

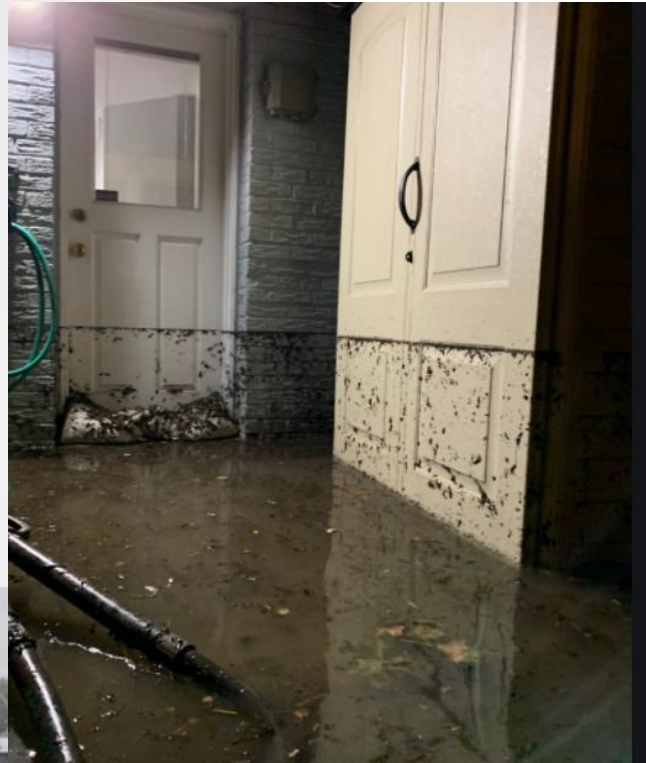


Flood Mitigation Through Stormwater Management: Action Plan

City Council Work Session
September 22, 2020



Climate Change Effects: More Frequent, Intense Rainfall Events



Introduction to Work Session

1. Reprioritization & Acceleration of Investments
2. Establishment of Interdepartmental Strike Team
3. Provide Immediate City Assistance
 - ✓ Expansion of eligibility for sewer backflow preventer program
 - ✓ Establishment of special City grant program to aid with for future flood mitigation

Work Session Agenda

Climate Emergency Flooding = Reorientation & Increased Urgency

- Shifting gears to address more issues with new resources
- *Expectation management*: Shared responsibility (public and private) Watershed-wide issues will remain a challenge. Systemic solutions are long-term.

1. Investment Action Plan (CIP)
2. Maintenance
3. Immediate Aid with Grants & Funding
4. Policy Decisions

Primary Themes* from Public Hearing

- Neighborhood solutions:
 - Technical assistance & engagement
- Flood mitigation grant program
- Acceleration of projects
- Review of Development Policies
- Grants and funding
- Plan for Climate Change

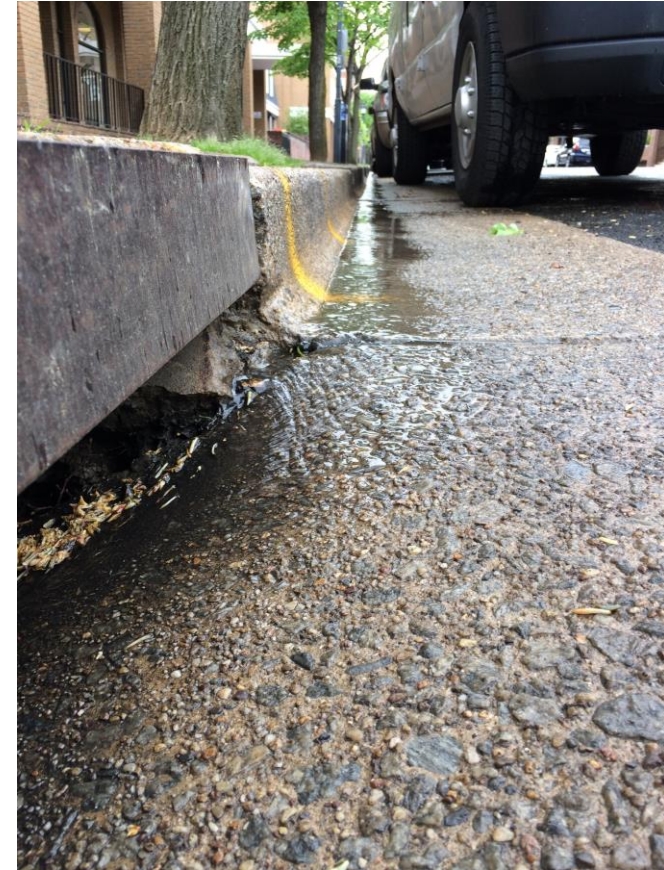
*Work session materials includes question list.



