

Appendix A: Application Form for Grant and Loan Requests for All Categories

Virginia Department of Conservation and Recreation
Virginia Community Flood Preparedness Fund Grant Program

Name of Local Government:

Category Being Applied for (check one):

☐ Capacity Building/Planning

☒ Project

☐ Study

NFIP/DCR Community Identification Number (CID) 510310

Name of Authorized Official and Title: Dr. Lydia Pettis Patton, Interim City Manager

Signature of Authorized Official: _____

Mailing Address (1): 215 Church Ave SW.

Mailing Address (2): Suite 364

City: Roanoke **State:** VA **Zip:** 24011

Telephone Number: (540) 853-2333 **Cell Phone Number:** ()

Email Address: lydia.patton@roanokeva.gov

Contact and Title (If different from authorized official): Curry McWilliams, Civil Engineer I

Mailing Address (1): 1802 Courtland Rd. NE

Mailing Address (2): _____

City: Roanoke **State:** VA **Zip:** 24012

Telephone Number: (540) 853-5921 **Cell Phone Number:** (540) 240-7296

Email Address: curry.mcwilliams@roanokeva.gov

Is the proposal in this application intended to benefit a low-income geographic area as defined in the Part 1 Definitions? Yes X No _____

Categories (select applicable activities that will be included in the project and used for scoring criterion):

Capacity Building and Planning Grants

- ☐ Floodplain Staff Capacity.
- ☐ Resilience Plan Development
 - ☐ Revisions to existing resilience plans and integration of comprehensive and hazard mitigation plans.
 - ☐ Resource assessments, planning, strategies, and development.
 - ☐ Policy management and/or development.
 - ☐ Stakeholder engagement and strategies.
- ☐ Other: _____

Study Grants (Check All that Apply)

- ☐ Revising other land use ordinances to incorporate flood protection and mitigation goals, standards, and practices.

- ☐ Conducting hydrologic and hydraulic (H&H) studies of floodplains. *Changes to the base flood, as demonstrated by the H&H must be submitted to FEMA within 6 months of the data becoming available.*
- ☐ Studies and Data Collection of Statewide and Regional Significance.
- ☐ Revisions to existing resilience plans and modifications to existing comprehensive and hazard.
- ☐ Other relevant flood prevention and protection project or study.
- ☐ Pluvial studies.
- ☐ Studies to aid in updating floodplain ordinances to maintain compliance with the NFIP, or to incorporate higher standards that may reduce the risk of flood damage. This must include establishing processes for implementing the ordinance, including but not limited to, permitting, record retention, violations, and variances. This may include revising a floodplain ordinance when the community is getting new Flood Insurance Rate Maps (FIRMs), updating a floodplain ordinance to include floodplain setbacks, freeboard, or other higher standards, RiskMAP public noticing requirements, or correcting issues identified in a Corrective Action Plan.

Project Grants and Loans (Check All that Apply – Hybrid Solutions will include items from both the “Nature-Based” and “Other” categories)

Nature-based solutions

- ☒ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development, and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.
- ☐ Wetland restoration.
- ☒ Floodplain restoration.
- ☐ Construction of swales and settling ponds.

- ☐ Living shorelines and vegetated buffers.
- ☐ Permanent conservation of undeveloped lands identified as having flood resilience value by *ConserveVirginia* Floodplain and Flooding Resilience layer or a similar data driven analytic tool, or the acquisition of developed land for future conservation.
- ☐ Dam removal.
- ☐ Stream bank restoration or stabilization.
- ☒ Restoration of floodplains to natural and beneficial function.

Other Projects

- ☐ Developing flood warning and response systems, which may include gauge installation, to notify residents of potential emergency flooding events.
- ☐ Dam restoration.
- ☐ Beneficial reuse of dredge materials for flood mitigation purposes
- ☐ Removal or relocation of structures from flood-prone areas where the land will not be returned to open space.
- ☐ Structural floodwalls, levees, berms, flood gates, structural conveyances.
- ☐ Storm water system upgrades.
- ☐ Medium and large-scale Low Impact Development (LID) in urban areas.
- ☐ Acquisition of property (or interests therein) and/or structures for purposes of allowing floodwater inundation, strategic retreat of existing land uses from areas vulnerable to flooding; the conservation or enhancement of natural flood resilience resources; or acquisition of structures, provided the acquired property will be protected in perpetuity from further development, and where the flood mitigation benefits will **not be** achieved as a part of the same project as the property acquisition.
- ☐ Other project identified in a DCR-approved Resilience Plan.

Location of Project or Activity (Include Maps): Roanoke, VA

NFIP Community Identification Number (CID#): 510310

Is Project Located in an NFIP Participating Community? ☒ Yes ☐ No

Is Project Located in a Special Flood Hazard Area? ☒ Yes ☐ No

Flood Zone(s) (If Applicable): Floodway and SFHA Zone AE

Flood Insurance Rate Map Number(s) (If Applicable): 51161C0168G

Total Cost of Project: \$4,526,000.00

Total Amount Requested \$4,299,700.00

Amount Requested as Grant \$4,299,700.00

Amount Requested as Project Loan (Long-Term, not including short-term loans for up-front costs)
\$0

RVRF Loan Amount Requested as Project Match (Not including short-term loans for up-front costs)
\$0

Amount Requested as Short-Term loan for Up-Front Costs (not to exceed 20% of amount requested as Grant) \$0

For projects, planning, capacity building, and studies in low-income geographic areas: Are you requesting that match be waived? ☐ Yes ☒ No

For informational purposes only: Supplemental information for loan requests may include but are not limited to the following. This information will be collected AFTER a CFPF award is made, prior to the signing of a grant agreement.

- General Obligation
- Lease, Revenue
- Special Fund Revenue
- Moral obligation from other government entity)
- Desired loan term
- Since the date of your latest financial statements, any new debt
- Pending or potential litigation by or against the applicant
- Five years of current audited financial statements (FY18-22) or refer to website if posted
- Capital Improvement Plan
- Financial Policies
- List of the ten largest employers in the jurisdiction.
- List of the ten largest taxpayers in the jurisdiction

All loan requests are subject to credit review and approval by Virginia Resources Authority.

