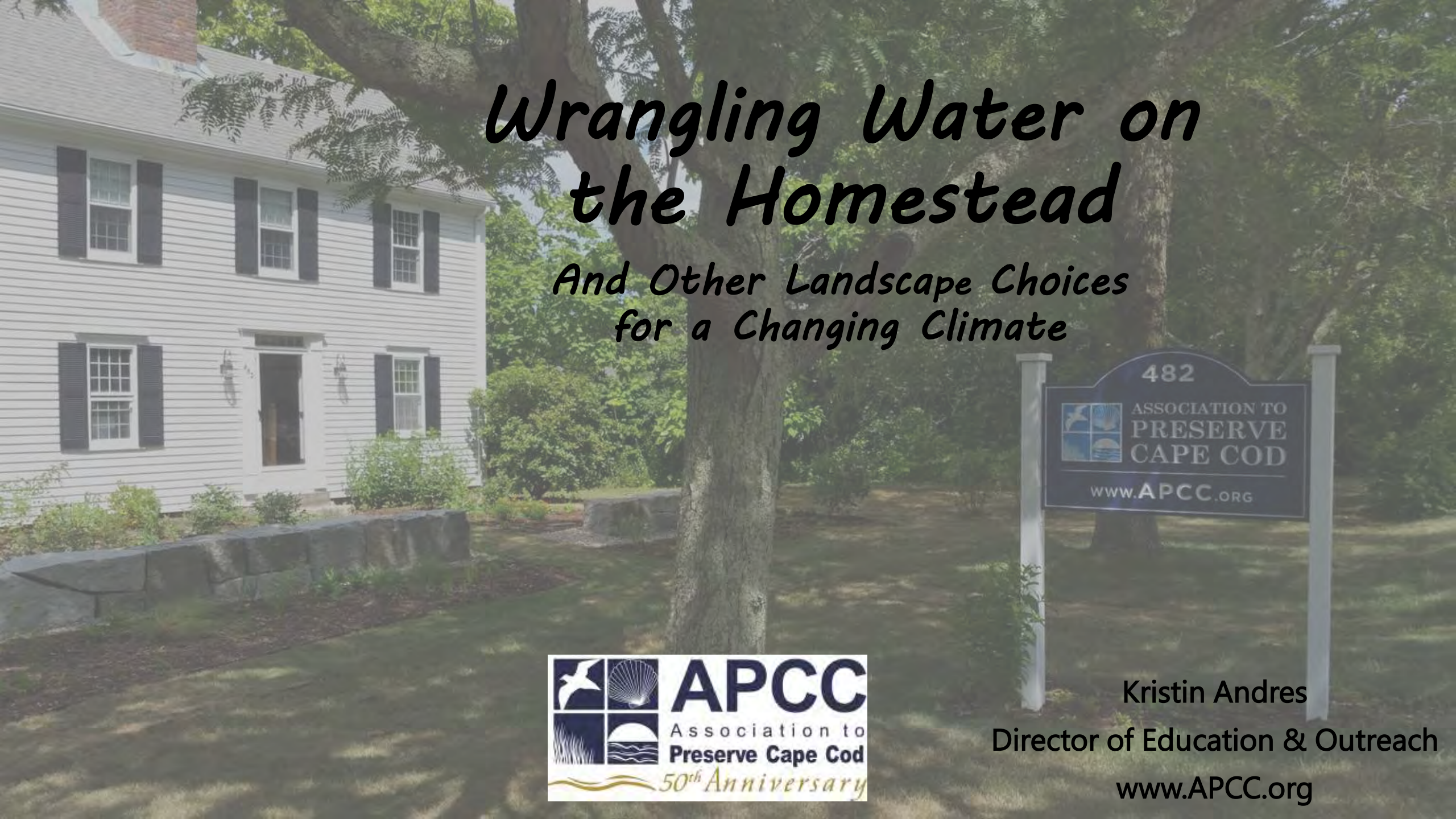
Wrangling Water on the Homestead

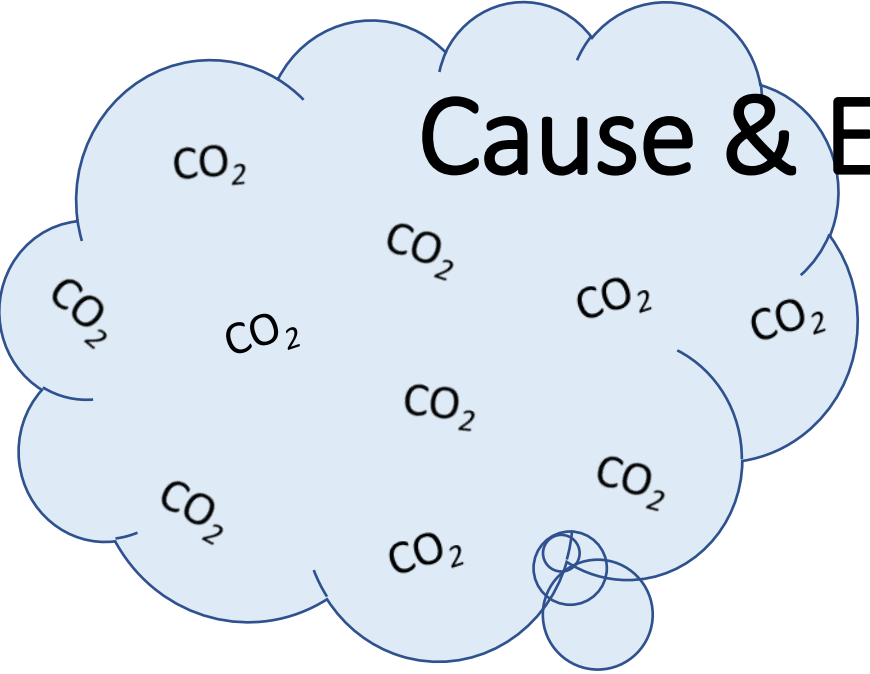