Action Plan

Investment Areas

1. Storm Sewer **Capacity** (CASSCA)
2. **Spot Improvements** Projects
3. **Stream and Channel** Maintenance
4. **Water Quality** Projects (Bay mandates)

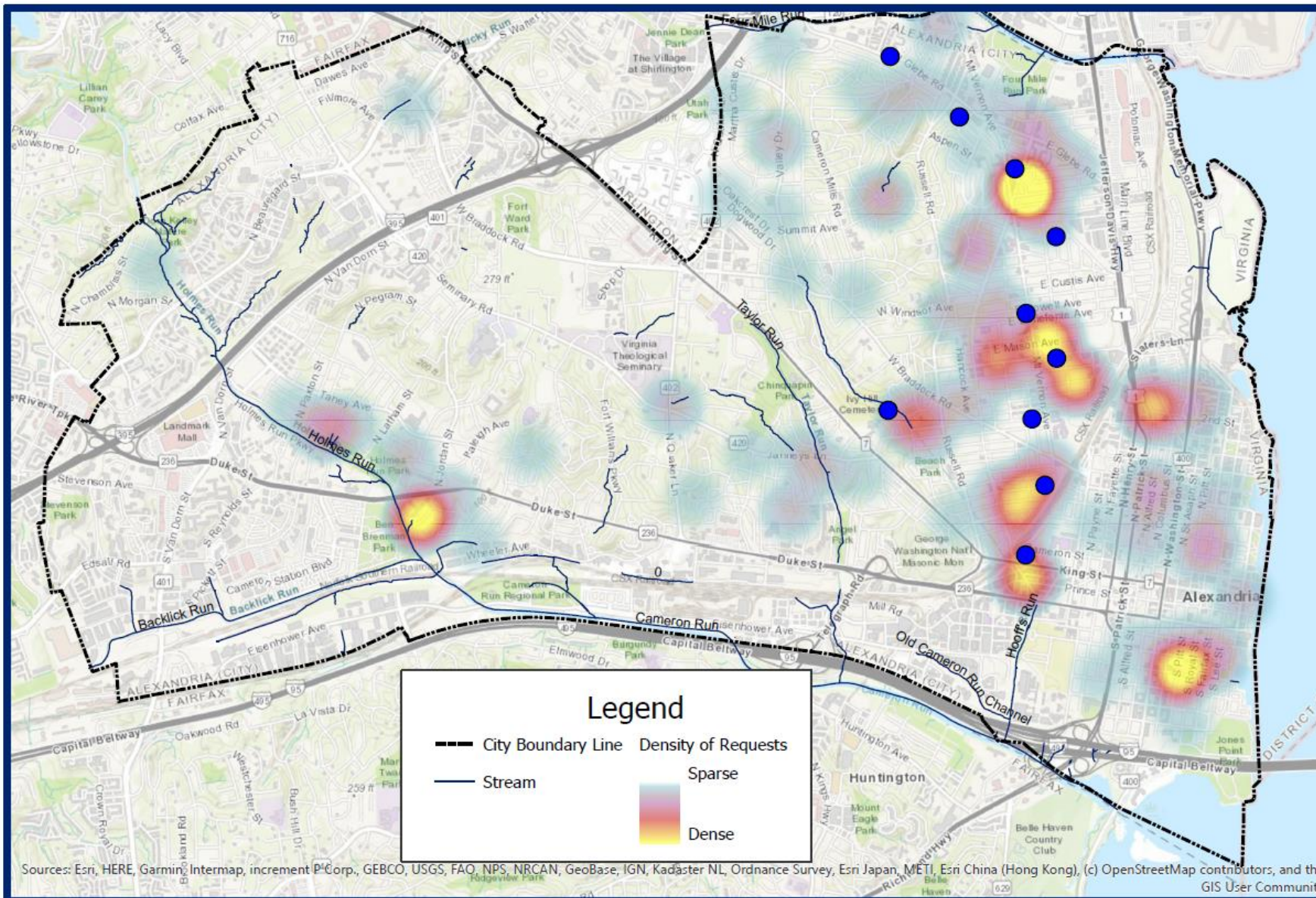


Storm Sewer Capacity (CASSCA)

- Current CIP: \$7.5M in FY 2025
 - Two projects, top priorities in 4MR & Hooffs
 - Cost-benefit & strategies: 10-yr design standard
 - Is this the right design standard?
- **Accelerating projects**
- **Shift future water quality funding to water quantity**



How do critical capacity projects align with recent impacts?



Capacity Prioritization Projects



Table: Hooffs Run Watershed Highest Priorities

Problem Area	Location	Planning Level Capital Cost (millions) ¹
001	Mt. Vernon, Glendale, Luray	\$2.4
002	E. Monroe and Wayne St.	\$.60
006	Dewitt	\$4.1
10	Russel & W. Rosemont	\$.85
17	Russell & W. Rosemont	\$.42
22	E. Mason	\$.30
HRC	Hooffs Run Culvert	\$13.6
		\$22.3

Table: Four Mile Run Watershed Highest Priorities

Problem Area	Location	Planning Level Capital Cost (millions) ¹
101	Commonwealth and Glebe	\$8.0
102	Ashby Street and Glebe	\$4.9
107	Edison and Dale Streets	\$3.5
118	Notabene Dr. and Old Dominion Blvd	\$0.9
		\$18.4

1. 2016 estimates for 10-year design; do not include feasibility, constructability, design, or utility relocation.

Spot Improvements

- Recently completed 5 projects at \$750k
- Increased reporting and identification of needs
- **Accelerate project implementation**
- **Increase resources and funding**

