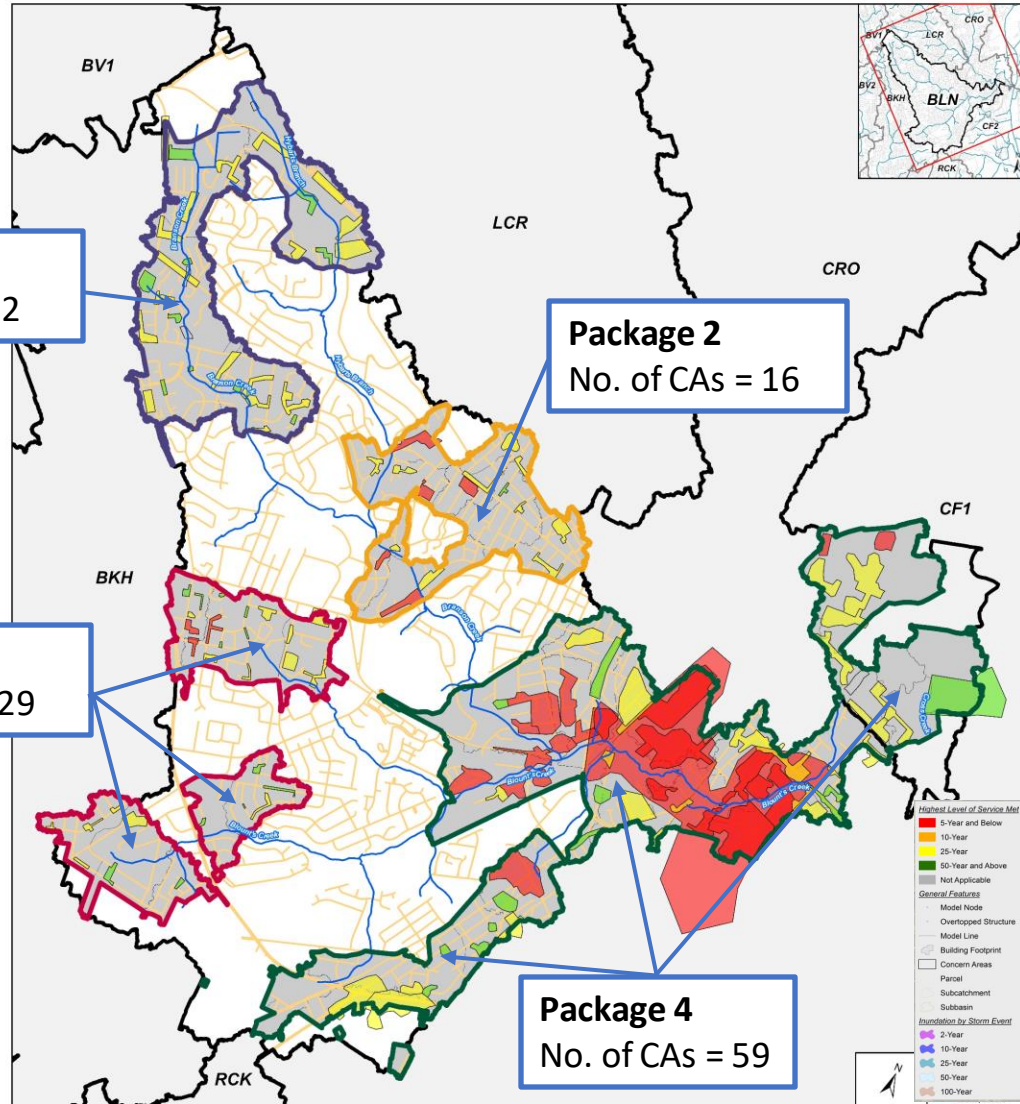




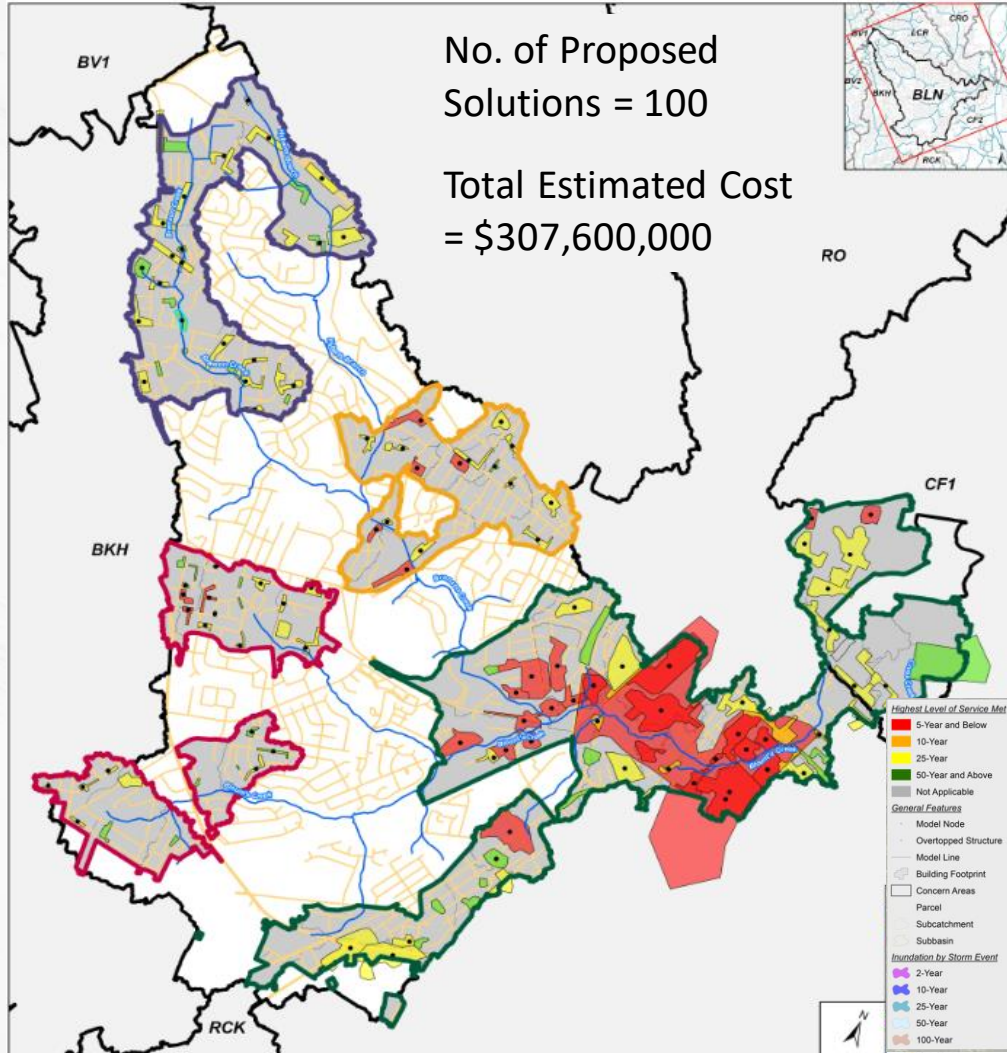
# Watershed Master Plan Solutions for Blounts Creek

*City Council Work Session:  
September 5, 2023*



- Blounts Creek evaluated as four separate packages (areas)
- Total Number of Concern Areas (CAs) = 136
- Majority of CAs in Downtown (Package 4)





Study Area

- 92 – Total Subbasins
- 50 - Priority I Subbasins
- 6.22 – Sq. Miles

Study Identified

- 136 – Concern Areas (CAs)
- 101 – CAs Selected
- 100 – Proposed Solutions

Miles of Impacted Lane Length Identified – 46.5 | Resolved – 33.8

Number of Traverse Road Crossing Identified – 13 | Resolved - 1

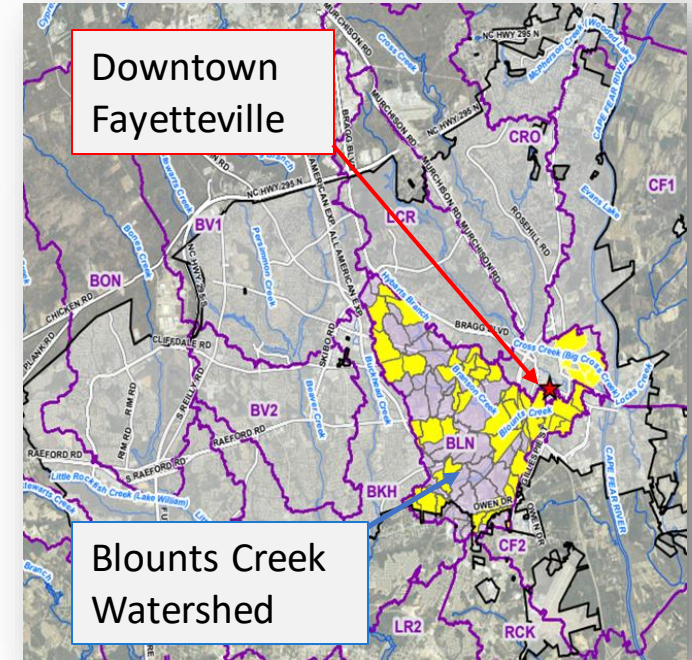
Number of Disconnected Structures Identified – 366 | Resolved - 216

