

A background image showing a close-up of a water splash, with a central droplet about to hit the surface, creating concentric ripples. The colors are dark teal and blue.

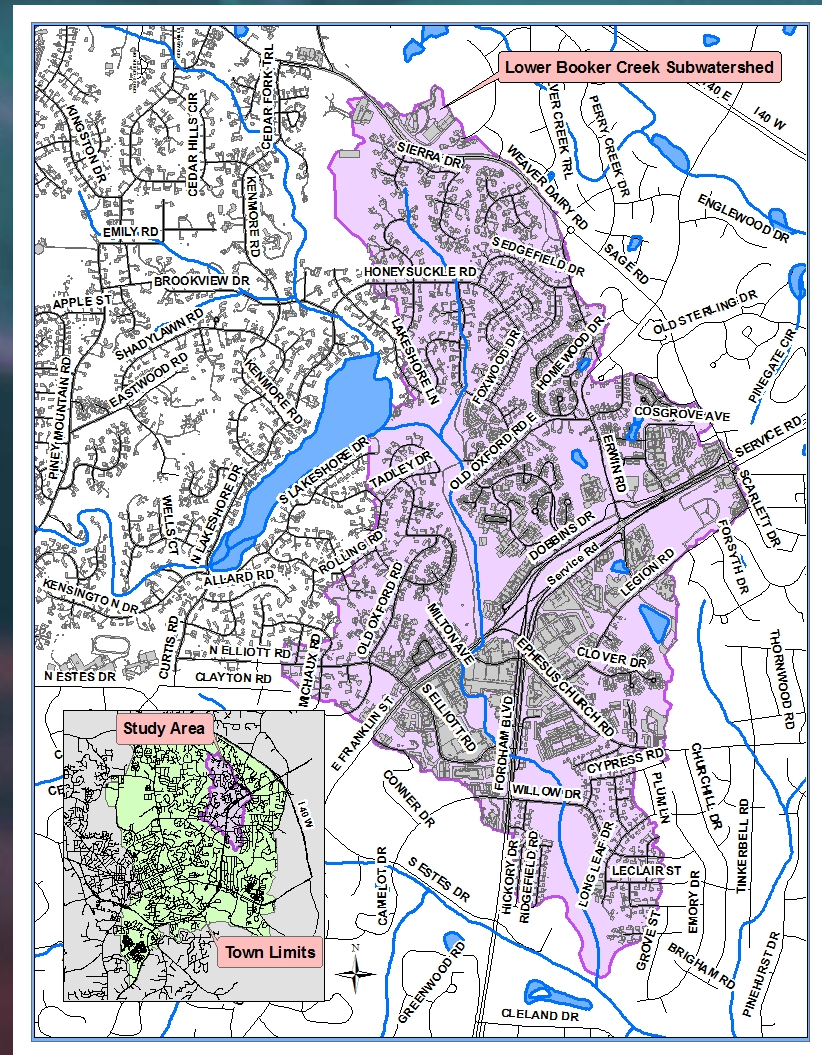
Lower Booker Creek Subwatershed Study

Town of Chapel Hill Stormwater Advisory Board

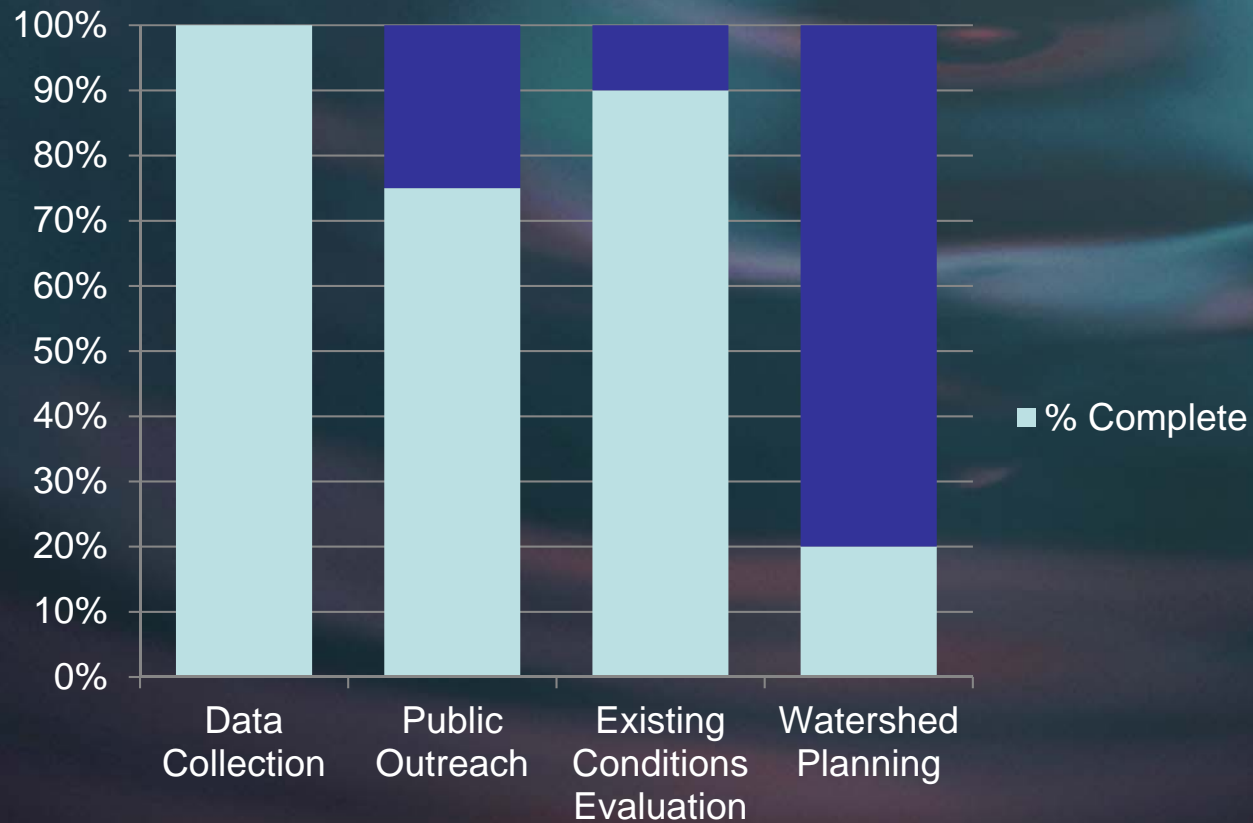
April 26, 2016

Agenda

- Progress Update
 - Public outreach
 - Existing conditions modeling
 - Future conditions modeling
 - Condition assessment
 - Stream assessments
 - Water quality retrofits
- Next Steps



