

WASH CREEK STORMWATER MASTER PLAN

Hendersonville, NC

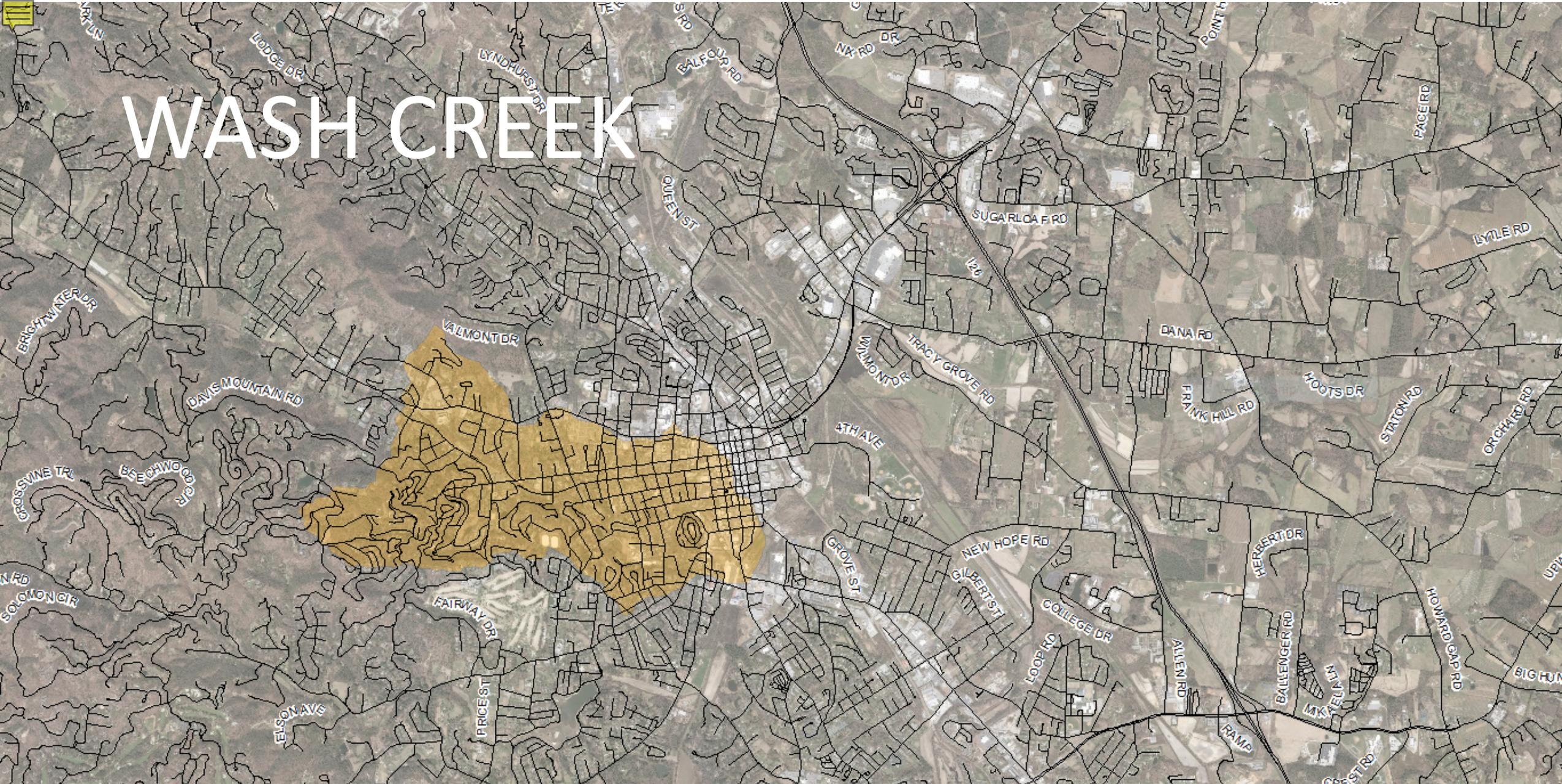
May 2019

Presented By:
Jennifer C. Diaz, PE

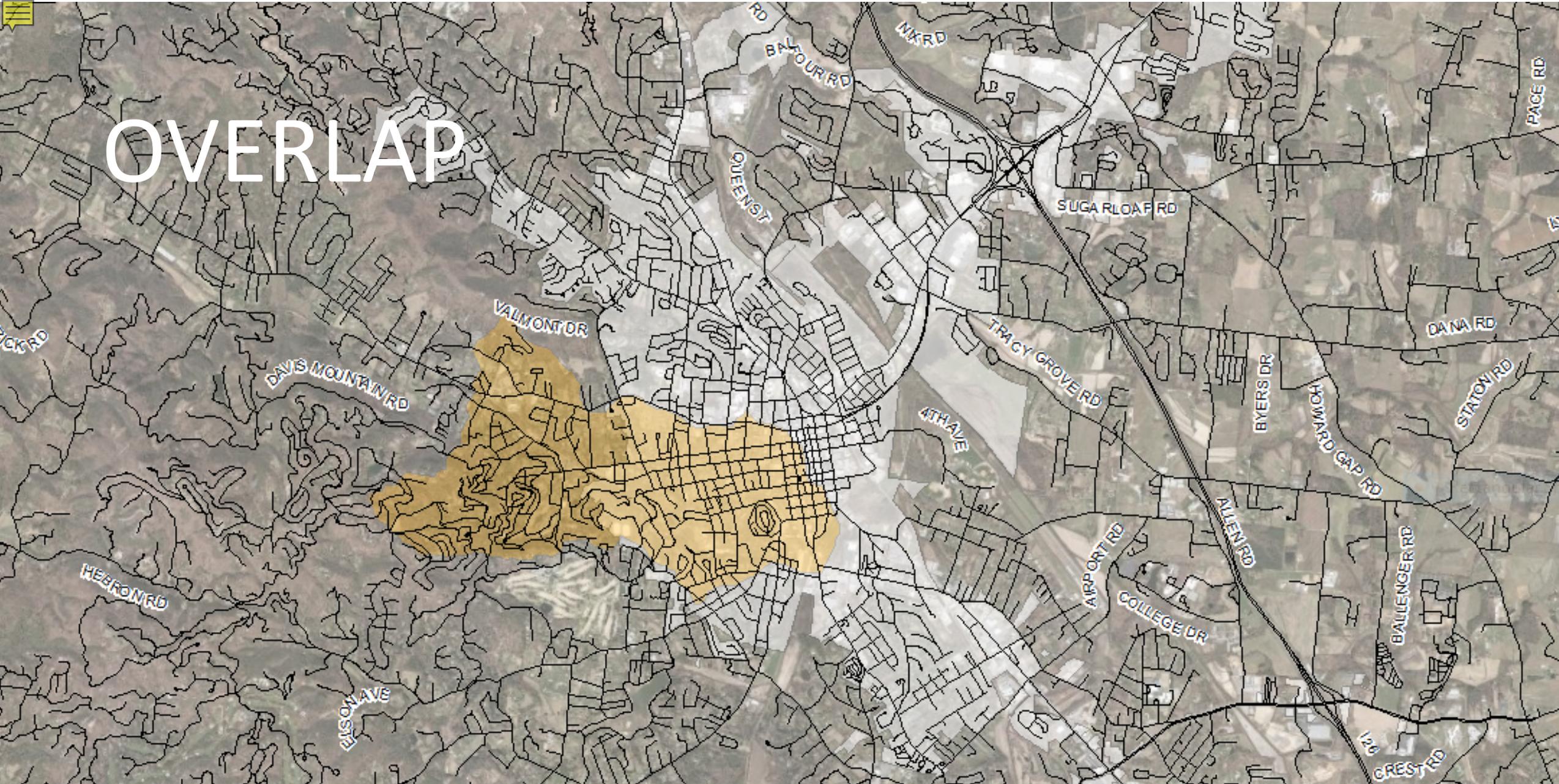
HENDERSONVILLE



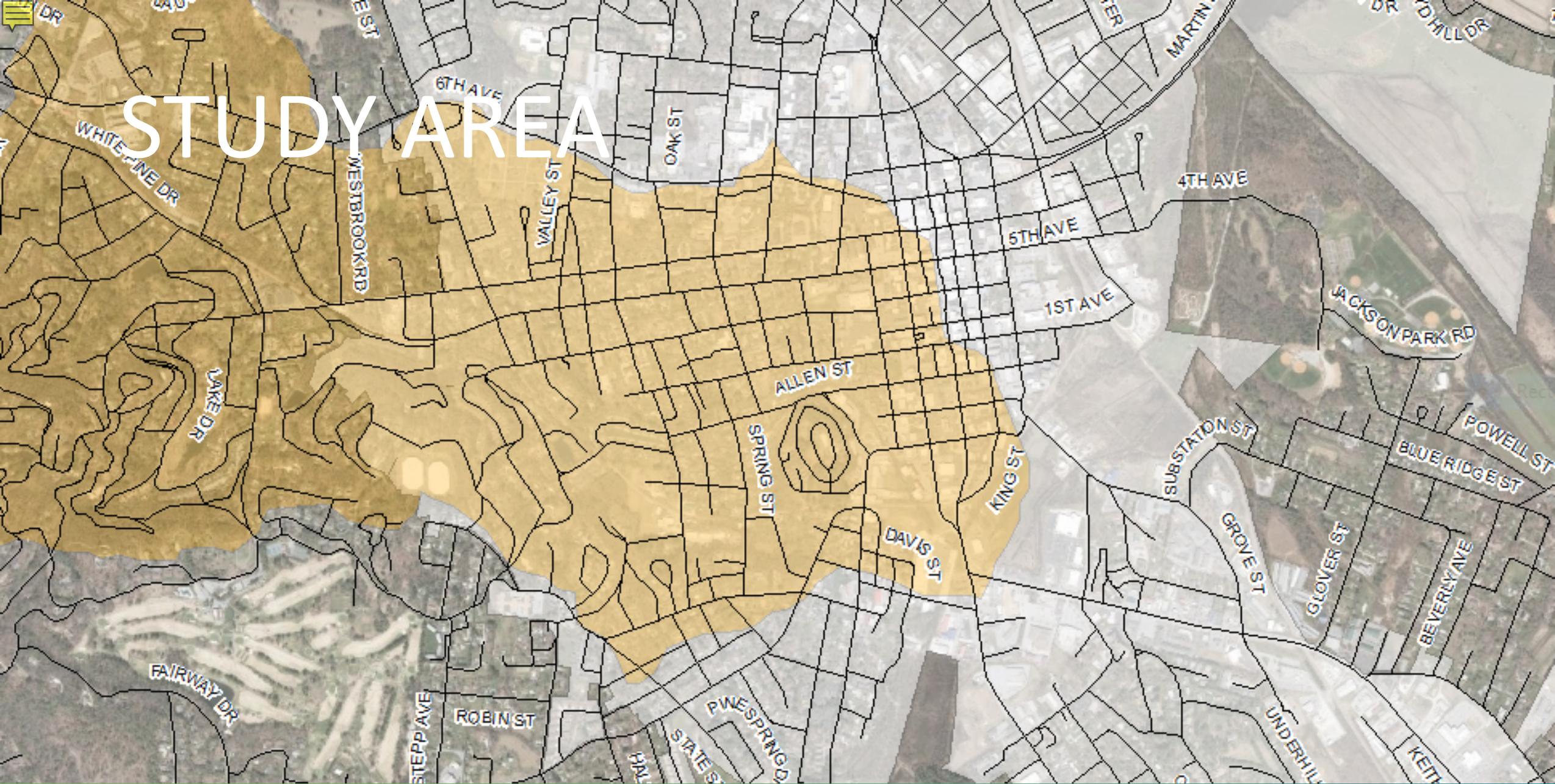
WASH CREEK