Indian Village: Acquisition, Demolition, & Floodplain Restoration

*Virginia Department of Conservation and Recreation (DCR) Community Flood Preparedness Fund (CFPF)
Project Grant Application*

CID510130_RoanokeCity_CFPF-2

Introduction

In this grant proposal, the City of Roanoke, Virginia (City) requests funding from the Department of Conservation and Recreation's (DCR's) Community Flood Preparedness Fund (CFPF) in support of a proposed acquisition, demolition and floodplain restoration project on Tinker Creek, a flood prone stream in Roanoke City, Virginia. The scope of this project includes the acquisition of one property and demolition of the three existing structures, followed by the restoration of the floodplain using natural channel design principles, excavation of a floodplain bench, removal of all impervious surface, and replanting the entire site with the appropriate native grasses, trees and shrubs (see Figure 1, next page). This project will provide significant flood risk reduction benefits to the surrounding area and will improve water quality. This project is submitted as a nature-based solution, and as such the City is requesting 95% DCR CFPF funding for the full delivery project cost of \$4,526,000.00. This project will be managed by the City's Stormwater Utility, and we anticipate that this project will be a significant contribution to our goal of transforming the Roanoke River and its tributaries into community assets, focal points, and sources of pride for those that live, work, learn and play in its watershed.

This proposal is organized using the same hierarchy as DCR's Round 5 CFPF grant manual for ease of review. The content in this document mirrors that in the WebGrants Portal, but allows for more robust narrative, tables, figures and appendices.

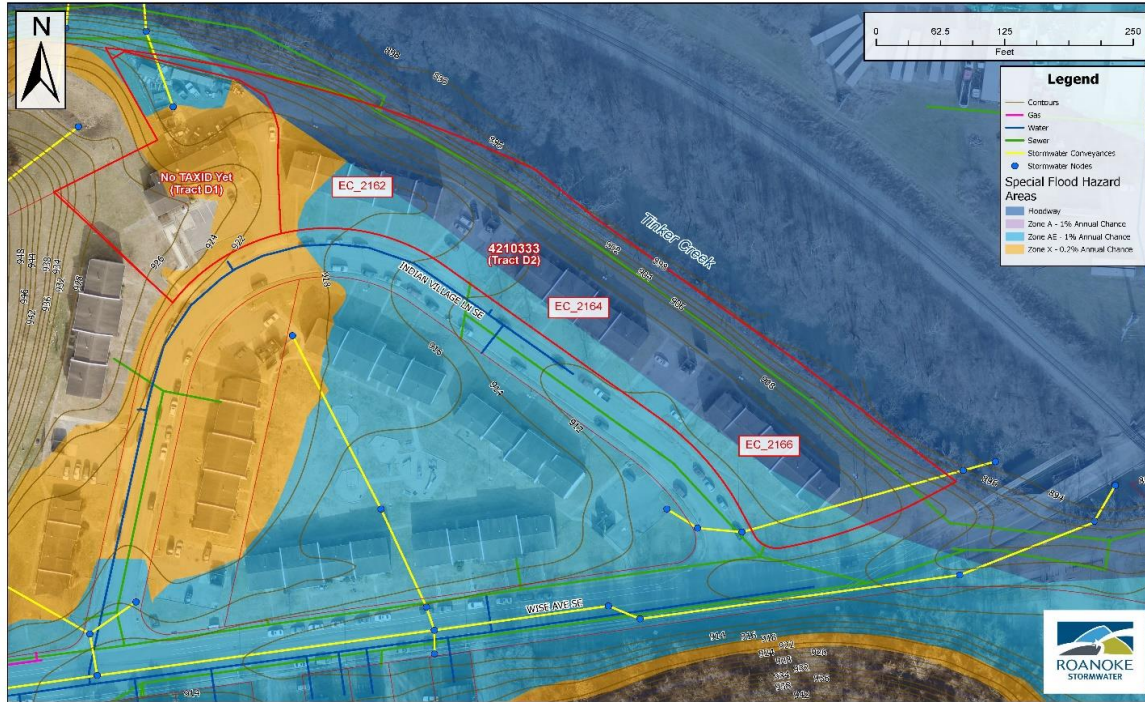


Figure 1 – Map of the proposed project area in red outline with regulatory Floodway shown in dark blue and Zone AE 1% Special Flood Hazard Area in light blue.

Scope of Work Narrative

The narrative provided in this section provides the information requested in Part V. Section B. “Scope of Work Narrative” in the Round 5 CFPF Manual.

General Requirements/Project Information

A. Specific problem being solved (not just that flooding exists or may occur in the future).

The project area falls within Tinker Creek’s (a larger riverine system) Floodway and Special Flood Hazard Area and is subject to riverine flooding. The three structures located on the property are all affordable housing apartment buildings for low income residents owned and operated by the Roanoke Redevelopment and Housing Authority. There is significant risk and probable damage during the 50 year and greater flood events. Flooding also impacts the transportation corridors in the area, including the Wise Ave low water bridge and Tinker Creek pedestrian greenway which convey 6,400 vehicles and hundreds of pedestrians per day across the City, respectively. Additionally, the purchase of the three affordable housing buildings would fund Roanoke Redevelopment and Housing Authority’s future development of a larger affordable housing complex for low income residents within the city, and outside the SFHA. This project would mitigate flood risk for one of the City’s more vulnerable and at-risk community by removing flood prone, low income housing structures.

B. Factors which contribute to the identified problem.

Tinker Creek is a highly flood prone urban waterway that drains from mountains to the north of the City of Roanoke (“City”) in both Roanoke and Botetourt Counties, through highly developed land within City limits, paralleling several main roads, crossing US 460, and finally flowing into the Roanoke River one mile downstream of the proposed project area. The proposed project includes

the acquisition and demolition of three high flood risk structures along Tinker Creek, the establishment of a floodplain bench, and the restoration of the floodplain with appropriate and functional riparian vegetation (Figure 1).

C. Why the activity is needed either locally or regionally.

This project is needed for its benefits, which are realized in terms of facilitating the relocation of housing for at risk residents to newer, safer housing, property damages avoided, reduction of traffic impacts, and the improved environmental functions of the restored floodplain.

D. How the activity decreases the risk to public safety through flood risk reduction.

The proposed acquisition and demolition component of this effort would completely mitigate the local risk to the property owner (estimated as \$11M± in structure damage and business impacts), it protects the at risk residents from a potentially devastating flood disaster, and the removal of these flow impedances and excavation of floodplain bench would reduce risk to the surrounding businesses and critical traffic corridor.