Number of Impacted Structures

	10-yr	25-yr	50-yr
Identified	155	138	112
Resolved	91	46	65

Identified – 155 | 138 | 112

Resolved – 91 | 46 | 65





## Russell/Person Street Bridges and Stream Improvements

### Person Street Improvement

- Replacement of City-owned bridge
- Estimated Cost = \$3.9 million

### Russell Street Improvements

- Replacement of 2 DOT and 1 CSX bridge
- Estimated Cost = \$12.8 million

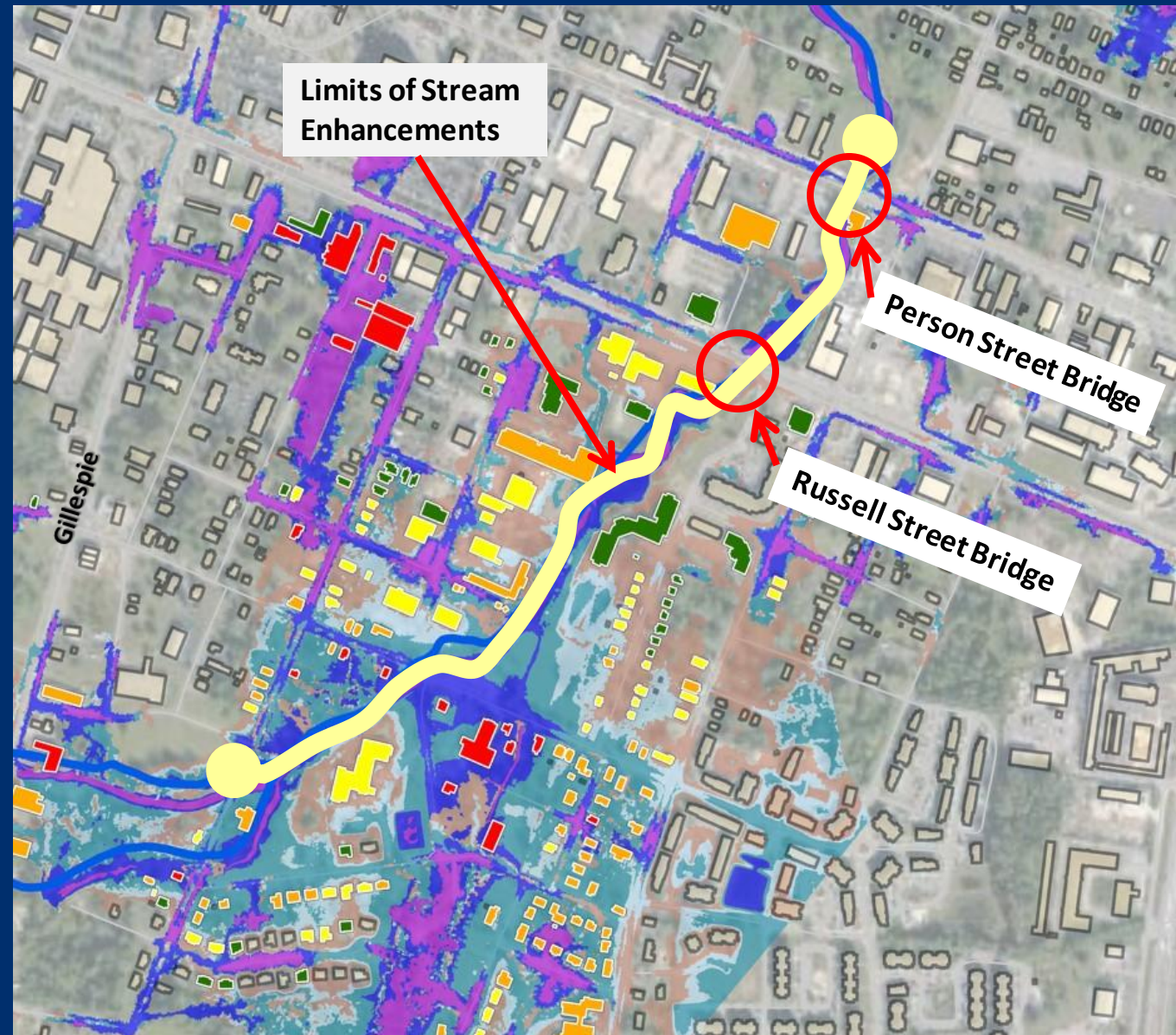
### Blounts Creek Stream Enhancements

- Stabilize and provide additional floodplain storage for 4,000 lineal feet of Blounts Creek in downtown
- Estimated Cost = \$4.9 million
- Project received \$200k from GoldenLEAF for conc. design

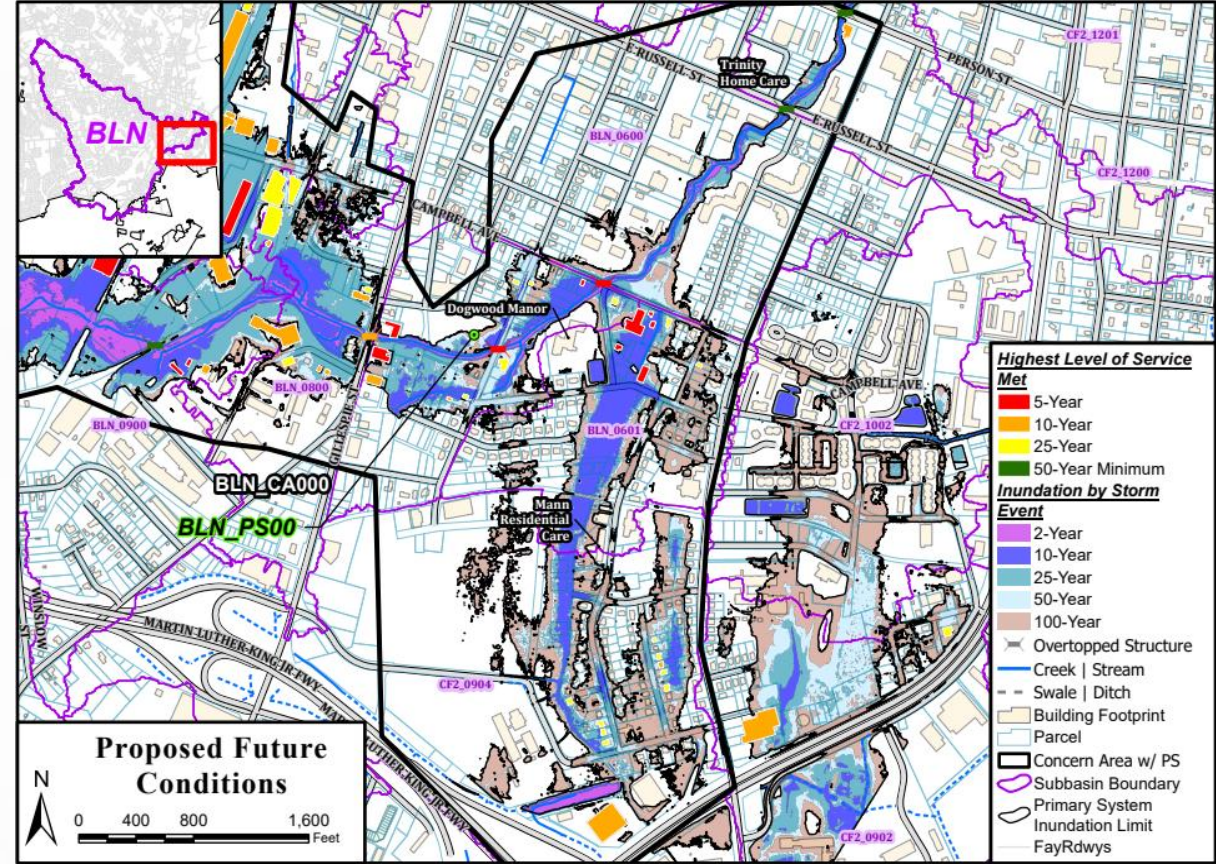
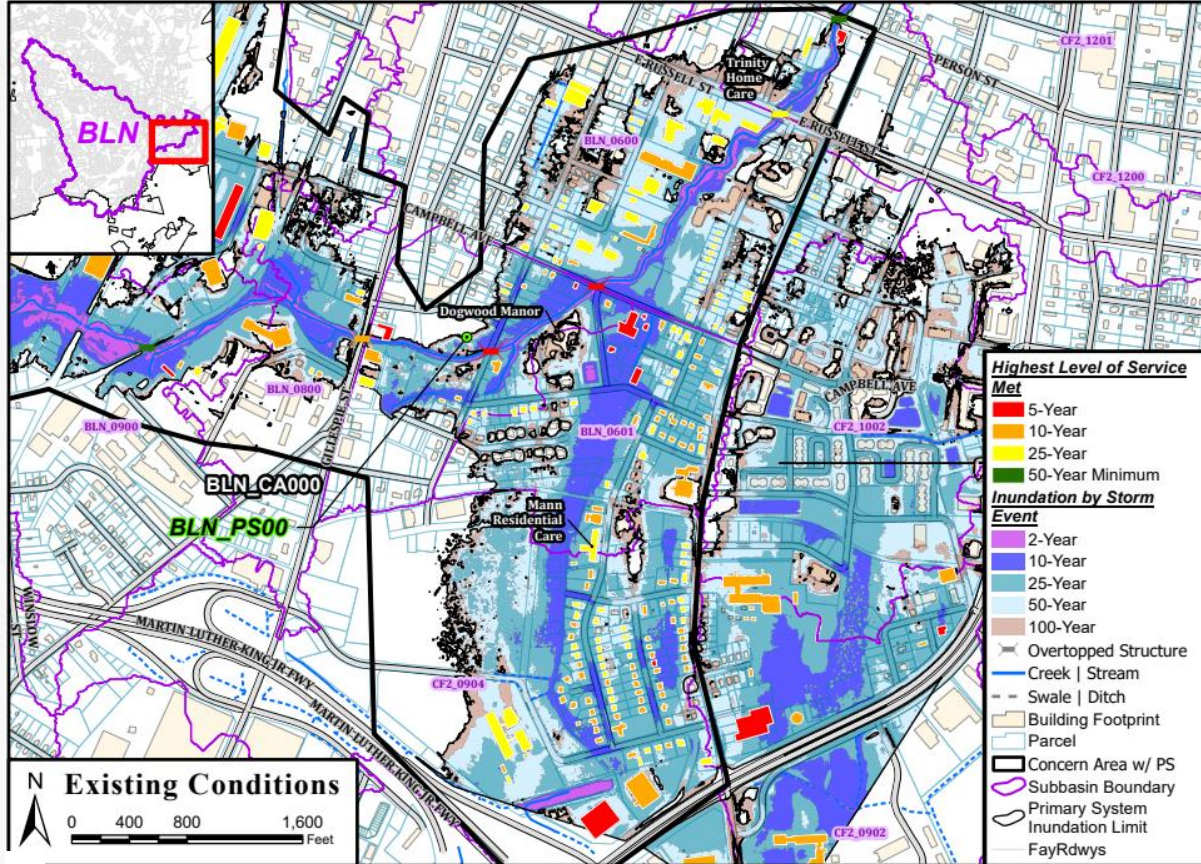
Total Budget Cost = \$21.6 million

