

# From FEMA Buyout to Restoration: the Chantilly Ecological Sanctuary at Briar Creek

2018 EcoStream Conference  
Asheville, NC



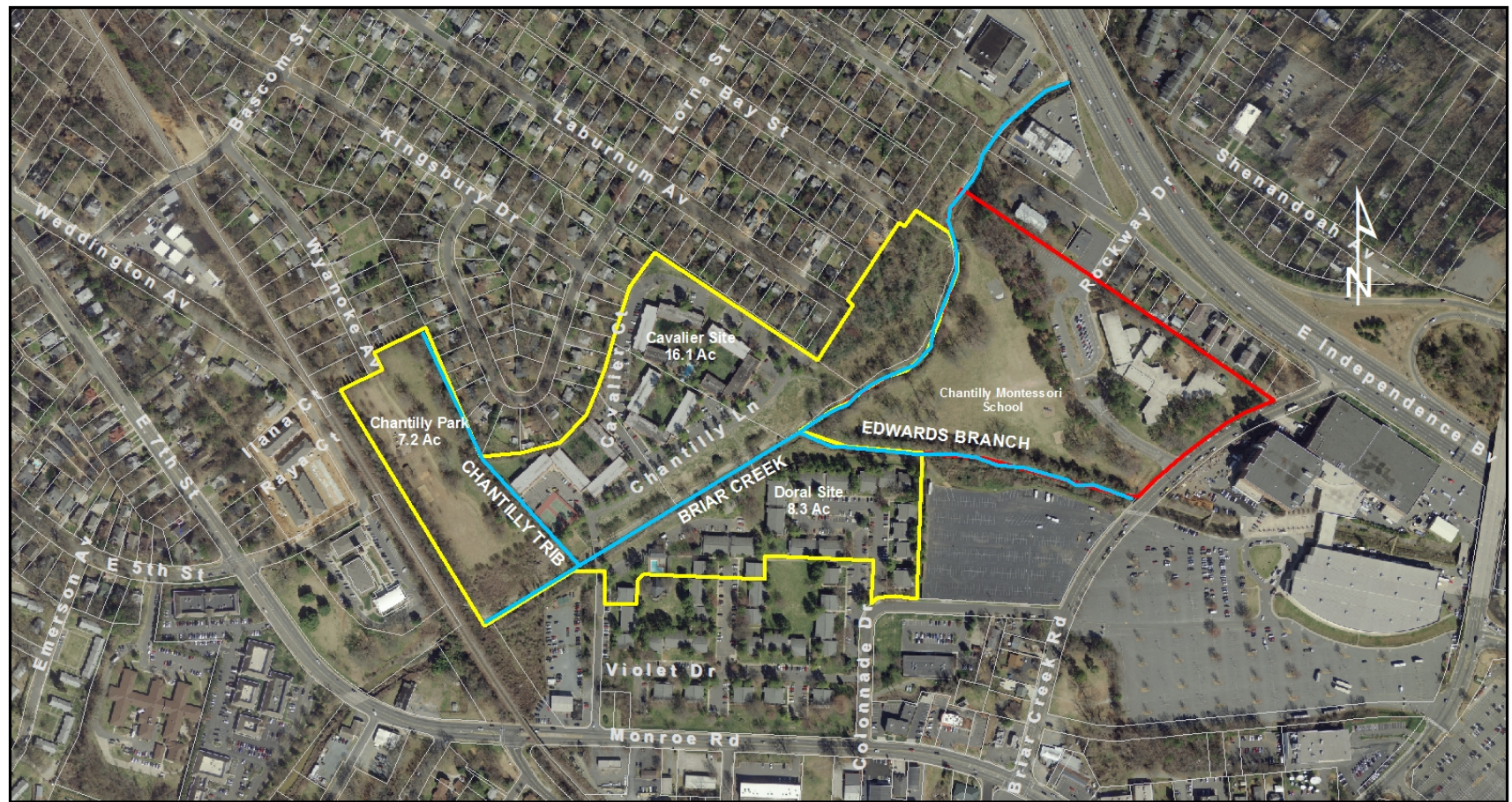
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# Doral/Cavalier Apartments Location



