



## Schenks Branch Tributary Stream Restoration Tree Commission Meeting

2022.06.07

# Outline

1. Project Background & Goals
2. Integration into the Botanical Garden of the Piedmont
3. Design Process
4. Project Timeline
5. Questions and Answers (if time allows)



# Project Team, Design & Implementation

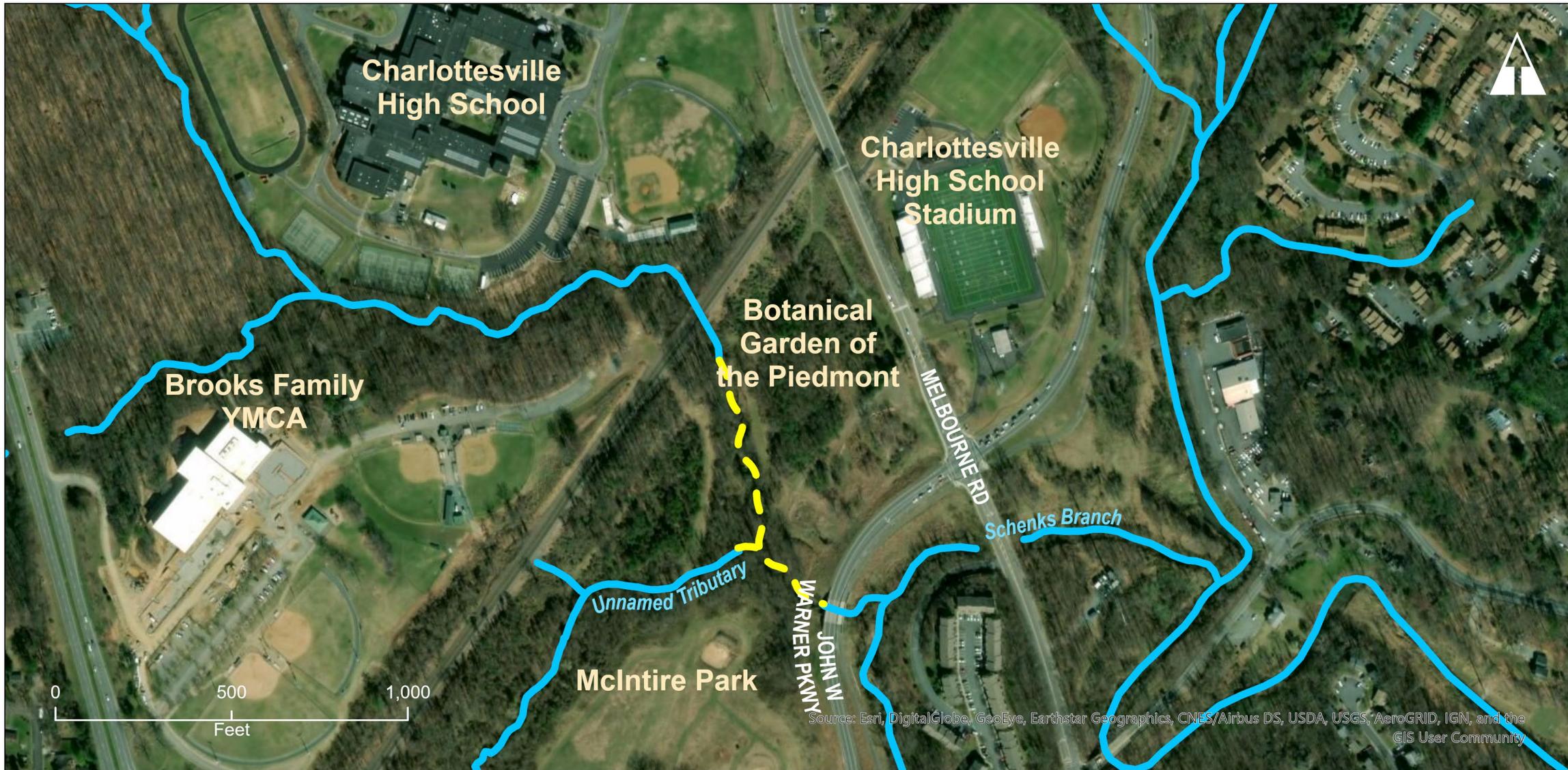
Schenks Branch Tributary Project, Design & Implementation Team



