

Subapplicant information

Name of federal agency

FEMA

Type of submission

Application**CITY OF GASTONIA TOWN HALL**

181 S SOUTH ST

GASTONIA, NC 28052 United States

State	DUNS #	EIN #
NC	074497249	566000227

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)**

Kyle Butler kyleb@tworiversutilities.com	Primary phone 7048666768 Work	Mailing address
Brian Potocki brianp@cityofgastonia.com	Primary phone	Mailing address

Point(s) of contact

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MR Brian Potocki Asst. Director Public Utilitie	Primary phone 7048666728 Work	Additional phones 7049135267 Mobile	Mailing address PO Box 1748 1300 N. Broad St Gastonia NC 28053-1748

brianp@cityofgastonia.com	Fax		
MR Kyle Butler Civil Engineer III	Primary phone 7048666768 Work	Additional phones 7048666823 Work	Mailing address PO BOX 1748 1300 N. Broad St Gastonia NC 28053-1748
kyleb@tworiversutilities.com	Fax		

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
GASTONIA, CITY OF	071	370100	Y	9	2,10

Please provide any additional comments below (optional).

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
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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 Cleveland Gaston Lincoln Regional Hazard Mitigation Plan 2020 Update	Plan type Local Multijurisdictional Multi-Hazard Mitigation Plan	Plan approval date 03/23/2020
Proposed activity description The City of Gastonia's proposed project to stabilize and rehabilitate approximately 8,000 linear feet of Duharts Creek directly aligns with mitigation techniques identified in the attached Gaston County Regional Hazard Mitigation Plan. Section 8.3.3 Natural Resource Protection identifies resource protection measures such as slope stabilization and erosion control as a means of preserving or restoring natural areas and their protective functions. Section 9: Mitigation Action Plan also identifies		

an Action #P-10 for the City of Gastonia which is to pursue funding to implement mitigation strategies in identified vulnerable areas.

Please provide any additional comments below (optional).

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 1 - HMP Plan.pdf	01/07/2022	madeleine.lane@icf.com	Mitigation Plan Attachments	Relevant sections from Gaston County Regional HMP. Section 8.3.3 Natural Resource Protection identifies resource protection measures such as slope stabilization and erosion control as a means of preserving or restoring natural areas and their protective functions. Section 9: Mitigation Action Plan also identifies an Action #P-10 for the City of Gastonia which is to pursue funding to implement mitigation strategies in identified vulnerable areas.	

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)

City of Gastonia Duharts Creek - Critical Infrastructure Protection and Stream Restoration

Activities

Primary activity type

Stabilization and 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

The site of this mitigation activity is Duharts Creek, Gastonia, North Carolina, 28054 at 35.25173 latitude and -81.09916 longitude. The creek is located parallel to Wilkinson Boulevard in Gastonia, and the project location runs through both a residential and commercial area. The City of Gastonia proposes to stabilize and rehabilitate

approximately 8,000 linear feet of Duharts Creek from Redbud Drive to US 74/29. This property is owned by the City of Gastonia. Duharts Creek is a regulatory floodway. Regarding the stream restoration and bank stabilization measures, the design approach will emphasize nature-based solutions and materials and recommend a combination of floodplain benching, bank regrading, bio-engineered structural enhancements, natural fiber matting surface stabilization, and intensive revegetation with the appropriate native riparian plant species. Trees falling and impacting aerial sewer crossings are a major concern. Part of the nature-based solutions would be to remove any high-risk trees and replant new trees as part of the stream stabilization measures. In addition to the stabilization, some realignment of existing 18" and 8" gravity sewer lines and a 24" force main will be performed to move them further away from the creek and reduce the risk of impacts due to flooding. Refer to the Project Location Map for more information.

Community lifelines

Primary community lifeline

Food, water, shelter

Primary sub-community lifeline

Water

Secondary community lifeline (optional)

Safety and security

Secondary sub-community lifeline

Community safety

Tertiary community lifeline (optional)

Hazardous material

Tertiary sub-community lifeline

HAZMAT, pollutants, contaminants

Hazard sources

Primary hazard source

Flooding

Secondary hazard source (optional)

Severe storm

Tertiary hazard source (optional)

Uncategorized

If Uncategorized please specify

Erosion

Is this a phased project?

Yes

Are you doing construction in this project?

Yes

Population affected

34

Detail/description of stated percentage

The City of Gastonia's 2019 total population was 75,887. The total estimated population impacted by the loss of sewer or electric service should infrastructure failure occur within the Duharts Creek service area is roughly 25,839 people, or 34% of the City's population.

