

Subapplicant information

Name of federal agency **FEMA**
 Type of submission **Application**

WILKESBORO, TOWN OF

203 W MAIN ST OFC
 WILKESBORO, NC 28697 United States

State	DUNS #	EIN #
NC	052866159	566020162

Subapplicant type **Local Government**
 Is the subapplicant subject to review by Executive Order 12372 Process? **No - Not selected**
 Is the subapplicant delinquent on any federal debt? **No**

Contact information

Subrecipient Authorized Representative (SAR)

Halee Ratcliff	Primary phone	Mailing address
hratcliff@wilkesboronc.org		

Point(s) of contact

Halee Ratcliff Finance Director hratcliff@wilkesboronc.org	Primary phone 3368383951 Work Fax	Additional phones 3367550736 Mobile	Mailing address 203 W. Main Street Wilkesboro NC 28697
Kim Colson Grant Writer kim.colson@hdrinc.com	Primary phone 9199001658 Work Fax	Additional phones 9192716378 Mobile	Mailing address 555 Fayetteville St, Suite 900 Raleigh NC 27601

Community

Please provide the following information. If the Congressional district number for your community does not display correctly, please contact your State NFIP coordinator.

Add Communities

Please find the community(ies) that will benefit from this mitigation activity by clicking on the Find communities button. If needed, modify the Congressional District number for each community by entering the updated number under the U.S. Congressional District column for that community. When finished, click the Continue button.

NOTE: You should also notify your State NFIP coordinator so that the updated U.S. Congressional District number can be updated in the Community Information System (CIS) database.

Community name	County code	CID number	CRS community	CRS rating	U.S. Congressional District
NORTH WILKESBORO, TOWN OF	193	370257	N		1,2,5
WILKES COUNTY *	193	370256	Y	8	1,5
WILKESBORO, TOWN OF	193	370259	N		1,5

Please provide any additional comments below (optional).

This project benefits not only the Town of Wilkesboro (Town or Wilkesboro) but also communities around the town such as North Wilkesboro and the entire County of Wilkes (County). The stream restoration work will be complemented by open space and greenways that offer recreational opportunities beyond Wilkesboro. Specifically, the project will connect the existing Wilkesboro Greenway system to the greenways along the Yadkin River which are connected to the Town of North Wilkesboro's and County greenway system. Note that both Wilkesboro and North Wilkesboro are listed as "Relatively High" on FEMA's National Risk Index for Social Vulnerability (Attachment 22 FEMA SVI Map for Cub Creek III). These towns also have high CDC Social Vulnerability Indices (SVI). Wilkesboro is in Census Tract 37193961100 with a SVI of 0.8648. North Wilkesboro is in Census Tract 37193960600 and has a SVI of 0.7961. See Attachment 5B which provides output from the CDC SVI Mapping Tool. The Yadkin River Greenway was created through the cooperative efforts of citizen volunteers, landowners, and the governments of Wilkes County, North Wilkesboro, Wilkesboro, and the State of North Carolina. The effort began in 1994, and the first phase of the greenway became a reality and was opened May 18, 2002. The Yadkin River Greenway Council, a non-profit community organization, provided coordination and leadership. Beyond the direct recreational benefits to the local communities, this project will have a positive impact on High Rock Lake downstream. High Rock Lake is an impaired waterbody (i.e., on the state's 303(d) list – see Attachments 1). High Rock Lake is classified as a water supply and is used extensively for recreation. Since the impairment is related to Chlorophyll and pH, which are both nutrient related issues, this project will benefit the entire watershed as stream restoration and establishment of riparian buffers are one of the recommended strategies in the Yadkin – Pee Dee River Basin Plan (see Attachments 2).

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 5B Cub Creek III Stream Restoration Project Area Social Vulnerability Indices from CDC.pdf	11/10/2022	kim.colson@hdrinc.com	Community Attachments	Output from CDC SVI mapping tool for project area.	
Attachment 2 Yadkin_Pee Dee 2008 Basin Plan Pgs 10 and 11.pdf	11/10/2022	annie.huang@hdrinc.com	Community Attachments	Excerpt from NC DEQ Basin Plans related to watershed impairments	
Attachment 1 NC 2020 303(D) LIST Pages 172-174 High Rock Lake.pdf	11/10/2022	annie.huang@hdrinc.com	Community Attachments	Excerpt from NC DEQ Integrated Plan (303d list) related to watershed impairments	
Attachment 22 FEMA SVI Map for Cub Creek III.pdf	11/11/2022	kim.colson@hdrinc.com	Community Attachments	Output from FEMA SVI mapping tool for project area.	

Mitigation plan

Please provide your plan information below.

Is the entity that will benefit from the proposed activity covered by the current FEMA approved multi-hazard mitigation plan in compliance with 44 CFR Part 201?

Yes

Please provide plan detail

Plan name High Country Regional Hazard Mitigation Plan	Plan type Local Multi-Hazard Mitigation Plan	Plan approval date 02/05/2018
Proposed activity description		

Please provide any additional comments below (optional).

The proposed activity involves restoration of the floodplain capacity of Cub Creek via re-grading and planting of native plant species. This project furthers the objective of Goal #2 in Section 8.2 Mitigation Goals of the Attached HMP. See Attachment 17 - High Country Regional Hazard Mitigation Plan 2018 and Attachment 16 - Adoption Resolution. This project will restore a 3,800 feet segment of Cub Creek in Wilkesboro NC and associated riparian buffer from its existing substandard state to a more natural state including vegetated buffers and soft bioengineered stream banks. Cub Creek has many local impacts as it runs near many main roads, intersections, and the Town of Wilkesboro's Wastewater Treatment Plant. Instability of the channel has in many cases exposed the town's sewer infrastructure and flooded the wastewater treatment plant. This project complements other stream restoration projects that have been successfully implemented upstream. See Attachment 3 Photos of Previously Restored Sections of Cub Creek. In detail, the project will combine Natural Channel Design Methodologies along with vegetative practices to protect water quality and increase awareness of measures to protect water quality. A 50' native riparian vegetation buffer will highlight the project along with key access points for park goers to view stream morphology and learn about water quality. Additionally, two stormwater BMP demonstration structures will be installed to treat stormwater runoff from adjacent impervious areas before it enters Cub Creek. Ancillary outcomes will include the protection of sewer and water infrastructure, removal of invasive vegetation, and enhancement of fisheries. The project will also extend the Yadkin river greenway and provide connectivity to the towns park and the enhanced downtown community. This project continues this overall environmental community development and successful stream restoration projects already completed. See Attachment 4 Cub Creek Master Plan C100.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 17 High Country Regional Hazard Mitigation Plan 2018.pdf	11/10/2022	annie.huang@hdrinc.com	Mitigation Plan Attachments	Hazard mitigation plan for region	
Attachment 4 Cub Creek Master Plan C100.pdf	11/10/2022	annie.huang@hdrinc.com	Mitigation Plan Attachments	Previously prepared excerpt from cub creek master plan showing current phase	
Attachment 3 Photos of Previously Restored Sections of Cub Creek.pdf	11/10/2022	annie.huang@hdrinc.com	Mitigation Plan Attachments	Photos of previous restored segments of Cub Creek upstream of project area as documentation of successful completion of similar work.	
Attachment 16 Resolution 2018-05 Regional Hazard Mitigation Plan.pdf	11/10/2022	annie.huang@hdrinc.com	Mitigation Plan Attachments	Wilkesboro council adoption resolution of mitigation plan	

Scope of work

The project Scope of Work (SOW) identifies the eligible activity, describes what will be accomplished and explains how the mitigation activity will be implemented. The mitigation activity must be described in sufficient detail to verify the cost estimate. All activities for which funding is requested must be identified in the SOW prior to the close of the application period. FEMA has different requirements for project, planning and management cost SOWs.