Project currently in initial design stage

Recently awarded FEMA BRIC funding:  
\$15.4M Federal + \$6.2M City Match



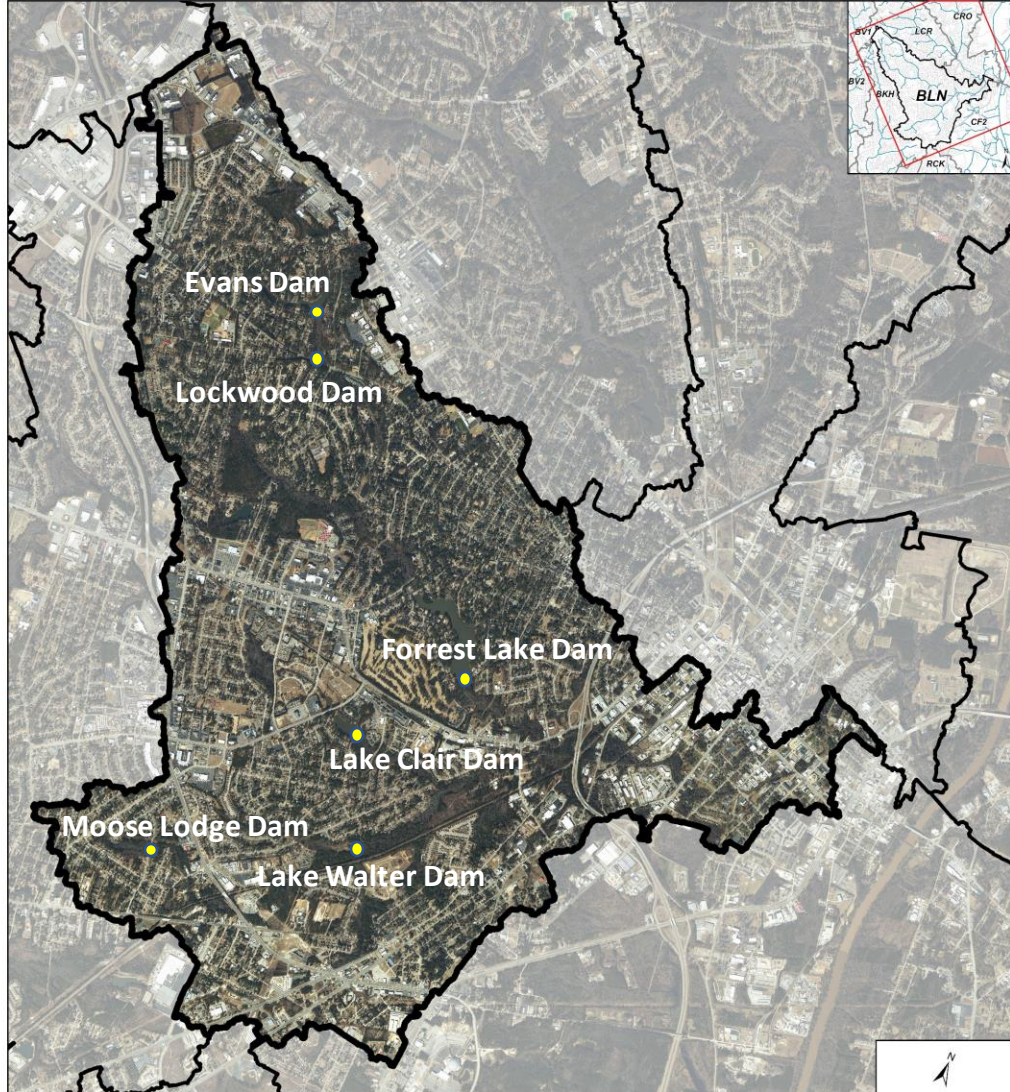




**Benefits:**

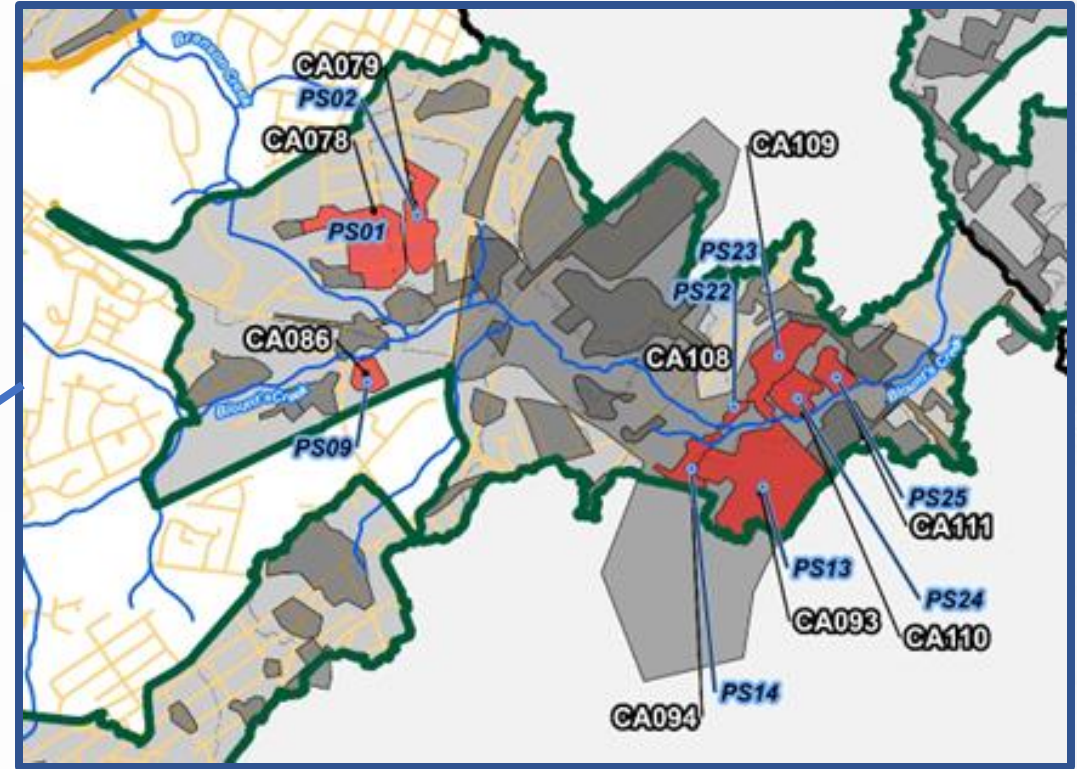
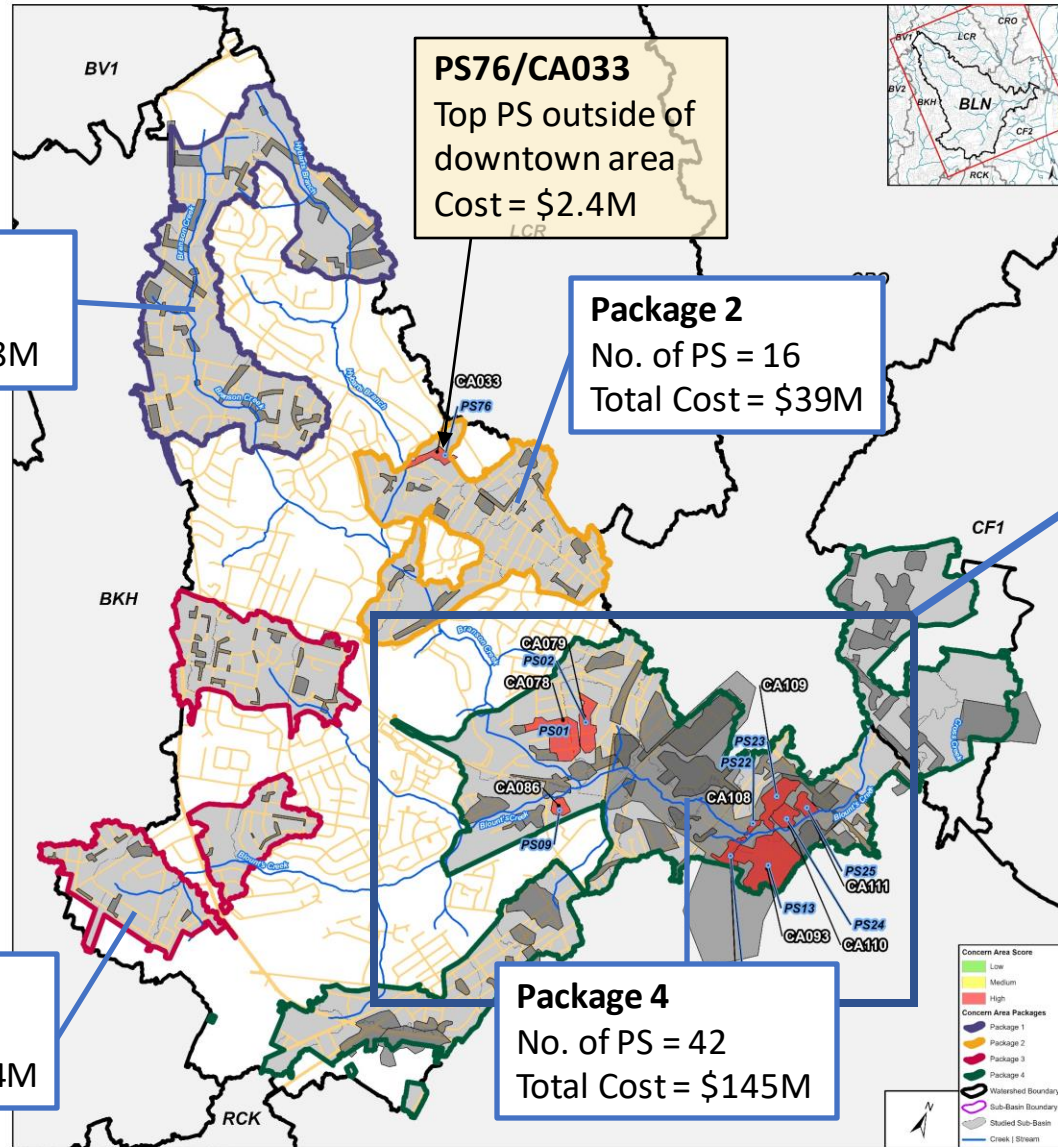
- Intersects with 10 storm sewer system Concern Areas and will reduce flood impacts for each
- Provides \$52M benefit over 10 years in flood risk reduction and property damage
- Stream enhancements will provide environmental and public benefits contributing to a resilient watershed





