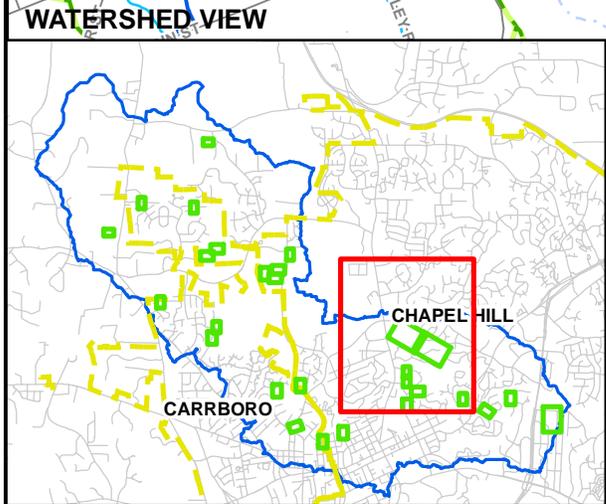
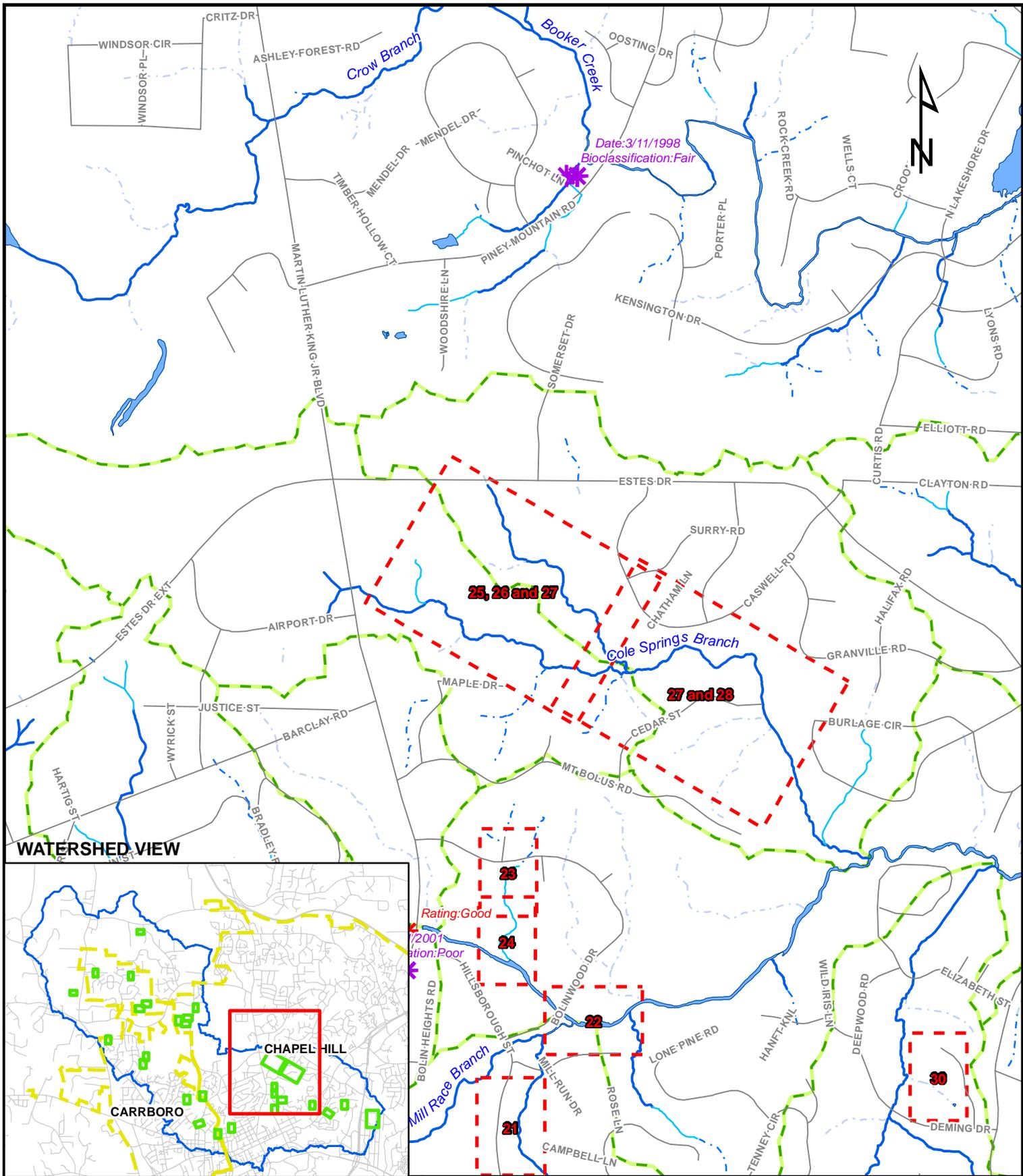