E. How the activity protects or conserves natural resources.

The final state of the project site will be a restored floodplain and riparian area that ties into other City efforts to create natural spaces and floodplains.

F. Who or what is protected.

This project would protect the 6,400 vehicles and hundreds of Greenway pedestrians that use this busy area every day, in addition to the property owner, the 100+ low income, at risk residents of the 24 apartment and assets of the three buildings will no longer be at risk from the impacts of riverine flooding

G. The safety threats, or environmental concerns related to flood risk.

The primary safety threat is related to the residents of the three apartment buildings that presently occupy the property. Flood Insurance Study (FIS) profiles indicate that these properties begin flooding at, or slightly below, the 50-year recurrence interval flood on Tinker Creek. Flooding also impacts the transportation corridors in the area, including the Wise Ave low water bridge, which conveys 6,400 vehicles per day, and the Tinker Creek Greenway, which conveys hundreds of pedestrians per day.

H. Groups who might directly benefit from this flood risk reduction effort.

The benefits would be realized by the current and future tenants of the 24 affordable housing units for low income residents, owner of the mitigated property, and the thousands of community members that use the low water bridge to reach Downtown Roanoke and the surrounding area. Visitors to the Tinker Creek Greenway and stream corridor will also be able to enjoy the passive recreation state of the site.

I. What would happen (or not happen) if the applicant does not receive funding.

If this proposed project were not funded, the risk would remain as-is unless mitigation funding could be secured from another program. Lack of flood mitigation funding would limit the options the Housing Authority has for securing fair and equitable funds from the purchase of these three floodway structures. The structures and the low income residents would remain in their current state.

J. Alternatives analysis of the viability of the project, how selected project reduces risk to populations at risk of flooding. Provide examples of current or previous related projects, data, outcomes etc. that justify the approach chosen. Include how long and how much protection to be achieved.

The proposed project area is located on a property currently owned by the Roanoke Redevelopment and Housing Authority (RRHA) and is focused on three high flood risk residential apartment buildings including 24 affordable housing units total, situated along Tinker Creek. RRHA's master plan includes the sale of these three floodprone structures to fund the development of 86 affordable housing units outside of the Special Flood Hazard Area. The City of Roanoke has a need for more affordable housing as a locality that is limited in both spatial and economic growth. All three structures in the proposed project area fall in the regulatory floodway and are subject to riverine flooding from Tinker Creek (Figure 1). Flood Insurance Study (FIS) profiles indicate that these properties begin flooding at, or slightly below, the 50-year recurrence interval flood on Tinker Creek. Being Floodway structures, removal of the risk is the only feasible option to mitigate. Elevation of the three multi-unit apartments is not economically viable nor does it align with the City's goals of long term resiliency through preservation of floodway. Flooding also impacts the transportation corridors in the area, including the Wise Ave low water bridge, which conveys thousands of vehicles per day, and the Tinker Creek Greenway, which conveys hundreds of pedestrians per day. The proposed acquisition and demolition component of this project would completely mitigate the local risk to the property owner (estimated as \$11M± in structure damage), and the removal of these flow impedances and excavation of the floodplain bench would reduce risk to the surrounding residential area and critical traffic corridors (Figure 2, next page). The benefits of this proposed project would include property damages avoided, reduction of traffic impacts, improved safety to vehicular and pedestrian traffic, and the improved environmental functions of the restored floodplain. The benefits would be realized by the owner of the mitigated property, and the thousands of community members that use the low water bridge to reach Downtown Roanoke and the surrounding area. Visitors to the Tinker Creek Greenway and stream corridor will also be able to enjoy the passive recreation state of the site.

The City has previously used mitigation and floodplain restoration projects to great effect, a great example being the [Roanoke River Flood Reduction Project](#), which removed \$5.1M of high flood risk structures along the Roanoke River and established 6.2 miles of floodplain benches. Similar projects have been completed on smaller tributaries, amounting to 28 acres of conserved floodplain land to date. Along perennial waterways, other types of mitigation strategies are not technically or economically feasible, though acquisition/demolition/restoration projects have demonstrated a favorable return-on-investment as they do not generate significant maintenance obligations and can be utilized indefinitely.

The proposed mitigation property, and the surrounding area, are subject to such a high level of flood risk, it would not be feasible to provide the same level of risk reduction using an alternate strategy because: (1) the volume of detention needed would not be economically feasible; (2) increasing downstream conveyance would be possible but would leave significant residual risk; and (3) floodproofing would need to be installed 3 – 7 ft. above existing grade according to the City's floodplain ordinance. If this proposed project were not funded through DCR's CFPF, the flood risk would remain as-is, unless mitigation funding could be secured from another program.⁴