Progress



Public Outreach

- Public forums (2) – January 7th
- Lake Forest HOA – February 17th
- Chamber of Commerce – March 3rd
- Closed questionnaire to compile results – March 9th
- Resident interviews
- Public forums (2) – June 23rd

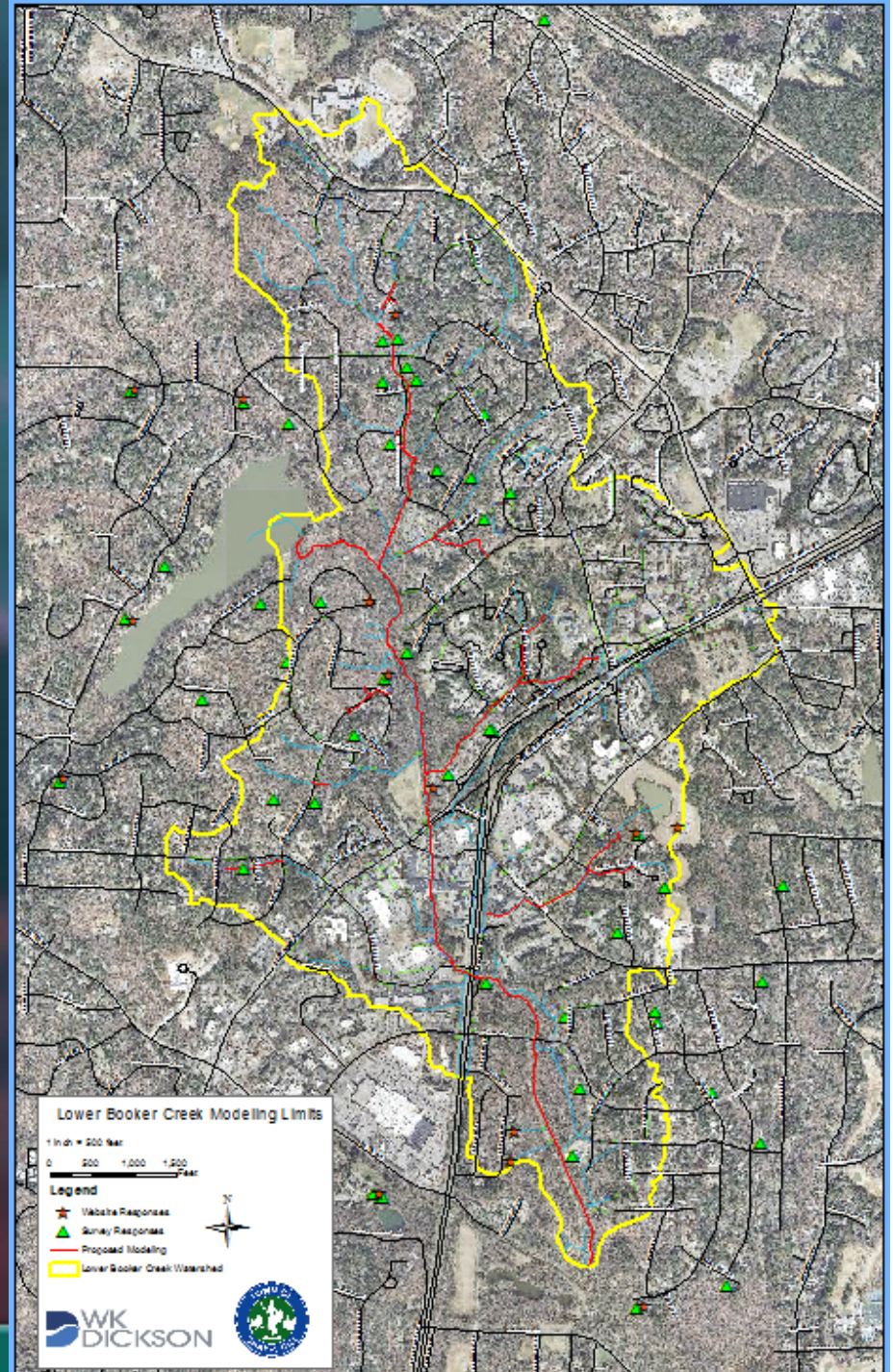


Public Outreach

- Questionnaires
 - 75 total responses
 - 57 indicated some type of flooding
 - 33 respondents located in Lower Booker Creek subwatershed
- Website
 - 16 total responses
 - 16 indicated some type of flooding
 - 8 respondents located in Lower Booker subwatershed
 - 9 respondents also submitted questionnaires

