Rain Gardens

&

Water Quality

Improvement

NASSAU COUNTY

SOIL & WATER
CONSERVATION DISTRICT

Who We Are

- Soil and Water Conservation districts are local units of government that develop, manage, and direct natural resource programs at the local level.
- We provide educational programs and technical services to all Nassau County residents and help foster coordination among municipalities to manage and preserve natural resources.

NASSAU COUNTY

SOIL & WATER
CONSERVATION DISTRICT

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What is a Rain Garden?

A type of bio-retention system comprised of native plants that help filter nonpoint pollution source

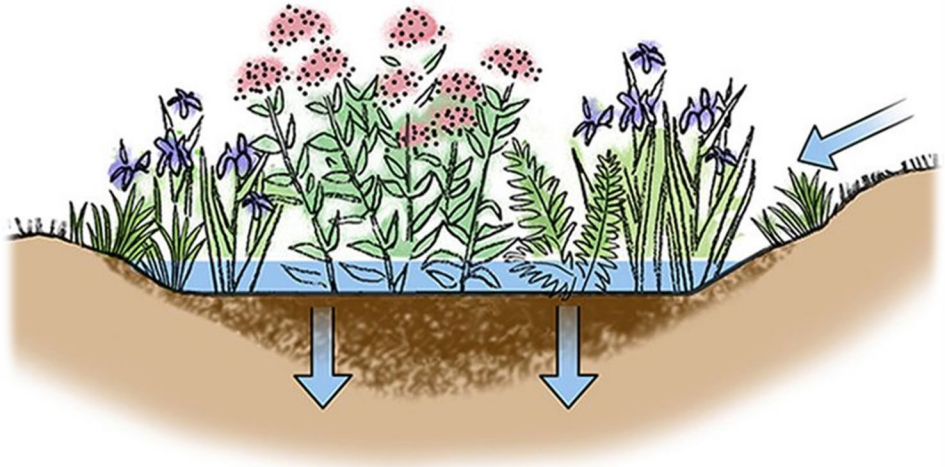
Filled with native plants, drought and flood resistant.

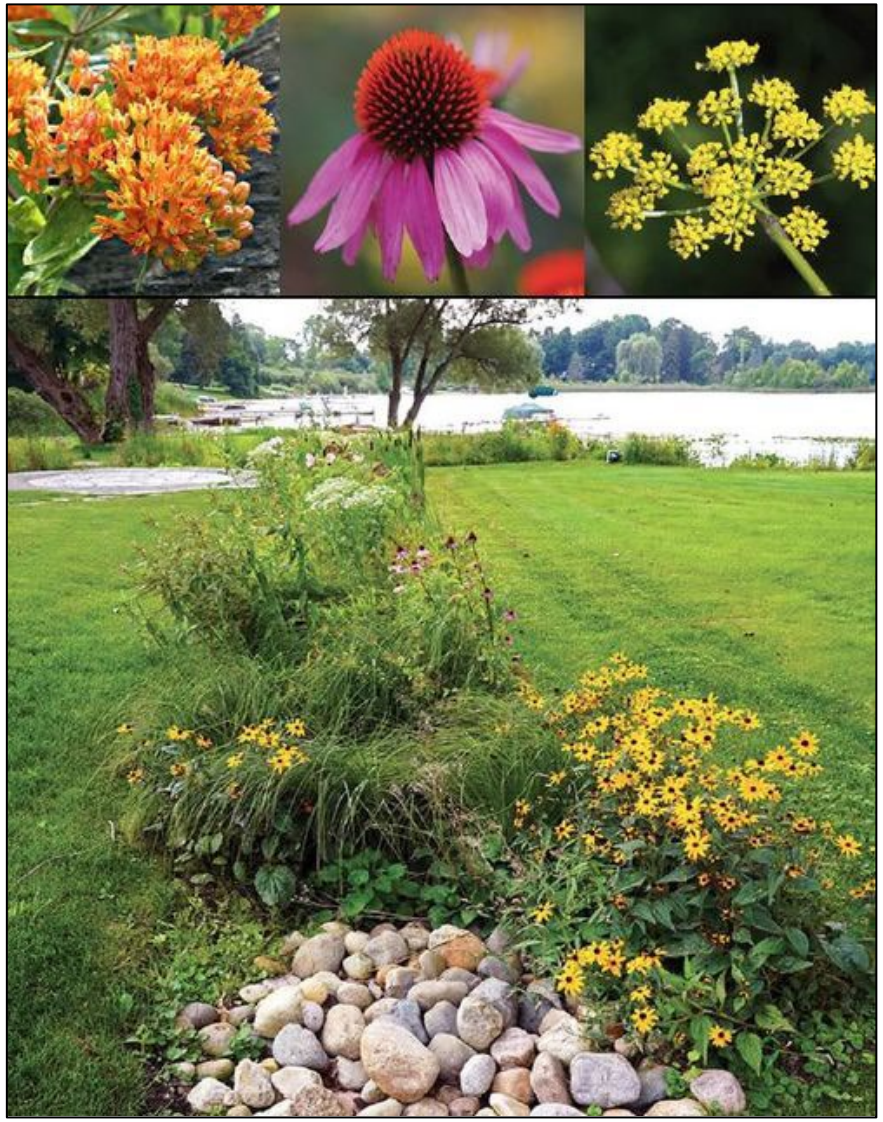
Strategically located in a depression or in the pathway of runoff from an impervious area.

