

R-4045 / BR-0012

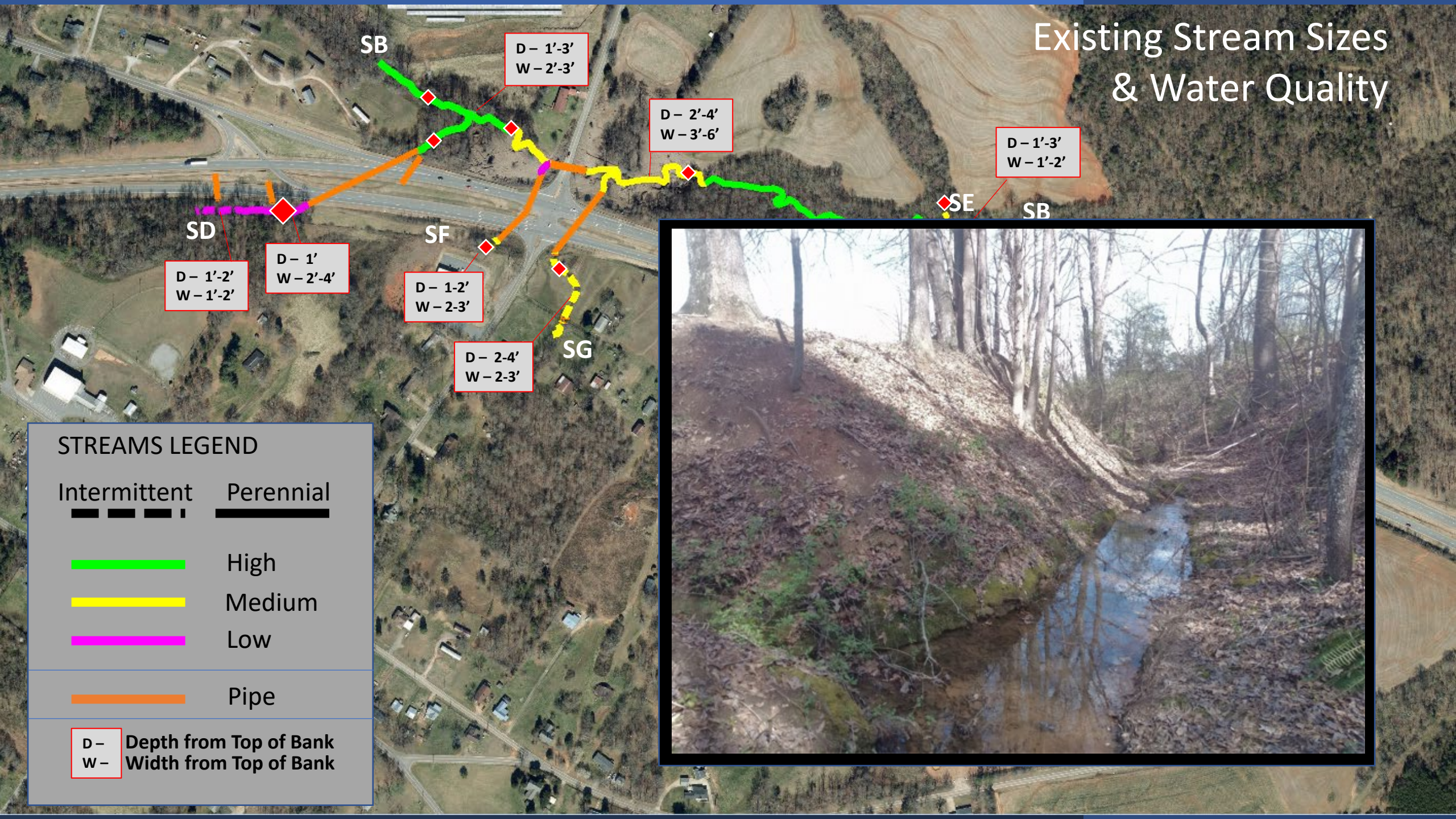
CP 2A Bridging Decisions

Existing Pipe Sizes & Water Quality



STREAMS LEGEND	
Intermittent	Perennial
	High
	Medium
	Low
	Pipe

Existing Stream Sizes & Water Quality



STREAMS LEGEND

Intermittent Perennial

High

Medium

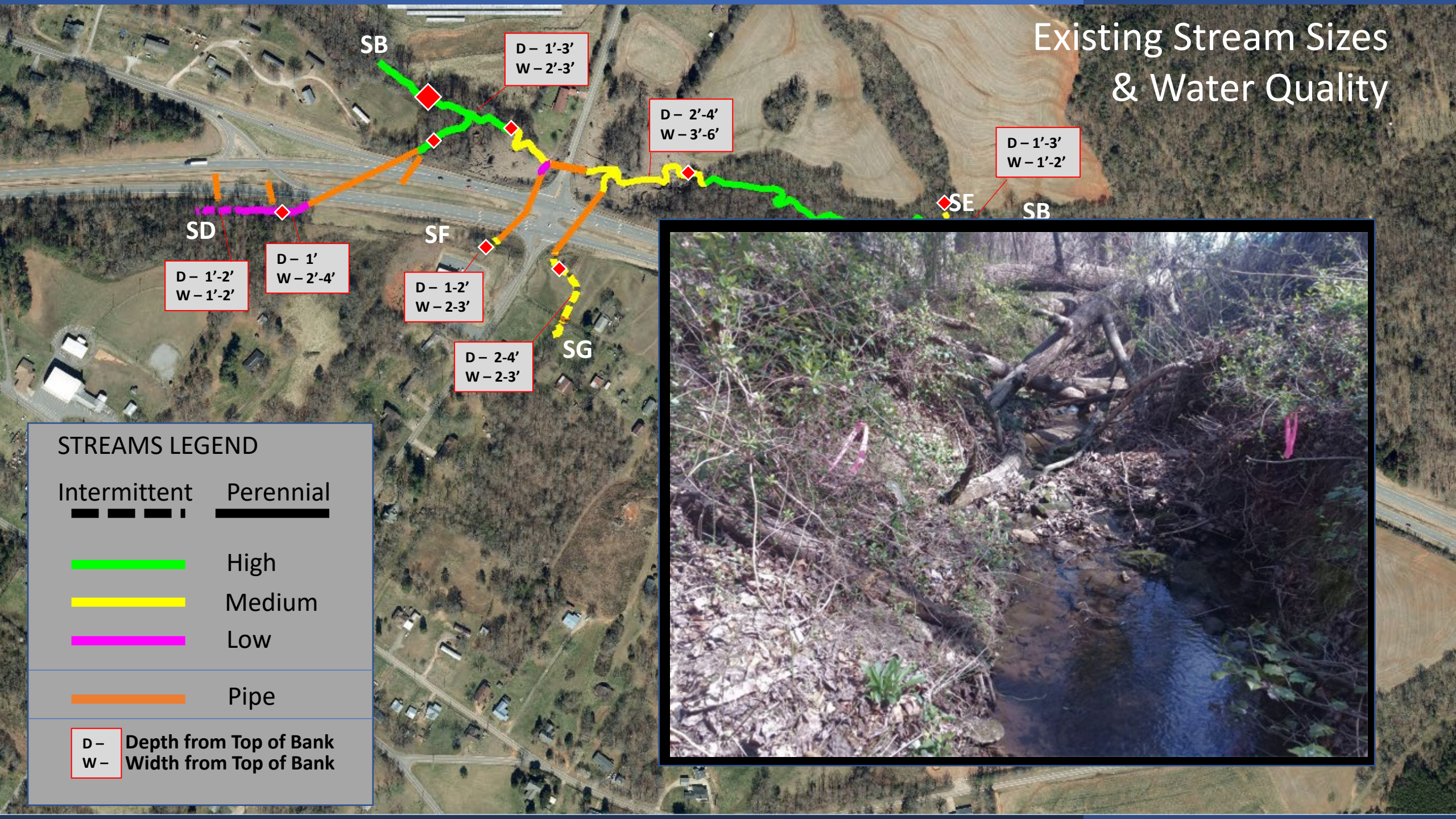
Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

