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Resolution

STATE OF NORTH CAROLINA)
)
COUNTY OF BUNCOMBE)

TOWN OF BILTMORE FOREST
BOARD OF COMMISSIONERS

RESOLUTION 2019-03

**AUTHORIZING SUBMITTAL OF A LOAN ASSISTANCE APPLICATION FOR
GREENWOOD PARK STREAM RESTORATION PROJECT**

WHEREAS, The Federal Clean Water Act Amendments of 1987 and the North Carolina the Water Infrastructure Act of 2005 (NCGS 159G) have authorized the making of loans and grants to aid eligible units of government in financing the cost of construction of stream restoration projects; and

WHEREAS, The Town of Biltmore Forest has need for and intends to conduct stream restoration in Greenwood Park; and

WHEREAS, The Town of Biltmore Forest intends to request state loan assistance for the project.

**NOW THEREFORE BE IT RESOLVED, BY THE BOARD OF COMMISSIONERS
OF THE TOWN OF BILTMORE FOREST:**

That the Town of Biltmore Forest, the **Applicant**, will arrange financing for all remaining costs of the project, if approved for a State loan award.

That the **Applicant** will adopt and place into effect on or before completion of the project a schedule of fees and charges and other available funds which will provide adequate funds for proper operation, maintenance, and administration of the system and the repayment of all principal and interest on the debt.

That the governing body of the **Applicant** agrees to include in any associated loan agreement a provision authorizing the State Treasurer, upon failure of the Town of Biltmore Forest to make scheduled repayment of the loan, to withhold from the Town of Biltmore Forest any State funds that would otherwise be distributed to the local government unit in an amount sufficient to pay all sums then due and payable to the State as a repayment of the loan.

That the **Applicant** will provide for efficient operation and maintenance of the project on completion of construction thereof.

That the Mayor Mr. George Goosmann, III and the Town Manager Jonathan Kanipe, the **Authorized Officials**, and their successors so titled, are hereby authorized to execute and file an application on behalf of the **Applicant** with the State of North Carolina for a loan to aid in the construction of the project described above.

That the **Authorized Officials**, and successors so titled, is hereby authorized and directed to furnish such information as the appropriate State agency may request in connection with such application or the project: to make the assurances as contained above; and to execute such other documents as may be required in connection with the application.

That the **Applicant** has substantially complied or will substantially comply with all Federal, State, and local laws, rules, regulations, and ordinances applicable to the project and to Federal and State grants and loans pertaining thereto.

Adopted this the 9th day of April, 2019.



George F. Goosmann III

George F. Goosmann, III
Mayor

Jonathan B. Kanipe
Jonathan B. Kanipe
Town Manager

CERTIFICATION BY RECORDING OFFICER

The undersigned duly qualified and acting Clerk of the Town of Biltmore Forest does hereby certify: That the above/attached resolution is a true and correct copy of the resolution authorizing the filing of an application with the State of North Carolina, as regularly adopted at a legally convened meeting of the Town of Biltmore Forest duly held on the 9th day of April, 2019; and, further, that such resolution has been fully recorded in the journal of proceedings and records in my office. IN WITNESS WHEREOF, I have hereunto set my hand this 9th day of April, 2019.

J. Matt

(Signature of Recording Officer)



Town Manager / Clerk

(Title of Recording Officer)

Division Application Form



**North Carolina Department of Environmental
Quality
Division of Water Infrastructure
Application for Funding**



(Last updated: February 2019)

1. General Information

Applicant Name	County	DUNS Number
Town of Biltmore Forest	Buncombe	055085120

Project Name	Total Project Cost	Total Funding Requested
Greenwood Park Stream Restoration	\$298,600	\$292,600

Applicant Type

<input checked="" type="checkbox"/> Municipality	<input type="checkbox"/> Sanitary District
<input type="checkbox"/> County	<input type="checkbox"/> Non-Profit Water Corporation
<input type="checkbox"/> Water and Sewer District	<input type="checkbox"/> Other (Specify:)
<input type="checkbox"/> Water and Sewer Authority	

Funding Type(s) Requested

<input type="checkbox"/> Asset Inventory and Assessment Grant	<input type="checkbox"/> Community Development Block Grant for Infrastructure†
<input type="checkbox"/> Merger/Regionalization Feasibility Grant	†All CDBG-I grants are 100% grants.
<input type="checkbox"/> Construction Project	LMI determination method:
<input type="checkbox"/> Drinking Water (all funding except CDBG-I)	<input type="checkbox"/> Survey <input type="checkbox"/> ACS
<input type="checkbox"/> Wastewater (all funding except CDBG-I)	LMI Percentage: _____
<input checked="" type="checkbox"/> Stormwater, stream restoration	