1 inch = 300 feet

## Legend

- Project Limits
- Mecklenburg County Property
- CMS Property

WILDLANDS  
ENGINEERING

YEARS

WATER  
Services



# Charlotte's Most Flood Prone Structures – Doral/Cavalier Apartments

Cavalier - 192 apartment units (County Purchased)

Doral - 128 apartment units (County Purchased)

- 160 apartment units (Privately Owned)

Total - 480 apartment units

- 320 apartment units purchased by the County

Flood damage in 1995, 1997, 2003, 2008, 2009

One of the most flooded properties in Mecklenburg County.

Predicted flood depths at Doral/Cavalier

FEMA BFE - 12 feet above the lowest floor

Future BFE - 16 feet above the lowest floor



# Flooding 1997





# Largest PDM Project in History (2006)

## PDM Grant Amount:

- Cavalier on two parcels
- Two individual PDM Grants/Project

Federal Share: \$5.4 million (70%)

Local Share: \$2.4 million (30%)

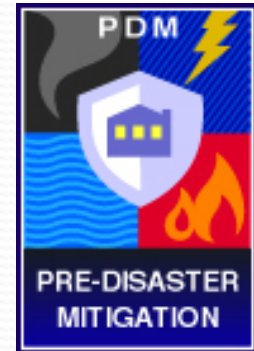
Total Grant Amount: \$7.8 million

## Actual Project Cost:

Federal Share: \$5.4 million (56%)

Local Share: \$4.2 million (44%)

Total Cost: \$9.6 million





# Highs and Lows

Mecklenburg Closed on  
Cavalier on June 14<sup>th</sup>, 2008

YEA!!



The entire apartment  
complex was  
FLOODED  
two months later...

BOO!!





# Stuff Happens

- August 28<sup>th</sup>, 2009 Briar Creek flooded all of Cavalier and a large portion of Doral
- 7 inches of rain fell on the Briar Creek Watershed
- Cavalier alone had 160 occupied units.
- Some tenants were rescued
- The lower units were unlivable
- County had to relocate the tenants and could only return to remove possessions





# Doral Apartments FMA Grant 2009

## FMA Grant Amount:

Agreed to sell 32 of the 66 buildings

Federal Share: \$3.5 million (75%)

Local Share: \$1.2 million (25%)

Total Grant Amount: \$4.7 million

## Actual Project Cost:

Federal Share: \$3.1 million (66%)

Local Share: \$1.6 million (34%)

Total Cost: \$4.7 million





# Total Project Cost – Doral/Cavalier

## Total Project Cost

- Federal Share: \$8.5 million (59%)
- Local Share: \$5.8 million (41%)
- Total Amount: \$14.3 million

## Cost Breakdown

- Property: \$9.7 million (68%)
- Tenant Relocation &  
Demolition: \$4.6 million (32%)