And Other Landscape Choices for a Changing Climate



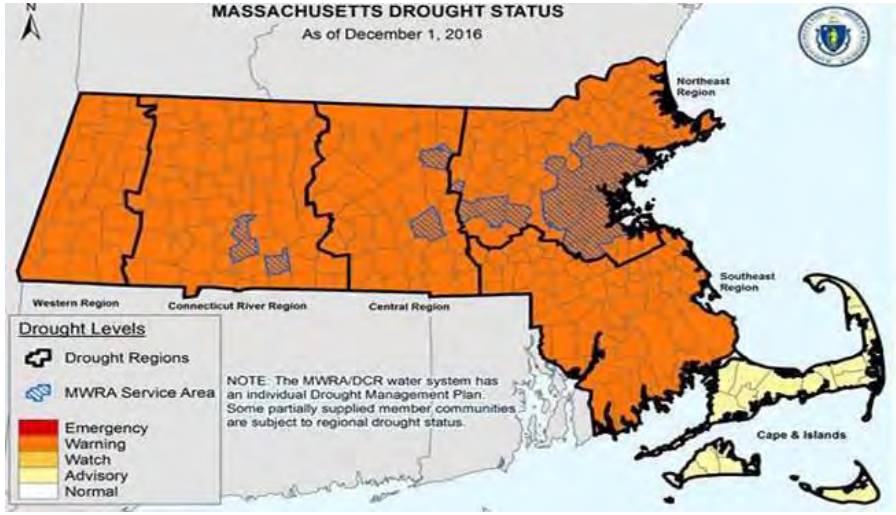
APCC
Association to
Preserve Cape Cod
50th Anniversary