# Hazen



waterstreetstudio



## Project Location

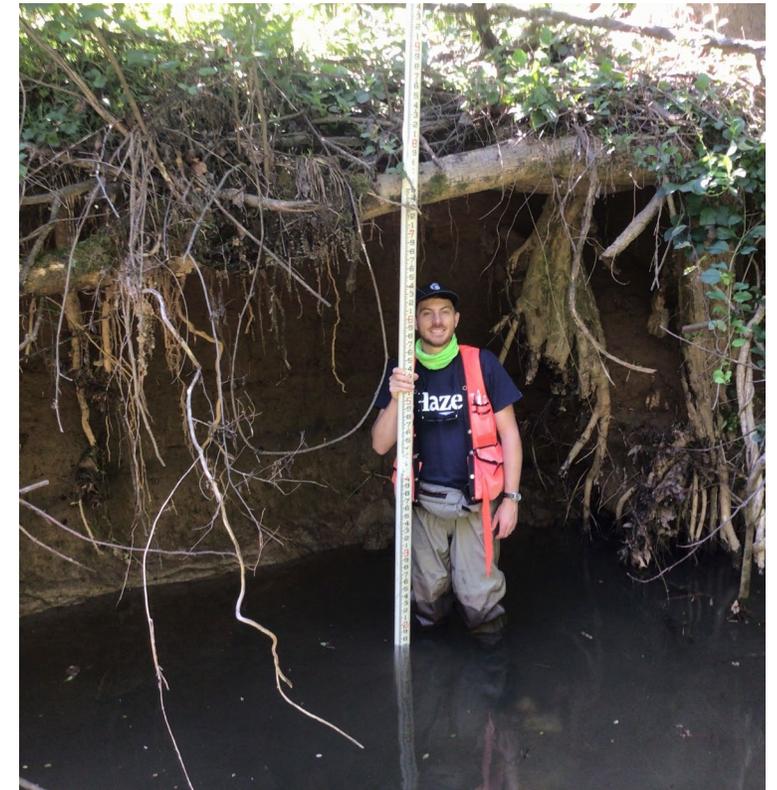
# Project Background

Schenks Branch Tributary Stream Restoration Public Stakeholder Meeting | 2022.06.07

- Current stream conditions
  - Active streambank erosion
  - Poor aquatic and riparian habitat
  - Largely inaccessible to the public
- East McIntire Park Plan approved by City Council in March 2015
- Botanical Garden of the Piedmont Schematic Plan - 2018
- City awarded grant funding in April 2019
  - Virginia Dept of Environmental Quality, Stormwater Local Assistance Fund (SLAF) grant
- City hired Hazen in summer 2021



East McIntire Park  
Schematic Plan 3-16-15



Active Streambank Erosion  
(taken in June 2021)

# Project Goals

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Water Quality Improvements



Increase Aquatic & Riparian Habitat



Promote Educational Opportunities and Improve Access



Botanical Garden  
*of the* **Piedmont**

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*We'll grow together*

# BGP Mission Statement & Vision



**The Mission:** To invite all community members and visitors to engage in nature, to educate and inspire through the beauty and importance of plants, to advance sustainability and promote human and environmental well-being.

## **The Vision:**

**Create and maintain** the garden designed to unite plants natural to our region with appropriate architecture and landscape design.

**Provide access** to the garden and its natural spaces for exploration, observation, and restoration.

**Present affordable**, engaging programming to provide educational and inspirational experiences for all ages.

**Commit to inclusion**, excellence, and upstanding management while maintaining a positive impact on the ecosystem and our community.



RAILROAD

Piedmont Prairie  
Meadow

Canopy Walk

Waterfall

Pine Garden

Red Bud Grove

Meadow

Main Green

Contemplation Gardens

Aquatics Garden

Autumn Gateway

Fern/Moss Garden

Amphitheatre

Overflow Parking

Drop-Off

Parking

Mounds

Vernal Pool

Children's Nature Play Garden

Garden  
Boundary

MELBOURNE ROAD

JOHN W. WARNER PARKWAY



# The Stream is an Outdoor Classroom

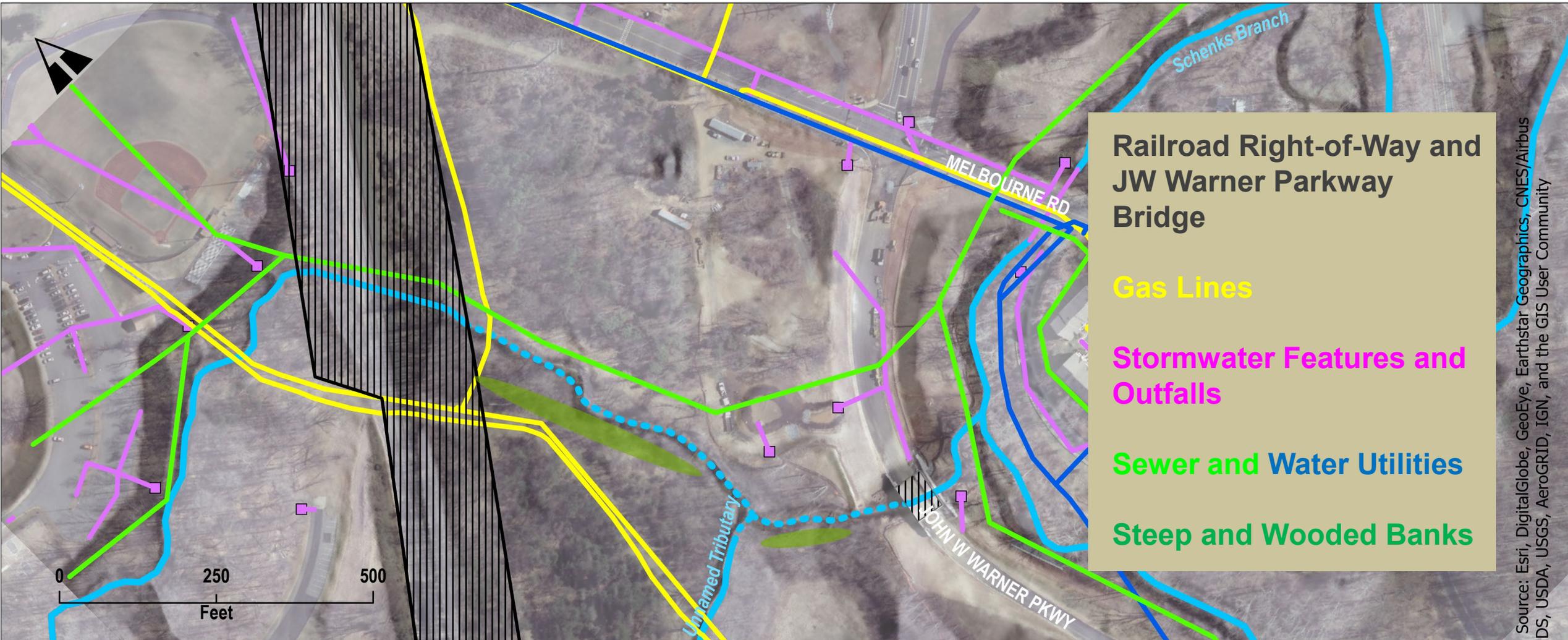
BGP received a grant to fund an educational component of the stream restoration. With Rivanna Conservation Alliance as our partner, we have already begun stream water testing with students and scouts which will continue to go on during and after the stream restoration work.

