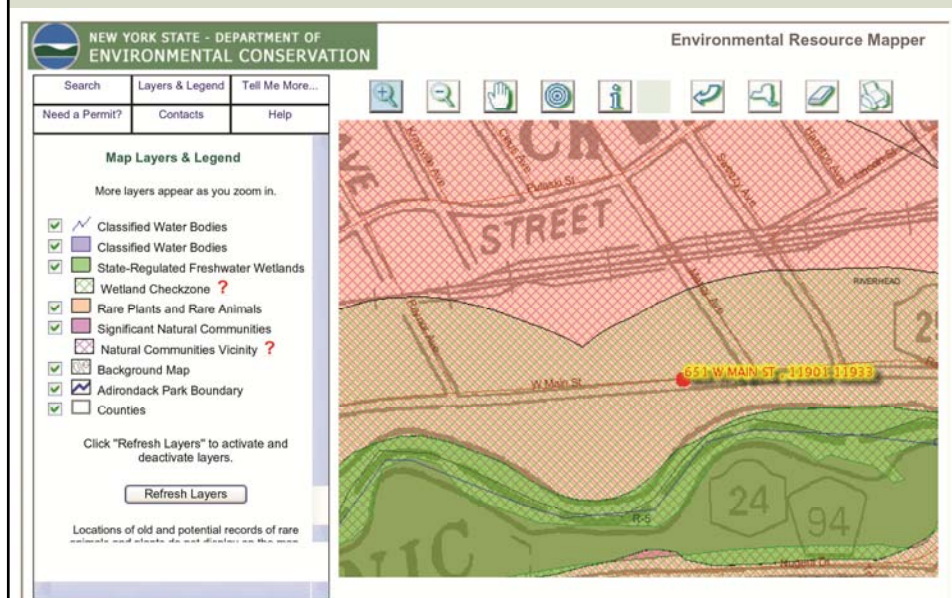




Vegetation and Soil Protection Zones (VSPZ)



Restoration

- Greyfields – previously developed sites
- Brownfields – recognized with Phase II ESA



Acid Mine Drainage Treatment System

Final Settling Pond
 The water mixes with air as it enters pond 6. The added oxygen creates iron oxide (rust) that settles to the bottom of the pond. The water exiting the treatment system is cleansed of metals and supports aquatic life in the created wetland you see to your right.

Restoration

Stacy Levy and Julie Bargeman

Regeneration

Living Building Challenge

Omega Center for Sustainable Living, Rhinebeck, NY



The Sustainable Sites Initiative

- Site Selection
- Site Assessment and Planning
- Design
 - Water
 - Soil and Vegetation
 - Materials Selection
 - Human Health + Well Being
- Construction
- Operations + Maintenance
- Monitoring and Innovation

Threats to Biodiversity

- habitat destruction, alteration and fragmentation;
- the spread of invasive species;
- pollution;
- illegal collection;
- climate change.



KEEP OUT

THIS AREA HAS BEEN DESIGNATED
AS A RE-NATURAL ENVIRONMENT

MOWING, CHEMICAL SPRAYING
OR OTHER RELATED ACTIVITIES
WILL DISRUPT THE RE-NATURAL
DEVELOPMENT OF PLANTS AND
ANIMALS THAT ARE ESTABLISHING
THEMSELVES AT THIS SITE

The Society for a Re-Natural Environment
www.srenature.org

Brian D. Collier

Habitat Acquisition Site #0001112906CUIL
Site condition when acquired on 11.29.2006



Habitat Acquisition Site #0001112906CUIL
Site development as of 06.21.2007



Habitat Acquisition Site #0001112906CUIL
Site development as of 07.17.2009 (fencing going up around field)