OVERLAP



STUDY AREA



ASSESSMENT

PRIORITIZATION

ANALYSIS

RECOMMENDATIONS



FIELD ASSESSMENT SUMMARY

STRUCTURES

641

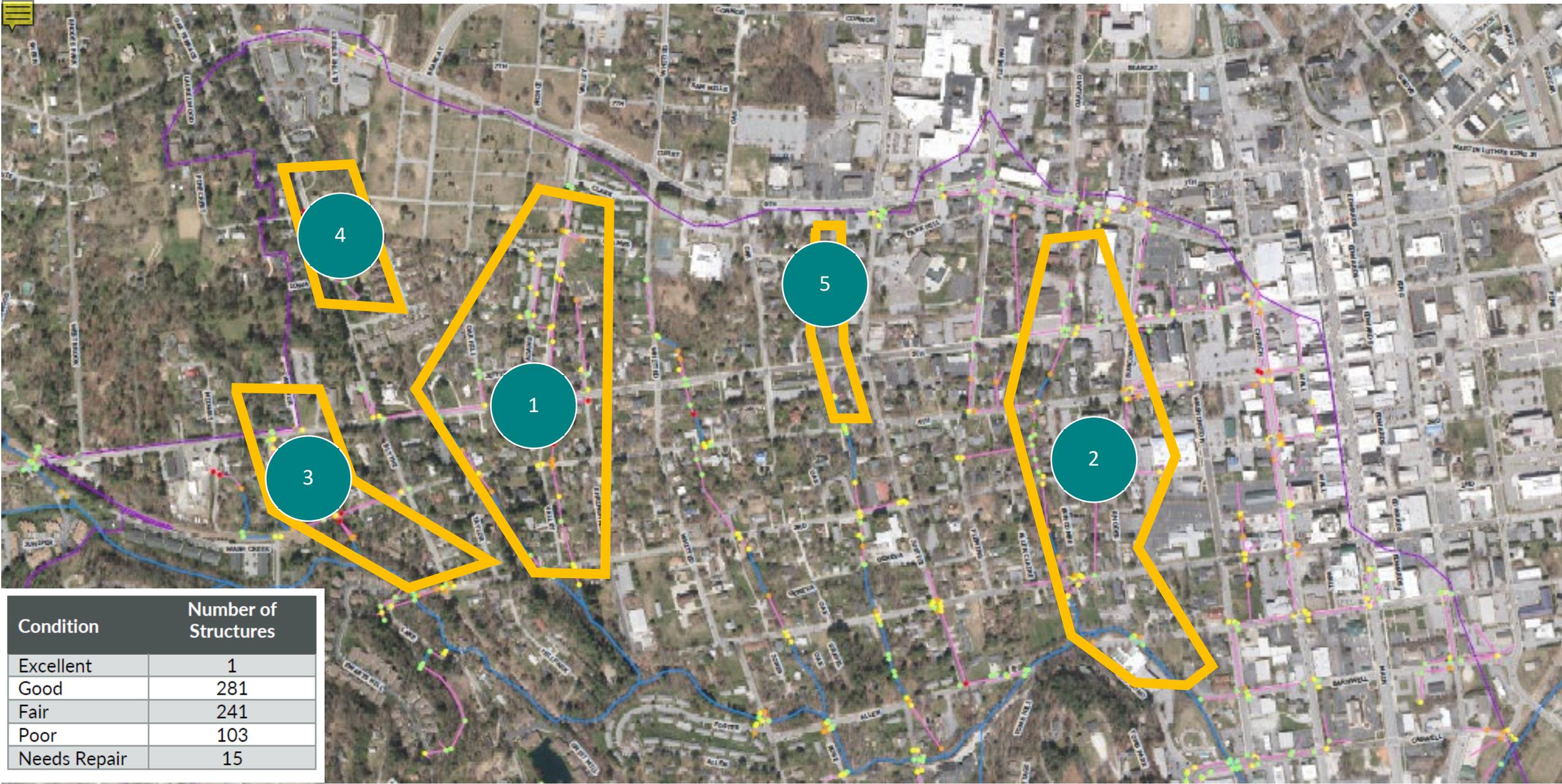
Condition	Number of Structures
Excellent	1
Good	281
Fair	241
Poor	103
Needs Repair	15