Holds several inches of storm water, allowing it to slowly infiltrate into the ground. Preventing flooding and overloading storm drains.

Rain Gardens Root Systems can absorb up to 90% of nutrients and chemicals from stormwater runoff

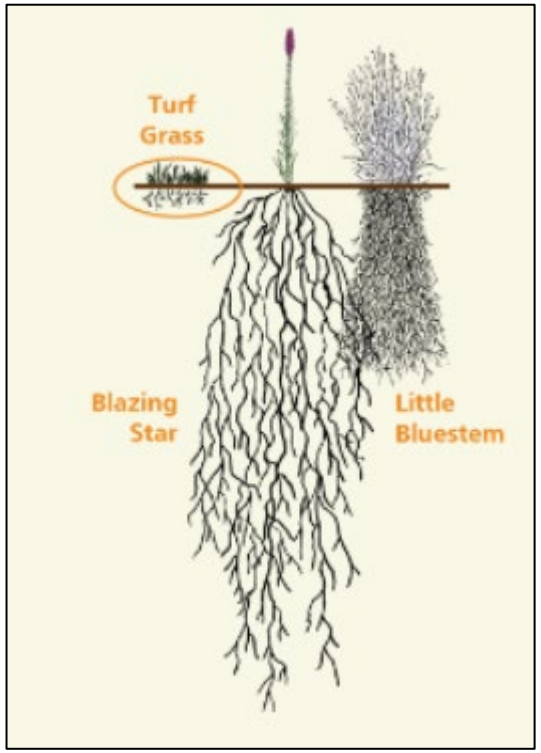
Pollutants removed before they can drain into our bays and waterways helps safeguard local shellfish





Benefits of having a Rain Garden

- Provide food, shelter, and nesting resources for pollinators, birds, small mammals, and a variety of wildlife species.
- Adds color and volume to an area.
- Store carbon dioxide and remove water pollutants like nitrogen and phosphorus.
- Little to no maintenance requirements.



Compared to a conventional lawn, rain gardens allow for 30% more water to soak into the ground.

Selecting an area for a Rain Garden

Wild Bergamot “Bee Balm”
Monarda fistulosa

1. Place in the pathway of runoff.
2. Size should be 20-30% of the impermeable surface you are trying to cover.
3. Test the soil by filling a small depression with water and checking routinely for infiltration
4. Dig a depression 3-12 in deep, adding drainage material if necessary

How to build a Rain Garden

- Create a comprehensive design plan to incorporate into the existing landscape, located where water pools or flows
- Place away from buildings and houses so infiltrating water doesn't seep into the foundation
- Do not place directly over a septic system
- Test soil composition. Texture should be granular and well draining
- Make use of existing storm drains for overflow
- Consider groundwater recharge rate, adding a riparian buffer or underdrain