The results will be available on our website to track the progress of the water quality throughout the construction.



# Schenks Branch Tributary - Site Characterization

Schenks Branch Tributary Stream Restoration Public Stakeholder Meeting | 2022.06.07



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

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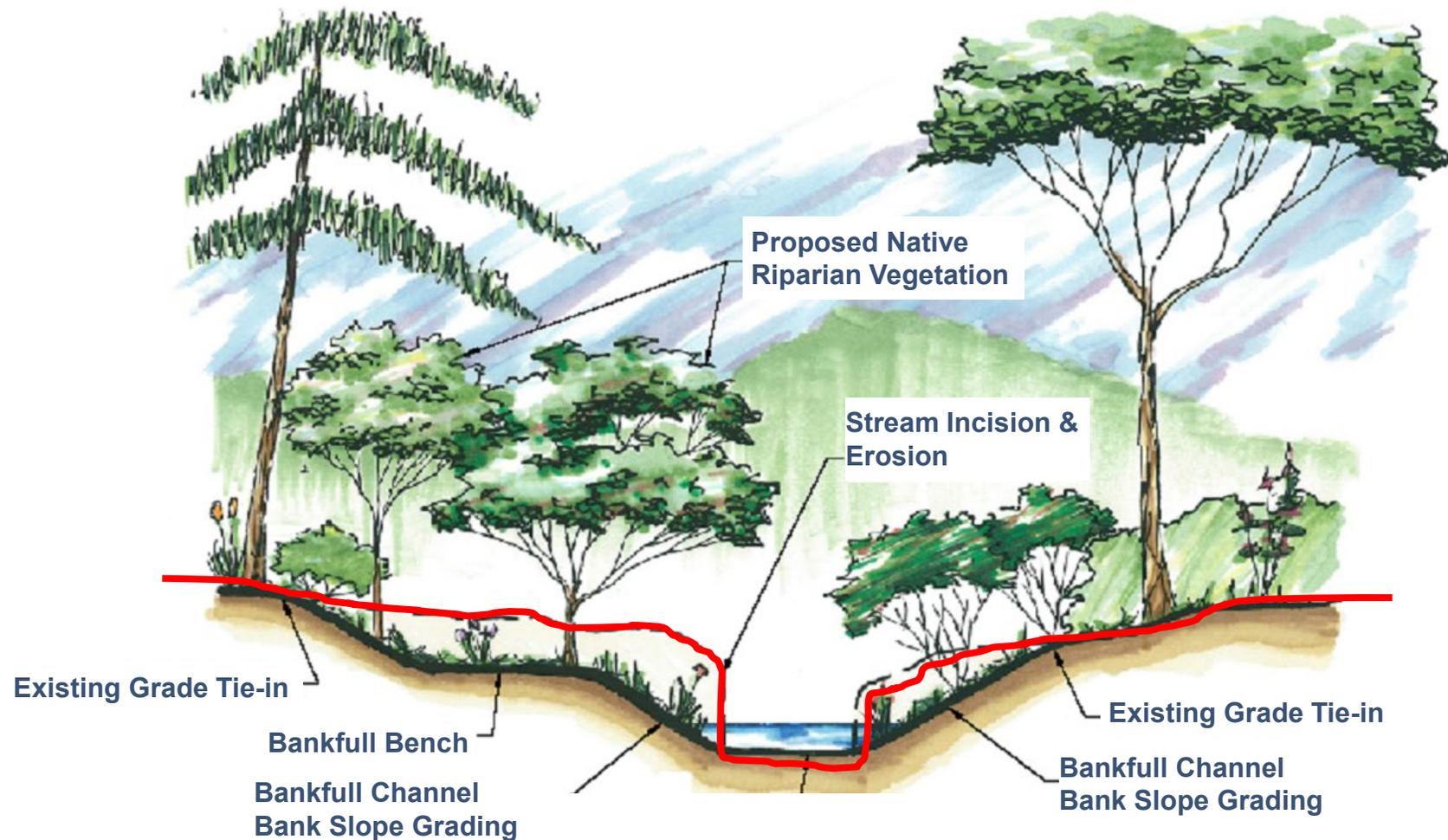
# Schenks Branch Tributary, Virtual “Stream Walk”