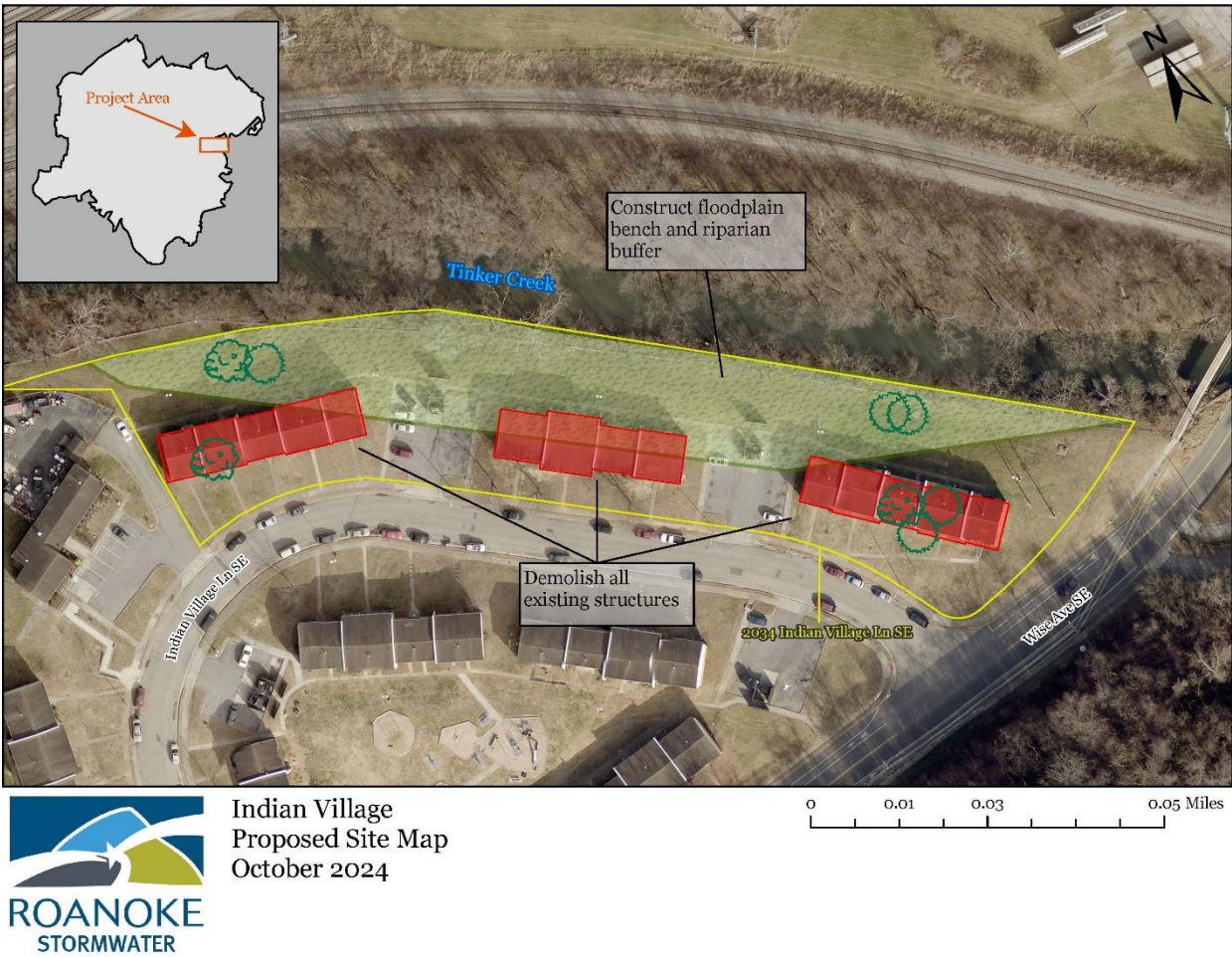


Figure 2 – Site map showing proposed demolition of all existing structures and grading of floodplain bench and riparian buffer.

Goals and Objectives

This project has three objectives to be achieved within the three-year period of performance:

1. Eliminate flood risk to the property by facilitating the relocation of the current residents to a newer and safer location, and through the demolition of the three existing structures.
2. Reduce flood risk to surrounding floodprone buildings, roadways, and greenways by removing impedances to flow (buildings) and opening the floodplain.
3. Improve water quality by removing impervious cover and reducing volume of runoff.

Work Plan

Major Activities, Tasks, Responsible Parties, Timeframes, Deliverables:

All major activities/tasks, responsible parties, timeframes and deliverables are presented in Table 1. In general, the City's Stormwater Utility will implement the work in five main tasks. Contracted survey, engineering/design, asbestos abatement, demolition and earthwork/landscaping services will support the project.

Table 1 – Project work plan with responsible party, timeframe and deliverables. SWU = City Stormwater Utility.

Major Task	Responsible Party	Timeframe	Deliverables
Acquire Property	City + RRHA	Year 1	Land Title, Executed Sales Agreement
Survey/Engineering	City	Year 1	Demolition plans, design drawings for restoration
Abate Asbestos	City + Contractor	Year 2	Executed Final Clearance Report
Demolish Structures	City + Contractor	Year 2	Clear site, Signed Final Acceptance
Grade Floodplain Bench, Plant Vegetation	City + Contractor	Year 3	Final Acceptance

A. Partners

The RRHA's master plan includes the sale of the three, 8-unit, flood prone structures to fund the development of 86 affordable housing units outside the Special Flood Hazard Area. The RRHA and their tenants are the primary stakeholder in the acquisition, demolition, and floodplain restoration of the project area. The RRHA and Stormwater will be collaborating on future public outreach to the tenants of the remaining complex, to ensure community input is incorporated into the final project concept.

The floodplain restoration and land cover conversion will complement the existing and future Tinker Creek Greenway in this corridor. As such, the proposed project has significant support from City Department of Parks and Recreation and the Engineering Division of Public Works that will design the future greenway.

B. Maintenance Plan

The City's Stormwater Utility will be responsible for long-term maintenance of the site. The Stormwater Utility has experience establishing and maintaining stream restoration and floodplain benching sites that require more careful upkeep of the highly visible perimeter while allowing native planting areas to mature – one example of this type of maintenance is at the stream restoration project at Washington Park ([see project description here](#)).

The main elements of the maintenance plan for the proposed work include:

- Routine maintenance along sidewalks, streetscapes, entrances.
- Periodic invasive species management.

- Selective mowing and string-trimming.
- Annual bush-hogging where prescribed
- Reseeding/replanting if needed.
- Quarterly, then annual inspections.

Based on similar stream/floodplain restoration projects performed elsewhere in the City, it is anticipated that the maintenance load will be largest in the first year after the project is completed but will diminish over time as the ecosystem becomes fully established.

Evaluation

A. Indicators of Success

The most immediate indicator of success for this project is the successful acquisition and demolition of the flood prone property and the three existing apartment buildings, demonstrated support for the RRHA's future development of 86 affordable housing units for low income residents, and the successful completion of the floodplain bench with riparian vegetation. The second longer term indicator is the successful establishment of vegetation on the site in keeping with the community input survey and consistent with the proposed maintenance plan. In this case, "success" means that the work proposed is completed within the period of performance and budget.

B. Data that will be collected and how the data will be used to measure success.

During flood events of significance, the Stormwater Utility collects data on rainfall intensity and return period, stream depths, flooding photographs, surveyed flood extents and impacts, drone photos, etc. and assimilates these data into a post-event report. During these events, staff collect information to identify issues that need to be addressed and to evaluate the performance of completed projects. As such, the proposed project will be included in this post-event review to assure proper function of the site with respect to design objectives.

C. How was cost effectiveness evaluated and measured against the expected outcomes?

Cost-effectiveness for this project was evaluated by estimating the reduction in flood damages delivered by the proposed work compared to the total cost to deliver the work using FEMA's Benefit Cost Analysis (BCA) Toolkit v.6.0 (see attachment in "Supporting Documentation" tab). In general, the BCA toolkit estimates project benefits based on modeled flood depths/damages during a range of return period floods; project costs are based on the attached budget narrative.