49,405

LINEAR FEET

CONDITION





Condition	Number of Structures
Excellent	1
Good	281
Fair	241
Poor	103
Needs Repair	15

ASSESSMENT

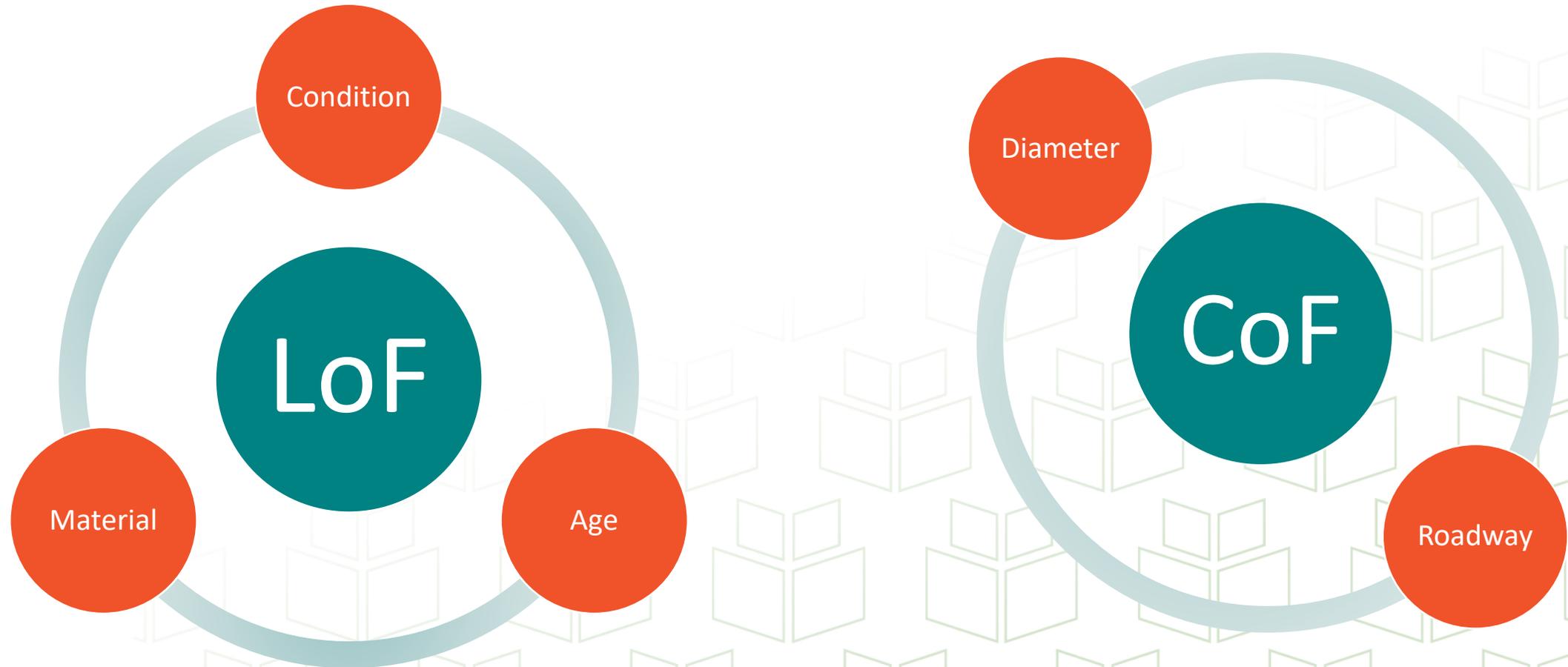
PRIORITIZATION

ANALYSIS

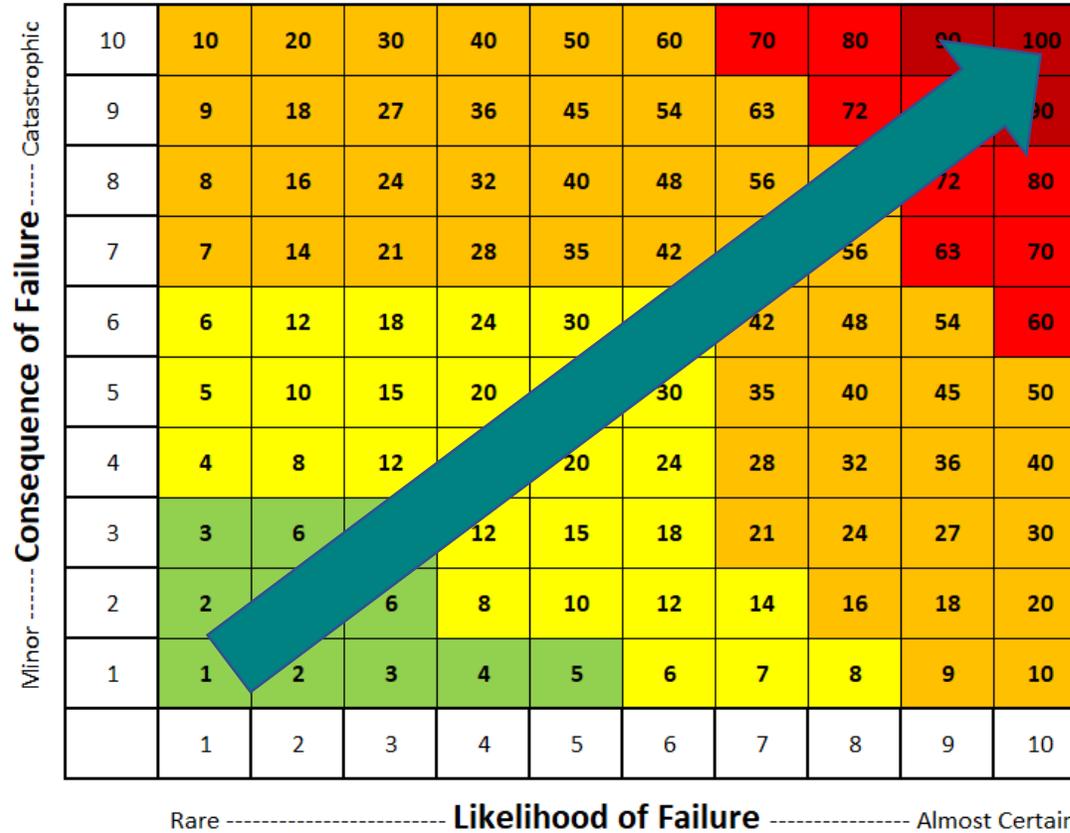
RECOMMENDATIONS



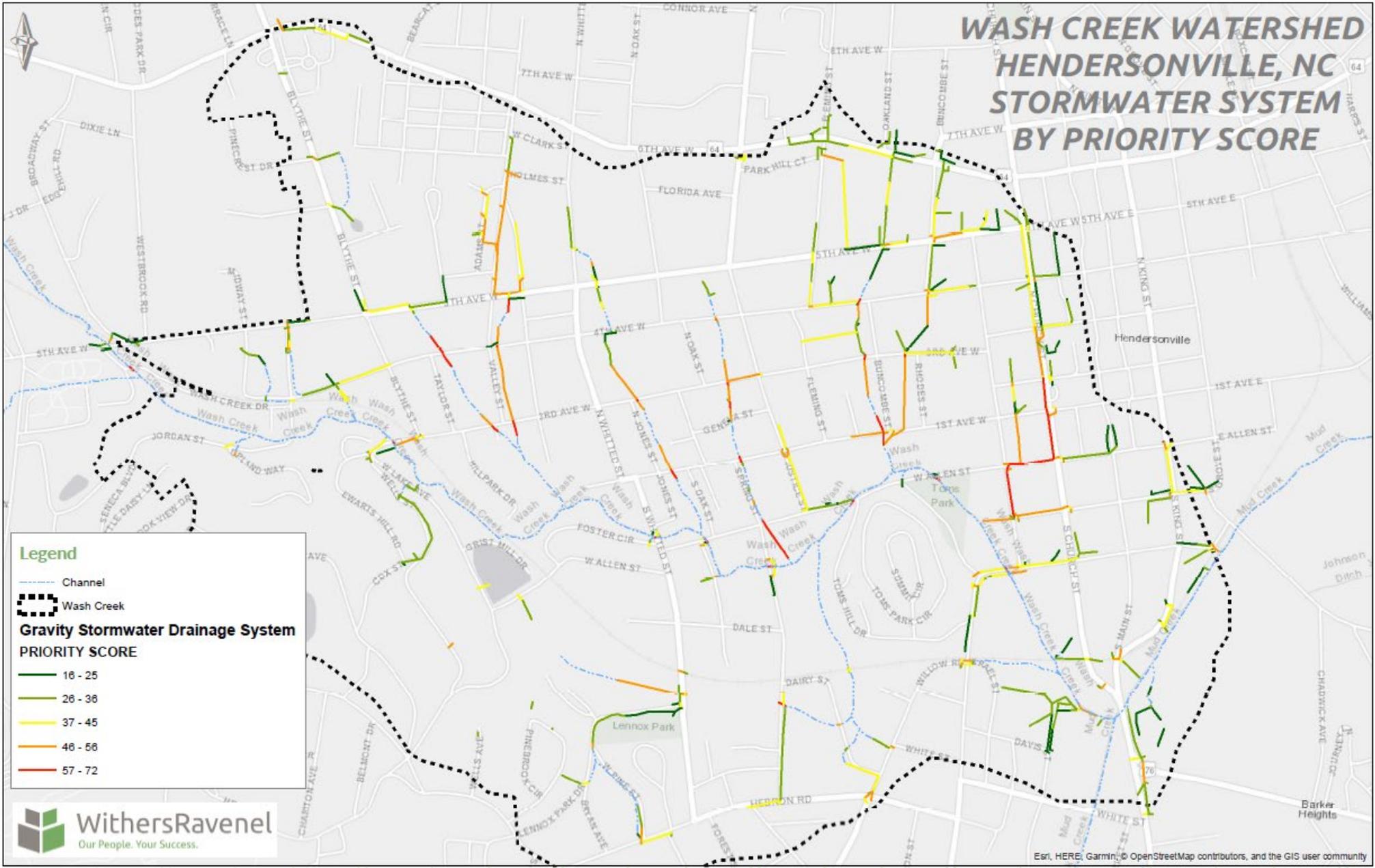
PRIORITIZATION MODEL



PRIORITIZATION MODEL



WASH CREEK WATERSHED HENDERSONVILLE, NC STORMWATER SYSTEM BY PRIORITY SCORE



Legend

- Channel
- Wash Creek

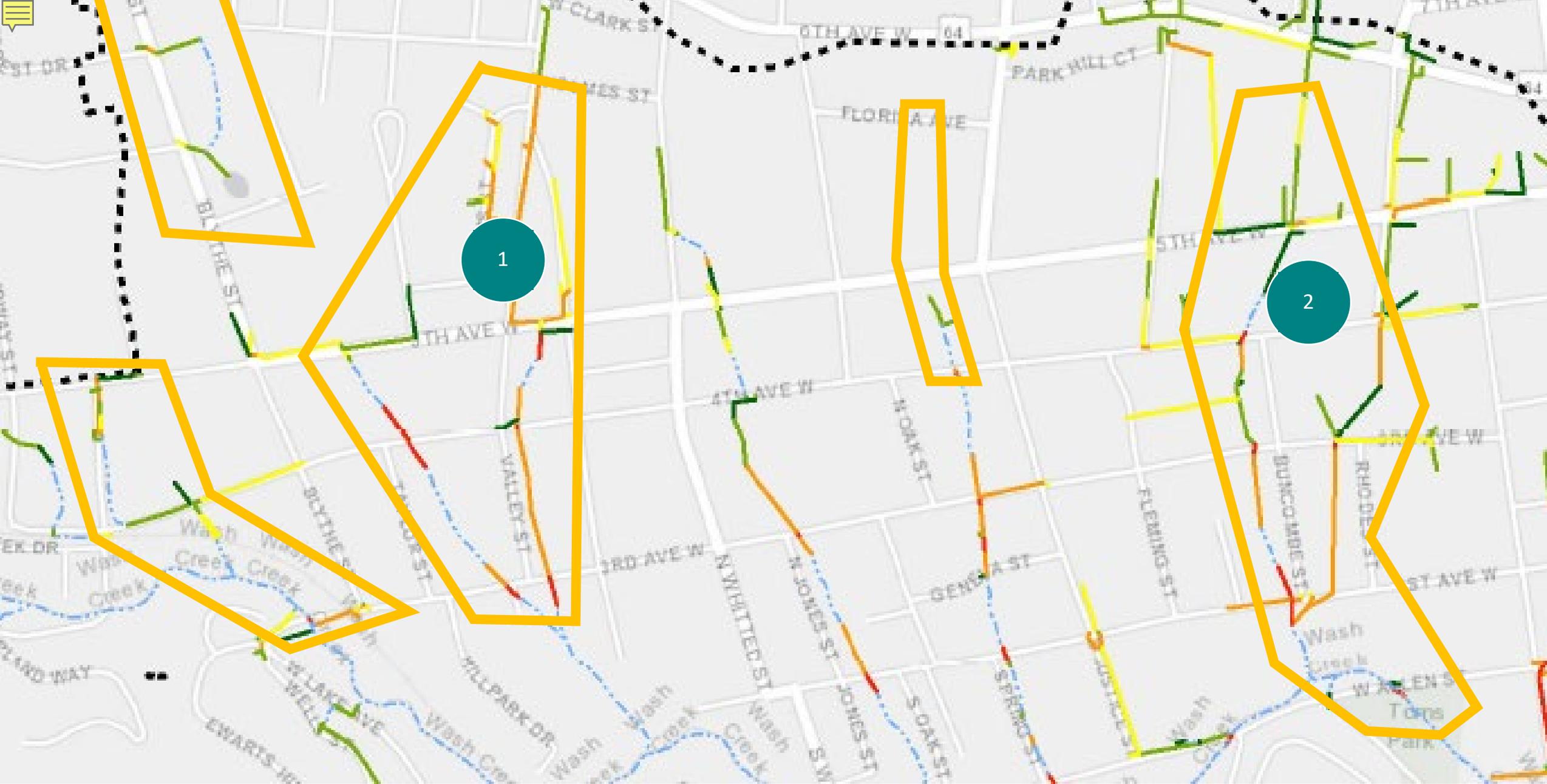
Gravity Stormwater Drainage System

