



City of Alexandria  
Department of Transportation &  
Environmental Services

# **Pitt and Gibbon Combined Sewer Surcharging Mitigation Project Resident Focus Group Meeting**

**October 22, 2025  
Alexandria City Hall**



# Agenda



1. Existing Conditions
2. Study Overview and Findings
3. Alternatives Studied
4. Next Steps
5. Questions



# Existing Conditions

- Combined sewer begins to overflow during relatively frequent, small storms
- Project area located in a local low point in watershed
- Project area inundated by combined sewer overflows

# Existing Conditions



S. Pitt St., east of Lyles-Crouch  
Traditional Academy



400 Block of Gibbon St.

**August 2021 Event**





## Existing Conditions

- Part of the combined sewer system (sanitary and storm)
- Large area contributing drainage to combined sewer:
  - 210 acres total system
  - 115 acres to project site
- Surface flooding is directed toward Pitt and Gibbon
- Entire combined sewer undersized



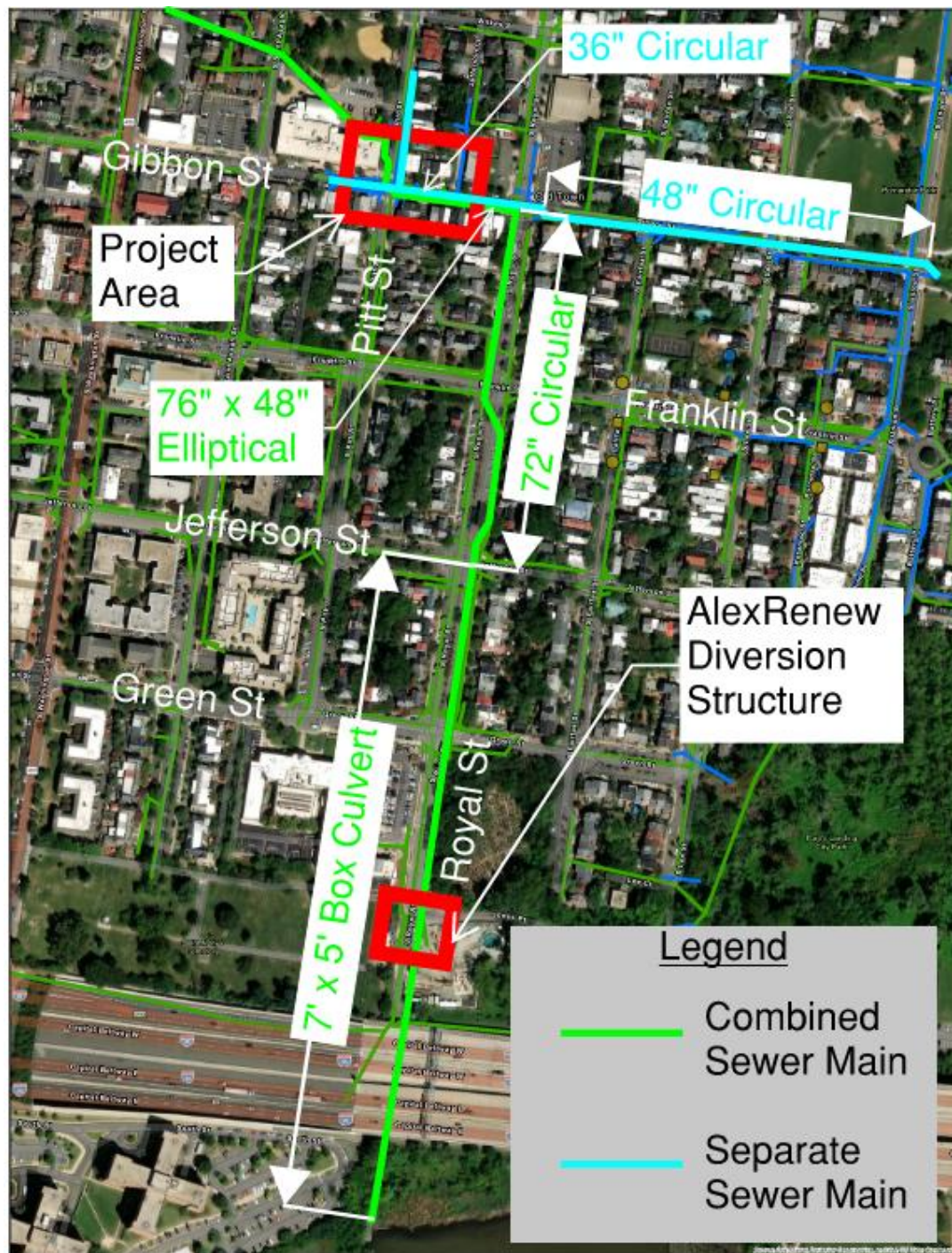
Systemic Factors



# Existing Conditions







# Existing Conditions



- Combined Sewer runs along Royal St and Outfalls to South
- Separate Storm Sewer System runs east along Gibbon St
- AlexRenew diversion structure at Royal St



# Study Overview: Initial Study

Earlier Study (2022): Tanyard Ditch Modeling Update

The study tested five main alternatives:

1. Sewer separation and combined relief sewer
2. Standalone combined relief sewer
3. Underground storage at Lyles-Crouch school
4. Combination of sewer separation and storage
5. Short-term manhole sealing



# Study Overview: Initial Study



## Findings:

- Performance of above listed alternatives was overstated
- Model underestimated flows in the watershed
- Model was addressing local combined sewer overflows at Pitt and Gibbon, but did not consider upstream surface flow



# Study Overview: Expanded Study

Study expanded to investigate additional alternatives:

- Increase combined sewer capacity
- Upsize existing separate storm sewers
- Separate storm and sanitary sewers
- Underground storage
- Pump Station

Result:

- None of the options adequately mitigate a 10-year storm



# Study Overview: Expanded Study



## Findings:

- Infrastructure upgrades provide only limited relief (2-year max)
- None of the options adequately mitigate a 10-year storm
- Area highly susceptible to flooding due to topography

## Recommendations:

- Property-level floodproofing
- **Expansion of flood mitigation grant program under investigation**

