



Spout Run Joint Civic Association Meeting

March 3, 2022



Speakers

Aileen Winquist

Stormwater Communications Manager

703-228-3610

awinquist@arlingtonva.us

Demetra McBride

Bureau Chief, Office of Sustainability

Environmental Management

703-228-3612

dmcbride@arlingtonva.us

Elizabeth Thurber, P.E.

Stormwater Infrastructure Program Manger

Floodplain Manager

571-289-2498

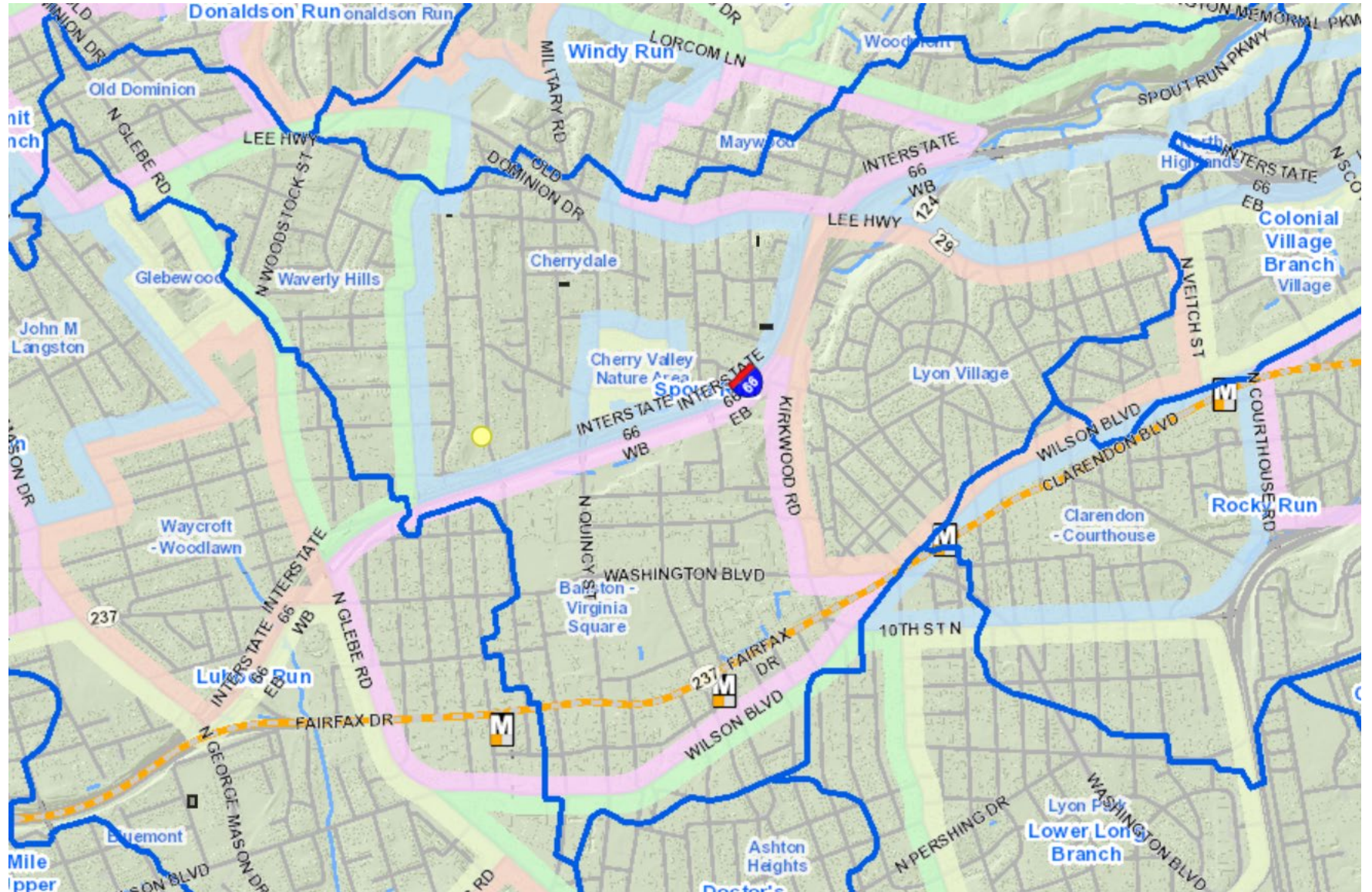
Ethurber@arlingtonva.us

- Introductions
- Flood Resilient Arlington
- History of flooding
- Causes of flooding
- Design Standards: 10 year plus overland relief
- Design Process
- Types of Projects
- Options Considered
- Where we are now
- Policy Considerations
- RAMP
- Stormwater Utility
- Plan Langston Blvd.
- Cherrydale Questions:
 - Monroe St. Sidewalk Project
 - Sewage Backups
 - Potential Detention Locations 1 and 2
- Action Items
- Discussion/Questions/Next Steps

Agenda

9 Civic Associations:

- Old Dominion
- Waverly Hills
- Cherrydale
- Maywood
- Lyon Village
- Cherry Valley Nature Area
- Ballston Virginia Square
- Ashton Heights
- North Highlands



Key Elements of Flood Resilient Arlington

Analytics and Data Assessment

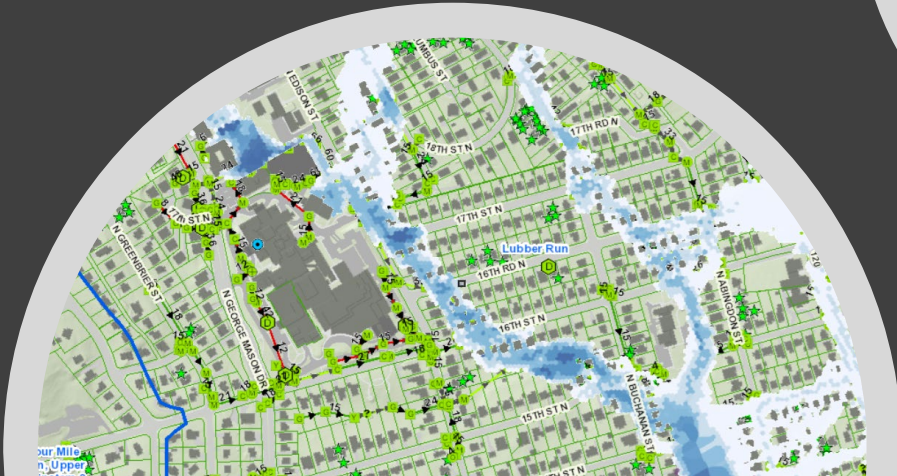
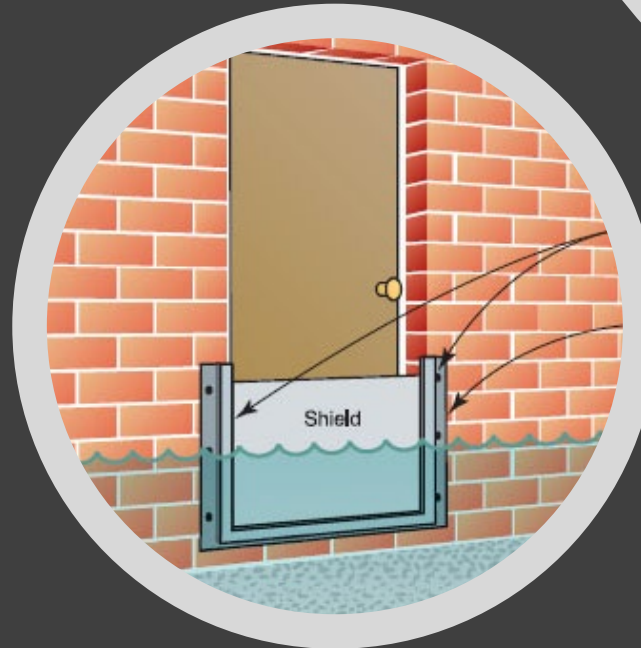
New Types and Locations for Capacity Projects

Increased Stormwater Requirements

Increased Funding

Voluntary Property Acquisition

Floodproofing Outreach





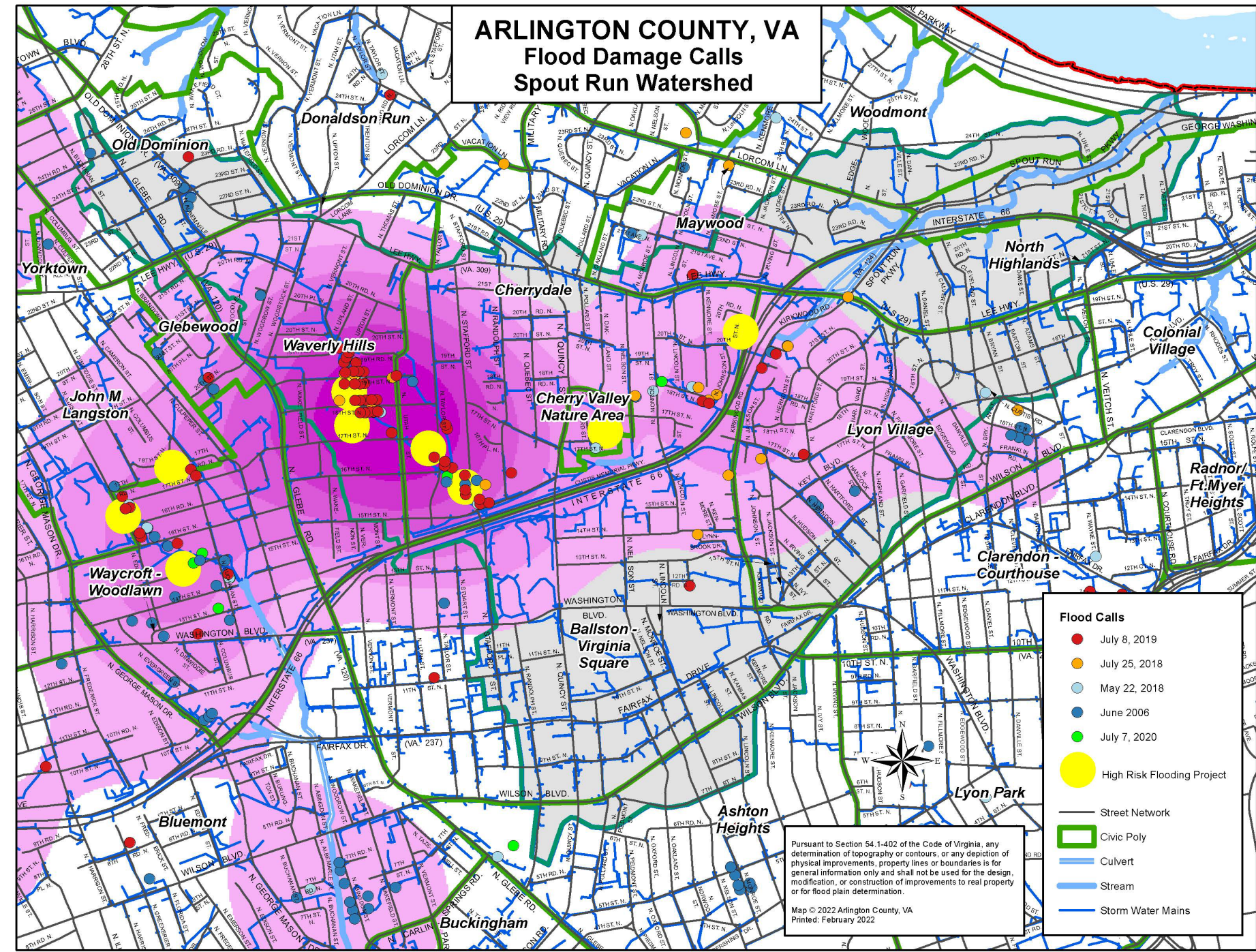
Just a reminder of the severity of the flooding problem in parts of Spout Run