2. Affordability (applies to all but CDBG-I only applicants)-N/A per Anita Reed

Residential Sewer Connections	Residential Water Connections
_____	_____
Non-Residential Sewer Connections	Non-Residential Water Connections
_____	_____
Sewer Bill per 5,000 gallons	Water Bill per 5,000 gallons
_____	_____

1. I am willing to accept funding that includes federal conditions. Yes No

2. Estimated grant percentage as calculated by hand calculator:
 0% 25% 50% 75% 100%

3. If grant funding is not available at the percentage provided above, I am willing to accept a minimal grant amount of*:
 0% (100% Loan) 25% 50% 75% 100%

*If available grant amount is below the percentage listed above, project will not be funded.

Percentage of Utility Bills and Rate Increase Percentages N/A per Anita Reed

Year	Percentage of Utility Bills Collected	Rate Increase Percentage
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

(OVER)

3. Applicant Contact Information

Authorized Representative Name: Mr. Jonathan Kanipe

Authorized Representative Title: Town Manager

Mailing Address Line 1: P.O. Box 5352

Mailing Address Line 2:

City: Asheville

State: NC

Zip Code: 28813

Phone Number: 828-274-0824

E-Mail Address: Jkanipe@biltmoreforest.org

4. Application Preparer Contact Information

Firm Name: WithersRavenel

Contact Name: Catherine Renbarger

Mailing Address Line 1: 137 S Wilmington Street

Mailing Address Line 2: Suite 200

City: Raleigh

State: NC

Zip Code: 27601

Phone Number: 919-238-0462

E-Mail Address: crenbarger@withersravenel.com

5. Engineer Contact Information

Is the engineering firm different from the application preparer? Yes No

Engineering Firm Name: WithersRavenel

Contact Name: Todd St. John

Mailing Address 1: 115 Mackenan Dr.

Mailing Address 2:

City: Cary

State: NC

Zip Code: 27511

Phone Number: 919-238-0462

E-Mail Address: tstjohn@withersravenel.com

6. Project Description

Number of New Connections Served by Project (if applicable): N/A

The purpose of this project is to restore the natural stream and improve the riparian corridor functions of a first-order stream located in Greenwood Park (See Figures 1 and 2). The stream is an unnamed tributary (UT) to Fourmile Branch (Class C waters) that flows directly to the French Broad River.

The current stream is in a substandard state with soil erosion and unstable stream banks. Wire gabion baskets were historically used to stabilize the stream. However, the baskets have reached the end of their service life and erosion is occurring. The gabion baskets will be replaced with soil lifts and/or other bioengineered systems that allow native forest vegetation to provide stability as opposed to the current hardened structures. This project will also use grade control measures to make the best use of the existing, naturalized stream bed and establish pools along the outside of the meanders.

This project will also establish a diverse riparian corridor 30 feet from each stream bank by establishing a community of native tree, shrub, and herbaceous species through planting and seeding with native species.

7. Additional Information for Consideration

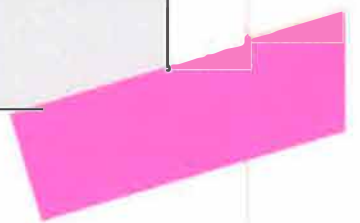
As a part of this project, the Town will also establish feasible, low-maintenance infiltration BMPs by removing concentrated and piped runoff through the buffer and discharging it to plunge pools and depressions designed to allow for infiltration. This will remove direct runoff discharges from impervious surfaces allowing for flow attenuation to help reduce discharge peaks in the stream, remove pollutants and reduce the water temperature in the stream during rain events, and will recharge the groundwater. Finally, these BMPs will also create a diverse habitat potential for wetland and aquatic plant and animal species.

