

Congratulations, You've Built Green Stormwater Infrastructure! Now Who Will Maintain It?

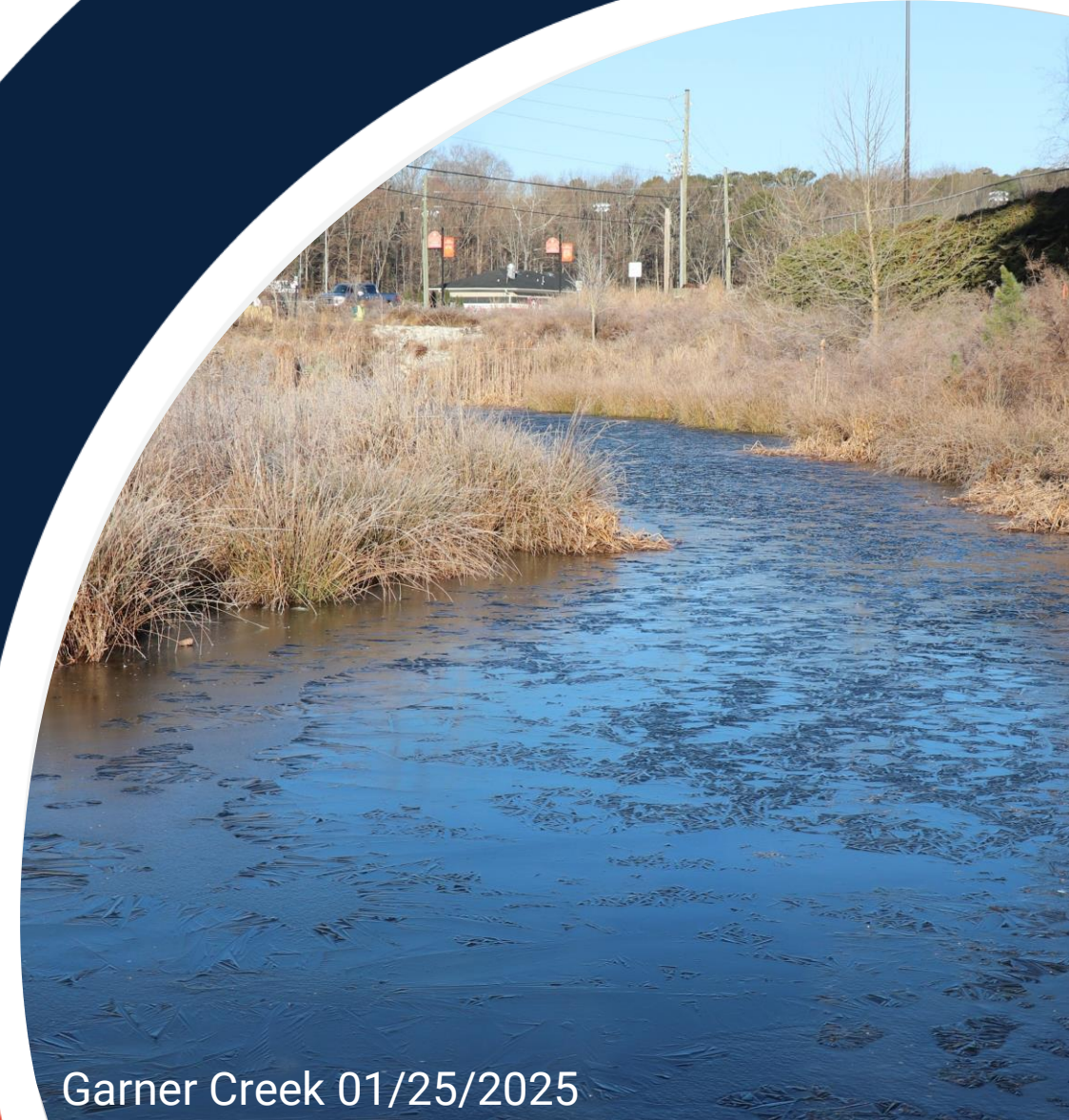
Cindy Nguyen

Gwinnett County Department of Water Resources (DWR)

Watershed Improvement Program (WIP)