History of Flooding

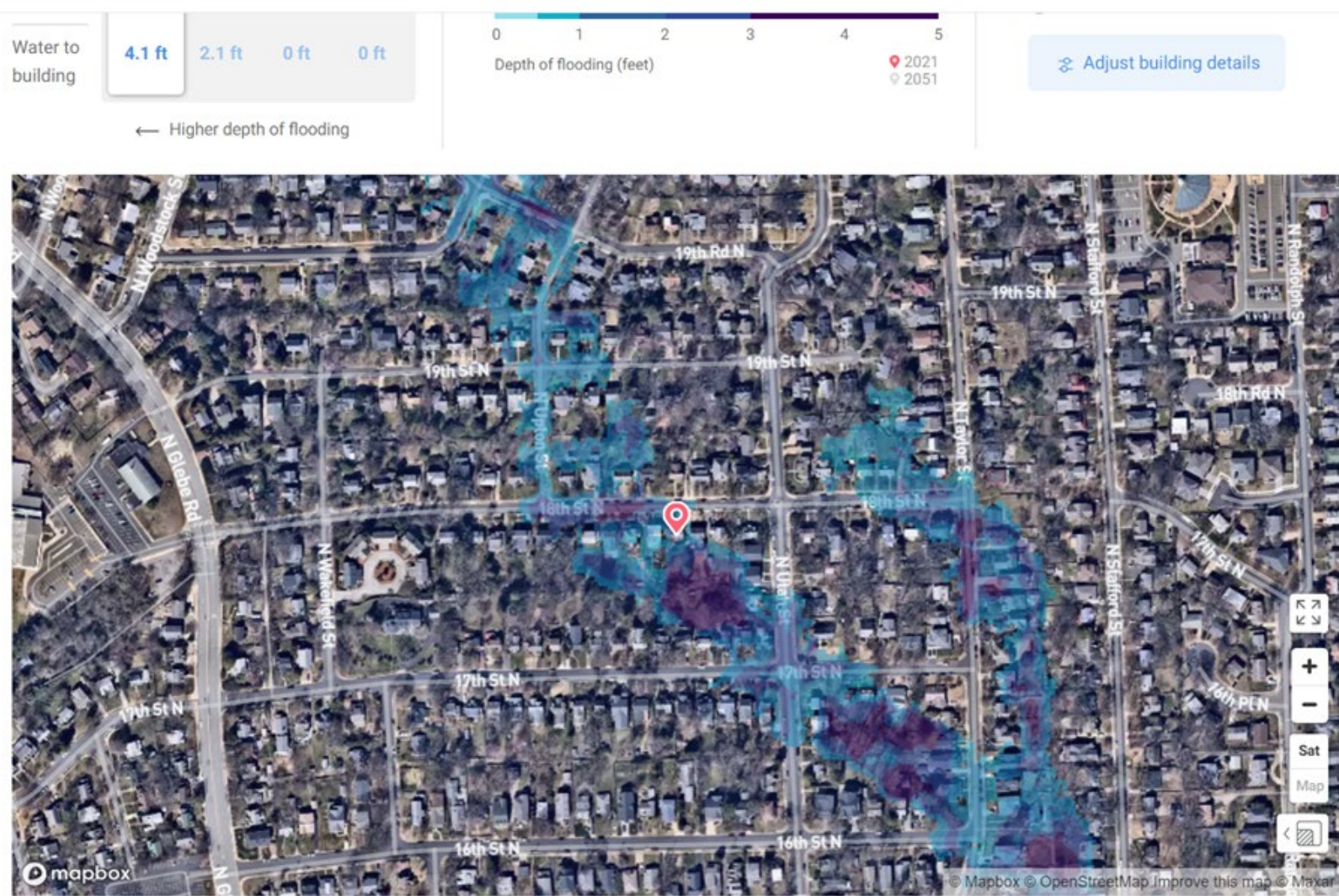
History of Flooding – Spout Run Watershed

Map showing concentration of flooding calls for rain events from:

- June 2006
- May 22, 2018
- July 25, 2018
- July 8, 2019
- July 7, 2020

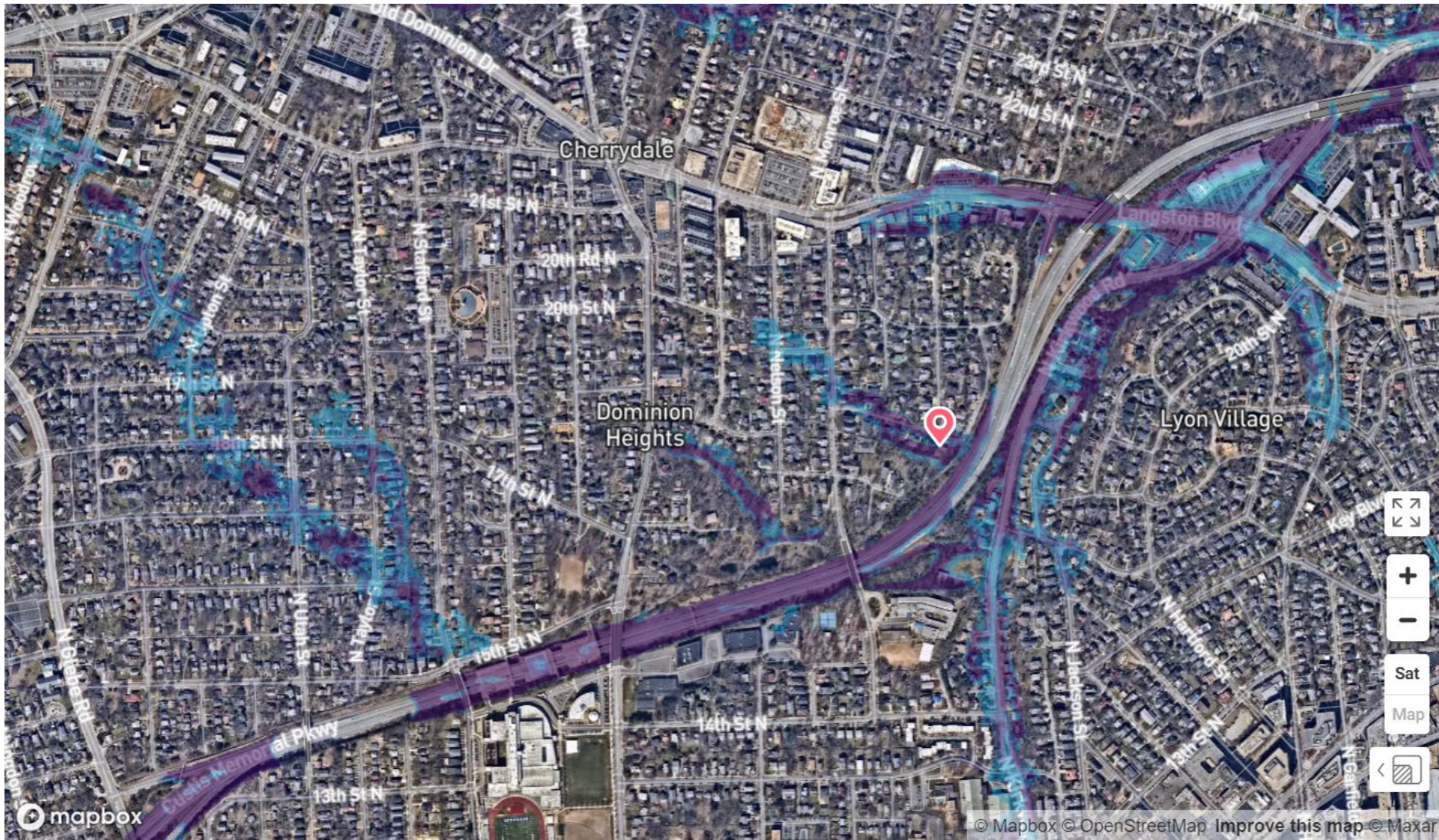


- Storm Sewer System
- Overland Relief



Inundation zone from Floodfactor.com

Causes of Flooding



More from Floodfactor.com

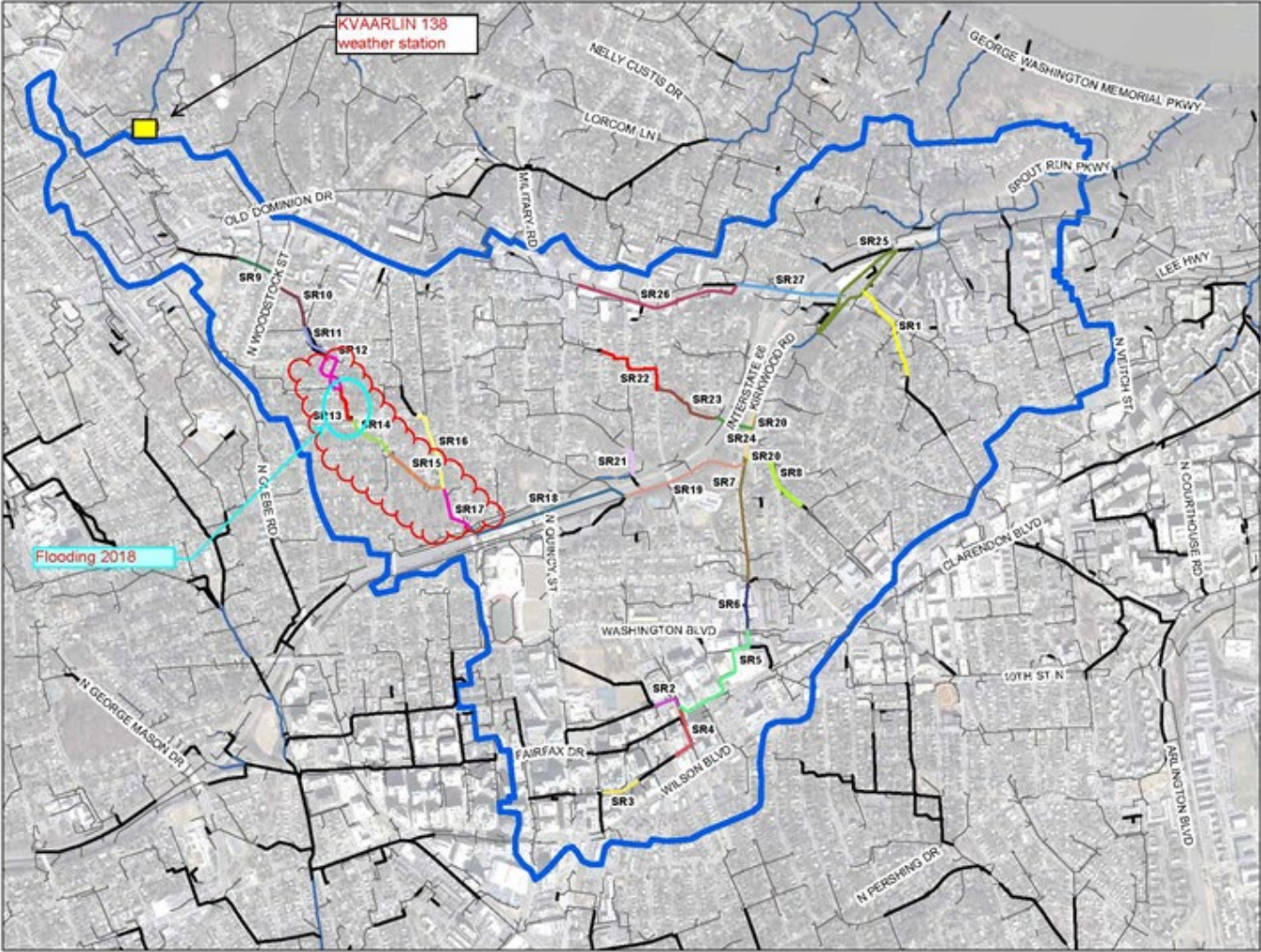
Storm Sewer Design Standards and Overland Relief

- Over time, the US government has collected rainfall data. This database of storm events is used to define the likelihood of a storm occurring.
- The 10 year storm is defined as having a 10% chance of happening each year, 100 year storm a 1% chance.
- Currently, storm sewers are designed for a 10 year storm, with the assumption that there is overland relief present for larger storms.
- Overland relief is a safe pathway for stormwater to flow for storms greater than the 10 year storm.



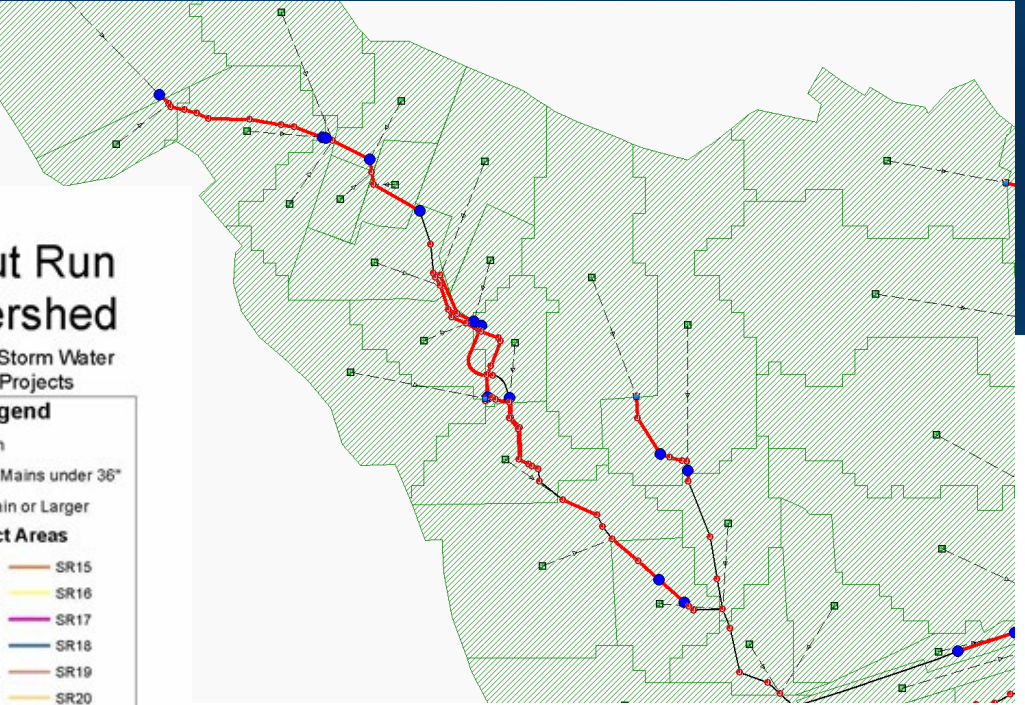
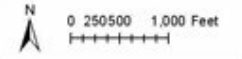
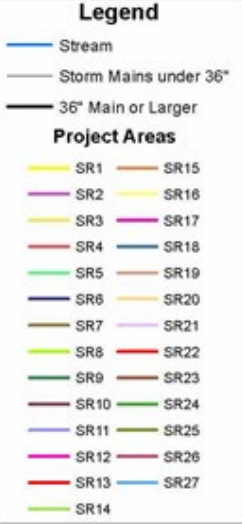
Goal = 10 Year storm + Overland Relief

Causes of Flooding – System Capacity



Spout Run Watershed

Proposed Storm Water Main Projects



- **Undersized storm sewers**
 - **Designed with no consideration of the future urbanization and climate change**
- **Lack of inlets**

Master Plan projects showing needed capacity improvements
 Existing Storm system does not handle 10 year storm

Causes of Flooding – No Overland Relief



- There is no overland relief
- Topography – structures/dwellings within the overland flow path
- Homes built right up to storm system with limited room for upgrades



RAMP inundation zone

System Layout corresponds to inundations zones and areas with system capacity limitations

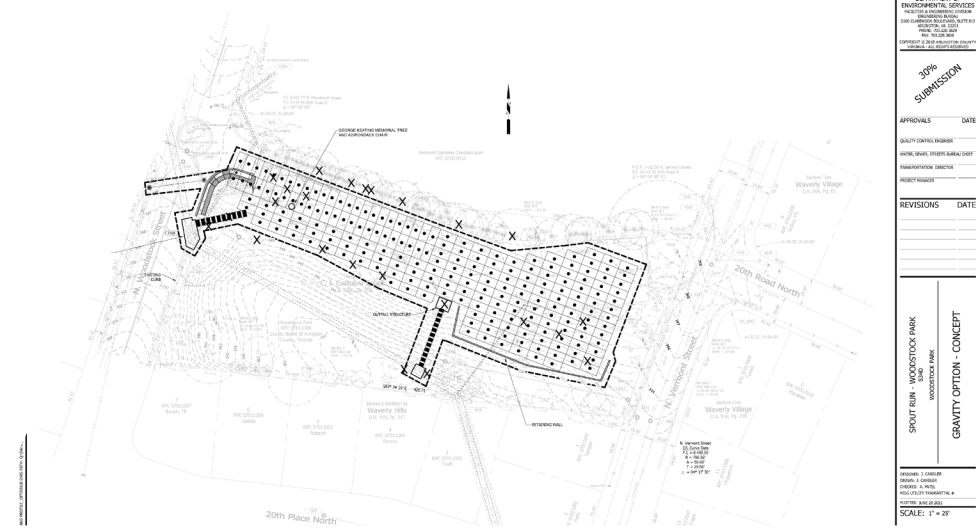
Storm System Improvements Design Process

- Land surveys and research on existing easements in location of flooding
- Development of conceptual plans for the system in that location
- Conduct system modeling to compare effectiveness of the different conceptual solutions for the watershed (may include joint projects)
- Cost estimates
- Community engagement on potential solutions
- Request easements if needed
- Complete design work on selected option
- Procurement
- Construction

