



Rumson Rain Garden Ambassadors

An Introduction to GSI & Maintenance



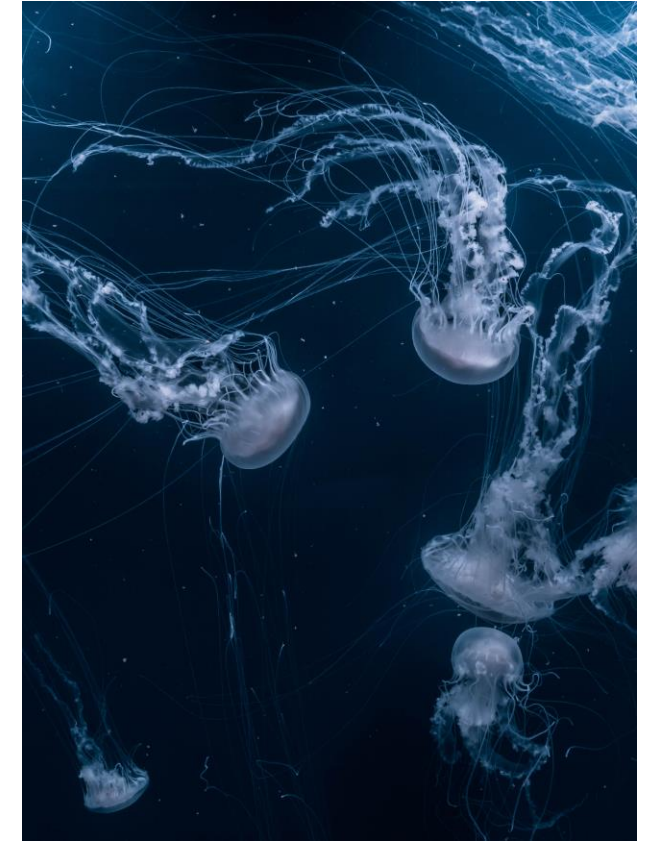
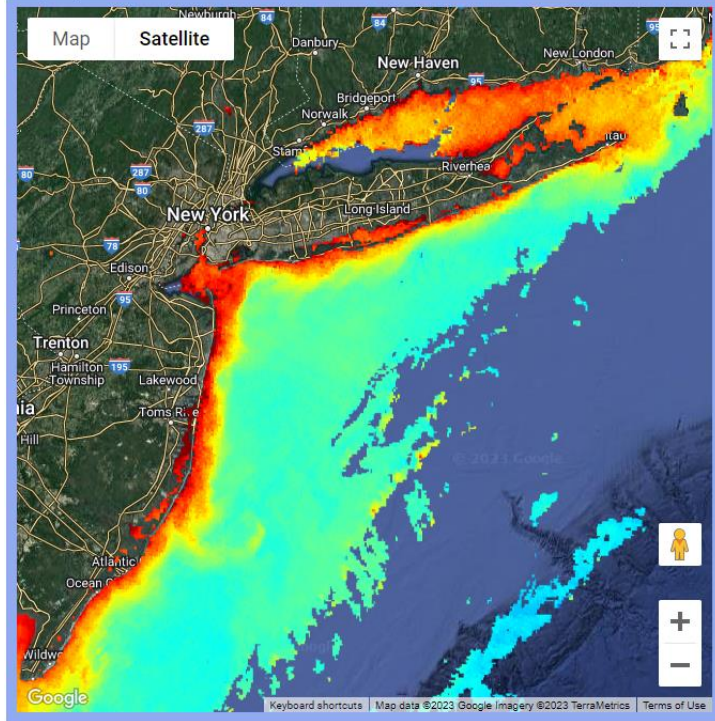
Topics Covered

- Intro to Rain Gardens & GSI
- Why Native
- Installation Basics & Project Siting
- Maintenance & Trouble Shooting
- Keeping Your Neighbors Happy
- Useful Resources