Gwinnett



Garner Creek 01/25/2025

Gwinnett County's Watershed Improvement Program

Supporting



Federal/ State
Wastewater and Stormwater Regulatory
Compliance

Gwinnett County Management
Framework



SAFE, LIVABLE, &
HEALTHY COMMUNITY



SUSTAINABILITY
& STEWARDSHIP



Water Resources
Strategic Objectives

Through Implementation Of

Watershed Protection Plan

- Prevention
- Protection
- Restoration
- Results



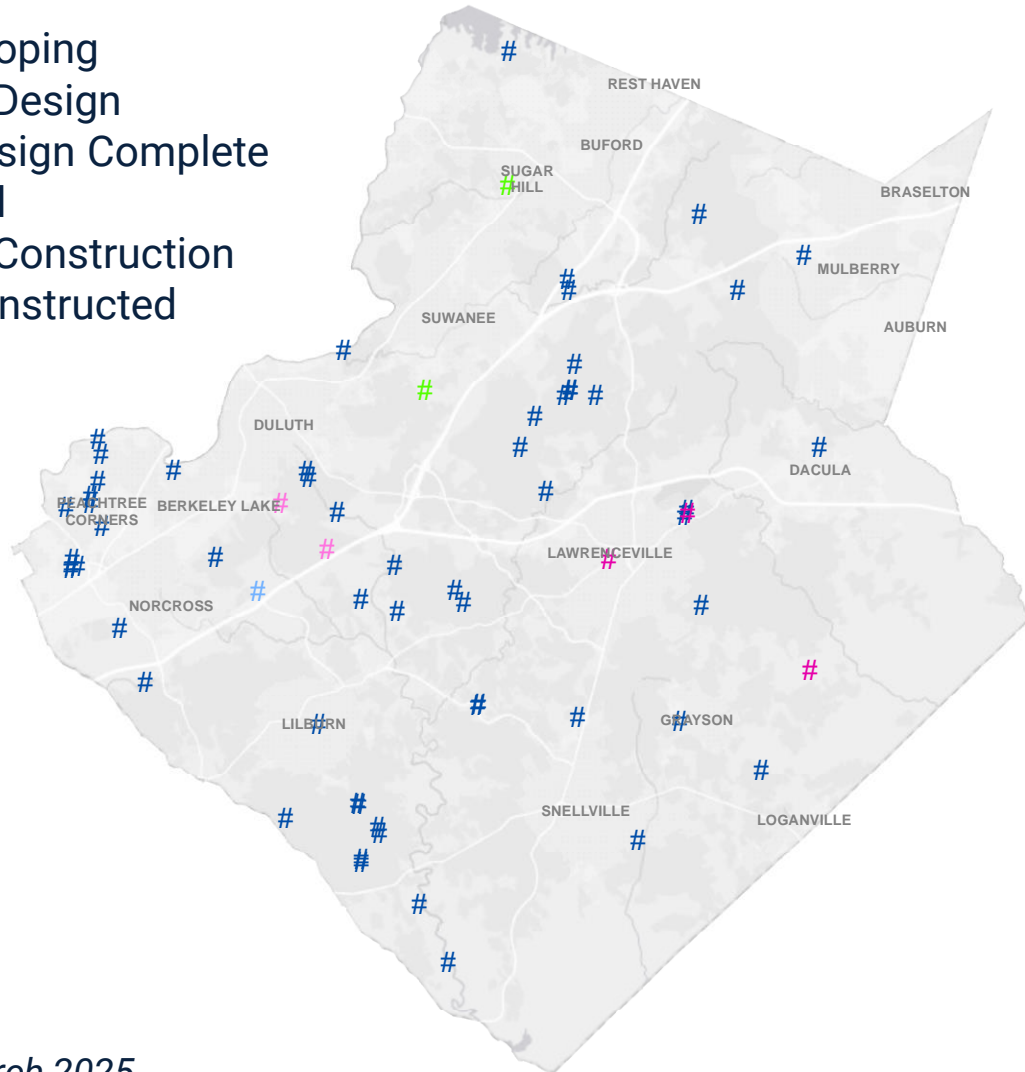
Program Goals

- Stormwater management demonstration projects with monitoring to facilitate innovation
- Internal and external education



