

Climate-resilient solutions to stormwater management for an equitable recovery from the COVID-19 pandemic

*RFP for Coronavirus State and Local Fiscal
Recovery Funds*

RiverLink

Garrett Artz
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Application Form

Question Group

Buncombe County requests proposals for projects to help the community recover from and respond to COVID-19 and its negative economic impacts.

Buncombe County has been awarded \$50,733,290 in Coronavirus State and Local Fiscal Recovery Funds (Recovery Funding), as part of the American Rescue Plan Act. To date, Buncombe County has awarded projects totaling \$23,093,499, leaving a balance of \$27,639,791 available to award.

Visit <http://www.buncombecounty.org/recoveryfunding><http://www.buncombecounty.org/recoveryfunding><http://www.buncombecounty.org/recoveryfunding><http://www.buncombecounty.org/recoveryfunding><http://www.buncombecounty.org/recoveryfunding> for details.

This infusion of federal resources is intended to help turn the tide on the pandemic, address its economic fallout, and lay the foundation for a strong and equitable recovery.

Buncombe County is committed to investing these funds in projects that:

- Align to county strategic plan and community priorities
- Support equitable outcomes for most impacted populations
- Leverage and align with other governmental funding sources
- Make best use of this one-time infusion of resources
- Have a lasting impact

Proposals shall be submitted in accordance with the terms and conditions of this RFP and any addenda issued hereto.

[Click here for the full terms and conditions of the RFP](#)

Organization Type*

Nonprofit

Nonprofit documentation

If nonprofit, attach IRS Determination Letter or other proof of nonprofit status.

501c3 Determination Ltr_RiverLink (1).pdf

Name of Project.*

Climate-resilient solutions to stormwater management for an equitable recovery from the COVID-19 pandemic

New/Updated Proposal*

Is this a new project proposal or an updated version of a proposal submitted during the earlier (July 2021) Recovery Funding RFP?

New project proposal

Amount of Funds Requested*

\$517,768.10

Category*

Please select one:

- Affordable Housing
- Aging/Older Adults
- Business Support/Economic Development
- Environmental/Climate
- Homelessness
- K-12 Education
- Infrastructure and/or Broadband
- Mental Health/Substance Use
- NC Pre-K Expansion
- Workforce

Environmental/Climate

Brief Project Description*

Provide a short summary of your proposed project.

This project will help ensure a strong, equitable recovery from COVID-19 and promote climate resilience in Buncombe County by providing stormwater improvements for a historically marginalized community, plus workforce development opportunities for A-B Tech students. Erosion caused by uncontrolled runoff from A-B Tech parking lots is contributing over 300 tons of sediment to the French Broad River annually. Runoff from a failing stormwater feature at the Hemlock Building is also causing erosion on private property in the under-resourced Southside Community below. This project will correct these problems through the installation of green infrastructure for 3 parking lots at the Hemlock and Fernihurst Bldgs. The planted stormwater features will promote climate resilience by keeping runoff onsite, filtering pollutants, and providing shade. After many months of virtual learning due to COVID-19, this project will provide a much-needed workforce development opportunity for AB-Tech students.

Project Plan*

Explain how the project will be structured and implemented, including timeframe.

A system of innovative stormwater treatments will be installed in and adjacent to three paved parking lots on the A-B Tech campus: two serving the Fernihurst Building and one at the Hemlock Building. RiverLink will work with A-B Tech to contract with a highly qualified design-build firm to construct the stormwater control measures which will include planted rain gardens, bioretention cells, and a regenerative stormwater conveyance (see attached schematic) to capture and filter runoff before it leaves the site.

RiverLink staff will collaborate with A-B Tech faculty to provide essential workforce development opportunities to students as part of the project. This project will deliver essential applied concepts to A-B Tech students enrolled in courses focusing on sustainable technologies, civil engineering, and environmental health. Students will gain hands-on training by participating in experiential learning activities including design, construction, and long-term data collection to monitor project effectiveness. Service-learning events will also be offered to the general public as part of the project.