Stormwater & its Impacts



Daily Map Viewer



Implications for Aquatic & Marine Life

GSI as a Solution

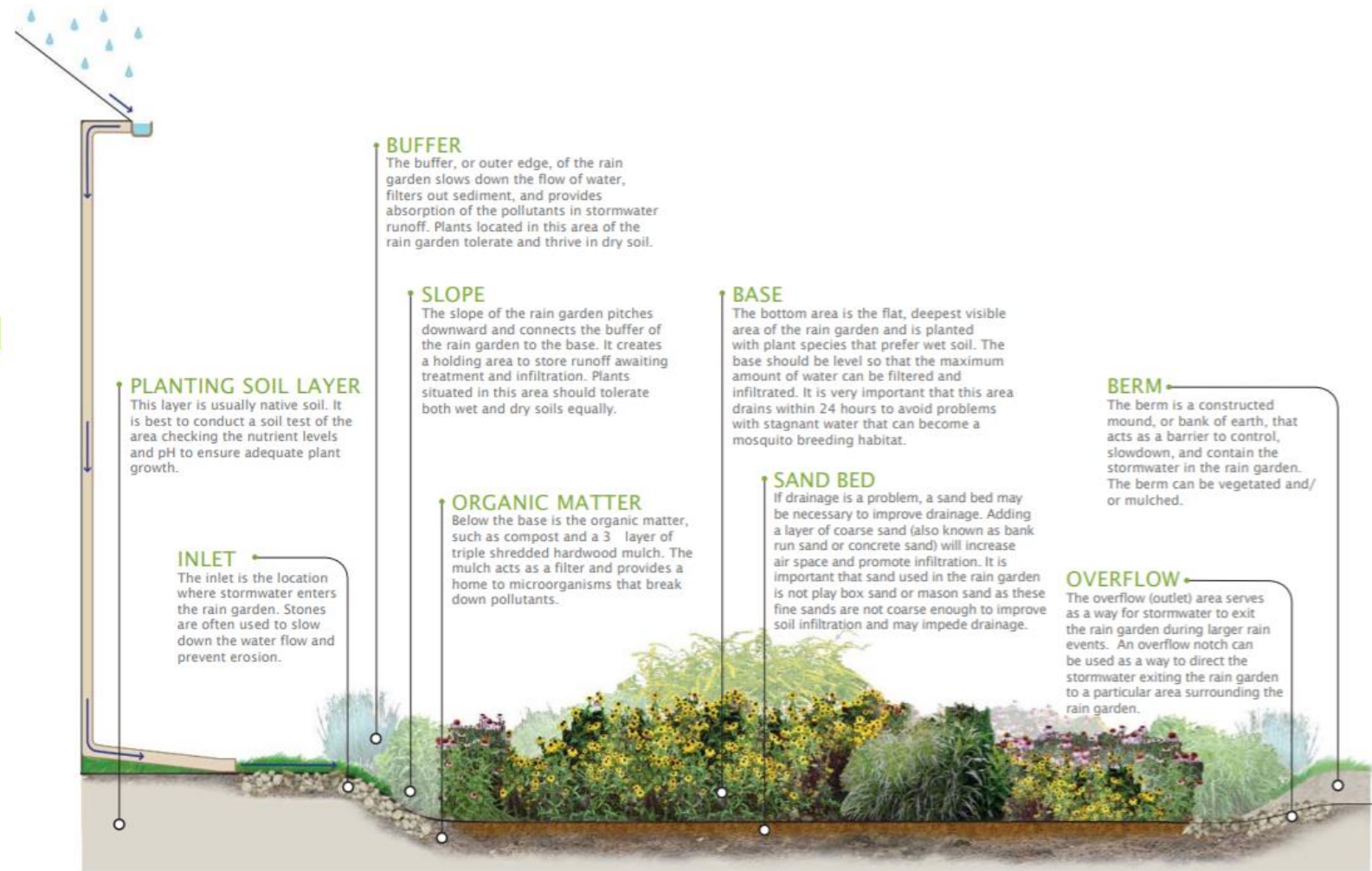
- **Green stormwater infrastructure** includes a range of soil-water-plant systems that intercept **stormwater**, infiltrate a portion of it into the ground, evaporate a portion of it into the air, and in some cases release a portion of it slowly back into the storm sewer system.
- It preserves and recreates natural landscape features, minimizing effective imperviousness to create functional and appealing site drainage that treat stormwater as a resource rather than a waste product.