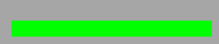


Existing Stream Sizes & Water Quality



STREAMS LEGEND

Intermittent Perennial



High



Medium



Low

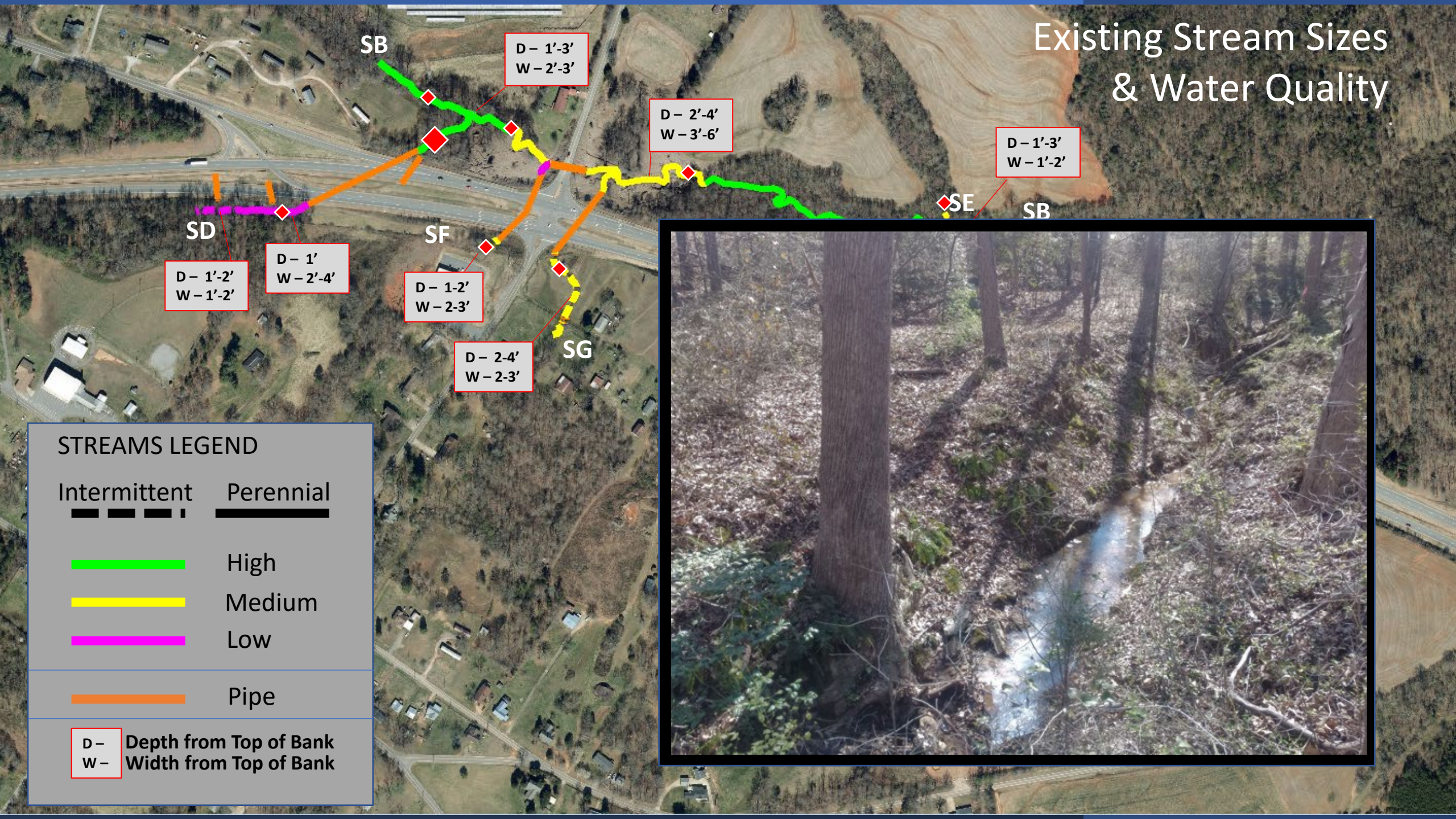


Pipe

D - Depth from Top of Bank
W - Width from Top of Bank



Existing Stream Sizes & Water Quality



STREAMS LEGEND

Intermittent Perennial

High

Medium

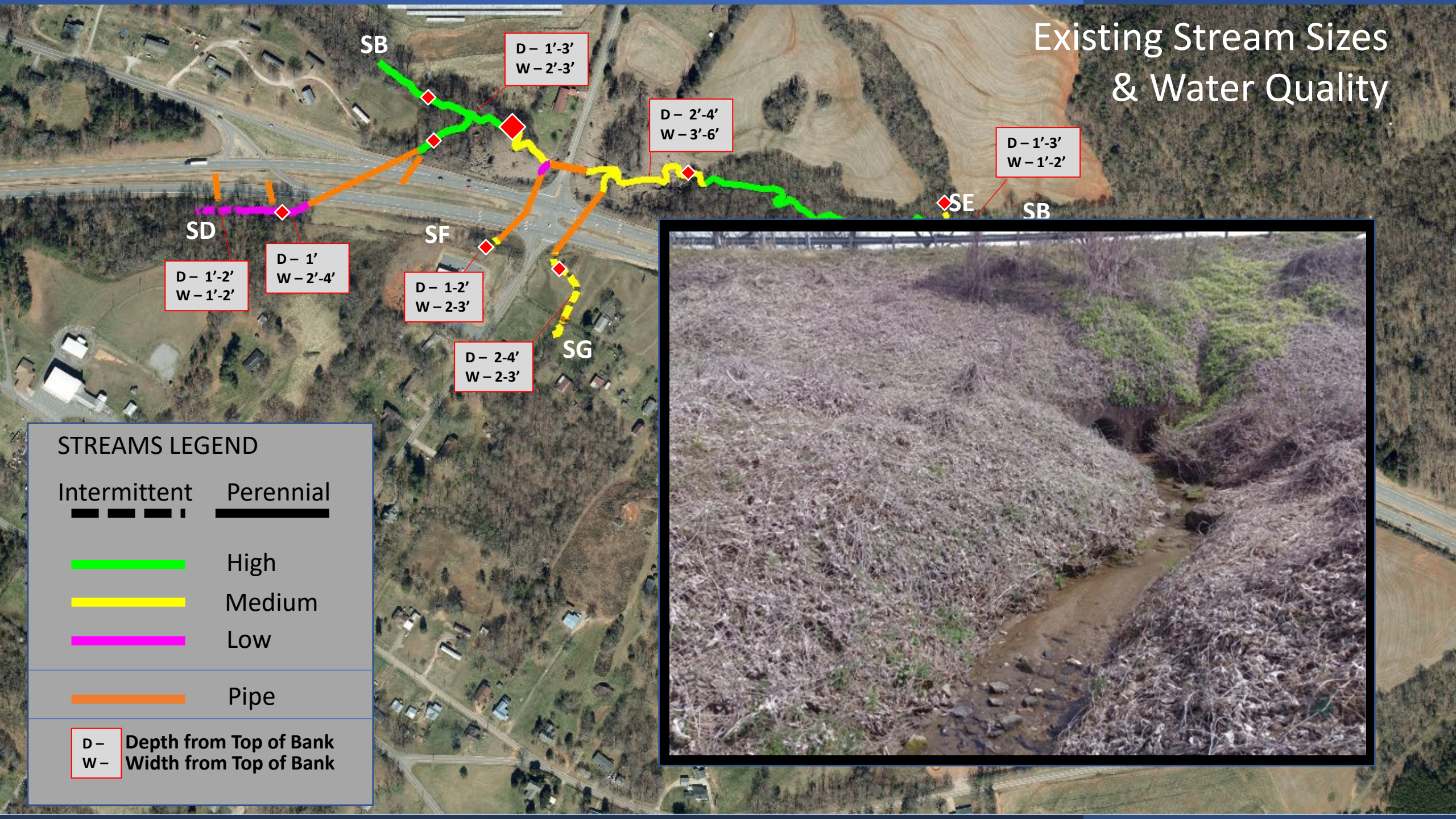
Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