The overall benefit to cost ratio for this proposed project is 2.29:1 indicating a highly favorable project. Actual flood risk reduction will be observed over time as the property floods under the proposed condition without causing damage to the site. Success for this project as defined by the previously mentioned community survey is in alignment with the proposed finish site condition.

D. What products, services, meetings, outreach efforts etc. will be conducted and how will success be measured?

Outreach efforts will be conducted with the coordination of RRHA residents as noted above, broader neighborhood meetings, and utilizing ZenCities/Plan Roanoke webpages.

E. Project progress monitoring plan to ensure project meets the requirements of the agreement and is delivered on time. Outline how delays or other findings may be used to modify or improve outcomes/deliverables.

Cost-effectiveness for this project was evaluated using FEMA's Benefit Cost Analysis (BCA) Toolkit v.6.0 (see Supporting Documentation below). The overall benefit to cost ratio for this proposed project is 2.29:1, indicating a highly favorable project. The principal, and most immediate, indicator of success for this project is the successful acquisition and demolition of the three flood prone structures and the successful completion of the floodplain bench with riparian vegetation. Actual flood risk reduction will be observed over time as the property floods under the proposed condition without causing damage to the site. Success for this project as defined by the previously mentioned community survey is in alignment with the proposed finished site condition.

Progress Monitoring

Upon award, the City will develop a Project Management Plan that outlines roles and responsibilities, provides a project schedule based on award date and any additional available information, and defines any potential schedule delays. The project will be managed by a Project Engineer who is responsible for grant compliance and managing schedule/budget risk. The City support team will include a Senior Engineer, Environmental Specialist, and Financial Administrator who will assure on-time, on-budget delivery. The City will also utilize an external contractor for environmental assessment, final site design/demo plan, abatement and demolition, grading and planting to be managed by the City Project Engineer.

Project Information

Name of Local Government: City of Roanoke

NFIP/DCR Community Identification Number (CID): 510130

Authorized Individual: Dr. Lydia Pettis Patton

Mailing Address: 215 Church Ave SW., Ste. 364, Roanoke, Virginia, 24011

Telephone Number: 540-853-2333

Cell Phone Number: 540-853-2333

Email: lydia.patton@roanokeva.gov

Contact Person:

Name: Curry McWilliams

Address: 1802 Courtland Rd NW., Roanoke, Virginia, 24012

Telephone Number: 540-853-5921

Cell Phone Number: 540-240-7296

Email Address: curry.mcwilliams@roanokeva.gov

Project Description:

Acquisition, abatement, and demolition of three multi-family, floodway/SFHA structures. The 2.1-acre lot will be designated open space, a floodplain bench will be graded along the creek, and a riparian buffer will be created to enhance this nature-based solution to flood mitigation. The project area will serve as recreational open space for the adjacent community and remaining multi-family units.

Benefit a low-income geographic area: Yes

Census Block(s) Where Project will Occur: 51770003002603

Is Project Located in an NFIP Participating Community? Yes

Is Project Located in a Special Flood Hazard Area? Yes

Flood Zone(s) (if applicable): Floodway and SFHA Zone AE

Flood Insurance Rate Map Number(s) (if applicable): 51161C0168G

Eligibility

Is the applicant a local government (including counties, cities, towns, municipal corporations, authorities, districts, commissions, or political subdivisions created by the General Assembly or pursuant to the Constitution or laws of the Commonwealth, or any combination of these)?: **Yes**

Does the local government have an approved resilience plan and has provided a copy or link to the plan with this application?: **Yes**

If the applicant is not a town, city, or county, are letters of support from all affected local governments included in this application?: **N/A**

Has this or any portion of this project been included in any application or program previously funded by the Department?: **No**

Has the applicant provided evidence of an ability to provide the required matching funds?: **Yes**

Supporting Information

a. Population

The City of Roanoke had an estimated population of 97,847 as of the July 2022 Census. While the direct benefits of this project will be realized by the property owners and owners/tenants in the adjacent area, benefits of the project would also be realized by the thousands of daily vehicles using the surrounding roadways and hundreds of daily pedestrians using the adjacent Greenway.

The median household income of City of Roanoke is \$48,476, while the median household income of Virginia is \$80,615 (2020 U.S. Census). The City's median income is 60.1% of the statewide median, designating the City as a "low-income geographic area" as per the DCR definition. The median household income for the part of the City this project falls is <\$25,000.

b. Historical Flooding Data and Hydrologic Studies

The property and all three structures are both located in ZONE AE FLOODWAY according to a 2007 Flood Insurance Study. Estimated flood depths for four recurrence intervals are shown below (Table 2).

Table 2 – Flood depth information from Elevation Certificates and Flood Profiles from 2007 Flood Insurance Study.

	Elevation Certificate 2162 Building 1	Elevation Certificate 2164 Building 2	Elevation Certificate 2166 Building 3
Elevation Certificate Data			
Vertical Datum	NGVD29	NGVD29	NGVD29
Base Flood Elevation (BFE, ft.)	919	919	919
Lowest Adjacent Grade (LAG, ft.)	918.4	914.1	914
LAG adjusted to NAVD88	917.75	913.45	913.35
Flood Information Study (2007) Data			
Vertical Datum	NAVD88	NAVD88	NAVD88
Cross Section	I-J	I-J	I-J
Streambed Elevation (ft)	892.5	892.5	892.5
Water Surface Elevations (ft)			
10% / 10 Year	910.1	910	910
2% / 50 Year	915.2	915.1	915
1% / 100 Year	919	919	919
0.2% / 500 Year	924	924	924
Discharges (CFS)			
10% / 10 Year	7,800	7,800	7,800
2% / 50 Year	15,800	15,800	15,800
1% / 100 Year	21,200	21,200	21,200
0.2% / 500 Year	42,000	42,000	42,000
Estimated Flood Depths (ft)			
10% / 10 Year	-	-	-
2% / 50 Year	-	1.65	1.65
1% / 100 Year	1.25	5.55	5.65

c. No Adverse Impacts

The removal of structures and fill from the floodplain will result in a lower impedance to flow and will therefore reduce water surface elevations. While the hydraulic analysis to demonstrate these benefits has not yet been performed, this will be completed by a licensed PE/CFM during the development of demolition and grading plans for the site.