Subapplication title (include type of activity and location)

Wilkesboro Cub Creek Phase III

Activities

Primary activity type

Stabilization and restoration

Primary sub-activity type

Floodplain and stream restoration

Primary sub-activity type

Floodplain and stream restoration

Secondary activity type (Optional)

Utility and infrastructure protection

Secondary sub-activity type

Wastewater and/or sanitary sewer system

Tertiary activity type (Optional)

Geographic areas description

This site is located along Cub Creek between the last stretch of Cub Creek that has been restored to the confluence with the Yadkin River. The coordinates at the middle of this stretch of stream is 36.151193° N, -081.136735°. Attached is a location map labeled Attachment 5A Cub Creek Ph III Project Area Map. However, the area benefited extends well beyond the project area. See Attachment 20 Population Impacted.

Community lifelines

Primary community lifeline

Food, water, shelter

Primary sub-community lifeline

Water

Secondary community lifeline (optional)

Safety and security

Secondary sub-community lifeline

Government service

Tertiary community lifeline (optional)

Health and medical

Tertiary sub-community lifeline

Public health

Hazard sources

Primary hazard source

Infrastructure failure

Secondary hazard source (optional)

Flooding

Tertiary hazard source (optional)

Biological incident

Is this a phased project?

No

Are you doing construction in this project?

Yes

Percentage of population impacted

100

Provide detailed description of population impacted

This project benefits the entire town by protecting wastewater infrastructure and enhancing recreational opportunities for the entire town. There is a sewer line that crosses Cub Creek in the project area that is a single point of failure for the WWTP. Protecting this line provides resilience for the wastewater service to the entire town and parts of Moravian Falls that is also served by the WWTP. In addition, the ancillary benefits that include recreational opportunities are open to the entire town. In addition, this project extends to a community beyond Wilkesboro as it adds ancillary benefits to North Wilkesboro (greenway connectivity - See Attachment 15) and communities downstream that utilize High Rock Lake (reduced nutrient loading - See Attachments 1 and 2). Note that both Wilkesboro and North Wilkesboro are

listed as "Relatively High" on FEMA's National Risk Index for Social Vulnerability. These towns also have high CDC Social Vulnerability Indices (SVI) – see Attachment 5B. Wilkesboro is in Census Tract 37193961100 with a SVI of 0.8648. North Wilkesboro is in Census Tract 37193960600 and has a SVI of 0.7961. See Attachment 20 Population Impacted for more information on community lifelines. There are no residences located in the existing floodplain associated with the Cub Creek Ph III project based floodplain maps. The floodplain associated with Cub Creek Ph III is used mostly for agricultural and wastewater infrastructure purposes.

Provide a clear and detailed description of your proposed activity

This project, Cub Creek Phase III, will include stream and buffer restoration of 3800 linear feet of class-C waters in Wilkesboro-Wilkes County, North Carolina immediately adjacent to the town's Wastewater Treatment Plant (WWTP). The project is the third phase in a multi-phase project. Phase I and II have been successfully completed upstream and are functioning at a high-level during flood events. Phase III will mirror the previous phases – for details see Attachment 3 Photos of Previously Restored Sections of Cub Creek and Attachment 27 – Cub Creek Phase II Plans. Stream restoration provides a stable stream channel, stream banks, and allows minor flooding to occur routinely. This provides a reduced sediment load downstream (less channel and bank erosion) that lessens sediment deposits downstream (maintaining channel capacity downstream and reducing pollution). Attachment 3A Photos of Cub Creek Phase III Reach Issues provides photos of the streambank erosion issues, lack of riparian buffer, and excessive sedimentation in the stream channel to be restored. The stream restoration will provide stabilized stream banks and stream channel by implementing stream features that mimic natural features to ensure sinuous flow (which has a lower velocity). The restored stream will provide a more natural stream environment that will allow routine minor flooding without erosion thus protecting sewer infrastructure near the stream and a better aquatic habitat. The project is not expected to change larger flood elevations, but will result in less stream damage from flooding events. See Attachment 24 Implementation Measures. A separate, complementary project will move most of the wastewater treatment infrastructure out of the 500-year floodplain (See Attachment 18 Floodplain Map). Remaining WWTP facilities in the floodplain will be provided additional flood protection. This project will leverage the benefits of that separate project by providing stream erosion benefits that protect the remaining WWTP infrastructure in the floodplain. A wastewater influent structure is approximately 20 ft. from the stream.

How will the mitigation activity be implemented?

Based on Phase II work by Blue Ridge Environmental Consultants, the same approach will be taken with Phase III following established Natural Channel Design Methodologies including: 1. Data Acquisition 2. Reference Reach criteria 3. Habitat Assessments 4. Biological Assessments 5. Confirm construction feasibility/Value 6. Engineering 7. Regulatory approval 8. Construction 9. Monitoring Steps 2-4 above will leverage effort from previous phases making this effort efficient. However, data will be acquired on the Phase III stream segments on bank full discharge and velocity, Rosgen classification, and channel assessment and classification. Based on the data collection and analysis, engineering design will be initiated to confirm feasibility of restoration priority (1 or 2), ensuring maximum protection of sewer infrastructure (i.e., stream stability), H&H modeling to evaluate floodplain impacts, and coordinate with wastewater treatment plant work that will be conducted as part of a separate project. Wilkesboro will hire fully qualified design and construction firms with related experience and geomorphology expertise. As with Phase II and most stream restoration projects, Priority 1 restoration, reconnecting the stream to the floodplain, if possible, will provide the maximum benefit for stream stability. Stream stability can still be achieved with Priority 2 type restoration activity necessary to protect the critical infrastructure. Stream stability will be achieved taking an approach as described in 'Stream Restoration, A Natural Channel Design Handbook', North Carolina State University, "... a natural channel design utilizes a reference reach, which provides a template for restoring a stable and biologically diverse stream channel. ... A restored stream reach should provide enhancements that are demonstrated at the reference reach. For example, establishing and protecting a vegetated buffer that includes all or part of the floodplain will provide a number of benefits. Trees and shrubs growing within the buffer will produce a root mass that will greatly increase bank stability." (Pg 11-12) The successful completion of previous phases along Cub Creek using the above approach provides assurances Cub Creek Phase III can be successfully completed. That is, the reference reach, habitat, biology, watershed, current conditions, and limitations (which are few) are all very similar to previous phases. The Phase III project will begin where Phase II ended (i.e., contiguous). Once design is

Describe how the project is technically feasible and will be effective in reducing the risk by reducing or eliminating damage to property and/or loss of life in the project area. Please include engineering design parameters and references to the following: preliminary schematic or engineering drawings/design; applicable building codes; engineering practices and/or best practices; level of protection (e.g., life safety, 100-yr flood protection with freeboard, 100-yr wind design, etc.):

determined, all regulatory permits will be obtained (which may require minor design changes). Construction services will be procured from firms that have experience with stream restoration projects. Wilkesboro has specific stream construction experience from previous phases which will inform construction activities for this phase. Prevailing wages will be paid as assured in Attachment 29 – Wage Assurances. Wilkesboro previously hired Blue Ridge Environmental Consultants, which has experience in stream restoration projects, that successfully completed designed and oversight of previous phases. Cub Creek Phase III project will combine Natural Channel Design Methodologies along with vegetative practices to protect water quality that were successfully used in Phase II. 50' native riparian vegetation will highlight the project along with key access points for park goers to view stream morphology and learn about water quality. Additionally, two stormwater BMP demonstration structures will be installed to treat stormwater runoff from adjacent impervious areas before it enters Cub Creek. For the complementary WWTP project, several WWTP processes will be moved from the floodplain by installing new facilities outside of the 500-year floodplain. All permits will be obtained from appropriate agencies (federal, state, and local). The biggest challenge for this project is funding for both these coordinated projects. This funding opportunity combined with SRF funding provides a potential solution. The project schedule is based on project schedules from previous projects successfully completed.