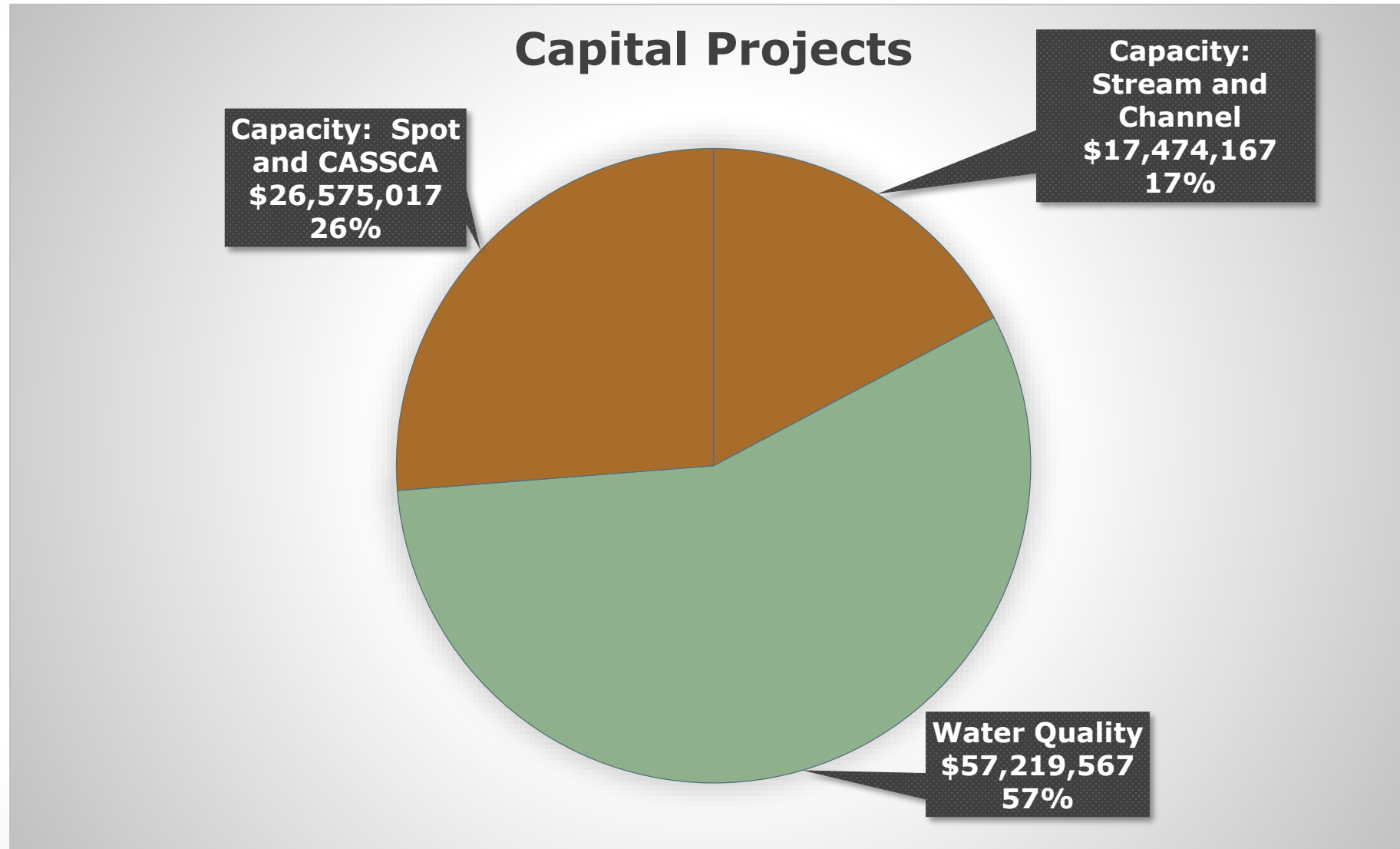


Stream & Channel Maintenance

- Holmes Run, Cameron Run, Hooffs Run, Backlick Run, Taylor Run, others
 - Four Mile Run Flood Control Project
- **Accelerate and increase resources**