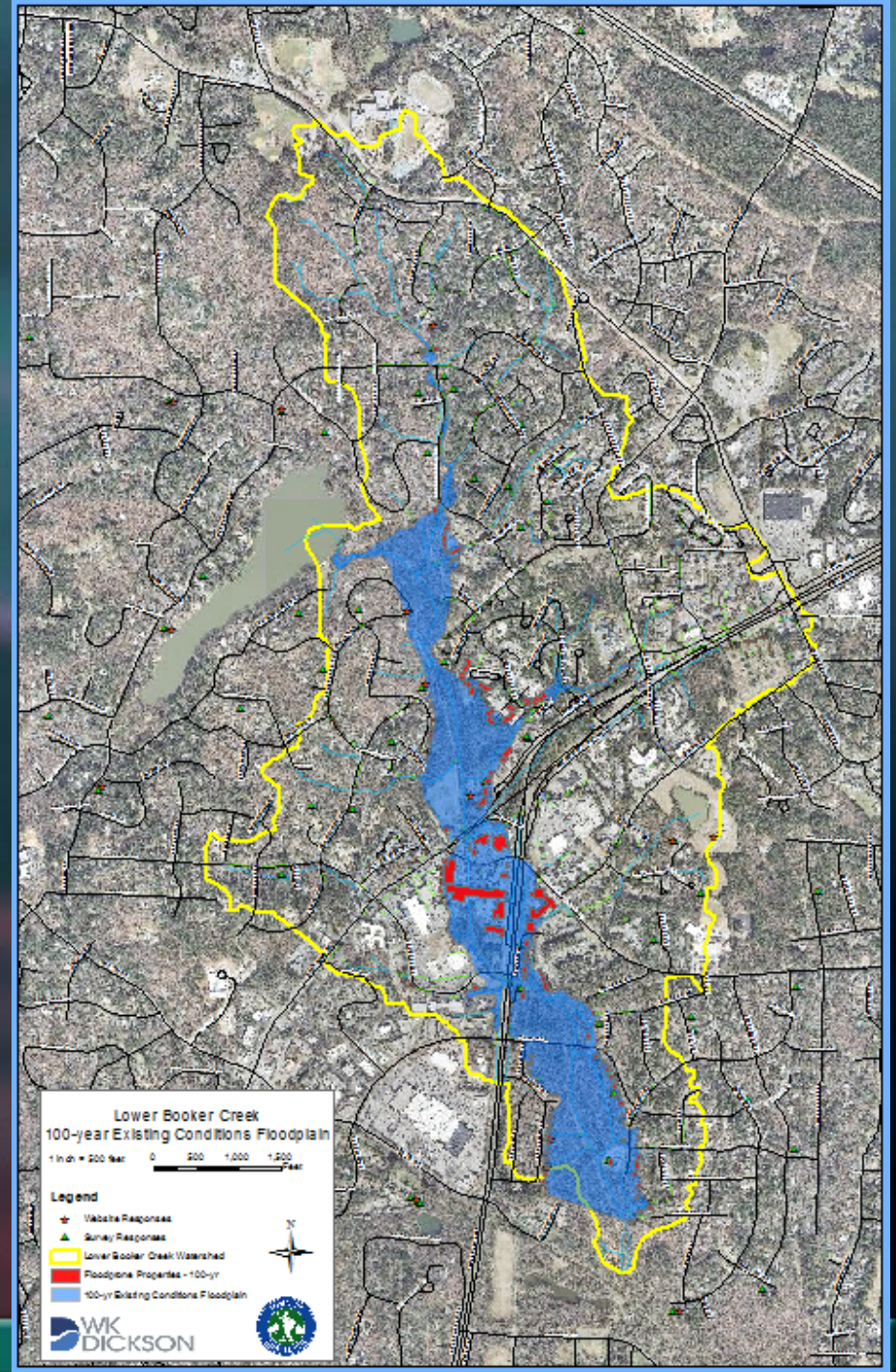
Modeling Limits

- Booker Creek from confluence to north of Honeysuckle Rd
- Tributary along Dobbins Dr and Summerfield Crossing
- Ephesus Church Rd
- Wood Circle
- Old Oxford Rd
- Oxford Hills Dr
- Booker Creek Rd
- Chesley Ln



Floodplain

- Validation Storms
 - June 2013
 - December 2015
- Floodprone structures
 - Single family – 52
 - High density res – 12
 - Office – 7
 - Commercial - 16



Roadway Level of Service

Overtopping Analysis of Roadway Crossings - BOOKER CREEK							
Location	Size/Material	Minimum Elevation at Top of Road (feet NAVD)	Calculated Water Surface Elevation (feet NAVD)				
			2-Year	10-Year	25-Year	50-Year	100-Year
Daley Road (Sta 9676)	Bridge	267.41	267.76	269.40	270.27	271.43	271.94
East Franklin Street (Sta 6670)	Triple 11' x 11' RCBCs	265.71	258.82	263.16	264.98	266.39	267.24
Eastgate Shopping Center Road (Sta 6269)	35' x 10.5' RCBC	260.81	258.61	262.33	263.57	264.37	265.19
S. Elliot Road (Sta 4645)	Triple 19.5' x 9.6' Elliptical CMP	262.95	256.00	259.15	261.14	262.77	263.93
Fordham Blvd/ Hwy 15-501 (Sta 4387)	Triple 11.5' x 11.5' RCBCs	264.21	255.61	258.25	259.67	260.75	261.64
Willow Drive (Sta 3157)	Bridge	259.11	253.17	255.17	256.24	257.40	257.79
Overtopping Analysis of Roadway Crossings - DOBBINS REACH							
Dobbins Drive (Sta 2651)	72" CMP	282.01	281.17	282.54	282.85	283.00	283.09
Summerfield Crossing (Sta 1772)	Twin 66" RCP	275.86	271.08	272.62	273.32	273.89	274.65
Foxcroft Drive (Sta 1329)	Triple 48" RCP	272.49	268.01	269.32	270.54	271.48	272.33
Overtopping Analysis of Roadway Crossings - SIERRA REACH							
Honeysuckle Road (Sta 2791)	54" CMP	294.58	293.49	295.25	295.54	295.65	295.71
Booker Creek Road - U/S (Sta 2476)	54" RCP	291.01	289.17	291.17	291.33	291.41	291.48
Booker Creek Road - D/S (Sta 912)	Twin 5' x 3.4' Elliptical CMP	274.01	271.80	274.22	275.03	275.37	275.60

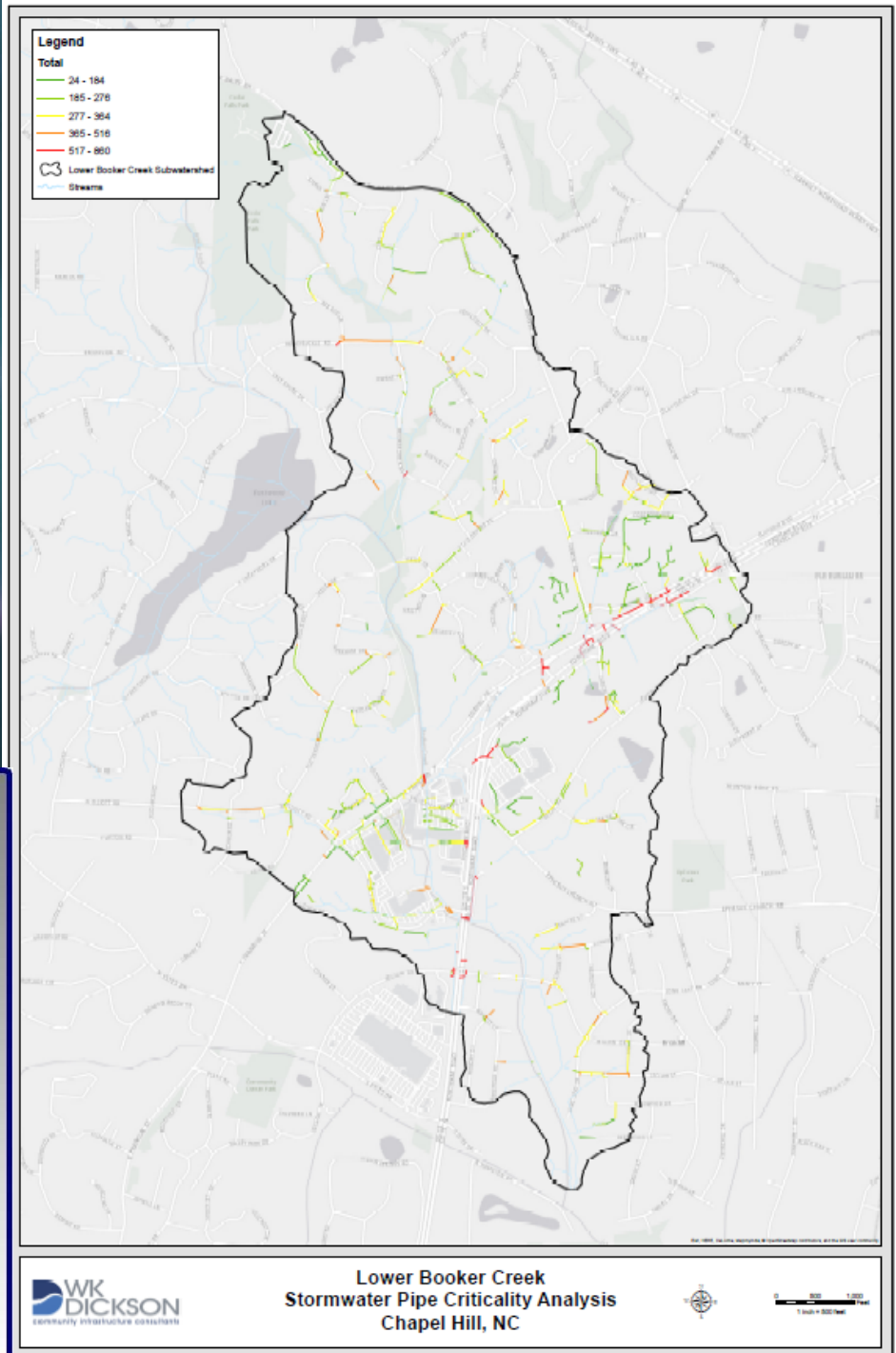
*Red text indicates roadway overtopping.