As described above, Natural Channel Design Methodologies will be utilized to provide a stable stream channel to protect sewer infrastructure. These are well established methodologies and have already been successfully employed in previously phases for Cub Creek (Engineering Plans from Phase II are included in Attachment 27 – Cub Creek Phase II Plans). The same basis of design and techniques will be used for Phase III, as described above, to ensure feasibility to provide the required stream stability. In upper reaches of Cub Creek the streambank is stabilized, habitat restored, and the floodplain has properly functioned during storm events. See Attachment 3 Photos of Previously Restored Sections of Cub Creek. Stormwater BMPs will be utilized to store and treat smaller rain events. The project will be designed to operate properly during larger storm events. See Attachment 14 Future Conditions Revised and Attachment 24 - Implementation Measures. For the complementary project, WWTP facilities that can be moved out of the floodplain will be located outside the 500-year floodplain - this has been evaluated by HDR Engineering in a preliminary engineering report. See Attachment 18 Floodplain Map.

Who will manage and complete the mitigation activity?

The Town of Wilkesboro will manage and complete the mitigation activity through its consultants. The town and prior consulting team has successfully completed two prior phases of mitigation activities along Cub Creek totaling approximately 5,000 feet. In those previous phases, Wilkesboro provided in-house construction services that provides detailed experience on this type of project in the project area. These prior phases are functioning and performed the expected mitigation tasks as expected and have proven there worth by saving the town and its citizens Millions of dollars in property loss via soil erosion and damaged infrastructure. The complementary WWTP project has been evaluated by HDR Engineering. The town has experience in managing projects with federal and state funding.

Will the project address the hazards identified and what risks will remain from all hazards after project implementation (residual risk)?

This project will reduce velocities, stabilize streambanks, and allow activation of floodplain all of which will significantly reduce erosion of the streambank protecting wastewater infrastructure along the stream. It is estimates that Cub Creek will threaten wastewater infrastructure in as little as 11 years due to stream erosion. With stream restoration and the resulting reduction in erosion, the wastewater infrastructure is estimated to be protected for as much as 75 years. See Attachment 14 Future Conditions Revised and Attachment 24 - Implementation Measures. While this project will not eliminate all risks (e.g., flooding) to remaining wastewater infrastructure that remains along this stretch of Cub Creek, a separate, complementary project will move most of the wastewater treatment infrastructure out of the 500-year floodplain. Remaining wastewater treatment infrastructure (pump stations and storage tankage) will be provided flood protection. The wastewater aeration, clarification, disinfection, and flow monitoring will all be moved out of the 500-year floodplain. This project will leverage the benefits of that separate project.

Does the mitigation activity incorporate nature-based solutions?

Yes

When will the mitigation activity take place?

Provided funding is obtained, Oct 2023 – Nov 2025. The project schedule is based on project schedules from previous projects successfully completed by both the Town.

Explain why this project is the best alternative. What alternatives were considered to address the risk and why was the proposed activity considered the best alternative?

This nature-based biological engineering technique was the selected alternative because it is superior to hard structures by providing a natural riparian system that removes nutrients, enables natural floodplain processes, stabilizes streambanks that protect infrastructure, provides recreational opportunities, and habitat including trees that may serve as habitat for the endangered long nose bat. The complementary WWTP project alternative was chosen to permanently remove flood risk to critical elements where possible and the new treatment process reduces energy consumption. It was not feasible due to costs to move the influent wastewater infrastructure. These separate, coordinated projects provide the best reduction of direct impacts from flooding, superior recreational opportunities and community connectiveness, and environmental protection downstream by reducing nutrients.

Please identify the entity that will perform any long-term maintenance and provide a maintenance, schedule and cost information. The subapplicant or owner of the area to be mitigated is responsible for maintenance (including costs of long-term care) after the project is completed?

Wilkesboro will be providing any maintenance required as it already does with the completed phases. Because this project largely involves restoring the streams natural functions, extensive maintenance is not anticipated. However, minor maintenance functions such as debris jams, riparian vegetation management, and accumulated sediment removal will be performed by the town as part of its budgeted daily activities. The experience of already successfully completing stream restoration project is an additional resource for the town. Also since there are many partners (Yadkin River Greenway Council, The Health Foundation, Wilkesboro Tourism Development Authority, Wilkes Outdoor Economy Coalition, Wilkes Soil and Water Conservation District, NC Wildlife Resource Commission, Trout Unlimited) that actively use the stream and associated greenway, these partners provide ongoing project support. The project will be monitored as described in Attachment 24 - Implementation Measures.

Additional comments (optional)

Using a holistic perspective that coordinates both this nature-based project along with the WWTP project is an innovative process for the town. HDR Engineering, Inc (HDR) has provided a preliminary engineering report for the WWTP project. See Attachment 18 Floodplain Map. HDR specializes in engineering, architecture, environmental and construction services. Both projects will be closely coordinated and routine project meetings with the Town and both firms have been and will continue to be held. Using nature-based mitigation provides significant ancillary benefits beyond reducing increasing flood risk due to climate change (more precipitation and increased intensity of precipitation). This stream restoration project provides habitat restoration to a stream that can support trout (Wildlife Resource Commission stocks trout upstream - See Attachment 13 Partners). The vegetative canopy provided with restoration provides the cooler water habitat necessary of trout which is even more critical with global warming. Fishing and recreational opportunities are also critical to rural economies such as Wilkesboro. This project also provides connectivity to the overall greenway system in the broader community (Wilkesboro, North Wilkesboro, and county). This nature-based project will also reduce nutrients in a nutrient sensitive watershed (High Rock Lake). Warming surface waters from climate change will exacerbate nutrient sensitivity as algal growth is a function (in part) of temperature (i.e., higher temperature supports higher growth). This project will also establish a greenway trail that is directly adjacent to Cub Creek. In recent years, with growing awareness of water quality, Cub Creek has gained more attention. As an urban stream in a largely rural area, the stream is often overlooked as a source of high-water quality or aesthetic appeal.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 1 NC 2020 303(D) LIST Pages 172-174 High Rock Lake.pdf	11/10/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Excerpt from NC DEQ Integrated Plan (303d list) related to watershed impairments	
Attachment 29 Wage Assurance.pdf	12/30/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Letter from Wilkesboro on paying prevailing wages	
Attachment 13 Partners.pdf	11/10/2022	kim.colson@hdrinc.com	Scope of Work Attachments	List of partners for Wilkesboro	
Attachment 20 Population Impacted.pdf	11/10/2022	annie.huang@hdrinc.com	Scope of Work Attachments	Details of population impacted	