Jacob's Ladder - *Polemonium reptans*

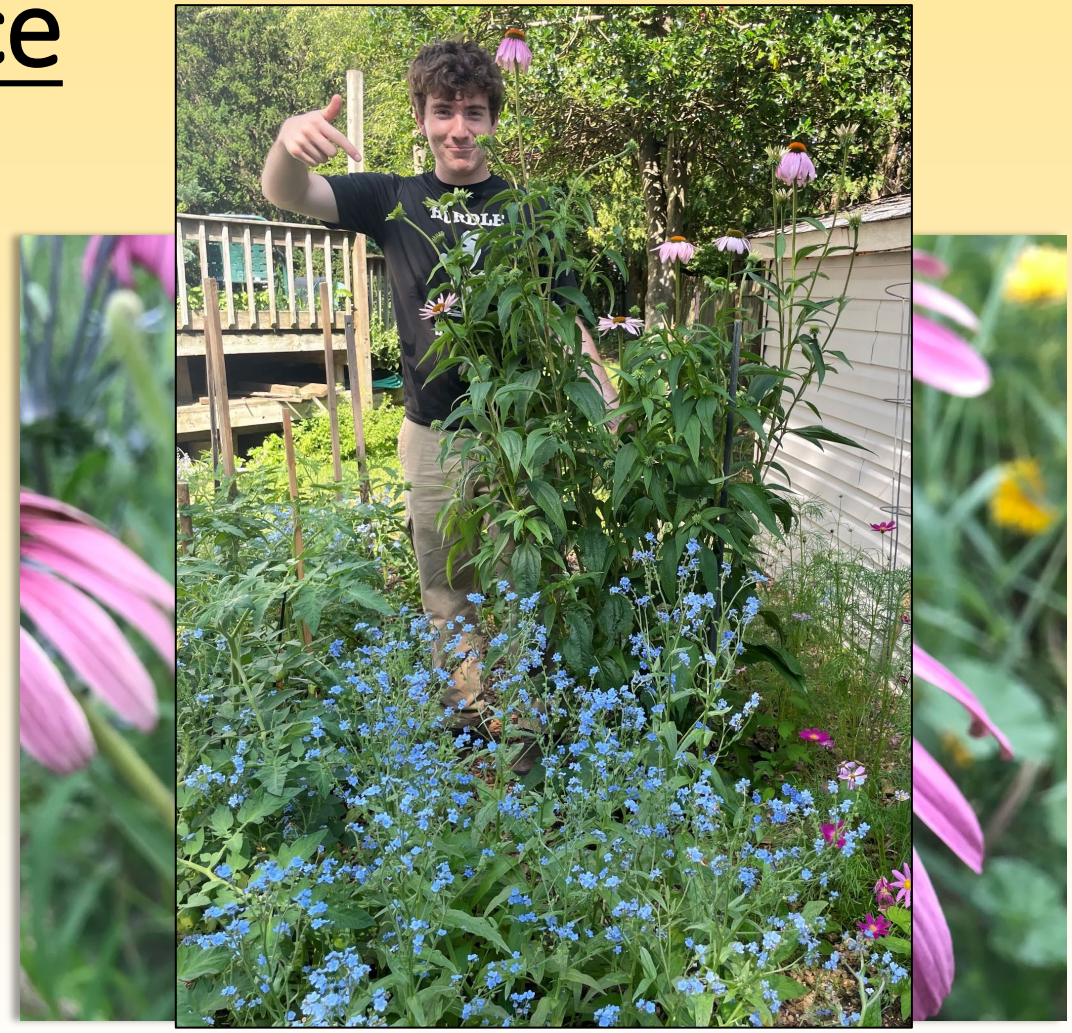
Expected Maintenance

Water for the first 3-6 months, once established no additional irrigation is needed

No additional fertilizer is needed as plants are already adapted to native soil conditions

Weeding and Invasive species removal

Pruning of trees and shrubs, deadhead plants at the end of the season



Purple Coneflower – *Echinacea purpurea*

Mosquitos require 72hrs. of standing water for larvae development. Raingardens are designed to drain in 24hrs.