PRIORITY SCORE

- 18 - 25
- 26 - 36
- 37 - 45
- 46 - 56
- 57 - 72



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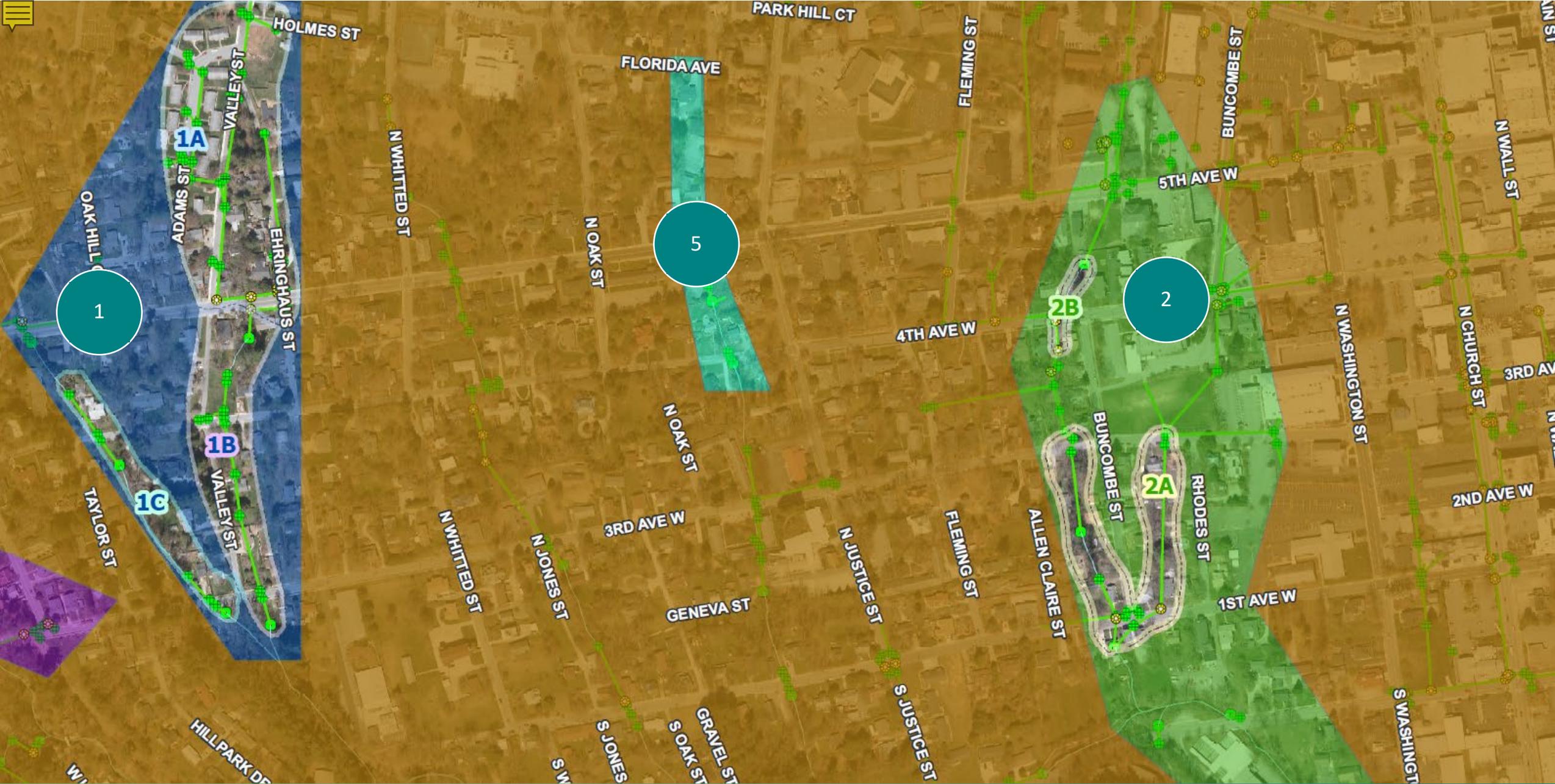


ASSESSMENT

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RECOMMENDATIONS





ANALYSIS

CAPITAL IMPROVEMENT PROJECT ANALYSIS

- **CONDITION**
 - Based on Field Assessment
- **CAPACITY**
 - Hydraulic model analyzing 10-year storm
- **COST ASSUMPTIONS**
 - Assumed all structures to be 10-feet deep
 - Pipes were replaced with Class III RCP
 - Construction Costs assumed to be 2x materials
 - Engineering and Survey cost assumed to be 20% of Construction Costs
 - Additional 25% Contingency added

PROJECT AREA 1A

- Size upgrade

Proposed System

Structure	Quantity (pipes in lf)	Unit Price	Total
24" RCP	1278	115	146929
30" RCP	917	125	114674
36" RCP	450	150	67500
Manholes	6	3600	21600
Inlets	27	3600	97200
Headwalls	1	5000	5000
	Materials Subtotal		\$452,903.89
	With Cost of Construction		\$910,000.00
	With Engineering and Survey Costs		\$1,100,000.00
	Additional Contingency		\$1,380,000.00