Anatomy of a Rain Garden

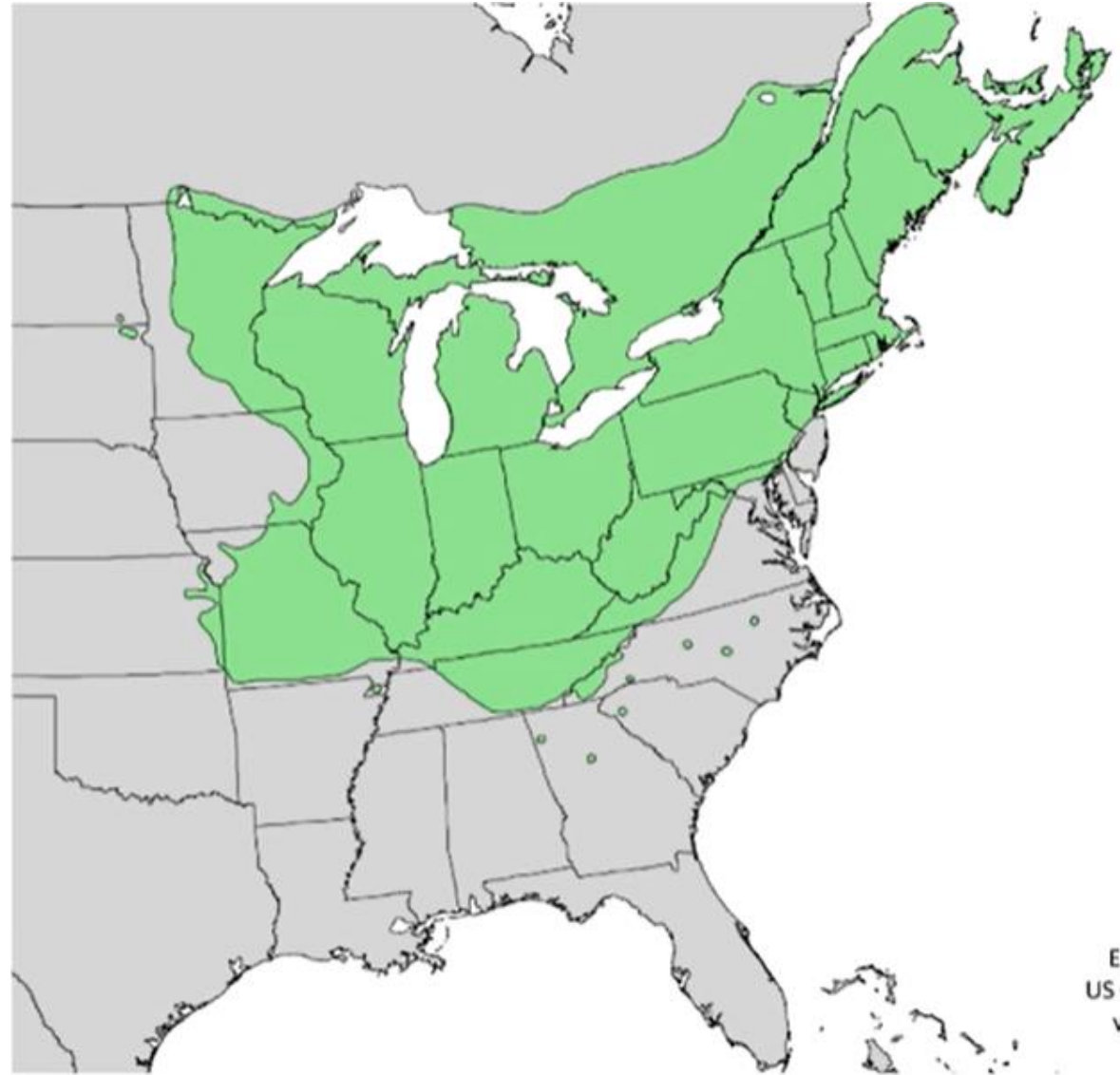
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Parts of a Rain Garden



Native Plants

- Occur in a natural range and in particular habitats where over the course of evolutionary time they have adapted to the physical conditions and co-evolved with other species that live there.
- EX: Native Range of Sugar Maple