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 3 Photos of Previously Restored Sections of Cub Creek.pdf	11/10/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Photos of previous restored segments of Cub Creek upstream of project area as documentation of successful completion of similar work.	
Attachment 18 Cub Creek III FRIS Map with Project Area.pdf	11/11/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Project area shown on FRIS map	
Attachment 5A Cub Creek Ph III Project Area Map.pdf	11/15/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Map of project area	
Attachment 2 Yadkin_Pee Dee 2008 Basin Plan Pgs 10 and 11.pdf	11/10/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Excerpt from NC DEQ Basin Plan related to watershed impairments	
Attachment 24 Implementation Measures 221229.pdf	01/06/2023	kim.colson@hdrinc.com	Scope of Work Attachments	Details on implementation measures	
Attachment 26 Risk Reduction and Resilience Effectiveness.pdf	01/06/2023	kim.colson@hdrinc.com	Scope of Work Attachments	Details on risk reduction	
Attachment 27 CUB_CREEK_PHASE_2 Plans.pdf	01/05/2023	kim.colson@hdrinc.com	Scope of Work Attachments	Engineering plans from Phase II of Cub Creek restoration immediately upstream of proposed Ph III. Ph II and Ph III are very similar in pre-existing conditions and stream morphology.	
Attachment 14 Revised Future Conditions 230106.pdf	01/06/2023	kim.colson@hdrinc.com	Scope of Work Attachments	Details of future conditions after project completion.	
Attachment 3A Photos of Cub Creek Phase III Reach Issues V2.pdf	01/05/2023	kim.colson@hdrinc.com	Scope of Work Attachments	Photos of current conditions associated with project area including photos of eroding banks and lack of riparian buffer.	
Attachment 15 Yadkin Greenway Map.pdf	11/10/2022	kim.colson@hdrinc.com	Scope of Work Attachments	Map of joint-effort greenway network including Wilkesboro and other surrounding communities	

Schedule

Specify the work schedule for the mitigation activities.

Add tasks to the schedule

Please include all tasks necessary to implement this mitigation activity; include descriptions and estimated time frames.

Task Name Procure Design	Start Month 10	Task Duration (in Months) 2 months
Task Description Procure design service for project		
Task Name Complete Preliminary Design and Complete Environmental Review	Start Month 12	Task Duration (in Months) 5 months
Task Description Once design services are procured, develop preliminary design. Go or no go milestone.		
Task Name Begin Permitting	Start Month 4	Task Duration (in Months) 1 months

	Task Description Submit permit applications to various regulatory agencies	
Task Name Final Design	Start Month 10	Task Duration (in Months) 2 months
	Task Description Finalize design as permits are obtained to reflect regulatory agency requirements/changes.	
Task Name Construction Procurement	Start Month 10	Task Duration (in Months) 2 months
	Task Description Procure construction after design is finalized	
Task Name Construction	Start Month 12	Task Duration (in Months) 12 months
	Task Description Begin and complete construction	
Task Name Project Close Out	Start Month 11	Task Duration (in Months) 2 months
	Task Description Review all work and close out project construction	

Estimate the total duration of your proposed activities (in months). **26**

Proposed project start and end dates

Start Date **2023-10-01**
End Date **2025-11-30**

Introduction

Project location

Provide a detailed description of the proposed project's location.

This site is located along Cub Creek between the last stretch of Cub Creek that has been restored to teh confluence with the Yadkin River. See Attachment 5A Cub Creek Location Map.

Latitude **36.151193**

Longitude **-081.136735**

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 5A Cub Creek Ph III Project Area Map.pdf	11/10/2022	kim.colson@hdrinc.com	Project Location Attachments	Project area in relation to Town of Wilkesboro and Town of North Wilkesboro	

Project benefiting area

Provide a detailed description of the proposed project's benefiting area.

The Cub Creek III stream restoration projects provides benefits directly to both Town of Wilkesboro and the Town of North Wilkesboro by providing an enhanced environment and recreational opportunities. These towns have high Social Vulnerability Indices (SVI). Wilkesboro is in Census Tract 37193961100 with a SVI of 0.8648. North Wilkesboro is in Census Tract 37193960600 and has a SVI of 0.7961. See Attachment 5B which provides output from the CDC SVI Mapping Tool. This project also provides benefit much further downstream by preventing stream erosion and nutrient reduction which mitigates sediment accumulation by reducing sediment loads and mitigation nutrient-related impairment in High Rock Lake. High sediment loads can accumulate downstream exacerbating flooding. High Rock Lake is impaired due to eutrophication and serves as a water supply reservoir. As temperatures increase due to climate change, eutrophication issues in reservoirs will increase necessitating nutrient input reductions. This project reduces nutrient loading to High Rock Lake by establishing a riparian buffer. See Attachments 1, 2, 5C.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 5C Page 13_3 NC DEQ YPD Basin Plan.pdf	11/10/2022	kim.colson@hdrinc.com	Location project benefiting area Attachments	Figure of High Rock Lake watershed from NC DEQ Yadkin Pee Dee River Basin Plan showing impairment and project location.	
Attachment 5B Cub Creek III Stream Restoration Project Area Social Vulnerability Indices from CDC.pdf	11/10/2022	kim.colson@hdrinc.com	Location project benefiting area Attachments	Mapping output from the CDC SVI for the census tracts in the direct benefit area. Both tracts have high SVI.	
Attachment 2 Yadkin_Pee Dee 2008 Basin Plan Pgs 10 and 11.pdf	11/11/2022	annie.huang@hdrinc.com	Location project benefiting area Attachments	Excerpt from NC DEQ Basin Plans related to watershed impairments - downstream benefiting area.	

Project impact area

Provide a detailed description of the proposed project's impact area.

The project impact area is along Cub Creek from NC18 in Wilkesboro downstream to the confluence with the Yadkin River.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 5A Cub Creek Ph III Project Area Map.pdf	11/11/2022	kim.colson@hdrinc.com	Location project impact area Attachments	Project area map	

Project site inventory

Does this project subapplication propose to mitigate a property/structure(s)? (Examples: residential home, commercial building, bridge, fire station, levee, pumping station, wastewater treatment plant, telephone pole, electric line, etc.)

No

Please [download the excel template](#), and then fill out the template with building or infrastructure data.

Budget

Budget cost estimate should directly link to your scope of work and work schedule. You must add at least one item(s) greater than 0 for your cost estimate. As necessary, please adjust your federal/non-federal cost shares, and add the non-federal funding source(s) you are planning to use this project. Once you have completed this section, please click the Continue button at the bottom of this page to navigate to the next section.

Add budget cost types and item(s)

First, click the Add cost type button below to add cost type cost estimate and then click the Add item(s) button to add the item(s) for the cost estimate.

Grand total: \$1,782,270.00

Budget type: Construction

▶	Cost type: Cost estimate	\$1,697,400.00
▶	Cost type: Management cost	\$84,870.00

Program income (optional)

Cost share

Cost share or matching means the portion of project costs not paid by federal funds.

Proposed federal vs. non-federal funding shares

Hazard mitigation assistance (HMA) funds may be used to pay up to 75% federal share of the eligible activity costs. Building Resilient Infrastructure and Communities (BRIC) and small impoverished communities may be eligible for up to 90% federal share. Flood Mitigation Assistance (FMA) and severe repetitive loss (SRL) properties may be eligible for up to 100% federal share. Repetitive loss (RL) properties may be eligible for up to 90% federal share.

Is this an Economically Disadvantaged Rural Community? ⓘ This determines your federal/non-federal share ratio. No		↕ Percentage	↑ Dollar amount
	Proposed federal share	71.43	1273050.00
	Proposed non-federal share	28.57	509220.00
		Based on total Budget cost: \$1,782,270.00	

Non-federal funding sources here

That portion of the total costs of the program provided by the non-federal entity in the form of in-kind donations or cash match received from third parties or contributed by the agency. In-kind contributions must be provided and cash expended during the project period along with federal funds to satisfy the matching requirements.