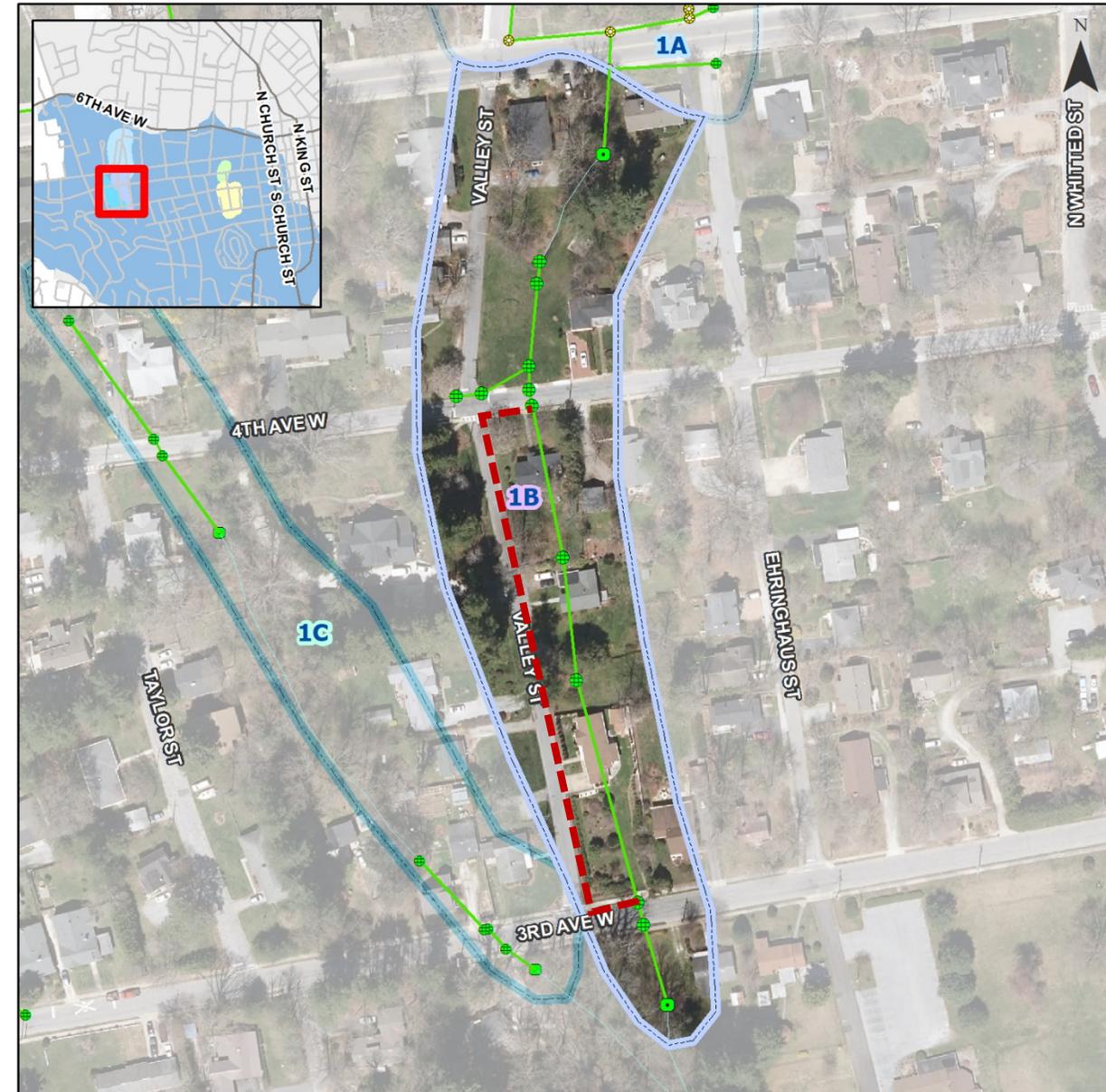


PROJECT AREA 1B

- Size upgrade & reroute

Proposed System

Structure	Quantity (pipes in lf)	Unit Price	Total
42" RCP	331	180	59670
Small Box Culvert	619	300	185636
Inlets	13	3600	46800
Headwalls	2	5000	10000
	Materials Subtotal		\$302,105.75
	With Cost of Construction		\$610,000.00
	With Engineering and Survey Costs		\$740,000.00
	Additional Contingency		\$930,000.00

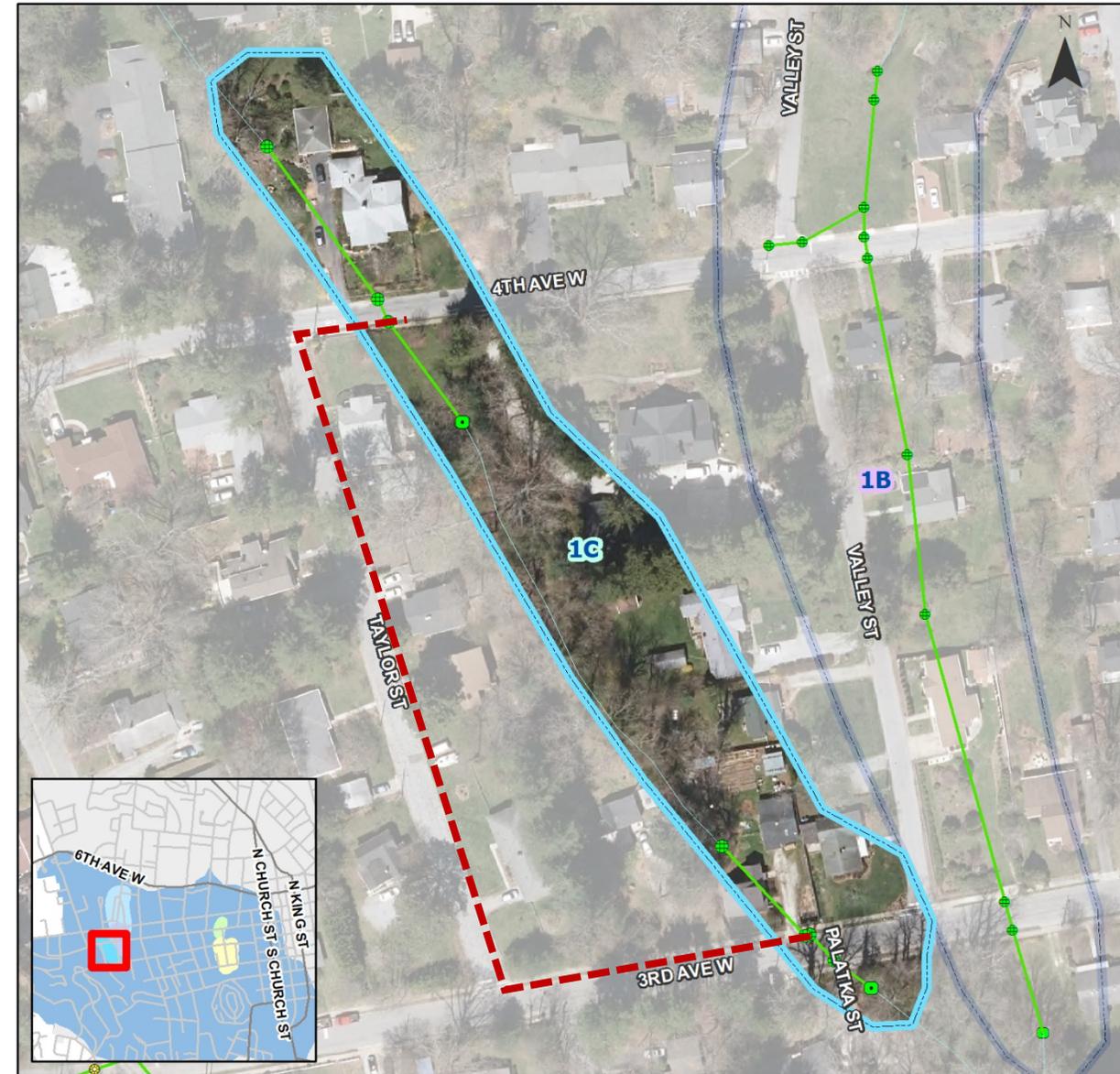


PROJECT AREA 1C

- Size upgrade & reroute

Proposed System

Structure	Quantity (pipes in lf)	Unit Price	Total
48" RCP	800	200	160000
Inlets	11	3600	39600
Headwalls	2	5000	10000
		Materials Subtotal	\$209,600.00
		With Cost of Construction	\$420,000.00
		With Engineering and Survey Costs	\$510,000.00
		Additional Contingency	\$640,000.00