Kristin Andres
Director of Education & Outreach
www.APCC.org

Cause & Effects of a Disrupted Climate

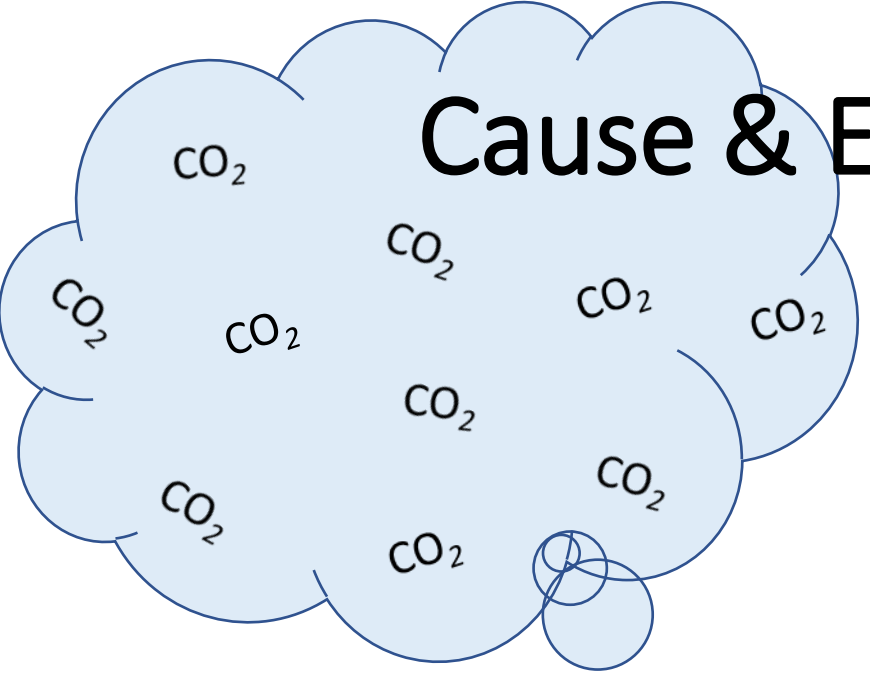


- Warming temperatures
- Extended periods of drought



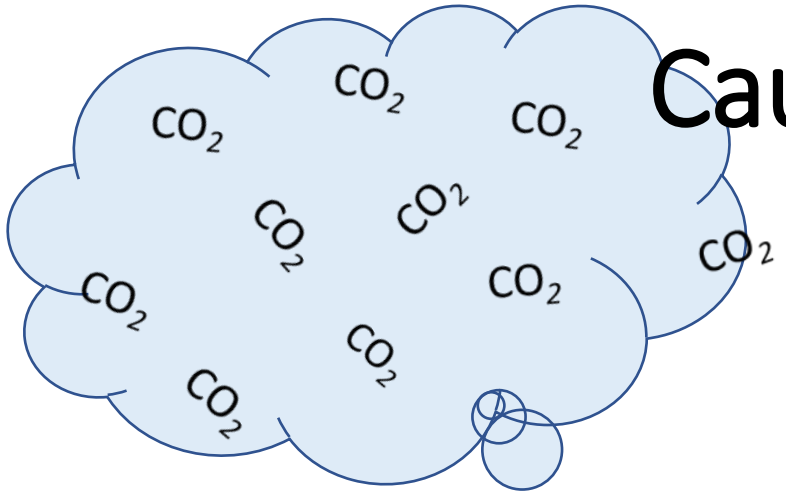
Scituate Reservoir, Scituate, MA - photo by Qainat Kahn for WBUR

Cause & Effects of a Disrupted Climate



- Increased storm intensity
- Frequent flooding

"Global Wierding"