Provide a clear and detailed description of your proposed activity

Duharts Creek is located along the east side of the City of Gastonia. Frequent, and increasingly severe, rain events have left Duharts Creek vulnerable to flooding and has caused significant erosion along the banks. See Attachment 2, Photo Log, for more details. Continued heavy rain events, and resulting erosion, have caused nuisance flooding and threatens to jeopardize the integrity of critical infrastructure lines. Storms, such as the winter storms of February 2020, caused substantial flooding along the creek, with a mean stream height of 3.63 feet on February 6, 2020 (see USGS stream gauge data,

attached to this application). Due to the increased concerns of localized flooding, in 2016 the City of Gastonia staff was charged with generating methods and programs to reduce the runoff volume this drainage way experiences and help alleviate citizens' concerns. Several solutions are highlighted in the attached Duharts Creek Urban Runoff Reduction Initiative memo. The City of Gastonia proposes to stabilize and rehabilitate approximately 8,000 linear feet of Duharts Creek from Redbud Drive to US 74/29. In addition to the stabilization, some realignment of existing 18" and 8" gravity sewer lines and a 24" force main will be performed to move them further away from the creek and reduce the risk of impacts due to flooding. The combined creek restoration and sewer realignment measures will provide increased resiliency to the sewer infrastructure and mitigate any future loss of service to community lifelines and critical facilities. Additionally, a class 3 utility pole is within inches of the top of actively eroding banks. The utility pole is at risk of falling in the creek if the footing is undermined by eroding soil. This hazard threatens electrical power service for the expected service population. The proposed project will increase bank stability to mitigate future erosion threatening the utility pole. The project will be implemented in two phases. Phase one will include notice of grant award and design team contracting which will include preliminary design, permitting, and final design. Phase two will include bidding and construction. Additionally, the stream restoration and bank stabilization design approach will emphasize nature-based solutions and materials and recommend a combination of floodplain benching, bank regrading, bio-engineered structural enhancements, natural fiber matting surface stabilization, and intensive revegetation with the appropriate native riparian plant species. Trees falling and impacting aerial sewer crossings are a major concern. Part of the nature-based solutions would be to remove any high-risk trees and replant new trees as part of the stream stabilization measures. This nature-based approach will achieve greater stability within the reach of Duharts Creek banks and will reduce the severity of erosion and encroachment from future flood events on the sewer infrastructure. The primary goal of this project is to ensure future encroachment upon the sewer infrastructure is minimized due to the forces of erosion. For further detail on sewer realignment, stream restoration, and bank stabilization, see Attachment 3, Technical Scope of Work Memo.

How will the mitigation activity be implemented?

The City of Gastonia will manage the proposed project and contract with a qualified design engineer and construction contractor through an open procurement process. The City of Gastonia Department of Public Works (DPW) proposes to implement the project in two phases, in accordance with FEMA guidelines on phased projects. Phase 1 will include surveying, design, permitting, and conducting a new benefit-cost analysis (BCA). Permits will be obtained from all appropriate local, state, and federal agencies for construction activity, stormwater discharges, floodplain management, land disturbance, drainage review and approval, and environmental quality reviews. Upon completion of Phase 1 and approval from FEMA, Phase 2 will consist of project construction (including site preparation), acquisition of equipment and materials, floodplain benching, and creek stabilization and restoration. Site preparation of the stream restoration measures will necessitate large staging areas for material and equipment delivery, and this is reflected in Attachment 5, Ground Disturbance Map. For further details on mitigation activity implementation, see Attachment 3, Technical Scope of Work Memo.

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.):

The existing channel of Duharts Creek has been impacted by both watershed and on-site changes. At some point, the stream was straightened during the 20th century, which reduced the amount of floodplain available to the stream. Further development and a changing climate have further induced downcutting and bank erosion in the stream. This erosion has created vulnerabilities whereby a food event is more likely to wash out gravity sewer line pipes. With 24-36 hrs for flood waters to fully recede until sewer line failure can be

identified and accessed by City of Gastonia staff, this would have a significant impact on loss of service. The proposed restoration will construct a new stream channel sized to the appropriate bankfull width and depth. In-stream structures, such as vegetated soil lifts, construction riffles, and wood toe, will be used to both stabilize the new channel and provide aquatic habitat. In addition to the channel modifications, floodplain grading will be completed to recreate a stream corridor that will accommodate flashy storms on an adjacent floodplain. While this will require significant grading, the process will lower the flood elevations throughout the project corridor and provide stormwater capacity for larger storms in a watershed with the potential for more development. Due to the stream realignment, the gravity sewer and force mains that currently run along the creek will be relocated further north. The sewer relocation will be done in conjunction with the grading and excavation of the stream realignment.