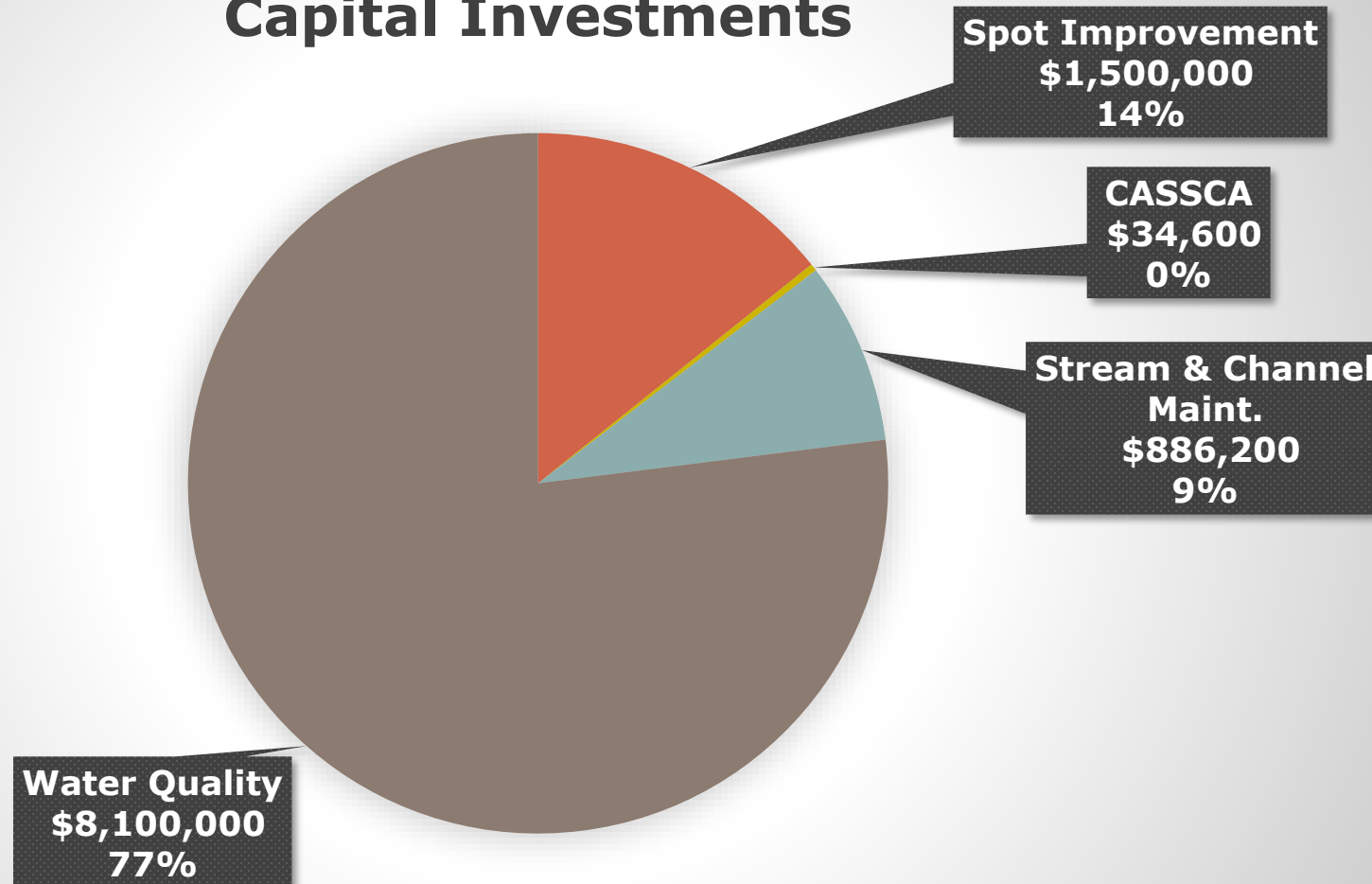
SWU: FY 2021 Approved 10-Year



FY 2021 Approved 10-Year Total: \$101.9M

Capital Project Spending: FY2018 – FY 2020

Capital Investments





Expanded Maintenance Capacity

Storm Infrastructure Maintenance



- Team of 7 dedicated Full Time Employee's (FTEs)
- Mix of **reactive*** and preventative
- 2020 extreme rain events resulted in 500+ requests for service through the City's 311 system



Maintenance Standards

Stormwater Infrastructure*	Minimum Frequency
System "Hot Spots" (~200 locations)	6x per year or before after 1" rain events
Catch Basin/Inlet/Area Drain	Regular observation & inspection; maintenance 2-5 year intervals
Outfall	Annual inspection, maintain as needed
Pipes & culverts	Reactive
Streams & channels	Annual inspection (CIP Program)
Publicly-Owned Best Management Practice ("BMPs")	Annually
Privately-Owned BMPs	Inspections every 5 years

***185 miles of pipes, 13,500 structures and 26 miles of streams/channels**

Hooff's Run Culvert

- Large culvert which conveys stormwater from much of Del Ray, Rosemont, and portions of North Ridge
- Following July 2019 storm, need for inspection and cleaning was identified
 - RedZone Robotics completed in May 2020
- Emergency procurement for cleaning & repair
 - Cleaning anticipated to begin this fall (~6-month process)
 - Cost of nearly \$2 million