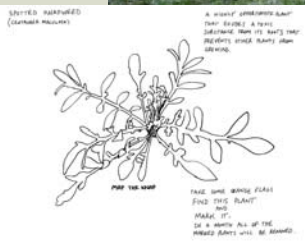
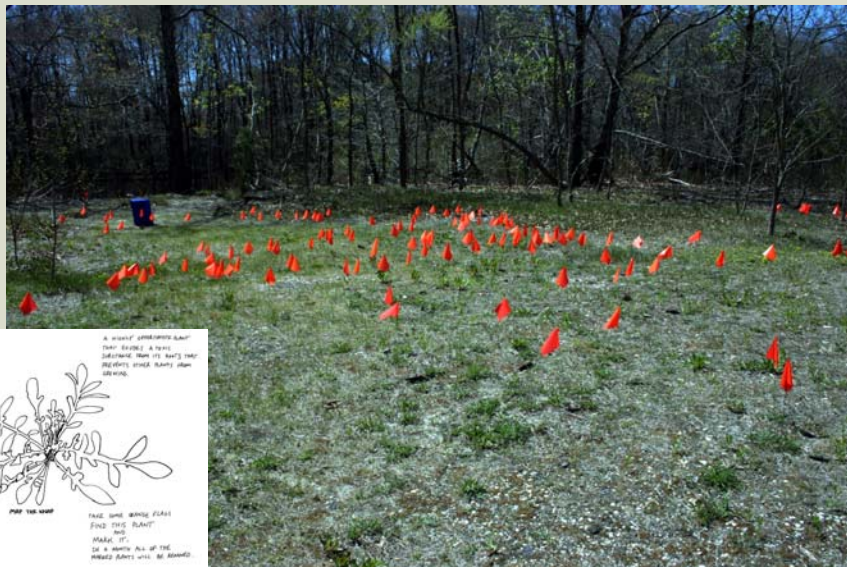


Invasives



Invasives

Bob Braine + Leslie Reed







Laura Schwanof



Appropriate Plants Species

- Cold hardiness
- Heat tolerance
- Salt tolerance
- Soil moisture range
- Plant water use requirements
- Soil volume requirements
- Soil pH requirements
- Sun/Shade requirements
- Pest susceptibility
- Maintenance requirements

Water Use

Table 1. Typical Domestic Daily per Capita Water Use.³

Use	Gallons per Capita	% of Daily Total
Potable indoor uses		
• Showers	11.6	7.0%
• Dishwashers	1.0	0.6%
• Baths	1.2	0.8%
• Faucets	10.9	6.6%
• Other uses, leaks	11.1	6.7%
Subtotal	35.8	21.7%
Non-potable indoor uses		
• Clothes washers	15.0	9.1%
• Toilets	18.5	11.2%
Subtotal	33.5	20.3%
Outdoor uses	95.7	58.0%

Low Impact Development Center

Evapotranspiration Rate

www.ccesuffolk.org

Monthly Evapotranspiration Rate (inches) Report - 2010*
March through October
Compiled by Thomas Kowalsick
Cornell Cooperative Extension - Suffolk County
423 Griffing Avenue, Riverhead, NY
In Cooperation with the Northeast Regional Climate Center
at Cornell University ()

Date	EH	FRG	ISP	NYC	JFK	SHR	WHB
Mar-10	1.38	1.33	1.32	1.51	1.35	1.37	1.36
Apr-10	2.77	2.82	2.69	3.17	2.65	2.72	2.67
May-10	4.04	4.12	4.04	4.37	3.99	4.14	4.99
Jun-10	4.13	4.63	4.60	4.97	4.48	4.39	4.15
Jul-10	4.95	4.90	4.70	5.41	4.76	4.92	5.01
Aug-10	4.04	4.25	3.77	4.19	3.78	3.99	4.01
Sep-10	2.83	2.61	2.55	2.92	2.63	2.48	2.63
Oct-10	1.52	1.53	1.37	1.71	1.46	1.43	1.37
Total	25.66	26.19	25.04	28.25	25.10	25.44	26.19

Legend:

*Evapotranspiration Rate determined using the Penman Monteith Method
which is provided by the Northeast Regional Climate Center at Cornell University
<http://www.nrcc.cornell.edu/>

EH = East Hampton (Airport) (Readings taken at 12:00 midnight)
FRG = Farmingdale (Airport) (Readings taken at 12:00 midnight)
ISP = Islip (MacArthur Airport) (Readings taken at 12:00 midnight)
NYC = New York City (Central Park) (Readings taken at 12:00 midnight)
JFK = J.F. Kennedy Airport (Readings taken at 12:00 midnight)
SHR = Shirley (Airport) (Readings taken at 12:00 midnight)
WHB = Westhampton Beach (Gabreski Airport) (Readings taken at 12:00 midnight)

Irrigation Water Reduction 50% minimum for Sustainable Sites

Baseline Landscape Water Requirement

$$BLWR = ET_0 \times A \times C_u$$

Where:

ET_0 = average reference evapotranspiration (ET_0) for the site's peak watering month, provided locally (inches/month).