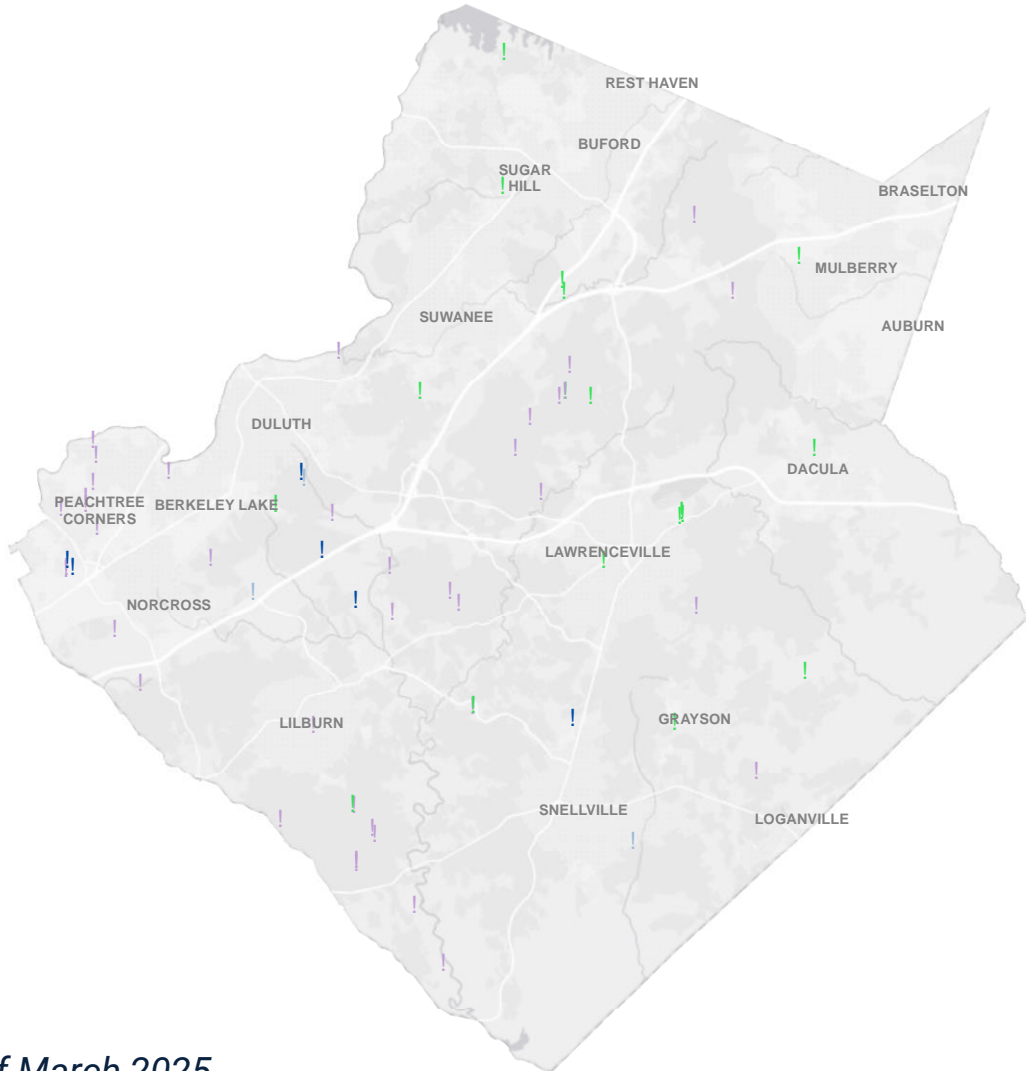
Watershed Improvement Capital Projects

- ▲ Scoping
- ▲ In Design
- ▲ Design Complete
- ▲ Bid
- ▲ In Construction
- ▲ Constructed



- Watershed Improvement Program Established in 2000
- First project constructed in 2007
- Projects focused mainly on stream/wetland restoration and pond retrofits
- Green stormwater infrastructure retrofits added to program with adoption of Gwinnett County Stormwater Management Manual in 2018
- ~70 projects to date