Process can be lengthy and sometimes iterative

Types of Projects

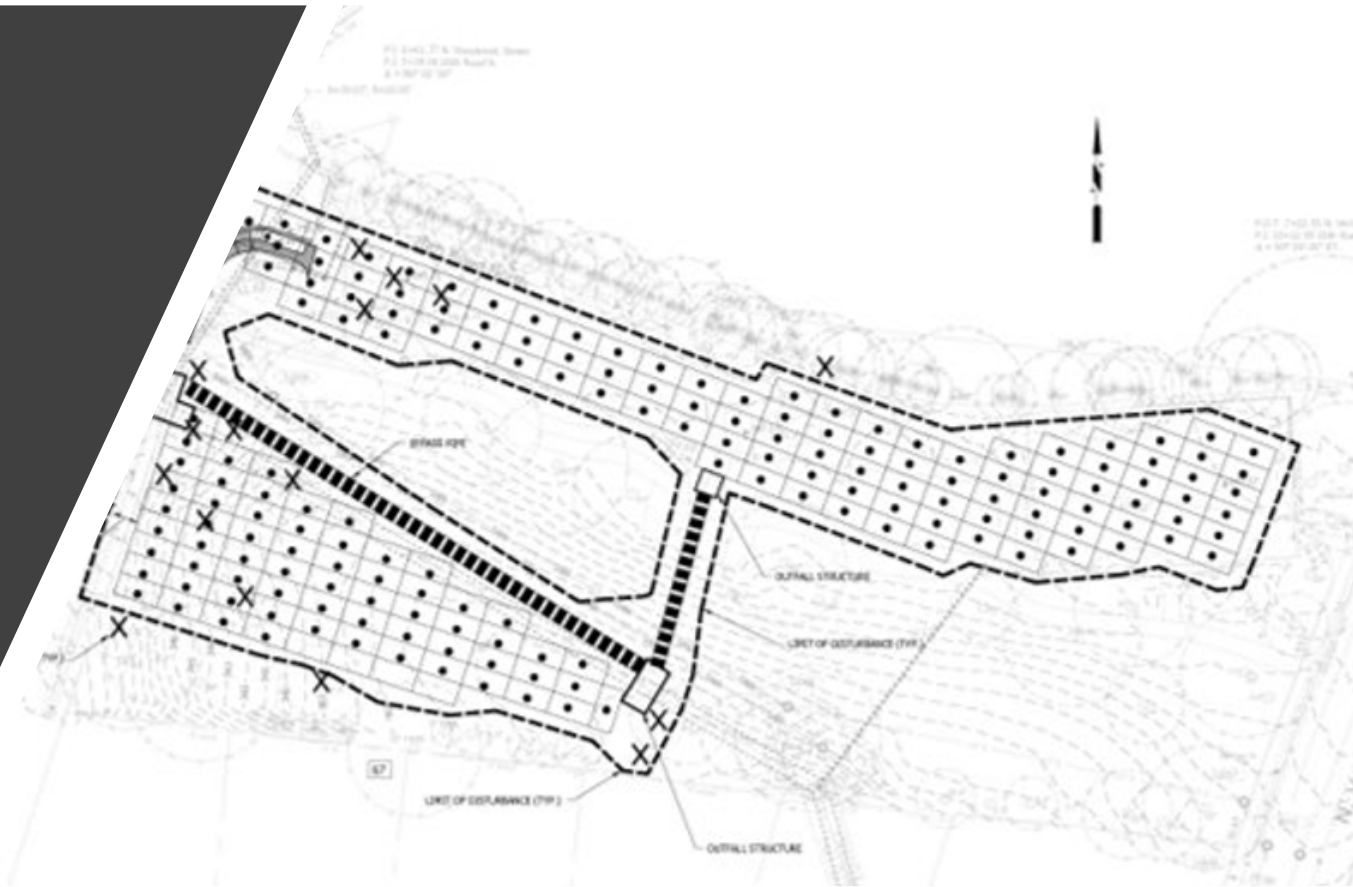




Options Considered to Date*

- Various vault configurations at Woodstock park
- Distributed detention – multiple scenarios
- Graded Channel
- Overland Relief Pathway
- Piped System – 10 year – multiple alignments
- Piped System – 100 year
- Climate change Impacts

*Note that analysis continues downstream to I-66 and includes portions of Cherrydale



Woodstock Park Vault has significant Challenges:

- Technical:
 - Pumps
 - Deep excavation
 - Need for Intrusive Construction Methods
 - Cost (including future maintenance costs)
 - Park and Tree Impacts
 - Construction impacts to neighborhood
 - Limitations on flood risk mitigation
- Policy:
 - Climate Change
 - Design criteria
 - Budgets (CIP and Operating)
 - Property Acquisition for overland relief
- County has been evaluating each challenge and examining options to address
- Process is incomplete at this time
- Expected completion is in May integrated with release of CIP information

Where are We Now?

There is no long-term solution to flooding in this watershed without provision of overland relief.

- A detention vault alone cannot provide relief for storms greater than the 10-year storm, and costs are very high.
- There is an inverse relationship between disruption to park and risk reduction.
 - Less park disruption results in less detained volume = higher flood risk
 - More park disruption results in more detained volume = lower flood risk
 - However, no amount of park disruption eliminates the need for overland relief
- Within existing easements and rights-of-way, there is very little available space to make necessary system upgrades without acquiring property.
- Providing protection for the 100-year storm will require creating an overland relief pathway
- This has raised new policy considerations

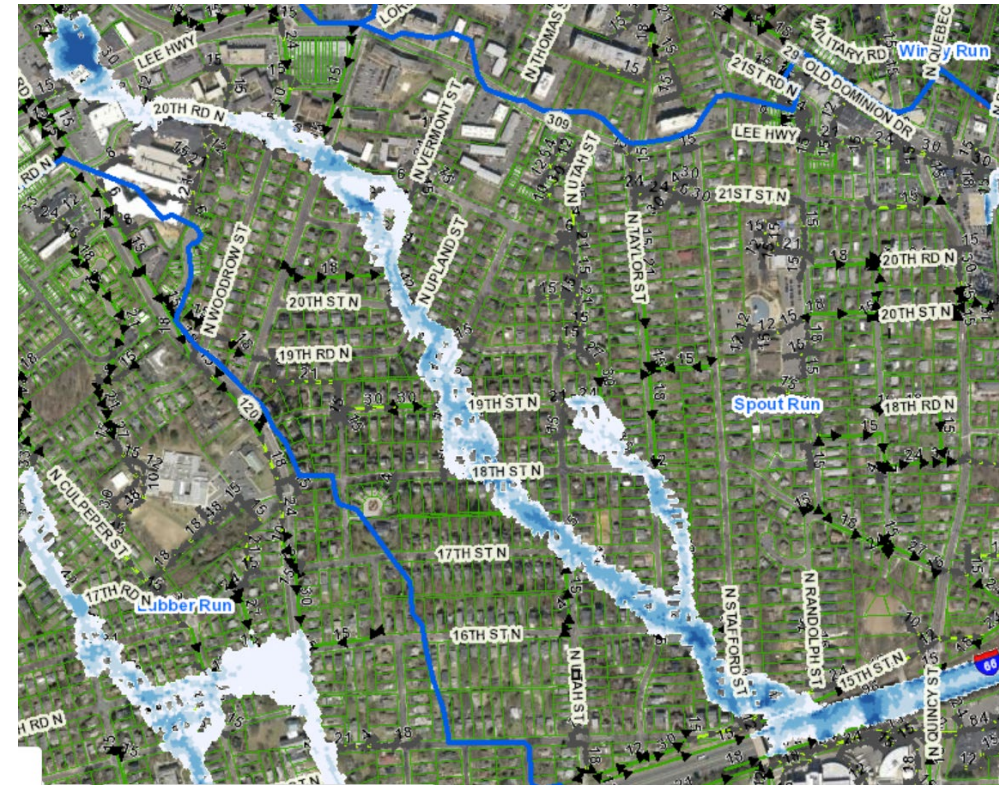
Major Policy Issues have been raised as a result of the multiple analyses for areas in Spout Run watershed (not just Waverly Hills) as well as Lubber Run and Torreyson Run

- Implications for other neighborhoods/watersheds (similar problems in other locations)
- Design Criteria
 - Return Period (10 year / 100 year)
 - Accounting for climate change
- How to establish overland relief paths – very challenging
- How to protect overland relief pathways from development

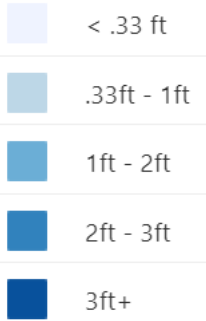
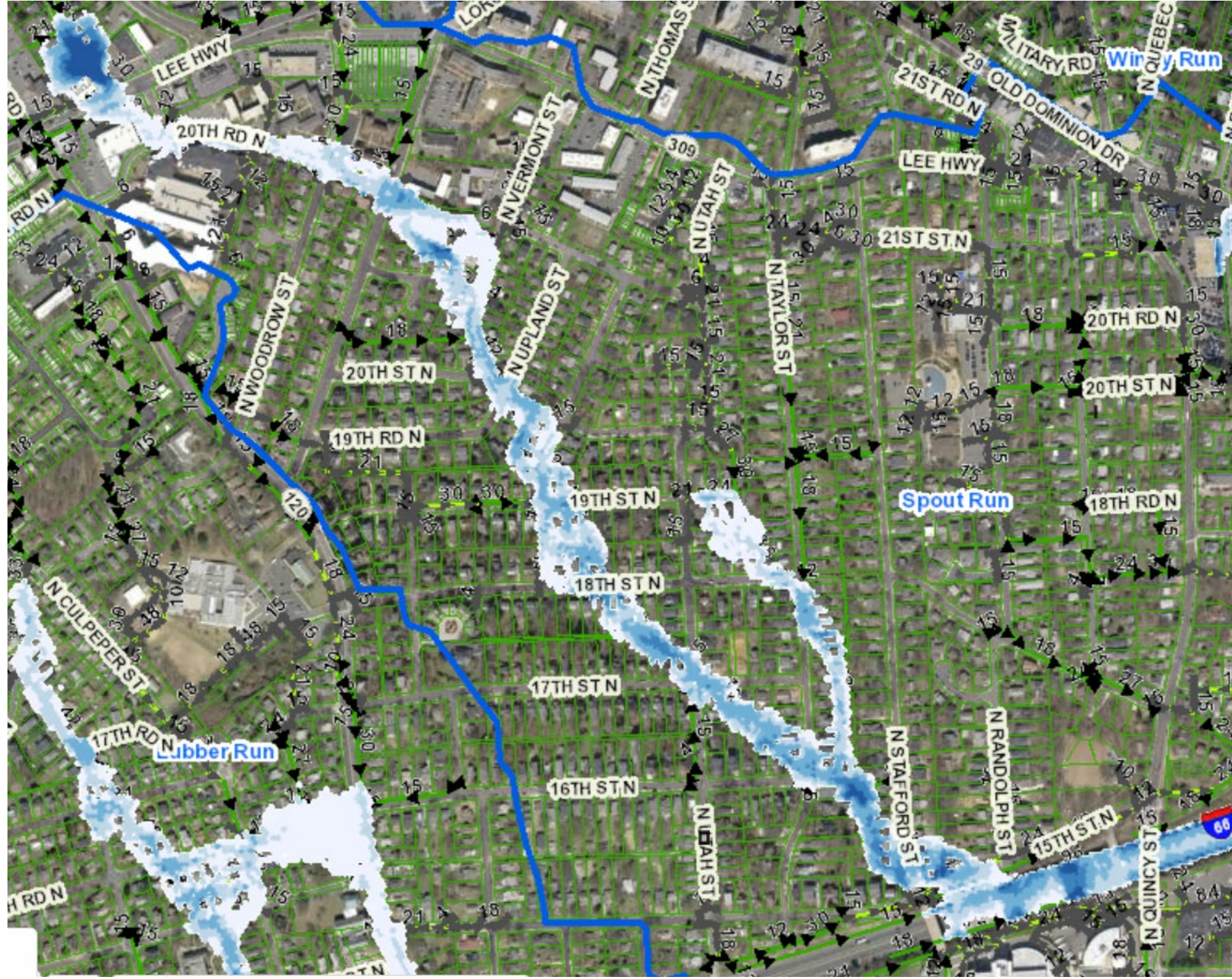
Policy Considerations

