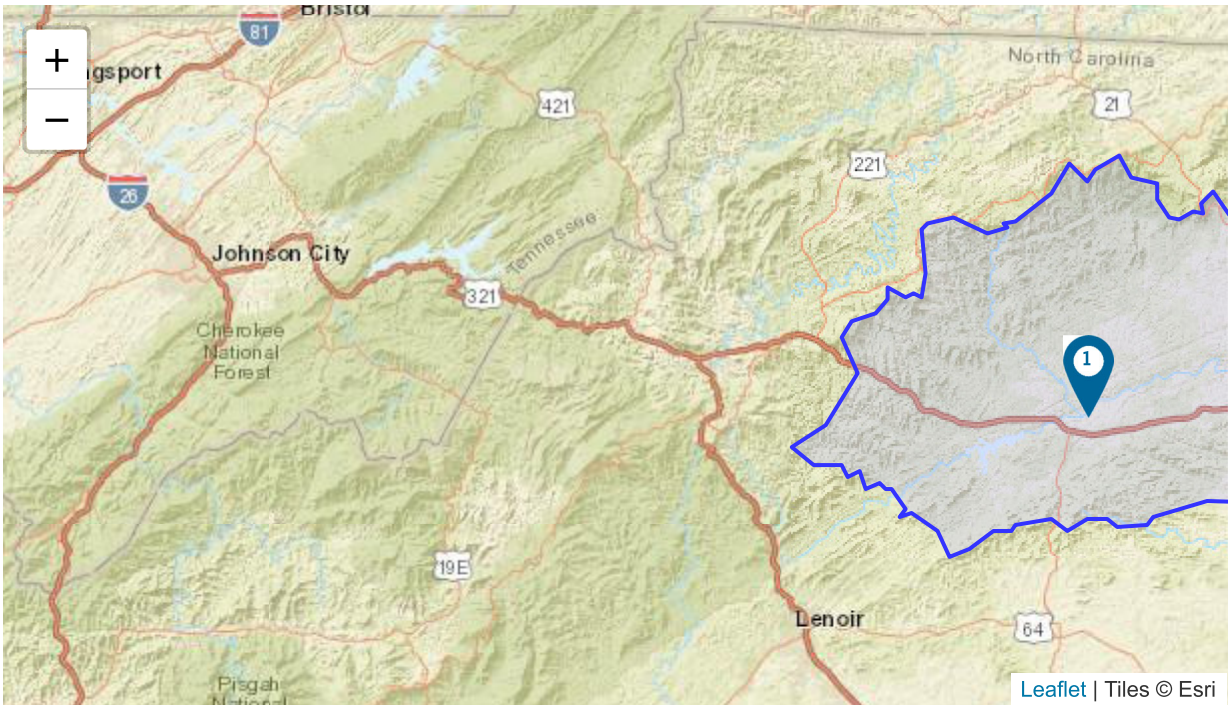
FEMA Benefit-Cost Calculator

V.6.0 (Build 20230103.1822 | Release Notes)

Benefit-Cost Analysis

Project Name: Wilkesboro Cub Creek Ph III



				Using 7% Discount Rate			Using 3% Discount Rate (For FY22 BRIC and FMA only)			
Map Marker ▲	Mitigation Title	Property Type	Hazard	Benefits (B)	Costs (C)	BCR (B/C)	Benefits (B)	Costs (C)	BCR (B/C)	
1	Floodplain and Stream Restoration @ 36.1511930; -81.1367350	•••	DFA - Riverine Flood	$ 2,945,038	$ 1,883,536	1.56	$ 4,651,773	$ 1,991,407	2.34	
TOTAL (SELECTED)				**$ 2,945,038**	**$ 1,883,536**	**1.56**	**$ 4,651,773**	**$ 1,991,407**	**2.34**	
TOTAL				**$ 2,945,038**	**$ 1,883,536**	**1.56**	**$ 4,651,773**	**$ 1,991,407**	**2.34**	

Property Configuration

Property Title:	Floodplain and Stream Restoration @ 36.1511930; -81.1367350
Property Location:	28697, Wilkes, North Carolina
Property Coordinates:	36.151193, -81.1367350
Hazard Type:	Riverine Flood
Mitigation Action Type:	Floodplain and Stream Restoration
Property Type:	Other
Analysis Method Type:	Historical Damages

Cost Estimation
Floodplain and Stream Restoration @ 36.1511930; -81.1367350

Project Useful Life (years):	30
Project Cost:	$1,697,400
Number of Maintenance Years:	30 Use Default:Yes
Annual Maintenance Cost:	$15,000

Comments

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Annual Maintenance Cost:

Maintenance costs are those at the beginning of the project including monitoring. These costs will decrease with time with the establishment and maturation of vegetation. Costs are based on input from Blue Ridge Environmental Consultants which completed Phase I and II of Cub Creek restoration projects. The town's current stormwater expenditures are only +/- $60,000 (which includes costs for Phase I and II as well as other stormwater expenditures) so this will represent a substantial portion of that budget.

