



NORTH CAROLINA

SPOTLIGHT

Building Successful Stream Stabilization and Buffer Repair Programs

May 25, 2023 / 11:00 a.m. - 12:00 p.m. (Eastern)

www.SESWA.org

Today's Presenters



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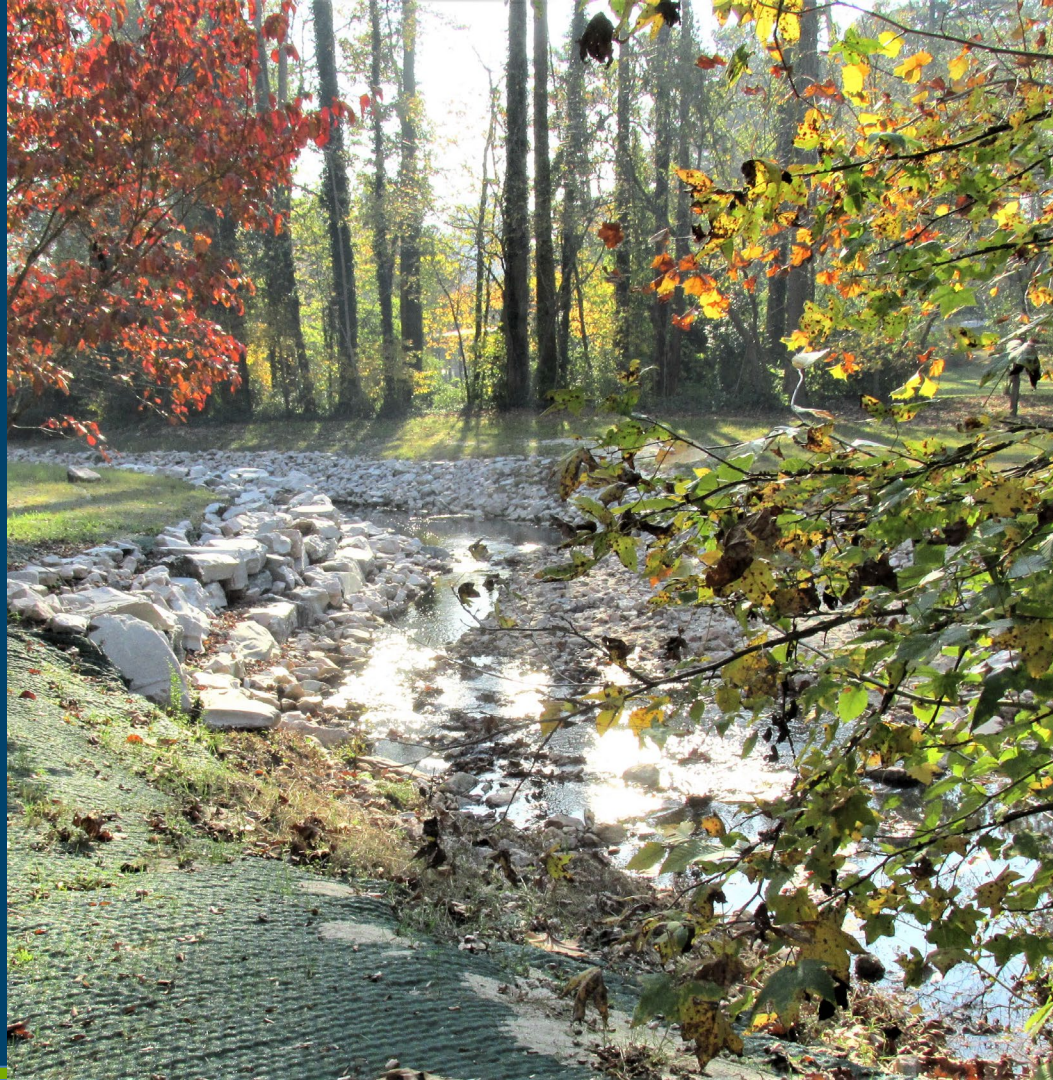
City of Raleigh