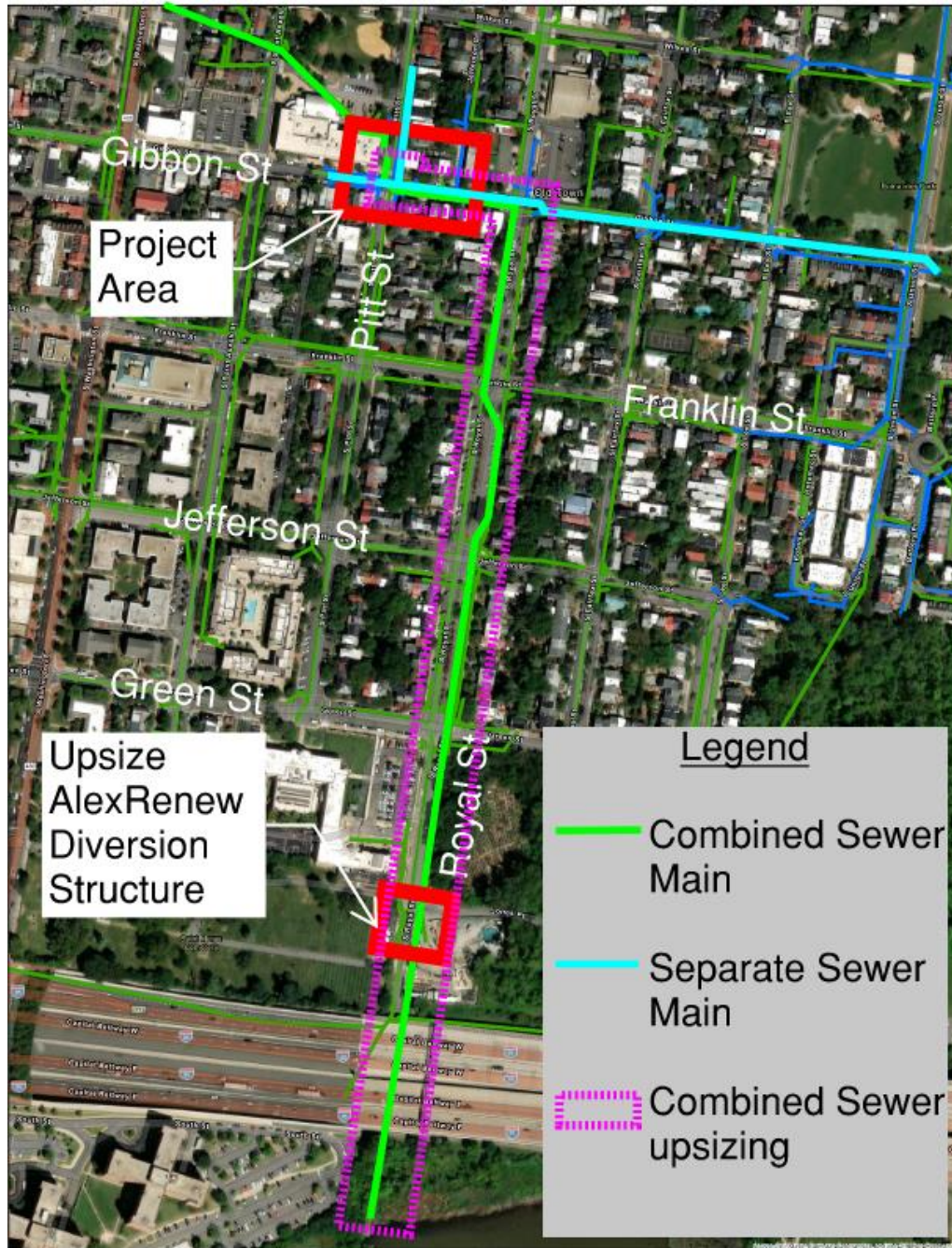


# Expanded Study: Alternatives

1. Increase Combined Sewer Capacity
2. Upsize Existing Separate Sewer
3. Full-Scale Sewer Separation
4. Detention Storage
5. Pumping Station



# Alt 1: Increase Combined Sewer Capacity



- Scope: Upsize combined sewer with 12' x 5' box culvert to outfall (~2,800 LF)
- Goal: relieve bottleneck and provide capacity to keep runoff within system