From:
Elbert Little, Jr.
US Geologic Survey
via Wikimedia

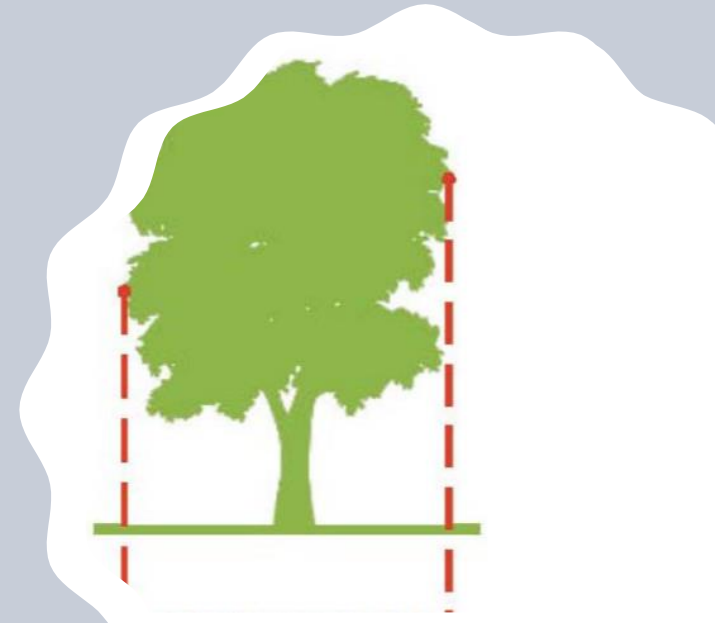
Native Plants

- Require less fertilizer
- Have adapted to survive off the average rainfall in their native range
- Are more resistant to predators and pests
- Photo Credit: Wonderopolis



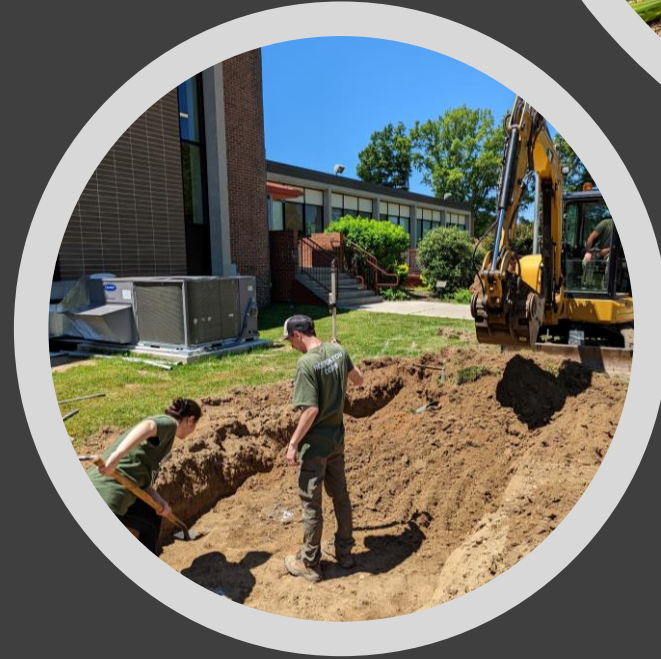
Rain Garden Siting

- Initial site inspection. Where is water flowing too?
- Avoid ponding areas
- 10 feet from foundation of any buildings
- Never install over septic field or adjacent to well head.
- Understand where the garden will overflow too.
- Get to know your soils
- Consider slope and sunlight
- NJ One Call 1-800-272-1000



Installation Basics

- Dig bed to a minimum of ponding depth + 2-3 inches of compost + 2-3 inches of mulch depth. Average dig depth is 12 inches.
- Use stake, line level and 4 foot to measure depth of bed and height of berm.
- Level the ponding area before and after incorporating bioretention media
- Plant like plants together and avoid compacting soils
- Water and mulch





Maintenance & Trouble Shooting



- Rain gardens are **low** maintenance, not **no** maintenance!
- Inspect regularly, especially after large storms to assess needs
- Expect more maintenance during the first two growing seasons
- Most issues can be attributed to a design problem or a programmatic problem, determining the cause will help you find a solution faster!

