pm, 10 min)
7. Public Comment (8:50pm, 10 min)
8. Adjourn (9:00pm)

# Welcome remarks

AGENDA ITEM #1

# Review of Minutes

AGENDA ITEM #2

# Program Update from City Staff

AGENDA ITEM #3

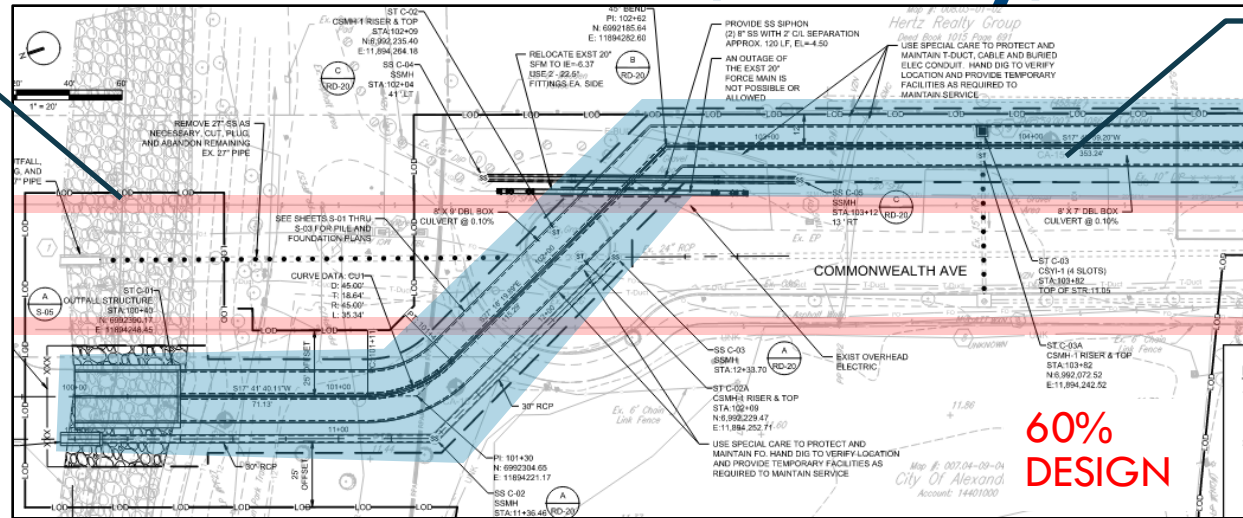
# Flood Action Progress Report: Commonwealth, Ashby, Glebe

- Optimized foundation design to reduce costs
  - Realigned culvert to the ballfield
    - 60% alignment used specialized design (Micro-piles)
    - Updated to lower cost foundation design (Rigid inclusion)
    - Avoid overhead utility conflicts
    - Larger work area
  - Changed a section of the foundation to a stone mat
    - Applicable in areas where poor soils are close to surface
    - Excavate poor soils and replace with stone below culvert
    - Minimal settlement tolerable (outside of road)