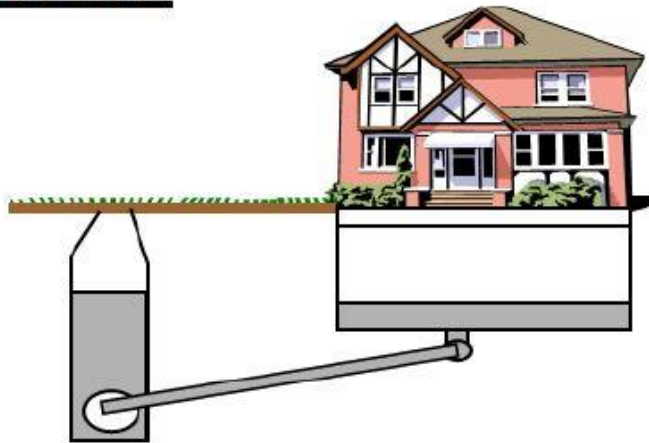


Immediate Aid

Local, State and Federal Aid

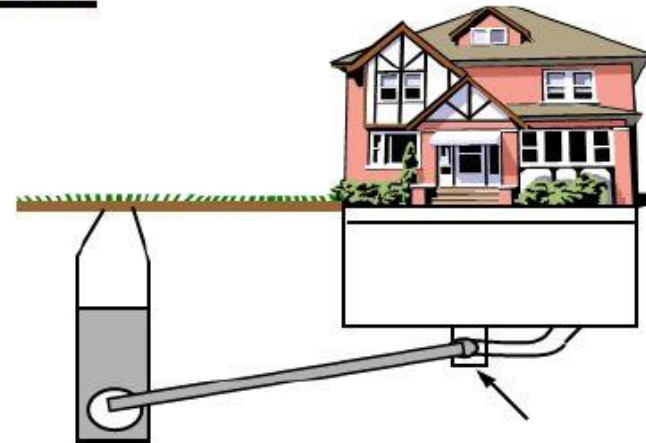
- City Backflow Preventer Program (up to \$2,000) – expansion of eligibility
- Federal (BRIC) & Flood Mitigation Assistance (FMA)

Without BFP



Rainfall overloads sewers – backs-up into basement

With BFP



BFP stops flow from sewer from entering basement

Flood Mitigation Pilot Program

- Public private partnership
- Local grant program to homeowners
- Other initiatives
 - Expansion of backflow preventer
 - Taxation policy opportunities
 - SWU Credit Policy



➤ **Options to manage runoff & accumulation from re/development, not watershed scale challenges**



Rainfall Data and Warning Signs

- Expand/update rain and stream gauge network
 - Expanded 'Warning Signs' and 'Early Warning' system
 - Revise storm characterization
- **Early warning and more coverage, and dashboard / app**





Policy Decisions

Development Regulations and Policies

- Water Quantity
- Water Quality
- Floodplain Management
- Green Infrastructure
- Stormwater Management Master Plan