# Alt 1: Increase Combined Sewer Capacity

## Constraints:

- System extremely flat (~0.2% slope)
- Shallow pipe system, limits allowable pipe height
- Alignment dense with utilities
  - Water: 6" and 12" mains on both sides of road
  - Sanitary Sewer: Mains on both sides of road
  - Other: Gas, telecom, electric
- AlexRenew diversion structure at Royal St.





# Alt 1: Increase Combined Sewer Capacity

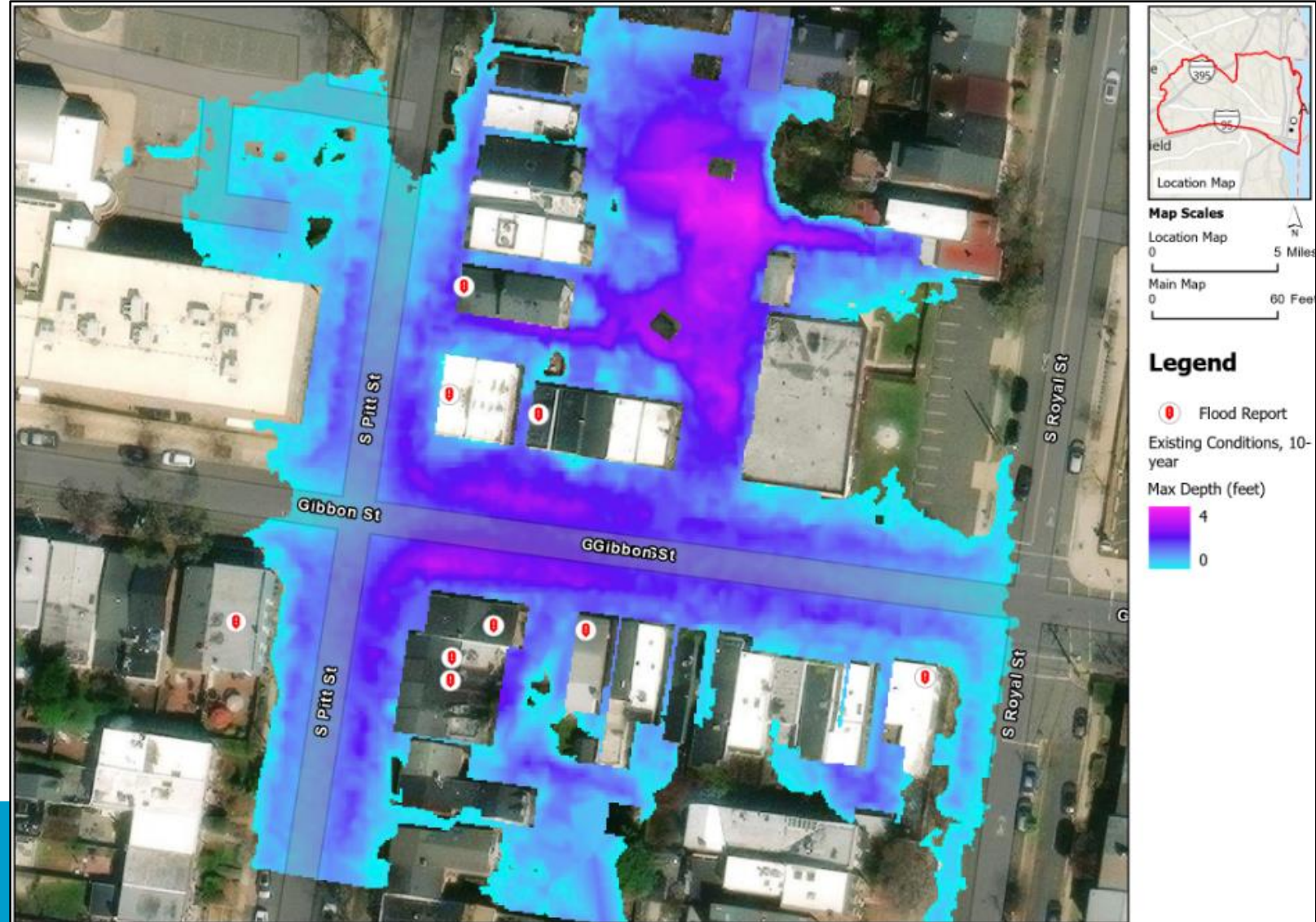
## Results:

- <2-year protection without upsizing AlexRenew diversion
- 2-year protection with upsizing AlexRenew diversion
- **Not feasible** to achieve meaningful (10-year) protection due to structural and spatial limitations
- Even with larger downstream pipes, stormwater from surrounding streets would continue to collect at this low point.



# Alt 1: Increase Combined Sewer Capacity

Existing Conditions:  
10-year Flood

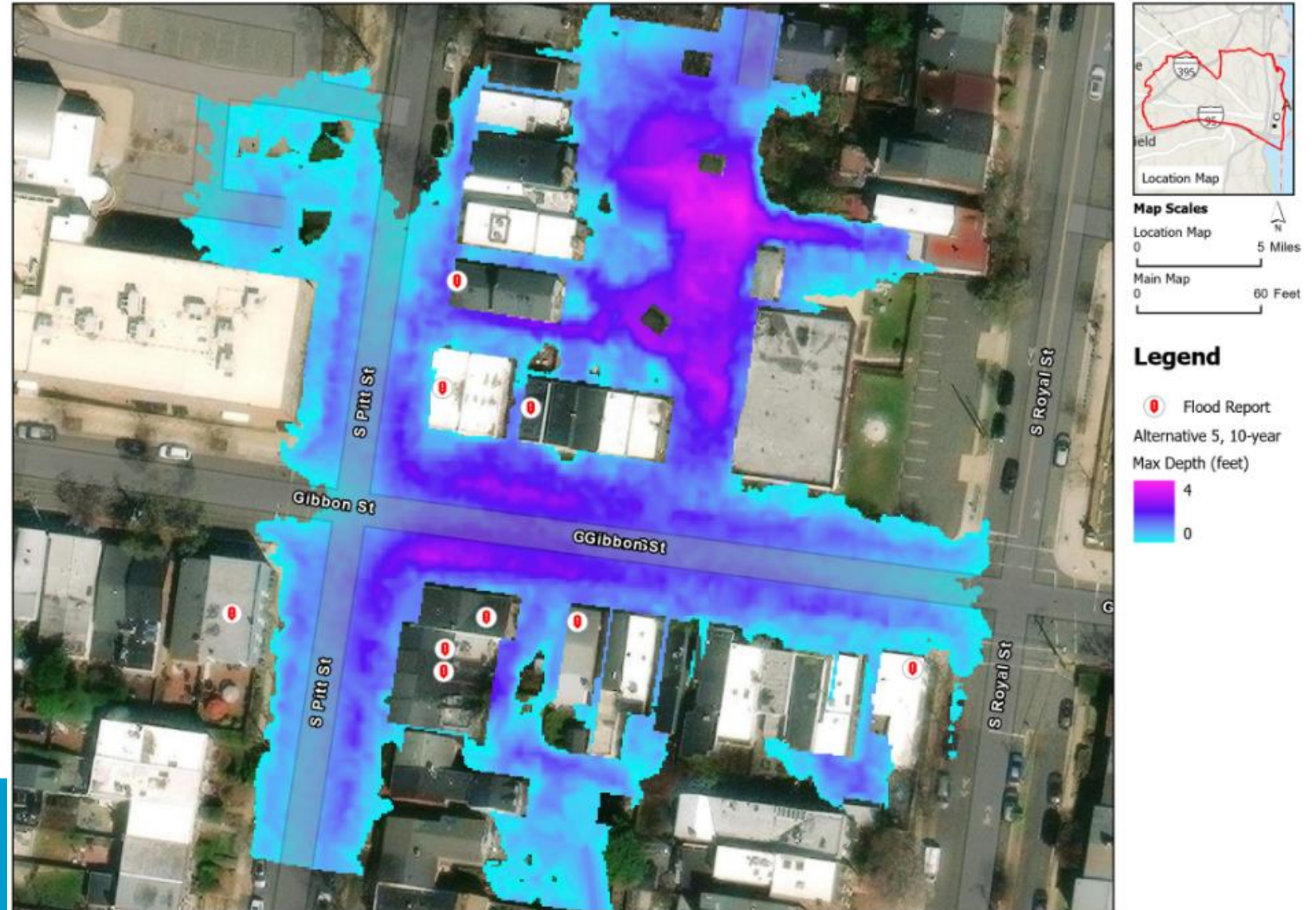






# Alt 1: Increase Combined Sewer Capacity

Alternative 1:  
10-year Flood







# Alt 2: Upsize Existing Separate Sewer

## Description:

- Upsize the separate storm sewer along Gibbon St
- Intent is to relieve inundation at low point by increasing capacity
- Separate system constructed as part of Tanyard Ditch Conveyance project, constructed in 2007



# Alt 2: Upsize Existing Separate Sewer







# Alt 2: Upsize Existing Separate Sewer







# Alt 2: Upsize Existing Separate Sewer

## Constraints:

- Separate storm pipe has roughly  $1/10^{\text{th}}$  of the required capacity at bottleneck (48") for 10-year combined sewer overflows
- Upsizing downstream of existing tunneled pipe would require major excavation and deep tunneling (beyond traditional methods)
- Dense utilities, and required depth of excavation, make this option infeasible