Future Conditions Landuse

- 2020 Land use plan and Zoning
- Future focus areas
 - Ephesus Fordham
 - Northern Area
- RCD
- UNC North
- Development activity map (Town website)
- Detention requirements
 - 25-year
 - 50-year (UNC North)

Condition Assessment

- Criticality
 - Likelihood of failure
 - Consequence of failure
- Tool to guide prioritization of proactive maintenance

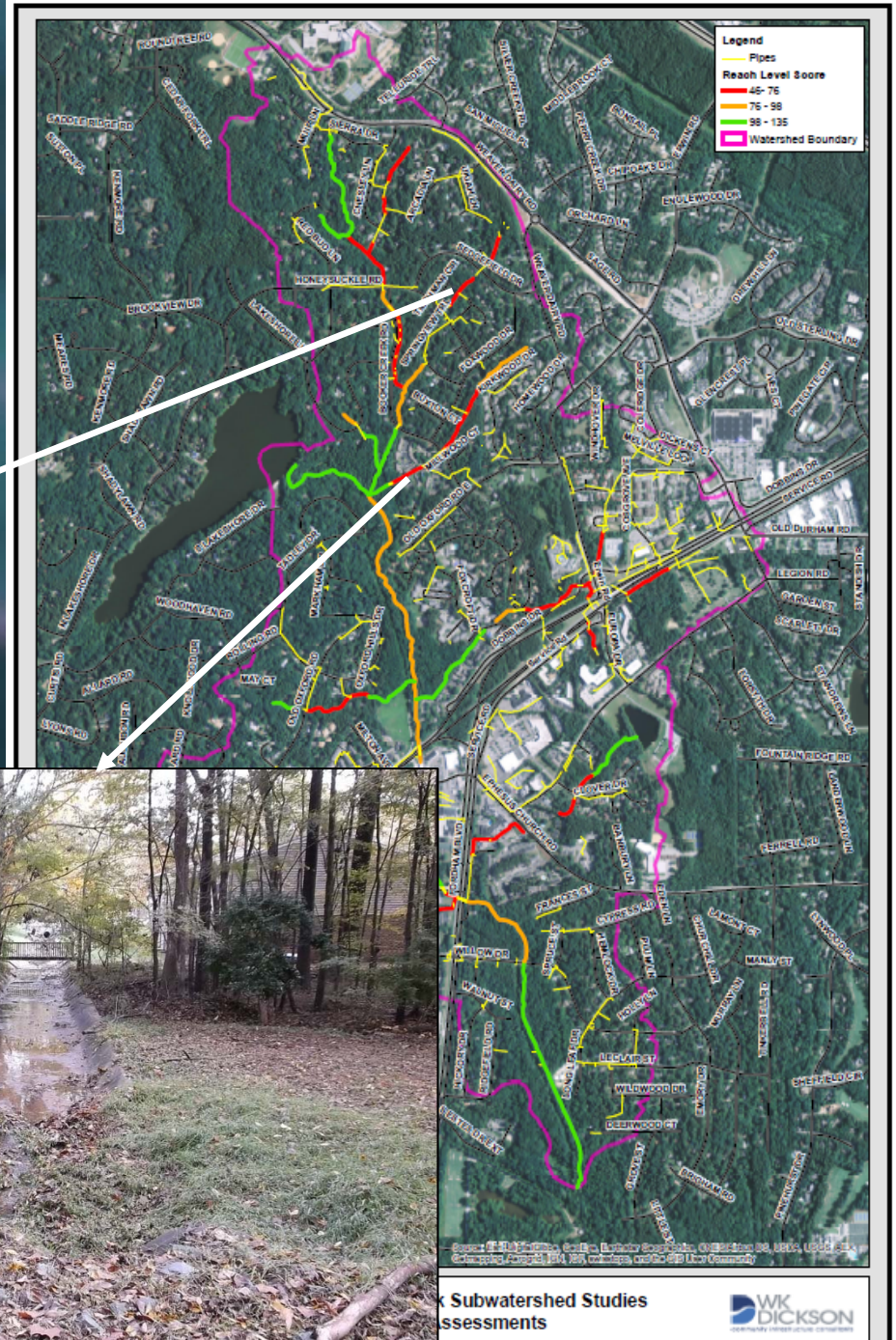


Stream Assessments

Sedgefield Drive outfall and bank stabilization



Booker Creek Townhouse Apts Stream Restoration or RSC

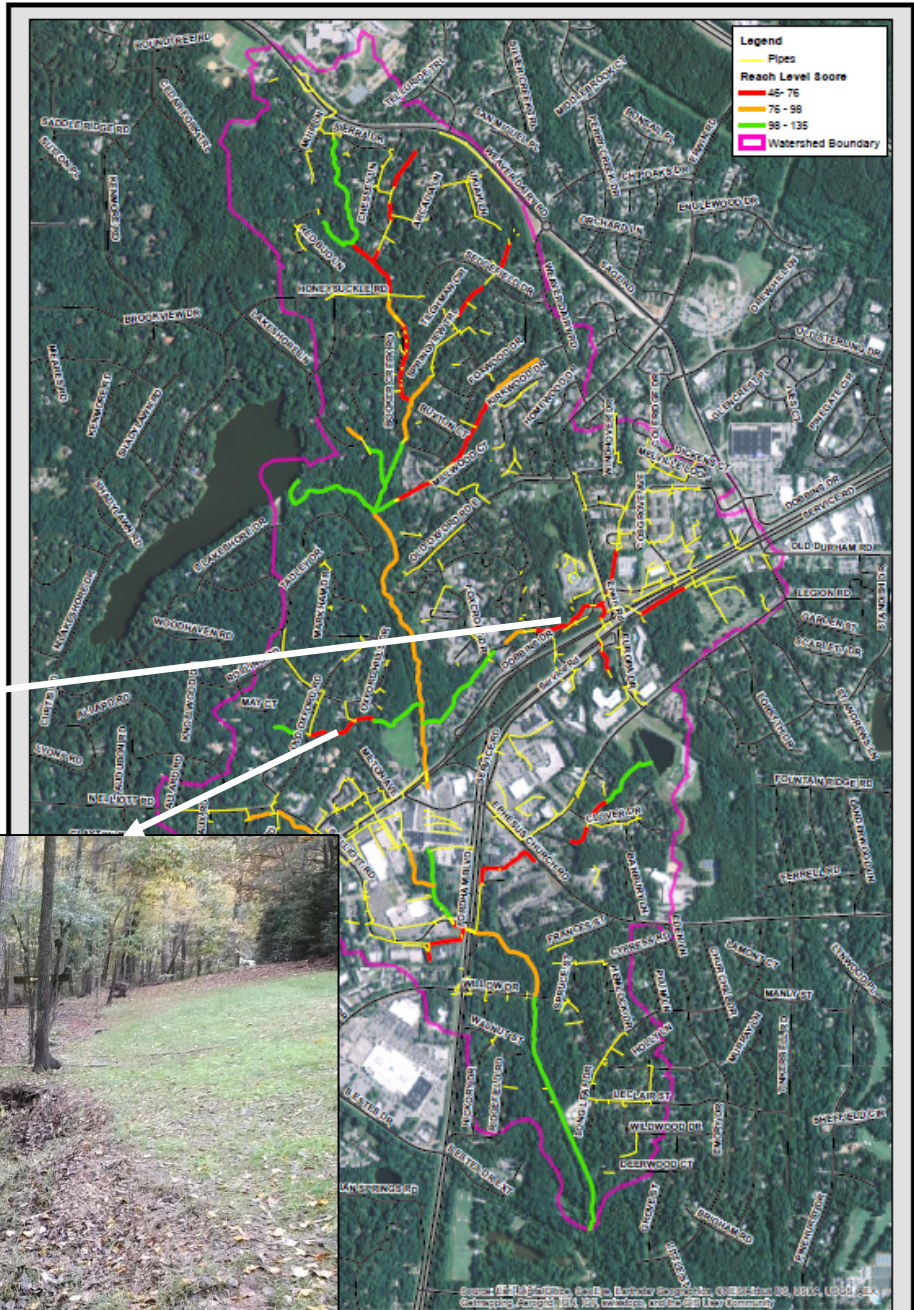


Stream Assessments



Dobbins Drive bank stabilization

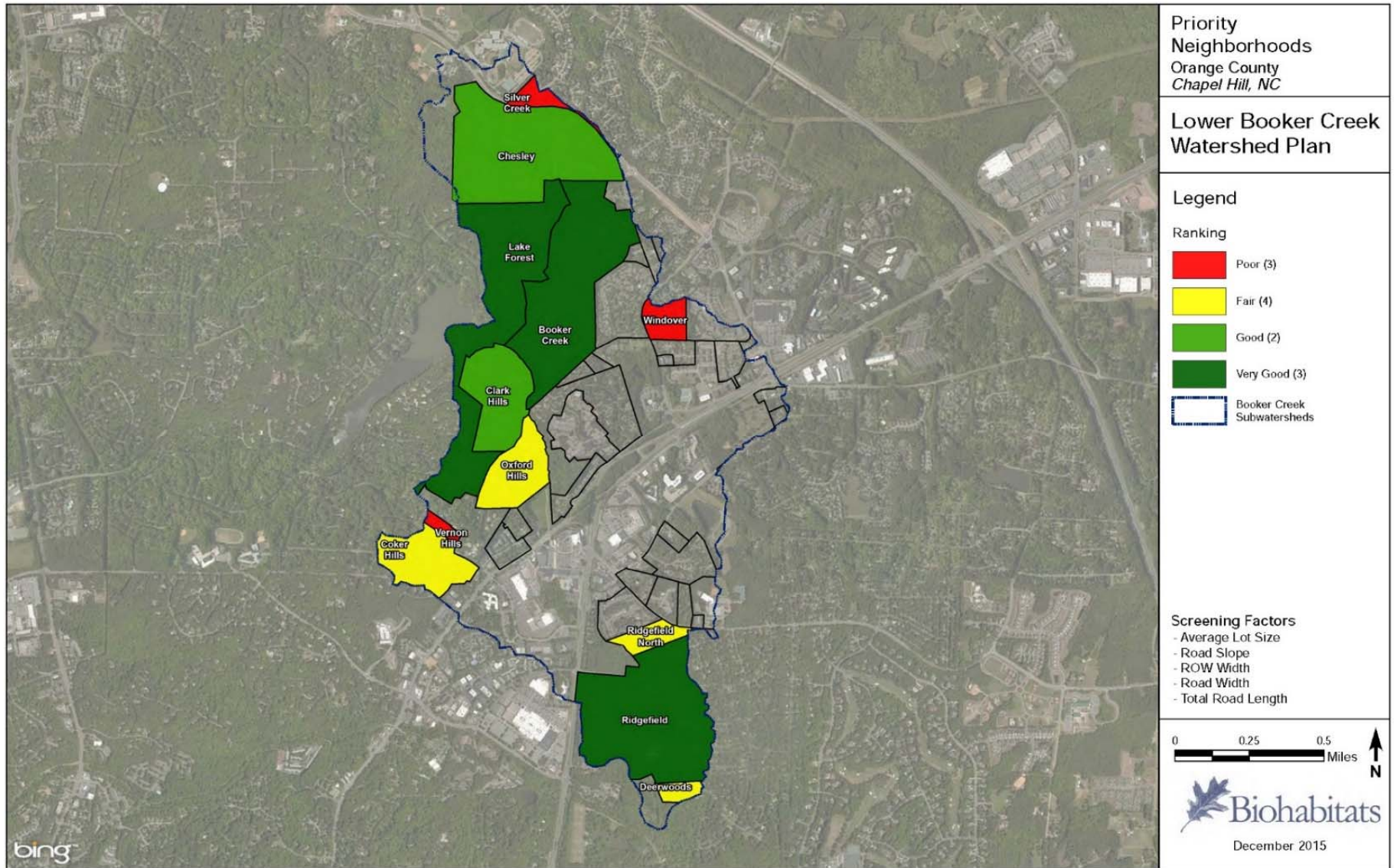
Oxford Hill Rd stream stabilization and buffer enhancement