Dam Name	Dam Ownership	Status	Potential Solution	Solution Benefit
Evans Dam	Private	Impounding	Real time controls	Limited
Forrest Lake Dam (Branson Lake Dam)	Unknown (Private)	Impounding	Real time controls	Limited
Lake Clair Dam	Private	Impounding	Real time controls	Limited
Moose Lodge Dam	Private	Exempt	Weir/riser structure	Moderate
Lockwood Dam	Private	Breached	Weir/riser structure	Moderate
Lake Walter Dam	Private	Breached	Weir/riser structure	Moderate





Nine of Top Ten Proposed Solutions (PS) Located in Downtown Area



Propose Solutions prioritized based on a combination of non-biased, data-driven factors:

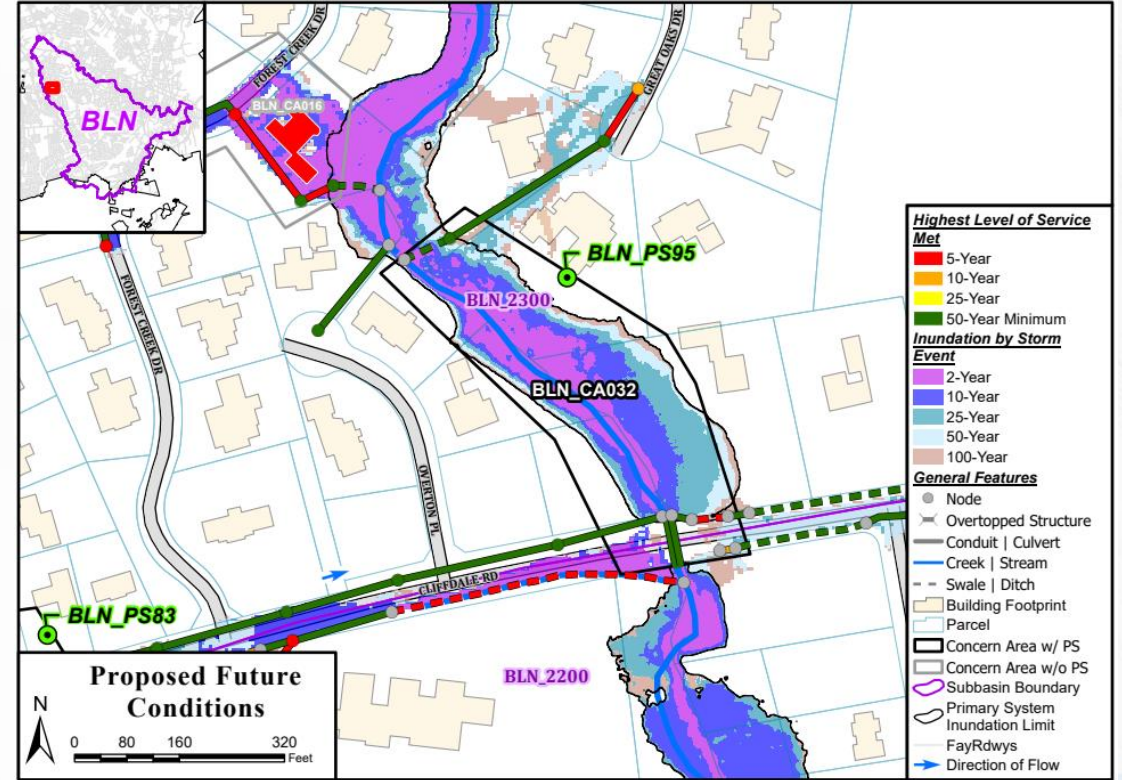
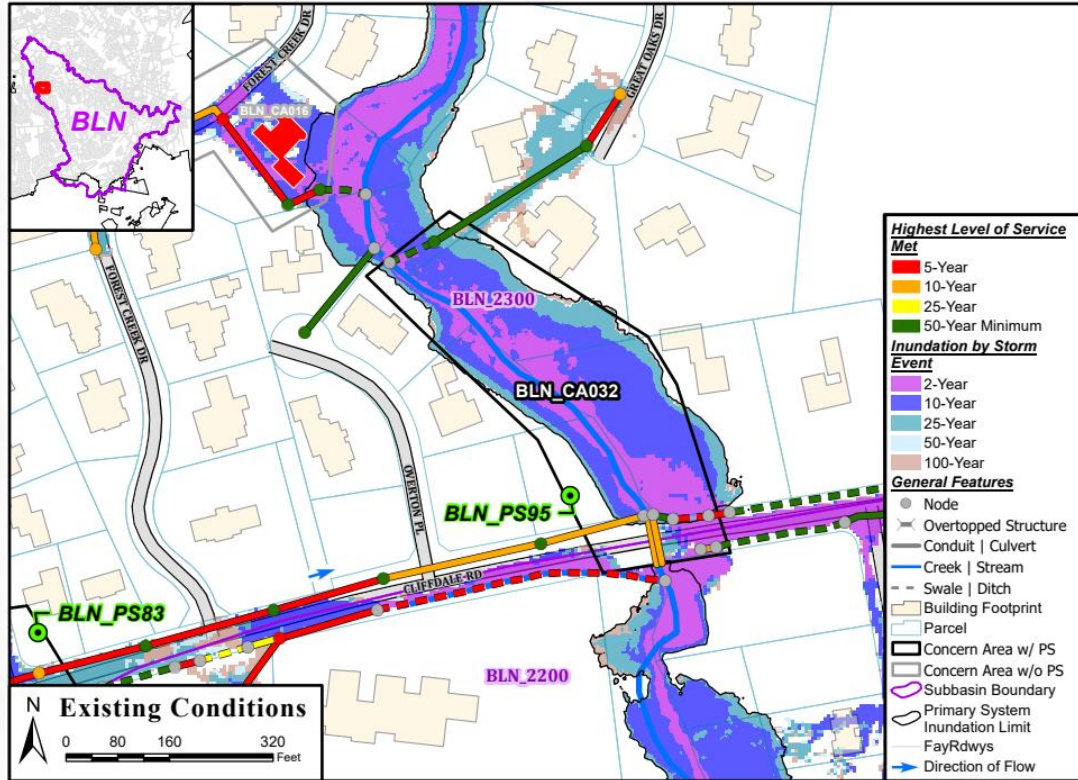
- Concern Area score (highest to lowest)
- Efficacy (is there a practical solution based off funding?)
- Equitable distribution between watershed areas
- Strategic selections (i.e. DOT right of way, greater benefit to the community)

## Example: Why did the Skye Drive Proposed Solution fall outside of the Top Ten?

- Concern Area score = 3
- Proposed solution (additional culvert) would only provide minimal reduction in water surface elevation during flood events based on modeling results
- Skye Drive would need to be raised by 4' or dam on Evans Lake lowered by 4' to address hydraulics issue







- Council Districts 5 & 9
- Proposed Solution = Culvert upsizing
- CA Score = 3
- Efficacy = 63%
- Estimated Cost = \$1.4M

- Eliminates Roadway Overtopping from 50-yr event





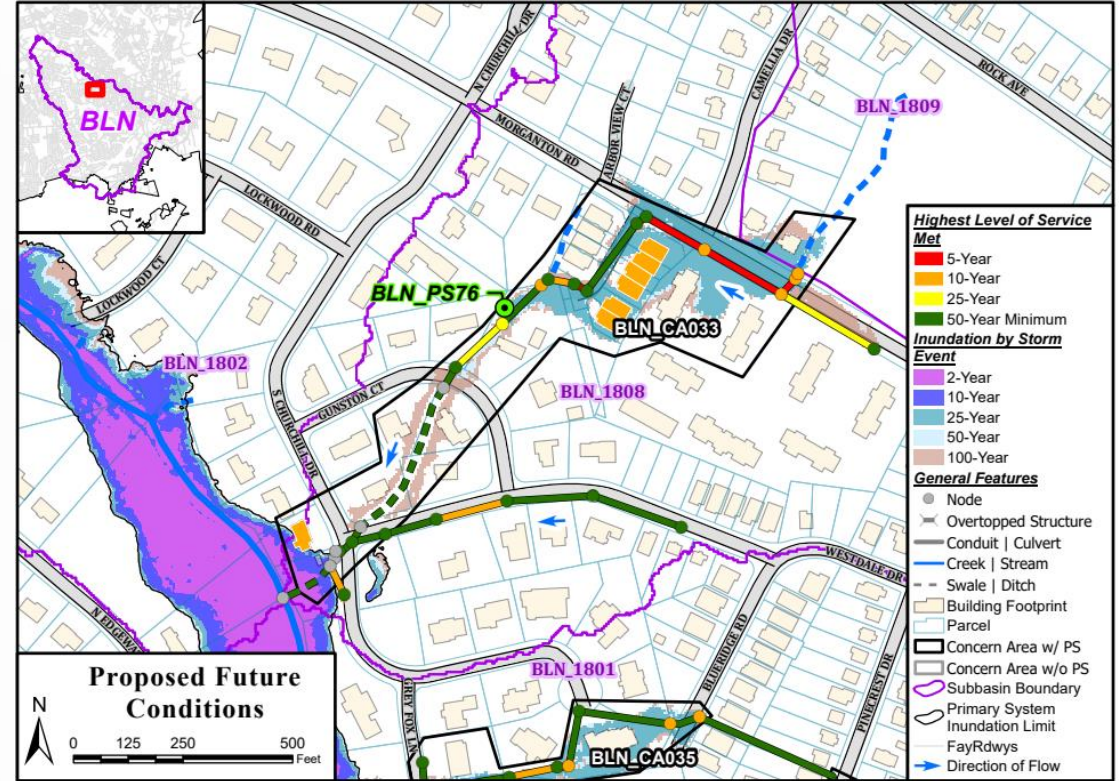
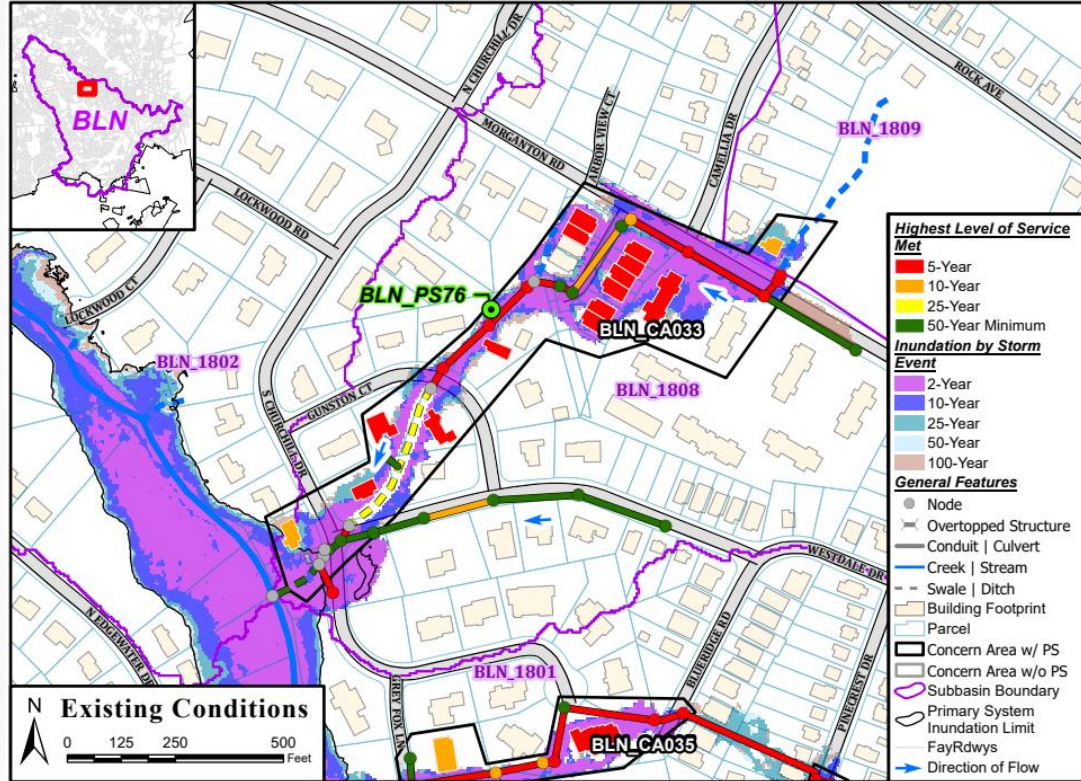
## **PS76 (CA033) – Wynncrest Lane**