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# How Do We Design Stream Restoration?

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## Hazen's Methodology

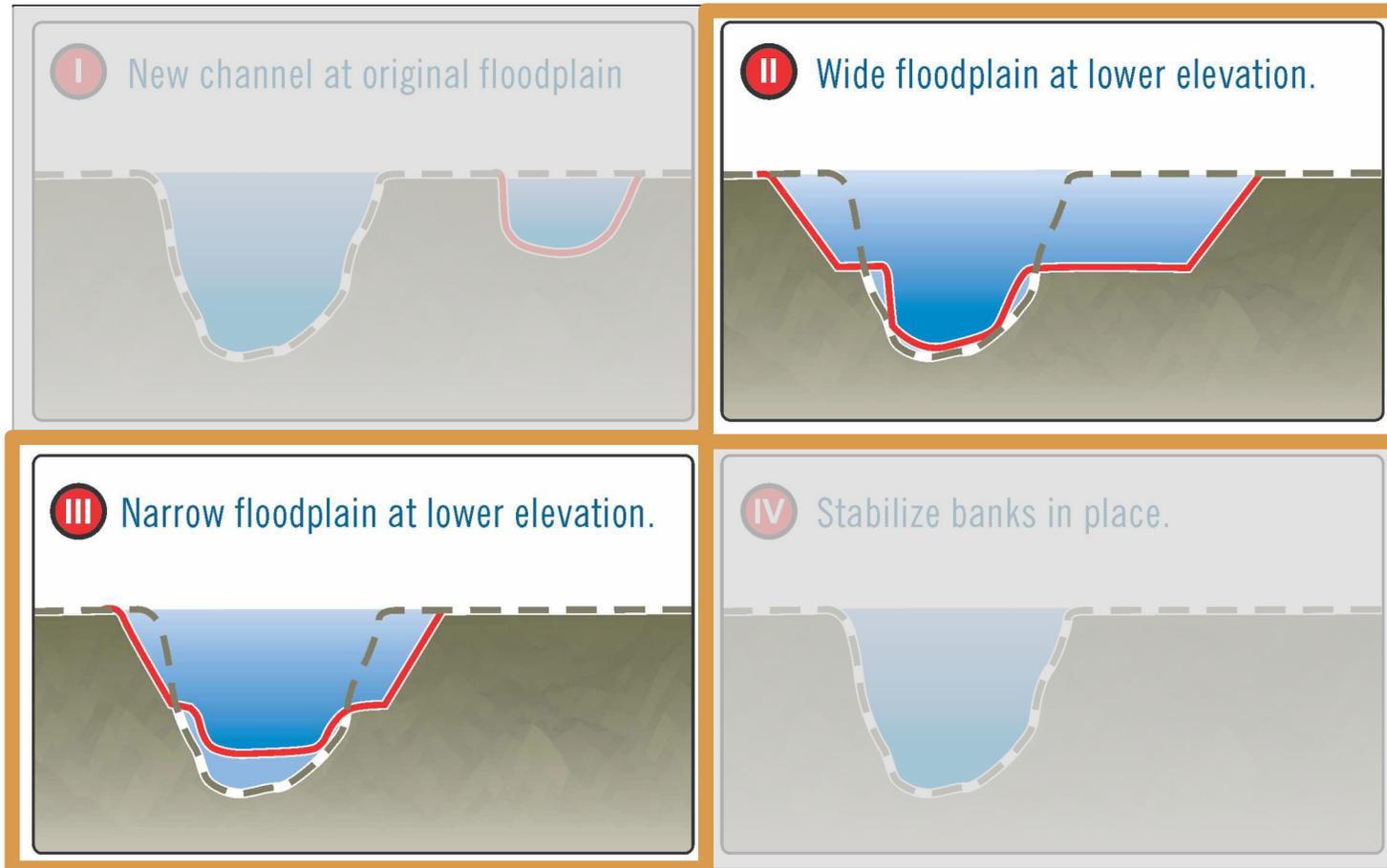
- Define Project Goals
- Understand Challenges and Opportunities
- Leverage Local Knowledge and Lessons Learned
- Seek Resilient and Sustainable Solutions

## Natural Channel Design

- Promotes stream stability
- Approved for Chesapeake Bay TMDL Nutrient Credits

# Schenks Branch Tributary, NCD Priority Restoration Approach

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(Cluer & Thorne, 2012)