Spring Bloom List

Seasonal Bloom List provided by Town of North Hempstead – Meagan Fastuca

Black Cohosh *Actaea racemosa*	**Jack in the Pulpit** *Arisaema triphyllum*	**Wild Columbine** *Aquilegia canadensis*	**Wild Ginger** *Asarum canadense*	**Blue Wild Indigo** *Baptisia australis*	**Wild Indigo** *Baptisia tinctoria*
Dutchman's Breeches *Dicentra cucullaria*	**Scarlet Strawberry** *Fragaria virginiana*	**Wild Geranium** *Geranium maculatum*	**Blue flag Iris** *Iris versicolor*	**Foxglove beardtongue *** *Penstemon digitalis*	**Creeping Phlox** *Phlox subulata*
Jacob's Ladder Polemonium reptans	**Solomon's Seal** *Polygonatum biflorum*	**Barren Strawberry** *Waldsteinia fragarioides*	**Bluets** *Houstonia caerulea*	**Foamflower** *Tiarella cordifolia*	**Golden Alexanders** *Zizia aurea*

Summer Bloom List

Yarrow *Achillea millefolium*	**Giant Hyssop** *Agastache foeniculum*	**Swamp Milkweed** *Asclepias incarnata*	**Butterfly Milkweed** *Asclepias tuberosa*	**Common Milkweed** *Asclepias syriaca*	**Lanceleaf Coreopsis *** *Coreopsis lanceolata*	**Tickseed Coreopsis *** *Coreopsis verticillata*
Pink Threadleaf Coreopsis *Coreopsis rosea*	**Purple Coneflower *** *Echinacea purpurea*	**Joe Pye Weed** *Eutrochium dubium*	**Spotted Joe Pye Weed** *Eutrochium maculatum*	**Purple Joe Pye** *Eutrochium purpureum*	**Wintergreen** *Gaultheria procumbens*	**Round-headed bush clover** *Lespedeza capitata*
Blazing Star *Liatris spicata*	**Cardinal Flower** *Lobelia cardinalis*	**Great Blue Lobelia** *Lobelia siphilitica*	**Wild Blue Lupine** *Lupinus perennis*	**Wild Bergamot** *Monarda fistulosa*	**Scarlet Beebalm** *Monarda didyma*	**Smooth Oxeye** *Heliopsis helianthoides*
Rough Sunflower *Helianthus divaricatus*	**Woodland sunflower** *Helianthus strumosus*	**Coral Bells** *Heuchera americana*	**Garden Phlox** *Phlox paniculata*	**Blunt Mountain mint** *Pycnanthemum muticum*	**Slender-leaved mountain mint** *Pycnanthemum tenuifolium*	**Virginia Mountain Mint** *Pycnanthemum virginianum*
Black Eyed Susan * *Rudbeckia fulgida*	**Blue Vervain** *Verbena hastata*	**New York Ironweed** *Vernonia noveboracensis*	**Eastern Prickly Pear Cactus** *Opuntia humifusa*	**Zig Zag Goldenrod** *Solidago flexicaulis*	**Blue Wood Aster** *Symphyotrichum cordifolium*	