8. Project Budget (for Construction Projects Only)

	Division Funding Requested	Other Secured Funding Source(s)	Total Cost Amount
Indicate construction costs by line item (e.g., linear feet of different-sized lines)			
Construction Costs			
Bank Stabilization (Bioengineering)	\$36,000		\$36,000
Stream Bed Restoration	\$50,000		\$50,000
Riparian Corridor Restoration (Mostly Planting)	\$20,000		\$20,000
Infiltration BMPs	\$15,000		\$15,000
Clearing & Grubbing, Grading, Erosion Control, Pump Around Operation, etc.	\$55,000		\$55,000
<i>Contingency (10% of construction costs):</i>	\$17,600		\$17,600
Construction Subtotal:	\$193,600		\$193,600
Engineering Costs			
Engineering Design	\$45,000		\$45,000
Permitting	\$10,000		\$10,000
Land Surveying Costs	\$15,000		\$15,000
Engineering Subtotal:	\$70,000		\$70,000
Administration Costs			
Planning	\$4,000		\$4,000
Easement Preparation			
Grant Administration (if applicable)			
Loan Administration (if applicable)	\$15,000		\$15,000
ER Preparation	\$10,000		\$10,000
Environmental Documentation Preparation			
Legal Costs			
Other (Loan Closing Costs 2%)		\$6,000	\$6,000
Administration Subtotal:	\$29,000	\$6,000	\$35,000
TOTAL PROJECT COST:	\$292,600	\$6,000	\$298,600










A PE Seal for the estimate *must be provided* in the space to the right for the application to be considered complete.

from



Certification by Authorized Representative

The attached statements and exhibits are hereby made part of this application, and the undersigned representatives of the Applicant certifies that the information in this application and the attached statements and exhibits is true, correct, and complete to the best of his/her knowledge and belief. By initialing each item and signature at the end of this application, he/she further certifies that:

1.  as Authorized Representative, he/she has been authorized to file this application by formal action of the governing body;
2.  the governing body agrees to provide for proper maintenance and operation of the approved project after its completion;
3.  the Applicant has substantially complied with or will comply with all federal, state, and local laws, rules, and regulations and ordinances as applicable to this project;
4.  the Applicant will adopt and place into effect on or before the completion of the project a schedule of fees and charges which will provide for the adequate and proper operation, maintenance, and administration and repayment of all principle and interest on loans (if applicable) of the project;
5.  the Applicant has followed proper accounting and fiscal reporting procedures, as evidenced by the Applicant's most recent audit report, and that the Applicant is in substantial compliance with provision of the general fiscal control laws of the State;
6.  the project budget provided on Page 5 of this application form includes all funding requested from all sources of funding proposed for this project; and
7.  the (Town or County), North Carolina is organized and chartered under the laws of North Carolina. All officials and employees are aware of, and in full compliance with NCGS 14-234, "Director of public trust contracting for his own benefit, participation in business transaction involving public funds; exemptions." (For units of local government only. All others should initial "N/A.")
8.  the Applicant acknowledges that all loans are subject to approval by the Local Government Commission.
9.  in accordance with G.S. 120-157.1 through 157.9, for local government debt to be issued greater than \$1,000,000, the local government must submit a letter to Committee Chairs, Committee Assistant, and the Fiscal Research Division of the General Assembly at least 45 days prior to presentation before the Local Government Commission.

(OVER)

Completeness Checklist*

In addition to this application, the following items must be included for a complete application package; please initial that each item is included in this submittal.

	Resolution by Governing Body of Applicant with Certification by Recording Officer
	Division Financial Information and Fund Transfer Certification
	Applicable Priority Rating System Form with supporting narratives and documentation
	Current Rate Sheets
	PE Seal on project budget (construction projects only)

*All forms are available separately on the DWI website.

****For each application, please provide copies that are bound (e.g., report cover with fasteners, plastic report combs, spiral or 3-ring binders.) No paper clips, staples or binder clasps, for each application. ****

Submittal Information

- For CDBG-I (Fall only), send one (1) original and two (2) copies of the Application.
- For all other programs, send one (1) original and one (1) copy of the Application.
- If submitting for both CDBG-I and construction projects, send (1) original and (3) copies of the Application.

Send complete Application package to:

Mailing Address[†] (US Postal Service only)

Division of Water Infrastructure
1633 Mail Service Center
Raleigh, NC 27699-1633

Physical Address (FedEx, UPS)[‡]

Division of Water Infrastructure – 8th Floor, Archdale Building
512 North Salisbury Street
Raleigh, NC 27604
919.707.9160

[†]Please allow a week for delivery if mailing via the US Postal Service.

[‡]For all courier services, please use the physical address, as having a courier deliver to the mailing address will delay package delivery.

Application Signature

Please note: Original signatures are required for each application.