# Community Benefits





# Site Overview

## Stream Drainage Areas

Briar Creek = 14.6 mi<sup>2</sup>

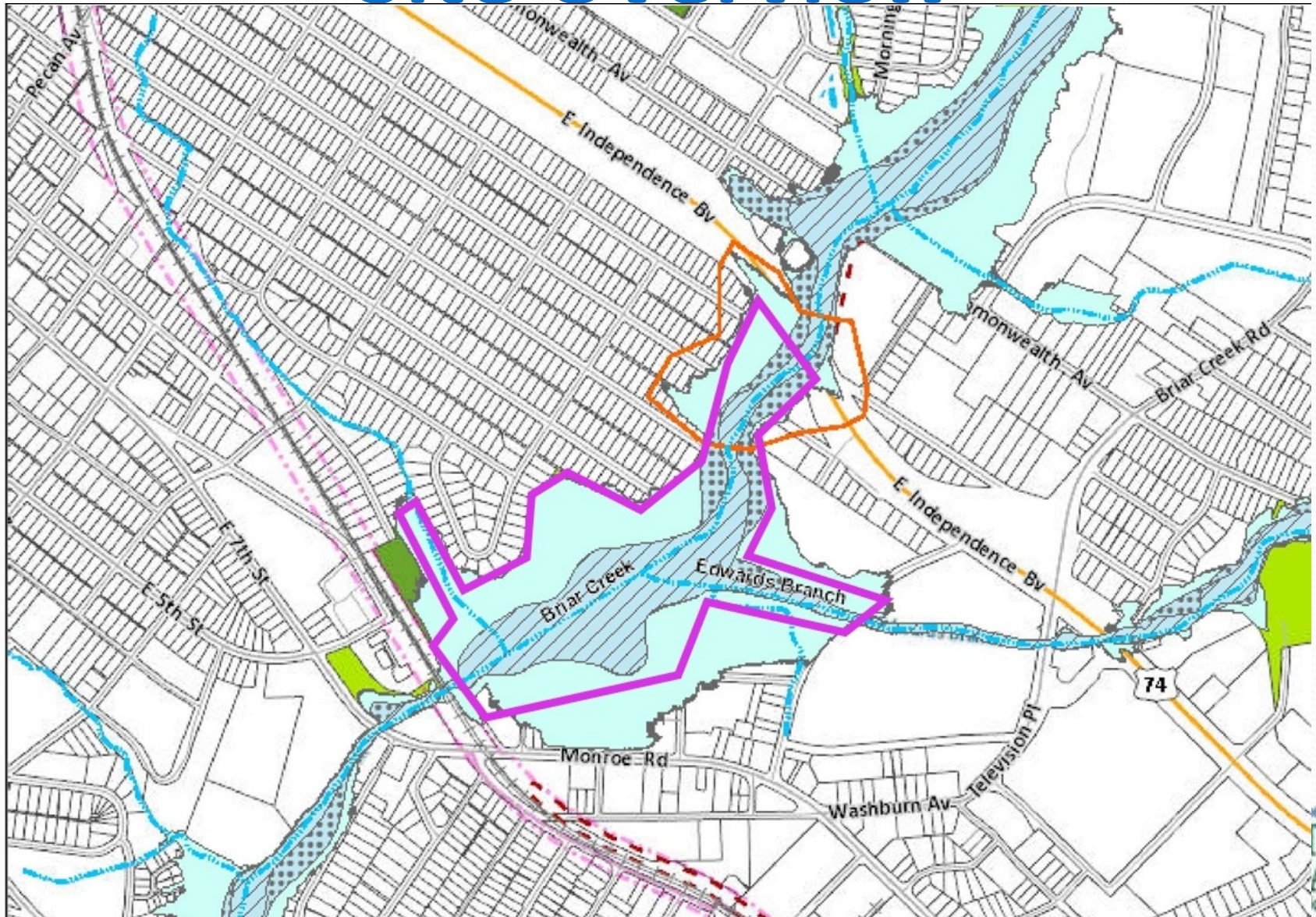
Edwards Branch = 2.6 mi<sup>2</sup>

Chantilly Park Trib = 0.28 mi<sup>2</sup>





# Site Overview





# Pre-Project Conditions



**Briar