Who will manage and complete the mitigation activity?

The City of Gastonia Department of Public Works will manage the mitigation activity with support from procured design and construction firms. The department has prior experience with projects of similar scope and scale. DPW staff have also managed several State Revolving Fund projects in the past and are familiar with grant management requirements.

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

Duharts Creek is located along the east side of the City of Gastonia. Frequent, and increasingly severe, rain events have left Duharts Creek vulnerable to flooding and has caused significant erosion along the banks. Continued heavy rain events, and resulting erosion, have caused nuisance flooding and threatens to jeopardize the integrity of critical infrastructure lines. Two gravity sewer lines (18" and 8") and a 24" sewer force main run parallel to the creek, and erosion has led to the exposure of these lines. Damage to these lines could threaten the services they provide to the surrounding homes, businesses, and critical government infrastructure. In addition, the erosion of the banks has threatened to compromise the stability of power lines that cross over the creek as well as a high voltage transmission tower in the vicinity. Continued erosion could cause a disruption to the power supply of homes and businesses within the service area. Stream restoration and stabilization measures would protect the creek against future flooding damages and erosion and lessen the threat of damage to these critical infrastructure lines. Due to the impacts of climate change, the City is predicted to experience more frequent and severe precipitation events and an increased flooding risk. Gastonia could see a more than 60% annual increase in the number of days with precipitation of 3 inches or greater by midcentury from a 1996-2015 baseline average. This data can be found in Attachment 6, the North Carolina Climate Science Report. These hazards only increase the threat of erosion along the creek bed, in turn, leading to potential future encroachment upon the sewer infrastructure. To combat this threat, the design approach recommends a combination of floodplain benching, bio-engineered structural enhancements, bank regrading, natural fiber matting for reinforcement, and intensive revegetation with appropriate native riparian plant species. This nature-based approach will achieve greater stability along the creek banks and will reduce the severity of future flood events and resulting erosion. Impacts to sewer infrastructure along Duharts Creek resulting from creek bank erosion could result in loss of sewer service to the following community lifelines within the service area: • Food, Water & Shelter: There are two sewer lines and a sewer force main that parallel portions of Duharts Creek that could be impacted due to erosion of creek banks due to flood events. • Medical & Health: Within the identified area there are over twenty-five medical facilities that are part of the CaroMont Regional Medical Center and surrounding area. • Safety & Security: There are three fire stations, two police departments, and one government services building within the sewer service area. • Energy: There is a high voltage transmission tower in the vicinity of Duhart's Creek that could potentially be impacted by

continued creek bank erosion caused by repetitive flooding events. •
Transportation: There is a Norfolk Southern railroad station that could be impacted by loss of wastewater service. Although not specifically listed as lifelines, there are two schools within the area that could be considered critical facilities that would be impacted by loss of water/sewer service.

When will the mitigation activity take place?

Assuming FEMA funding is awarded, the project will kick off in October 2022 and finish by May of 2025. Please see Attachment 7, Detailed Schedule, for more information.

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?

Several alternatives were considered for this project, including the “No Action” alternative and a floodproofing alternative. The “No Action” alternative was determined to be infeasible because it would allow for continued erosion and exposure of utility lines, as well as future flooding events. Due to upstream development and alterations to the stream and watershed, the stream is experiencing severe erosion and bank instability that is threatening the nearby infrastructure and encroaching on private property. Rain events have been becoming more severe in recent years, contributing an increasing rate of bank erosion and larger flood volumes. This has directly jeopardized two gravity sewer lines, a forcemain and power infrastructure. For the reason, the proposed project represents the best alternative to reduce long term risks associated with the erosion.

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?

The City of Gastonia Department of Public Works will be responsible for long-term maintenance of the project, including annual inspections, vegetation control, and general repairs and maintenance. Future greenway maintenance will be as-needed; point repairs and buffer enhancements will be performed as-needed once restoration is completed. Approximately \$50,000 will be built into the City’s annual budget the first several years until the project becomes permanently stable. For more detail, refer to Attachment 8, Maintenance Agreement Letter.