Drainage Assistance and Stream Stabilization Programs

State Spotlight Seminar
Southeast Stormwater Association



Raleigh





Agenda

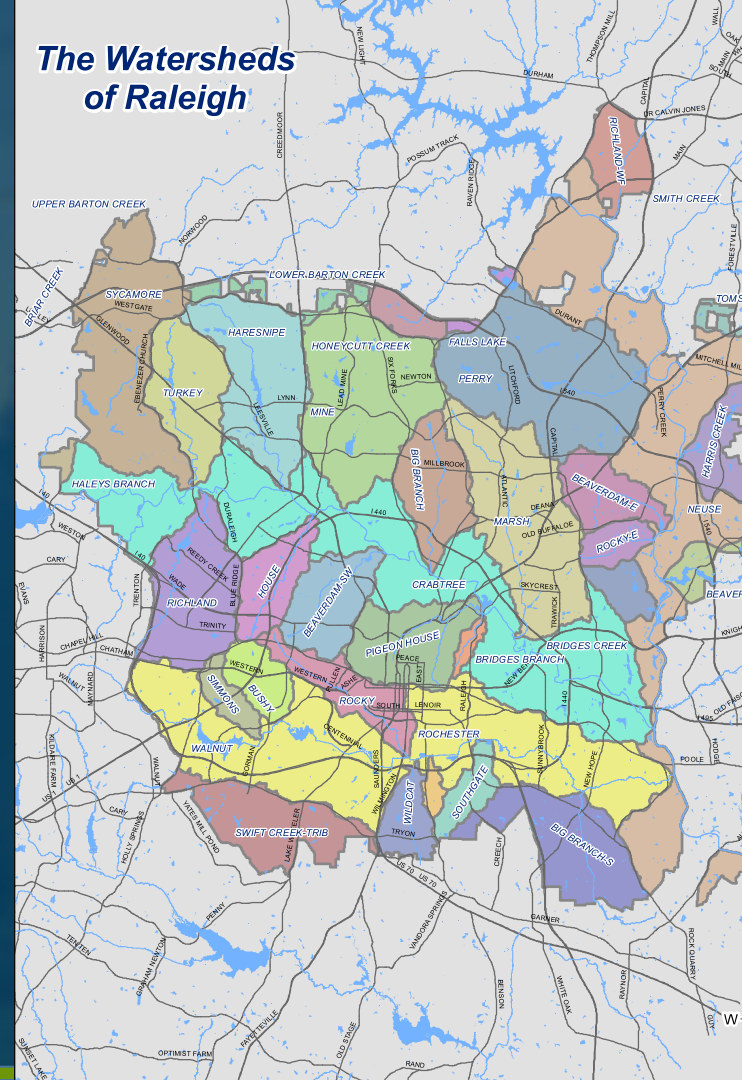
1. About Raleigh and Stormwater Program
2. Drainage Assistance Program
3. Stream Stabilization Program
 - Stream Stabilization
 - Stream Repair Workshops
 - Buffer Builder Bag
4. Goals for Stream Stabilization Program



About Raleigh

- City Capital of NC
- Population ~ 470,000
- 36 watersheds across the city
- Home to the **Carolina Hurricanes!**

The Watersheds of Raleigh





Raleigh

Raleigh City Government





Stormwater Management Advisory Commission





Raleigh

Program Objective

Stormwater Management Core Mission

To preserve and protect life, support healthy natural resources, and complement sustainable growth within the Raleigh community.





We are applying the
“Be Stormwater
Smart!”
philosophy to all
programs supporting
our mission.