Creek**



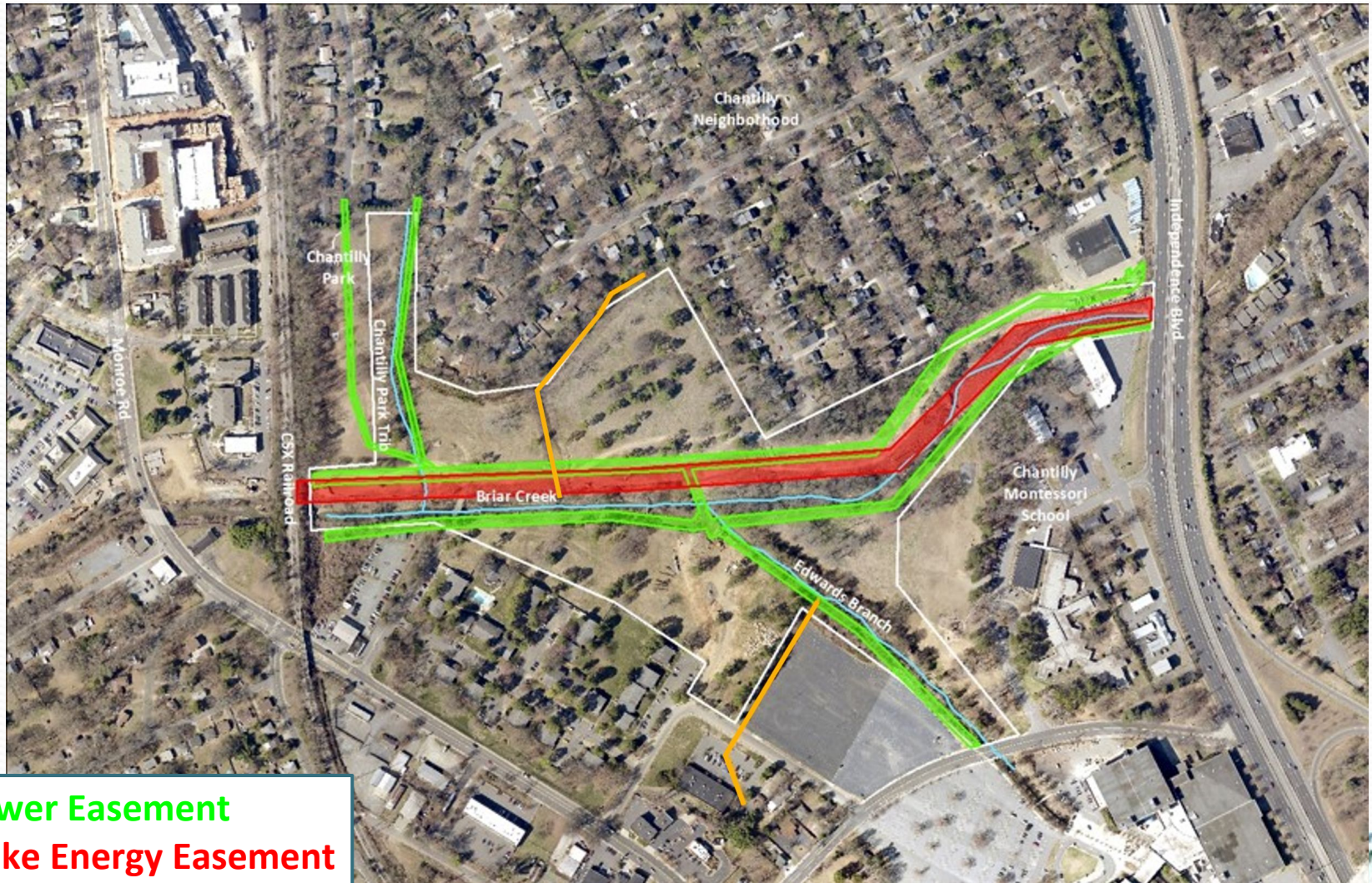
**Edwards Branch**



**Chantilly Park Trib**



# Constraints



**Sewer Easement**  
**Duke Energy Easement**  
**BMP Storm Discharges**



# Approaches

**Briar Creek:**

**Heavy Enhancement/Lite Restoration**





# Approaches