# Flood Action Progress Report: Commonwealth, Ashby, Glebe

Overhead powerlines

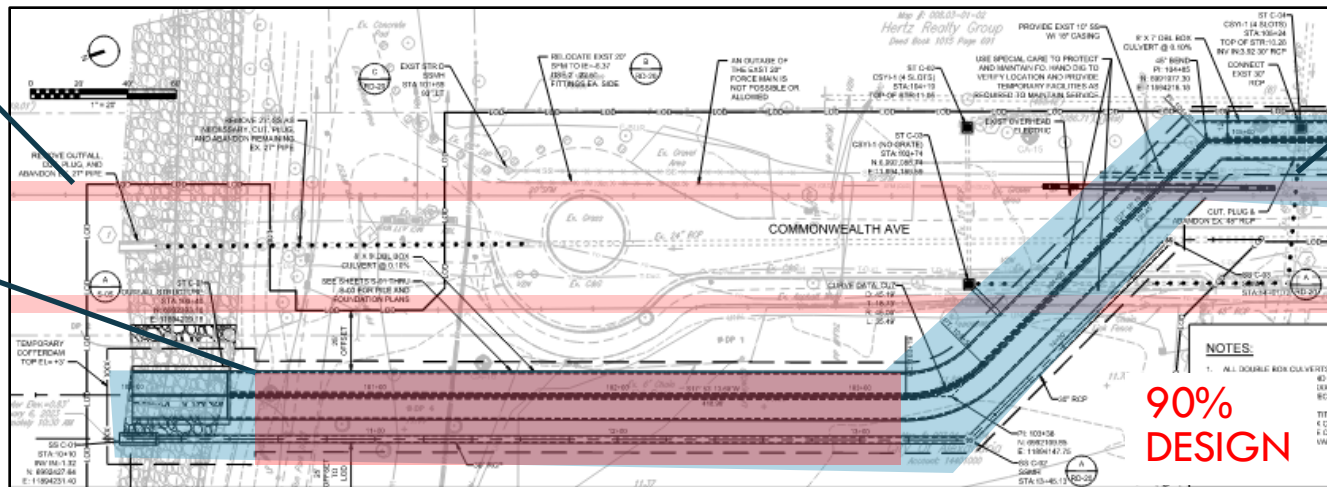
Proposed culvert



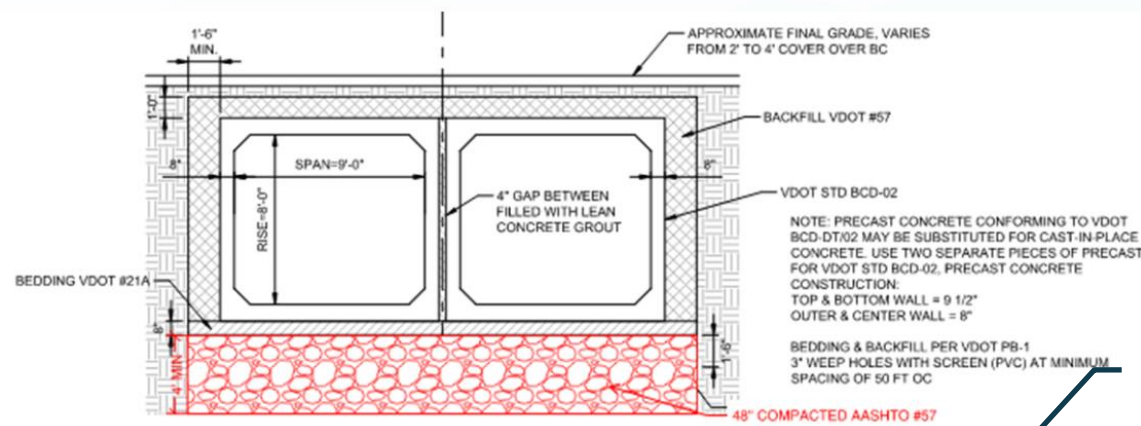
Overhead powerlines

Proposed culvert

Relocate 400' of  
Culvert into  
ballfield (Rigid  
Inclusion)

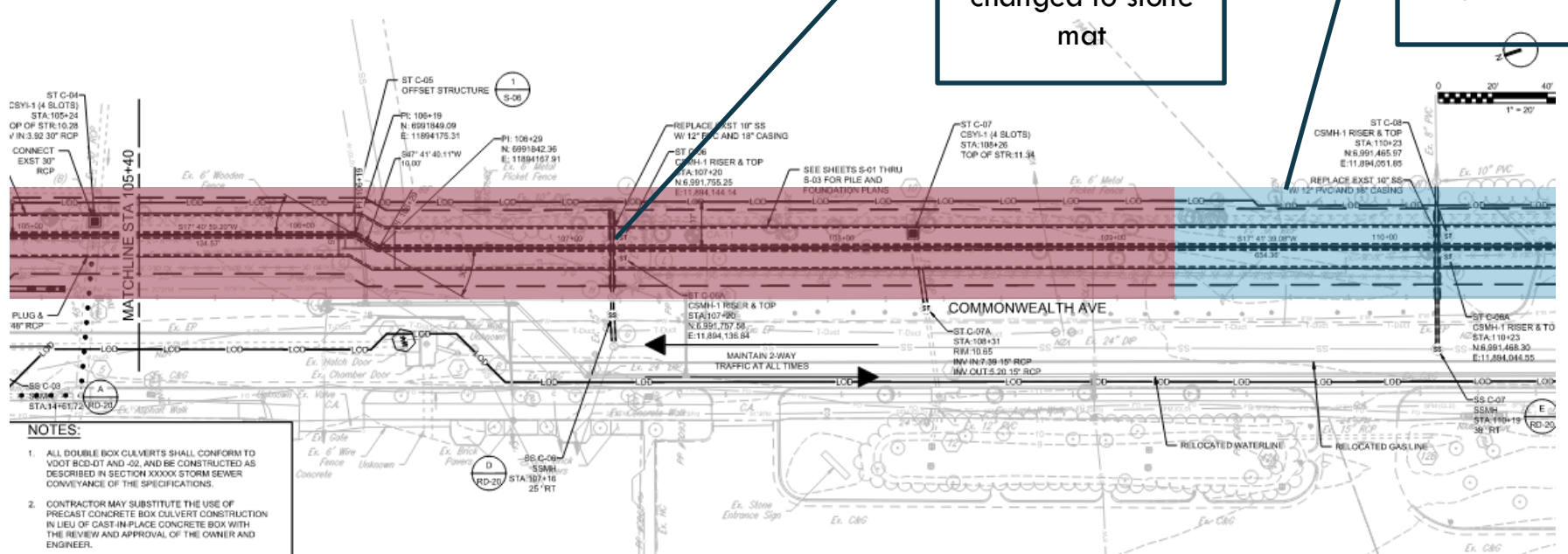


# Flood Action Progress Report: Commonwealth, Ashby, Glebe



400' of foundation changed to stone mat

Proposed culvert





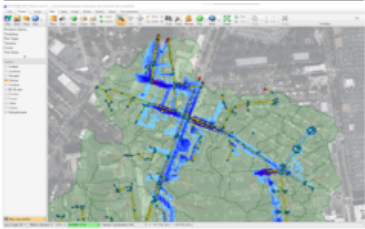
# Flood Action Progress Report: Commonwealth, Ashby, Glebe

- Challenges and delays
  - Realignment is a major change after 60%
  - Update foundation design
  - Coordinate future development of ballfield
  - New utility crossing coordination
  - No change in construction schedule currently
- Future Communications:
  - Schedule community updates at major milestones
  - Continue to share online materials from 60% meeting in Summer
  - 90% anticipated early next year
- Schedule:
  - Design completion Summer 2025
  - Construction complete Summer 2029

# Flood Action Progress Report: Hooffs Run Culvert Bypass Project

- Project objectives
  - Convey the 10-year future rainfall event without worsening flooding elsewhere in the drainage system.
  - Where control of the 10-year future storm is not practicable, reduce flooding as much as possible.
- Modeling
  - A hydraulic optimization model, Optimizer, was used to screen thousands of possible solutions.
  - Each solution was a combination of the following elements:
    - Gravity storm sewers,
    - Pump stations and force mains
    - Large storage (both gravity drained and with dewatering pumps), and
    - Modular storage (gravity drained).
  - Optimizer combines design elements over a range of sizes and examines their combined performance
  - Optimizer “learns” from each simulation.