Funding source	Funding amount	% Non-federal share by source
▶ Funding source: Cash reserves or NC Clean Water State Revolving Fund	100.00%	\$509,220.00

Please provide any additional comments below (optional).

Wilkesboro has applied for funding to the North Carolina Clean Water State Revolving Fund (CWSRF); however, at the time of submittal for this application, CWSRF funding decisions have not been made. Wilkesboro will utilize either town funds or CWSRF if the project is awarded funding. Wilkesboro will coordinate with the CWSRF program, if funding is awarded, to ensure loan funds are from the revolving portion of the CWSRF (i.e., not considered federal) not from capitalization grants (i.e., which are considered federal).

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 28 Local Match Letter.pdf	12/30/2022	kim.colson@hdrinc.com	BudgetAttachments	Wilkesboro letter regarding match	

Cost-effectiveness

How was cost-effectiveness determined for this project?

- BCA completed in FEMA's BCA toolkit
Subapplicant must attach supporting documentation.
- Pre-calculated benefits
- Substantial damage in special flood hazard area
- Other BCA methodology approved by FEMA in writing
- Not applicable
- Not applicable

What are the total project benefits? (\$) **2945038**

What are the total project cost? (\$) **1893404**

What is the benefit-cost ratio (BCR) for the entire project? **1.55**

Was sea level rise incorporated into the flood elevations in the BCA? **No**

Were environmental benefits added to the project benefits? **Yes**

Were social benefits added to the project benefits? **No**

Please provide any additional comments below (optional).

Cost estimates are based on previous restoration projects along upstream reaches of Cub Creek that have been successfully completed. Based on FEMA BCA Helpline response, benefits were not provided for wastewater infrastructure that will be protected by restoring the stream since the BCR>1 for environmental benefits. Wilkesboro is in Census Tract 37193961100 with a SVI of 0.8648. Benefits do not include the further downstream environmental benefits for the High Rock Lake watershed that is a nutrient impaired lake. Benefits also do not include impacts to the wastewater treatment plant and the bypassing of raw sewage that occurs during flooding events. See Attachment 6 WWTP Flood Photos. Since these structures are not substantially damaged, the costs are minimal in terms of the FEMA BCA; however, there are costs that are difficult to quantify of worker safety, bacterial contamination from bypasses, and additional nutrient load to High Rock Lake. These benefits are part of this project however Wilkesboro is moving most components of the WWTP out of the floodplain as part of a complementary project. Since that is an independent project, we have not included damages. Only sewer line influent collection lines and influent pump station will remain in floodplain. This project will help mitigate flood damage to those remaining wastewater infrastructure components.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 6 Wilkesboro WWTP Flood Photos.pdf	11/10/2022	kim.colson@hdrinc.com	Cost Effectiveness Attachments	Photos of flooding along Cub Creek Ph III area at WWTP which is part of a complementary project to move some infrastructure out of floodplain.	
Attachment 21 Cub Creek III BCA Report 230105V2.pdf	01/05/2023	kim.colson@hdrinc.com	Cost Effectiveness Attachments	BCA Toolkit Report for Cub Creek III project	

Environmental/Historic Preservation (EHP) Review Information

Introduction

An environmental/historic preservation review is required for all activities for which FEMA funds are being requested. FEMA will complete this review with the assistance of both the state or tribal government and the local applicant. It is important that you provide accurate information. If you are having problems completing this section, please contact your application point of contact.

A. National Historic Preservation Act - Historic Buildings and Structures

1. Does your project affect or is it in close proximity to any buildings or structures 50 years or more in age? **No**

Please confirm that you have provided the information listed below by selecting each check box. (If you have not provided these documents in any other section of the application, please attach the required documents below.)

- The property address and original date of construction for each property affected (unless this information is already noted in the Properties section).
- A minimum of two color photographs showing at least three sides of each structure (Please label the photos accordingly).
- A diagram or USGS 1:24,000 scale quadrangle map displaying the relationship of the property (s) to the project area.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

- Information gathered about potential historic properties in the project area, including any evidence indicating the age of the building or structure and presence of buildings or structures that are listed or eligible for listing on the National Register of Historic Places or within or near a National Register listed or eligible historic district. Sources for this information may include the State Historic Preservation Officer, and/or the Tribal Historic Preservation Officer (SHPO/THPO), your local planning office, historic preservation organization, or historical society.
- Consideration of how the project design will minimize adverse effects on known or potential historic buildings or structures, and any alternatives considered or implemented to avoid or minimize effects on historic buildings or structures. Please address and note associated costs in your project budget.
- For acquisition/demolition projects affecting historic buildings or structures, any data regarding the consideration and feasibility of elevation, relocation, or flood proofing as alternatives to demolition.
- Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

Please provide an explanation and any information about this project that could assist FEMA in its review.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
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B. National Historic Preservation Act - Archeological Resources

Does your project involve disturbance of ground? **Yes**

Please confirm that you have provided the information listed below by selecting each check box. (If you have not provided these documents in any other section of the application, please attach the required documents below.)

- A description of the ground disturbance by giving the dimensions (area, volume, depth, etc.) and location.
- The past use of the area to be disturbed, noting the extent of previously disturbed ground.
- A USGS 1:24,000 scale or other site map showing the location and extent of ground disturbance.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

- Any information about potential historic properties, including archeological sites, in the project area. Sources of this information may include SHPO/THPO, and/or the Tribe's cultural resources contact if no THPO is designated. Include, if possible, a map showing the relation of any identified historic properties to the project area.
- Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

A review of the National Register of Historic Places (NRHP) GIS Web Service (National Register of HP Mapper) found the Downtown Wilkesboro Historic District within the Project Area (1 mile of the site). The N.C. Historic Preservation Office (NCHPO) HPOWEB GIS Web Service (<http://gis.ncdcr.gov/hpweb/>) indicated 192 sites within 1 mile of the project

site as noted in Attachment 7. There are no known historical buildings located in the disturbed area of the project (the disturbed area is in the floodplain and any building located would have been severely damaged by repeated flooding). The N.C. Office of State Archaeology (OSA) was contacted to gather previously conducted archaeological surveys and reports occurring within one mile of the proposed project. This data is not publicly available due to its sensitivity. Several surveys have been completed within one mile of the proposed project. There are five previously recorded archaeological sites within one mile of the proposed project

Please provide an explanation and any information about this project that could assist FEMA in its review.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 7 NHP Description.pdf	11/10/2022	annie.huang@hdrinc.com	involveDisturbanceOfGround.attachmentlds	National Heritage Program information based on work for the complementary WWTP project (environmental document submitted to CWSRF program).	

C. Endangered Species Act and Fish and Wildlife Coordination Act

1. Are federally listed threatened or endangered species or their critical habitat present in the area affected by the project? **Yes**

Please confirm that you have provided the information listed below by selecting each check box. (If you have not provided these documents in any other section of the application, please provide the required documents either through attachment and/or comment box below.)

Information you obtained to identify species in or near the project area. Provide the source and date of the information cited.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

Any request for information and associated response from the USFWS, the National Marine Fisheries Service (NMFS) (for affected ocean-going fish), or your State Wildlife Agency, regarding potential listed species present and potential of the project to impact those species.

Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

Based on consultation for an adjacent project (Wilkesboro's wastewater treatment plant), the Northern Long-eared bat (*Myotis septentrionalis*) may be present but has not been documented. For that preliminary environmental document, the impact is listed as "May affect, not likely to adversely affect". This project will actually provide additional habitat for that species.