Raleigh

Drainage Assistance Program



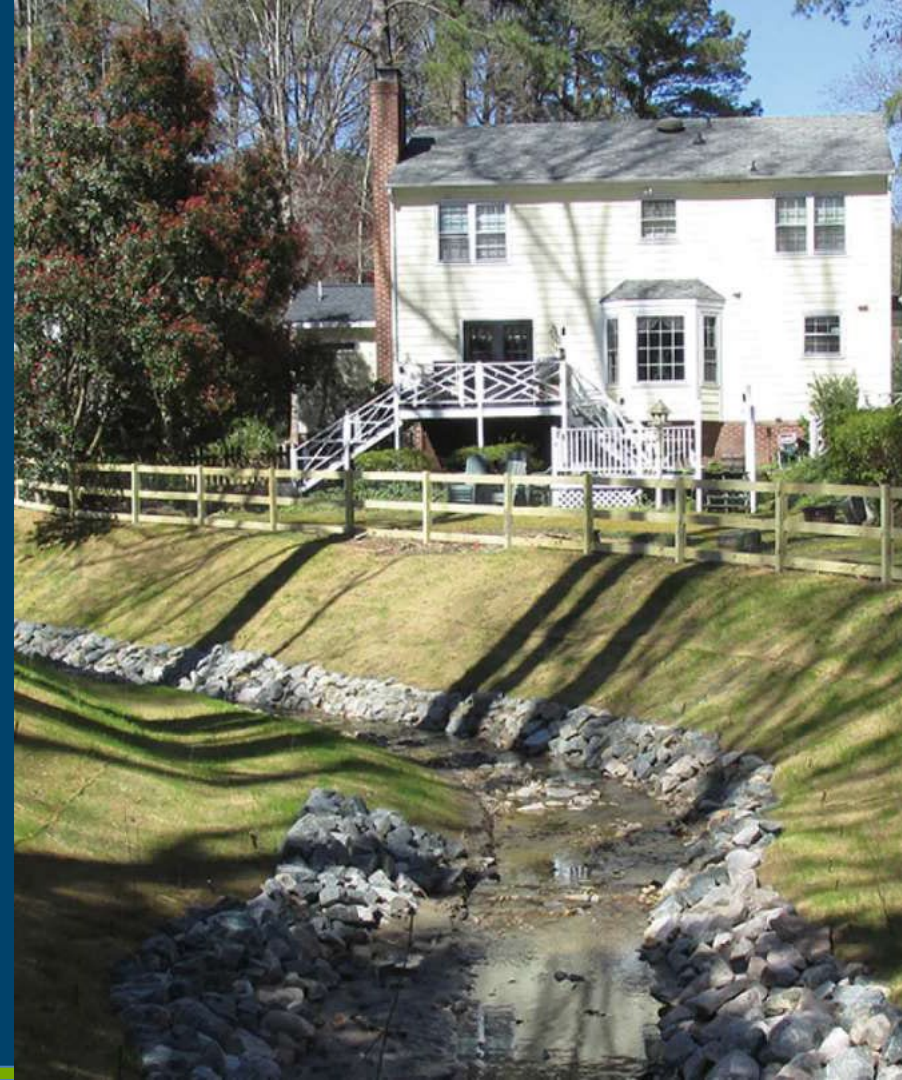
- Assist residents with flooding and severe erosion.
- Fully funded City Program.
- Eligibility Requirements:
 - Own property in City limits.
 - Receive public stormwater runoff.
 - Be willing to donate an easement.



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Drainage Assistance Program

- Provides \$1.25M in annual funding.
- Supports 8 projects (+/-) per year.
- Projects selected by ranking in the prioritization model.





Program Timeline



1989

City cost-share
program



2016

Drainage
Assistance
Program



2021

Proposal of Stream
Stabilization Program



Nov 2022

Council adopts
SS Program



Drainage Assistance Process



Citizen calls or emails about flooding and/or erosion.



Staff promptly responds and often conducts a site visit.



If project qualifies for DA program, the project is scored and ranked.



Projects are rescored as conditions change or after a certain time has elapsed.



Completed Project – Spring Drive

Before



After





Drainage Assistance vs Stream Stabilization



Major Erosion
Drainage Assistance



Minor-Moderate Erosion
Stream Stabilization



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Stream Stabilization Program