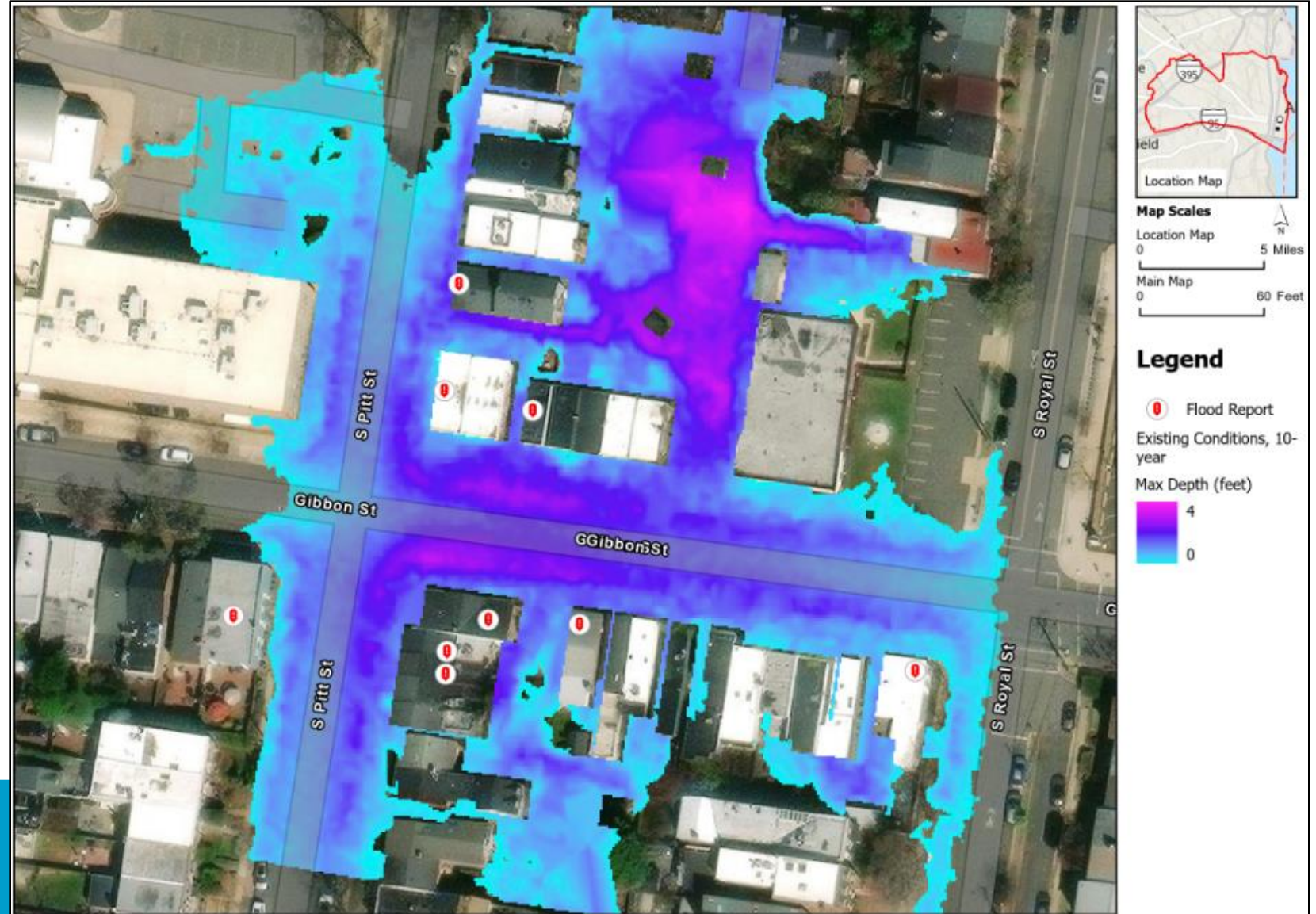
## Results:

- Upsizing existing tunneled pipe not feasible
- No significant improvement unless 48" upsized