Develop a plan for maintenance tasks

- Determine **who** will be responsible for maintenance tasks **before** installing rain garden
- Factor mulch and reinforcement plants into original budget
- Know when to call a professional

Maintenance Tasks	Frequency
<ul style="list-style-type: none"> • Water once every three days for the first month and then weekly during the first growing season (April-October), depending on rainfall • Expect up to 10% of the plant stock to fail in the first year; and plan accordingly for replacement plants 	Upon establishment
<ul style="list-style-type: none"> • Check inlets and overflow areas for debris or leaves that are blocking flow • Check and repair erosion areas 	After heavy rains in first month; periodically in subsequent years
<ul style="list-style-type: none"> • Remove weeds by hand 	Monthly for first growing season; every 3 months or as needed in subsequent years
<ul style="list-style-type: none"> • For "meadow" type Conservation Landscapes consisting of grasses, mow in early spring • For other types of landscapes, check for winter damage and add mulch to bare spots as desired (2–3 inches) • Cut back perennials and remove dead growth 	March or April
<ul style="list-style-type: none"> • Add reinforcement planting to maintain the desired vegetation density • Prune trees and shrubs; thin herbaceous plants as desired 	Fall
<ul style="list-style-type: none"> • Remove invasive and non-native plants using recommended control methods • Remove any dead or diseased plants • Dead-head flowers • Stabilize any eroded or bare areas • Remove trash 	As needed

Keep a Record of your Rain Garden

Component:	Check For:	Observations:	VERIFICATION
Pre-Treatment: <input type="checkbox"/> Forebay <input type="checkbox"/> Grass filter strip <input type="checkbox"/> Grass channel <input type="checkbox"/> Stone pad <input type="checkbox"/> Other: <input type="checkbox"/> None	<input type="checkbox"/> Full of sediment; needs clean-out <input type="checkbox"/> Erosion <input type="checkbox"/> Holding water <input type="checkbox"/> Flow by-passes pre-treatment <input type="checkbox"/> Other		
BMP Surface Area: <input type="checkbox"/> Vegetation <input type="checkbox"/> Mulch <input type="checkbox"/> Other:	<input type="checkbox"/> Appears undersized <input type="checkbox"/> Ponding depth too shallow <input type="checkbox"/> Ponding depth too deep <input type="checkbox"/> Not level; ponding not even across surface <input type="checkbox"/> Sink holes <input type="checkbox"/> Sediment caked on surface <input type="checkbox"/> Standing water <input type="checkbox"/> Trash <input type="checkbox"/> Erosion		<input type="checkbox"/> Surface area conforms to plan? If different from plan, note how it is different: <input type="checkbox"/> Ponding depth conforms to plan? If different from plan, note how it is different:
Soil Media: <input type="checkbox"/> Bioretention or Rain Garden mix <input type="checkbox"/> Sand <input type="checkbox"/> Other:	<input type="checkbox"/> Too much clay or wrong soil type; not permeable enough <input type="checkbox"/> Too shallow <input type="checkbox"/> Other:		<input type="checkbox"/> Soil media appears to conform to plan? If different from plan, note how it is different:
Side Slopes	<input type="checkbox"/> Erosion <input type="checkbox"/> Unstable <input type="checkbox"/> Other:		
Vegetation: <input type="checkbox"/> Trees <input type="checkbox"/> Shrubs <input type="checkbox"/> Herbaceous <input type="checkbox"/> Other:	<input type="checkbox"/> % surface area covered with vegetation: <input type="checkbox"/> Many bare spots <input type="checkbox"/> Dead/diseased/unhealthy plants <input type="checkbox"/> Overgrown <input type="checkbox"/> Invasives <input type="checkbox"/> Too much mulch <input type="checkbox"/> Other:		<input type="checkbox"/> Vegetation generally conforms to plan OR vegetative cover is adequate? If different from plan, note how it is different:

Vegetated Practices: bioretention, rain gardens, bioswales, filter strips, living wall, buffers/shoreline, constructed wetlands, infiltration w/ vegetation. NOTE: Shaded cells to be used for BMP verification