## H&H Model



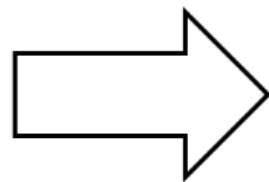
## Project Options



## Performance Criteria

- Cost
- Flood Depths

## Optimizer Software



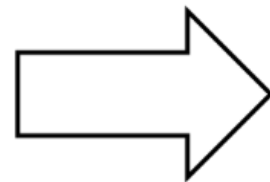
Automation

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Computational Power

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Algorithms

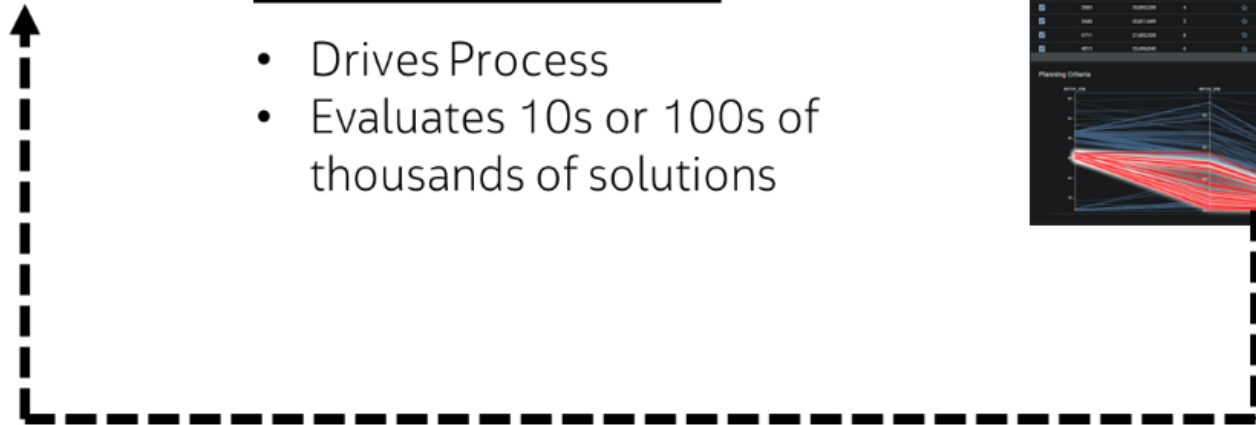


- Drives Process
- Evaluates 10s or 100s of thousands of solutions

## Review and Interrogate Results



Validate High Performing Scenarios with 2D



*Iterate based on increased system understanding*

# Flood Action Progress Report: Hooffs Run Culvert Bypass Project

- A desktop analysis is being performed on the high-performing alternatives.
- The analysis is an initial assessment to evaluate the feasibility of the alternatives
- The analysis includes:
  - Engineering feasibility
  - Cost
  - Constructability
  - Disruption of City functions
  - Potential negative impacts on the community

# Flood Action Progress Report: Hooffs Run Culvert Bypass Project

- Challenges
  - Climate change: More intense storms require larger infrastructure
  - Relocation of underground utilities: Utility lines (water, gas, power, communications) must be moved to make way for construction, which is challenging given the limited space and complexity of planning and execution.
  - Complex infrastructure systems: The new drainage system must coordinate with major infrastructure elements, including the King Street Metro station and Metrorail lines. This coordination involves multiple agencies and must avoid service disruptions.
  - Space constraints: The ultra urban setting limits available construction space, presenting further logistical challenges.
  - High cost: All the above challenges increase project's cost.

# Flood Action Progress Report: Hooffs Run Culvert Bypass Project

- Next steps
  - Refine evaluation criteria
  - Continue evaluation of alternatives
  - Define a course of action
  - Start the design phase

# Flood Action Progress Report: CSS

- Pitt & Gibbon (\$20-25M) CSO surcharge mitigation. Project team reviewing alternatives to mitigate flooding for the 10-year storm. Schedule pending.
- Nethergate (\$5M) CSO Surcharge mitigation. City is finalizing review of alternatives assessment and field data before formally moving to design stage.

### Nethergate Storm Sewer Improvements

**Project Webpage**

<https://www.alexandriava.gov/capital-projects/project/nethergate-storm-sewer-improvements>

**Project Description**

The purpose of this project is to mitigate flooding in the Nethergate Townhome community based on reports from residents after intense rainfall events. The project area is bound by Bashford Ln to the north, Second St. to the south, Portner Rd to the west and W Abingdon Dr to the east. As part of this project, the design team will analyze hydraulic capacity of the existing storm sewer, and develop alternatives to mitigate flooding.

**Project Information**

**Current Phase:** Planning

**Total Planned Budget:** \$1,587,951.82

**Funding Sources:** SSF

**Schedule - Calendar Year (CY)**

Schedule Phase	2022				2023				2024				2025				2026				2027		
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3
Planning																							
Design																							
Construction																							

# Flood Action Progress Report:

## Updates to Stormwater Program Schedule

### 4300 Block of Loyola Avenue Storm Sewer Upgrade

#### Project Webpage

<https://www.alexandriava.gov/FloodAction>

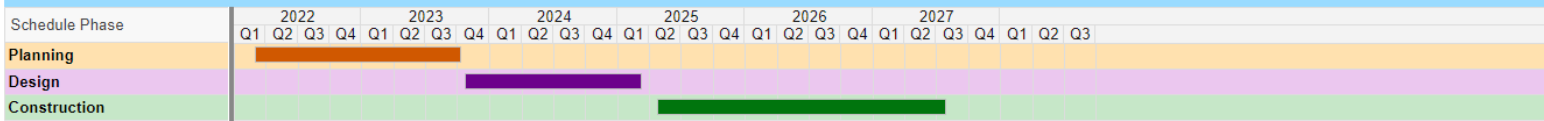
#### Project Description

This project will replace the existing open storm sewer at 4300 block of Loyola Avenue with an enclosed storm sewer pipe.

#### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$836,500.00  
**Funding Sources:** SWU

#### Schedule - Calendar Year (CY)



#### ON-GOING

- Received 90% Comments
- Reviewing 90% design package

#### FORECASTED

- Advancing to 100% Design

### Bellefonte Ave Storm Drain Improvements

#### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/bellefonte-avenue-storm-drain-improvements>

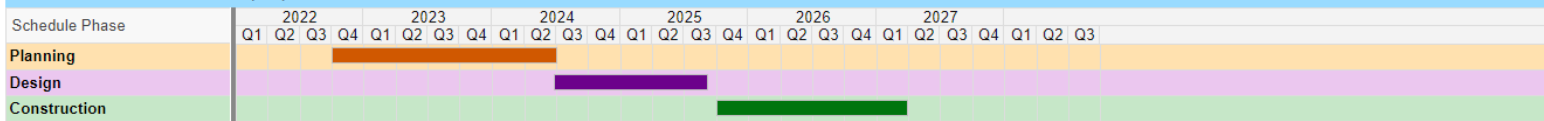
#### Project Description

The Bellefonte Avenue Storm Drain improvement project aims to improve the local storm drainage system, specifically targeting areas prone to flooding during the City's standard 10-year, 24-hour storm event along East Bellefonte Avenue and East Howell Avenue. The project seeks to mitigate the impact of larger storm events while ensuring that improvements do not worsen flooding in other parts of the drainage system.

#### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$1,564,869.29  
**Funding Sources:** SWU

#### Schedule - Calendar Year (CY)



#### ON-GOING

- Received fee proposal
- Continued negotiations

#### FORECASTED

- Advancing to design kickoff



# Flood Action Progress Report: Updates to Stormwater Program Schedule

## Clifford Ave, Fulton St. & Manning St. (CFM) Storm Sewer Improvements

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/clifford-avenue-fulton-street-and-manning-street-storm-sewer-improvements>

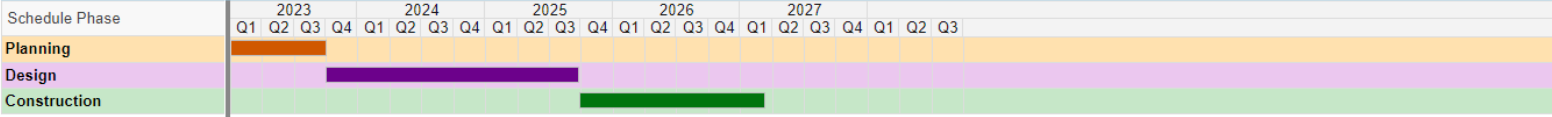
### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$831,630.00  
**Funding Sources:** SWU, HUD (Beyer)

### Project Description

The Clifford Avenue, Fulton Street and Manning Street (CFM) Storm Sewer Improvements Project will provide flooding mitigation to townhouses along the 3000 block of Fulton Street and Manning Street. The alley bound between the two streets will be re-built to channelize surface flow and improve drainage. Inlets and underground storage will be installed to capture and attenuate stormwater runoff. Utility impacts will be identified and resolved during the design phase.

### Schedule - Calendar Year (CY)



## Edison St. Storm Sewer Upgrades

### Project Webpage

<https://www.alexandriava.gov/stormwater-management/edison-street-and-dale-street-early-phase>

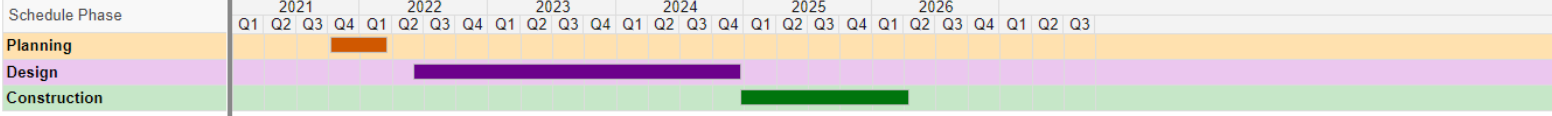
### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$979,000.00  
**Funding Sources:** SWU, CFPF

### Project Description

The Edison St. Storm Sewer Upgrades Project proposes to upgrade the storm sewer system capacity along the 3800 block of Edison Street to the outfall in Four Mile Run Park. Additional inlets are proposed along Edison Street to increase storm water capture. These storm sewer improvements are a portion of the future Large Capacity Project – Edison and Dale that have been accelerated upon receiving funding from Virginia Community Flood Preparedness Fund (CFPF) prior to the funding becoming available in FY 2026.

### Schedule - Calendar Year (CY)



### ON-GOING

- Completed data collection
- Completed preliminary design

### FORECASTED

- Advancing to 30% Design

### ON-GOING

- Received final design
- Continuing Utility coordination

### FORECASTED

- Planning Pre-construction community meeting
- Advancing to Construction Procurement

# Flood Action Progress Report: Updates to Stormwater Program Schedule

## Four Mile Run and Hoofs Run Inlet Installation and Enhancement

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/four-mile-run-and-hoofs-run-inlet-installation-and-enhancement>

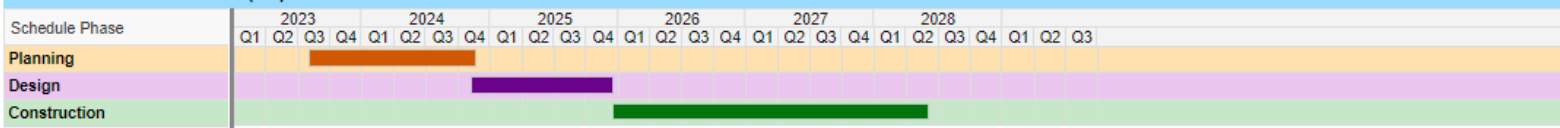
### Project Information

**Current Phase:** Planning  
**Total Planned Budget:** \$1,584,100.00  
**Funding Sources:**

### Project Description

This project will focus on comprehensive analysis of the existing stormwater inlet capacity across Four Mile Run and Hoofs Run watersheds. By evaluating the capacity of existing stormwater inlets within these two watersheds, this project will provide recommendations on installing or replacing inlets to mitigate local flash floods and to enhance the overall conveyance efficiency of the storm sewer system. The project receives funding from the City's Stormwater Utility and the Virginia Community Flood Preparedness Fund (CFPF) grant.