# Alt 2: Upsize Existing Sewer

Existing Conditions:  
10-year Flood

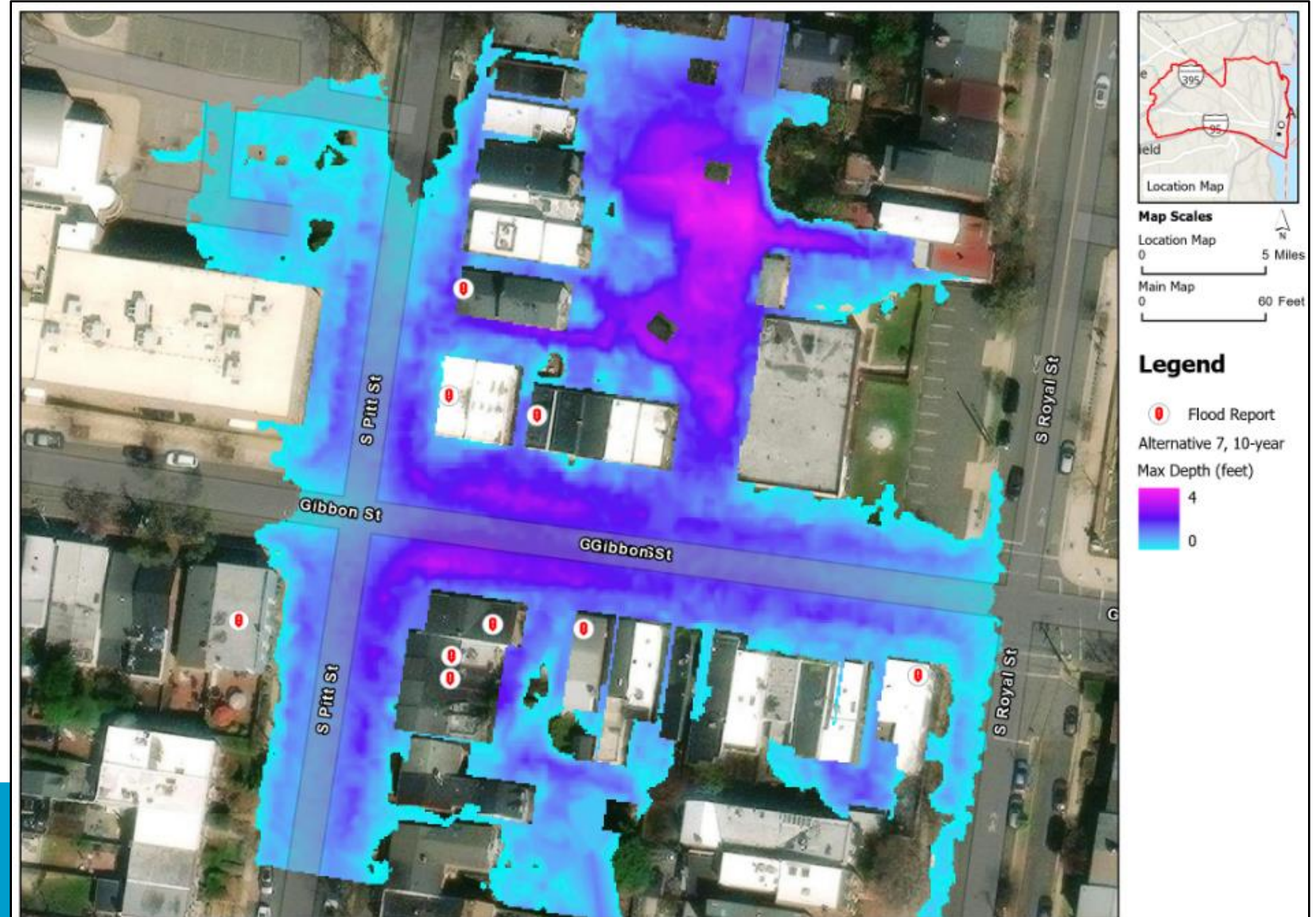






# Alt 2: Upsize Existing Sewer

Alternative 2:  
10-year Flood







# Alt 3: Full-Scale Sewer Separation

## Description:

- Separate storm and sanitary flows throughout combined watershed (Royal St. outfall)

## Constraints:

- Above-mentioned constraints apply to this option as well
- Separation still requires a new pipe system
- Existing combined sewer alignment follows natural topography
- New outfalls would require multiple jack and bore excavations



# Alt 4: Detention Storage

## Description:

- Provide underground storage tank to hold excess flow
- Only viable location: Lyles-Crouch school field (~50,000 sf area, 6-ft depth).





# Alt 4: Underground Storage

## Constraints:

- Space available ~ 50,000 sf
- Storage needed for 10-year storm ~ 500,000 sf
- Restricts future school expansion
- Combined sewer flow adds maintenance concerns
- Alternative relies on upstream inlet capture