# Stream Restoration Structural Approaches

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## Stream Stability & Habitat via “Grade Control Structures”

*Before Construction*



*After Construction*



## Lateral Stream Stability via “Toe Wood”

*Before Construction*



*After Construction*



## Vertical Stream Stability via “Cascades”

*Before Construction*



*After Construction*



## Challenging Tie-in Grading via “Soil Lifts”

*Before Construction*

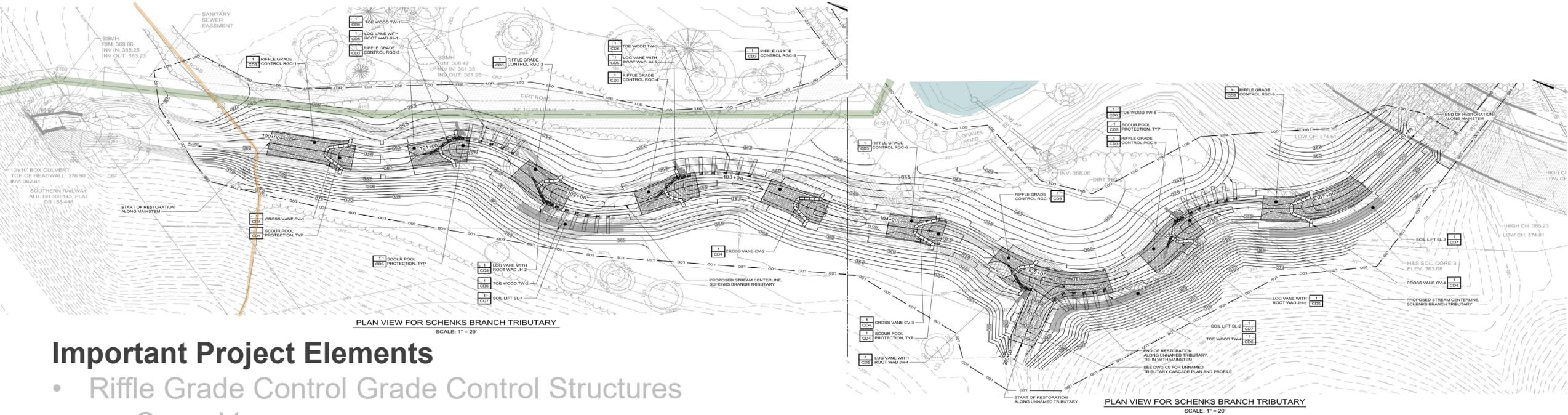


*After Construction*



# Schenks Branch Tributary, Design Implementation

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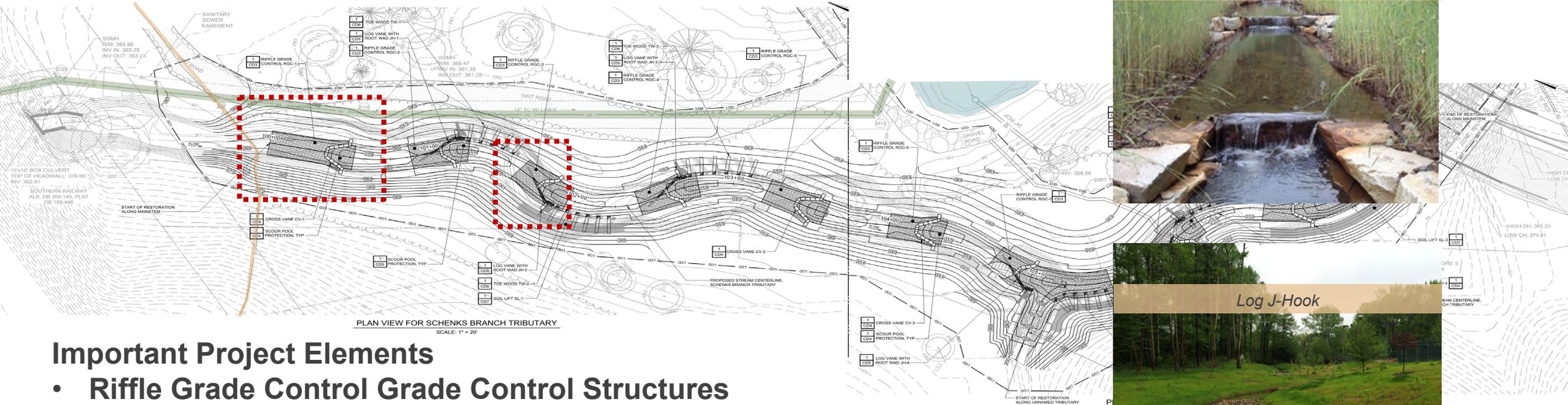


## Important Project Elements

- Riffle Grade Control Grade Control Structures
  - Cross Vane
  - Log J-Hook
- Cascade
- Toe Wood
- Soil Lifts