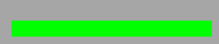


Existing Stream Sizes & Water Quality



STREAMS LEGEND

Intermittent  Perennial 



High



Medium



Low

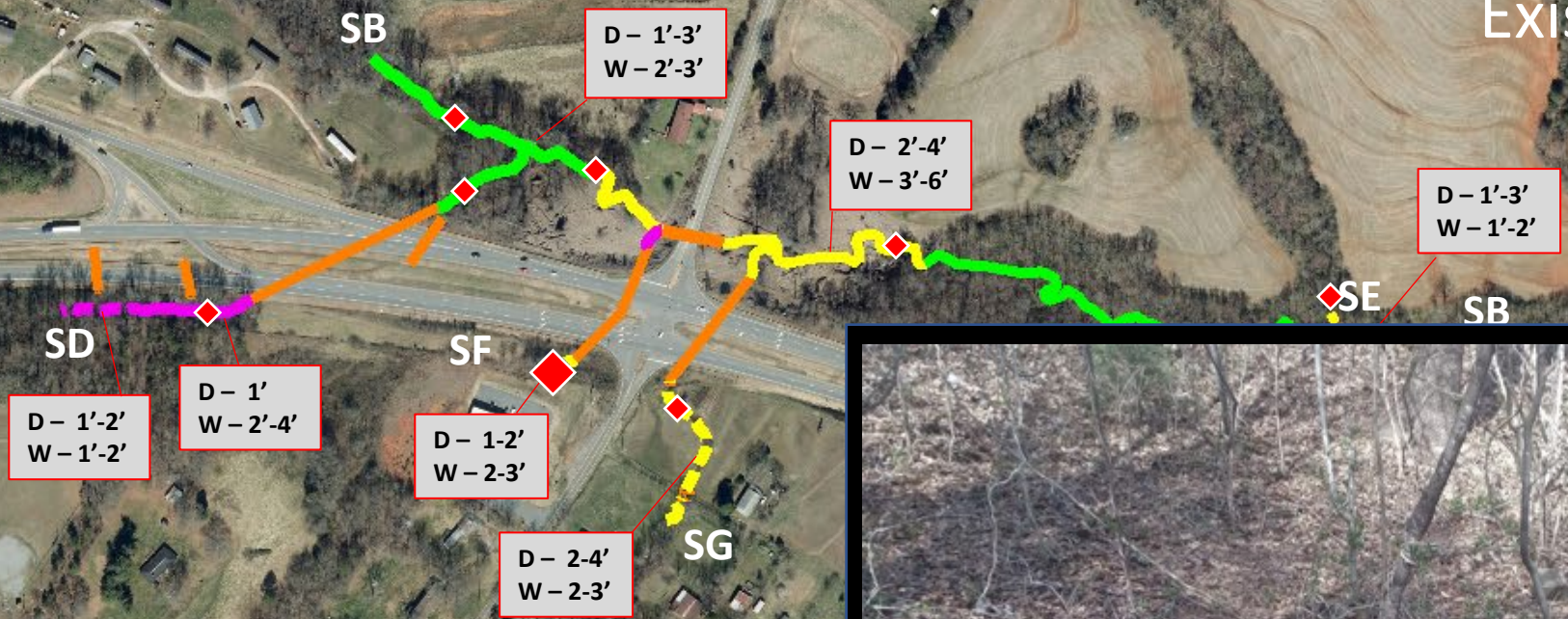
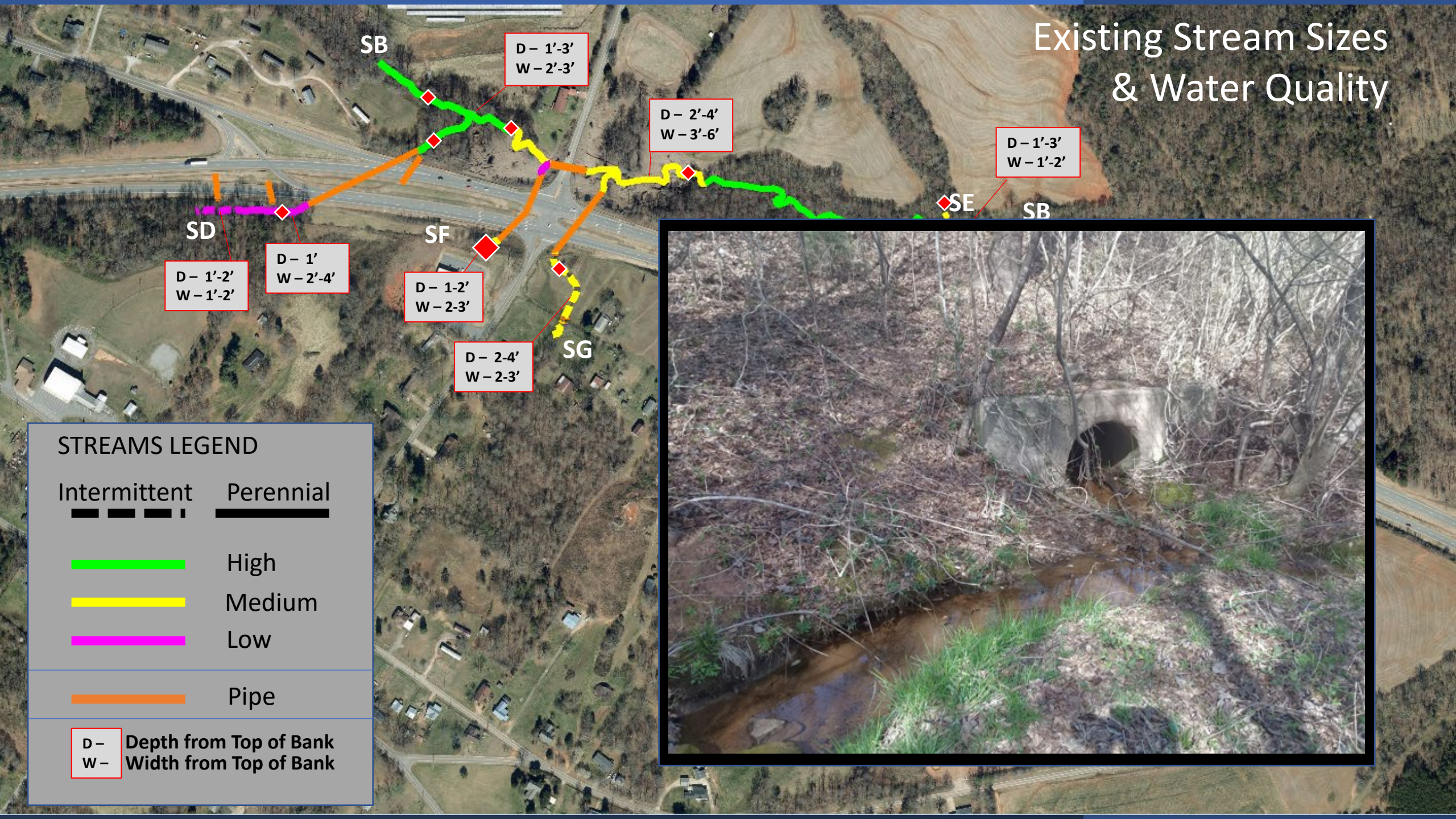


Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

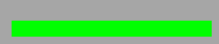


Existing Stream Sizes & Water Quality



STREAMS LEGEND

Intermittent Perennial



High



Medium



Low

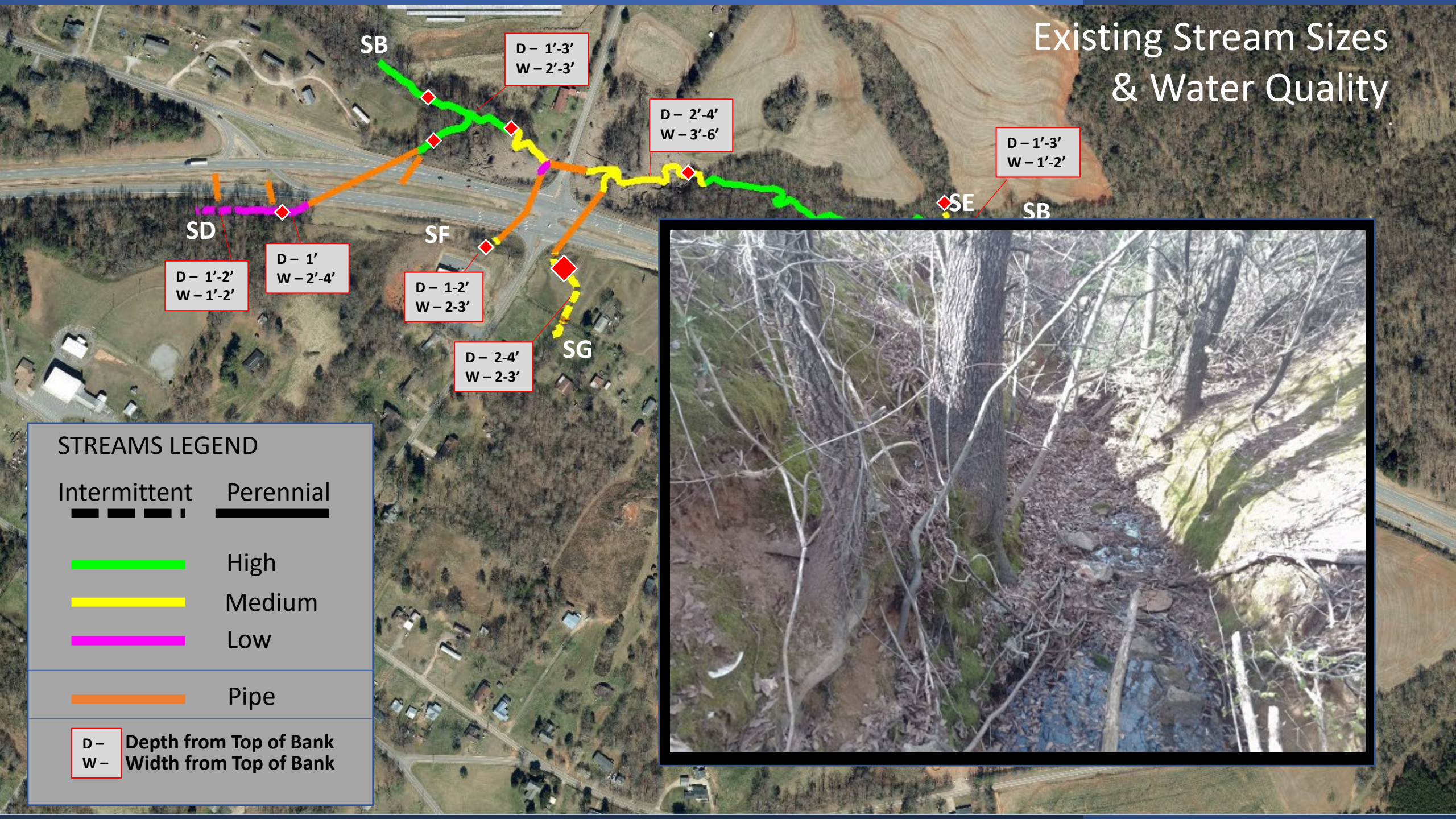


Pipe

D - Depth from Top of Bank
W - Width from Top of Bank



Existing Stream Sizes & Water Quality



SB
D - 1'-3'
W - 2'-3'

D - 2'-4'
W - 3'-6'

D - 1'-3'
W - 1'-2'

SD
D - 1'-2'
W - 1'-2'

D - 1'
W - 2'-4'

SF
D - 1-2'
W - 2-3'

D - 2-4'
W - 2-3'

SG

SE

SB

STREAMS LEGEND

Intermittent Perennial

High

Medium

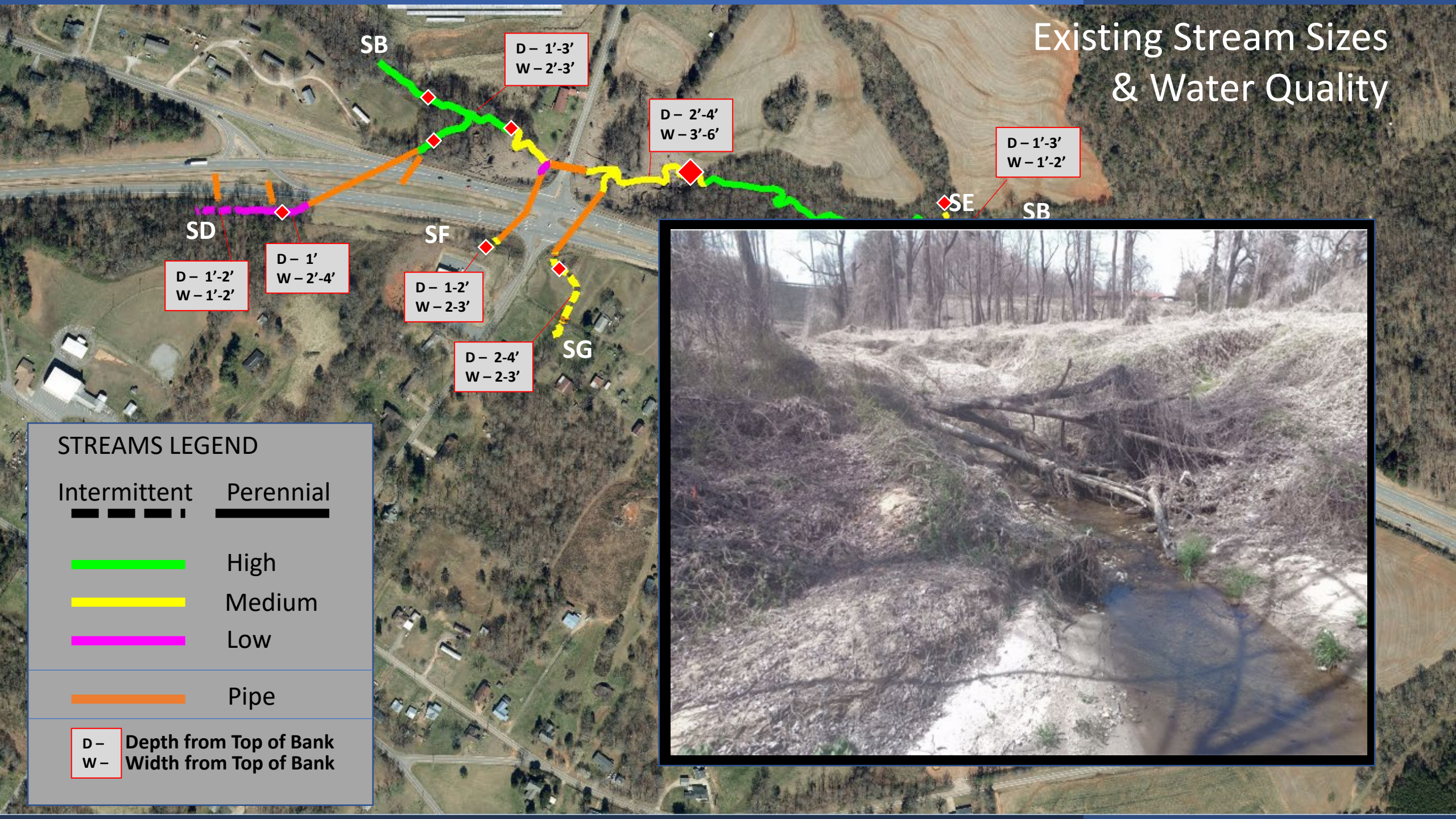
Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank



Existing Stream Sizes & Water Quality



SB
D - 1'-3'
W - 2'-3'

D - 2'-4'
W - 3'-6'

D - 1'-3'
W - 1'-2'

SD
D - 1'-2'
W - 1'-2'

D - 1'
W - 2'-4'

SF
D - 1-2'
W - 2-3'

D - 2-4'
W - 2-3'

SG

SE

SB

STREAMS LEGEND

Intermittent Perennial

High

Medium

Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank



Existing Stream Sizes & Water Quality



D - 1'-3'
W - 1'-2'

D - 1'-2'
W - 4'-6'

D - 0.5'
W - 1'

D - 1'-2'
W - 2'-3'

D - 1'-2'
W - 2'-3'

D - 1"
W - 2'

Medium

Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

Existing Stream Sizes & Water Quality



D - 1'-3'
W - 1'-2'

SE

SB

SB

D - 1'-2'
W - 4'-6'

D - 0.5'
W - 1'

D - 1'-2'
W - 2'-3'

SC

D - 1'-2'
W - 2'-3'

D - 1''
W - 2'

Medium

Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

Existing Stream Sizes & Water Quality



Medium

Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

D - 1'-3'
W - 1'-2'

D - 1'-2'
W - 4'-6'

D - 0.5'
W - 1'

D - 1'-2'
W - 2'-3'

D - 1'-2'
W - 2'-3'

D - 1"
W - 2'

Existing Stream Sizes & Water Quality



Medium

Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank



Existing Stream Sizes & Water Quality



Medium

Low

Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

Existing Stream Sizes & Water Quality



D - 1'-3'
W - 1'-2'

D - 1'-2'
W - 4'-6'

D - 0.5'
W - 1'

D - 1'-2'
W - 2'-3'

D - 1'-2'
W - 2'-3'

D - 1"
W - 2'