## Results:

- <1-year protection at maximum feasible volume





# Alt 5: Pumping Station

## Description:

- Combined sewer pumping station to prevent overtopping





# Alt 5: Pumping Station

## Constraints

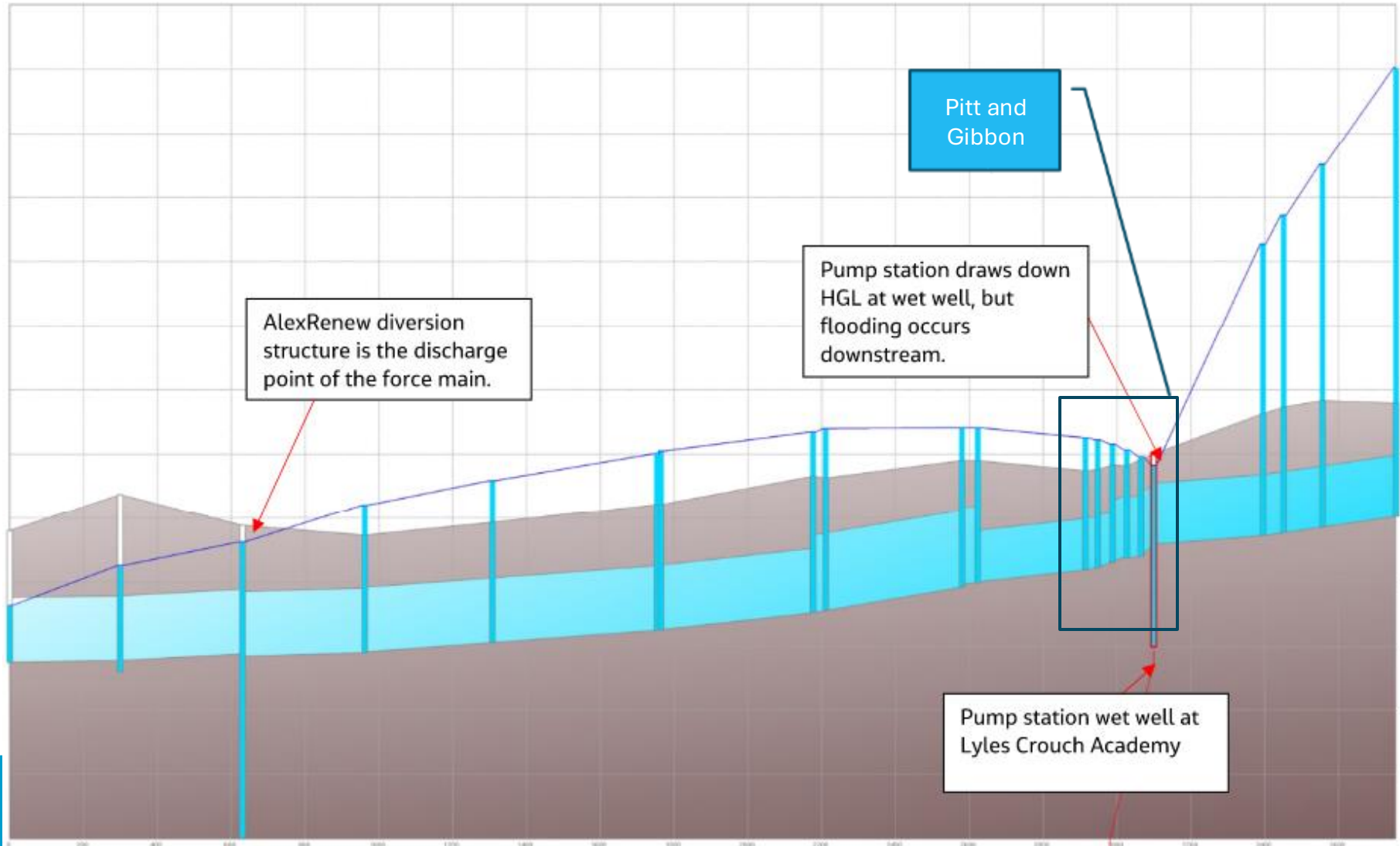
- Downstream pipes are already full during major storms
- Limited space available for the pump station
- Large cost, power needs, and operational risk

## Results

- Pump size required not feasible
- Does not mitigate upstream overflows
- Potential regulatory issues with respect to AlexRenew diversion



# Alt 5: Pumping Station



Combined  
sewer profile  
with pump:  
10-year Storm





# Next Steps

- Evaluate floodproofing grant program expansion with consultant team:
  - Evaluate city-wide modeling for flood prone areas
  - Review programs from neighboring jurisdictions
  - Determine program structure
  - Determine eligibility of properties
  - Public update planned for Spring 2026
  - Options for technical assistance
- Pitt and Gibbon is a high priority area for this expansion



# Next Steps

- Work with Board of Architectural Review (BAR) to streamline private upgrade approvals
- BAR helped identify potential flood proofing measures for at risk properties
  - Masonry walls with removable flood barriers (e.g., 421 Gibbon Street)
  - Removable flood barriers for identified points of entry
  - Waterproofing
  - Residents not limited to these measures



# Open Discussion / Q&A

## Questions?

### Contact:

Jonathan Whiteleather

Technical Project Manager

(703) 746-4637

[Jonathan.whiteleather@alexandriava.gov](mailto:Jonathan.whiteleather@alexandriava.gov)

Suzanne Salva

Civil Engineer III

(703) 746-4053

[Suzanne.salva@alexandriava.gov](mailto:Suzanne.salva@alexandriava.gov)