Date of Inspection: _____	Project/BMP Name: _____	Plan/BMP # if applicable: _____
Type of Inspection: <input type="checkbox"/> Verification 1 st Inspection for Permit Cycle <input type="checkbox"/> Verification Re-Inspection To Confirm Corrective Actions		
BMP Type: <input type="checkbox"/> Stormwater Retrofit <input type="checkbox"/> New LID Practice <input type="checkbox"/> Old Stormwater Practice <input type="checkbox"/> Homeowner BMP		
Date BMP Placed into Service: _____		Site Address: _____
Verification Inspector: _____		Inspector Credential(s): _____
Photo #s Taken at Site: _____		Is BMP Still Present? <input type="checkbox"/> YES <input type="checkbox"/> NO

Component:	Check For:	Observations:	VERIFICATION
Drainage Area	<input type="checkbox"/> Erosion <input type="checkbox"/> Sediment/Grit/Dirt <input type="checkbox"/> Stockpiles: <input type="checkbox"/> Bare soil <input type="checkbox"/> Chemicals, oil, etc.: <input type="checkbox"/> Other:		<input type="checkbox"/> Drainage area conforms to plan? If different from plan, note how it is different:
Inlets to Practices: <input type="checkbox"/> Pipes <input type="checkbox"/> Curb cuts <input type="checkbox"/> Sheetflow <input type="checkbox"/> Other:	<input type="checkbox"/> Obstruction <input type="checkbox"/> Erosion <input type="checkbox"/> Structural/safety issues <input type="checkbox"/> Other		

Flow & Drainage Issues

- Design based: Improperly sited inflow, unlevel garden bed, over or under sized garden, garden sited too far from a water source
- Programmatic Based: Compaction due to working in wet