- Medium
- Low
- Pipe

D - Depth from Top of Bank
W - Width from Top of Bank

Hydraulic Need

Drainage Area 129 ac
10x7 Box Culvert

Drainage Area 179 ac
10x8 Box Culvert

SD

SB

SF

SG



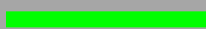



SE

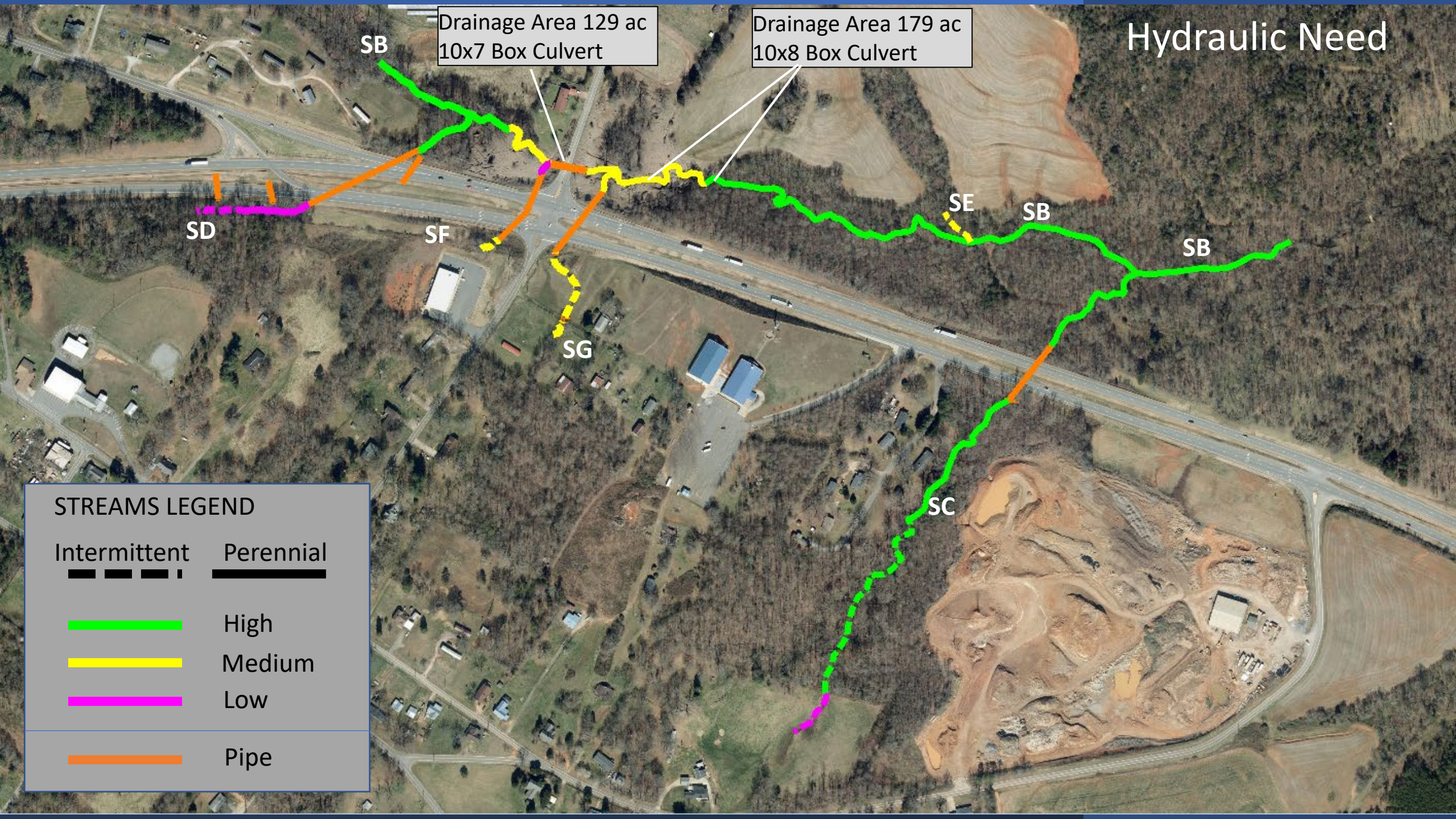
SB

SB

SC

STREAMS LEGEND

Intermittent	Perennial
	
	High
	Medium
	Low
	Pipe



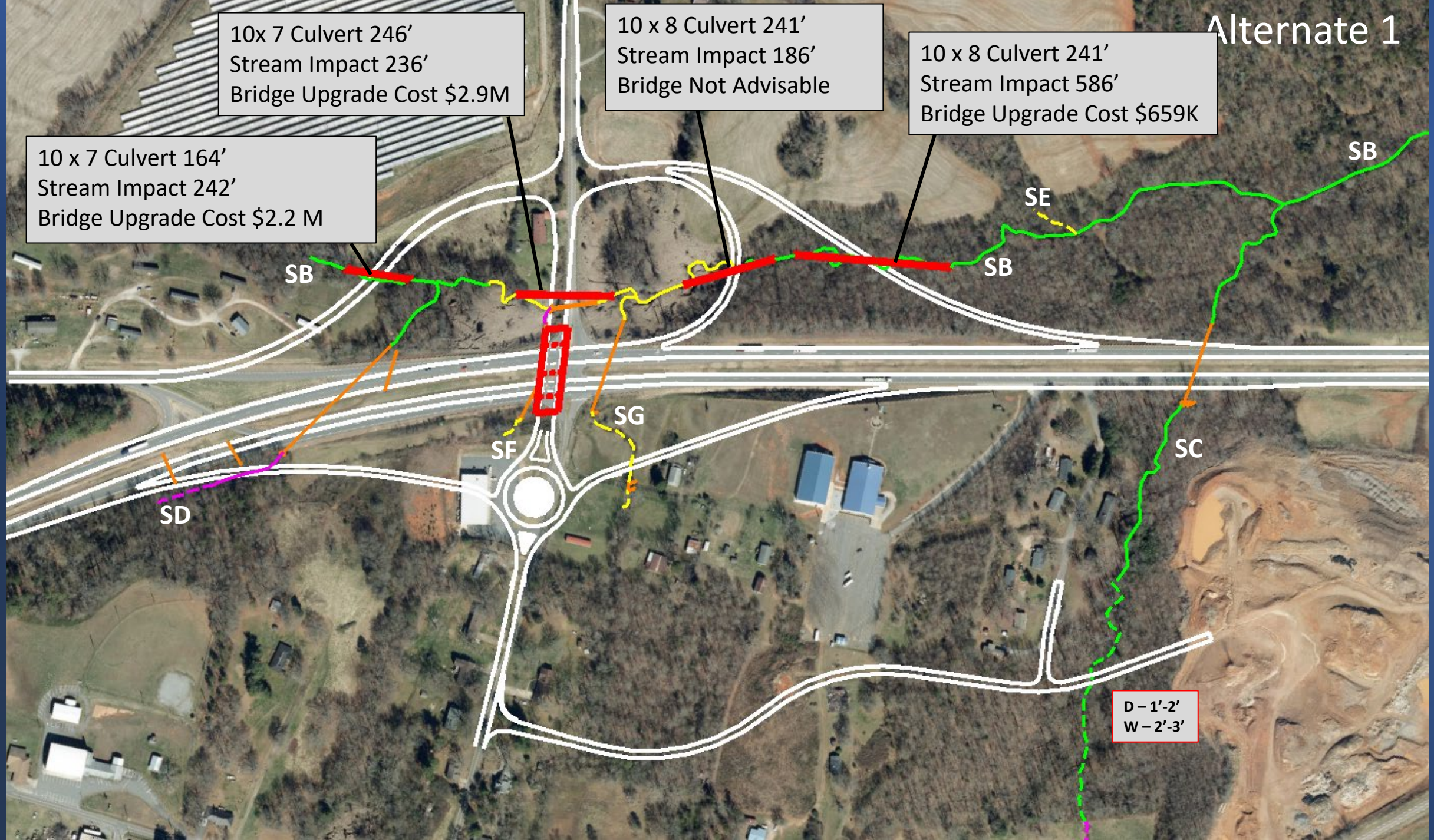
Alternate 1

10x 7 Culvert 246'
Stream Impact 236'
Bridge Upgrade Cost \$2.9M

10 x 8 Culvert 241'
Stream Impact 186'
Bridge Not Advisable

10 x 8 Culvert 241'
Stream Impact 586'
Bridge Upgrade Cost \$659K

10 x 7 Culvert 164'
Stream Impact 242'
Bridge Upgrade Cost \$2.2 M



D - 1'-2'
W - 2'-3'