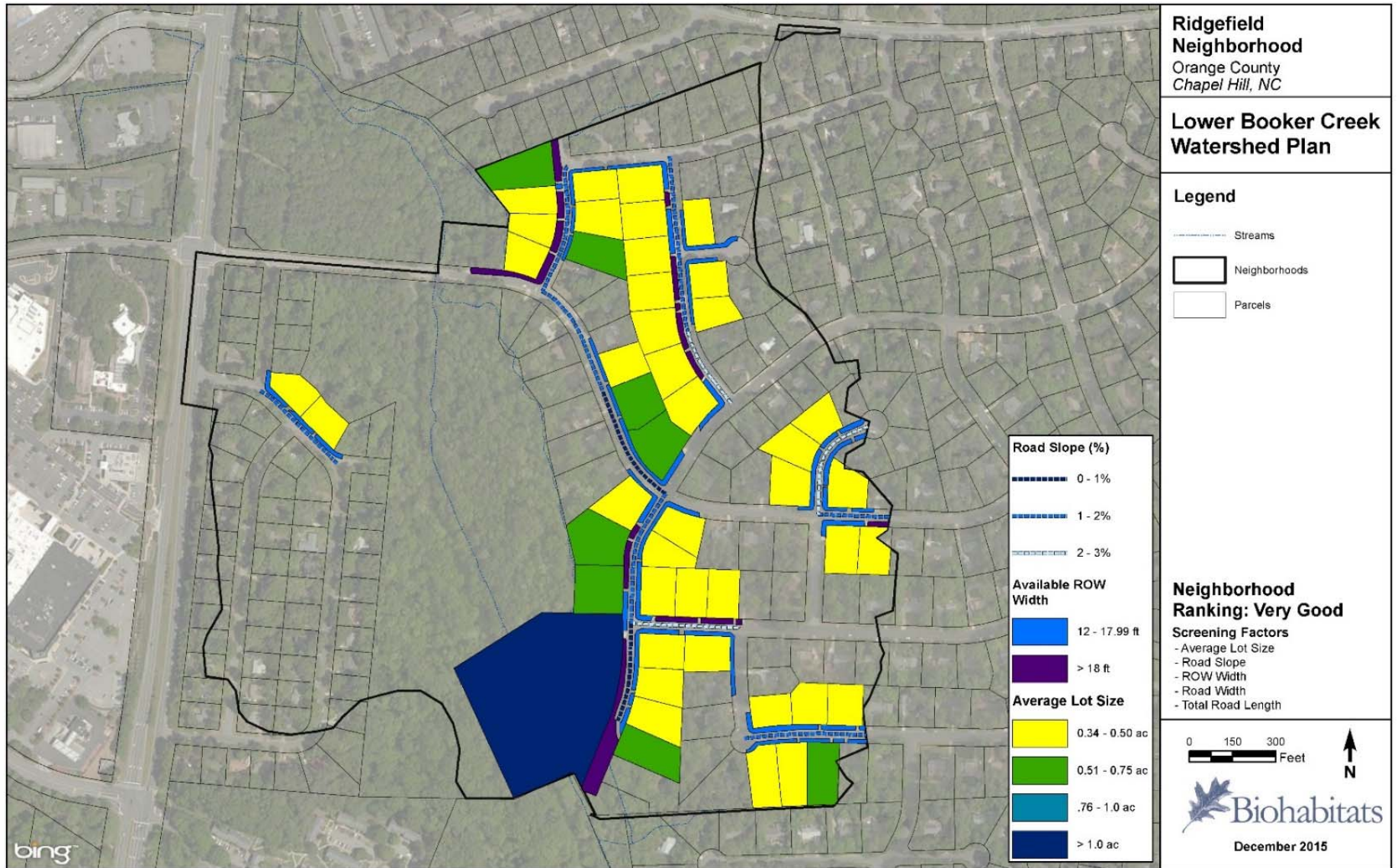
Neighborhood Retrofits

- Average Lot Size Distribution
- Road Slope Distribution
- Road Width Distribution
- Right of Way Width Distribution
- Road Length Distribution