Risk Assessment and Management Plan (RAMP)

- Will deliver updated rainfall curves, 10 year design standard and 2040 and 2070 climate projections
- The RAMP maps critical community facilities in all sectors, to support vulnerability and risk assessments, and allow mitigation planning.
- Map County's "urban" floodplains (outside FEMA floodplains)
- Measures both Flooding and Sea Level Rise/Storm Surge Risks
- Define and value risks from flooding
- Informs flood resilient design and construction standards

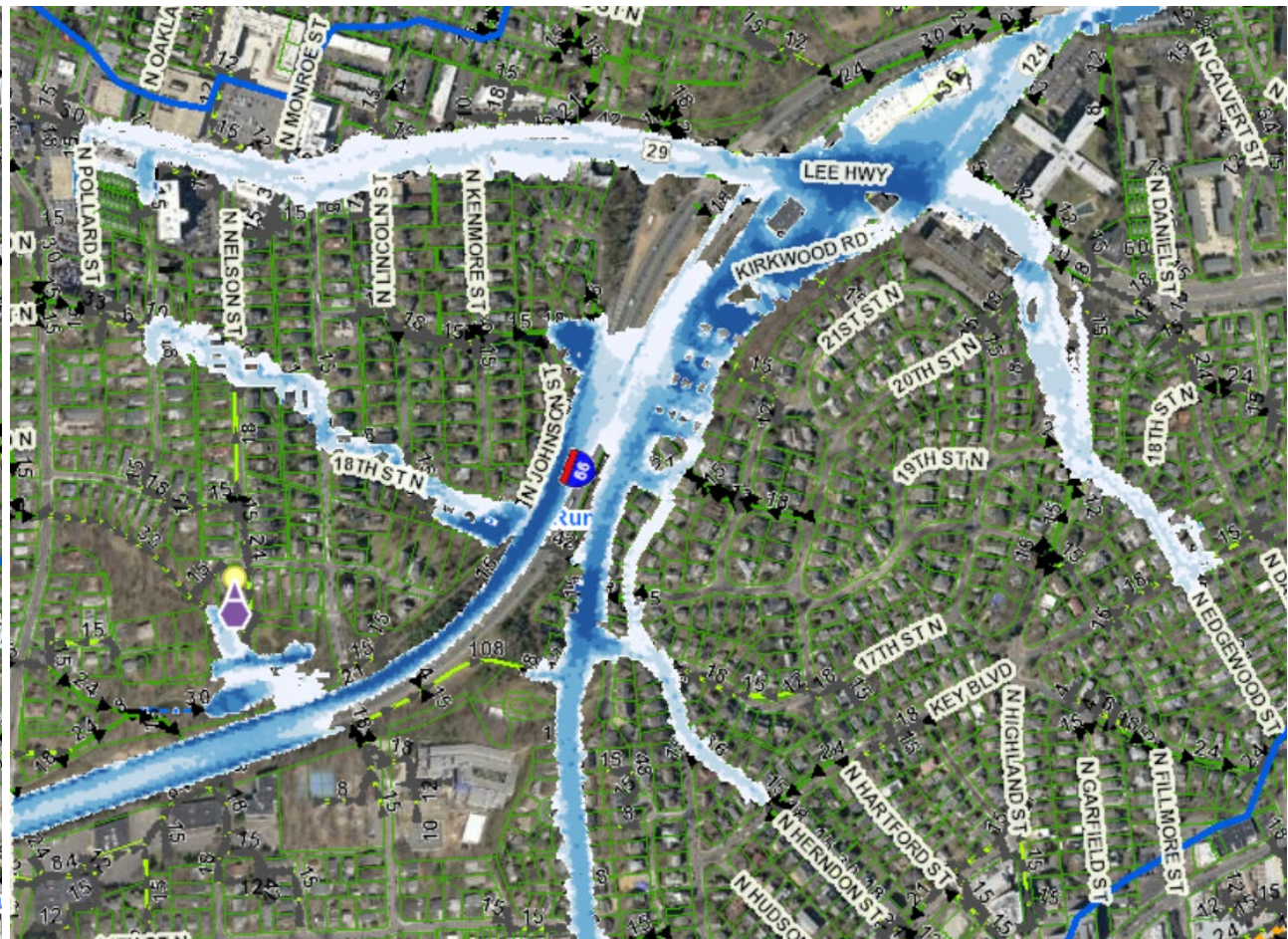
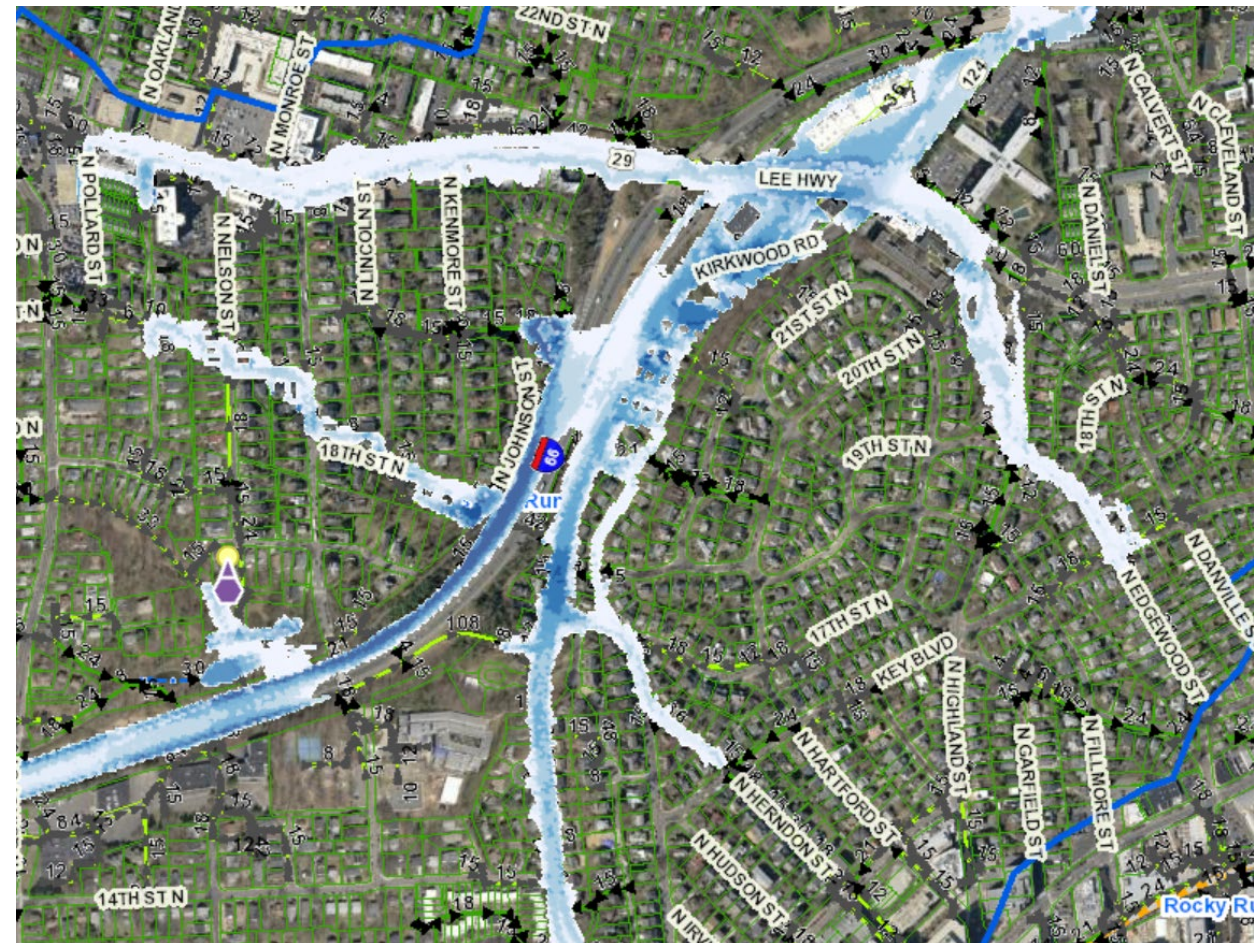


2070 100-year



2040 100-year

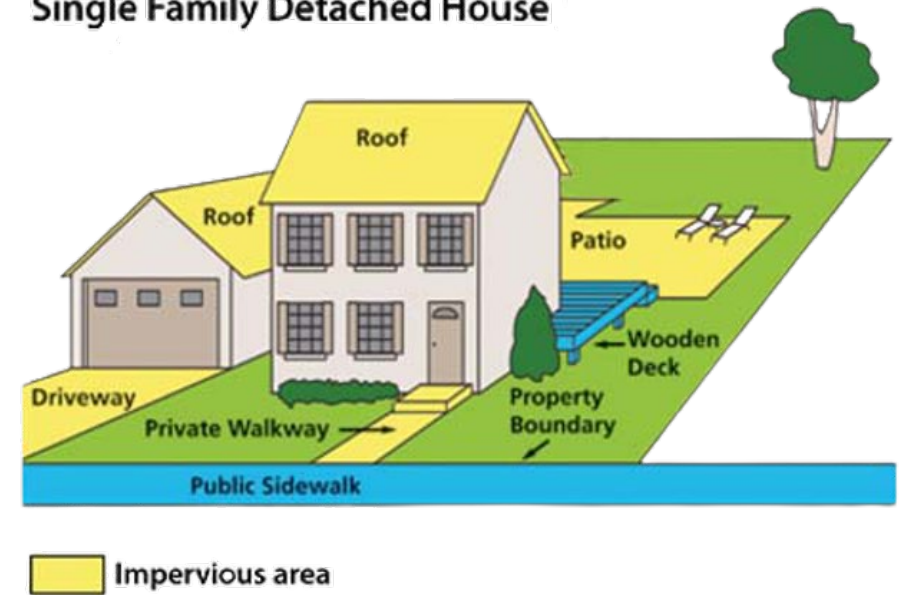
2070 100-year



Stormwater Utility

- County has assessed the feasibility of transitioning to a stormwater utility and is moving in this direction.
- Most other local governments in VA fund stormwater programs this way.
- Fees are based on impervious cover on the lot (yellow areas on the diagram)
- Engagement process on the utility is getting underway. Creating an advisory committee and will be holding public meetings in summer/fall timeframe