# Schenks Branch Tributary, Design Implementation

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Cross Vane



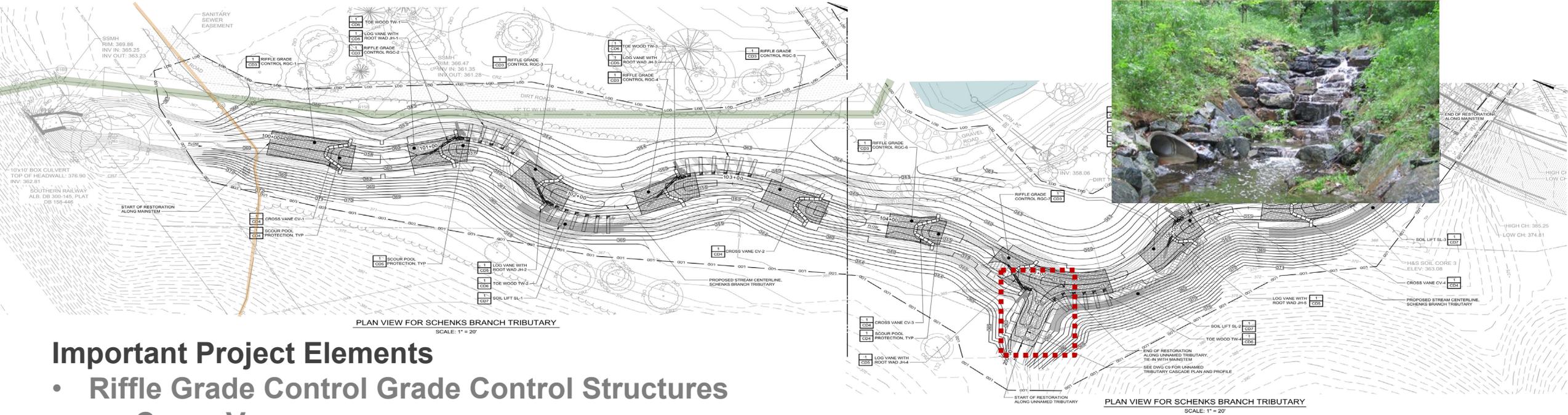
Log J-Hook

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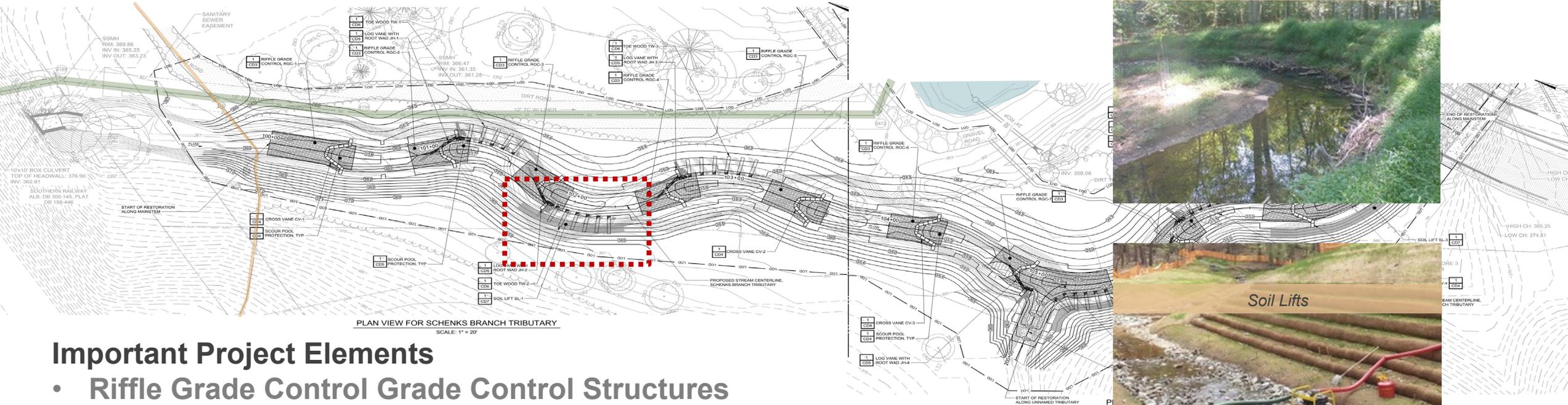


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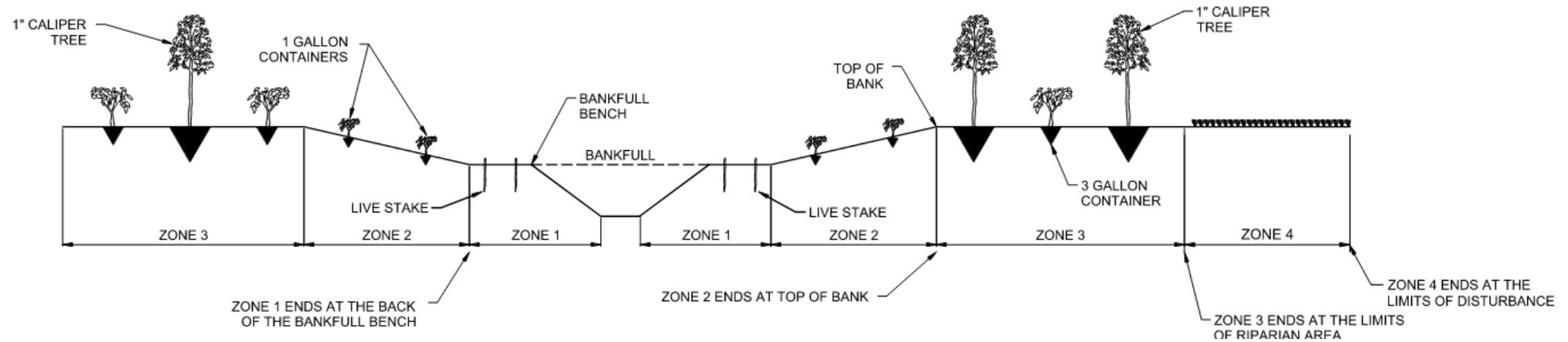