Watershed Improvement Capital Projects



- Stream Restoration
- Pond/Lake Retrofits
- Wetland Restoration
- Green Stormwater Infrastructure Retrofits

-12 Total Projects

-34 Total Green Stormwater Infrastructure BMPs

Bioretention: 17

Bioslope: 1

Enhanced Swale: 8

Regenerative Stormwater Conveyance: 4

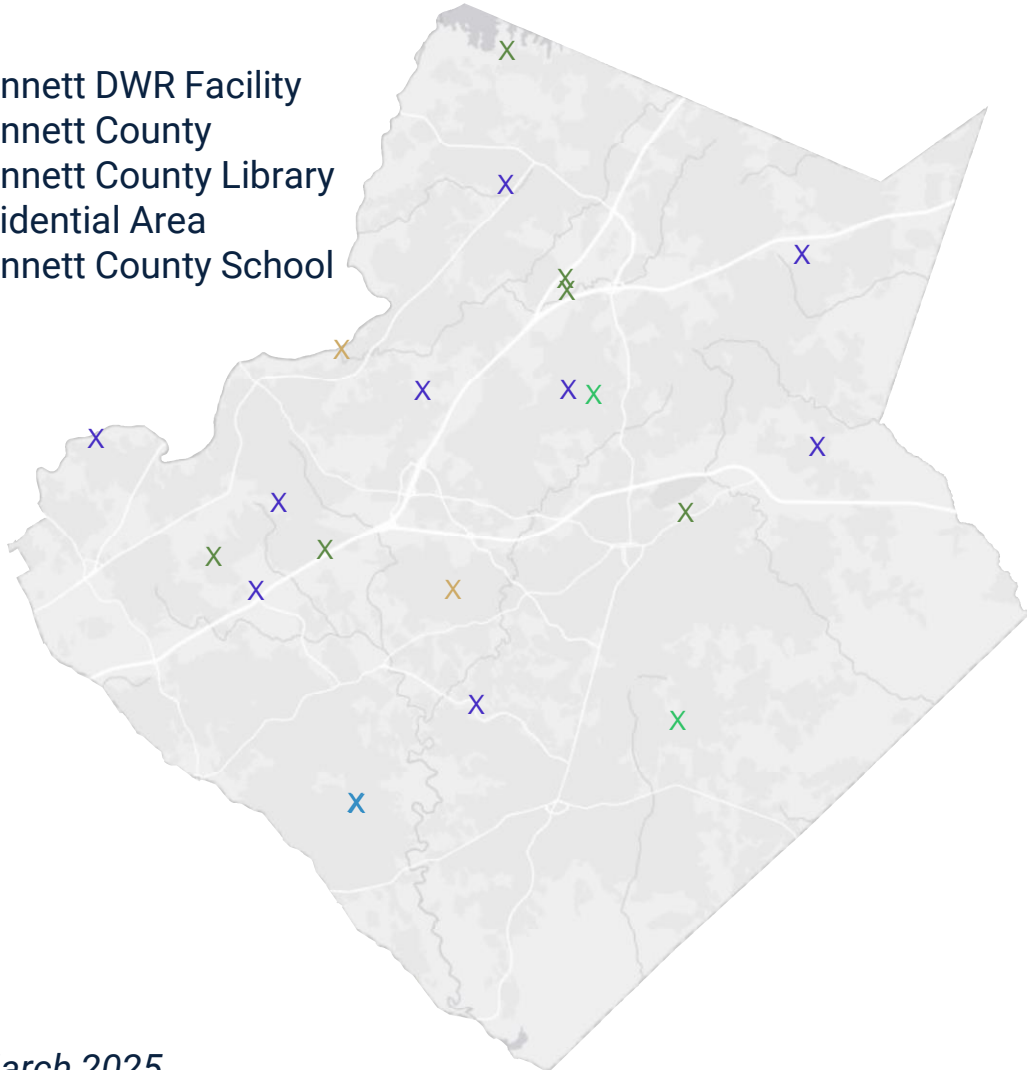
Submerged Gravel Wetland: 1

Stormwater Wetland: 4



Watershed Improvement Capital Projects

- ◆ Gwinnett DWR Facility
- ◆ Gwinnett County
- ◆ Gwinnett County Library
- ◆ Residential Area
- ◆ Gwinnett County School