## **SITE 26**

Index Sheet No.: 26  
Raw Data Name: BD 71



Estimated Construction Cost: \$69,400



**Legend**

- Ambient Monitoring
- Benthic Monitoring
- Fish Sampling
- Municipal Boundary
- Orange County Roads
- Subwatersheds
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Stream, unknown flow

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**SITE 25, 26 and 27  
VICINITY MAP**

Geomorphic Analysis and Identification of  
Potential Sites for Stormwater BMPs  
Orange County, North Carolina

0 500 1,000 2,000 Feet

1 inch equals 1,000 feet

**Project Description**

	Drainage Area (acres)	Impervious Area (acres)	% Impervious
Site 26	29.0	3.0	10.3%

**Location**

Site 26 is located approximately 800 feet south of the intersection of Estes Dr. and Somerset Dr.

**Problem Description**

Site 26 is situated on a small tributary to Cole Springs Branch with active headcuts and bank erosion. The tributary was observed to be ephemeral, based on indicators such as position in the landscape, rooted plants in the channel and other factors. The headcut is actively cutting upstream, and needs immediate attention before it forms more of a gully. **Table 26.1** shows a summary of calculated pollutant loads being produced by the contributing drainage area.

**Proposed Solution**

The ephemeral drain provides an ideal site for bio-retention when the drain meets the floodplain of Cole Springs Branch. The storage volume and reduced velocities will aid the stability of the Cole Springs Branch. Baseflow augmentation should result from this floodplain BMP. The outlet of the proposed bio-retention area should be a level spreader that runs parallel to Cole Springs Branch. This will alleviate the concentrated flow and scour that was observed on the site. Water quality and quantity management from the bio-retention area placed at the confluence of the steep ephemeral channel and Cole Springs Branch represents the type of project that should be implemented throughout this sub-watershed. Though a liner bio-retention, such as bio-grade step, would be applicable here, it is less expensive to manage these flows where they reach the lower slope of the perennial streams floodplain.

Pollutant loads of the contributing drainage, as well as potential reductions, have been estimated and are displayed in **Table 26.1**.

**Table 26.1**

SITE 26	Pollutant Load (lbs)		
	TN	TP	TSS
EXISTING CONDITION	3.74	0.38	50.80
BIORETENTION TREATMENT	35.00%	45.00%	85.00%
NET REDUCTION	1.31	0.17	43.18
FUTURE CONDITION	2.43	0.21	7.62

**Constraints**

Most of the site consists of a mature hardwood forest, and therefore tree removal will be necessary at this site for the BMP.

The site is located on a privately owned property.

*Bolin Creek Watershed  
Geomorphic Analysis and Potential Site Identification for Stormwater BMPs and Retrofits*

**Alternatives**

No alternatives are proposed for this site.