A = Area of irrigated landscape in square feet (area designed with permanent irrigation systems)

C_u = Conversion factor (0.6233 for results in gallons/month)

Water Reduction Landscape

K_L = Landscape coefficient for plant species

$$K_L = K_D \times K_S \times K_{MC}$$

K_D Density

Low: .5-.9 <70% canopy coverage for trees, and
<90% for shrubs and groundcovers

Average: 1

High: 1.1 – 1.3 Vegetation tiers
 $K_S \times K_{MC}$

Species Factor - Microclimate

Microclimate Kmc	Low	Average	High
Shading	0.5	0.8	1.0
High Sun exposure	1.0	1.2	1.5
Protection from wind	0.8	0.9	1.0
Windy area	1	1.2	1.5

Irrigation Water Reduction

TABLE 1: PLANT TYPE AND ESTIMATED LANDSCAPE COEFFICIENT (K_L)

Plant Type	K _L		
	Water Requirements		
	Low	Medium	High
Ground Cover	0.2	0.5	0.7
Shrubs	0.2	0.5	0.7
Trees	0.2	0.5	0.7
Turfgrass	0.6	0.7	0.8

Note: The estimated K_L values in Table 1 are taken from the U.S. EPA WaterSense Water Budget Tool (May 2009 revision).

TABLE 2: DISTRIBUTION UNIFORMITY

Irrigation Type	DU _(LQ) or EU*
Drip - Standard	70%
Drip - Press Comp	90%
Fixed Spray	65%
Micro Spray	70%
Rotor	70%

Note: The lower quarter distribution uniformity values in Table 2 are taken from the U.S. EPA WaterSense Water Budget Tool (May 2009 rev.). Original source: The Irrigation Association, "Landscape Irrigation Scheduling and Water Management," IA 2005.

*Lower quarter distribution uniformity DU_(LQ) applies to sprinkler zones and emission uniformity (EU) applies to drip/micro-irrigation zones.

Soil Biomass Density Index (BDI)

TABLE 4.6-A: CALCULATIONS FOR EXISTING SITE BDI

Land cover/vegetation type zone	Biomass density value* for this zone	Percent of total site area for this zone	Biomass density value x percent of total site area (column B x column C)
A	B	C	D
Trees with understory	6		
Trees without understory (less than 10 percent herbaceous/shrub cover)	4		
Shrubs	3		
Desert plants	1.5		
Annual plantings	1.5		
Grasslands and turfgrass	2		
Wetlands**	6		
Impervious cover or bare ground not shaded by vegetation or vegetated structures	0		
SUBTOTAL (sum of all rows)	n/a	100%	
ADDITIONAL VALUE for other horizontal and vertical surfaces covered with vegetation (e.g., green walls, trellises, pergolas), if applicable: Calculate the total surface area of the vegetated surface, multiply by a biomass density value of 1, and divide by the total site area.			
Existing Site BDI (sum of Subtotal and Additional Value)			

* The biomass density values in column B are based on a literature review of leaf area index for various vegetation types.

** This category includes wetlands with emergent vegetation and does not include open water.

KEY THINGS TO CONTROL

- WATER NEED FOR PLANT SPECIES
- DENSITY OF PLANTING
- MICROCLIMATE
- IF USE IRRIGATION – EFFICIENCY OF SYSTEM
- SOURCE TYPE OF WATER

Thank You

Presentation by Glynis Berry, AIA, LEED AP
of
Peconic Green Growth
for Master Gardeners Program

www.peconicgreengrowth.org