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# Stream Restoration Vegetative Approaches

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- Landscaping Palette Design

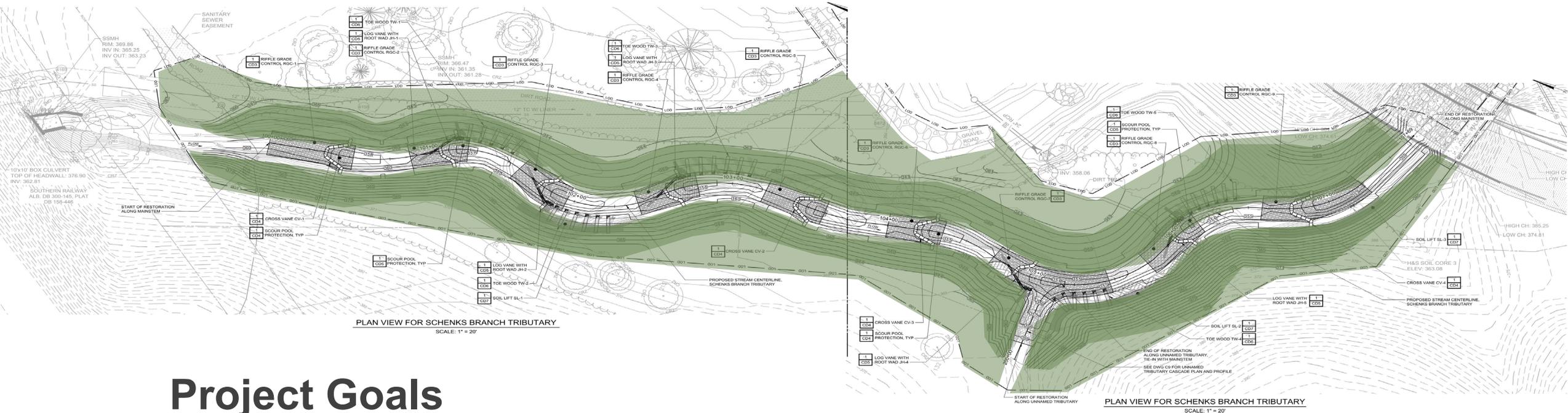
- Choose native and incorporate species diversity.
- Structural diversity (i.e., canopy, understory, scrub/shrub).
- Water-tolerance.
- Spacing design and root mass consideration.

- Plant Selection References

- Albemarle County's [Native Plant Resources](#)
- Virginia Native Plant Society's [Piedmont Native Plants Guide](#) (2019)
- Virginia DCR's [Riparian Buffers Modification & Mitigation Manual](#) (2006)
- Virginia DCR's [Virginia Invasive Plant Species List](#) (2014)
- USFS [Nonnative Invasive Plants of Southern Forests](#) (2006)