d. Ability to Provide Share of Cost

The total proposed project cost is outlined Appendix B. As the proposed project incorporates nature-based solutions and as the City is a low-income community, it is anticipated that the match for this project would be 95% DCR/5% City. This would require a commitment of \$226,300.00 by the City which would be appropriated out of the Stormwater Utility's Capital Improvement Program. The Stormwater Utility currently has adequate cash on hand to fund the project. If needed, the Utility's annual capital budget is supported by \$3 million in annual bond issuances and at least \$500,000 in cash contributions. This project represents a small portion of the Utility's capital program.

e. Benefit-Cost Analysis (BCA)

The City has completed a FEMA BCA to assure high return-on-investment. The completed printout from FEMA's BCA Toolkit v6.0 is attached. The overall benefit to cost ratio of the project is 2.29:1. Notes to the development of the BCA are as follows:

- The BCA was performed for each of the three structures separately, and then combined into one overall BCA. Costs were divided based on the area proportion of each building.
- Flood depths were estimated based on the 2007 Flood Insurance Study profiles.
- Ecosystem services benefits were estimated based on a 100% riparian configuration and FEMA's standard ecosystem services benefits.

f. Administration of Local Floodplain Management Regulations

The City's Floodplain Regulations are included in the City's Zoning Ordinance – City Code Sec. 36.2-333 – Floodplain Overlay District (F). A direct link to the ordinance is provided below: https://library.municode.com/va/roanoke/codes/code_of_ordinances?nodeId=CORO1979_CH36.2ZO_ART3RESPZODI_DIV5OVDI_S36.2-333FLOVDIF.

g. Other Information to Establish Project Priority

Repetitive Loss and/or Severe Repetitive Loss Properties

The project area does not fall into one of the City's Repetitive Loss Areas and does not contain repetitive loss or severe repetitive loss structures.

Residential and/or Commercial Structures

The property and the three structures located within the project area are currently owned and operated by the RRHA. These three structures accommodate 24 affordable housing units. The RRHA has evaluated the economic and social value of relocating tenants and vacating the three apartment buildings as part of a master plan to build 86 new affordable housing units within the City. We expect to see primary benefits to the project area through the relocation of all low income, at risk tenants occupying the 24 units, and the removal of the three floodprone structures immediately at risk of flooding and reducing flow impedance within the floodplain.

Critical Facilities

While the project site does not contain any critical facilities, the adjacent roadway, Wise Ave. SW, is an important corridor for emergency vehicle. Flooding on this roadway represents an impedance to emergency vehicles and any reduction in flood frequency and depths would reduce emergency access risk.

Local Government Floodplain Regulations

Need for Assistance

Financial and Staff Resources

The City's Stormwater Utility has sufficient financial and staff resources to successfully deliver this proposed work, including an annual revenue of nearly \$10M and a robust technical staff including a Stormwater Manager, three senior engineers, one water quality administrator, three junior engineers, one project inspector, two GIS/Asset Management staff and two environmental specialists. The Stormwater Utility also has over 30 front-line operations employees that build and maintain stormwater assets, and the Stormwater Utility collaborates heavily with the City's Planning Building and Development Department, City Engineer's office, and Emergency Managers.

This particular project will be managed by a junior stormwater engineer (EIT, CFM), with the support of a senior engineer (PE), GIS specialist and project inspector. The consulting design and permitting team includes a senior engineer (PE, CFM), a junior engineer (EIT) and a staff scientist. Modeling for floodplain analysis and permitting will be performed by a consultant using HEC-RAS 1-D Steady State modeling, to be reviewed by the City's Floodplain Administrator. All design work will be performed using AutoCAD Civil3D.

Notwithstanding the funding and capabilities of the Stormwater Utility, external funding is imperative because of the backlog of approximately \$150M in neighborhood drainage projects, \$90M in downtown flooding projects and \$150M in water quality projects. External funding is needed to achieve the long-range goals of flood risk mitigation and improved water quality.

Project Area's Social Vulnerability Index Score

Social Vulnerability Index (SVI) Index: 1.6 - Very High Social Vulnerability

This information was obtained using the [Virginia Vulnerability Viewer](#) provided by DCR in the WebGrants Management Portal.

Alternatives

The mitigation property proposed (and the surrounding area) are subject to such a high level of flood risk that it would not be feasible to provide the same measure of risk reduction using an alternate strategy because: (1) the volume of detention needed would not be economically feasible; (2) increasing downstream conveyance would be possible but would leave significant residual risk; and (3) floodproofing would need to be installed to 3-7 ft. above existing grade according to the City's floodplain ordinance. If no action was taken, flood risk would remain as-is as there is no alternative means of mitigating the risk.

Goals and Objectives - Identify and describe the goals and objectives of the project. Include a description of the expected results of the completed project and explain the expected benefits of the project. This may include financial benefits, increased awareness, decreased risk, etc.

This project has three objectives to be achieved within the three-year period of performance:

1. Eliminate flood risk to the subject property by acquiring and demolishing existing structures.
2. Reduce flood risk to surrounding flood prone buildings, roadways and greenways by removing impedances to flow (buildings) and opening floodplain.
3. Improve water quality by removing impervious cover, reducing volume of runoff and restoring a natural floodplain area.

The anticipated results of this project would completely eliminate the flood risk to the subject property and would reduce flood impacts and related to risk to the adjacent transportation assets.

Approach, Milestones, and Deliverables - Outline a plan of action laying out the scope and detail of how the proposed work will be accomplished with a timeline identifying expected completion dates. Determine milestones for the project that will be used to track progress. Explain what deliverables can be expected at each milestone, and what the final project deliverables will be. Identify other project partners.

All major activities/tasks, responsible parties, timeframes and deliverables are presented in Table 1. In general, the City's Stormwater Utility will implement the work in five main tasks. Contracted survey, engineering/design, asbestos abatement, demolition and earthwork/landscaping services will support the project.

Table 3 – Project work plan with responsible party, timeframe and deliverables.

Major Activities/Tasks	Responsible Party	Timeframe	Deliverables
Acquire Properties	City	Year 1	Land Title, Executed Sales Agreement
Survey and Engineering	City and Consultant	Year 1	Plans for demolition and restoration
Abate Asbestos	City + Contractor	Year 2	Executed Final Clearance Report
Demolish Structures + Substructures	City + Contractor	Year 2	Clear site, Signed Final Acceptance
Grade Floodplain Bench, Plant Vegetation	City + Contractor	Year 3	Final Acceptance

The key partner in the restoration of this area from high flood risk structures to passive recreation space is the RRHA. The Housing Authority master plan includes the sale of the three, 8-unit, flood prone structures to fund the development of 86 affordable housing units outside the Special Flood Hazard Area. The RRHA and their tenants are the primary stakeholder in the acquisition, demolition, and floodplain restoration of the project area. The RRHA and Stormwater will be collaborating on future public outreach to the tenants of the remaining complex, to ensure community input is incorporated into the final project concept.