Fall Bloom List

Swamp Sunflower
Helianthus angustifolius

New England Aster
Symphyotrichum novae-angliae

New York Aster
Symphyotrichum novi-belgii

Smooth Blue Aster
Symphyotrichum laeve

Turtlehead
Chelone glabra

Big Leaf Aster
Eurybia macrophylla

Sneezeweed
Helenium autumnale

Stiff Goldenrod
Solidago rigida

Rough Goldenrod
Solidago rugosa

Showy Goldenrod
Solidago speciosa

Early Goldenrod
Solidago juncea

Gray Goldenrod
Solidago nemoralis

Maryland Golden Aster
Chrysopsis mariana

Grasses

Big Bluestem Grass
Andropogon gerardii

Broom sedge
Andropogon virginicus

Sideoats Grama
Bouteloua curtipendula

Pennsylvania Sedge
Carex pensylvanica

Deer Tongue
Dichanthelium clandestinum

Purple Lovegrass
Eragrostis spectabilis

Common Rush
Juncus effusus

Path Rush
Juncus tenuis

Switchgrass
Panicum virgatum

Little Bluestem Grass
Schizachyrium scoparium

Indian Grass
Sorghastrum nutans

Prairie Dropseed
Sporobolus heterolepis

Purpletop
Tridens flavus cupreus

Trees

Red Maple	Canadian Serviceberry	Allegheny Serviceberry	Red Chokeberry	Black Chokeberry	River Birch	Gray Birch	New Jersey Tea
Redbud	Sweetfern	Pagoda Dogwood	Silky Dogwood	Flowering Dogwood	Gray Dogwood	Red-Twig Dogwood	Huckleberry
Winterberry	American Holly	Mountain Laurel	Tulip Poplar	Spicebush	Sweetbay magnolia	Northern Bayberry	Ninebark
Black Cherry	Chokecherry	Carolina Rose	Swamp Rose	Virginia Rose	Smooth Blackberry	Black Raspberry	Flowering Raspberry
Pussy Willow	Sassafras	Lowbush Blueberry	Highbush Blueberry	Arrowwood Viburnum	Blackhaw Viburnum	American Cranberry Bush	Maple-leaved viburnum

Conifers & Insignificant blooms

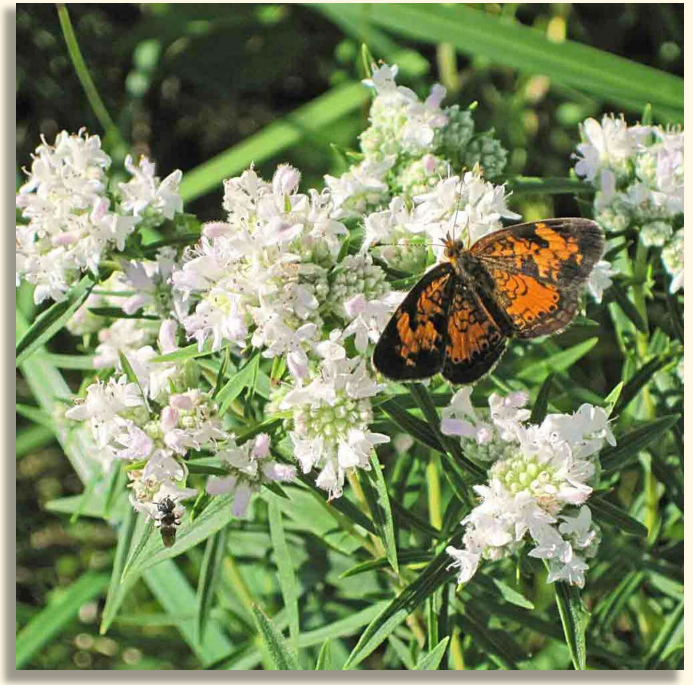
- Common Juniper
- Eastern Red Cedar
- Silver Maple
- Sugar Maple
- Common Hackberry
- American Beech
- White Oak
- Bur Oak
- Pin Oak
- Red oak
- Black Oak

Ferns

- Maidenhair Fern
- Lady Fern
- Ostrich Fern
- Sensitive Fern
- Cinnamon Fern
- Royal Fern
- Christmas Fern

Raingardens Funded by NCSWCD

- Bayville Waterfront Center
- Clarks Botanic Garden -Town of North Hempstead
- Ridder's Park - Town of North Hempstead
- Cedarmere Park and Preserve
- Bayville Community Center
- Town of Oyster Bay Waterfront Center
- The Hempstead Plains Nature Center



Virginia Mountain Mint
Pycnanthemum virginianum

Nassau County Soil & Water Conservation District
Services Provided

Services

- Percolation test / Infiltration rate
- Gradient readings of the site
- Lists of native plants
- Maintenance plan, equipment and recommendations
- Soil Group Worksheets
- Plant Identification

NCSWCD Office Rain Garden

Native Plant List

- Little Bluestem
- Blue False Indigo
- Black Eyed Susan
- Blue Sedge
- Swamp Milkweed
- Black Chokeberry
- Blue Fortune

Xeriscaping

- Style of landscape design for hot and dry areas, requiring little to no irrigation or other maintenance after established for 2 years
- Ideal for microclimate conditions (side of house, reflected light)
- Improves infiltration by up to 50-60%

Drought Resistant Plants

- Coneflower
- Marigold
- Lavender
- Daffodils
- Blue Iris
- Sedum
- Coreopsis “Tickseed”
- Succulents
- Grasses
  - Little Bluestem
  - Indian Grass
  - Prairie Dropseed
  - Common Rush