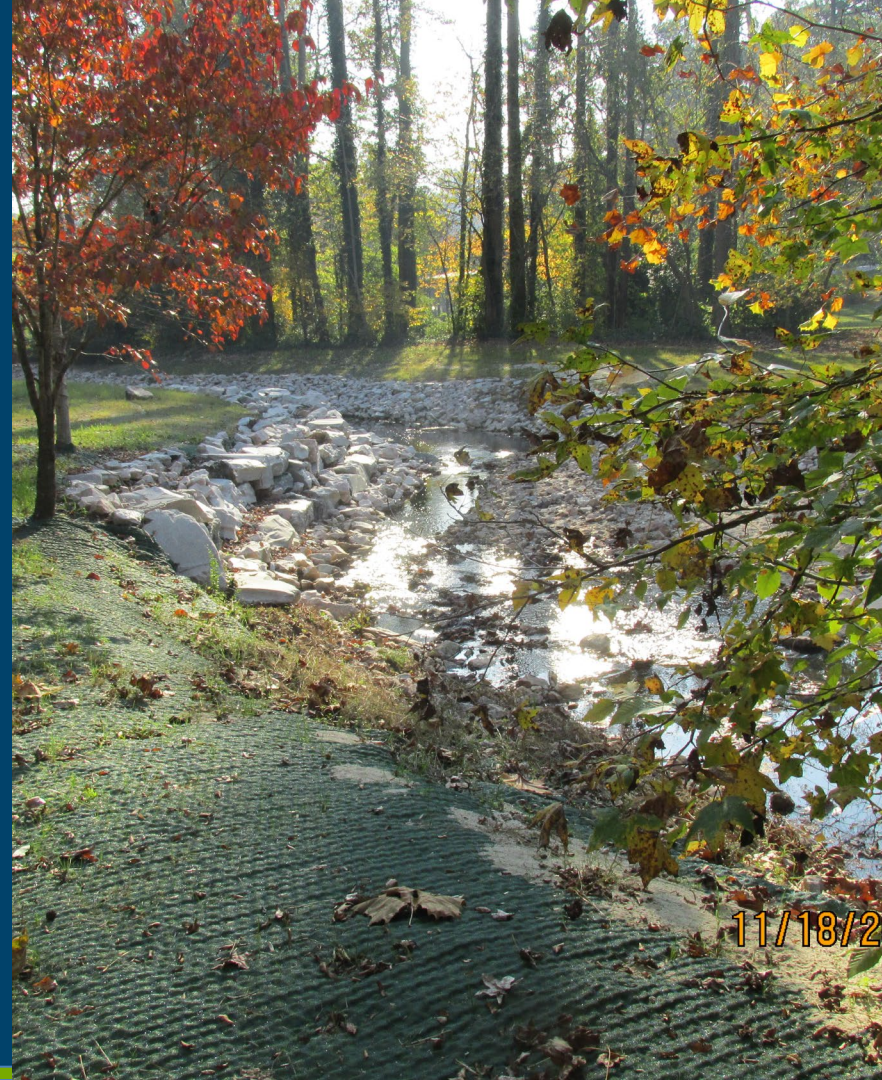
- Addresses streambank erosion that would not score high under the Drainage Assistance Program.
- Driven by the public safety criteria within the scoring system.
- Purpose: to improve the water quality by protecting and stabilizing the eroding stream banks.



Raleigh

Stream Stabilization Program

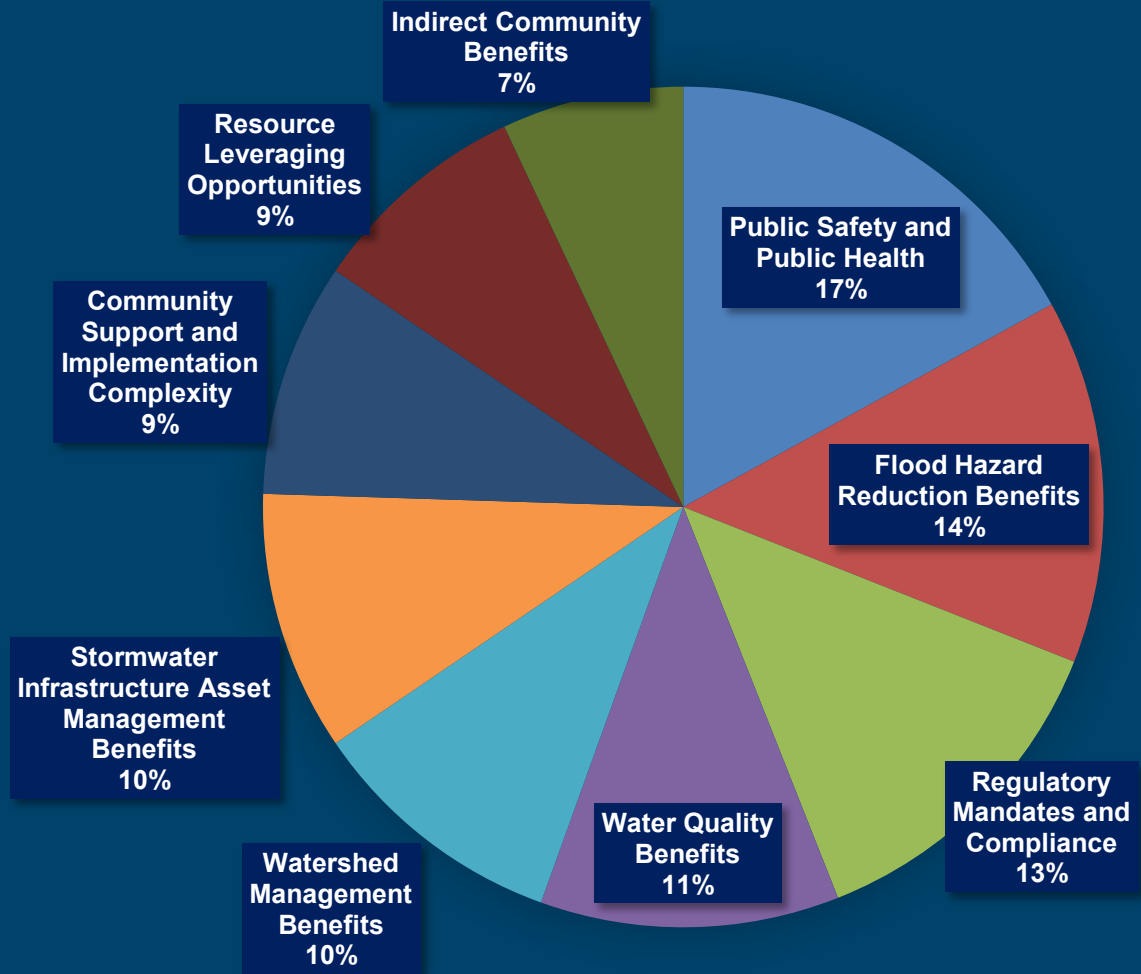
- Provides \$500k in annual funding.
- Supports 6 projects (+/-) per year.
- Projects selected by ranking in the prioritization model.
- Three options provided:
 - Stream Stabilization projects
 - Stream Repair Workshops
 - Buffer Builder Bags