Please provide an explanation and any information about this project that could assist FEMA in its review.

2. Does your project remove or affect vegetation? **Yes**

Please confirm that you have provided the information listed below by selecting each check box. (If you have not provided these documents in any other section of the application, please provide the required documents either through attachment and/or comment box below.)

Description of the amount (area) and type of vegetation to be removed or affected.

A site map showing the project area and the extent of vegetation affected.

Photographs or digital images that show both the vegetation affected and the vegetation in context of its surroundings.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

Vegetation will be removed within the project area in order to re-grade it and expand the floodplain capacity. Non-native species may also be permanently removed. The streambank and associated riparian areas will be re-planted

with native vegetation after the work is complete. Please see the attached ground and vegetation disturbance map and aerial imagery for more details. See Attachments 3, 3A, and 24.

Please provide an explanation and any information about this project that could assist FEMA in its review.

3. Is your project in, near (within 200 feet), or likely to affect any type of waterway or body of water? **Yes**

If Yes, and project is not within an existing building, you must confirm that you have provided the following: (If you have not provided these documents in any other section of the application, please attach the required documents below.)

- A USGS 1:24,000 scale quadrangle map showing the project activities in relation to all nearby water bodies (within 200 feet).
- Any information about the type of water body nearby including: its dimensions, the proximity of the project activity to the water body, and the expected and possible changes to the water body, if any. Identify all water bodies regardless whether you think there may be an effect.
- A photograph or digital image of the site showing both the body of water and the project area.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

- Evidence of any discussions with the US Fish and Wildlife Service (USFWS), and/or your State Wildlife Agency concerning any potential impacts if there is the potential for the project to affect any water body.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

The project is designed to improve the floodplain functionality, aquatic habitat, streambank stability, wildlife habitat of Cub Creek through Natural Channel Design Methodologies along with vegetative practices. This nature-based project will also improve water quality downstream by improving riparian buffer functions (nitrogen removal) and reducing erosion (phosphorus retention) in a nutrient impaired watershed. Additionally, two stormwater BMP demonstration structures will be installed to treat stormwater runoff from adjacent impervious areas before it enters Cub Creek. See Attachment 8.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 8 Endangered Species Act and Fish and Wildlife Coordination Act.pdf	11/10/2022	kim.colson@hdrinc.com	endangeredSpecies.attachmentIds	Endangered species information based on work for the complementary WWTP project (environmental document submitted to CWSRF program).	

D. Clean Water Act, Rivers and Harbors Act, and Executive Order 11990 (Protection of Wetlands)

1. Will the project involve dredging or disposal of dredged material, excavation, adding fill material or result in any modification to water bodies or wetlands designated as 'waters of the U.S.' as identified by the US Army Corps of Engineers or on the National Wetland Inventory? **Yes**

Please confirm that you have provided the information listed below by selecting each check box. (If you have not provided these documents in any other section of the application, please attach the required documents below.)

- Documentation of the project location on a USGS 1:24,000 scale topographic map or image.
- A copy of a National Wetlands Inventory map or other available wetlands mapping information.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

- Request for information and response letter from the US Army Corps of Engineers and/or state resource agencies regarding the potential for wetlands, and applicability of permitting requirements.
- Evidence of alternatives considered to eliminate or minimize impacts to wetland.
- Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

While no known wetlands, other than Cub Creek and tributaries that is a jurisdictional stream, are known, a delineation from the US Army Corps of Engineers will be requested for any suspected wetlands. See Attachment 9.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 9 NWI Cub Creek Ph III Project Area.pdf	11/10/2022	annie.huang@hdrinc.com	waterBodyOrWetlandModification.attachmentIds	Wetlands information based on work for the complementary WWTP project (environmental document submitted to CWSRF program).	

E. Executive Order 11988 (Floodplain Management)

1. Does a Flood Insurance Rate Map (FIRM), Flood Hazard Boundary Map (FHBM), hydrologic study, or some other source indicate that the project is located in or will affect a 1% annual chance floodplain, a 0.2% annual chance floodplain, a regulatory floodway, or an area prone to flooding?

Yes

Please explain in the text box below and/or provide any documentation to identify the means or the alternatives considered to eliminate or minimize impacts to floodplains (See the 8 step process found in 44 CFR Part 9.6.) to help FEMA evaluate the impact of the project:

There are no practicable alternatives for the stream restoration outside of the floodplain. Channelization with armored banks could be considered but would not provide any benefits to structures and would eliminate ancillary benefits of water quality improvement, outdoor recreation for disadvantaged communities, and water quality improvement for the High Rock Lake impairment or improved trout habitat. See Attachments 10 and 24

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

The project is intended to improve floodplain functionality through Natural Channel Design Methodologies along with vegetative practices to improve streambank stabilization.

2. Does the project alter a watercourse, water flow patterns, or a drainage way, regardless of its floodplain designation?

Yes

If Yes, please indicate below any other information you are providing to help FEMA evaluate the impact of the project:

- Hydrologic/hydraulic information from a qualified engineer to demonstrate how drainage and flood flow patterns will be changed and to identify down and upstream effects.
- Request for information and response letter from the state water resource agency, if applicable, with jurisdiction over modification of waterways.
- Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

The project is intended to improve floodplain functionality through Natural Channel Design Methodologies along with vegetative practices to improve streambank stabilization.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 10 Floodplain Cub Creek Ph III.pdf	11/10/2022	annie.huang@hdrinc.com	affectToPercentAnnualChanceFloodplain.attachmentIds	Floodplain information for project area	

F. Coastal Zone Management Act

1. Is the project located in the state's designated coastal zone? **No**

G. Farmland Protection Policy Act

1. Will the project convert more than 5 acres of prime or unique farmland outside city limits to a non-agricultural use? **No**

H. Resource Conservation and Recovery Act (RCRA) and Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (Hazardous and Toxic Materials)

1. Is there a reason to suspect there are contaminants from a current or past use on the property associated with the proposed project? **No**

2. Are there any studies, investigations, or enforcement actions related to the property associated with the proposed project? **No**

3. Does any project construction or operation activities involve the use of hazardous or toxic materials? **No**

4. Do you know if any of the current or past land-uses of the property affected by the proposed project or of the adjacent properties are associated with hazardous or toxic materials? **No**

I. Executive Order 12898, Environmental Justice for Low Income and Minority Populations

1. Are there low income or minority populations in the project's area of effect or adjacent to the project area? **Yes**

If Yes, you must confirm that you have provided the following either in the text box below or by attachment: (If you have not provided these documents in any other section of the application, please attach the required documents or provide the description below.)

Description of any disproportionate and adverse effects to these populations.

To help FEMA evaluate the impact of the project, please indicate below any other information you are providing. (optional)

Description of the population affected and the portion of the population that would be disproportionately and adversely affected. Please include specific efforts to address the adverse impacts in your proposal narrative and budget.

Attached materials or additional comments.

Please provide an explanation and any information about this project that could assist FEMA in its review. (optional)

EPA Environmental Justice reports attached. Generally, Wilkesboro has a higher percentage of low-income households compared to the state or region. There is not a disproportionate impact to low-income households or minority populations. The project does enhance recreational opportunities to these populations. See Attachments 11 and 12.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 11 EJ Report Cub Creek Ph III.pdf	11/10/2022	annie.huang@hdrinc.com	lowIncomeMinority.attachmentIds	EPA EJ report from EPA EJ tool.	
Attachment 12 EJ ACS Report Cub Creek Ph III.pdf	11/10/2022	annie.huang@hdrinc.com	lowIncomeMinority.attachmentIds	EPAACS Summary report from EPA EJ tool.	