SIGNATURE OF AUTHORIZED REPRESENTATIVE

Jonathan B. Kanipe

TYPED NAME

Town Manager

TYPED TITLE

4/17/19

DATE

Financial Information Form/Fund Transfer Certification



**North Carolina Department of Environmental
Quality
Division of Water Infrastructure
Water & Sewer Financial Information and Fund
Transfer Certification**
(revised February 2019)



Complete the following information related to your system's enterprise fund. If your enterprise funds are separate for water and sewer, *please supply sheets for both.*

1. Supply the required information below.

Combined System Water System Sewer System

Unit Name: Town of Biltmore Forest

Fund Name: The Town does not have an enterprise fund for stream restoration. *Not Sewer. Sewer*

is handled through PSD Buncombe County

2. Provide the following information for the past three fiscal years *for which an audit has been completed* and submitted to the Local Government Commission.

	Fiscal Years		
	2017-18	2016-17	2015-16
Operating Revenues			
Customer Charges	772,220	849,981	459,582
Impact Fees			
Other Revenue	1,105	191	
Total Operating Revenues	773,325	850,172	459,582
Expenditures			
<i>Administration</i>			
Salaries			
Other			
<i>Operations</i>			
Salaries	77,622	75,170	129,401
Other	571,963	603,811	238,049
Total Expenditures	640,981	678,981	367,450
Other (do not include depreciation)			
Debt principal			
Interest			
Capital outlay	8,604	185,513	7,019
Capital reserve			
Transfer from (to) other funds		110,217	
Other (list):			
Total Other	8,604	75,296	7,019
Net Income (Loss)	123,740	95,895	85,113

(OVER)

3. Certification. Please read and sign below.

I attest that the fiscal information provided in this form, to the best of my knowledge, is accurate, complete and consistent with audits for the past three years. I further attest that, to the best of my knowledge, if the Town of Biltmore Forest has made any transfers within the past three years, these transfers are shown in Item #2 of this form.


SIGNATURE OF
FINANCE OFFICER

4/11/19
DATE

Jonathan B Kanipe

Finance Officer

TYPED NAME

TYPED TITLE

Fund Transfer Certification

(Required for all funding applications except for projects solely funded by CDBG-I)

§ 159G-37.(b) requires that all local governments applying for funding from the Clean Water State Revolving Fund, the Wastewater Reserve, the Drinking Water State Revolving Fund, or the Drinking Water Reserve for water or wastewater projects certify that no funds received from water or wastewater utility operations have been transferred to the local government's general fund for the purpose of supplementing the resources of the general fund since July 1, 2014. The prohibition contained in § 159G-37.(b) shall not be interpreted to include payments made to the local government to reimburse the general fund for expenses paid from that fund that are reasonably allocable to the regular and ongoing operations of the utility, including, but not limited to, rent and shared facility costs, engineering and design work, plan review, and shared personnel costs.

Applicant's Certification:

I certify that no funds received from water or wastewater utility operations have been transferred since July 1, 2014 from the water and/or sewer enterprise fund to the _____ Town of Biltmore Forest _____ general fund for the purpose of supplementing the resources of the general fund in accordance with § 159G-37.(b).


SIGNATURE OF
AUTHORIZED REPRESENTATIVE

4/11/19
DATE

Jonathan B Kanipe

Town Manager

TYPED NAME

TYPED TITLE

Priority Rating System

PRIORITY RATING SYSTEM for Wastewater Projects

Instructions: For each line item, mark "X" to claim the points for that line item. Be sure that your narrative includes justification for every line item claimed. At the end of each Category, provide the total points claimed for each program in the subtotal row for that category. Then add the subtotals from each category and enter the Project Total in the last line. Note that some categories have a maximum allowed points that may be less than the total of individual line items.

Line Item #	Category 1 – Project Purpose	Claimed Yes/No	Points
1.A	Reserved for Other Programs		
1.B	Project will resolve failed infrastructure issues	No	15
1.C	Project will rehabilitate or replace infrastructure	No	15
1.C.1	Treatment units, pumps and/or pump stations to be rehabilitated or replaced are greater than 20 years old, OR water/sewer lines, storage tanks, drinking water wells or intake structures to be rehabilitated or replaced are greater than 40 years old	No	10
1.D	Project will expand infrastructure	No	2
1.D.1	Treatment units, pumps and/or pump stations to be rehabilitated or replaced are greater than 20 years old, OR lines, storage tanks, drinking water wells or intake structures to be rehabilitated or replaced are greater than 40 years old	No	10
1.E – 1.E.2	Reserved for Other Programs		
1.F	Project will provide stream/wetland/buffer restoration	Yes	15*
1.F.1	Restoration project that includes restoration of a first order stream and includes stormwater infiltration BMPs	Yes	5*
1.F.2	Restoration project that includes restoration and / or protection of riparian buffers to at least 30 feet on both sides of the stream	Yes	5*