Prioritization Model

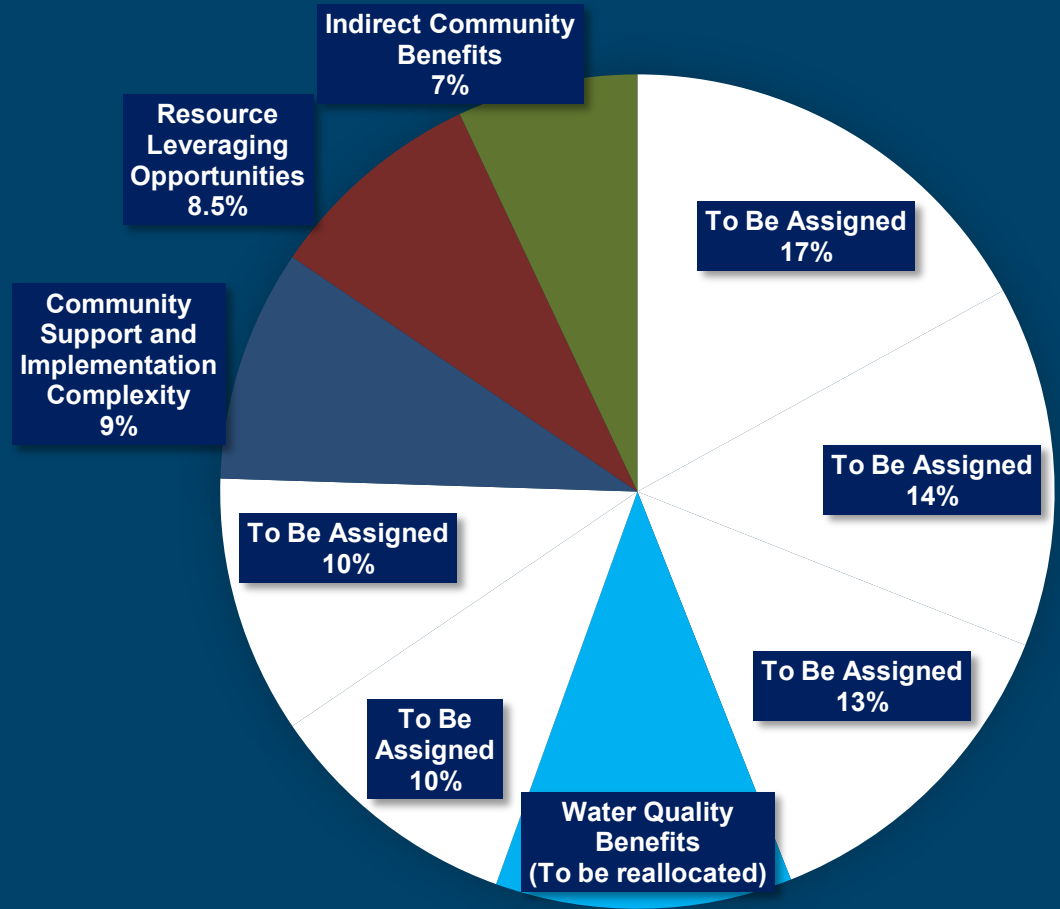
Integrated Prioritization Criteria





Total Project Score (TPS)