Neighborhood Potential



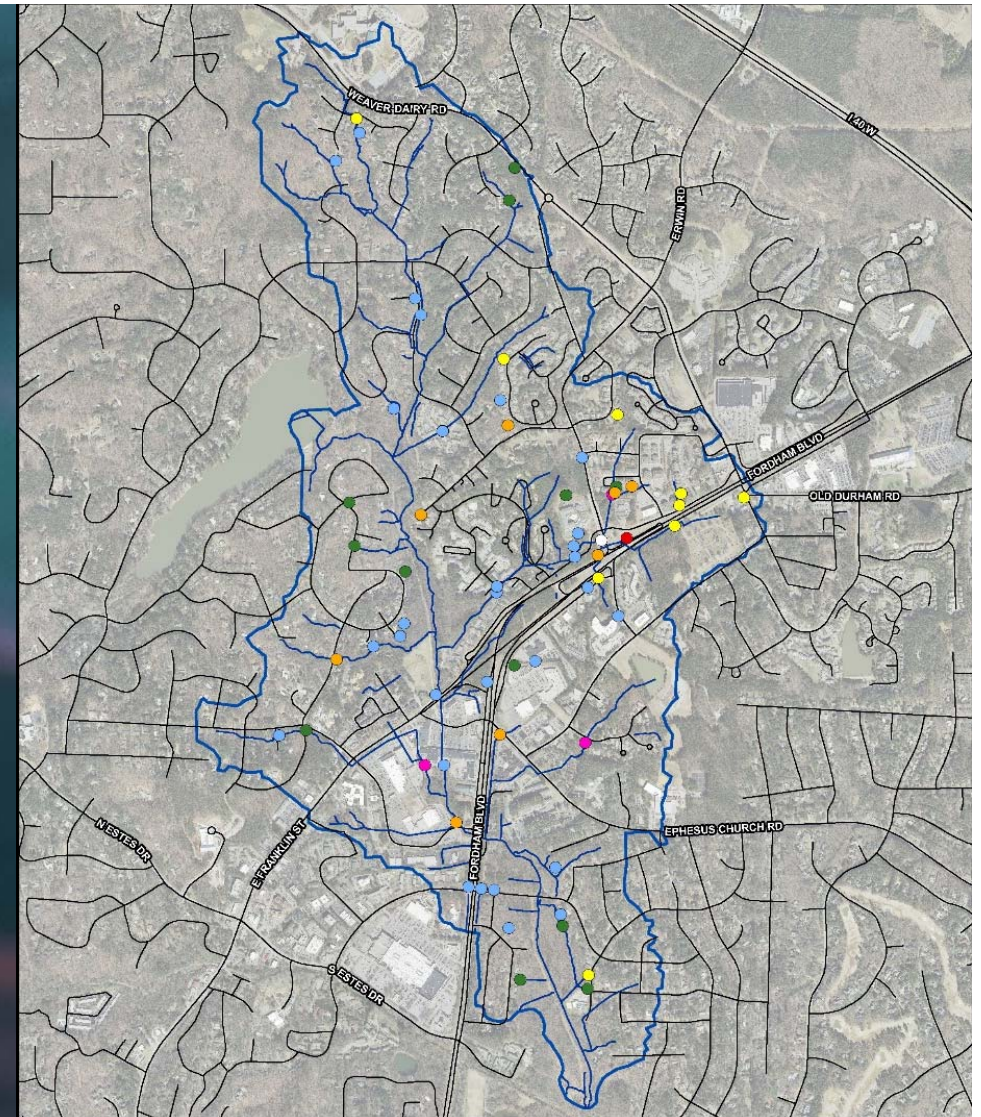
Neighborhood Potential



Outfall Retrofits

Screening Factors

- Hydraulics Feasibility
- Need for Additional Infrastructure
- Accessibility
- Property Ownership
- Earthwork
- Utility Conflicts
- Traffic Impacts
- Tree Impacts
- Impervious Cover Treated
- Practice Area to Drainage Area Ratio

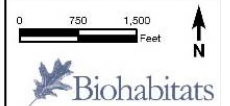


Dataset of Analyzed Outfalls

Lower Booker Creek
Chapel Hill, NC

Outfalls and Pipe Size (inches)