### Schedule - Calendar Year (CY)



## Hume Ave Stormdrain Bypass

### Project Webpage

<https://www.alexandriava.gov/tes/hume-avenue-bypass-project>

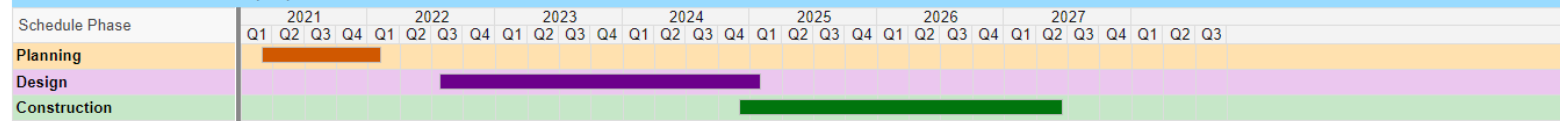
### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$4,567,216.00  
**Funding Sources:** SWU, ARPA

### Project Description

The Hume Avenue Storm Sewer Bypass Project will install storm sewer and inlets along the 100 block of Hume Avenue and E. Raymond Avenue. The addition of a new utility within each right-of-way requires the relocation of gas, electric, water and sanitary systems. On E. Raymond Avenue the sanitary sewer will be upgraded to a larger pipe in tandem with its re-location. Hume Avenue will be re-built to restore conveyance along the curb and gutter.

### Schedule - Calendar Year (CY)



### ON-GOING

- Completed field investigation
- Continuing inlet sizing analysis

### FORECASTED

- Receive & review final report

### ON-GOING

- Continuing Utility coordination
- Continuing temporary easement negotiations

### FORECASTED

- Resolve utility conflicts
- Receive final design

# Flood Action Progress Report: Updates to Stormwater Program Schedule

## Mt Vernon and Edison Dual Culvert Replacement Project

### Project Webpage

<https://www.alexandriava.gov/stormwater-management/mount-vernon-dual-corrugated-metal-pipe-cmp-culvert-replacement-project>

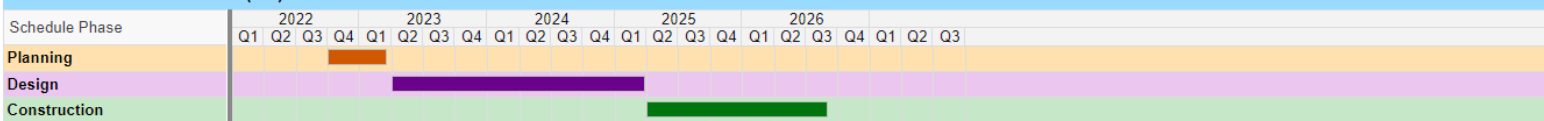
### Project Description

The project upgrades an existing Dual Corrugated Metal Pipe (CMP) culvert system to convey larger storm events, reducing the chance of surcharging in Mount Vernon Avenue. The project receives funding from the City's Stormwater Utility and a grant from the Virginia Community Flood Preparedness Fund (CFPF).

### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$2,500,000.00  
**Funding Sources:** SWU, CFPF

### Schedule - Calendar Year (CY)



## Mt. Vernon Cul-de-sac Inlets and Alley Storm Sewer Improvements

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/mt-vernon-cul-de-sac-inlets-and-alley-storm-sewer-improvements>

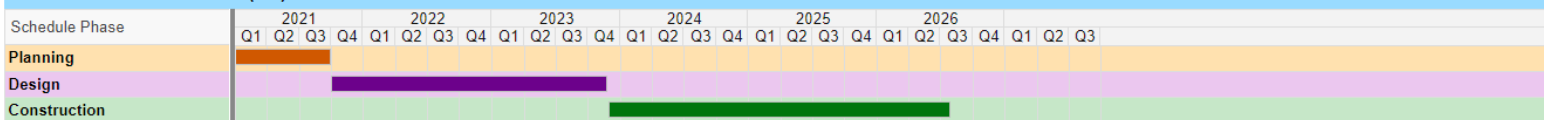
### Project Description

The Mt. Vernon Cul-de-sac Inlets and Alley Improvements Project will provide flood mitigation for townhomes on the 100 block of Mt. Vernon Avenue. Inlets and underground storage vaults will be installed on Mt. Vernon Avenue and it's adjacent alleyway to capture and attenuate storm water runoff. In tandem with work, the alleyway will be re-graded to improve surface drainage into the downstream swale. The addition of new underground utilities requires the relocation of the local water utility.

### Project Information

**Current Phase:** Construction  
**Total Planned Budget:** \$2,055,841.00  
**Funding Sources:** SWU, ARPA

### Schedule - Calendar Year (CY)



### ON-GOING

- Completed field investigation
- Continuing inlet sizing analysis

### FORECASTED

- Receive & review final report

### ON-GOING

- Reviewing community concerns and planning responses and adjustments

### FORECASTED

- Additional community outreach

# Flood Action Progress Report: Updates to Stormwater Program Schedule

## N Overlook Drainage Improvements

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/n-overlook-drainage-improvements-project>

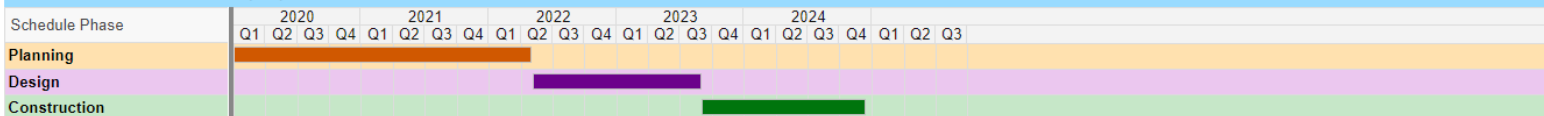
### Project Description

Runoff from N Overlook Dr flows to a driveway access between 701 N Overlook Dr and 615 N Overlook Dr. Runoff overtops the north curb of the driveway access and flows towards Pullman Pl. This project will increase inlet capture and storm sewer capacity to mitigate flooding for the 10-year storm. In addition, project will ensure no increases in downstream storm sewer for the 10-year storm.