Damage Analysis Parameters - Damage Frequency Assessment
Floodplain and Stream Restoration @ 36.1511930; -81.1367350

Year of Analysis was Conducted:	2022
Year Property was Built:	1975
Analysis Duration:	48 Use Default:Yes

Comments

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Year Built:

The Wilkesboro WWTP was built in the early 1970's - 1975 is used as an estimate. The influent structure that is closest to Cub Creek will be refurbished as part of the Cub Creek WWTP expansion, but the structure will not be replaced or moved.

Historical Damages Before Mitigation

Floodplain and Stream Restoration @ 36.1511930; -81.1367350

		OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL		
Damage Year	Recurrence Interval (years)	Damages ($)	Category 1 ($)	Category 2 ($)	Category 3 ($)	Number of Volunteers	Number of Days	Damages ($)	Current Dollars?	Inflated Damages ($)
0	0	0	0	0	0	0	0	0	No	0

Annualized Damages Before Mitigation

Floodplain and Stream Restoration @ 36.1511930; -81.1367350

Annualized Recurrence Interval (years)	Damages and Losses ($)	Annualized Damages and Losses ($)
	Sum Damages and Losses ($)	Sum Annualized Damages and Losses ($)
	0	0

Expected Damages After Mitigation

Floodplain and Stream Restoration @ 36.1511930; -81.1367350

	OTHER	OPTIONAL DAMAGES			VOLUNTEER COSTS		TOTAL
Recurrence Interval (years)	Damages ($)	Category 1 ($)	Category 2 ($)	Category 3 ($)	Number of Volunteers	Number of Days	Damages ($)
0	0	0	0	0	0	0	0

Comments

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Damages After Mitigation:

Based on inquiry number 20221219-2176 to the BCA helpline, damages after mitigation to a specific structure is not provided since the environmental benefits already provide a BCR>1 (i.e., "Demonstrating non-ecosystem service benefits in the BCA is not necessary if the ecosystem services benefits provide sufficient benefits to reach a BCR of at least 1.0."). However, this project does mitigate damages to the wastewater infrastructure located adjacent to Cub Creek - see Attachment 26 - Risk Reduction and Resilience Effectiveness.

Annualized Damages After Mitigation

Floodplain and Stream Restoration @ 36.1511930; -81.1367350

Annualized Recurrence Interval (years)	Damages and Losses ($)	Annualized Damages and Losses ($)
	Sum Damages and Losses ($)	Sum Annualized Damages and Losses ($)
	0	0

Standard Benefits - Ecosystem Services

Floodplain and Stream Restoration @ 36.1511930; -81.1367350

Total Project Area (acres):	9
Percentage of Urban Green Open Space:	50.00%
Percentage of Rural Green Open Space:	0.00%
Percentage of Riparian:	50.00%
Percentage of Coastal Wetlands:	0.00%
Percentage of Inland Wetlands:	0.00%
Percentage of Forests:	0.00%
Percentage of Coral Reefs:	0.00%
Percentage of Shellfish Reefs:	0.00%
Percentage of Beaches and Dunes:	0.00%
Expected Annual Ecosystem Services Benefits:	$237,330

Comments

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Percent Riparian:

Riparian area assumed to be 100 ft. wide (i.e., 50 ft. on each side of the stream). This corresponds to riparian buffer rules in North Carolina that are used for nutrient reduction through the riparian area for both nitrogen and phosphorus. While virtually all the project area will be within this riparian area, 50% is used to conservatively factor in existing riparian area that provides some limited benefit. The existing riparian area does not have woody vegetation in some reaches, vegetation does not exist across the entire 50 ft. of the riparian corridor, or vegetation effectiveness is significantly reduced due to streambank erosion. See Attachment 3A - Photos of Cub Creek Phase III Reach Issues that documents existing conditions. Additional benefits not included are loss of service benefits as the wastewater infrastructure protected provides service to the entire town.

Benefits-Costs Summary

Floodplain and Stream Restoration @ 36.1511930; -81.1367350

Total Standard Mitigation Benefits:	$2,945,038
Total Social Benefits:	$0
Total Mitigation Project Benefits:	$2,945,038
Total Mitigation Project Cost:	$1,883,536
Benefit Cost Ratio - Standard:	1.56
Benefit Cost Ratio - Standard + Social:	1.56