## Edwards Branch: Priority 2 Restoration





# Approaches

**Chantilly Park Trib:  
Priority 1.5 Restoration  
Charlotte Umbrella Mitigation Bank**

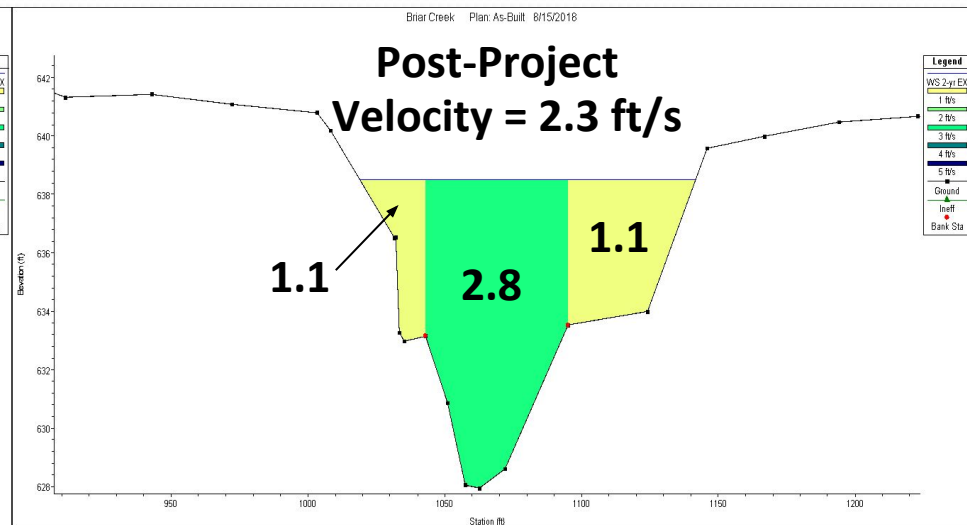
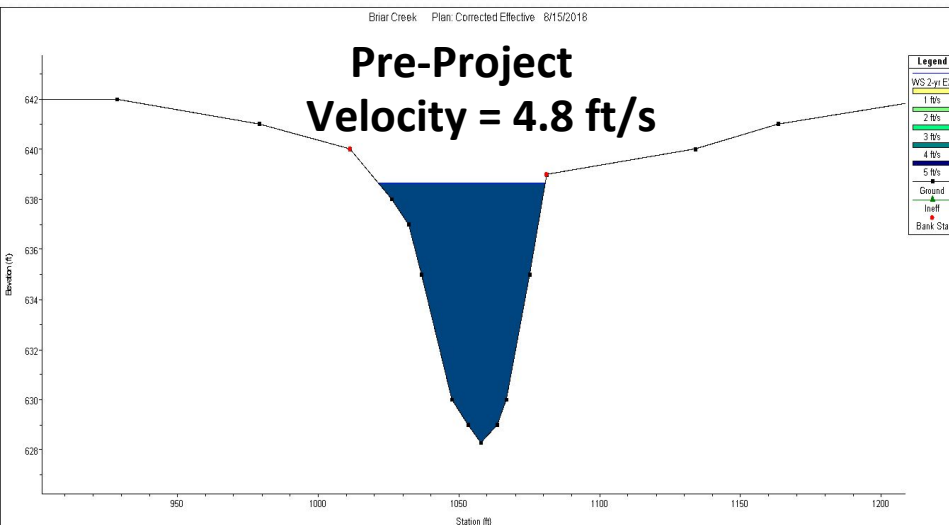
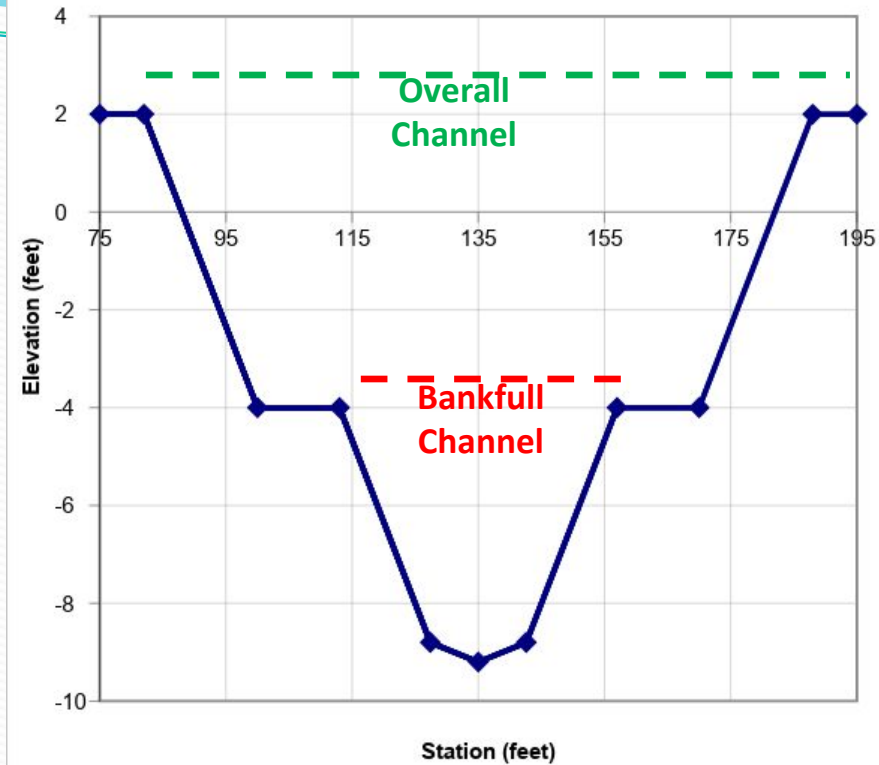