- Council District = 5
- CA Score = 29
- Efficacy = 73%
- Estimated Cost = \$2.4M
- Reduces 2,000 LF of impacted lane length for 10-yr LOS
- Eliminates 6 disconnected structures for 50-yr event
- Eliminates 8 structures from 10-, 25-, & 50-yr events

## **PS61 (CA048) – Raeford Road/Club Circle**

- Council District = 2
- CA Score = 19
- Efficacy = 96%
- Estimated Cost = \$1.8M
- Reduces 2,500 LF of impacted lane length for 10-yr LOS
- Eliminates 0 disconnected structures for 50-yr event
- Eliminates 1 structures from 10-, 25-, & 50-yr events

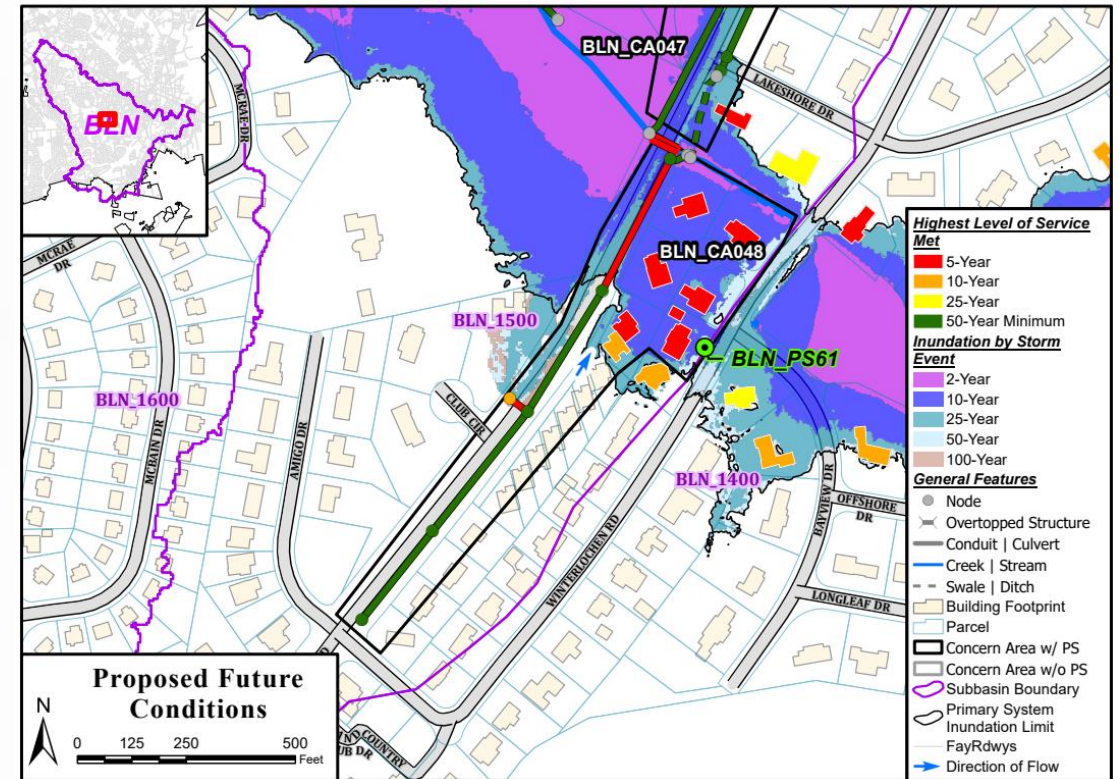
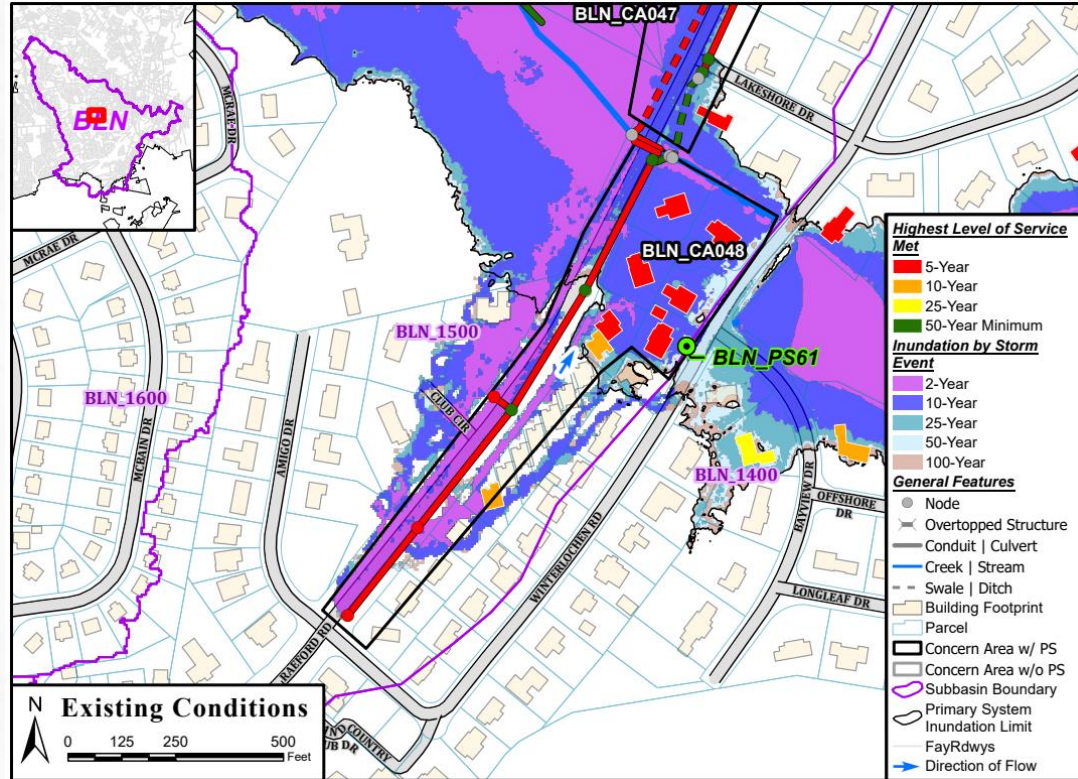




- Council District 5
- Proposed Solution = Storm sewer upsizing
- CA Score = 29
- Efficacy = 73%
- Estimated Cost = \$2.4M

- Reduces 2,000 LF of impacted lane length for 10-yr LOS
- Eliminates 6 disconnected structures for 50-yr event
- Eliminates 8 structures from 10-, 25-, & 50-yr events





- Council District 2
- Proposed Solution = Storm sewer upsizing
- CA Score = 19
- Efficacy = 96%
- Estimated Cost = \$1.8M

- Reduces 2,500 LF of impacted lane length for 10-yr LOS
- Eliminates 0 disconnected structures for 50-yr event
- Eliminates 1 structures from 10-, 25-, & 50-yr events