To Be Assigned = 75%





Pending Projects

Rank	Project ID	Project Name	Evaluation Date (most recent)	Primary Type of Project	Sub-Watershed	Council District	Total Project Score (TPS)	Safety Criticality Score (SCS)	Mission Criticality Score (MCS)	Study and/or Engineering Design Cost	Construction Cost	Total Project Cost
							(0 - 100)	(0 - 100)	(0 - 100)	(\$)	(\$)	(\$)
1	216-2019-0147	Foxtrot Rd	3/24/2020	Integrated	Southgate	C	31.13	70.00	34.83	\$18,000	\$105,000	\$123,000
2	216-2023-0272	Guard Hill Drive	1/0/1900	Infrastructure	Neuse	C	28.20	80.00	26.85	\$16,000	\$94,000	\$110,000
3	216-2020-0175	Glenbrook Dr.	3/3/2020	Infrastructure	Walnut Creek	D	27.07	60.00	26.25	\$9,000	\$81,000	\$90,000
4	216-2021-0217	Port Royal Rd 2109	2/18/2021	Infrastructure	Marsh Creek	A	26.92	60.00	30.48	\$12,000	\$115,000	\$127,000
5	216-2023-0273	Long and Winding Drive	1/0/1900	Infrastructure	Neuse	D	26.79	60.00	29.93	\$10,000	\$115,000	\$125,000
6	216-2020-0210	Grist Mill 7201	12/31/2020	Infrastructure	Perry Creek	A	26.75	70.00	23.78	\$13,000	\$135,000	\$148,000
7	216-2021-0239	Midlands Townhomes HOA	3/24/2023	Stream/Erosion	Mine Creek	A	26.74	60.00	34.53	\$16,000	\$97,000	\$113,000
8	216-2021-0211	Meredith Street	1/11/2021	Integrated	Walnut Creek	D	26.73	50.00	28.71	\$12,000	\$10,000	\$112,000
9	216-2022-0261	Bells Valley Drive	9/21/2022	Stream/Erosion	Sycamore	E	26.73	60.00	33.15	\$14,000	\$85,000	\$99,000
10	216-2018-0125	Runnymede Rd. 906	11/12/2019	Infrastructure	Beaverdam-SW	E	26.63	70.00	34.55	\$26,000	\$135,000	\$161,000
11	216-2020-0197	Averell Court 8505	10/28/2020	Stream/Erosion	Perry	A	26.49	20.00	26.78	\$52,500	\$122,500	\$175,000
12	216-2019-0140	Oak Pard Rd 4436	2/19/2019	Stream/Erosion	Crabtree Creek	E	26.46	40.00	30.24	\$28,000	\$158,000	\$186,000
13	216-2021-0232	Angel Falls Rd	9/13/2022	Infrastructure	Richland-WF	B	26.45	80.00	26.85	\$13,000	\$108,000	\$123,000
14	216-2018-0127	Lakehaven Dr	12/6/2018	Infrastructure	Mine Creek	A	26.44	50.00	28.17	\$18,000	\$125,000	\$143,000
15	216-2019-0149	Neptune Dr.	2/22/2022	Stream/Erosion	Marsh Creek	B	26.40	70.00	35.09	\$32,000	\$210,000	\$0
16	216-2021-0222	Watkins St	3/29/2021	Stream/Erosion	Pigeon House	C	26.39	50.00	31.47	N/A	N/A	\$0
17	216-2017-0041	Gramercy Ct. 4609	7/21/2017	Infrastructure	Mine Creek	A	26.26	70.00	27.49	\$28,000	\$172,000	\$200,000
18	216-2022-0263	Hershey Court	1/0/1900	Infrastructure	Haresnipe	A	26.22	10.00	26.43	\$0	\$0	\$0
19	216-2019-0151	Charleston Oak Drive 2932	1/10/2018	Stream/Erosion	Richland-WF	B	26.21	50.00	33.93	\$11,000	\$35,000	\$46,000
20	216-2020-0202	Keswick Drive	3/10/2023	Infrastructure	Mine Creek	A	26.17	70.00	27.24	\$28,000	\$100,000	\$0
21	216-2020-0174	Glenwood Ave 1909/1911	2/21/2020	Infrastructure	Crabtree Creek	E	26.12	60.00	26.25	\$35,000	\$100,000	\$135,000
22	216-2018-0158	Port Royal Rd 2109	12/31/2020	Infrastructure	Marsh Creek	A	26.08	70.00	23.78	\$12,000	\$115,000	\$127,000



Stream Stabilization Process



Citizen calls or emails about stream and/or channel erosion.