Alt 1, Service Road 3 Impacts & Costs

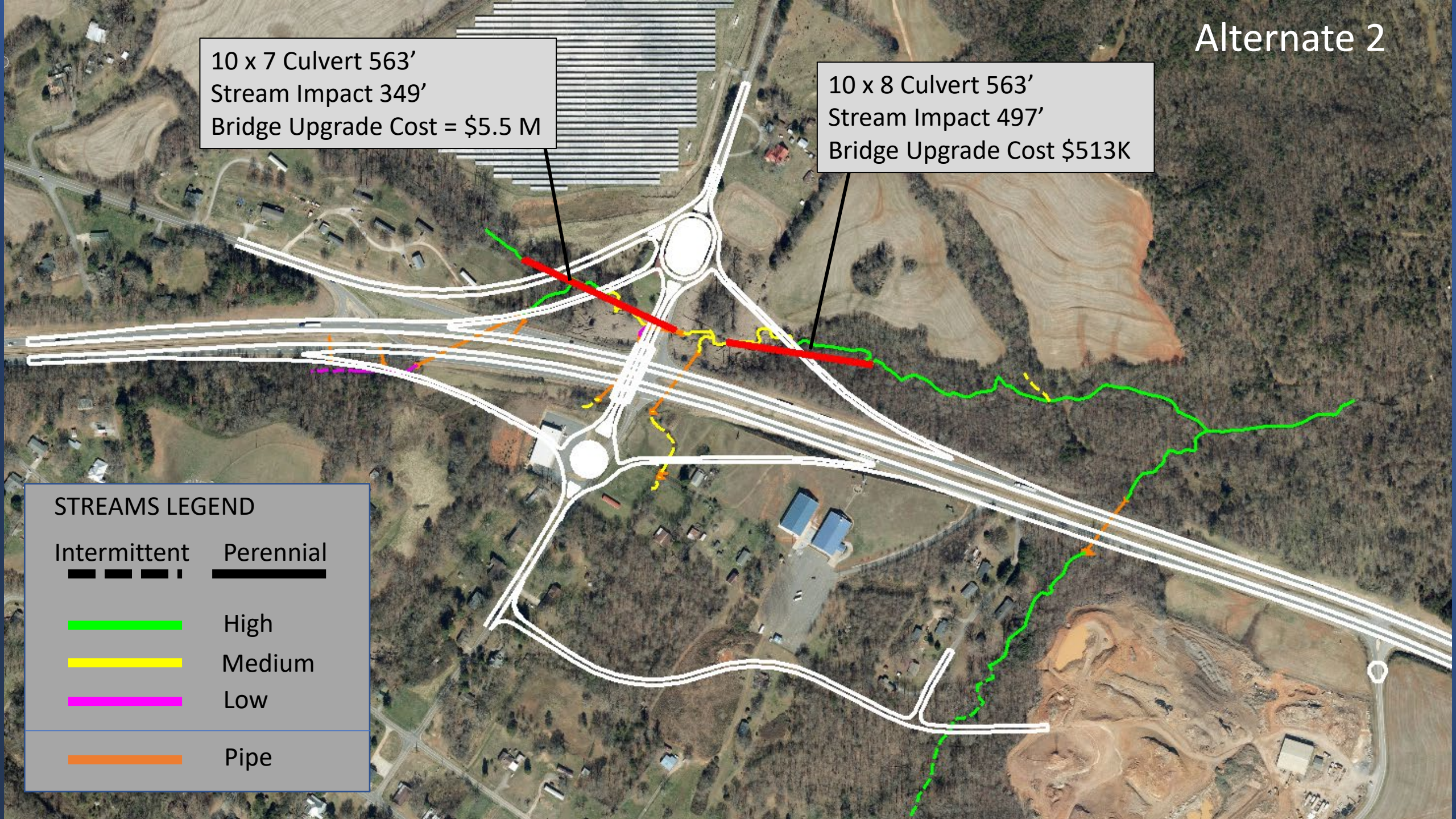
Alternate 1				Culverts On Stream B					Bridges On Stream B				
Stream Crossing Location	Stream	Intermittent/Perennial	Quality	Structure	Permanent Impact (lf)	Temporary Impact (lf)	Culvert Length (lf)	Cost (\$)	Structure	Permanent Impact (lf)	Temporary Impact (lf)	Bridge Size (sf)	Cost (\$)
L Line Sta. 81+00	Sandy Run Creek	Perennial	Med	Pair of Bridges	0	0			Pair of Bridges	0	0		
Ellenboro Rd	SB	Perinneeal	High	10x7 Culvert	217	25	164	511,000	Bridge	0	0	10,411	2,706,000
Lattimore Rd (Y1)	SB	Perennial	Med	10x7 Culvert	87	149	246	767,000	Bridge	0	0	14,000	3,638,000
Loop A	SB	Perennial	Med/High	10x8 Culvert	346	25	241		Culvert	371	25		
Ramp A	SB	Perennial	High	10x8 Culvert	561	25	400	1,247,400	Bridge	0	0	7,355	1,906,000
L Line Sta. 55+00 R	SC	Perennial	High	Parallel Pipe, Retaining Wall	20	15			Parallel Pipe, Retaining Wall	20	15		
Quarry Service Rd	SC	Intermittent	High	New Pipe < 48"	225	25			New Pipe < 48"	225	25		
L Line Sta 30+50 R	SD	Perennial	Low	Extend Pipe	209	0			Extend Pipe	209	0		
L Line Sta 28+00 R	SD	Intermittent	Low	Extend Pipe	168	0			Extend Pipe	168	0		
No Crossing	SE	Intermittent	Med	No Impact	0	0			No Impact	0	0		
Lattimore Rd (Y1)	SF	Perennial	Low	Culvert	46	0			Culvert	46	0		
Near Ramp C 20+00	SF	Perennial	Med	Extend Pipe	65	0			Extend Pipe	65	0		
Loop A/Lattimore	SG	Perennial	Med	Side slope	46	0			Side slope	46	0		
Ramp D	SG	Intermittent	Med	Extend Pipe	321	0			Extend Pipe	321	0		
Total					2311	264		\$2,525,400		1471	65		\$8,250,000
				Total Impacts	2575 lf				Total Impacts	1536 lf			

10 x 7 Culvert 563'
Stream Impact 349'