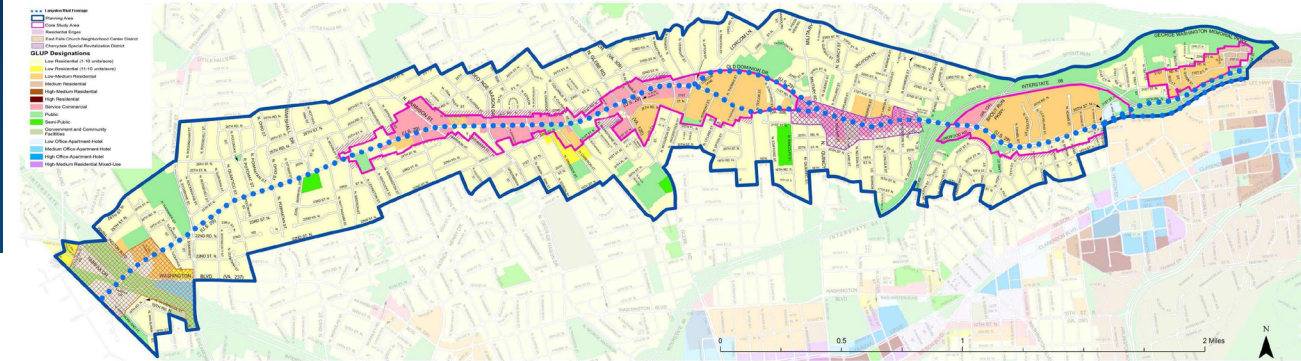
Single Family Detached House



<https://www.arlingtonva.us/Government/Programs/Sustainability-and-Environment/Stormwater/Stormwater-Utility-Feasibility-Study>

Plan Langston Blvd

LANGSTON BOULEVARD Study Area Map



STUDY AREA APPROACH

Planning Area
Areas within 1/4-mile walking distance of the corridor

Core Study Area
Priority areas with most opportunity for change and in need of a vision (no adopted policy guidance):

- Areas designated Service Commercial, Low-Medium, and Medium Residential on the General Land Use Plan (GLUP)
- Areas with commercial zoning or commercial uses
- Select single-family areas with Langston Blvd frontage and surrounded by commercial/multi-family areas

Residential Edges

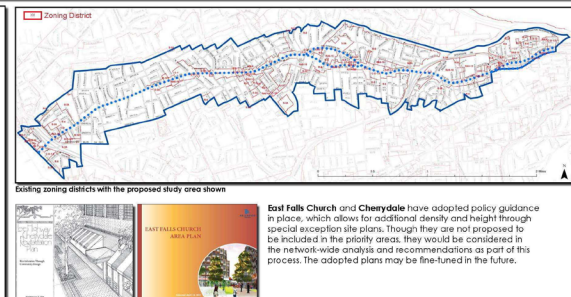
- Single-family areas that may need to be considered in terms of impacts from adjacent redevelopment and/or to make redevelopment feasible on Langston Blvd.
- Includes single-family areas adjacent to shallow lots in commercial/multi-family areas
- The shaded areas on the map capture approximately 250 feet from Langston Blvd and arterial streets
- Opportunity to explore housing types that transition appropriately to single-family neighborhoods

What Would This Be Used For?

- Primary research area
- Develop a vision and recommendations for network-wide elements, such as transportation and open space

What Would This Be Used For?

- Define character areas and evaluate land use scenarios
- Develop land use and building form recommendations



November 2016

Langston Boulevard Planning Initiative

ARLINGTON VIRGINIA

- We are working with Planning staff on this effort
- There may be opportunities for detention on some projects, but could result in increased density
- Site Plan vs. By right development
- With private development, County does not control the schedule, which poses challenges to reducing flood risk

Link to the planning effort documents and contacts to planners:



[Plan Langston Boulevard – Official Website of Arlington County Virginia Government \(arlingtonva.us\)](#)

CONTACT US

planlangstonblvd@arlingtonva.us

Coordinator
Natasha Alfonso-Ahmed
703-228-3691

Communications & Engagement
Rachel LaPiana
703-228-0059

Response to questions and comments
sent in advance

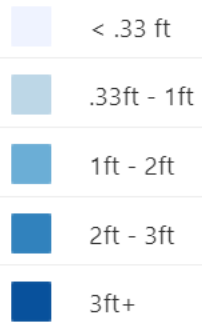
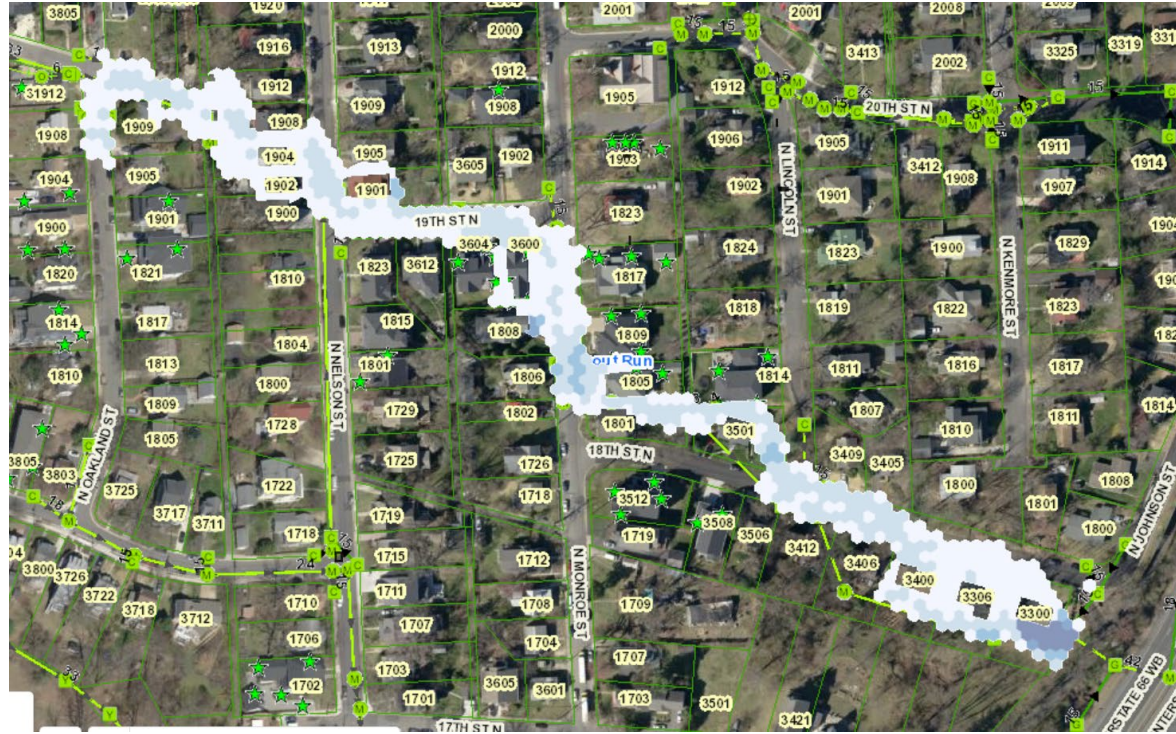
Cherrydale Questions

Monroe St Sidewalk Project (Cherrydale CA)

- Project has been on hold because of challenges with stormwater infrastructure and other utilities in the area
- We understand community is frustrated and wants a usable sidewalk
- Staff are arranging a meeting to figure out a path forward



Baseline 10-year

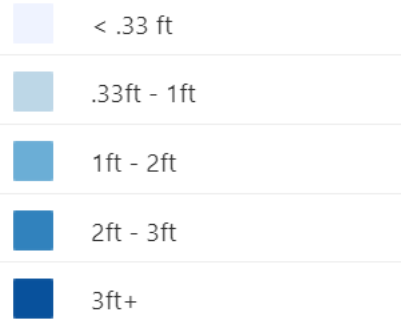
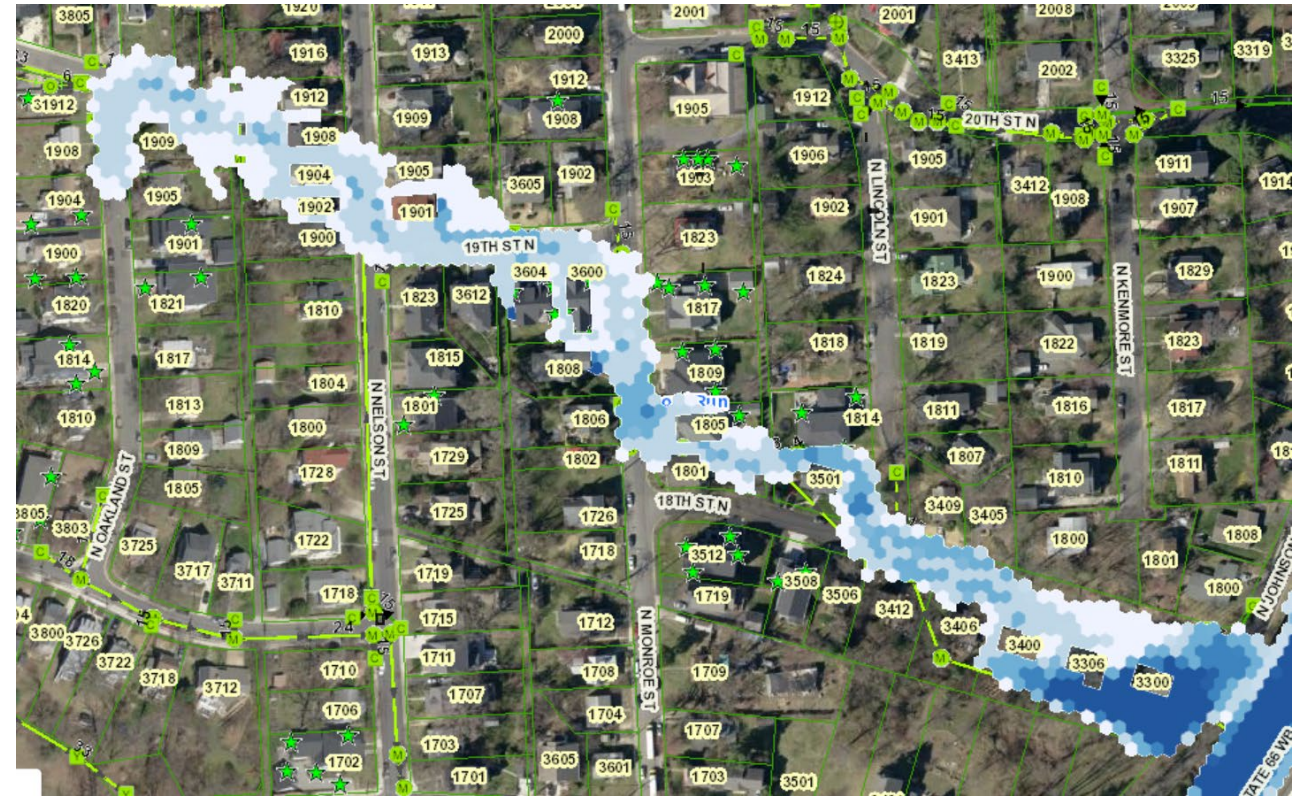