This project will undertake the following actions to eliminate stormwater runoff associated with the three impervious parking lots and provide workforce development:

ACTION: Install stormwater control measures to capture and filter runoff from A-B Tech parking lots, promoting climate resilience while keeping sediment and runoff out of neighboring residential properties, and out of the French Broad River.

ACTION: Modify an existing stormwater control measure at the Hemlock Building to increase its capacity to mitigate the more intense/frequent storm events anticipated in a time of climate change, and in the process eliminate a source of flooding that impacts residents of the under-resourced Southside Community.

ACTION: Install plantings in and around the stormwater control measures that will provide further climate resilience through carbon sequestration and mitigation of the “heat island effect” of the parking lots.

ACTION: Promote workforce development by collaborating with A-B Tech faculty as they provide classroom presentations and hands-on training as part of project design and construction.

Project Timeline (assuming ARPA awards by July and funds are released by August, 01 2022. Timeline is somewhat adjustable, depending on release of funds):

Release an RFP for design work: 9/01/2022

Signed contract with a design firm: 11/01/2022

Conduct community engagement: Duration of the project

Engage A-B Tech students in the design: Fall semester 2022 & Spring semester 2023

Final design & permitting: 6/01/2023

Construction Bidding: 8/01/2023

Signed contract with construction contractor: 09/01/2023

Engage A-B Tech students in planning and construction: Fall semester 2023 & Spring semester 2024

Construction: 09/01/24

Statement of Need*

Describe the need that this project will address. Include data to demonstrate the need, and cite the source of the data.

Infrastructure needs—including in the stormwater arena—were mounting before COVID struck, and the pandemic only delayed many projects still further. Sediment threatens current progress to improve water quality in the French Broad River, along with a \$3.8 billion annual economy tied to the river (NCDEQ, 2011;Ha, Steve, 2021; Economic Impact and Environmental Value Study of the French Broad River

Watershed). Extreme rain events are projected to increase in frequency due to climate change, exacerbating stormwater runoff issues (U.S. Climate Resilience Toolkit). Green infrastructure is a climate-resilient solution for stormwater management that uses soil and plants to keep runoff onsite where it can soak into the ground and filter pollutants

In 2020, RiverLink completed the Central Asheville Watershed Restoration Plan which identified A-B Tech's campus as a significant source of sediment pollution for the French Broad River. During the study, engineers found a 15-ft deep eroded gully in a wooded section of A-B Tech's campus that drains into Haith Branch, a tributary of the French Broad River. The gully has formed from untreated stormwater runoff from parking lots behind the Fernihurst Building. An EPA design team estimates that over 200,000 gallons of runoff leaves the Fernihurst parking lots during a single 1" rain event. Failing infrastructure tied to a stormwater feature at the Hemlock Building parking lot has caused gullying on private property in the Southside Community below. In total, over 300 tons of sediment is entering the river annually from these sites.

This project will capture and filter stormwater before it leaves A-B Tech's campus. It will also repair and upgrade the existing stormwater feature at the Hemlock Bldg that is negatively impacting the under-resourced community below. These efforts will eliminate a major source of sediment pollution for the French Broad, increase climate resilience in Buncombe County, and aid our recovery from the pandemic

Link to COVID-19*

Identify a health or economic harm resulting from or exacerbated by the public health emergency, describe the nature and extent of that harm, and explain how the use of this funding would address such harm.

The ARPA program provides a crucial opportunity to right past wrongs, mitigate the impacts of climate change, and build essential infrastructure that has been deferred for too long. COVID-19 threw existing disparities into sharp relief in Asheville and elsewhere. Dozens of studies by public agencies and academic sources have demonstrated that historically marginalized populations have experienced greater negative impacts of COVID-19--impacts to education, income, health, and public infrastructure. Locally, many infrastructure improvements ground to a halt during the pandemic. This project will ensure a strong and equitable recovery from COVID-19 by providing stormwater improvements to benefit an under-resourced community that has encountered additional barriers since the pandemic struck in March, 2020.

A-B Tech serves a population of low- to moderate-income students that have experienced higher unemployment and increased food and housing insecurity during/prior to the pandemic. Like other learning institutions, A-B Tech was forced into months of virtual learning due to COVID-19. This project is part of a return to experiential learning at A-B Tech--a mode of instruction whose benefits are well known and which is difficult and sometimes impossible to replace through virtual instruction.