# Design Discharge

- Edwards Branch and Chantilly Park Trib had ample bench width; bankfull discharge trended closely to rural curve
- Briar Creek was constrained; unable to achieve full beltwidth
- Sized **inner, bankfull channel** based on rural curve. ER = 2.2
- Sized **overall channel** based on 2 – 5 year discharge

Briar Creek Reach 1 Riffle Cross-Section





# Briar Creek Construction

**1. Pre-project**



**2. Build right bank**



**3. Build left bank**

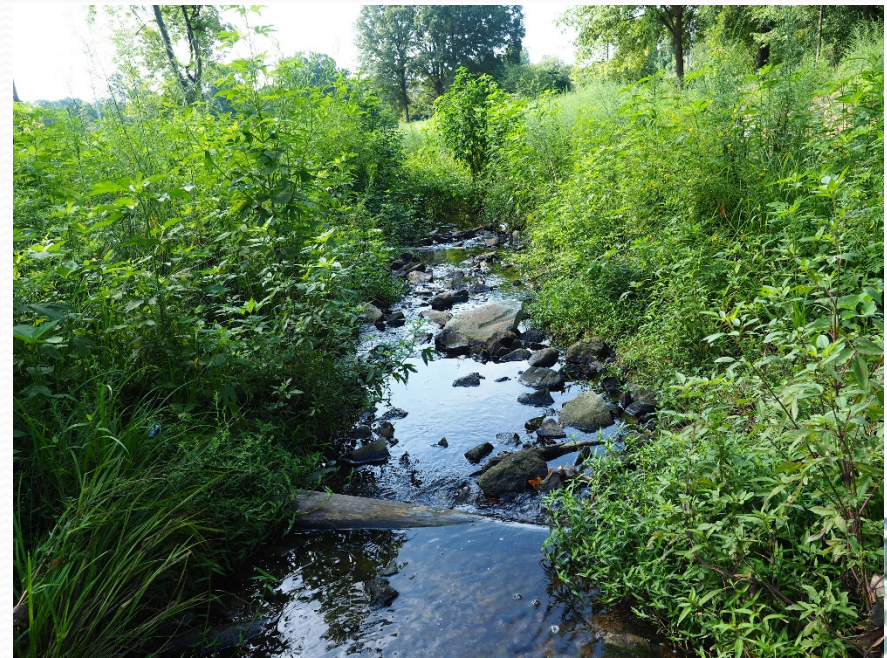


**4. Post-project**





# Riffle Wood





# Don't Forget the BMPs

## Constructed Wetland

DA = 34 ac



## Pond

DA = 97 ac



# Questions?

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