Line Item #	Category 1 – Project Purpose (Continued)	Claimed Yes/No	Points
1.G	Project will provide stormwater BMPs to treat existing sources of pollution	No	15*
1.G.1	Project that includes BMPs or BMPs in series that achieve at least 35% nutrient reduction (both TN and TP) and 85% TSS reduction	No	10*
R1.H	Project will provide reclaimed water/usage or rainwater harvesting/usage	No	15*
*CWSRF Only			
Maximum Points for Category 1 – Project Purpose			25
Subtotal claimed for Category 1 – Project Purpose			25
Line Item #	Category 2 – Project Benefits	Claimed Yes/No	Points
2.A – 2.B	Reserved for Other Programs		
2.C	Project provides a specific environmental benefit by replacement, repair, or merger; includes replacing failing septic tanks	No	15
2.D	Project addresses promulgated but not yet effective regulations	No	10
2.E	Project directly addresses enforcement documents		
2.E.1	Project directly addresses an EPA Administrative Order for a local government Applicant located in a Tier 1 county, or addresses an existing or pending SOC, or a DEQ Administrative Order, OR	No	5
2.E.2	Project directly resolves a Notice of Violation or Notice of Deficiency	No	3
2.F	Project includes system merger	No	10

2.G – 2.I	Reserved for Other Programs		
Line Item #	Category 2 – Project Benefits (Continued)	Claimed Yes/No	Points
2.J	Project improves treated water quality by adding or upgrading a unit process	No	3
2.K – 2.O	Reserved for Other Programs		
2.P	Project <u>directly benefits</u> subwatersheds that are impaired as noted on the most recent version of the Integrated Report	No	20
2.Q	Project <u>directly benefits</u> waters classified as HQW, ORW, Tr, SA, WS-I, WS-II, WS-III* or WS-IV* (* these classifications must be covered by an approved Source Water Protection Plan to qualify)	No	10
2.R	Project will result in elimination of an NPDES discharge	No	3
2.S	Primary purpose of the project is to achieve at least 20% reduction in energy use	No	5*
*CWSRF Only			
	Maximum Points for Category 2 – Project Benefits		35
	Subtotal claimed for Category 2 – Project Benefits		
Line Item #	Category 3 – System Management	Claimed Yes/No	Points
3.A	Applicant has a current Capital Improvement Plan (CIP) that spans at least 10-years and proposed project is included in the plan OR	No	2
3.B	Applicant has implemented an Asset Management Plan as of the date of application	No	10
3.C	System Operating Ratio is greater than or equal to 1.00 based on a current audit, or is less than 1.00 and unit cost is greater than 2.5%	No	5

Line Item #	Category 3 – System Management (Continued)	Claimed Yes/No	Points
3.D – 3.F	Reserved for Other Programs		
	Maximum Points for Category 3 – System Management		15
	Subtotal claimed for Category 3 – System Management		0
Line Item #	Category 4 – Affordability	Claimed Yes/No	Points
4.A	Residential Connections		
4.A.1	Less than 10,000 residential connections OR	No	2
4.A.2	Less than 5,000 residential connections OR	No	4
4.A.3	Less than 1,000 residential connections	No	8
4.B	Current Monthly Utility Rates at 5,000 gallons Usage		
4.B.1	Greater than \$33 OR	No	4
4.B.2	Greater than \$40 OR	No	6
4.B.3	Greater than \$47	No	8
4.B.4	Greater than \$58	No	10
4.C	Local Government Unit (LGU) Indicators		
4.C.1	3 out of 5 LGU indicators worse than state benchmark OR	No	3

Line Item #	Category 4 – Affordability (Continued)	Claimed Yes/No	Points
4.C.2	4 out of 5 LGU indicators worse than state benchmark OR	No	5
4.C.3	5 out of 5 LGU indicators worse than state benchmark	No	7
4.D – 4.E	Reserved for Other Programs		
	Maximum Points for Category 4 – Affordability		25
	Subtotal claimed for Category 4 – Affordability		0
	Total of Points for All Categories		25

Narrative with Supporting Documentation

Town of Biltmore Forest Greenwood Park Stream Restoration Narrative

Line Item 1.F

The purpose of this project is to restore the natural stream and improve the riparian corridor functions of a first-order stream located in Greenwood Park (See Figures 1 and 2). The stream is considered to be first-order based on Strahler Stream Order (Strahler, A.N., 1952; Horton, R.E., 1945). The stream has a drainage area of approximately 0.3 square miles with urban conditions up and down stream. The stream is an unnamed tributary (UT) to Fourmile Branch (Class C waters) that flows directly to the French Broad River.