Completed Projects Since 2018

Gwinnett County Parks

- Collins Hill Park
- Dacula Park
- Duncan Creek Park
- Ronald Reagan Park
- Beaver Ruin Wetland Park
- Jones Bridge Park

Gwinnett DWR Facilities

- F Wayne Hill WRC
- Gwinnett DWR Central
- Shoal Creek Filter Plant

Gwinnett County Libraries

- Collins Hill Library
- Grayson Library

Schools/Neighborhood

- Garner Creek at Parkview High School
- Shannon Way
- Plantation Woods
- Suwanee at the Hooch



Public Outreach

Program Goals:

- *Aims to educate and enhance our community and users with the chance to have an immediate impact on water quality and improve the health of the environment in Gwinnett*

Public Outreach

- In 2023, Public Outreach hosted or participated in 32 volunteer events with more than 650 volunteers
- Watershed Improvement Program partnership with Public Outreach
- Helping coordinate events with volunteers to perform green stormwater infrastructure maintenance



Bromolow Creek 12/18/2024

Issues with GSI Maintenance

- Neglect
- Landscapers uninformed about GSI care
- Mowing intended vegetation
- Parks & Rec staff are unaware of what GSI are in their parks
- Lack of specialized Operations and Maintenance manuals
- Learning what are desirable vs non desirable plants
- Public education of WIP projects

Challenges



Seasonal Parks staff



Learning plant identification



Unfamiliarity with proper maintenance requirements



Lack of awareness

Solutions

- Creating schedules of maintenance and field guides

Matlin Way Maintenance Field Checklist

<u>Date & Time of Inspection:</u>	
<u>Inspector Name:</u>	

<u>Maintenance Item</u>	<u>Condition</u>				<u>Comments</u>	<u>Recommended Schedule</u>
	Good	Poor	Bad	N/A		
General Inspection						
Is the project easily accessible?						Maintain access area annually in Winter
Is project area generally clean?						Remove litter and debris semi-annually in Spring and Fall
Stream						
Inspect stream banks for erosion						Inspect annually
Is the water flowing naturally and undisturbed?						Inspect annually

Solutions

- Training events for maintenance staff
- Educational tours for students and Master Gardeners



Solutions

- Engaging student groups and stakeholders on independent ownership of projects



Parkview HS 08/07/2019

Solutions

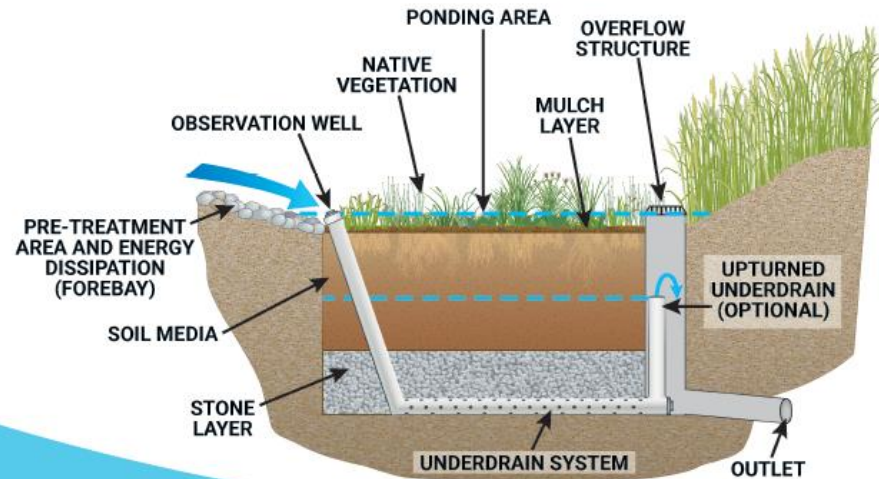
- Creating signage to inform the public of GSI functions
- QR code with corresponding animations of water flowing through system