Additional comments (optional)

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 10 - Stormwater and Floodplain Presentation.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	City of Gastonia Presentation on stormwater and floodplain management in Duharts Creek.	
Attachment 2 - Photo Log.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Photo report showing several locations along Duharts creek where bank erosion has caused vulnerabilities to critical infrastructure.	
Attachment 4 - Project Location Map.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Project location map	
Attachment 3 - Preliminary Engineering Report.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Technical memo outlining project overview, alternatives considered, concept drawings, relevant maps and	

Filename	Date uploaded	Uploaded by	Label	Description	Action
				associated schedule and budget.	
Attachment 5 - Ground Disturbance Map.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Ground Disturbance Map	
Attachment 6 - NC Climate Science Report.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	North Carolina Climate Science Report indicating that due to the impacts of climate change, the City is predicted to experience more frequent and severe precipitation events and an increased flooding risk. Gastonia could see a more than 60% annual increase in the number of days with precipitation of 3 inches or greater by midcentury from a 1996-2015 baseline average.	
Attachment 11 - Duhart Creek Conservation Area.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	<i>No description given.</i>	
Attachment 7 - Detailed Schedule.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Detailed project schedule	
Attachment 8 - Maintenance Agreement Letter.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Maintenance Agreement letter	
Attachment 9 - Duharts Council Memo.pdf	01/07/2022	madeleine.lane@icf.com	Scope of Work Attachments	Due to the increased concerns of localized flooding, in 2016 the City of Gastonia staff was charged with generating methods and programs to reduce the runoff volume this drainage way experiences and help alleviate citizens' concerns. Several solutions are highlighted in the attached Duharts Creek Urban Runoff Reduction Initiative memo.	

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	Start Month	Task Duration (in Months)
Phase 1: Design Team Contracting	1	1 months
Task Description		

Procuring and contracting with a design engineer to perform the work.		
Task Name Phase 1: Assessment and Preliminary Design	Start Month 2	Task Duration (in Months) 3 months
Task Description Design activities for the construction solution.		
Task Name Phase 1: 60% Design Documents	Start Month 5	Task Duration (in Months) 2 months
Task Description Milestone for 60% of engineering drawings		
Task Name Phase 1: Permitting	Start Month 7	Task Duration (in Months) 6 months
Task Description Applying for and receiving permits during the design phase.		
Task Name Phase 1: Final Design Documents	Start Month 13	Task Duration (in Months) 3 months
Task Description Design activities to finalize the design and create a bid package.		
Task Name Phase 2: Bidding and Award	Start Month 16	Task Duration (in Months) 3 months
Task Description Advertising bid documents, receiving and evaluating bids, and awarding a construction contract.		
Task Name Phase 2: Construction - Sewer Relocation	Start Month 19	Task Duration (in Months) 12 months
Task Description Construction activities related to sewer relocation.		
Task Name Phase 2: Construction - Stream Restoration	Start Month 19	Task Duration (in Months) 15 months
Task Description Construction activities for stream restoration, including nature-based solutions.		

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

33

Proposed project start and end dates

Start Date	2022-09-01
End Date	2025-05-31

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: \$8,372,300.00

Budget type: Construction

▶ Cost type: Cost estimate	\$7,977,000.00
▶ Cost type: Management cost	\$395,300.00

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. For Building Resilient Infrastructure and communities (BRIC), small impoverished communities may be eligible for up to 90% federal share. For 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. 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.

	% Percentage	\$ Dollar amount
Is this a small impoverished community? ⓘ This determines your federal/non-federal share ratio. No	Proposed federal share	71.42 5979200.00
	Proposed non-federal share	28.58 2393100.00
		Based on total budget cost: \$8,372,300.00

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: City of Gastonia	\$2,393,100.00	100.00%

Please provide any additional comments below (optional).

The cost committed by the City of Gastonia represents 30% of total estimated project costs (\$7,906,000) plus pre award costs for grant application development (\$71,000) which the City has already expended. The proposed non-federal share percentage shown in FEMA GO is shown as 28.58% due to management costs being included in the grand total, even though they are covered at 100%. Please see attached detailed budget and cost commitment letter for more details on construction line items.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 12 - Cost Commitment Letter.pdf	01/07/2022	madeleine.lane@icf.com	Budget Attachments	Letter from City of Gastonia committing 30% of project costs.	
Attachment 13 - Detailed Cost Estimate.pdf	01/07/2022	madeleine.lane@icf.com	Budget Attachments	Detailed cost estimate for proposed construction including sewer relocation and stream stabilization.	

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? (\$) **12513067**

What are the total project cost? (\$) **8526452**

What is the benefit-cost ratio (BCR) for the entire project? **1.46**

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

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

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

Does the mitigation measure incorporate nature-based solutions? **Yes**

Please provide any additional comments below (optional).