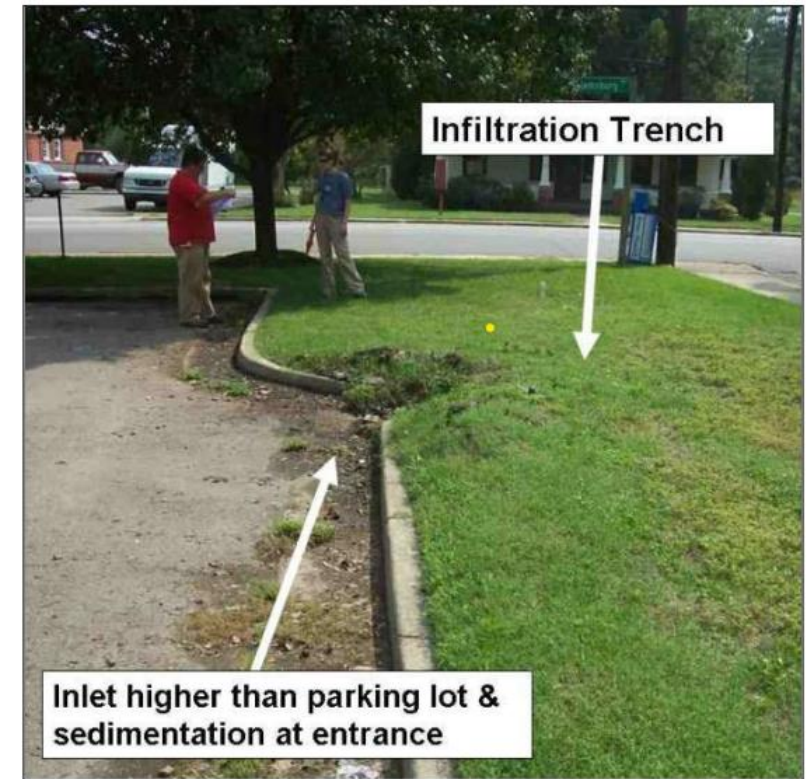


Photo Credit: Center for Watershed Protection

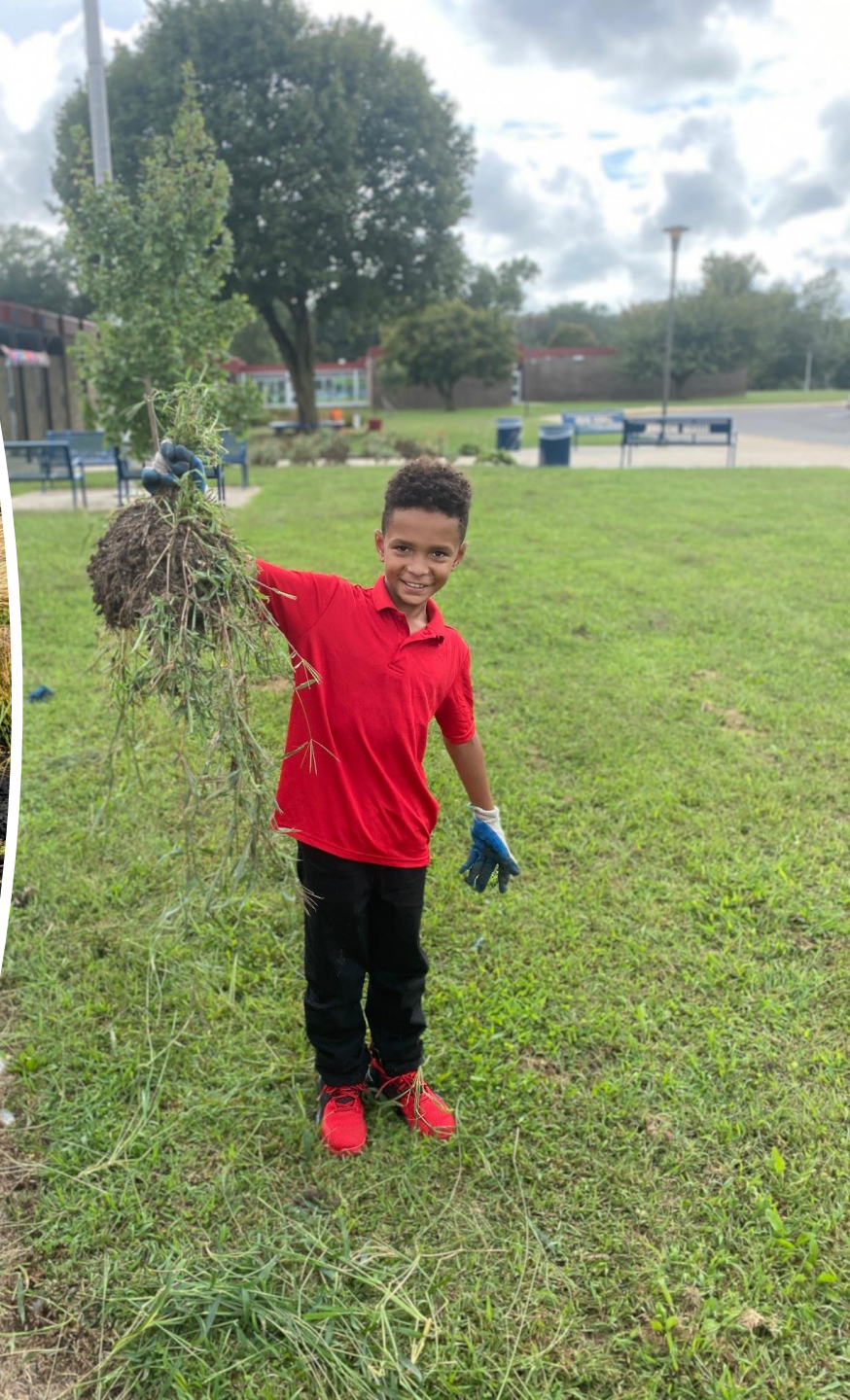
Flow & Drainage cont

- Sediment may build up, especially around the inlet and outlet. Remove excess with a shovel or hand trowel
- If you have placed rocks around the inlet or outlet, you may need to move them back into place if they get knocked around by weather or foot traffic



Issues related to weeds

- Monthly weeding will be needed during the first two growing seasons
- Total amount of weeds should decrease over time as plants fill out
- Maintaining a 3-inch layer of mulch will prevent weeds
- Mowing/weed whacking clippings landing in garden
- Pretreatment & starting with more mature plants will help prevent weeds





Design Tips & Communication

- Clean Edges
- Signage
- Being Neighborly
- Keeping an as built or planting plan
- Prune and deadhead as a compromise



Resources

[American Littoral Society](#)

[Rumson Environmental Commission](#)

[Jersey Friendly Yards](#)

[Watershed Stewards Academy University of Vermont Scaping Garden Manual](#)

[Rutgers Rain Garden Manual](#)

[South Jersey Water Savers](#)

[The Meadow Project](#)

[Pat Sutton's list of Native Plant Vendors](#)