BIORETENTION

Protecting Gwinnett's Watershed Health

Key features of bioretention:

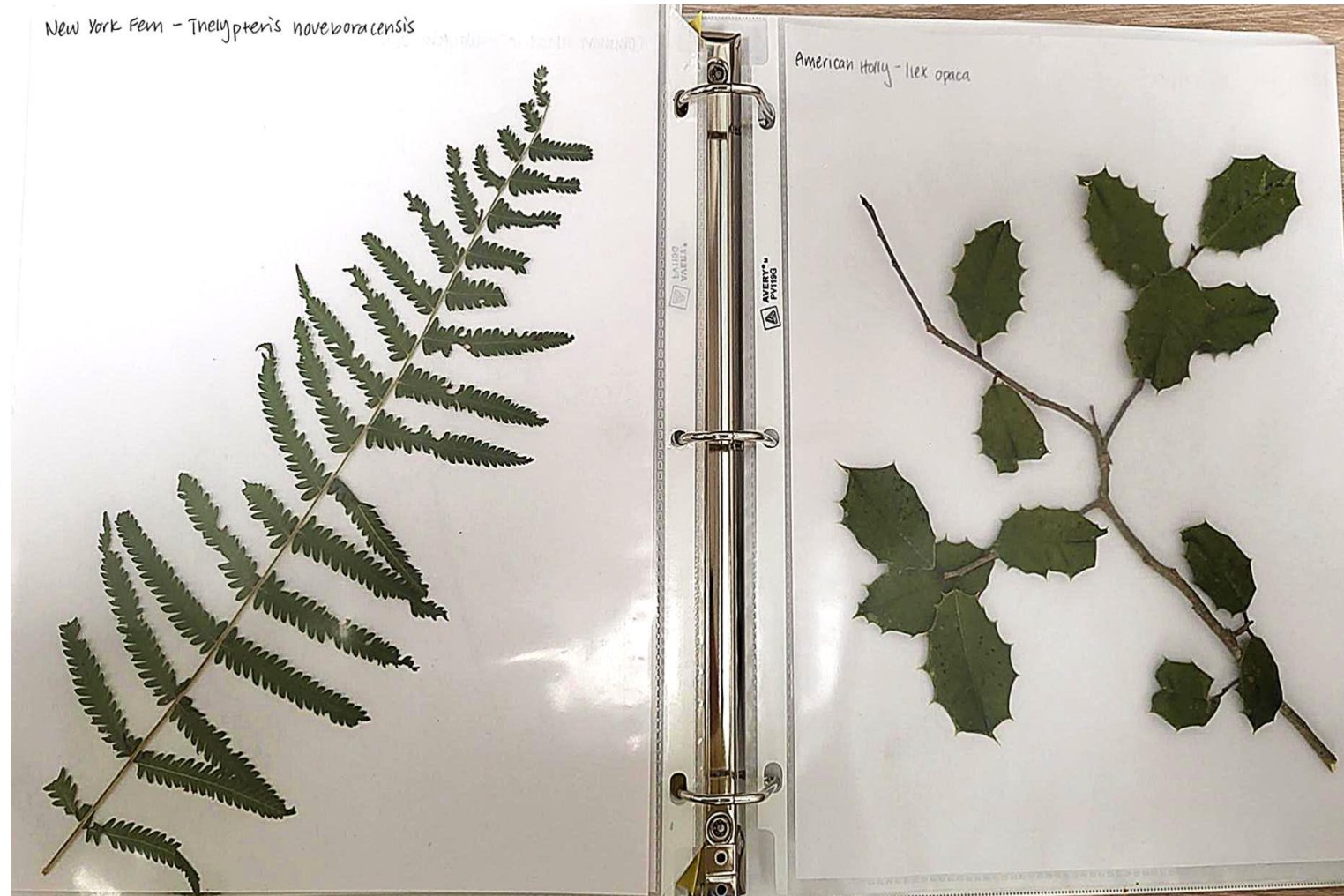
- Stormwater ponds at the surface and soaks in slowly
- Soil media layer filters out pollutants
- Plants uptake pollutants



See the animation
"How It Works:
Bioretention"