Staff promptly responds and often conducts a site visit.



Staff determine proper option: Stream Stabilization, Stream Repair Workshop, or Buffer Builder Bag.



If the site qualifies, the project is scored and ranked.



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Option 1: Stream Stabilization

- Moderate stream erosion.
- Erosion not threatening foundation of home or structure.
- Permitting/Design/Construction type project.
- Requires Permanent Drainage Easement from citizen.
- Usually involves 4-6 properties.





Option 2: Stream Repair Workshops

Partnership



- Held between late fall and early spring.
- 3-5 workshops per year.
- Teach cost-effective and natural methods for repairing streams.



Stream Repair Workshops

Typical materials

- Coir matting
- Coir logs
- Straw
- Riparian buffer seed mix
- Live stakes





Stream Repair Workshops

Hadley Road

- 90 feet of erosion
- Installed coir matting, straw, and riparian buffer seed mix.
- 200 live stakes and 10 trees were planted.
- Cost: \$450 Stream Repair vs \$220k involving 13 properties with Stream Stabilization





Hadley Road Stream Repair

Before



After





Stream Repair Workshops

Sylvester Street

- 110 feet of erosion
- Installed coir matting, coir logs, straw, and riparian buffer seed mix
- 200 live stakes and 5 trees were planted
- Cost: \$350 Stream Repair cost vs \$85k SS cost





Sylvester Street Stream Repair

Before



After





Stream Repair Workshops

Watkins Street

- 100 feet of erosion
- Installed coir matting and straw.
- 200 live stakes were planted
- Cost: \$532 Stream Repair vs \$105k Stream Stabilization



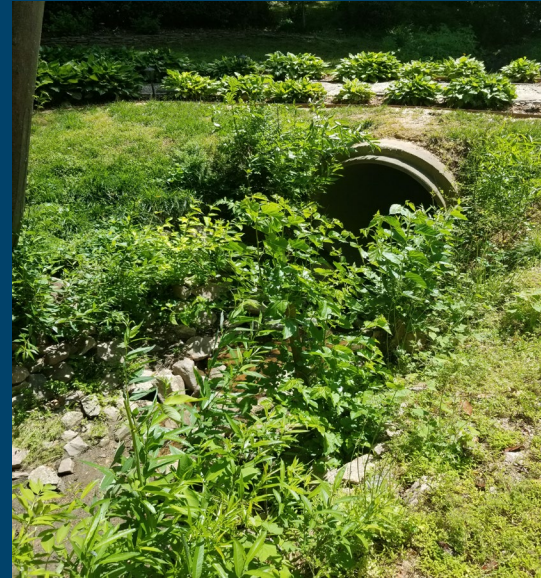


Watkins Street Stream Repair

Before



After





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Buffer Builder Bag (B3)

- Free native shrub and tree seedlings provided.
- Helps prevent erosion and create a streamside buffer.
- First-come, first-served basis.





Buffer Builder Bag Installation

Before



After





Stream Stabilization Program Goals

- ✓ Complete **5 stream stabilization projects** by the end of 2024.
- ✓ Increase projected approval projects to **10 projects per year**.
- ✓ Add additional staff to the program.
- ✓ Reduce the number of projects on the pending list to ~ 20 projects.



Stream Repair and B3 Goals

- ✓ Increase community awareness and outreach through social media and community meetings.
- ✓ Incorporate summer Stream Repair Workshops.
- ✓ Pursue more local partnerships.
- ✓ Stabilize **2,000 feet of stream** on public and private properties this year (currently 1,200 feet stabilized).
- ✓ Install **2,500 live stakes** this year (currently 1,850 live stakes installed).



Thank you!

Questions?

Visit raleighnc.gov and search “**Drainage Assistance Program**” for info about the Drainage Assistance and Stream Stabilization Programs.