See attached technical memo outlining BCA approach and methodology.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 14 - BCA Technical Memo.pdf	01/07/2022	madeleine.lane@icf.com	Cost Effectiveness Attachments	BCA Technical approach and methodology	
Gastonia Duharts Creek BCA.zip	11/23/2021	jeremy.cirillo@icf.com	Cost Effectiveness Attachments	FEMA BCA Toolkit Export	

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

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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)

Please see the attached Ground Disturbance Plan for limits of ground disturbance and vegetation disturbance for associated streambank activities. The primary goal of this project is to ensure future encroachment upon the sewer infrastructure is minimized due to the forces of erosion utilizing nature-based solutions. Part of the nature-based solutions would be to remove any high-risk trees and replant new trees as part of the stream stabilization measures. This approach will achieve greater stability within the reach of Duharts Creek banks. Please also see attached SHPO Coordination letter. Based on review of the project location overlaid onto the National Register of Historic Places GIS web map, there are no historic buildings that are in the immediate vicinity of the project area or would be impacted by construction.

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 5 - Ground Disturbance Map.pdf	01/07/2022	madeleine.lane@icf.com	involveDisturbanceOfGround.attachmentIds	Ground Disturbance Plan for limits of ground disturbance and vegetation disturbance for associated streambank activities.	
Attachment 16 - Historic Places Map.pdf	01/07/2022	madeleine.lane@icf.com	involveDisturbanceOfGround.attachmentIds	Project location searched through the National Register of Historic Places GIS web map showing there are no historic buildings that are in the immediate vicinity of the	

Filename	Date uploaded	Uploaded by	Label	Description	Action
				project area or would be impacted by construction.	
Attachment 15 - SHPO Letter.pdf	01/07/2022	madeleine.lane@icf.com	involveDisturbanceOfGround.attachmentIds	Letter from City of Gastonia to SHPO providing overview of project and requesting input	

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)

There are several endangered species and threatened species present in the project area, per the US Fish and Wildlife Service IPaC Report. However, the design team has determined that the project will not adversely impact these species or its critical habitat in the course of the project. Please see attached IPaC Report for more detail. Please also see attached email to state Fish and Wildlife agency providing project overview.

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 from the existing streambank in order to re-grade it and expand the floodplain capacity. The proposed restoration will construct a new stream channel sized to the appropriate bankfull width and depth. In-stream structures, such as vegetated soil lifts, construction riffles, and wood toe, will be used to

both stabilize the new channel and provide aquatic habitat. Problematic trees will be removed and replanted. See attached Concept Plan drawings for more details.

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 takes place within Duharts Creek which is a regulatory floodway. Please see attached National Wetlands Inventory Map and flood risk map showing the project location with respect to other flood zones.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 22 - National Wetlands Inventory.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	National Wetlands Inventory Map showing project area	
Attachment 18 - USGS Map.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	1:24,000 USGS map of the water bodies in the area surrounding the project site	
Attachment 20 - IPaC Report.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	US Fish and Wildlife Report produced to list species and critical habitats that are known or expected to be on or near the project area. The project team has identified that no species or critical habitats will be adversely impacted due to the implementation of this project.	
Attachment 19 - Flood Risk.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	Map of flood risk within the project	

Filename	Date uploaded	Uploaded by	Label	Description	Action
				area.	
Attachment 17 - Aerial Imagery.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	Concept drawing showing the extent of the proposed work in relation to the creek.	
Attachment 21 - NCDEQ Letter.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	Letter from City of Gastonia to NCDEQ providing overview of project and requesting input surrounding the project site	
Attachment 5 - Ground Disturbance Map.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	Map showing extent of ground disturbance for the project	
Attachment 2 - Photo Log.pdf	01/07/2022	madeleine.lane@icf.com	endangeredSpecies.attachmentIds	Photos of sites along Duharts Creek where erosion has become a threat to the integrity of critical infrastructure.	

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)

In addition to the channel modifications, floodplain grading will be completed to recreate a stream corridor that will accommodate flashy storms on an adjacent floodplain. While this will require significant grading, the process will lower the flood elevations throughout the project corridor and provide storm water capacity for larger storms in a watershed with the potential for more development. See attached preliminary engineering report for more detail on existing conditions

and proposed mitigation solutions. Please also see attached USACE Coordination letter notifying USACE of proposed project.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 3 - Preliminary Engineering Report.pdf	01/07/2022	madeleine.lane@icf.com	waterBodyOrWetlandModification.attachmentIds	Preliminary engineering report showing proposed channel modifications.	
Attachment 18 - USGS Map.pdf	01/07/2022	madeleine.lane@icf.com	waterBodyOrWetlandModification.attachmentIds	No description given.	
Attachment 23 - USACE Coordination Letter.pdf	01/07/2022	madeleine.lane@icf.com	waterBodyOrWetlandModification.attachmentIds	No description given.	
Attachment 22 - National Wetlands Inventory.pdf	01/07/2022	madeleine.lane@icf.com	waterBodyOrWetlandModification.attachmentIds	National wetlands map.	