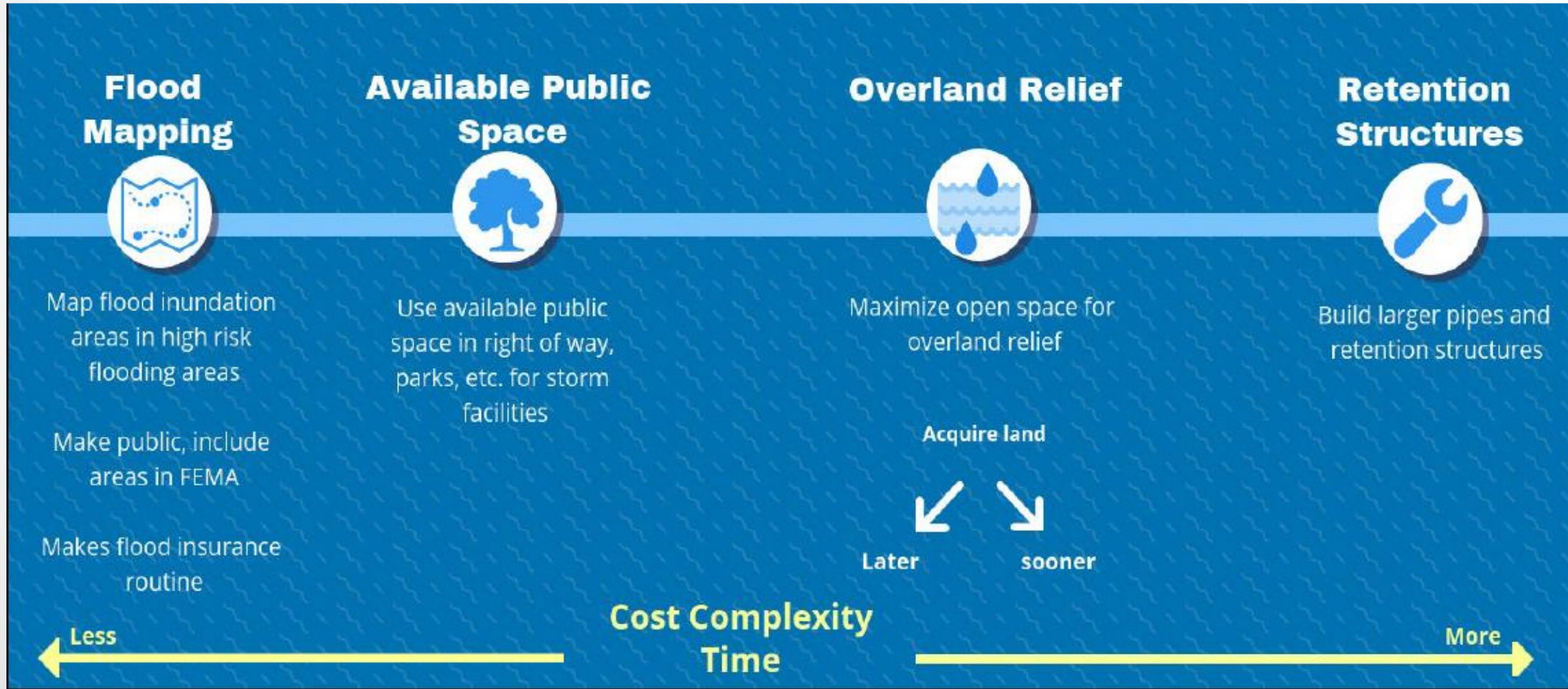


See Technical Addendum for discussion on existing

➤ **Consideration of more stringent requirements**

Public-Private Range of Options

Actions that could have meaningful impact on flooding risk over time





Next Steps

6 Key Takeaways

1. City to accelerate investments by refocusing existing plan, future SWU fee & debt (interdepartmental strike team)
2. City to provide aid through grants and programs to assist with flood resilience costs
3. Neighborhood Engagement and Technical Solutions program this fall
4. Expanded rain and stream gauge access, warning signs & early warning
5. Consideration of more stringent stormwater regulations and policy requirements
6. Accelerate update to the Stormwater Master Plan

What can homeowners do now?

- **Assess property** vulnerabilities NOW
- Ask insurance agent about **flood insurance** and sewer backup endorsement to homeowner's or renter's property
- Use **311** to report flooding: Be eyes, ears AND hands!
- Attend **public forums** – beginning fall
- Participate in **FEMA Flood Map** revision process
- Sign up for **Alexandria eNews**

➤ **Action needed by City and homeowners/businesses**





Next Work Session

- Proposed CIP adjustments
- Proposed Maintenance adjustments
- Neighborhood Engagement and Technical Support Framework
- Flood Mitigation Grant Program schedule
- Regulations & policies to consider



Thank you!
Questions?



Resource Slides

CIP: Water Quality Projects

- ✓ Lake Cook Retrofit
- ✓ Ben Brenman Pond Retrofit
- Stream Restoration Projects
 - Sanitary/storm sewer infrastructure protection, ecology, water quality
 - Lucky Run
 - Taylor Run
 - Strawberry Run
- ***All funded through FY 2021 Approved***