Solutions

- Utilizing plant identification apps
- Creating our own “plant binder”



Solutions

- Hosting volunteer events for WIP project maintenance
- Providing educational opportunities to Master Gardeners, students, and other groups



Bromolow Creek 12/18/2024



Gwinnett

F. Wayne Hill Water Resources Center

Nutrient Recovery Area
Bioretention Practice



FWH 08/30/2024

Master Gardeners

- About 15 volunteers from UGA Extension Master Gardeners
- Their knowledge of plants help increase the survival rate of the plants
- Typically work in ornamental or native gardens



FWH 11/08/2024

Step 1: Remove dead organic material

- Need to remove dead debris left from mowing
- Prevents altering the water flow
- Can affect water infiltration
- Mosquito breeding grounds



Step 2: Turn Stone

- Remove the sediment accumulation in forebay areas
- Routine maintenance will allow for more sediment capture
- Prevent plants from growing in forebay areas
- Energy dissipation



Step 3: Planting

- Sourced plants from local nursery
- Used Blue Arrow Juncus and Shenandoah Switchgrass
- Split existing plants to create more



Step 4: Add Mulch

- Mulch increases plant survival after planting
- Prevents soil erosion and compaction
- Retains soil moisture
- Prevents weeds



Step 5: Water the plants

- Help plants get established and recovered in a new environment
- Minimize transplant shock



Bioretention

Before



After



Stone

Before



After





Results

- Planted native plants
 - 5 Shenandoah Switchgrass 3 gal → \$79
 - 9 Blue Arrow Juncus 1 gal → \$95
- Pickup truck load of mulch → \$46
- Spent \$220 on materials
- Landscapers rate of \$50 per hour
 - 12 volunteers for 4 hours
 - We saved **\$2,400!**

Things to keep in mind

- You have to water plants!
- You need mulch, specifically double shredded mulch
- Master Gardeners are more than free labor



FWH 11/08/2024

Garner Creek at Parkview High School



Garner Creek 01/25/2025



Gwinnett

Garner Creek Ambassadors

- Environmental student group at Parkview High School
- Had continuous maintenance but lead to eventual loss of “ownership” on the project



Mountain Park 03/08/2025



Step 1: Allocate labor

- Large project
- Had the students split in 5 groups
 - Bioretention A
 - Outdoor Classrooms
 - Bioretention B
 - Debris Pick-up
 - Invasive / Pine Removal



Garner Creek Workday Main Focus Areas

Bioretention A



Bioretention B



Outdoor Classroom 1



Debris Pick Up Area



Outdoor Classroom 2



Step 2: Remove dead organic material

- Vegetation has not been maintained in awhile
- Lots of dead overgrowth that could affect draining



Step 3: Remove pine saplings and invasives

- Remove unwanted or poorly located volunteer species
- Pine sapling roots can affect the underdrain layer
- Invasive privet trees were removed
- Prevent competition with intended native plants



Bioretention A

Before



After



Bioretention A – April 5th Update

Before



After



Forebay Area – April 5th Update

Before



After



Outdoor Classroom #1

Before



After



Outdoor Classroom #2

Before



After



Bioretention B

Before



After





Gwinnett

Thanks to our volunteers!





Garner Creek 01/25/2025

Results

- Educated 20 Volunteers
- Re-engaged the Student Environmental Club
- Savings:
 - Landscapers rate of \$50 per hour
 - 20 volunteers for 3 hours
 - We saved **\$3000!**

Few Things About Volunteers

- High Schoolers have limitations
- Volunteers come in all ages
- Difficulty finding people to sign up
- Be prepared to answer lots of questions



Future Projects

- Collins Hill Park
- Hosting GSI tours for parks with our projects
- Going back to Garner Creek with Master Gardeners and students