# Schenks Branch Tributary, Design Implementation

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## Project Goals



Water Quality Improvements



Habitat Enhancement

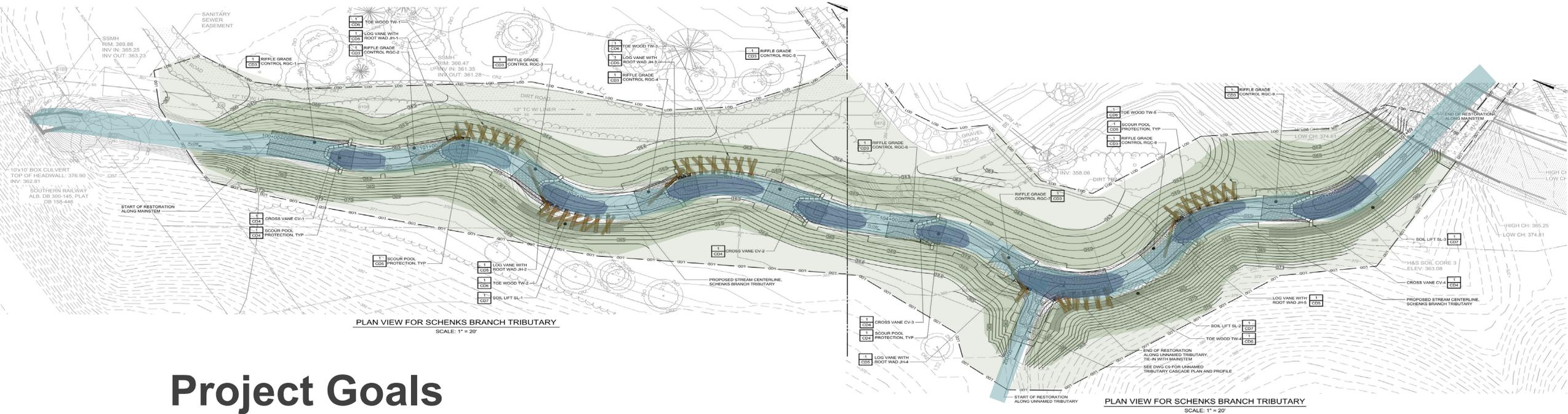


Educational Opportunities

Pollutant of Concern	Unit	Protocol 1 <sup>a</sup>	Protocol 2 <sup>b</sup>	Total <sup>b</sup>
Sediment	tons/yr	110	--	110
TP	lbs/yr	77	--	77
TN	lbs/yr	66	40	106

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## Project Goals



Water Quality Improvements



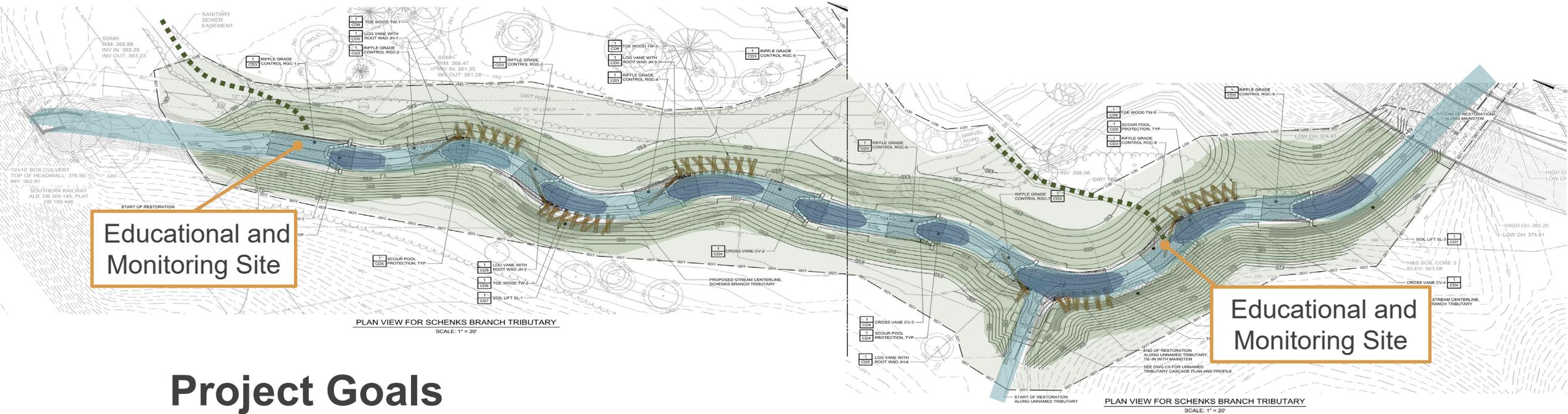
Habitat Enhancement



Educational Opportunities

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## Project Goals



Water Quality Improvements



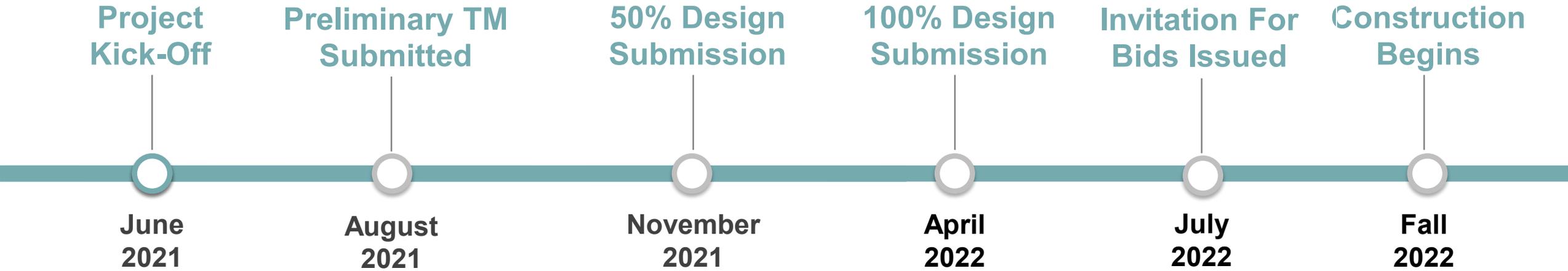
Habitat Enhancement



Educational Opportunities

# Project Timeline

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# Questions?

Email Dan Frisbee at [frisbee@charlottesville.gov](mailto:frisbee@charlottesville.gov)



QR Code for Project StoryMap

[bit.ly/schenksbranchtrib](https://bit.ly/schenksbranchtrib)