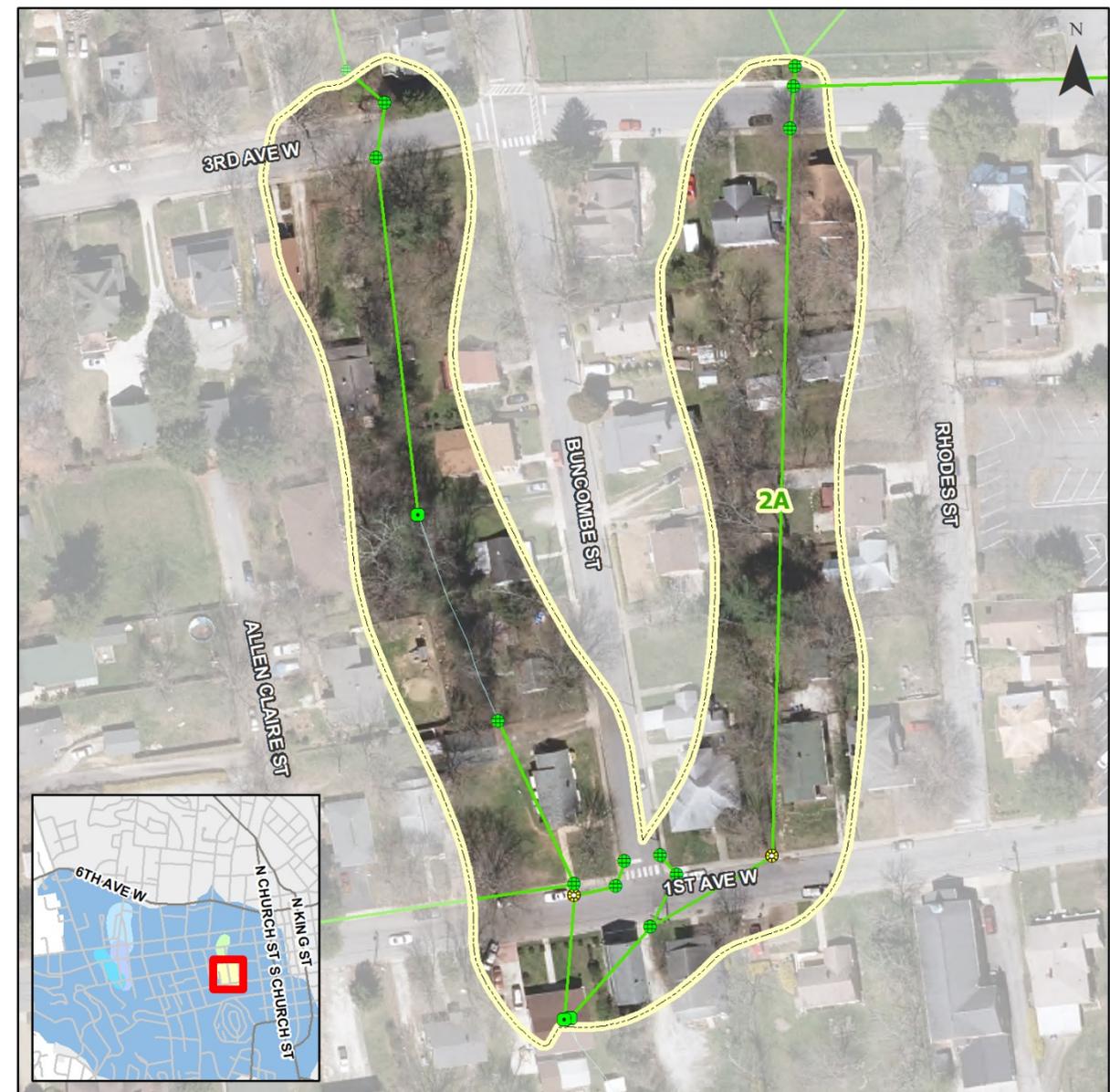


PROJECT AREA 2A

- Size upgrade

Proposed System

Structure	Quantity (pipes in lf)	Unit Price	Total
24" RCP	356	115	40963
30" RCP	53	125	6609
36" RCP	616	150	92428
42" RCP	392	180	70490
Inlets	8	3600	28800
Materials Subtotal			\$239,289.53
With Cost of Construction			\$480,000.00
With Engineering and Survey Costs			\$580,000.00
Additional Contingency			\$730,000.00

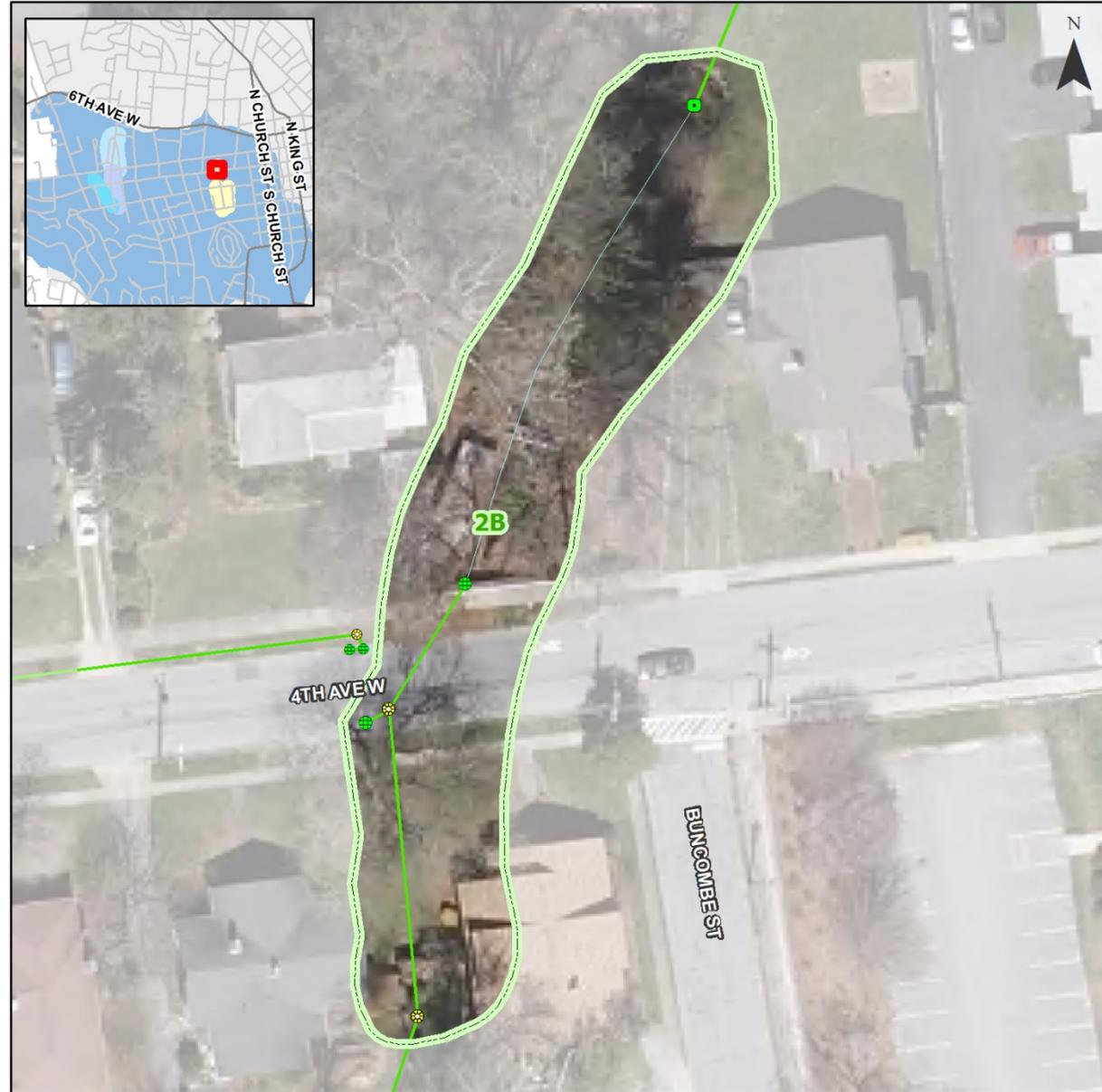


PROJECT AREA 2B

- Size upgrade

Proposed System

Structure	Quantity (pipes in lf)	Unit Price	Total
Large Box Culvert	129	500	64744
Inlets	3	3600	10800
Headwalls	1	5000	5000
	Materials Subtotal		\$80,544.07
	With Cost of Construction		\$170,000.00
	With Engineering and Survey Costs		\$210,000.00
	Additional Contingency		\$270,000.00



COST SUMMARY

Potential Project	Probable Costs
Project Area 1A	\$1,380,000
Project Area 1B	\$930,000
Project Area 1C	\$640,000
Project Area 2A	\$730,000
Project Area 2B	\$270,000

ASSESSMENT

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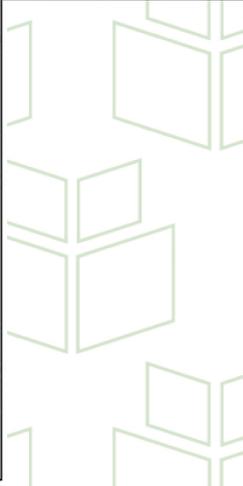