Baseline 100-year



2040 100-year

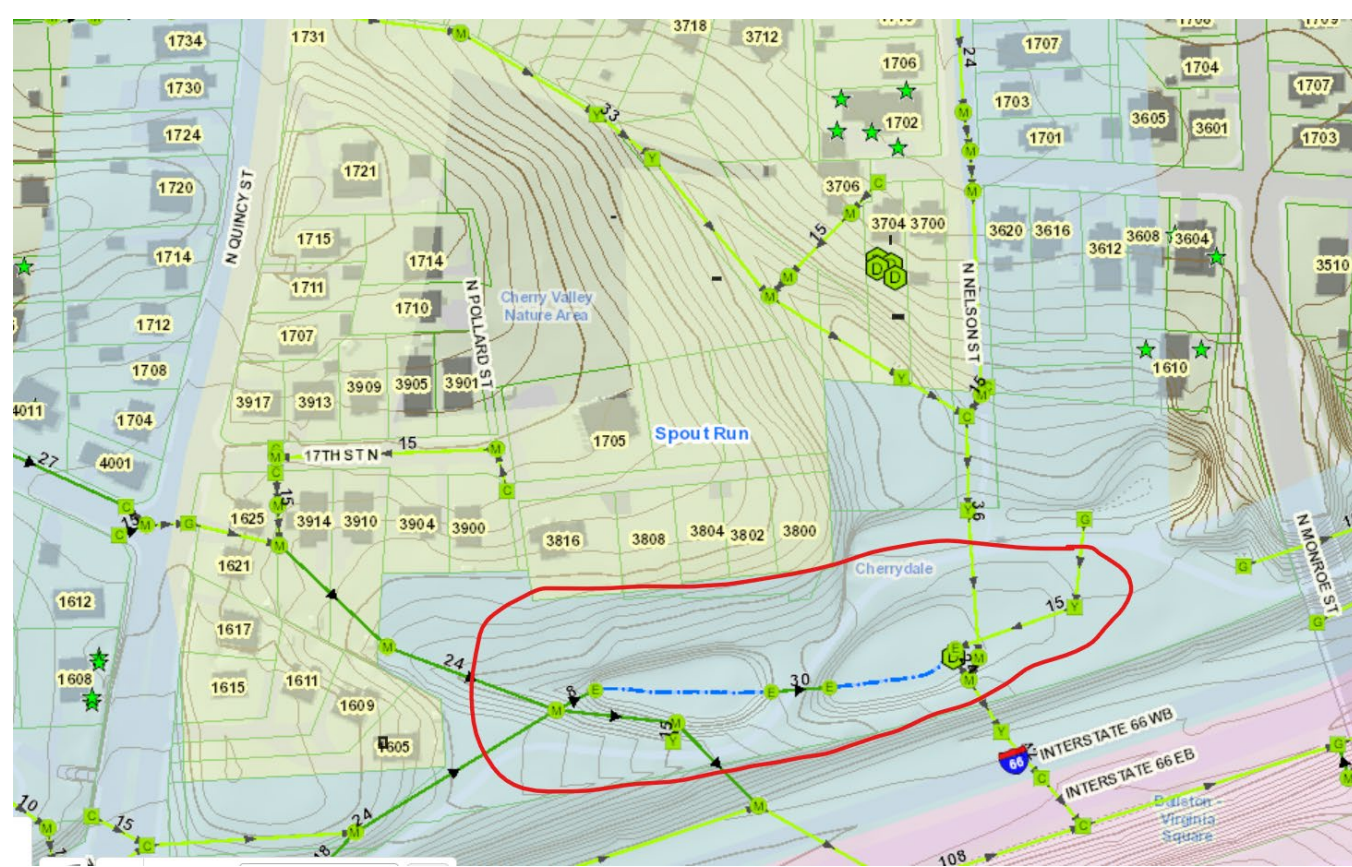
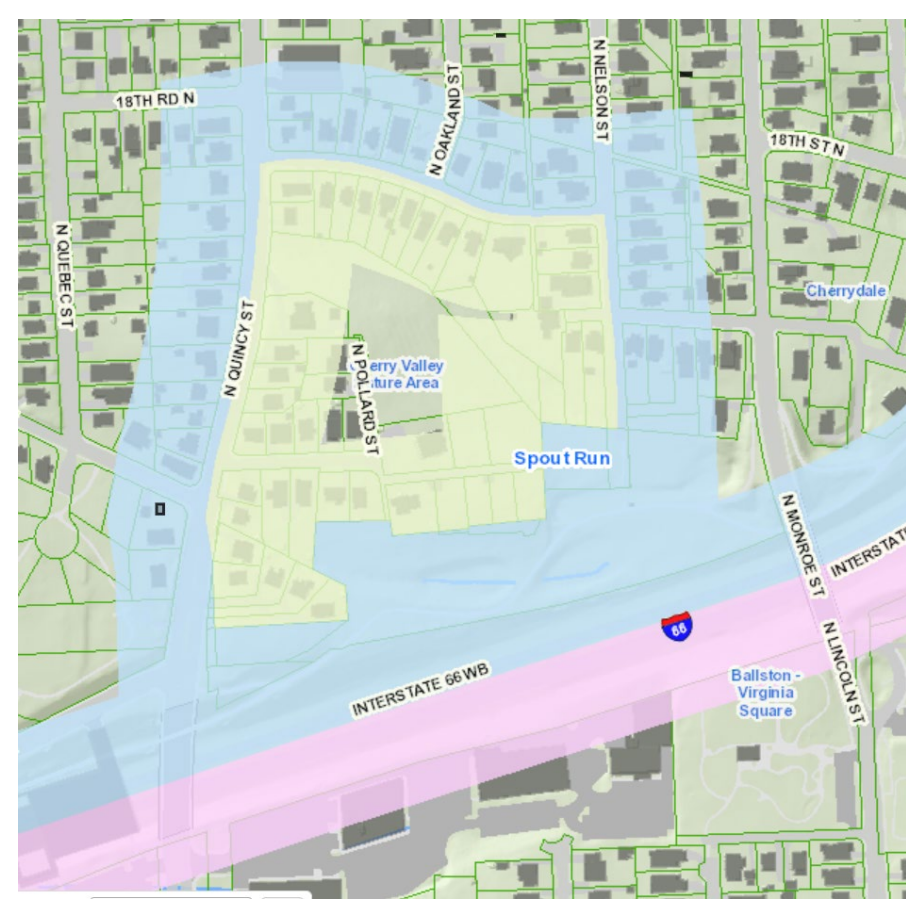
2070 100-year



Sewage Backups

- Sewage backups can occur during storms when stormwater gets into the sanitary (wastewater pipes), such as in manholes, and overflow
- Backflow preventers can help prevent this type of overflow into basements
- Some have observed water flowing in the storm sewers during dry weather. Because the storm sewers were installed where streams used to flow, there can be baseflow (groundwater) in storm sewers – this is not sewage





Cherry Valley Natural Area – possible detention sites

Location 1

Note: Location is at the bottom of the drainage area, downstream of homes = won't help flooding of homes much