The floodplain restoration and land cover conversion will complement the existing and future Tinker Creek Greenway in this corridor. As such, the proposed project has significant support from City Department of Parks and Recreation and the Engineering Division of Public Works that will design the future greenway.

Relationship to Other Projects

The acquisition, demolition, and ultimately open space preservation of the 2.1 acres of FEMA mapped floodway/SFHA AE, aligns with the City's goals of reducing flood risk within the community. The City has identified structures within the FEMA regulatory floodway as high risk to current and future flooding and has prioritized the removal of these structures as part of the City's long term resilience plan. In addition to this grant proposal, the City has received two FEMA FMA grants for the acquisition and demolition of repetitive loss properties; three FEMA PDM grants for the acquisition, and demolition of a total nine structures all within the regulatory floodway and within designated repetitive loss areas; a Round 4 CFPF grant to perform floodplain restoration at one of the PDM grant sites mentioned; two FEMA Hazard Mitigation Grant Program funds to acquire and demolish 7 floodway structures; and is currently applying for a second DCR CFPF grant for the acquisition, demolition, and floodplain connection of two floodway structures. City projects that remove high flood risk, floodway structures, while performed on a single to multi parcel scale, must be treated as a City-wide effort to reduce the future risk to property and public safety, as outlined in the City's Resilience Plan.

Aligning with the City's goal to reduce flood risk within the community, this project supports the goal of more resilient development by facilitating construction of affordable housing for the existing at risk community, in a safer location; keeping residents in the City and not contributing to the current issue of lack of affordable housing.

In addition, the successful completion of the proposed work would provide the footprint necessary for the City to continue the planned (future) construction of the Tinker Creek Greenway, which currently terminates immediately south of this site. While the Greenway is not a flood benefit *per se*, the major usage of the existing Greenways in the Roanoke Valley have brought significant beneficial attention to the City's waterways, and as such this is an important co-benefit of this proposed project.

Maintenance Plan

As this project uses nature-based solutions, it is anticipated that maintenance at the site will require the following:

- Invasive species identification and removal – once every two months during growing season
- Selective mowing and string trimming – once every two months during growing season
- Bush hogging of meadow areas – once per year
- Reseeding and replanting of site if/when needed.
- Inspect site annually to assure conformance with design

Maintenance will be the responsibility of the City of Roanoke’s Stormwater Division; the Utility presently has the capabilities to maintain this site and continues to grow its green infrastructure maintenance crews.

Criteria - Describe how the project meets each of the applicable scoring criteria contained in Appendix D.

The data in Table 4 clarifies the scoring of this project.

Table 4 – DCR CFPF Grant Criteria from Round 5 Manual

Criteria	Points Available	Proposed Project	Description	Reference
Eligible Projects	30	30	Project acquires high flood risk property	-
Social Vulnerability Index Score	10	10	VFRIS "Very High"	VFRIS
Community scale of benefits	30	30	Project will reduce flood depths in Block 3002, and at the Wise Avenue low water bridge and Tinker Creek Greenway trailhead (Blocks 3004/3000)	Attached "Community Scale Benefits.pdf"
Expected lifespan of project	10	10	Over 20 years; nature-based projects expected to have indefinite useful lives	Scope of Work Narrative
Remedy for NFIP probation/ suspension	5	0	No	-
Proposed project part of a low-income geographic area	10	10	Entire City of Roanoke designated as low income	-
Proposed project implements a Chesapeake Bay TMDL	5	5	Project reduces pollutant loading in accordance with VRRM 4.1 towards local TMDL	"Other Relevant Attachments.pdf" VRRM calcs

TOTAL 100 95

Scoring Criteria for Flood Prevention and Protection

Project Category:

Acquisition of developed property consistent with an overall comprehensive local or regional plan for purposes of allowing inundation, retreat, or acquisition of structures and where the flood mitigation benefits will be achieved as a part of the same project as the property acquisition.

Is the project area socially vulnerable? (based on ADAPT Virginia’s Social Vulnerability Index Score)

- Social Vulnerability Scoring:
 - Very High Social Vulnerability (More than 1.5)

- High Social Vulnerability (1.0 to 1.5)
- Moderate Social Vulnerability (0.0 to 1.0)
- Low Social Vulnerability (-1.0 to 0.0)
- Very Low Social Vulnerability (Less than -1.0)

Very High Social Vulnerability (More than 1.5)

Is the proposed project part of an effort to join or remedy the community's probation or suspension from the NFIP?

No

Is the proposed project in a low-income geographic area as defined below?
"Low-income geographic area" means any locality, or community within a locality, that has a median household income that is not greater than 80 percent of the local median household income, or any area in the Commonwealth designated as a qualified opportunity zone by the U.S. Secretary of the Treasury via his delegation of authority to the Internal Revenue Service. A project of any size within a low-income geographic area will be considered.

Yes

Projects eligible for funding may also reduce nutrient and sediment pollution to local waters and the Chesapeake Bay and assist the Commonwealth in achieving local and/or Chesapeake Bay TMDLs. Does the proposed project include implementation of one or more best management practices with a nitrogen, phosphorus, or sediment reduction efficiency established by the Virginia Department of Environmental Quality or the Chesapeake Bay Program Partnership in support of the Chesapeake Bay TMDL Phase III Watershed Implementation Plan?

Yes

Does this project provide "community scale" benefits?

The acquisition, demolition, and floodplain restoration of the Indian Village site will transform this section of Tinker Creek floodplain to a more natural functioning ecosystem, with passive recreation. The census block the project area falls within, and the immediate three blocks adjacent will see mitigation benefits post project completion. In addition to three floodway structures removed, flood depths will be reduced at this intersection of Wise Ave, a major traffic artery to downtown, and the Tinker Creek Greenway.

Expected Lifespan of Project: Over 20 Years

Long- and Short-Term Loan Budget – Projects – VCFPF

Are you applying for a short term, long term, or no loan as part of your application?