COST SUMMARY

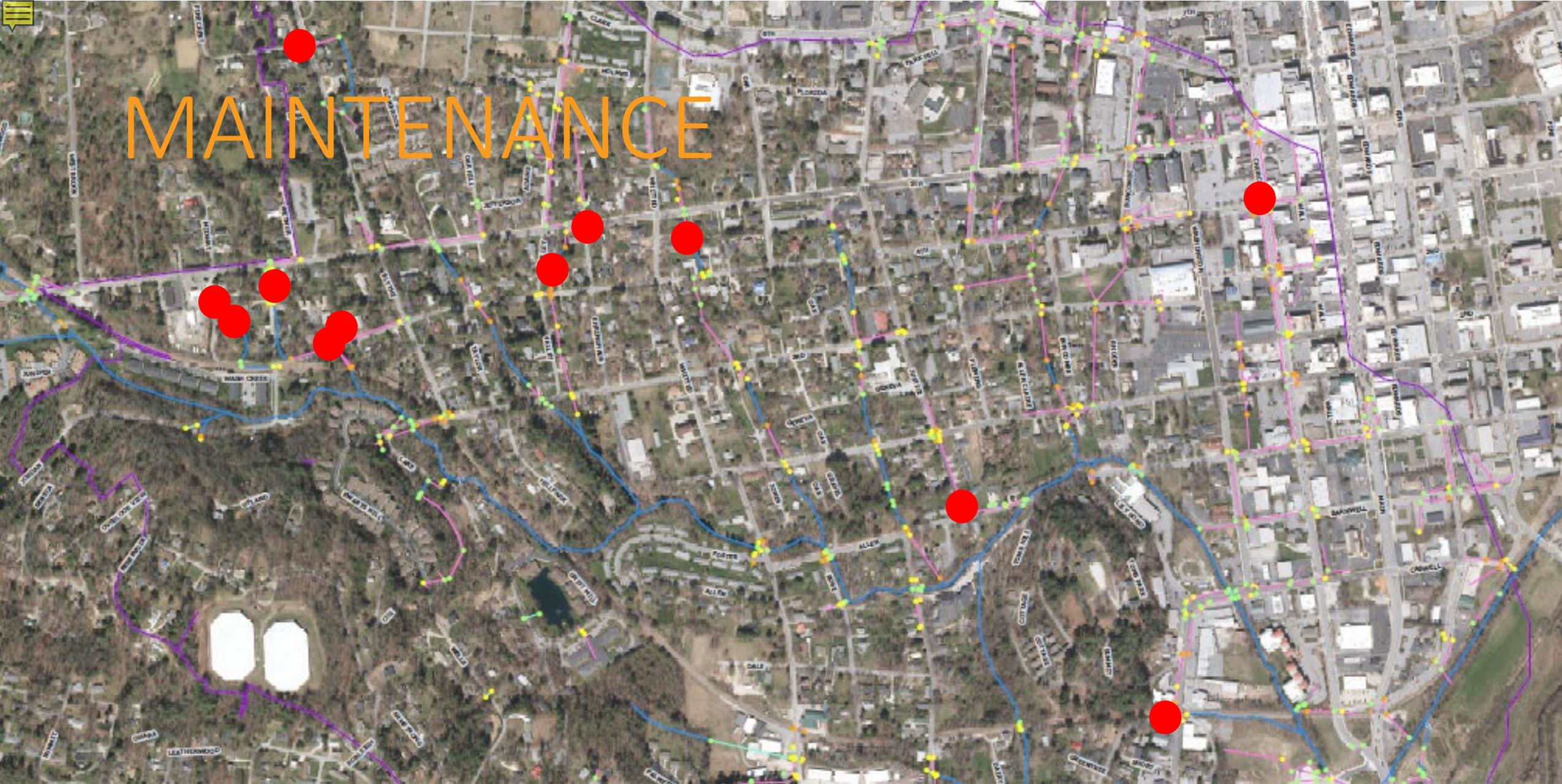
Potential Project	Probable Costs
Project Area 1C	\$640,000
Project Area 2A	\$730,000
Project Area 1B	\$930,000
Project Area 2B	\$270,000
Project Area 1A	\$1,380,000



PROJECT PRIORITY

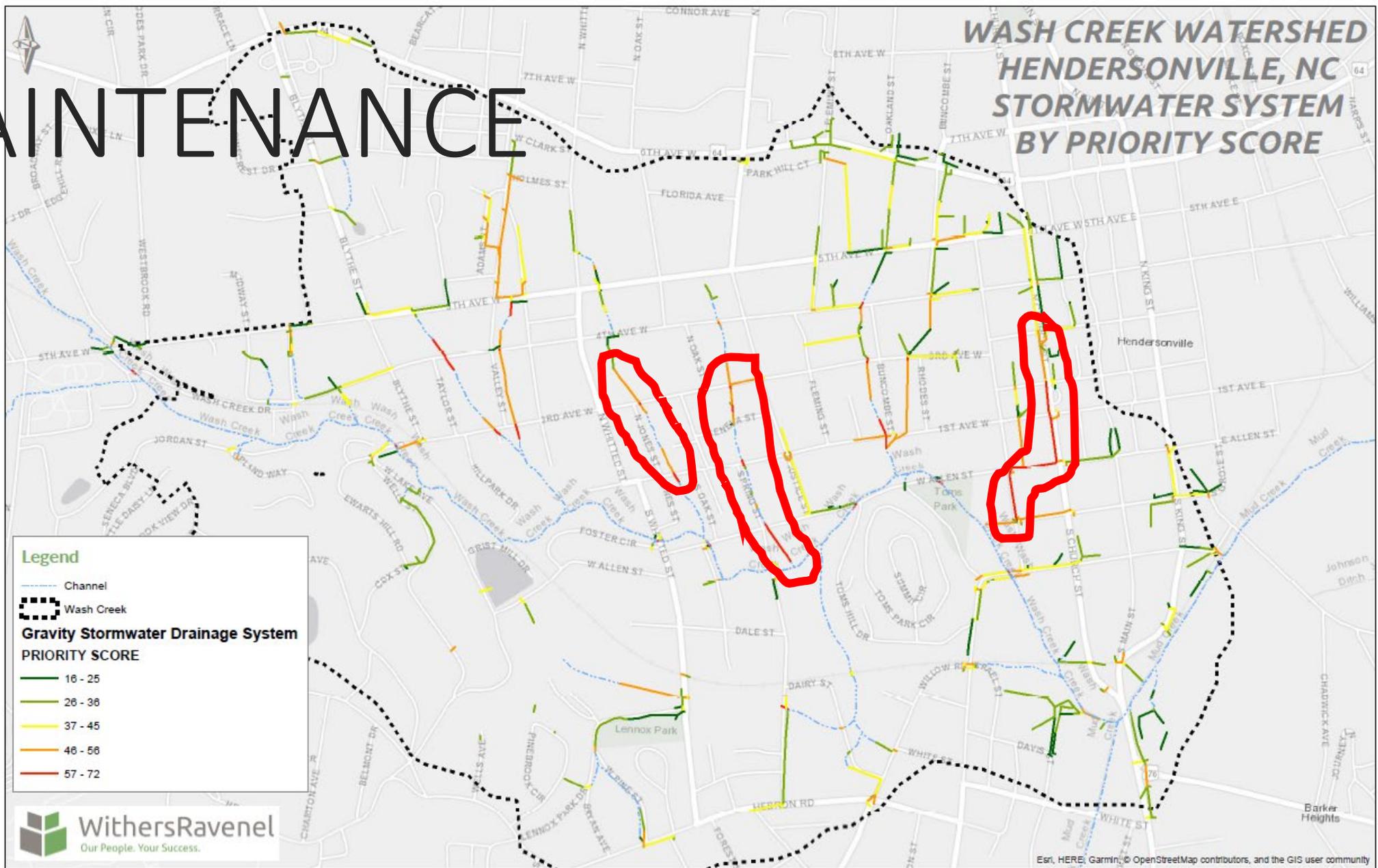


MAINTENANCE



MAINTENANCE

WASH CREEK WATERSHED HENDERSONVILLE, NC STORMWATER SYSTEM BY PRIORITY SCORE





ALTERNATIVE DESIGNS