Population Served*

Define the population to be served by this project, including volume and demographic characteristics of those served.

When it comes to historic inequity, the unseen impacts are often the most insidious. Like stormwater itself, unless properly managed, negative impacts will tend to manifest downhill--a reality that is expected to intensify with climate change. This project will serve approximately 30 directly impacted residents of the Southside Community; 50-75 A-B Tech students (depending on enrollment); plus tens of thousands of local residents and visitors who float or paddle the French Broad River in Asheville every year. COVID-19 has disproportionately affected historically marginalized populations in Asheville, where funding streams to provide infrastructure improvements were weak before the pandemic--and where COVID-19 added new barriers to local governments' capacity to make essential stormwater improvements. In addressing improper

gullying, sediment runoff, and nuisance flooding, this project will help address historical inequities that include the wholesale removal of family dwellings in and near the project area by federally-funded bulldozers in a 1970's program of "urban renewal," followed by a loss of properly recorded deed information affecting numerous Southside property owners.

Results*

Describe the proposed impact of the project. List at least 3 performance measures that will be tracked and reported. If possible, include baselines and goals for each performance measure.

This project will reduce runoff from ABTech by a minimum of 200,000 gallons during a single 1" rain event, keeping 300 tons of sediment pollution from entering the French Broad River annually. This project will also provide workforce development for students in sustainable technologies, civil engineering, and environmental health thru experiential learning activities that include stormwater project design, implementation, and long-term monitoring/data collection.

The project will use the following performance measures to indicate success: 1) the number of community members (30) and A-B Tech students (75) engaged; 2) 200,000 gallons of runoff stored and filtered during a 1" rain event, and 3) an 83% reduction in sediment leaving the project site after implementation. We will collect signatures from community members that attend service-learning events and/or complete surveys related to the project. For A-B Tech students, we will request the student roster from each class that participates in the project. The runoff reduction calculations will be provided by the engineering contractors that design and implement the stormwater control measures, providing a key learning opportunity for participating students—one that can be offered again and again by faculty for future classes.

The completion of each milestone in the project timeline (see Project Plan, above) will serve as a measure of our progress toward achieving project results. Faculty and students from the following courses will gain experiential learning related to the project: Environmental Biology, Introduction to Sustainable Technologies, Topics in Sustainable Technology, and Civil Engineering Technology. The project will reach out to involve the Southside Community residents that are most impacted by the proposed work, engaging them in the project design and implementation. RiverLink has a solid track record for public engagement that will ensure the project meets the needs of local residents.

Evaluation*

Describe the data collection, analysis, and quality assurance measures you will use to assure ongoing, effective tracking of contract requirements and outcomes.

The completion of each milestone in the project timeline (see Project Plan, above) will serve as indicators of our progress toward achieving project outcomes. RiverLink staff work together to assure effective tracking of contract requirements and outcomes. As project manager, Watershed Resources Manager Renee Fortner oversees contract implementation, and is responsible for gathering information on project results and submitting reimbursement requests and grant reporting. Renee works closely with sub-contractors on grant-funded projects to ensure that contract deliverables are completed as required. Project site visits and regular communication with the project team are part of the ongoing quality assurance measures.

Multiple RiverLink staff have knowledge of contracts with grantors and sub-contractors that work on grant-funded projects; all are reviewed by the Executive Director and Board Chair before signing. Our Development Manager maintains a master spreadsheet of grants and their reporting requirements to ensure deadlines are met.

RiverLink's Operations Manager manages the organizational budget, including financial transactions such as grant-related invoicing and payments using FastFund software and independent accountant firm Outfitters 4. RiverLink staff track time spent on grant-funded projects using spreadsheets and hourly salary rate calculations.

Equity Impact*

How will this effort help build toward a just, equitable, and sustainable COVID-19 recovery? How are the root causes and/or disproportionate impacts of inequities addressed?