If you are not applying for a loan, select "not applying for loan" and leave all other fields on this screen blank.

Not Applying for Loan

Supporting Documentation

Detailed Map of the project area(s)

[CID510130 RoanokeCity CFPF-2 Project Area](#)

Please find attached a detailed map of the project area created by the Department of Public Works Asset Management Division utilizing data and information from the Stormwater Utility.

FIRMette of the project area(s)

[CID510130 RoanokeCity CFPF-2 FIRMette](#)

Please find attached a FIRMette of the project area. The flood map for the selected area is number 51161C0168G, effective on 9/28/2007. The red pin on the map represents the best approximate project location within the FIRMette.

Historic flood damage data and/or images

[CID510130 RoanokeCity CFPF-2 Historic Flood Data](#)

The City of Roanoke Stormwater Utility does not have historic flood damage data or images from the project area. Please see the Scope of Work and the Benefit Cost Analysis that outlines the flood risk for each floodway structure for additional information.

A link to or a copy of the current floodplain ordinance

[CID510130 RoanokeCity CFPF-2 Floodplain Ordinance](#)

Please find attached a PDF copy of the City of Roanoke Ordinance: Sec. 36.2-333. - Floodplain Overlay District (F). You can view the entirety of the City of Roanoke Ordinance at https://library.municode.com/va/roanoke/codes/code_of_ordinances?nodeId=11474.

A link to or a copy of the current hazard mitigation plan

[CID510130 RoanokeCity CFPF-2 HMP](#)

Please find attached a PDF copy of the Roanoke Valley-Alleghany Regional Hazard Mitigation Plan (HMP) updated as of 2019. This HMP plan incorporates the City of Roanoke as well as surrounding municipalities.

A link to or a copy of the current comprehensive plan

[CID510130 RoanokeCity CFPF-2 Comprehensive Plan](#)

Please find attached the City of Roanoke Comprehensive Plan, otherwise designated as "City Plan 2040," **updated December 21, 2020**.

Social vulnerability index score(s) for the project area

[CID510130_RoanokeCity_CFPF-2 SVI](#)

Please find attached a map displaying the Social Vulnerability Index of the project layer. The map was created using DCR's VFRIS - Virginia Flood Risk Information System and the Social Vulnerability Block Groups 2020.

Authorization to request funding from the Fund from governing body or chief executive of the local government

[CID510130_RoanokeCity_CFPF-2 Authorization](#)

Please find attached the authorization to request funding from the Fund from the Council of the City of Roanoke.

Resilience Plan

[CID510130_RoanokeCity_CFPF-2 Resilience Plan](#)

Please find attached a PDF copy of the City of Roanoke Resilience Plan published September 25, 2023. The adoption and implementation of the resilience principles and the specific project proposals illustrated in this plan will further support the City Plan 2040 vision of a strong, livable, economically resilient community that exists in harmony with nature while ensuring that programs and actions are equitable for all members of the community.

Appendix B: Budget Narrative Template

***See Engineer's Estimate, next page for detailed cost summary*

Applicant Name: City of Roanoke, VA
Grant Application ID: CID510130_RoanokeCity_CFPF-1
Project Name: Indian Village Aquisition, Demolition + Floodplain Restoration

Period of Performance Start: 1/1/2026 End Date: 12/31/2028
Submission Date: 12/23/2024

Project Type: Nature Based
DCR Match: 95%

Grand Total State Funding Request \$4,299,700.00

Grand Total Local Share of Project \$226,300.00
Federal Funding (if applicable) \$0.00
Project Grand Total \$4,526,000.00
Locality Cost Match 5%

Breakout by Cost Type	Personnel	Fringe	Travel	Equipment	Supplies	Contracts	Indirect Costs	Other Costs	Total
Federal Share									\$0.00
Local Share						\$226,300.00			\$226,300.00
State Share - CFPF Grant						\$4,299,700.00			\$4,299,700.00
State Share - RVRP Match Loan									\$0.00
Pre-Award/Startup									\$0.00
Maintenance									\$0.00
Total	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$4,526,000.00	\$0.00	\$0.00	\$4,526,000.00

Acquisition, Demolition, Floodplain Restoration - 2034 Indian Village Apt Bldgs 1-3**Engineer's Estimate****10/23/2024**

Item	Unit	Unit Cost	# of Units	Total Cost
Survey, Engineering, Permit Development	LS	\$80,000.00	1	\$80,000.00
City Land Disturbance Permit	LS	\$2,000.00	1	\$2,000.00
Land Purchase	SF	\$81.00	31,892	\$2,583,252.00
Mobilization	LS	\$52,295.31	1	\$52,295.00
Erosion & Sediment Control	LS	\$5,000.00	1	\$5,000.00
Contents Removal	LS	\$1.16	0	\$0.00
Environmental Abatement	SF	\$9.83	31,892	\$313,362.00
Demolition	SF	\$7.81	31,892	\$249,083.00
Excavation, Disposal, Grading	CY	\$50.00	3500	\$175,000.00
Electrical Utility Relocate	LS	\$20,000.00	1	\$20,000.00
WVWA Sewer Utility Top Adjustments	EA	\$20,000.00	4	\$80,000.00
18" Topsoil	CY	\$42.50	4500	\$191,250.00
Tree Planting	EA	\$50.00	147	\$7,350.00
Seeding	AC	\$3,000.00	1.62	\$4,860.00

SUBTOTAL: \$3,763,452.00

10% CONTINGENCY: \$376,345.00

TWO YEAR INFLATION @ 5%: \$385,754.00

TOTAL: \$4,525,551.00



Legend

Contours

Gas

Water

Sewer

Stormwater Conveyances

Stormwater Nodes

Special Flood Hazard Areas

Floodway

Zone A - 1% Annual Chance

Zone AE - 1% Annual Chance

Zone X - 0.2% Annual Chance

No TAXID Yet
(Tract D1)

EC_2162

4210333
(Tract D2)

EC_2164

EC_2166

Tinker Creek

INDIAN VILLAGE LN SE

WISE AVE SE



Project area outlined in green. Blocks Ids shown in Black.
Regulatory Floodway in dark blue.

- Project is located in Block 3001
- Project will remove existing structures and fill from regulatory floodway
- Project will increase flood conveyance capacity
- Project will reduce flood depths in Block 3002, and at the Wise Avenue low water bridge and Tinker Creek Greenway trailhead (Blocks 3004/3000)