J. Other Environmental/Historic Preservation Laws or Issues

1. Are there other environmental/historic preservation requirements associated with this project that you are aware of? **No**

2. Are there controversial issues associated with this project? **No**

3. Have you conducted any public meeting or solicited public input or comments on your specific proposed mitigation project? **Yes**

If Yes, please indicate in the text box below a description of the requirements, issues or public involvement effort.

Yes. The potential benefits of this project were discussed in open meeting on multiple occasions. The Council and staff talked through the multiple benefits of this work when the purchase of the property was considered at Council Retreat on November 12, 2020. No public comment was made. The plans were again discussed when the Council approved the Budget Amendment required to account for the land purchase. No public comment was made.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
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K. Summary and Cost of Potential Impacts

Having answered the questions in parts A. through J., have you identified any aspects of your proposed project that have the potential to impact environmental resources or historic properties? **No**

Evaluation

Is the applicant participating in the [Community Rating System \(CRS\)](#)? **Yes**

Select rating. **4**

Is the applicant a [Cooperating Technical Partner \(CTP\)](#)? **No**

Was this application generated from a previous FEMA HMA Advance Assistance or Project Scoping award or any other federal grant award, or the subapplicant is a past recipient of Building Resilient Infrastructure and Communities (BRIC) non-financial Direct Technical Assistance? **No**

Has the applicant adopted building codes consistent with the [international codes](#)? **Yes**

Year of building code **2018**

Please provide the building code. **2018 North Carolina State Building Code (2015 IRC', IMC', IFGC', and IPC' with NC Amendments.**

Have the applicant's building codes been assessed on the [Building Code Effectiveness Grading Schedule \(BCEGS\)](#)?

Yes

Select rating.

4

Describe involvement of partners to enhance the mitigation activity outcome.

Many sections of the Yadkin River Greenway have already been successfully constructed under a concerted effort by the Town of Wilkesboro, Town of North Wilkesboro, Wilkes County, Yadkin River Greenway Council, The Health Foundation, Wilkesboro Tourism Development Authority, Wilkes Outdoor Economy Coalition, Wilkes Soil and Water Conservation District, NC Wildlife Resource Commission, Trout Unlimited, and the High Country Council of Governments to restore streams and develop better recreational opportunities with connectiveness to better serve all communities in the area. These partners (See Attachment 13 Partners) are active participants in the ongoing utilization of the stream areas such as the Yadkin River Greenway's Turtle Race and the NC Wildlife Resources Commission stocking of trout on Cub Creek. For this project Wilkesboro will continue within that framework, has also utilized BREC and HDR Engineering for preliminary design, and is seeking NC Clean Water State Revolving Fund project funding (pending approval). Partners will continue to be involved as noted in Attachment 31 - Leveraging Partners and Attachment 25 - Outreach Activities.

Discuss how anticipated future conditions are addressed by this project.

Climate change is predicted to increase overall rainfall and more intense precipitation in the southeast of the United States. Climate Information that provides two different sources indicating increased rainfall in the eastern United States. Wilkes County has experienced increased rainfall recently. According to National Weather Service records on Weather.Gov, the mean annual rainfall since 2000 (at the North Wilkesboro station which is adjacent to Wilkesboro) was 52" while the annual mean for the 2018-2020 was almost 72". This increase in rainfall results in additional runoff and without stream stabilization, additional streambank erosion that increases the risk to sewer infrastructure (see discussion in Scope of Work Section) as well as additional nutrient loading to the nutrient sensitive watershed. Climate change is also predicted to increase ambient temperatures including temperatures of surface waters. This impacts habitat for trout as trout species require lower water temperatures than many freshwater fish. This project provides a better canopy that will mitigate water temperature increases. Lastly, increasing water temperatures increases nutrient sensitivity in surface waters (i.e., more susceptible to algal blooms). High Rock Lake downstream of this project is already nutrient sensitive and this project will reduce the nutrient loading to that waterbody. This project addresses future increases in rainfall due to climate change, nutrient reduction needs in the High Rock Lake watershed, and past stream impacts which have limited recreational opportunities such as trout fishing that are a future economic development opportunity for the area. See Attachment 14 - Revise Future Conditions.

Additional comments (optional)

There are also ancillary benefits for the Town's overall rural economy. The Town of Wilkesboro has declining population, a poverty rate higher than the overall state's poverty rate, and median household income (MHI) is less than the state's MHI (source NC Division of Water Infrastructure Affordability Statistics). In the Preface of Michael Walden's "North Carolina Beyond the Connected Age - The Tar Heel State in 2050" (2017 The University of North Carolina Press), Mr. Walden states that "By the beginning of the twenty-first century ... [m]etropolitan areas were ascending, small towns and rural areas struggling." This project along with the wastewater treatment expansion are key elements to maintaining a key industry and providing changes to enhance the environmental (recreational opportunities) and artisan related economy. See Attachment 20 Population Impacted. BCEGS letter attached - Attachment 30 - Wilkesboro NC BCEGS Letter

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 25 Outreach Activities 230106.pdf	01/06/2023	kim.colson@hdrinc.com	Evaluation Attachments	Description of outreach activities.	
Attachment 14 Revised Future Conditions 230106.pdf	01/06/2023	kim.colson@hdrinc.com	Evaluation Attachments	Details of future conditions after project completion.	
Attachment 13 Partners.pdf	11/10/2022	kim.colson@hdrinc.com	Evaluation Attachments	List of partners.	

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 30 Wilkesboro NC BCEGS Letter.pdf	01/05/2023	kim.colson@hdrinc.com	Evaluation Attachments	Letter from ISO on BCEGS analysis of the building codes adopted by Wilkesboro.	
Attachment 20 Population Impacted.pdf	11/10/2022	kim.colson@hdrinc.com	Evaluation Attachments	Details of population impacted	
Attachment 31 Leveraging Partners Attachment 230106.pdf	01/06/2023	kim.colson@hdrinc.com	Evaluation Attachments	Details of partners and roles associated with overall stream restoration initiatives and this project.	

Comments & attachments

▶ Community	1 comment, 4 attachments
▶ Mitigation plan	1 comment, 4 attachments
▶ Scope of work	1 comment, 14 attachments
▶ Budget	1 comment, 1 attachments
▶ Cost-effectiveness	1 comment, 2 attachments
▶ Evaluation	1 comment, 6 attachments
▶ Environmental/Historic Preservation (EHP)	0 comment, 6 attachments
▶ Location	0 comment, 5 attachments

Assurances and certifications

OMB number: 4040-0009, Expiration Date: 02/28/2025 [View burden statement](#)

SF-424D: Assurances - Construction Programs

Content:

OMB Number: 4040-0009
 Expiration Date: 02/28/2025

Certain of these assurances may not be applicable to your project or program. If you have any questions, please contact the awarding agency. Further, certain Federal awarding agencies may require applicants to certify to additional assurances. If such is the case, you will be notified.