Infrastructure needs tend to be out of sight, out of mind for most of us. Climate change is bringing stormwater concerns into sharper focus here and elsewhere. The position of A-B Tech's parking lots with little to no stormwater treatment occupying the hilltop directly above a historically disenfranchised community is the modern-day remnant of long-standing inequities. This project's goals of advancing rather than degrading neighboring property values while preserving the integrity of the French Broad river are important steps in our community's path to addressing root causes of disparity.

Project Partners* Identify any subcontractors you intend to use for the proposed scope of work. For each subcontractor listed, indicate: 1.) What products and/or services are to be supplied by that subcontractor and; 2.) What percentage of the overall scope of work that subcontractor will perform. Also, list non-funded key partners critical to the project. Character Limit: 2000

RiverLink will utilize a design firm of landscape architects and/or professional engineers to create the project design, lead the permitting process, and provide construction oversight. We may contract with a design-build firm, in which case the same company will also construct the project. If not, we will have a separate subcontractor do construction. These activities represent 90% of the overall scope of work.

A-B Tech is a critical non-funded partner on the project. Their administrative staff and grounds crew will be part of the decision making process and provide construction oversight/coordination as the project unfolds. A-B Tech faculty will provide workforce development opportunities to their students throughout the project in design, construction, and long-term monitoring of project effectiveness. Workforce development activities conducted by RiverLink staff and A-B Tech faculty will represent 10% of the overall scope of work.

Project Partners*

Identify any subcontractors you intend to use for the proposed scope of work. For each subcontractor listed, indicate:

- 1.) What products and/or services are to be supplied by that subcontractor and;
- 2.) What percentage of the overall scope of work that subcontractor will perform.

Also, list non-funded key partners critical to project.

The design/build project partner will be identified through a competitive bid process. This entity will provide all services related to design, permitting, and construction, representing 90% of the overall project scope.

AB-Tech is a committed project partner.

Design & Permitting – \$53,800

RiverLink will hire a subcontractor to complete the final project design. Required permits may include: 404/401 permits from Corps of Engineers and NC Division of Environmental Quality for stream and wetland impacts; City of Asheville Level II plan review and associated zoning and grading permits, including possible stormwater review.

Construction – \$385,900

Construction of stormwater control measures, includes materials & labor. A highly qualified construction subcontractor will be selected through a competitive bid process.

Construction Oversight – \$23,500. A subcontractor will be hired to provide construction oversight.

Project Administration: RiverLink Staff & Overhead Costs – \$52,568.10

RiverLink's Watershed Resources Manager will provide project management and grant administration for this project (0.2 FTE). She will coordinate project partners and subcontractors, manage grant budget, and submit grant reports. RiverLink's Operations Manager will administer contracts, process invoices, and other administrative duties related to the project (0.1 FTE).

Education and Outreach: RiverLink Staff – \$2000

A RiverLink Educator will provide an estimated 50 hours (@ \$40/hour) for classroom presentations, leading community meetings, and coordinating service learning events where A-B Tech students are engaged in design & construction activities.

Match Funding – \$241,341

Matching funds will be used for design & construction of stormwater control measures. Sources of matching funds: A-B Tech and the US Environmental Protection Agency through their Greening America's Communities Program.

Capacity*

Describe the background, experience, and capabilities of your organization or department as it relates to capacity for delivering the proposed project and managing federal funds.

RiverLink has worked for over 30 years to restore and revitalize the French Broad and its watershed. The organization has transformed abused lands into community parks; kept thousands of tons of sediment from entering the river; and educated thousands of local students and adults.

RiverLink's Watershed Resources Manager Renee Fortner (M.S. Biology) will be the project lead. Ms. Fortner has led similar stormwater projects listed below and has 20 years of experience in outreach and education. Renee has managed over \$1 million in grants. RiverLink was recently awarded \$350,000 from the NC Attorney General's Environmental Enhancement Grant and the NCDEQ Water Resources Development Grant for the Southside Community Stormwater Project.

RiverLink has successfully completed similar projects that incorporate stormwater and community outreach and education, including:

Craven Street Stormwater Project (2017)- Installation of stormwater control measures along Craven St. and the campus of New Belgium Brewery.

Givens Estates Innovative Stormwater Project (2018) - Installation of stormwater control measures and research study on their effectiveness in steep-slope areas.