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 100 year floodplain, a 500 year floodplain if a critical facility, an identified 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:

Please see attached 8-step process identifying how impacts to floodplains will be minimized

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

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)

Please see attached coordination letter from City of Gastonia requesting input from the local Floodplain Manager

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 17 - Aerial Imagery.pdf	01/07/2022	madeleine.lane@icf.com	affectTo100Or500YearFloodplain.attachmentIds	Concept plans showing design approach to stream restoration	
Attachment 19 - Flood Risk.pdf	01/07/2022	madeleine.lane@icf.com	affectTo100Or500YearFloodplain.attachmentIds	<i>No description given.</i>	
Attachment 25 - Floodplain Coordination Letter.pdf	01/07/2022	madeleine.lane@icf.com	affectTo100Or500YearFloodplain.attachmentIds	Letter demonstrating coordination with local floodplain administrator.	
Attachment 24 - 8-Step.pdf	01/07/2022	madeleine.lane@icf.com	affectTo100Or500YearFloodplain.attachmentIds	8-Step Process documentation.	

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 **Yes** or adjacent to the project area?

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)

Using the project area location overlaying with HUD's low- and moderate-income summary data (LMISD), which is used to identify projects that provide benefit to low- and moderate-income persons on an area basis, the immediate project area is located in the following census tract block group, which has a low-mod income percentage of 19.89%. Block Group 4, Census Tract 326, Gaston County, North Carolina – 19.89 % However, as shown in the attached service area map, many block groups adjacent and served by the project location are considered low-moderate income. No adverse impacts are perceived on these populations by the implementation of this project. In fact, this project is perceived to be of benefit to these populations as a reduction of flooding in the community will directly enhance the resilience of these low income populations.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 26 - LMI Map.pdf	01/07/2022	madeleine.lane@icf.com	lowIncomeMinority.attachmentlds	Project area location overlaid with HUD's low- and moderate-income summary data (LMISD) showing percentage of population by census tract in the immediate project area that are considered low and moderate income. No adverse impacts are perceived on these populations by the implementation of this project. In fact, this project is perceived to be of benefit to these populations as a reduction of flooding in the community will directly enhance the resilience of these low income populations.	

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? **No**

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.	9
Is the applicant a Cooperating Technical Partner (CTP) ?	No
Was this created from a previous FEMA HMA Advance assistance / Project scoping award?	No
Has the applicant adopted building codes consistent with the international codes ?	Yes
Year of building code	2018
Please provide the building code.	North Carolina Building Code 2018
Have the applicant's building codes been assessed on the Building Code Effectiveness Grading Schedule (BCEGS) ?	Yes
Select rating.	3
Describe involvement of partners to enhance the mitigation activity outcome.	<p>The City has worked to engage and partner with the public with regards to the issue of flooding in Duharts Creek through various outreach activities. A public meeting was held before the city's Utilities Committee to report upon efforts made to control the stormwater that flows through Duharts Creek. In 2016, the City's Stormwater Utility Administrator sent a memo with a relevant presentation to the Town Manager for City Council approval (see 2016 Memorandum). In 2017, the City held a public meeting explaining floodplain regulations and the need for the Duharts Creek project (see Stormwater and Floodplain Regulations Presentation). The City of Gastonia will continue to conduct public outreach efforts, including publishing public notices regarding the project activity and implementation progress. The City has also directly partnered with civic and religious groups, amongst other organizations, such as Catawba Riverkeeper, a local, community-based conservation non-profit, to engage citizens in the care of Duharts Creek. The City of Gastonia has previously worked with these community organizations to create and host events relating to the local Adopt-a-Stream program. The City will continue to engage partner organizations as the project progresses. Additionally, the City has coordinated with the Gaston-Cleveland-Lincoln Metropolitan Planning Organization (MPO) to study multimodal uses along Duharts Creek. This study was done in support of a proposed greenway project along the creek.</p>
Discuss how anticipated future conditions are addressed by this project.	<p>Due to the impacts of climate change, the City is predicted to experience more frequent and severe precipitation events and an increased flooding risk. Gastonia could see a more than 60% annual increase in the number of days with precipitation of 3 inches or greater by midcentury from a 1996-2015 baseline average. 2018 was the wettest year on record in the Piedmont region of North Carolina, receiving 63 inches of rainfall, 17 inches above average. Additionally, the North Carolina Climate Science Report states that it is likely that severe thunderstorms in the Piedmont will increase in frequency. Over the next 25 years, Gastonia could see more frequent and severe precipitation events, leading to pluvial and riverine flooding events. The proposed project will mitigate the increased flooding risk that Gastonia faces. These hazards only increase the threat of erosion along the creek bed, in turn, leading to potential future encroachment upon the sewer infrastructure. In the current condition, there are 3 known risk points for sewer failure .one from an exposed parallel line, and two from existing aerial crossings. However, in the No Action alternative, we can safely assume the erosion of the stream will continue, and more risk points from exposure of the parallel lines on either side of the stream will be created. Looking at stream flow events, it is a conservative assumption that there will be at least 4-5 bankfull/high flow events that will pose the greatest risk to the exposed lines every 10 years. To combat this threat, the design approach recommends a combination of floodplain benching, bio-engineered structural enhancements, bank regrading, natural fiber</p>