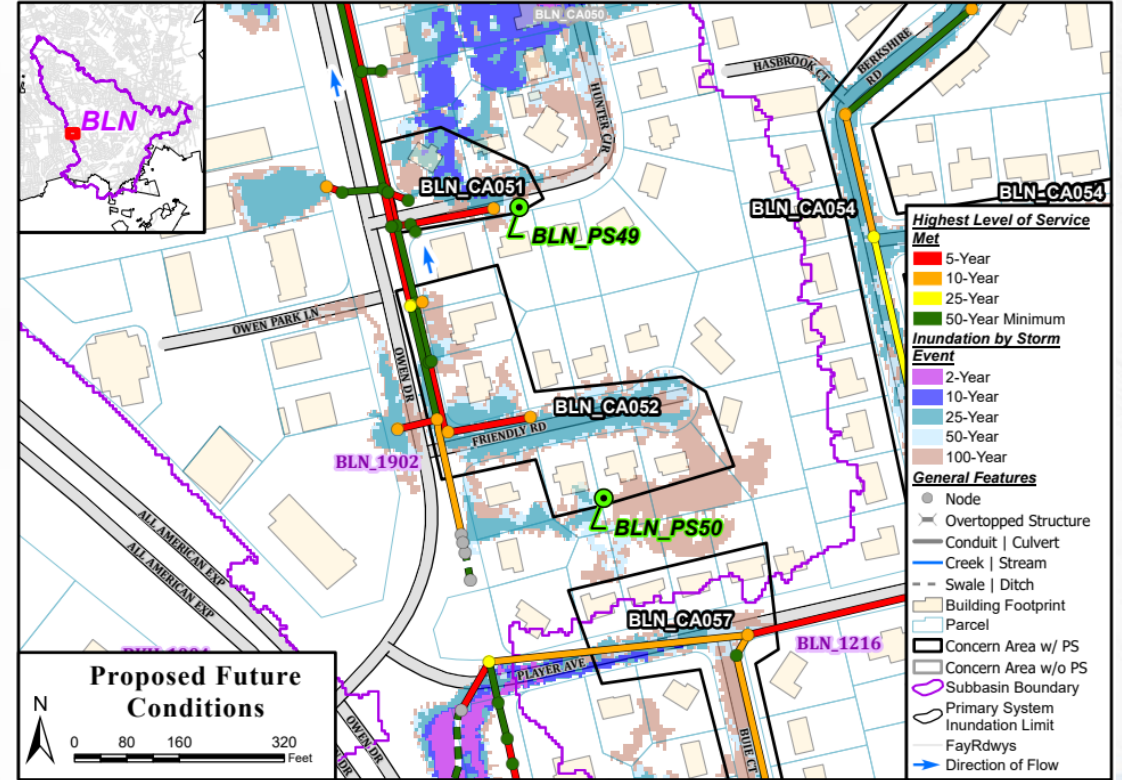
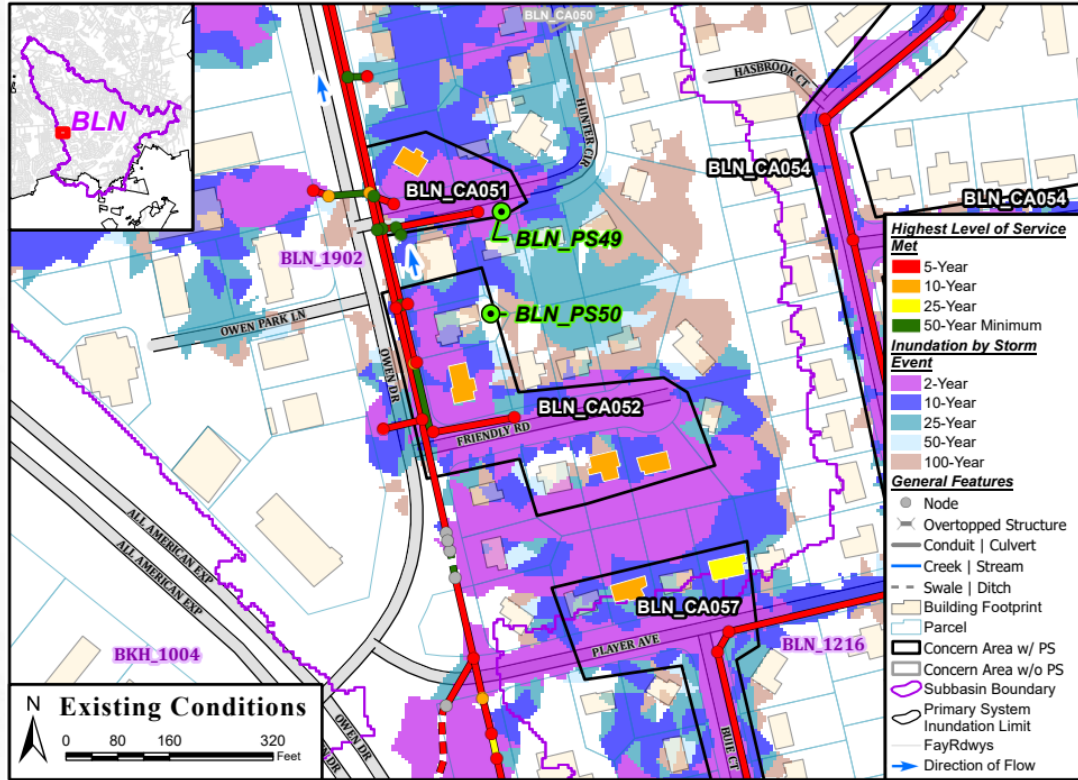
## PS50 (CA052) – Owen Dr./Friendly Rd.

- Council District 5
- CA Score = 13
- Efficacy = 78%
- Estimated Cost = \$1.1M
- Reduces 250 LF of impacted lane length for 10-yr LOS
- Eliminates 8 disconnected structures for 50-yr event
- Eliminates 3 structures from 10-, 25-, & 50-yr events

## PS53 (CA054) – Berkshire Rd/Alden Dr.

- Council Districts 2 & 5
- CA Score = 14
- Efficacy = 67%
- Estimated Cost = \$1.5M
- Reduces 2,850 LF of impacted lane length for 10-yr LOS
- Eliminates 17 disconnected structures for 50-yr event
- Eliminates 0 structures from 10-, 25-, & 50-yr events

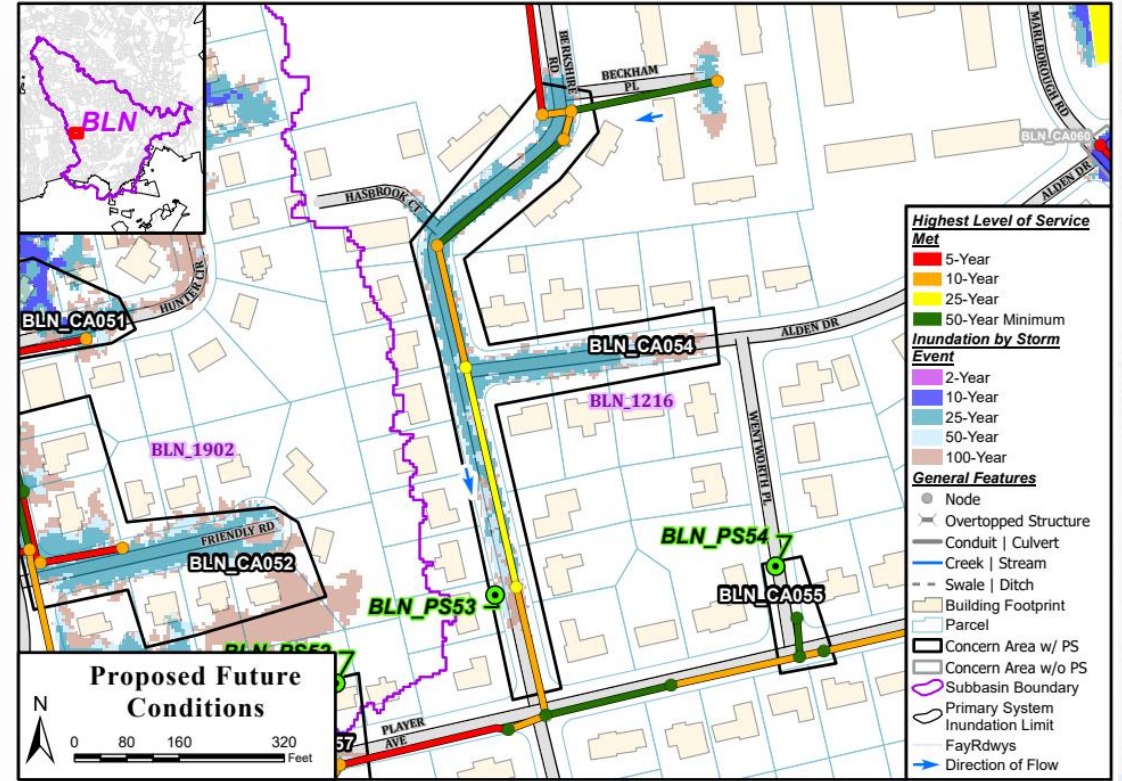
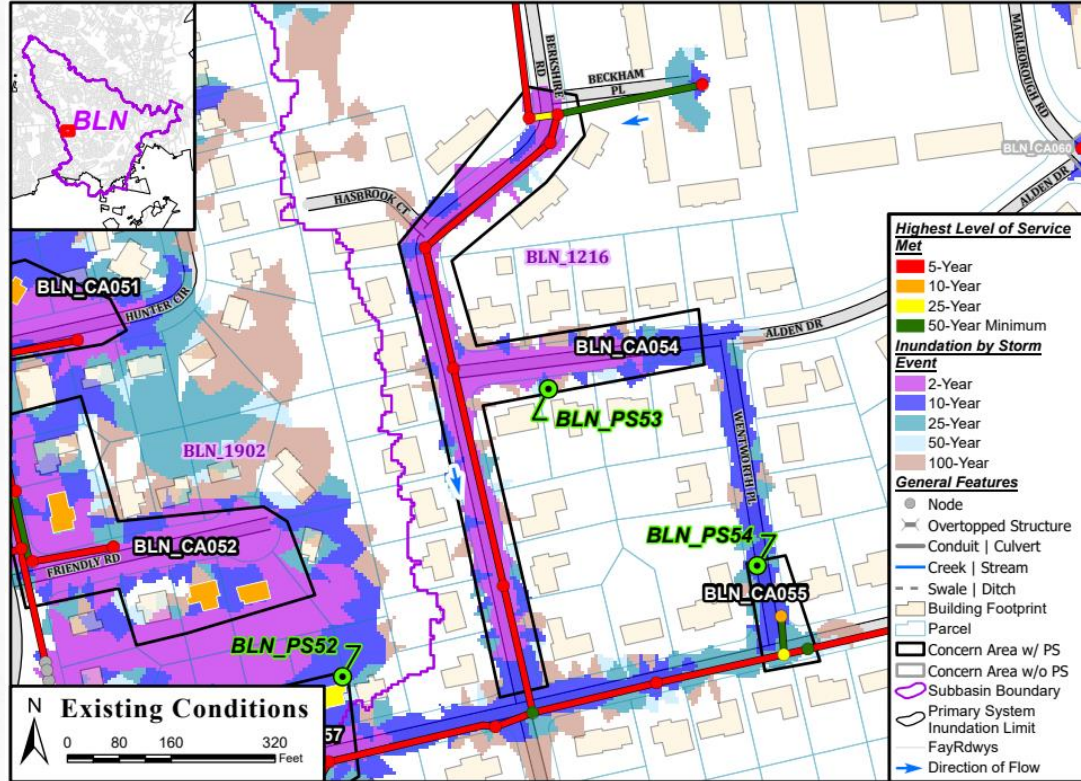