Central Asheville Watershed Restoration Plan (2020)- The Plan is a result of a year-long study to identify opportunities to address water quality issues and promote climate resilience

Community Stormwater Project Design (August 2021)- RiverLink led a community-driven design process that engaged residents of the Southside Community to help design a stormwater project that includes amenities for residents.

RiverLink has been awarded federal funds through EPA's 319 grant program and also managed numerous state grants which have similarly stringent requirements in procurement and reporting. A-B Tech has decades of experience managing federal funds. Current projects include \$3 million in funding from Appalachian Regional Commission and a \$75,000 grant from the Federal Highway Administration.

Budget*

Provide a detailed project budget including all proposed project revenues and expenditures, including explanations and methodology. For all revenue sources, list the funder and denote whether funds are confirmed or pending. For project expenses, denote all capital vs. operating costs, and reflect which specific expenses are proposed to be funded with one-time Buncombe County Recovery Funds.

Download a copy of the budget form [HERE](#). Complete the form, and upload it using the button below.

RiverLink Recovery-Funds-budget.xlsx - Sheet1.pdf

Special Considerations*

Provide any other information that might assist the County in its selection.

202204121129.pdf

It's still unclear when/how funds from the Infrastructure Investment and Jobs Act will be disbursed. There is agreement that the funding will be distributed to States that will then pass some funds along to local municipalities. The primary focus for this funding will be traditional infrastructure like roads, bridges and data networks. The language around spending on environmental projects focuses heavily on clean energy, and in regards to water quality, removing lead pipes and addressing emerging contaminants to ensure safe drinking water. Despite the negative impacts of untreated stormwater runoff (e.g. poor water quality, erosion, flooding) it's uncertain how much, if any, of the funding will trickle down to green stormwater infrastructure projects.

File Attachment Summary

Applicant File Uploads

- 501c3 Determination Ltr_RiverLink (1).pdf
- RiverLink Recovery-Funds-budget.xlsx - Sheet1.pdf
- 202204121129.pdf

INTERNAL REVENUE SERVICE
DISTRICT DIRECTOR
C - 1130
ATLANTA, GA 30301

DEPARTMENT OF THE TREASURY

Date: **SEP 29 1993**

RIVERLINK INC
PO BOX 15488
ASHEVILLE, NC 28813

file

Employer Identification Number:
58-1867958
Case Number:
583260008
Contact Person:
ROBERTA VAN METER
Contact Telephone Number:
(404) 331-0185
Our Letter Dated:
February 2, 1990
Addendum Applies:
No

Dear Applicant:

This modifies our letter of the above date in which we stated that you would be treated as an organization that is not a private foundation until the expiration of your advance ruling period.

Your exempt status under section 501(a) of the Internal Revenue Code as an organization described in section 501(c)(3) is still in effect. Based on the information you submitted, we have determined that you are not a private foundation within the meaning of section 509(a) of the Code because you are an organization of the type described in section 509(a)(1) and 170(b)(1)(A)(vi).

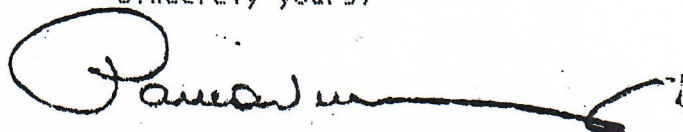
Grantors and contributors may rely on this determination unless the Internal Revenue Service publishes notice to the contrary. However, if you lose your section 509(a)(1) status, a grantor or contributor may not rely on this determination if he or she was in part responsible for, or was aware of, the act or failure to act, or the substantial or material change on the part of the organization that resulted in your loss of such status, or if he or she acquired knowledge that the Internal Revenue Service had given notice that you would no longer be classified as a section 509(a)(1) organization.

If we have indicated in the heading of this letter that an addendum applies, the addendum enclosed is an integral part of this letter.

Because this letter could help resolve any questions about your private foundation status, please keep it in your permanent records.

If you have any questions, please contact the person whose name and telephone number are shown above.