Cause & Effects of a Disrupted Climate

- Sea Level Rise
- Erosion
- Higher groundwater

https://www.usgs.gov/news/cape-cod-susceptible-potential-effects-sea-level-rise

Mitigation & Adaptation

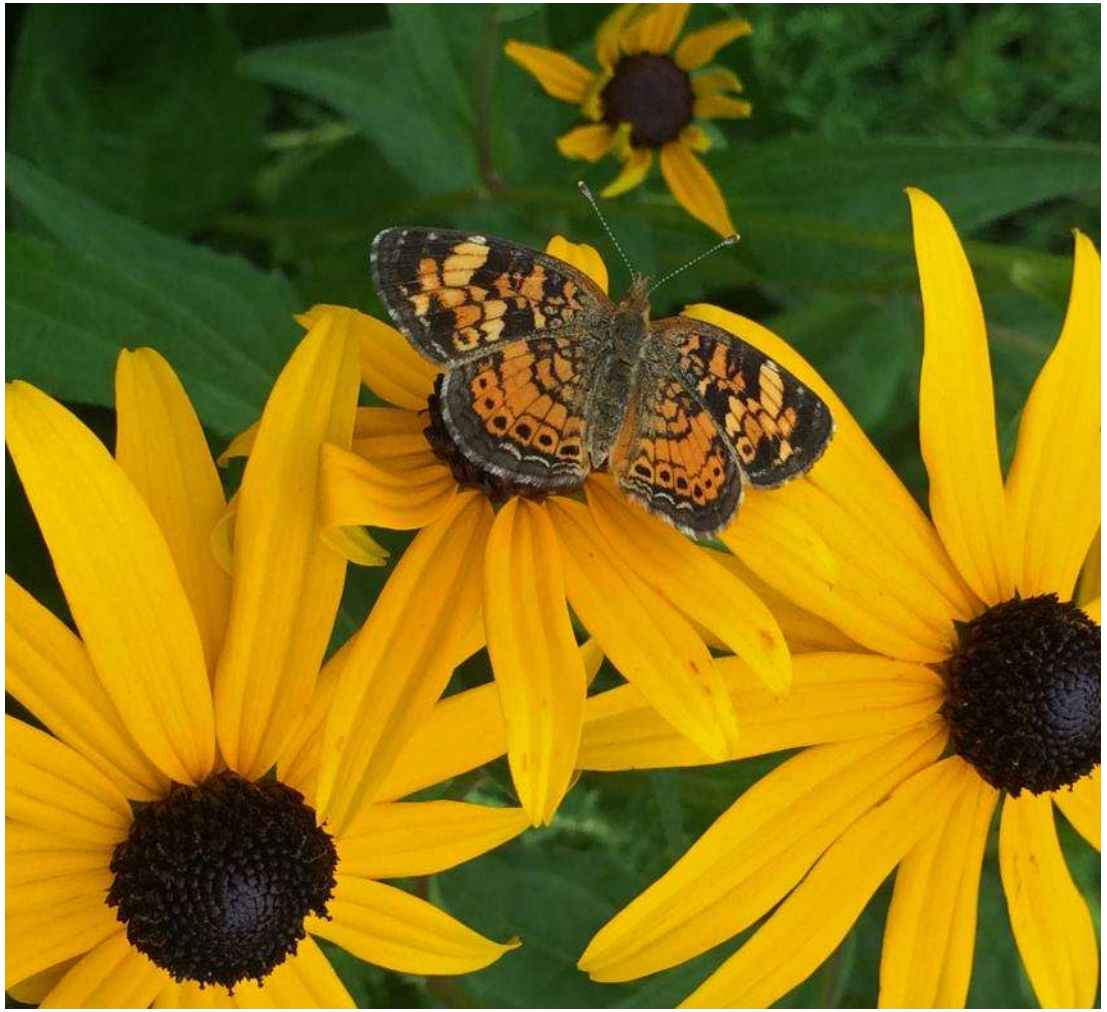
- **Mitigate** – take steps to reduce the problem (greenhouse gas emissions)

- **Adapt** – make adjustments in behavior, practice and design to deal with changes in our environment, for resiliency

Cumulative Impact

"Every garden matters, every landscape counts."

— Grow Native Massachusetts



Plant More Trees

Energy Saving

- *Cool (temps) up to 10°F by shading our homes and streets and releasing water vapor*
- *Reduce your household's heating and cooling by up to 25%, saving between $100 and $250 in annual energy costs*

Carbon storage

- *In one year, an acre of mature trees absorbs the amount of CO2 produced by a car driven 26,000 miles.*

Treebenefits.com

i-Tree

http://treebenefits.com/calculator/

Other values of TREES

- Air quality
- Water quality
- Soil porosity & flood control
- Soil stabilization
- Wildlife habitat
- Reduce Urban Crime
- Community Project
- Increase in property value & quality of life

PLANT TREES

Preserve Trees

"A tree is beautiful, but what's more, it has a right to life; like water, the sun and the stars, it is essential. Life on earth is inconceivable without trees." **Anton Chekhov**

Conserve Water & Harvest Rain

Use less water from the tap; use rainwater for your plants

- Rain barrel; capture roof runoff
- Rain barrel water collection system
- Cistern
- Solar pump / watering can