matting for reinforcement, and intensive revegetation with appropriate native riparian plant species. This nature-based approach will achieve greater stability along the creek banks and will reduce the severity of future flood events and resulting erosion.

Additional comments (optional)

The City of Gastonia is an approved inspection agency through the North Carolina Department of Insurance, State Fire Marshalls Office. All code officials are certified through the North Carolina Code Officials Qualification Board. The building standards are presented by the North Carolina Building Code Council and are ultimately approved by the North Carolina General Assembly for adoption by local jurisdictions. The most recent adopted codes for North Carolina are the 2018 NC Building Codes which includes: building (residential and commercial), plumbing, mechanical, energy, gas, rehab and fire codes; and a reference document for Accessibility Code (ANSI A117.1 2003 Version); 2017 National Electric Code. Gastonia recently implemented a new online new permitting system, CityView. The CityView Portal gives residents and contractors 24/7 convenience when applying for permits, making payments, viewing review status of applications and scheduling inspections. It has many functionalities with the customer in mind. The City has a BCEGS score, obtained in 2012, of 3. This score demonstrates that the City has effective building codes that are well enforced; staff education and certifications are at very high levels; staffing levels are exceptional based on workloads; and the City has adopted a model code within the last five years. The City is planning to update their BCEGS rating within the next year.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
01_Risk_Reduction_Attachment_Gastonia_Duharts.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	
Attachment 6 - NC Climate Science Report.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	
02_Future_Conditions_Attachment_Gastonia_Duharts.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	
03_Implementation_Attachment_Gastonia_Duharts.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	
04_Impacted_Pop_Attachment_Gastonia_Duharts.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	
05_Outreach_Activities_Attachment_Gastonia_Duharts.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	
06_Leveraging_Partners_Attachment_Gastonia_Duharts.pdf	01/07/2022	madeleine.lane@icf.com	Evaluation Attachments	<i>No description given.</i>	

Comments & attachments

- ▶ **Community** **0 comment, 0 attachments**
- ▶ **Mitigation plan** **0 comment, 1 attachments**
- ▶ **Scope of work** **0 comment, 10 attachments**

▶ Budget	1 comment, 2 attachments
▶ Cost-effectiveness	1 comment, 2 attachments
▶ Evaluation	1 comment, 7 attachments
▶ Environmental/Historic Preservation (EHP)	0 comment, 20 attachments
▶ Location	0 comment, 7 attachments

Introduction

Project location

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

The site of this mitigation activity is Duharts Creek, Gastonia, North Carolina, 28054 at 35.25173 latitude and -81.09916 longitude. The creek is located parallel to Wilkinson Boulevard in Gastonia, and the project location runs through both a residential and commercial area. The City of Gastonia proposes to stabilize and rehabilitate approximately 8,000 linear feet of Duharts Creek from Redbud Drive to US 74/29. This property is owned by the City of Gastonia. Duharts Creek is a regulatory floodway. Regarding the stream restoration and bank stabilization measures, the design approach will emphasize nature-based solutions and materials and recommend a combination of floodplain benching, bank regrading, bio-engineered structural enhancements, natural fiber matting surface stabilization, and intensive revegetation with the appropriate native riparian plant species. Trees falling and impacting aerial sewer crossings are a major concern. Part of the nature-based solutions would be to remove any high-risk trees and replant new trees as part of the stream stabilization measures. In addition to the stabilization, some realignment of existing 18" and 8" gravity sewer lines and a 24" force main will be performed to move them further away from the creek and reduce the risk of impacts due to flooding. Refer to the Location Map and Preliminary Engineering Report for more information.