Sincerely yours,



Paul Williams
District Director

Coronavirus State and Local Fiscal Recovery Funds Proposed Project Budget

Organization Name: RiverLink	
Project Name:	
Amount Requested: \$517,768.10	

Proposed Project Revenue Funder	Amount	Confirmed or Pending?	Notes
Proposed Buncombe COVID Recovery Funds	\$ 517,768.10	Pending	Funding for Design and Construction
A-B Tech	\$ 181,341.00	Confirmed	Funding for Design and Construction
U.S. Environmental Protection Agency- Greening America's Communities Program	\$ 60,000.00	Confirmed	Funding for Project Concept Design
List other sources here			
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List other sources here			
Total	\$ 759,109.10		

Proposed Project Expenses	Proposed	Other Funds	Total	Capital or Operating	Notes
Design & Permitting	\$ 53,800.00	\$ 91,341.00	\$ 145,141.00	Capital	
Construction	\$ 385,900.00	\$ 150,000.00	\$ 535,900.00	Capital	
Construction Oversight	\$ 23,500.00		\$ 23,500.00	Capital	
Project Administration	\$ 52,568.10		\$ 52,568.10	Operating	RiverLink staff time (0.2 FTE Watershed staff + 0.1 FTE Admin support)
Workforce Development	\$ 2,000.00		\$ 2,000.00	Operating	RL staff time with A-B Tech students + community members (100 hrs @ \$40/hr)
List expenses here			\$ -		
List expenses here			\$ -		
List expenses here			\$ -		
Total			\$ 759,109.10		

April 6, 2022

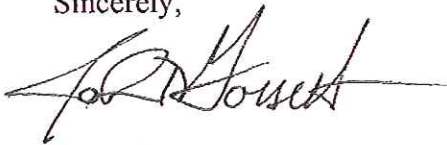
Renee Fortner
Watershed Resources Manager RiverLink
171 Lyman St.
Asheville, NC 28801

Re: Stormwater Control Measures in Fernihurst and Hemlock Parking Lots

I am writing in support of RiverLink's Buncombe County ARPA proposal to implement innovative stormwater control measures that address runoff from three parking lots on our property at 340 Victoria Road, Asheville NC, 28801. A-B Tech has committed funding for improvements to the Hemlock Building parking lot stormwater feature and ARPA funding will fill a critical funding gap needed to fully address the runoff issues.

We are excited about this opportunity to protect our natural resources, promote climate resilience, and offer a unique workforce development opportunity for our students who will be engaged in this project.

Sincerely,



Dr. John Gossett
President

April 7, 2022

Ms. Renee Fortner
Watershed Resources Manager RiverLink
171 Lyman St.
Asheville, NC 28801

Re: Green Stormwater Infrastructure on Campus

Dear Ms. Fortner,

I am writing in support of the grant application to the Buncombe County ARPA for green stormwater infrastructure on the Asheville-Buncombe Technical Community College campus. The stormwater infrastructure is needed to reduce flooding in the Southside Community from increasingly large and frequent storms due to climate change. The Southside Community is an underserved population. The proposed stormwater infrastructure would also help to improve water quality by treating the runoff for fecal coliforms, biochemical oxygen demand, sediment, and temperature. The proposed measure includes planting woody and non-woody vegetation which will also help improve climate resilience and carbon sequestration.

The proposed stormwater improvement sites are adjacent to the Hemlock and Fernihurst buildings. Stormwater flows over impervious parking lots and into Haith Branch creek which then runs into the French Broad River. Runoff volumes from paved areas are over 3 times more than from vegetated areas. Stormwater measure reduce runoff volumes, reduce peak flows for downstream areas, and reduce runoff velocities. Reducing runoff velocity reduces erosion and subsequent downstream sediment deposition that damages aquatic ecosystems and fish populations. The paved areas that the stormwater encounters collect pollutants from leaking fluids from cars, brake pads, animal waste, litter and other sources. The French Broad River is a Class B surface water. Class B waters are protected for recreational use which includes swimming, paddle boarding, kayaking, inner tubing and other activities involving human body contact with water. Class B waters are also protected for aquatic life propagation and maintenance of biological integrity. Designing and installing stormwater infrastructure will protect valuable natural resources.