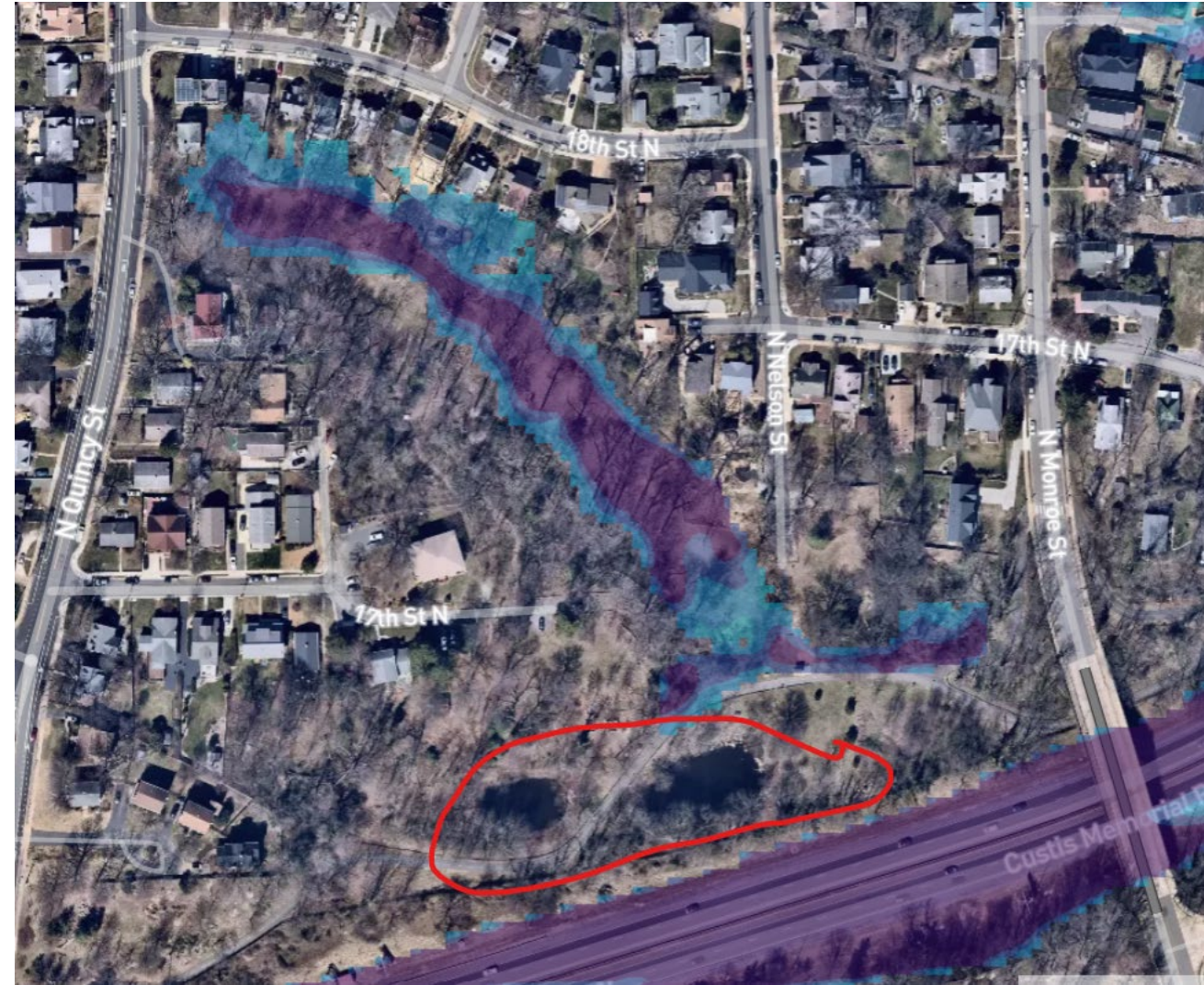
RPA

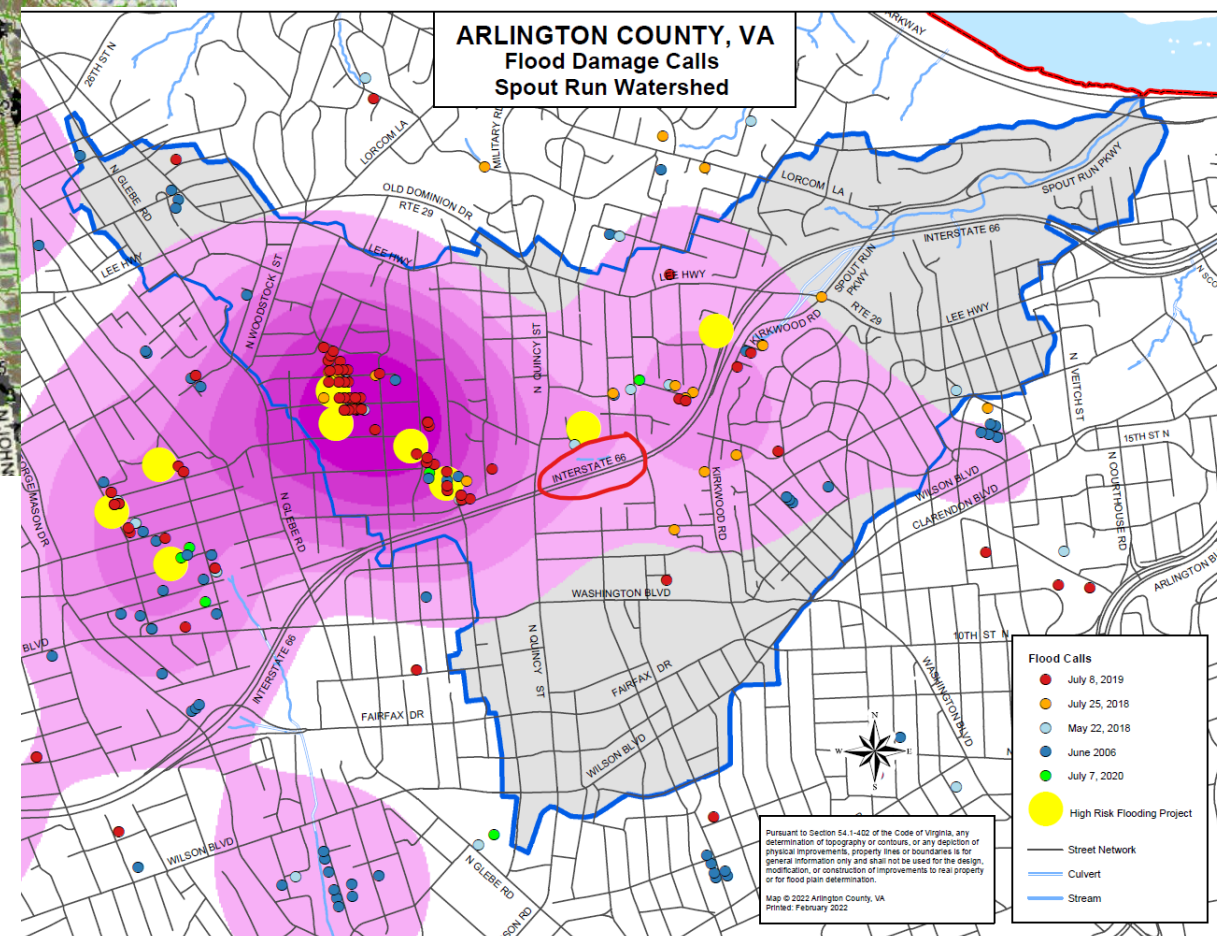


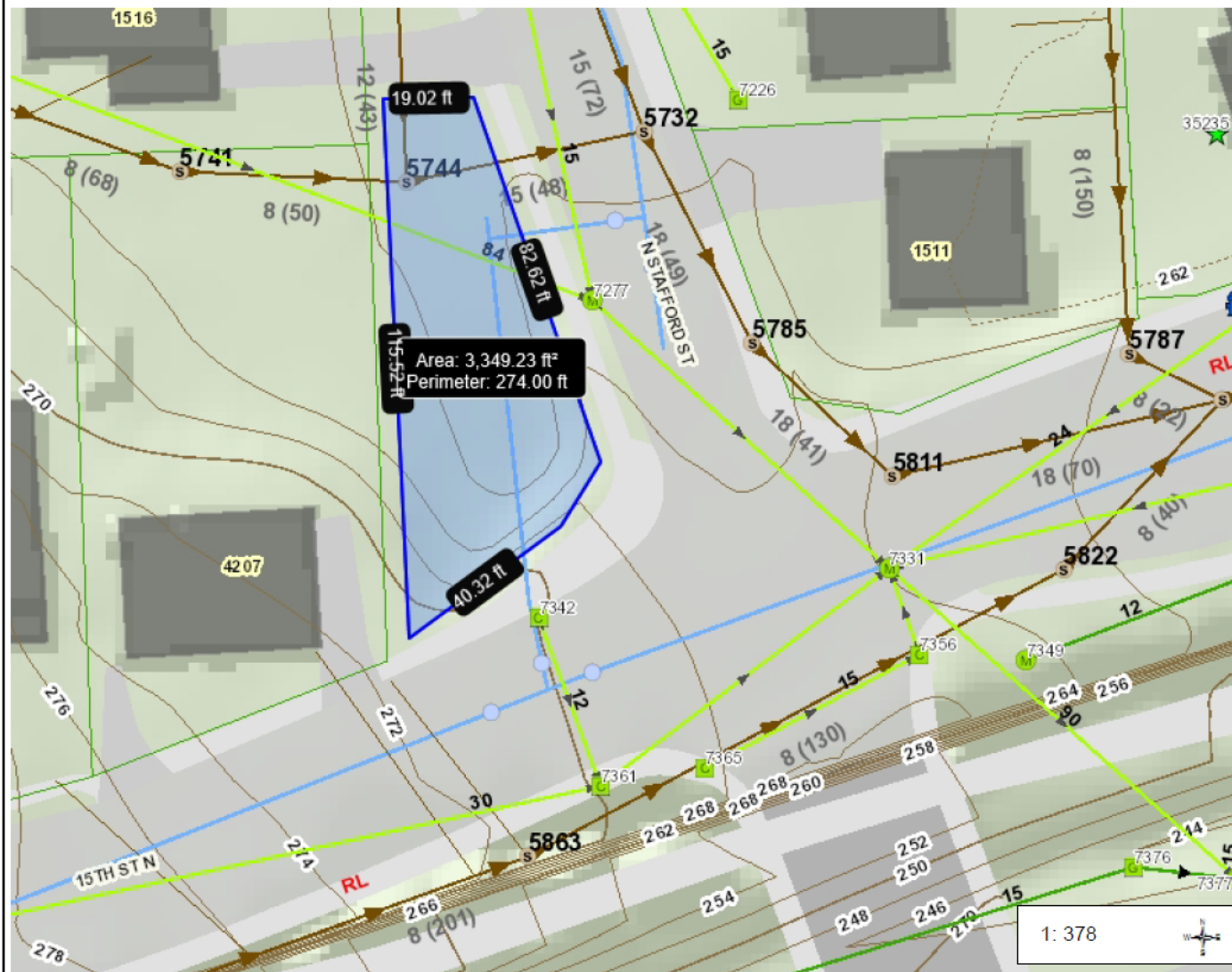
Floodfactor.com



RAMP
Baseline
100-year







Legend

- Arlington County Boundary
- Address
- Storm Water Junctions
 - Unknown
 - Catch Basin
 - Detention Facility
 - End Wall / End Section
 - Grate Inlet
 - Junction No Structure
 - Manhole
 - Other
 - Yard Inlet
 - Discharge Point
 - STBMP
 - Stormwater Management Facility
- Storm Water Mains by Type
 - <all other values>
 - Arch Culvert
 - Box Culvert
 - Circular Pipe; Elliptical Pipe
 - Ditch; Open Channel; Open Drainage
 - Other
 - Pipe
 - Service Lateral
 - Stream Channel
- Sewer Junction ID (Cartegrap)
 - Sewer Junction Types
 - Standard Manhole
 - Air Valve
 - Chamber (Junction Box) Manhole
 - Clean Out
 - Grease Trap

1: 378

0.0 0 0.01 0.0 Miles

NAD_1983_StatePlane_Virginia_North_FIPS_4501_Feet
© Arlington County, VA. GIS Mapping Center

This map is a user generated static output from an Internet mapping site and is for reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable.
THIS MAP IS NOT TO BE USED FOR NAVIGATION

Notes

Potential Detention Locations in Cherrydale Location 2

Max Depth = 6 ft
 Area = 3350 sf
 Max Vol = 20,100 cf
 Area is very small
 Volume is very small
 Location is far downstream
 For Comparison Woodstock Park Vault is 282,000 cf.
 This area represents only 7% of that volume
 Distributed Detention volumes are approximately 533,000 cf.
 This area represents 3.75% of needed volume
 Also must relocate a waterline

Action Items

- **CIP Input Opportunity FY 2023- FY 2032 Capital Improvement Plan through Mar. 15: Share your thoughts on how Arlington should invest in major infrastructure for the future. Your input will help inform the County Manager's proposed 10-year Capital Improvement Plan.**
- CIP will be proposed in April, adopted in July
- Consider flood insurance
- Floodproofing

Future Meetings:

- May/June: with CIP Process

Questions? Next Steps