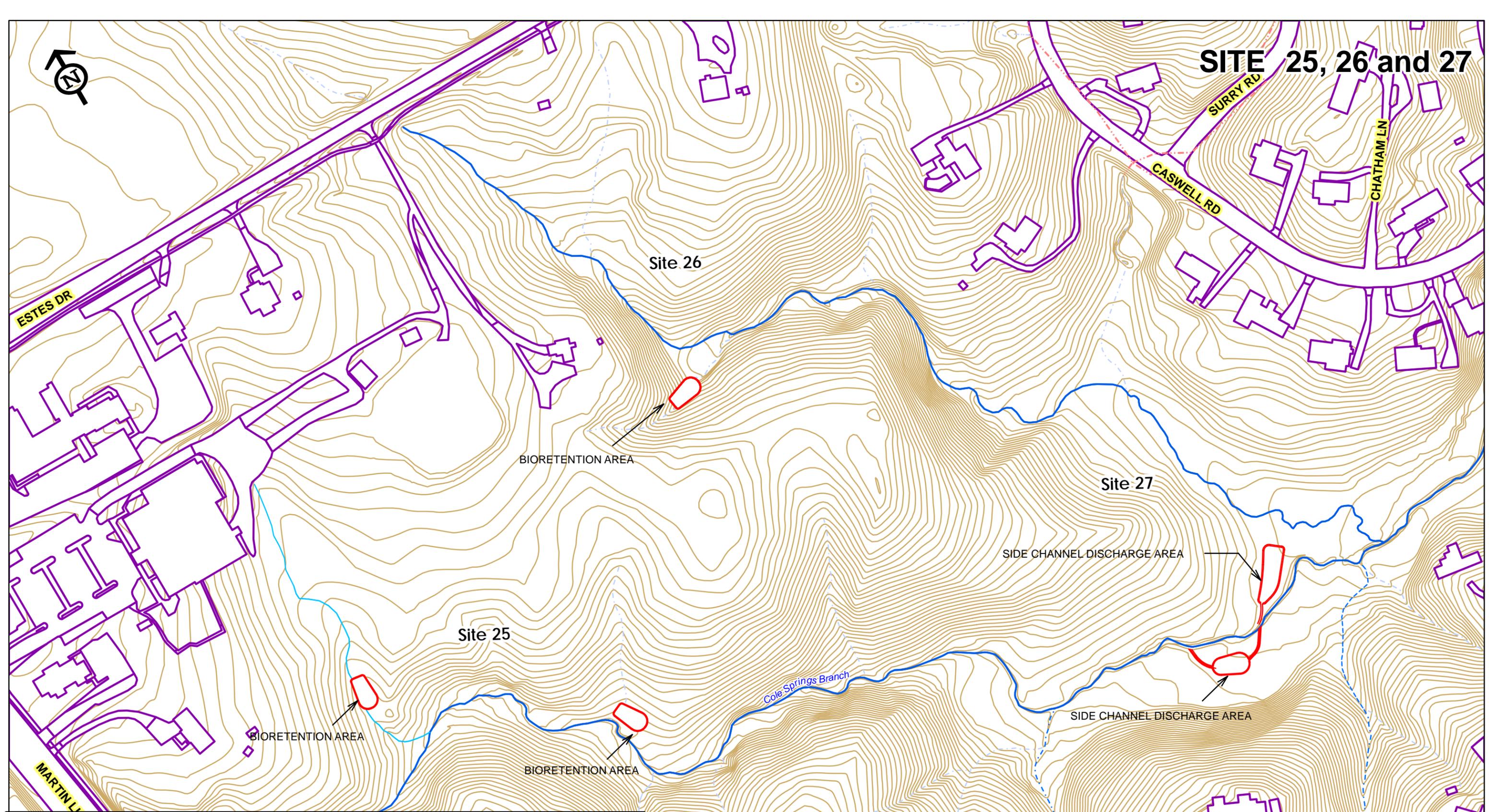
**Cost-Estimate Breakdown**

**Table 26.2** shows a conceptual itemized cost estimate for Site 26. These costs represent construction and maintenance costs only. The cost for the bioretention area is derived from a cost per cubic foot treated for bioretention areas as reported by Schueler, et. al. (2007). The contingency fee for this site has been increased due to the difficulty of access and proximity to a utility easement.

**Table 26.2**  
**SITE 26**

Pay Item Description	Estimated Quantity	Unit	Unit Bid Price	Bid Amount
Bio-Retention Area	4581.00	CF	12.62	\$57,812
<b>Total</b>				<b>\$57,812</b>
Mobilization (5%)	1.00	LS		\$2,891
Contingencies (15%)	1.00	LS		\$8,672
Total + Mobilization and Contingencies				<b>\$69,375</b>
<b>Maintenance Costs</b>				
Maintenance (5% of base construction cost of BMP)	1.0	Year		<b>\$3,469</b>

# SITE 25, 26 and 27



**Legend**

- Stormwater Lines
- Impervious Surfaces
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Stream, unknown flow
- Contours

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**CONCEPTUAL PLAN VIEW**  
BOLIN CREEK WATERSHED  
Geomorphic Analysis and Potential Site  
Identification For  
Stormwater Structures and Retrofits

0 75 150 300 Feet  
1 inch equals 150 feet



# SITE 25, 26 and 27

ESTES DR

SURRY RD

CHATHAM LN

CASWELL RD

Site 26

Site 27

BIORETENTION AREA

SIDE CHANNEL DISCHARGE AREA

Site 25

BIORETENTION AREA

BIORETENTION AREA

SIDE CHANNEL DISCHARGE AREA

Cole Springs Branch

MARTIN LN

MAPLE DR

### Legend

- Stormwater Lines
- Perennial Stream
- Intermittent Stream
- Ephemeral Stream
- Stream, unknown flow



### AERIAL PHOTO VIEW

BOLIN CREEK WATERSHED  
 Geomorphic Analysis and Potential Site  
 Identification For  
 Stormwater Structures and Retrofits

0 75 150 300 Feet

1 inch equals 150 feet