In addition to protecting natural resources, the stormwater improvements would help protect the economic benefits of the French Broad River. The French Broad Partnership commissioned a study on the economic impacts of the French Broad River in 2021. The study found that the total economic impact of the River and its tributaries are approximately \$3.8 billion annually. The proposed stormwater improvements will help to protect the quality of the French Broad River and will contribute to keeping this resource a major economic driver in the region.

I am the Chair of the Transfer Engineering program at the College and teach additional classes in Civil Engineering Technology. I have used the existing stormwater system as a senior design capstone project. Students in the design class analyzed existing runoff patterns and volumes and proposed design solutions to mitigate the problems. The proposed stormwater improvements are in line with the recommendations and findings of our engineering students. The current conditions are contributing tons of sediment to the French Broad River annually. Students use the stormwater system for surveying projects as well, mapping out the system and the drainage patterns. I worked for NCDEQ in water quality for years. I was responsible for implementing the Phase I and Phase II stormwater programs in WNC. Based on my expertise I fully understand the benefits the stormwater improvements will have on our local watershed. A-B Tech students will be engaged in the design, implementation, and long term monitoring of the stormwater improvements. There is a large demand for engineers in the local area, and especially for engineers with stormwater expertise. Our students and the workforce will benefit greatly from involvement in this project.

Sincerely,

Starr Silvis

Starr Silvis, M.S. P.E.
Chair of Transfer Engineering



DESIGN OPTIONS 3 REGENERATIVE STORMWATER CONVEYANCE

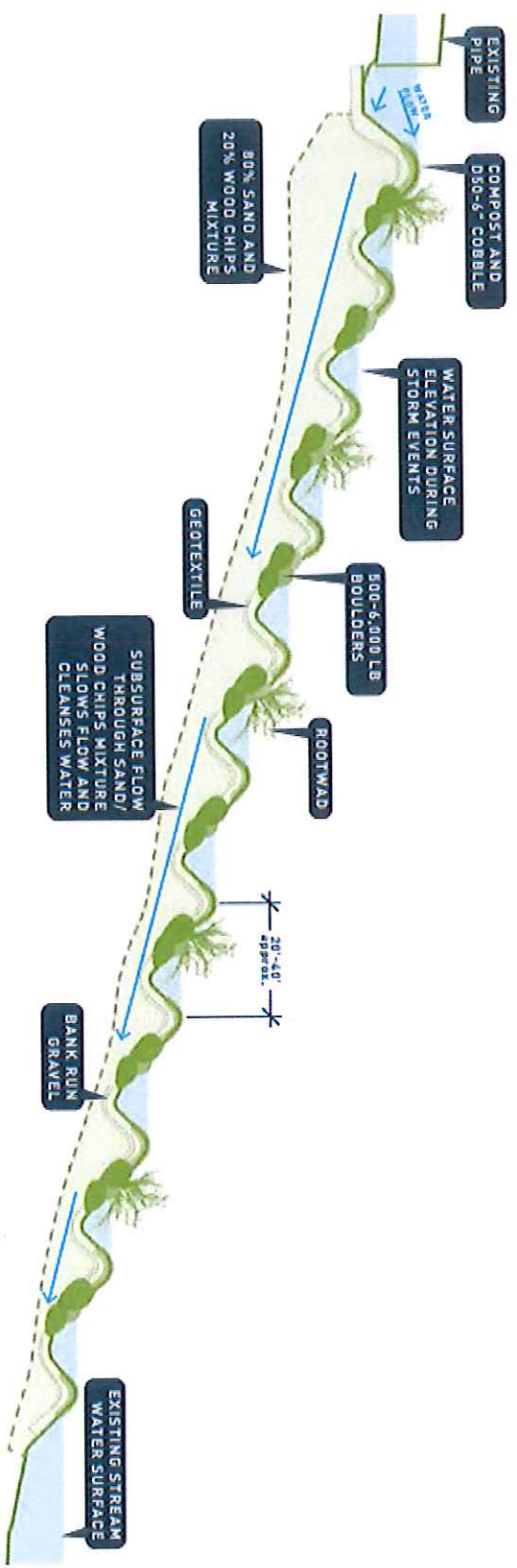


FIGURE 33 *Wedge weir, typical profile, design features, and materials.*