Latitude **35.251730**
 Longitude **-081.099160**

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 4 - Project Location Map.pdf	01/07/2022	madeleine.lane@icf.com	Project Location Attachments	<i>No description given.</i>	
Attachment 3 - Preliminary Engineering Report.pdf	01/07/2022	madeleine.lane@icf.com	Project Location Attachments	Technical memo outlining project overview, alternatives considered, concept drawings, relevant maps and associated schedule and budget.	

Project benefiting area

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

The City of Gastonia's 2019 total population was 75,887. The total estimated population impacted by the loss of sewer or electric service should infrastructure failure occur within the Duharts Creek service area is roughly 25,839 people, or 34% of the City's population. Additionally, in accordance with the Justice40 initiative, the City of Gastonia has identified that disadvantaged communities will benefit from this project. The attached map depicts the Centers for Disease Control and Prevention's Social Vulnerability Index (SVI) for the census tracts within the Duharts Creek project area. SVI ranks the tracts on 15 social factors, including unemployment, minority status, and disability and further groups them into four related themes. The CDC SVI ranking variables for the four themes are for the Socioeconomic Status, Household Composition & Disability, Minority Status & Language, and Housing Type & Transportation. These indicators help support analysis on the relative vulnerability of a given census tract and helps identify communities that will need continued support to recover following an emergency or natural disaster. The attached map shows the overall ranking (RPL_Themes) which is a percentile ranking that represents the proportion of tracts that are equal to or lower than a tract of interest in terms of social vulnerability. For example, a CDC/ATSDR SVI ranking of 0.85 signifies that 85% of tracts in the state or nation are less vulnerable than the tract of interest and that 15% of tracts in the state or nation are more vulnerable. Utilizing SVI indicators, census tract 321 within the Duharts Creek project area appears especially vulnerable, with a SVI of .98 and a poverty rate of 26.2%; see attached SVI Map for further details.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Attachment 28 - Percent Minority Map.pdf	01/07/2022	madeleine.lane@icf.com	Location project benefiting area Attachments	Map demonstrating the percent minority of residents living within the service area of the proposed project.	
Attachment 27 - Percent Poverty Map.pdf	01/07/2022	madeleine.lane@icf.com	Location project benefiting area Attachments	<i>No description given.</i>	
Attachment 29 - Overall SVI Percentile Map.pdf	01/07/2022	madeleine.lane@icf.com	Location project benefiting area Attachments	Map demonstrating the overall SVI percentile of residents living within the service area of the proposed project.	

Project impact area

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

The design approach to mitigate flooding, bank erosion, and sewer line exposure includes. stabilize and rehabilitate approximately 8,000 linear feet of Duharts Creek from Redbud Drive to US 74/29 (see attached Project Location Map). In addition to the stabilization, some realignment of existing 18" and 8" gravity sewer lines and a 24" force main will be performed to move them further away from the creek and reduce the risk of impacts due to flooding. The City of Gastonia and the design team pursued a river stabilization design that will emphasize nature-based solutions and materials and recommend a combination of floodplain benching, bank regrading, bio-engineered

structural enhancements, natural fiber matting surface stabilization, and intensive revegetation with the appropriate native riparian plant species. Trees falling and impacting aerial sewer crossings are a major concern. Part of the nature-based solutions would be to remove any high-risk trees and replant new trees as part of the stream stabilization measures.

Attachments

Filename	Date uploaded	Uploaded by	Label	Description	Action
Preliminary Engineering Report Project Information Summary Duharts Creek 11.23.2021.pdf	11/23/2021	madeleine.lane@icf.com	Location project impact area Attachments	Technical memo outlining project overview, alternatives considered, concept drawings, relevant maps and associated schedule and budget.	
Duharts Creek FEMA Project Location Map.pdf	11/23/2021	madeleine.lane@icf.com	Location project impact area Attachments	Map demonstrating the proposed project location.	

Project site inventory

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

Please describe how the propert(ies) will be selected upon subgrant approval. (Example: Saferoom Lottery Project, Fix the Bricks Project)

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

Enter the location of the property/structure.

List of location(s) (1 location)

Status	Location ID	Address	Inventory type	Structure type	Mitigation action
✓	25602	Duharts Creek , Gastonia, NC, Gaston, 28054	Infrastructure/Utility/other	Wastewater	Other retrofit

Assurances and certifications

OMB number: 4040-0009, Expiration date: 02/28/2022 [View burden statement](#)

SF-424D: Assurances - Construction Programs

Content:

OMB Number: 4040-0009
 Expiration Date: 02/28/2022

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.