The stream and riparian corridor within the Park that will be enhanced/restored is approximately 370 feet and .6 acres, respectively. Wire gabion baskets were historically used to stabilize the stream and secure the banks along the outside meander bends. However, the baskets have reached the end of their service life and erosion is occurring. The gabion baskets will be replaced with soil lifts and/or other bioengineered systems that allow native forest vegetation to provide stability as opposed to the current hardened structures (See Figure 3). In some locations the gabion baskets will be replaced with vegetated soil lifts and in other locations it may be possible to add top soil where the wire is already missing or failed and plant live cuttings between the remaining rocks now mixed with soil. Replacing the gabion baskets will allow for direct shading of the stream to maintain and establish cool water conditions needed by naturally occurring, local aquatic organisms. It will also establish a natural and stable undercut banks and root system that serves as a habit and substrate for many aquatic organisms and allow for a more deformable yet stable system that can filter and collect some of the fine sediments from upstream sources.

This project will also use grade control measures to make the best use of the existing, naturalized stream bed and establish pools along the outside of the meanders. This will establish a more natural stream bed, create the opportunity to flush the fine sediments that have accumulated due to soil erosion through the system, and will prevent stream incision which is commonly observed in many urban streams in North Carolina.

Line Item 1.F.1

As a part of this project, the Town will also establish feasible, low-maintenance infiltration BMPs by removing the existing concentrated and piped runoff that currently bypasses the buffer and redirecting it into plunge pools and depressions to allow for infiltration and diffuse flow through the buffer. Removing the current drainage and replacing it with stormwater BMPS will remove direct runoff discharges from impervious surfaces allowing for flow attenuation to help reduce discharge peaks in the stream, remove pollutants and reduce the water temperature in the stream, and will recharge the groundwater. Finally, these BMPs will also create a diverse habitat potential for wetland and aquatic plant and animal species. See Figure 2 for the location of the stormwater infiltration BMPS.

Line Item 1.F.2

This project will also establish a diverse riparian corridor 30 feet from each stream bank by establishing a community of native tree, shrub, and herbaceous species through planting and seeding with native species. Currently, the riparian buffer is mostly vegetated with non-native turf grass and sparse tree coverage. This has resulted in a lack of canopy coverage compared to similar natural systems in the area as well as a lack of understory and woody species diversity. These conditions preclude the ability of a riparian corridor to moderate temperatures, to filter runoff and to maintain stream stability. Creating this buffer will establish a diverse forest habitat for many species of animals, insects, fungi, and plants. The buffer will also establish a natural leaf litter and soil formation providing better substrate for the forest itself, but also allowing for infiltration of runoff, recharge of ground water, pollutant filtration, nutrient cycling removal, and temperature modification to maintain native species and reduce temperatures in the stream increased by runoff from impervious surfaces. As this stream is located in a community park, a small percentage of the buffer (.04 acres or 7%) is currently built upon with playground structures that will remain. However, the Town is committed to a natural stream buffer.



Figure 2
Conceptual Stream
and Riparian Buffer
Restoration

WithersRavenel
 Engineers | Planners | Surveyors
 115 MacKenan Dr | Cary, NC, 27511
 t 919 469 3340
 license # C-0832
 www.withersravenel.com

0 12.5 25 50
 Feet
 1 inch = 27 feet

Legend

- Riffle
- Stream
- 2' Contours
- Pipe Removal
- 18" Stormwater Pipe
- Infiltration BMPs
- Soil Lifts
- Project Stream
- Existing Playground
- 30 ft Vegetated Buffer
- Parcels