### Project Information

**Current Phase:** Construction  
**Total Planned Budget:** \$387,979.35  
**Funding Sources:** SWU

### Schedule - Calendar Year (CY)



### ON-GOING

- Achieved substantial completion!
- Continuing park irrigation repairs

### FORECASTED

- Project Closeout & final documents

## Oakland Terrace Timber Branch Channel Wall Replacement

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/oakland-terrace-timber-branch-channel-wall-reconstruction>

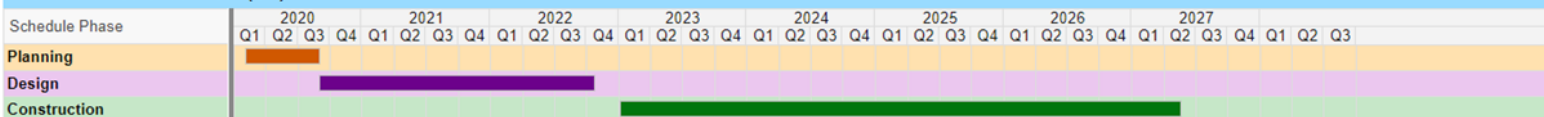
### Project Description

This project replaces approximately 205 linear feet of an existing concrete retaining wall with a vegetative reinforced revetment and bioengineered soil.

### Project Information

**Current Phase:** Construction  
**Total Planned Budget:** \$307,854.00  
**Funding Sources:** SWU

### Schedule - Calendar Year (CY)



### ON-GOING

- Installing channel bank reinforcement & stabilization

### FORECASTED

- Continue Construction

# Flood Action Progress Report: Updates to Stormwater Program Schedule

## S Jordan St. Stormwater Improvement Phase II

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/s-jordan-st-stormwater-improvement-project-phase-ii>

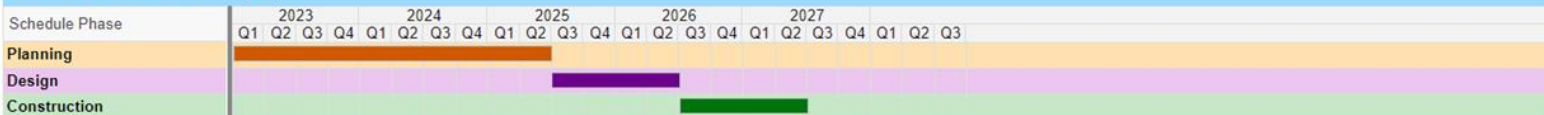
### Project Information

**Current Phase:** Planning  
**Total Planned Budget:** \$530,000.00  
**Funding Sources:** SWU

### Project Description

This project will design a solution to reduce backyard flooding risk to the maximum extent practicable on the north side of the block of 95 to 127 South Jordan Street. After the field investigation, reviewing CCTV recordings and reading the consultants recommendations, one small scale project was identified. SWM team to work with private property owners along S Jordan St and 4600 Duke to improve the existing swale and conveyance on private property. The City will plan to obtain a 15-ft. wide permanent easement for the storm drain system in this neighborhood as part of this project. Obtaining an easement will allow the City to provide maintenance to the storm drain system without having to request permission.

### Schedule - Calendar Year (CY)



### ON-GOING

- Finalized scope of design
- Received design fee proposal

### FORECASTED

- Continue design fee negotiations

## Valley Drive Storm Drain Improvements

### Project Webpage

<https://www.alexandriava.gov/capital-projects/project/valley-drive-storm-drain-improvements>

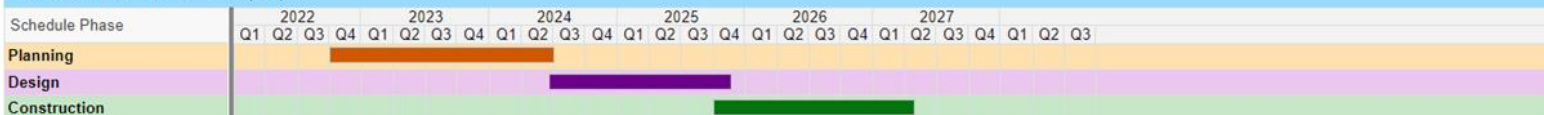
### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$3,639,999.29  
**Funding Sources:** SWU

### Project Description

The Valley Drive Storm Drain improvement project aims to improve the local storm drainage system, specifically targeting areas prone to flooding during the City's standard 10-year, 24-hour storm event along Valley Drive, Crestwood Drive, Summit Avenue, and Dogwood Drive. The project seeks to mitigate the impact of larger storm events while ensuring that improvements do not worsen flooding in other parts of the drainage system. Following City Council approval, staff is working on an application for a state Community Flood Preparedness Fund (CFPF) grant for a 60/40 match in the amount of \$2,160,000 with local Stormwater Utility funding of \$1,440,000 identified for the match.

### Schedule - Calendar Year (CY)



### ON-GOING

- Continuing design procurement
- Preparing grant application

### FORECASTED

- Design phase kickoff



# Flood Action Progress Report: Updates to Stormwater Program Schedule

## W. Reed Ave & Dale St Storm Sewer Improvements

### Project Webpage

<https://www.alexandriava.gov/stormwater-management/edison-street-and-dale-street-early-phase>

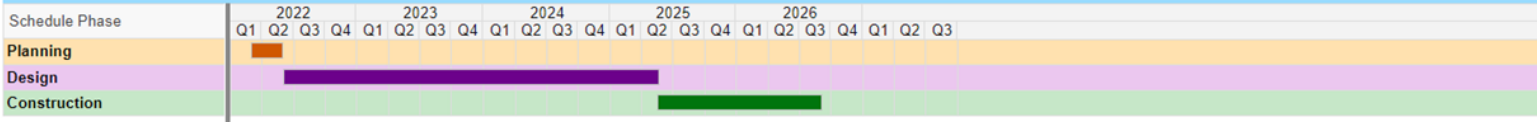
### Project Description

W. Reed Ave & Dale St. Storm Sewer Improvements Project proposes new inlets and storm sewer along the 100 block of W. Reed Ave and capacity improvements along the downstream system to the outfall in Four Mile Run Park. These storm sewer improvements are a portion of the future Large Capacity Project – Edison and Dale that have been accelerated with Virginia Community Flood Preparedness Fund (CFPF) prior to the funding becoming available in FY 2026.