● 18	● 30	● 42	○ 54
● 24	● 36	● 48	

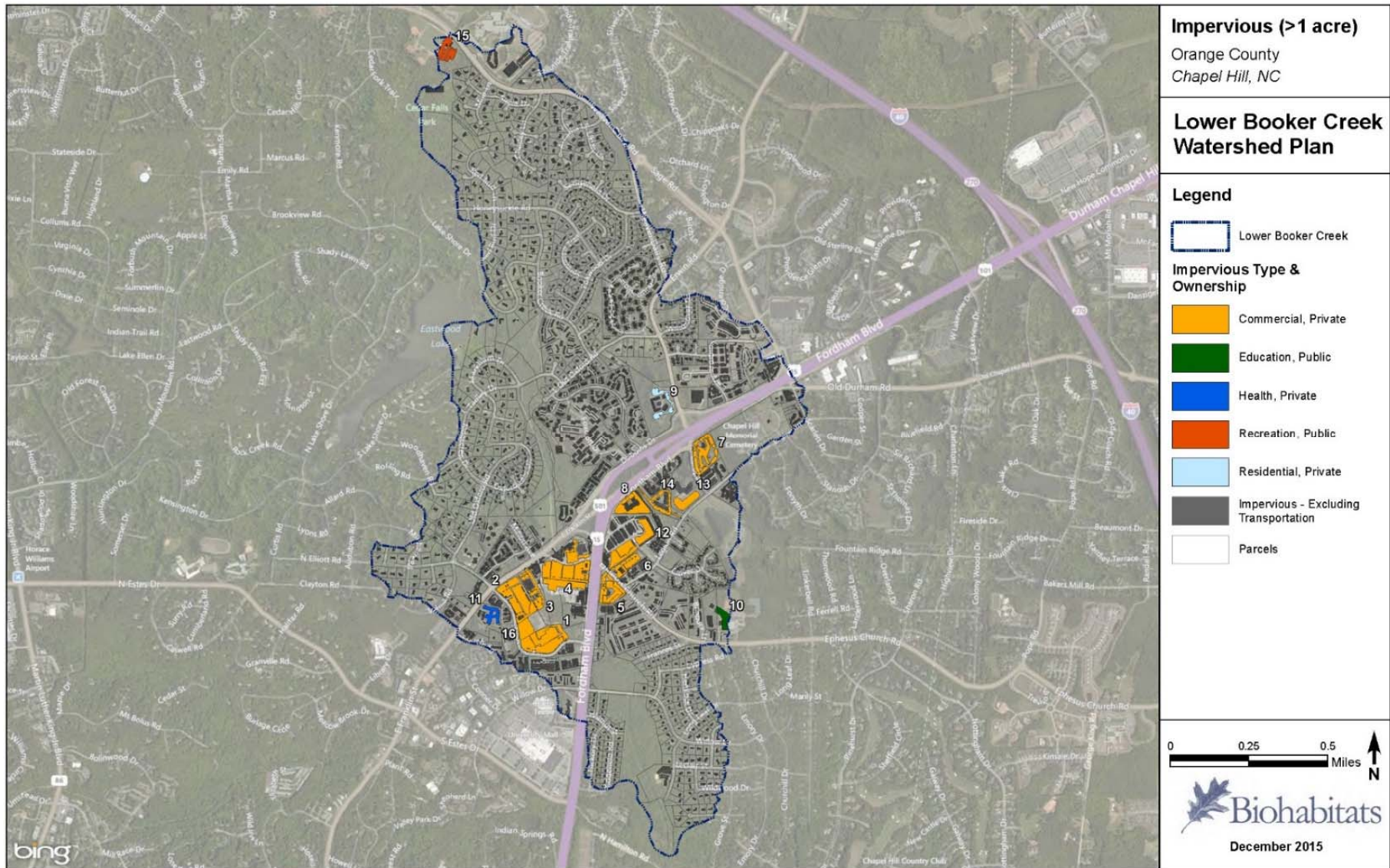


March 2016

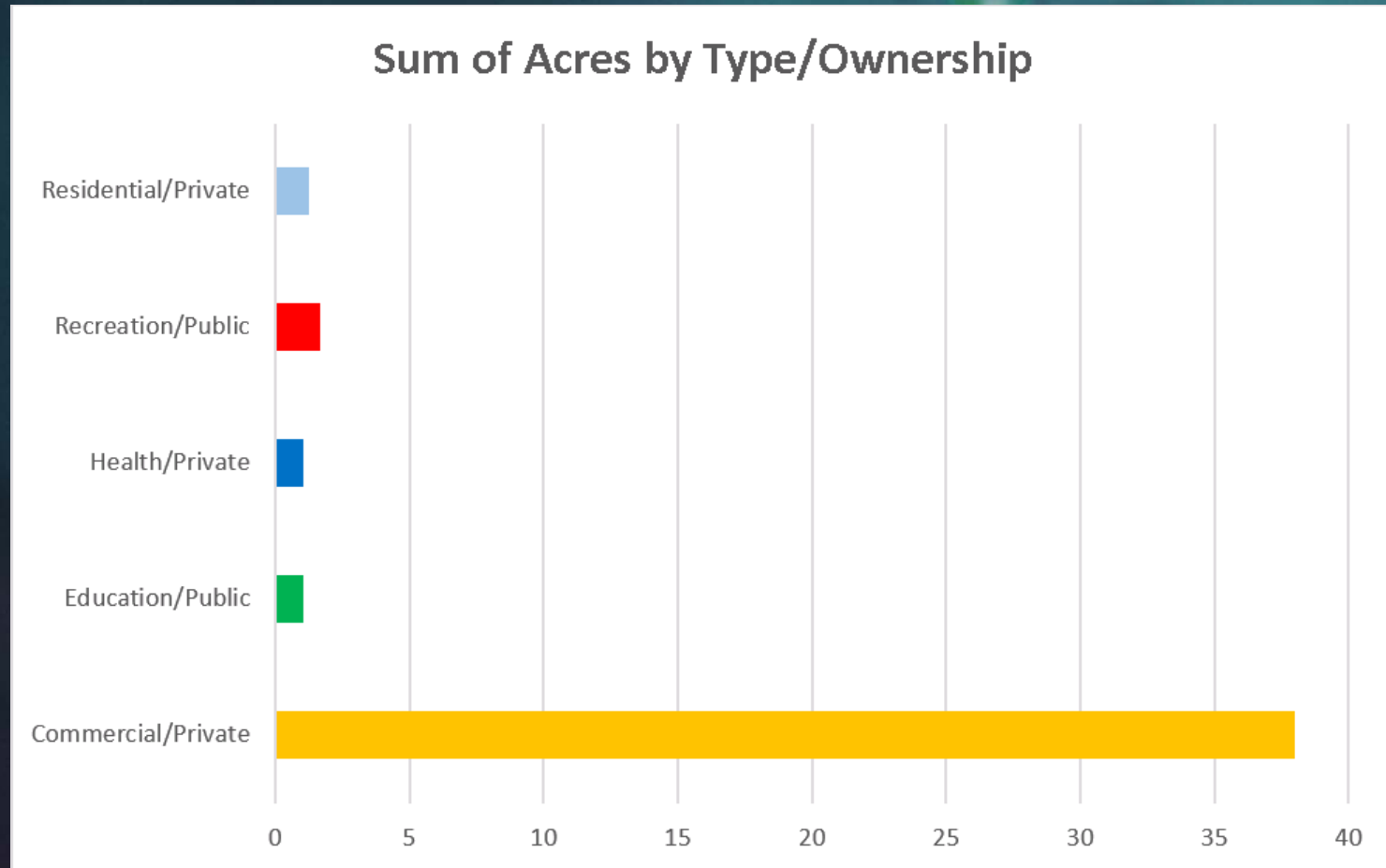
Outfall Potential



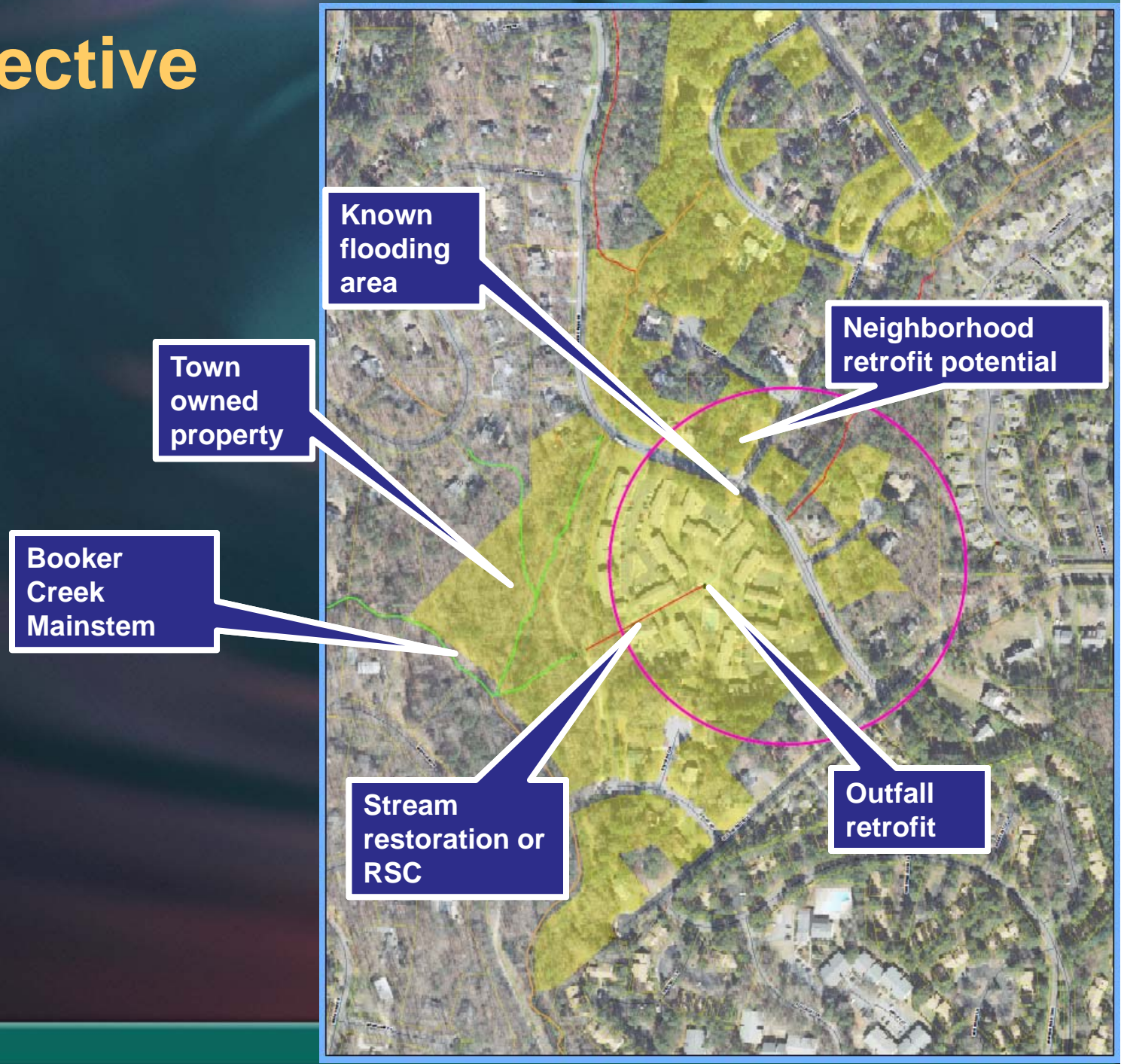
Impervious Cover



Impervious Cover



Multi-objective projects



Next Steps

- Future Conditions Modeling – April 2016
- Alternatives Development – May/June 2016
- Public Meetings – June 23, 2016
- Draft report – August 2016

Slide 21

SW25

Scott Whalen, 12/10/2014



Thank You