- Council District 5
- Proposed Solution = Storm sewer upsizing
- CA Score = 13
- Efficacy = 78%
- Estimated Cost = \$1.1M

- Reduces 250 LF of impacted lane length for 25-yr LOS
- Eliminates 8 disconnected structures for 50-yr event
- Eliminates 3 structures from 10-, 25-, & 50-yr events

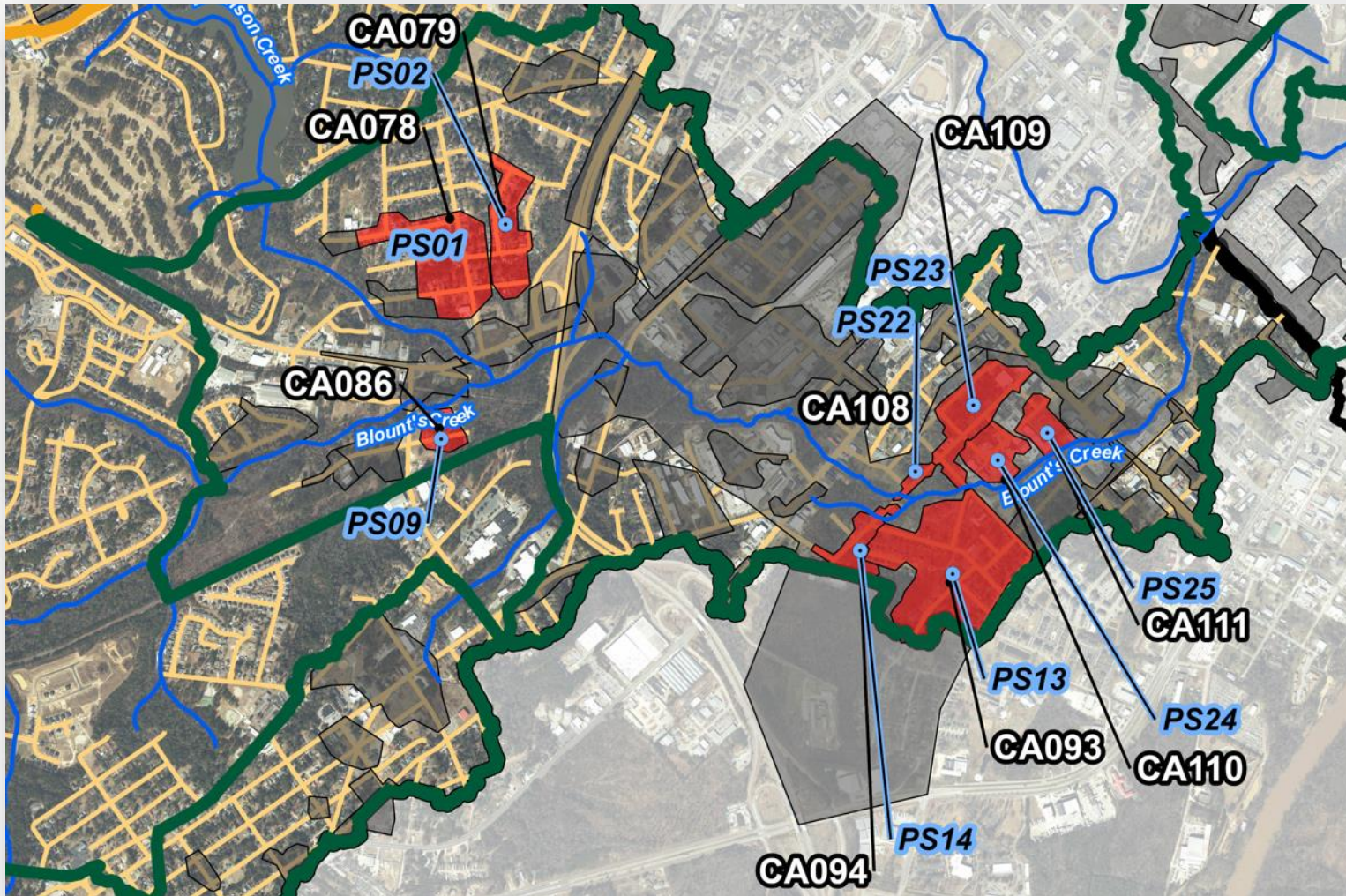




- Council Districts 2 & 5
- Proposed Solution = Storm sewer upsizing
- CA Score = 14
- Efficacy = 67%
- Estimated Cost = \$1.5M

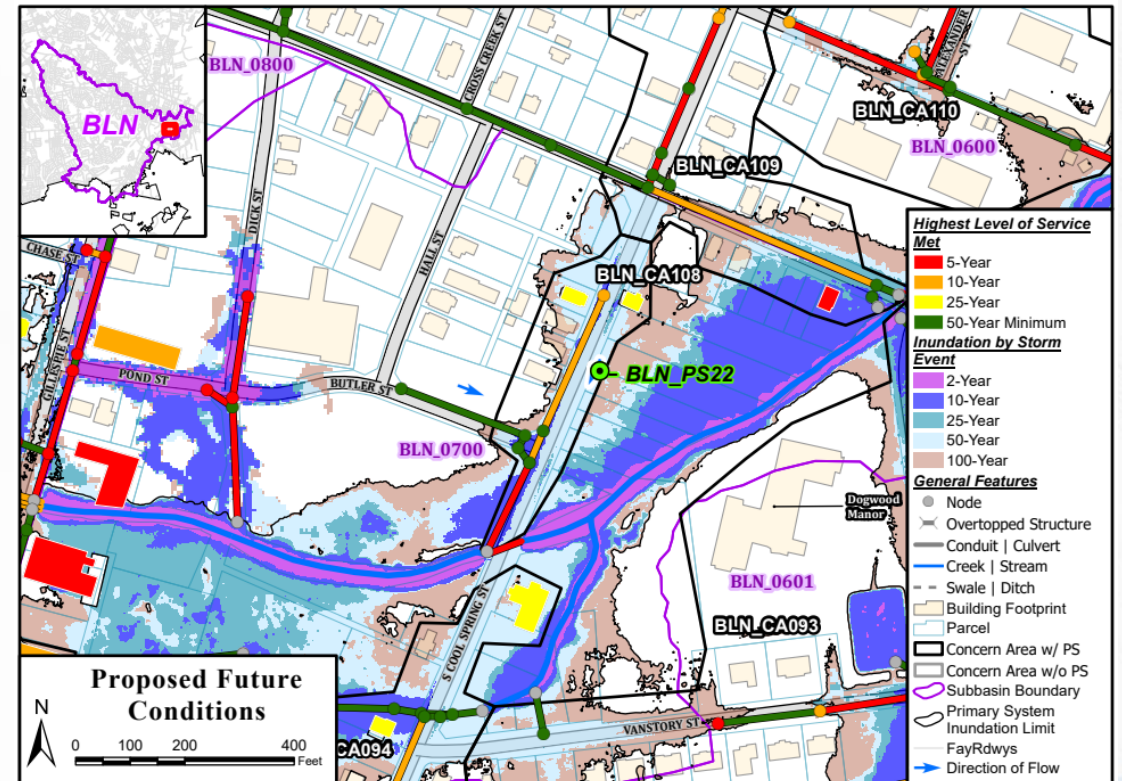
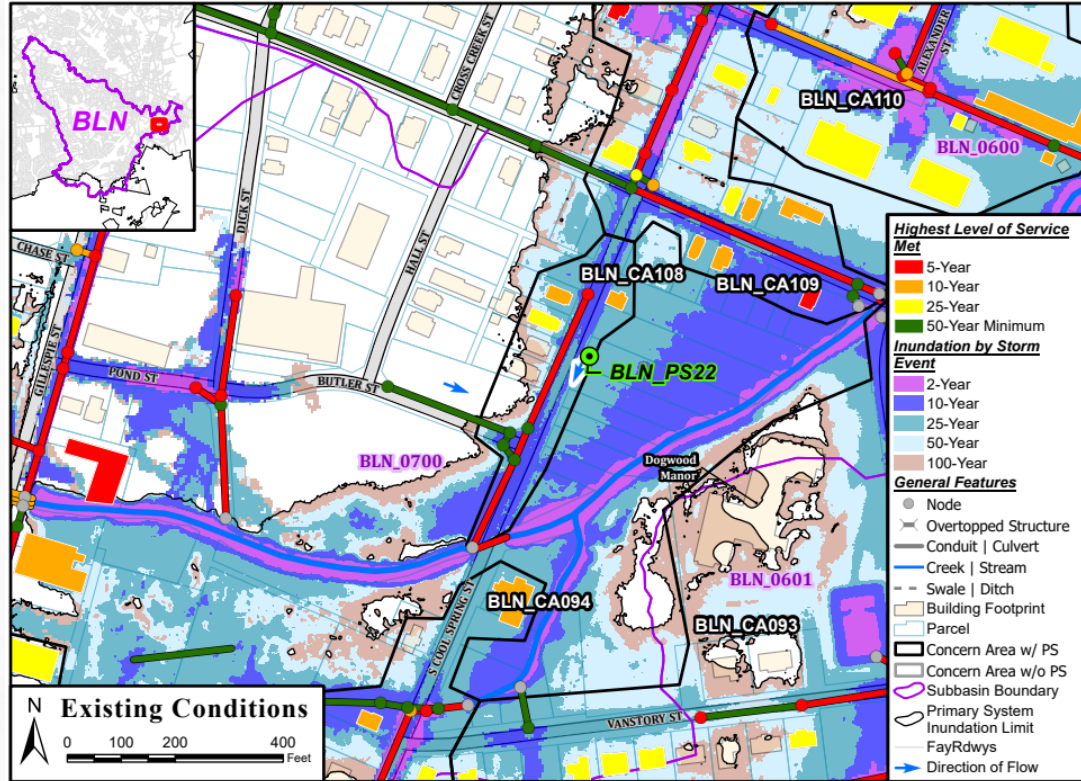
- Reduces 2,850 LF of impacted lane length for 10-yr LOS
- Eliminates 17 disconnected structures for 50-yr event
- Eliminates 0 structures from 10-, 25-, & 50-yr events