Storm Water and Green Infrastructure Solutions

Rain gardens are just one type of *green infrastructure* designed to mimic natural systems and manage stormwater runoff

Similar types of Green Infrastructure:
Permeable Pavement, Green Roofs, Blue Roofs, Bioswales, Infiltration Basins, Subsurface Detention Systems

NASSAU COUNTY
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Planting for Clean Water

NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF

- NFWF funding to promote clean water and sustainability in Bayville
- This project helped build Rain Gardens in 3 Bayville locations, adding an important environmental and educational resource to the community

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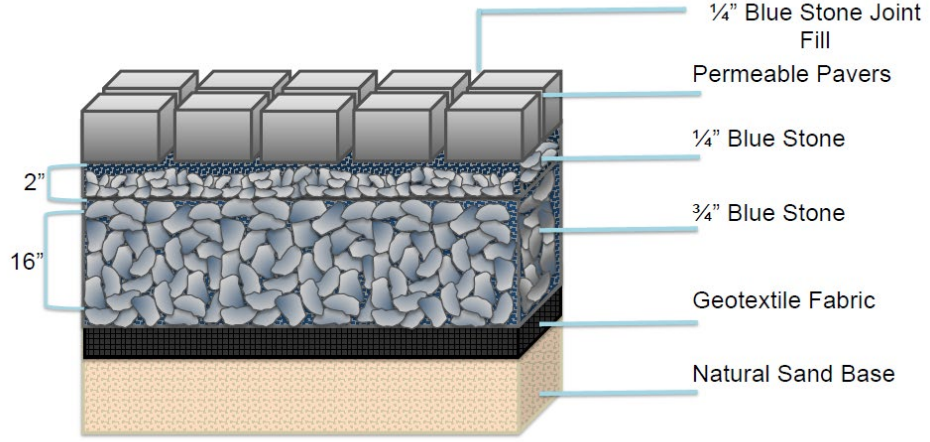
Planting for Clean Water