Collins Hill Pocket Wetland 10/10/2024

Brushy Fork Creek

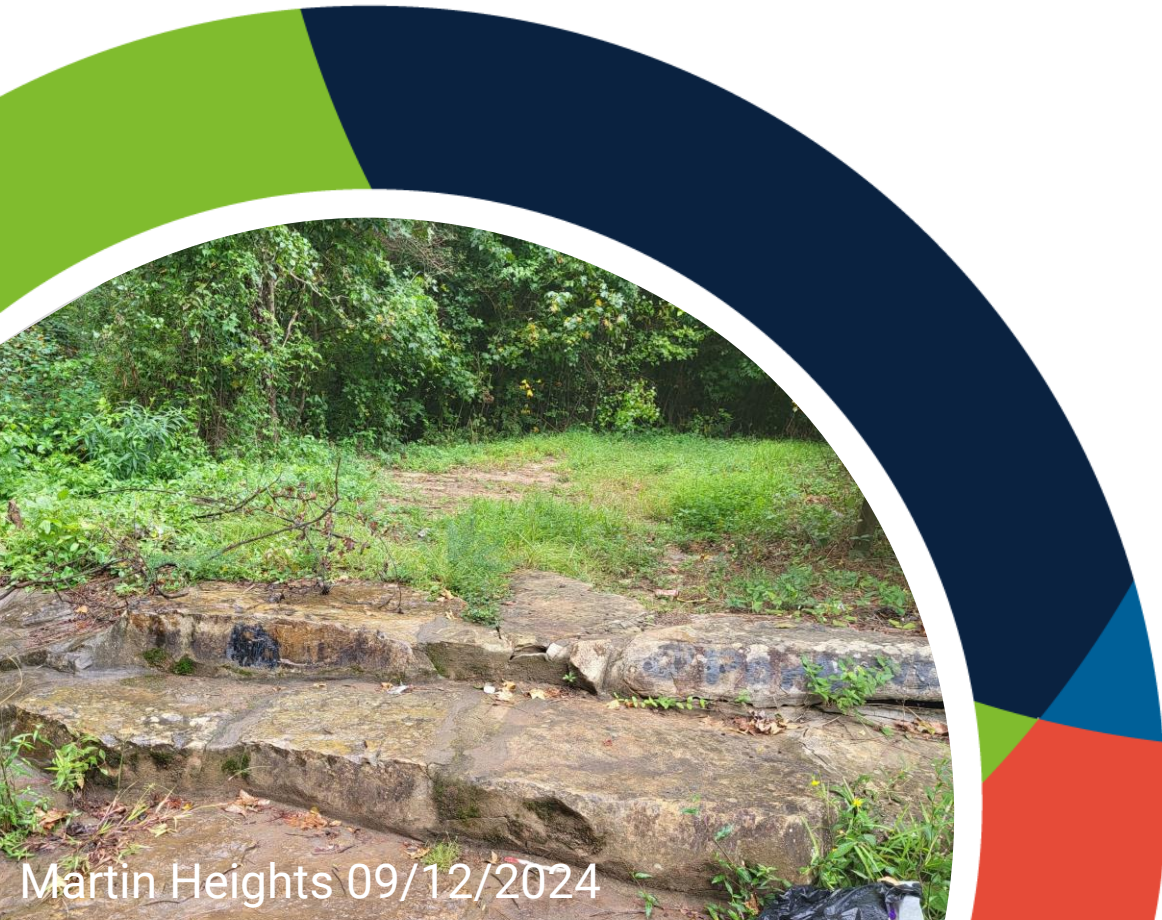
- Creating a relationship with Grayson High School for Brushy Fork Creek
- Opportunity for student engagement



Brushy Fork Creek 11/21/2024



Martin Heights



- Collaborating with a local mosque to clean a WIP at Martin Heights
- Litter and debris collection
- Maintaining trails for accessibility

Martin Heights 09/12/2024

Shoal Creek Filter Plant

- Re-planting bioretention at Shoal Creek Filter Plant
- Will have a booth for the Water Wonders Spring Festival!

Water Wonders Spring Festival

Saturday, April 26 | 10:00am – 2:00pm

Shoal Creek Filter Plant

1755 Buford Dam Road, Buford

Enjoy games, crafts, and free fairground treats at this family-friendly festival! Take a tour of the Shoal Creek Filter Plant facility and explore exciting exhibits from our community partners.

To learn more, visit
Gwinnetth2o.com/GetInvolved



Questions?

Thanks!