### Project Information

**Current Phase:** Design  
**Total Planned Budget:** \$2,230,000.00  
**Funding Sources:** SWU

### Schedule - Calendar Year (CY)



### ON-GOING

- Resolving utility conflicts with proposed layout

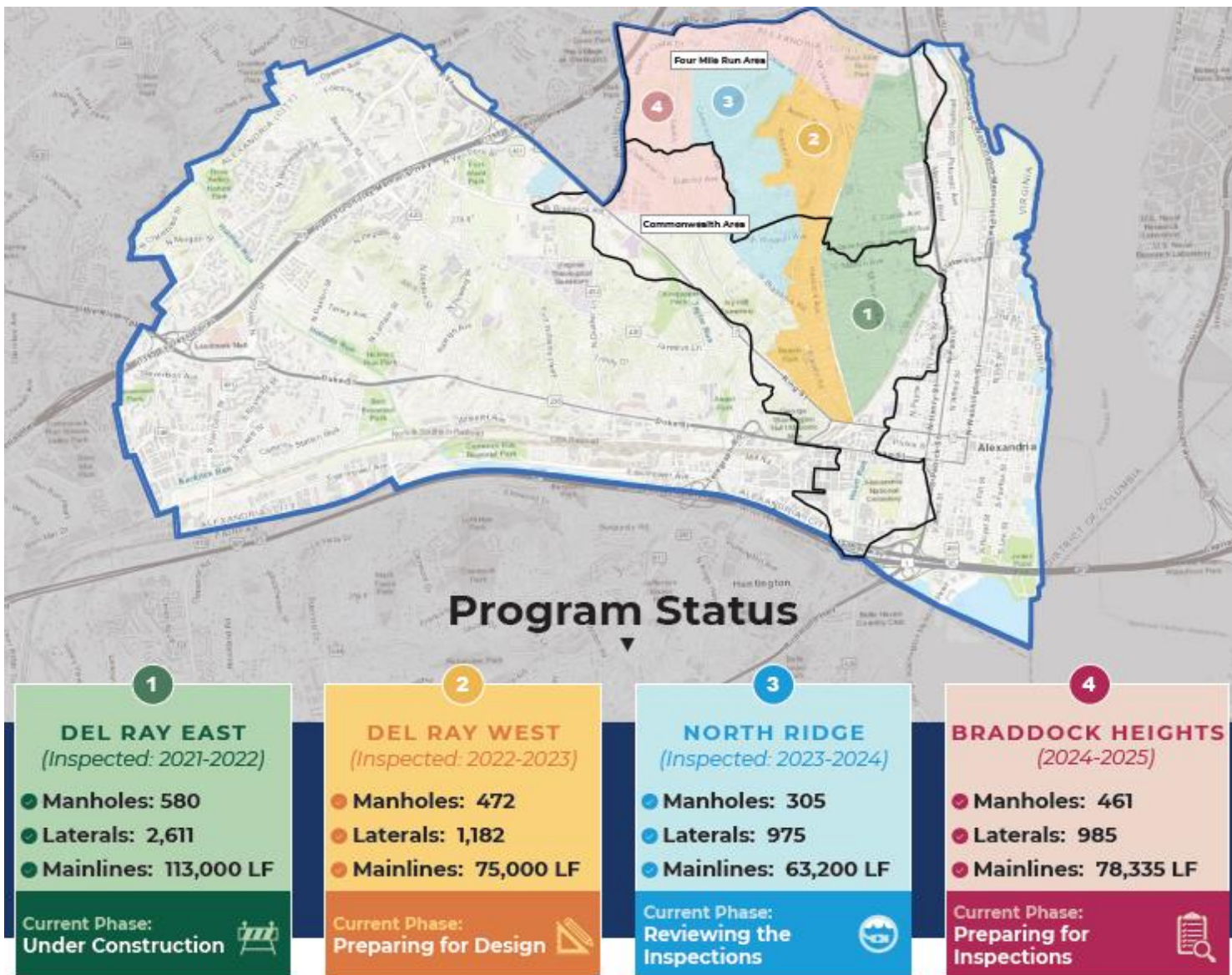
### FORECASTED

- Continue 90% Design

# Sanitary Sewer Asset Renewal Program

- **Del Ray East Sewer Rehabilitation:**

- Contractor issued Notice to Proceed Oct 16, 2023
  - Contract period = 1 year
  - To be extended until mid-January 2025
- Construction progress:
  - 90% pipes lined
  - 100% manholes rehabilitated
  - Lateral sewers under separate contract