As the duly authorized representative of the applicant, I certify that the applicant:

1. Has the legal authority to apply for Federal assistance and the institutional, managerial and financial capability (including funds sufficient to pay the non-Federal share of project costs) to ensure proper planning, management and completion of the project described in this application.
2. Will give the awarding agency, the Comptroller General of the United States and, if appropriate, the State, the right to examine all records, books, papers, or documents related to the assistance; and will establish a proper accounting system in accordance with generally accepted accounting standards or agency directives.
3. Will not dispose of, modify the use of, or change the terms of the real property title or other interest in the site and facilities without permission and instructions from the awarding agency. Will record the Federal awarding agency directives and will include a covenant in the title of real property acquired in whole or in part with Federal assistance funds to assure nondiscrimination during the useful life of the project.
4. Will comply with the requirements of the assistance awarding agency with regard to the drafting, review and approval of construction plans and specifications.
5. Will provide and maintain competent and adequate engineering supervision at the construction site to ensure that the complete work conforms with the approved plans and specifications and will furnish progressive reports and such other information as may be required by the assistance awarding agency or State.
6. Will initiate and complete the work within the applicable time frame after receipt of approval of the awarding agency.
7. Will establish safeguards to prohibit employees from using their positions for a purpose that constitutes or presents the appearance of personal or organizational conflict of interest, or personal gain.

8. Will comply with the Intergovernmental Personnel Act of 1970 (42 U.S.C. §§4728-4763) relating to prescribed standards for merit systems for programs funded under one of the 19 statutes or regulations specified in Appendix A of OPM's Standards for a Merit System of Personnel Administration (5 C.F.R. 900, Subpart F).
9. Will comply with the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. §§4801 et seq.) which prohibits the use of lead-based paint in construction or rehabilitation of residence structures.
10. Will comply with all Federal statutes relating to nondiscrimination. These include but are not limited to: (a) Title VI of the Civil Rights Act of 1964 (P.L. 88-352) which prohibits discrimination on the basis of race, color or national origin; (b) Title IX of the Education Amendments of 1972, as amended (20 U.S.C. §§1681-1683, and 1685-1686), which prohibits discrimination on the basis of sex; (c) Section 504 of the Rehabilitation Act of 1973, as amended (29 U.S.C. §794), which prohibits discrimination on the basis of handicaps; (d) the Age Discrimination Act of 1975, as amended (42 U.S.C. §§6101-6107), which prohibits discrimination on the basis of age; (e) the Drug Abuse Office and Treatment Act of 1972 (P.L. 92-255), as amended, relating to nondiscrimination on the basis of drug abuse; (f) the Comprehensive Alcohol Abuse and Alcoholism Prevention, Treatment and Rehabilitation Act of 1970 (P.L. 91-616), as amended, relating to nondiscrimination on the basis of alcohol abuse or alcoholism; (g) §§523 and 527 of the Public Health Service Act of 1912 (42 U.S.C. §§290 dd-3 and 290 ee- 3), as amended, relating to confidentiality of alcohol and drug abuse patient records; (h) Title VIII of the Civil Rights Act of 1968 (42 U.S.C. §§3601 et seq.), as amended, relating to nondiscrimination in the sale, rental or financing of housing; (i) any other nondiscrimination provisions in the specific statute(s) under which application for Federal assistance is being made; and, (j) the requirements of any other nondiscrimination statute(s) which may apply to the application.
11. Will comply, or has already complied, with the requirements of Titles II and III of the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (P.L. 91-646) which provide for fair and equitable treatment of persons displaced or whose property is acquired as a result of Federal or federally-assisted programs. These requirements apply to all interests in real property acquired for project purposes regardless of Federal participation in purchases.
12. Will comply with the provisions of the Hatch Act (5 U.S.C. §§1501-1508 and 7324-7328) which limit the political activities of employees whose principal employment activities are funded in whole or in part with Federal funds.
13. Will comply, as applicable, with the provisions of the Davis-Bacon Act (40 U.S.C. §§276a to 276a-7), the Copeland Act (40 U.S.C. §276c and 18 U.S.C. §874), and the Contract Work Hours and Safety Standards Act (40 U.S.C. §§327-333), regarding labor standards for federally-assisted construction subagreements.
14. Will comply with flood insurance purchase requirements of Section 102(a) of the Flood Disaster Protection Act of 1973 (P.L. 93-234) which requires recipients in a special flood hazard area to participate in the program and to purchase flood insurance if the total cost of insurable construction and acquisition is \$10,000 or more.
15. Will comply with environmental standards which may be prescribed pursuant to the following: (a) institution of environmental quality control measures under the National Environmental Policy Act of 1969 (P.L. 91-190) and Executive Order (EO) 11514; (b) notification of violating facilities pursuant to EO 11738; (c) protection of wetlands pursuant to EO 11990; (d) evaluation of flood hazards in floodplains in accordance with EO 11988; (e) assurance of project consistency with the approved State management program developed under the Coastal Zone Management Act of 1972 (16 U.S.C. §§1451 et seq.); (f) conformity of Federal actions to State (Clean Air) Implementation Plans under Section 176(c) of the Clean Air Act of 1955, as amended (42 U.S.C. §§7401 et seq.); (g) protection of underground sources of drinking water under the Safe Drinking Water Act of 1974, as amended (P.L. 93-523); and, (h) protection of endangered species under the Endangered Species Act of 1973, as amended (P.L. 93-205).
16. Will comply with the Wild and Scenic Rivers Act of 1968 (16 U.S.C. §§1271 et seq.) related to protecting components or potential components of the national wild and scenic rivers system.
17. Will assist the awarding agency in assuring compliance with Section 106 of the National Historic Preservation Act of 1966, as amended (16 U.S.C. §470), EO 11593 (identification and protection of historic properties), and the Archaeological and Historic Preservation Act of 1974 (16 U.S.C. §§469a--1 et seq.).
18. Will cause to be performed the required financial and compliance audits in accordance with the Single Audit Act Amendments of 1996 and OMB Circular No. A-133, "Audits of States, Local Governments, and Non-Profit Organizations."
19. Will comply with all applicable requirements of all other Federal laws, executive orders, regulations, and policies governing this program.
20. Will comply with the requirements of Section 106(g) of the Trafficking Victims Protection Act (TVPA) of 2000, as amended (22 U.S.C. 7104) which prohibits grant award recipients or a sub-recipient from (1) Engaging in severe forms of trafficking in persons during the period of time that the award is in effect (2) Procuring a commercial sex act during the period of time that the award is in effect or (3) Using forced labor in the performance of the award or subawards under the award.

Certifications regarding lobbying

OMB Number: 4040-0013

Expiration Date: 02/28/2025

Certification for Contracts, Grants, Loans, and Cooperative Agreements

The undersigned certifies, to the best of his or her knowledge and belief, that:

1. No Federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned, to any person for influencing or attempting to influence an officer or employee of an agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any Federal contract, the making of any Federal grant, the making of any Federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any Federal contract, grant, loan, or cooperative agreement.
2. If any funds other than Federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this Federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions.
3. The undersigned shall require that the language of this certification be included in the award documents for all subawards at all tiers (including subcontracts, subgrants, and contracts under grants, loans, and cooperative agreements) and that all subrecipients shall certify and disclose accordingly. This certification is a material representation of fact upon which reliance was placed when this transaction was made or entered into. Submission of this certification is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required certification shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.

Statement for Loan Guarantees and Loan Insurance

The undersigned states, to the best of his or her knowledge and belief, that:

If any funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with this commitment providing for the United States to insure or guarantee a loan, the undersigned shall complete and submit Standard Form-LLL, "Disclosure of Lobbying Activities," in accordance with its instructions. Submission of this statement is a prerequisite for making or entering into this transaction imposed by section 1352, title 31, U.S. Code. Any person who fails to file the required statement shall be subject to a civil penalty of not less than \$10,000 and not more than \$100,000 for each such failure.