PS (CA)	Score	Efficacy	Cost
PS13 (CA093)	46	76%	\$5.6M
PS01 (CA078)	32	88%	\$4.4M
PS22 (CA108)	25	77%	\$0.6M
PS23 (CA109)	19	91%	\$6.4M
PS02 (CA079)	17	87%	\$8.2M
PS09 (CA086)	17	76%	\$0.4M
PS24 (CA110)	15	94%	\$1.2M
PS14 (CA094)	15	73%	\$1.5M
PS25 (CA111)	13	100%	\$0.7M

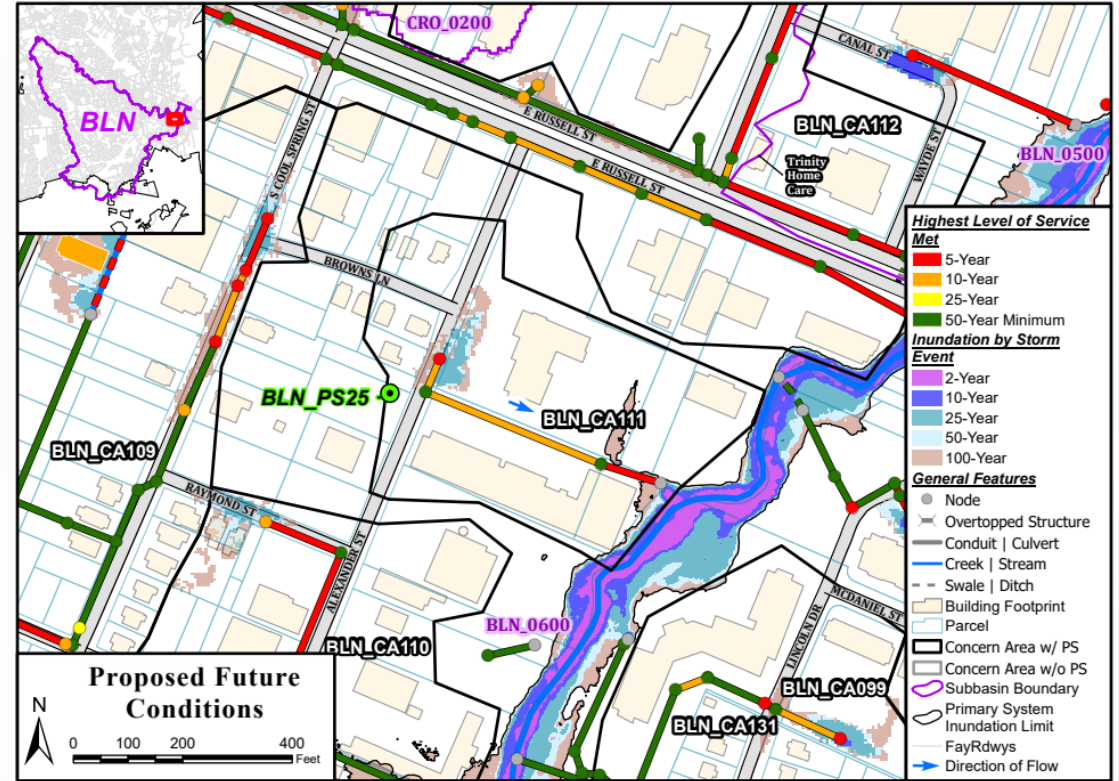
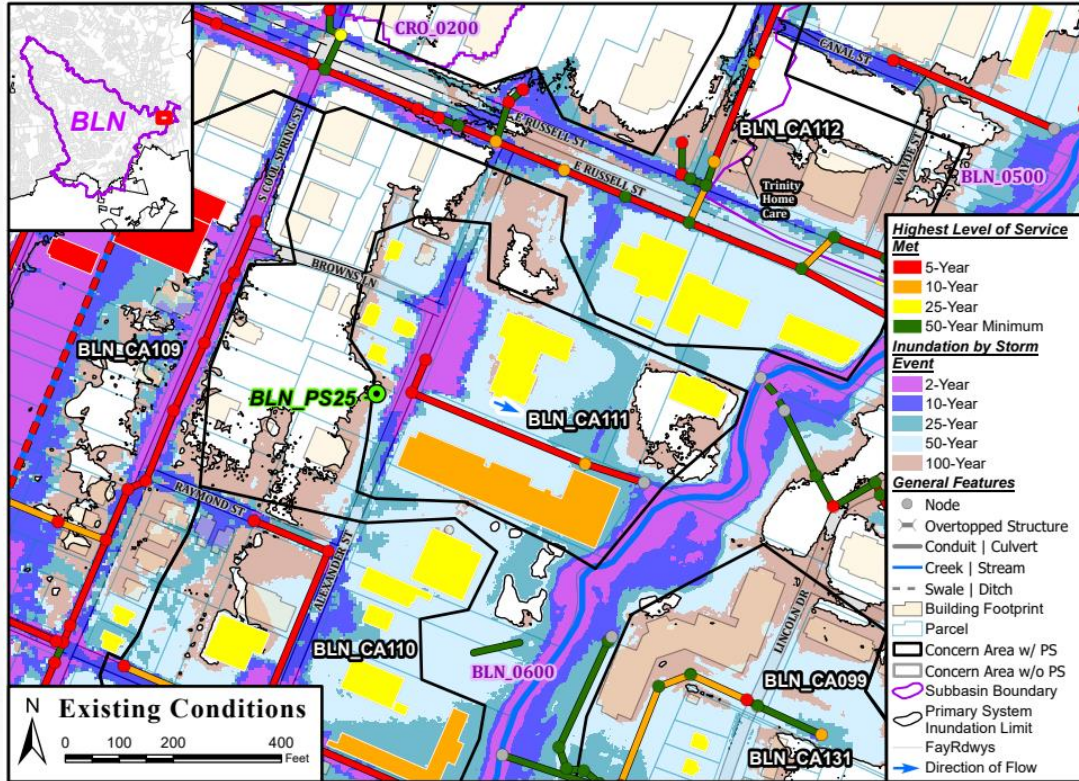




- Council District 2
- Proposed Solution = Storm sewer upsizing
- CA Score = 25
- Efficacy = 77%
- Estimated Cost = \$0.6M

- Reduces 900 LF of impacted lane length for 10-yr LOS
- Eliminates 5 disconnected structures for 50-yr event
- Eliminates 3 structures from 10-, 25-, & 50-yr events
- Needs Russell-Person Improvements to be constructed first





- Council District 2
- Proposed Solution = Storm sewer upsizing
- CA Score = 13
- Efficacy = 100%
- Estimated Cost = \$0.7M

- Reduces 800 LF of impacted lane length for 10-yr LOS
- Eliminates 6 disconnected structures for 50-yr event
- Eliminates 7 structures from 10-, 25-, & 50-yr events
- Needs Russell-Person Improvements to be constructed first



# Overall Top Proposed Solutions

Solution #	Package Area	Proposed Solution Description	Score	Efficacy	Cost
PS00 (CA000)	4	Russell-Person Bridge & Stream Improvements	50	66%	\$20.5M
PS13 (CA093)	4	Stevens Street	46	76%	\$5.6M
PS01 (CA078)	4	Commerce Street	32	88%	\$4.4M
PS76 (CA033)	2	Wynncrest Lane	25	77%	\$0.6M
PS22 (CA108)	4	S. Cool Springs/Butler	25	77%	\$0.6M
PS23 (CA109)	4	S. Cool Springs Street	19	91%	\$6.4M
PS02 (CA079)	4	Dwain Drive	17	87%	\$8.2M
PS09 (CA086)	4	Waterless/Taft	17	76%	\$0.4M
PS24 (CA110)	4	Alexander/Nimocks	15	94%	\$1.2M
PS14 (CA094)	4	S. Cool Springs/Cameron	15	73%	\$1.5M
PS25 (CA111)	4	Alexander/McDaniel	13	100%	\$0.7M
PS61 (CA048)	2	Raeford Road/Club Circle	19	96%	\$1.8M
PS50 (CA052)	3	Owen Dr./Friendly Rd.	13	78%	\$1.1M
PS53 (CA054)	3	Berkshire Rd/Alden Dr.	14	67%	\$1.5M



## **Options:**

1. Council provides consensus to approve the 100 proposed solutions to enable staff to program them into the annual CIP prioritization process and pursue grants as applicable.
2. Council does not provide consensus to approve the 100 proposed solutions and remands back to staff with additional guidance.

## **Recommended Action:**

Council provides consensus to approve the 100 proposed solutions to enable staff to program them into the annual CIP prioritization process and pursue grants as applicable.





Person Street looking East, 9-19-1945



Person Street looking West, 9-19-1945



## Package 1

Scoring Range = 3 to 7, Efficacy Range = 0 to 100%  
No Top Ranked Projects  
Projects of Interest:

- Skye Drive, Score = 3, Eff. = 67%, Cost = \$1.1M
- Cliffdale Road, Score = 3, Eff. = 63%, Cost = \$1.4M

## Package 2

Scoring Range = 4 to 29, Efficacy Range = 0 to 83%  
Top Ranked Projects:

- PS76, Score = 29, Eff. = 73%, Cost = \$2.4M
- PS61, Score = 19, Eff. = 96%, Cost = \$1.8M

## Package 3

Scoring Range = 3 to 15, Efficacy Range = 25 to 100%  
Top Ranked Projects:

- PS50, Score = 13, Eff. = 78%, Cost = \$1.1M
- PS53, Score = 14, Eff. = 67%, Cost = \$1.5M

## Package 4

Scoring Range = 2 to 50, Efficacy Range = 0 to 100%  
Top Ranked Projects:

- PS00, Score = 50, Eff. = 66%, Cost = \$20.5M
- PS22, Score = 25, Eff. = 77%, Cost = \$0.6M
- PS25, Score = 13, Eff. = 100%, Cost = \$0.7M

## Recommended Project

- PS00, Russell-Person Bridge and Stream Improvements
- Score = 50, Efficacy = 66%, Cost = \$20.5M
- Package 4 Area (downtown)