NATIONAL FISH AND WILDLIFE FOUNDATION
NFWF

Permeable Pavers installation at Bayville Community Center

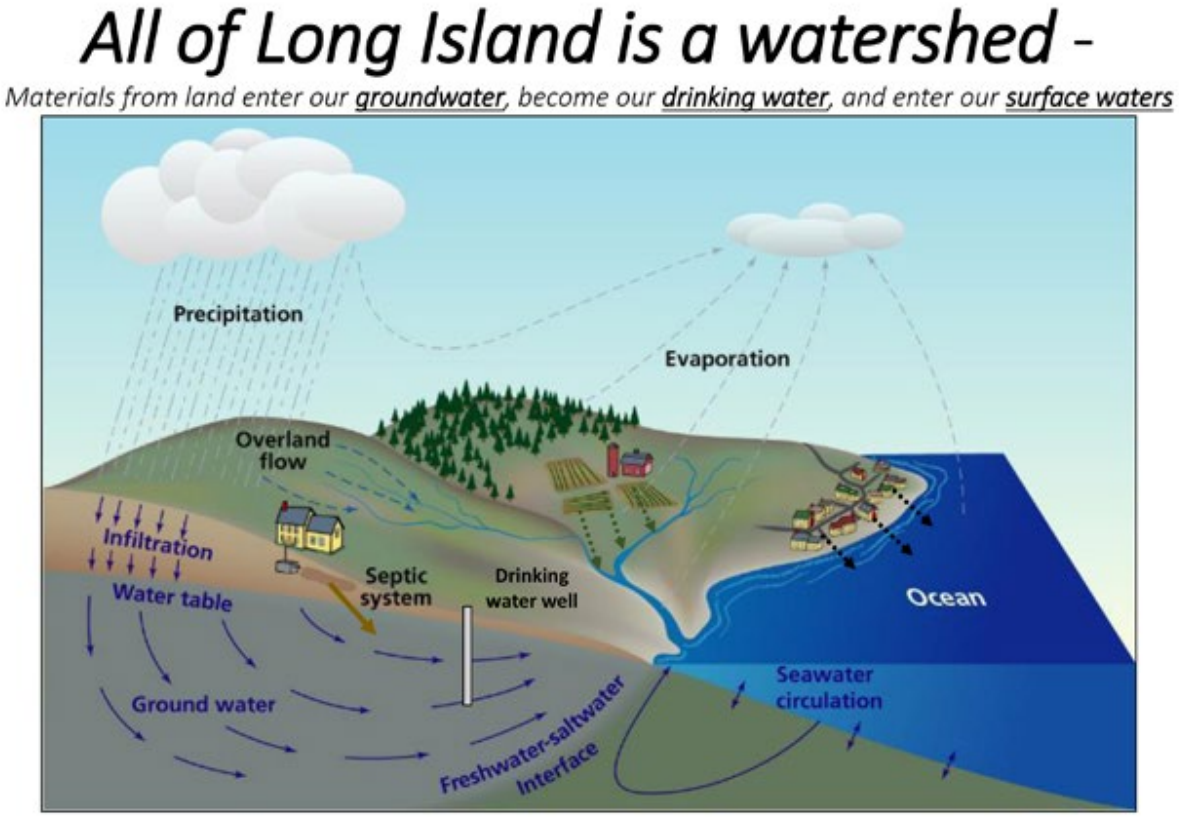


Septic Replacement Program

Visit nassauswcd.org/septic to learn more

Nassau County
S.E.P.T.I.C. Program

- Nitrogen pollution is the single largest cause of degraded water quality on Long Island contributing to HAB's, beach closures, shellfish and fish kills.
- +10,000 LI homes serviced by cesspools.
- Grants up to $20,000 for homeowners or small business to install nitrogen reducing septic system.
- Technology uses aerobic bacteria to turn organic nitrogen into nitrite and then anerobic environment to denitrify (stripping oxygen off nitrate) resulting in a safe gaseous nitrogen released into atmosphere.



Graphic from NY Sea Grant

Harmful Algal Blooms

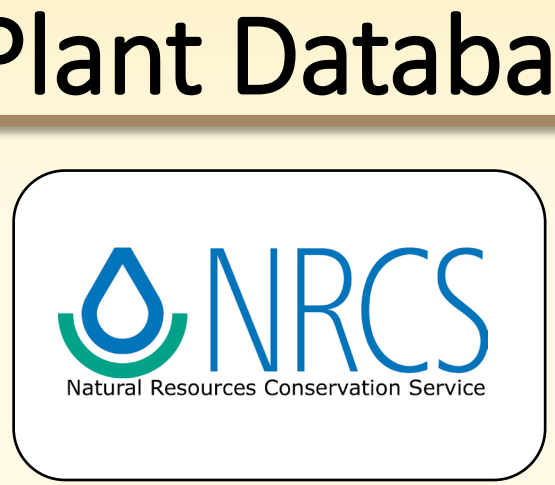
- Occur when colonies (ranging from single-celled algae to seaweed) grow out of control.
- Can contaminate water and shellfish, kill animals and make humans sick.
- Caused by an abundance of nutrients (nitrates, ammonia, urea, phosphate)

Fertilizer sold on Long Island should contain no Phosphorus, which is a leading cause of water pollution.

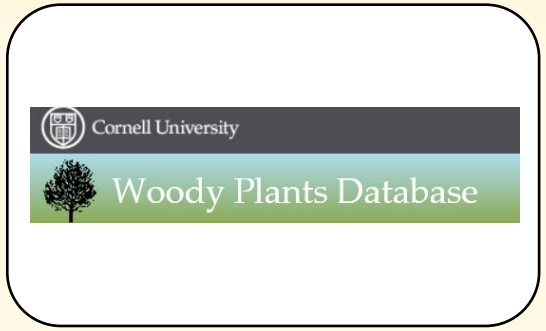
NEW YORK STATE

Report HAB's to your regional DOH office

Plant Databases



nrcs.usda.gov



www.woodyplants.cals.cornell.edu/home

Nyflora.org

nynhp.org/plants

plants.usda.gov/home

imapinvasives.org

Gardening Educational Resources

TONH Environmental Resources - Seasonal Bloom List

Cornell Cooperative Extension - Educational Videos

Cornell Cooperative Extension – Golf Medal Plant Program

Farmingdale State College – Teaching Gardens

ELA - Walk In the Garden Webinar Series

Plant Conservation Alliance – Webinars

National Garden Bureau - Webinars

UCONN – Rain Garden app

Questions

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