Bridge Upgrade Cost = \$5.5 M

10 x 8 Culvert 563'
Stream Impact 497'
Bridge Upgrade Cost \$513K

STREAMS LEGEND

Intermittent	Perennial
	
	High
	Medium
	Low
	Pipe



Alt 2, Service Road 3 Impacts & Costs

Alternate 2				Culverts On Stream B					Bridges On Stream B				
Stream Crossing Location	Stream	Intermittent/ Perennial	Quality	Structure	Permanent Impact (lf)	Temporary Impact (lf)	Culvert Length (lf)	Cost (\$)	Structure	Permanent Impact (lf)	Temporary Impact (lf)	Bridge Size (sf)	Cost (\$)
L Line Sta. 81+00	Sandy Run Creek	Perennial	Med	Pair of Bridges	0	0			Pair of Bridges	0	0		
Elleboro Rd/Ramp B/Lattimore	SB	Perennial	High/Med	10 x 7 Culvert	349	0	563	1,755,000	3 Bridges	0	0	27,796	7,224,000
Ramp A	SB	Perennial	Med/High	10 x 8 Culvert	714	25	495	1,544,000	Bridge	0	0	7,916	2,057,171
L Line Sta. 55+00 R	SC	Perennial	High/Med	Parallel Pipe, Retaining Wall	20	15			Parallel Pipe, Retaining Wall	20	15		
Quarry Service Rd	SC	Perennial	High/Med	New Pipe	225	25			New Pipe	225	25		
L Line Sta 30+50 R	SD	Perennial	Low	Extend Pipe	209	0			Extend Pipe	209	0		
L Line Sta 28+00 R	SD	Intermittent	Low	Extend Pipe	168	0			Extend Pipe	168	0		
No Impact	SE	Intermittent	Med	No Impact	0	0			No Impact	0	0		
Lattimore Rd (Y1)	SF	Perennial	Med	Culvert	46	0			Culvert	46	0		
Near Ramp C 20+00	SF	Perennial	Med	Extend Pipe	65	0			Extend Pipe	65	0		
Loop A/Lattimore	SG	Perennial	Low	Side slope	46	0			Side slope	46	0		
Ramp D	SG	Intermittent	Med	Extend Pipe	321	0			Extend Pipe	321	0		
				Total	2163	65		\$3,299,000	Total	1100	40		\$9,281,171
				Total Impacts	2228 lf				Total Impacts	1140 lf			

Discussion

CP 2A

Concurrence Form