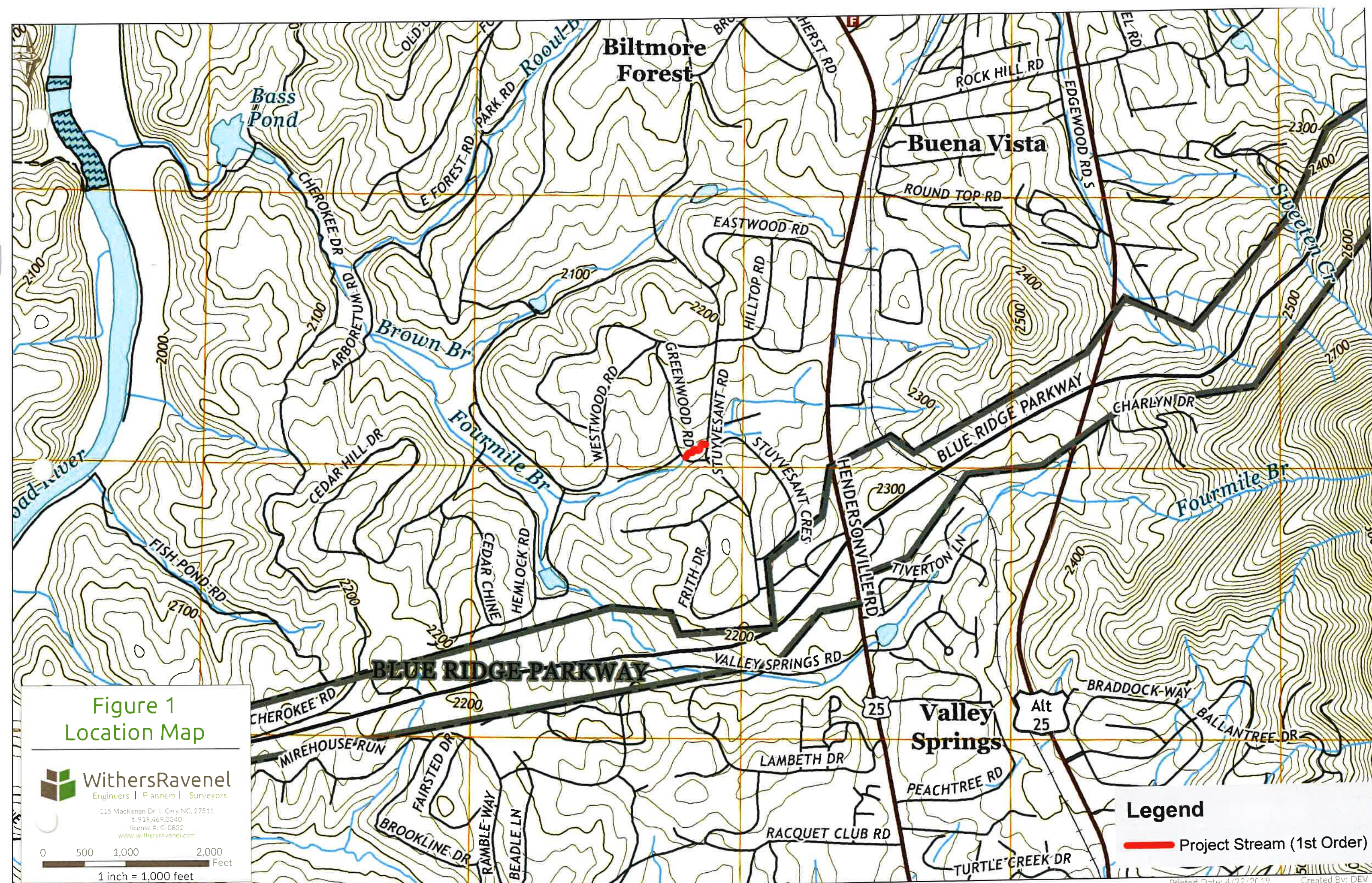


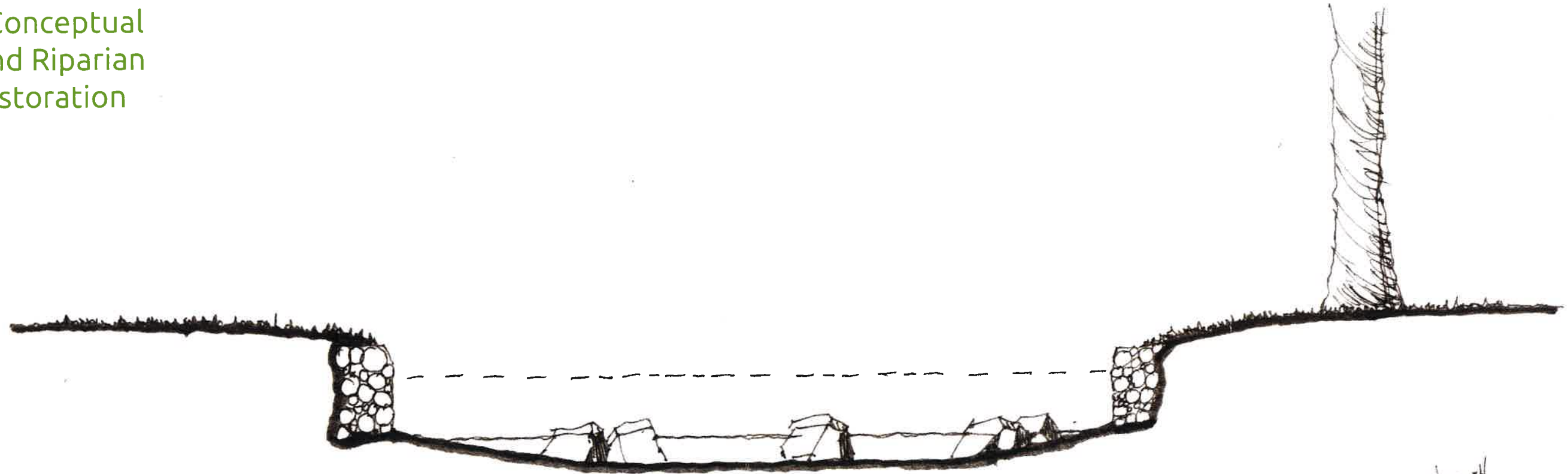
Figure 1
Location Map

WithersRavenel
Engineers | Planners | Surveyors
115 MacKenan Dr | Cary NC, 27511
t: 919.469.0340
license #: C-0832
www.withersravenel.com

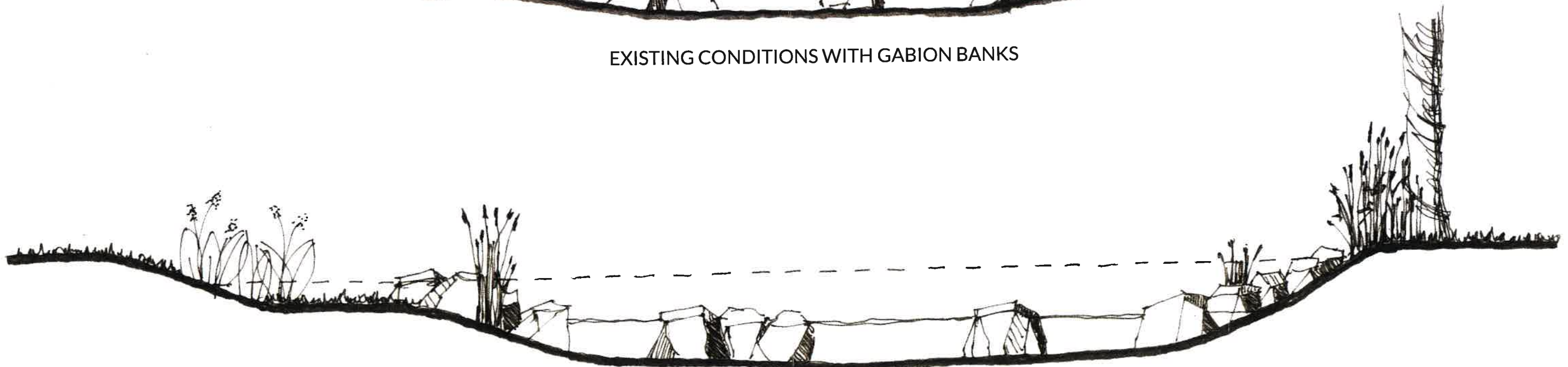
0 500 1,000 2,000 Feet
1 inch = 1,000 feet

Legend
Project Stream (1st Order)

Figure 3 Conceptual Stream and Riparian Buffer Restoration



EXISTING CONDITIONS WITH GABION BANKS



PROPOSED BANK STABILIZATION

SCALE: 1/2" = 1'

CREEK BED ALTERNATIVE SECTIONS
GREENWOOD PARK MASTER PLAN

TOWN OF BILTMORE FOREST

17 May, 2018

Affordability Calculator

Not Applicable

Current Rate Sheet

Not Applicable