# Communications

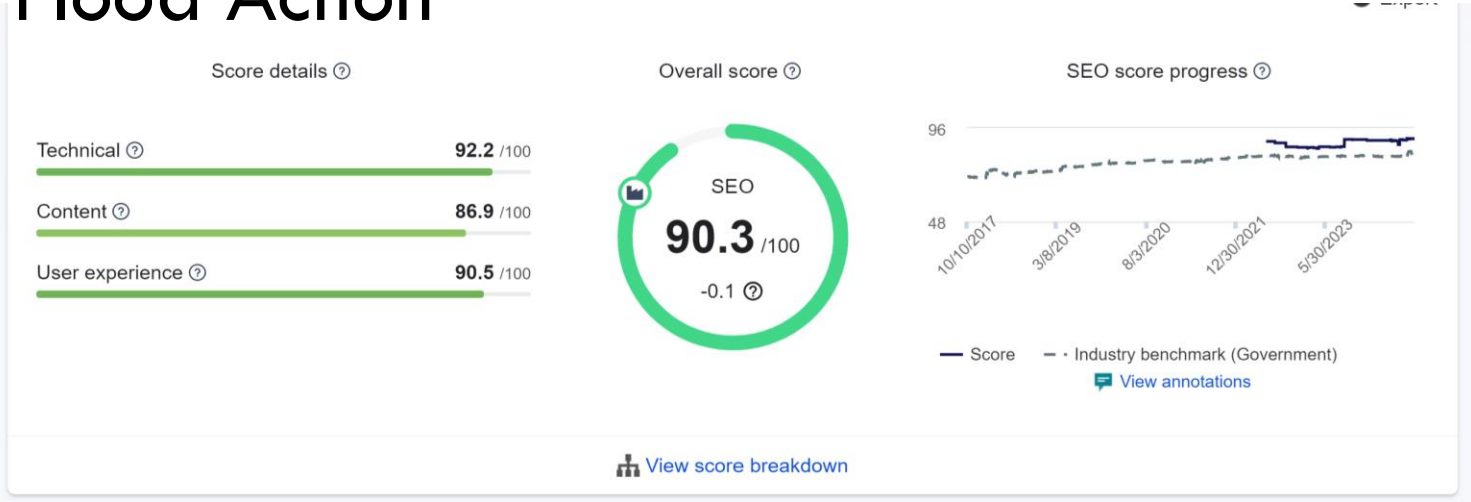
## September - October

- 18 Total Flood Action/ Stormwater social media posts
  - *SWU Fee Credit Program, Flood Resilience Plan, project updates*
- Impressions: 40,228 decreased by 43%
- Engagements: 1,558 increased by 26%
- Post link clicks: 80 decreased by 27%
  - \*Compared to previous 2 months (July-August)
- 7,277 Stormwater Management webpage views
  - \*86 total pages under Stormwater Management web group
- Average engagement rate: 64%
- Most popular stormwater webpages:
  - Flood map = 1,464 views
  - Flood Action = 664 views
  - Types of Sewer Systems = 565
- Highest engagement: (total)
  - Severe Storm and Flash Flood: 21:40
  - Flood Map: 14:52
  - Ben Brenman Pond: 12:00

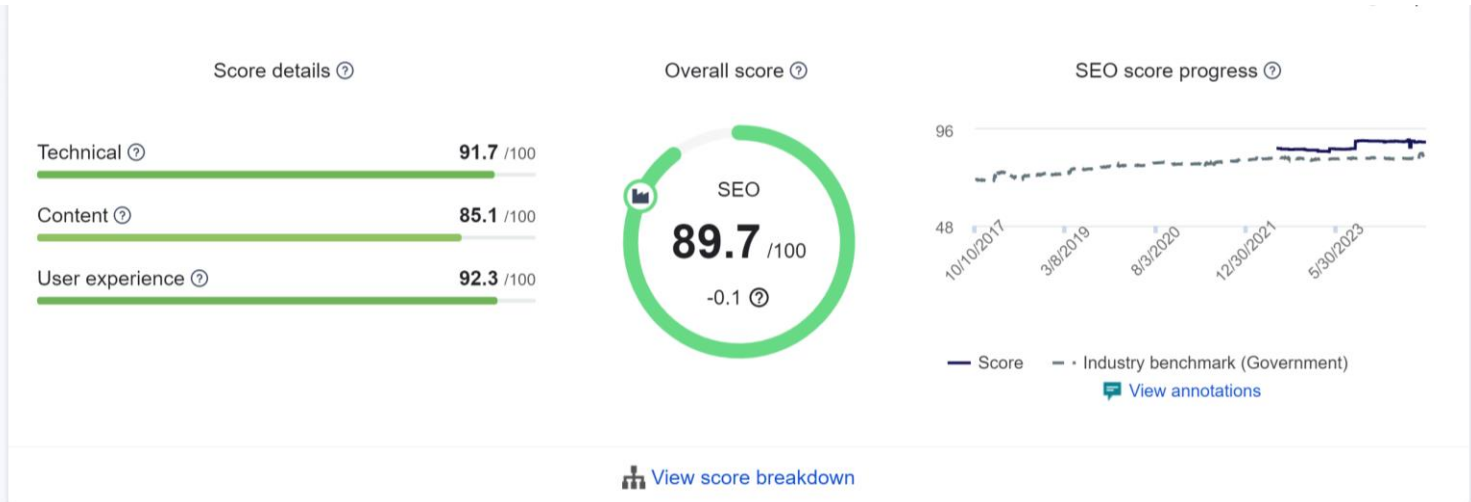


# Communications

## Flood Action



## Stormwater Management



Scores are based on broken links, dated images, and page formatting.

# Maintenance Activities

- Hooffs Run Culvert Maintenance and Cleaning from Linden Street to Duke Street
  - Maintenance work is tentatively scheduled to start in December 2024 and expected to continue until April 2025.
  - Work hours: Monday-Friday: 7am-6pm; No weekends or holidays
  - All work is below ground
  - Staging areas will be located in Linden Street Alley, Mount Vernon Avenue cul-de-sac and Hooff's Run Park
  - No Parking areas will be signed
  - City staff will be on-site to oversee the project

# Flood Mitigation Grant Program

- We have reimbursed a total of \$1,075,979.98 since the start of the program in July 2021.
- So far in FY2025, we have 63 applications in various stages with a total of \$85,132.75 reimbursed.
- In FY2024, we had 101 approved applications for a total of \$235,145.16 reimbursed.
- In FY2023, we had 73 approved applications for a total of \$167,538.49 reimbursed.
- In FY2022, we had 148 approved applications for a total of \$588,163.58 reimbursed.

# Annual SWU Credit Application Window

- Annual credit window is open from December 1 to February 15
- Approved eligible credits are good for 2 years
- Floodproofing practices added to eligibility list
- Residents who applied in the 22/23 cycle will receive an email to reapply



# 4. Review and approval of Committee charter & bylaws

AGENDA ITEM #4

# 5. Discussion of outreach events

AGENDA ITEM #5

# 6. Other topics

AGENDA ITEM #6

# 7. Public Comment

AGENDA ITEM #7



# 8. Adjourn

AGENDA ITEM #8