APCC

Reduce ~ Recycle ~ Re-purpose

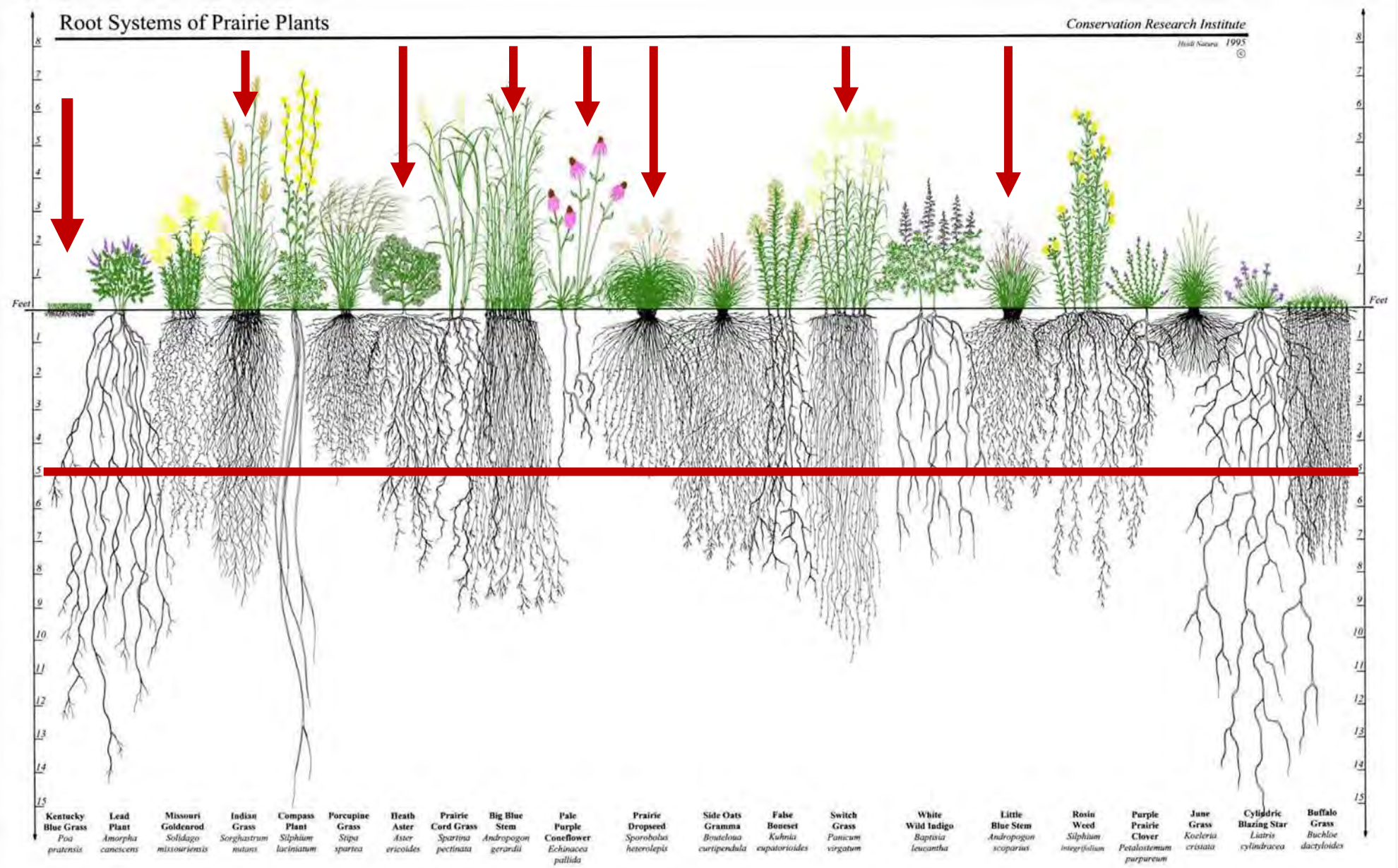
Keep nutrients on site

- Leave the leaves
- Compost for your vegetable garden & high nutrient loving plants
- If you have lawn, make it organic and mulch mow

Native Species –
the true proven winners

- Well-adapted
- Require less water
- Require **no soil amendments**
- Support local ecology

Roots


Root Systems of Prairie Plants
Conservation Research Institute
Heidi Natura 1995 ©
Feet
Kentucky Blue Grass Poa pratensis
Lead Plant Amorpha canescens
Missouri Goldenrod Solidago missouriensis
Indian Grass Sorghastrum nutans
Compass Plant Silphium laciniatum
Porcupine Grass Stipa spartea
Heath Aster Aster ericoides
Prairie Cord Grass Spartina pectinata
Big Blue Stem Andropogon gerardii
Pale Purple Coneflower Echinacea pallida
Prairie Dropseed Sporobolus heterolepis
Side Oats Gramma Bouteloua curtipendula
False Boneset Kuhnia eupatorioides
Switch Grass Panicum virgatum
White Wild Indigo Baptisia leucantha
Little Blue Stem Andropogon scoparius
Rosin Weed Silphium integrifolium
Purple Prairie Clover Petalostemum purpureum
June Grass Koeleria cristata
Cylindric Blazing Star Liatris cylindracea
Buffalo Grass Buchloe dactyloides

Design Considerations

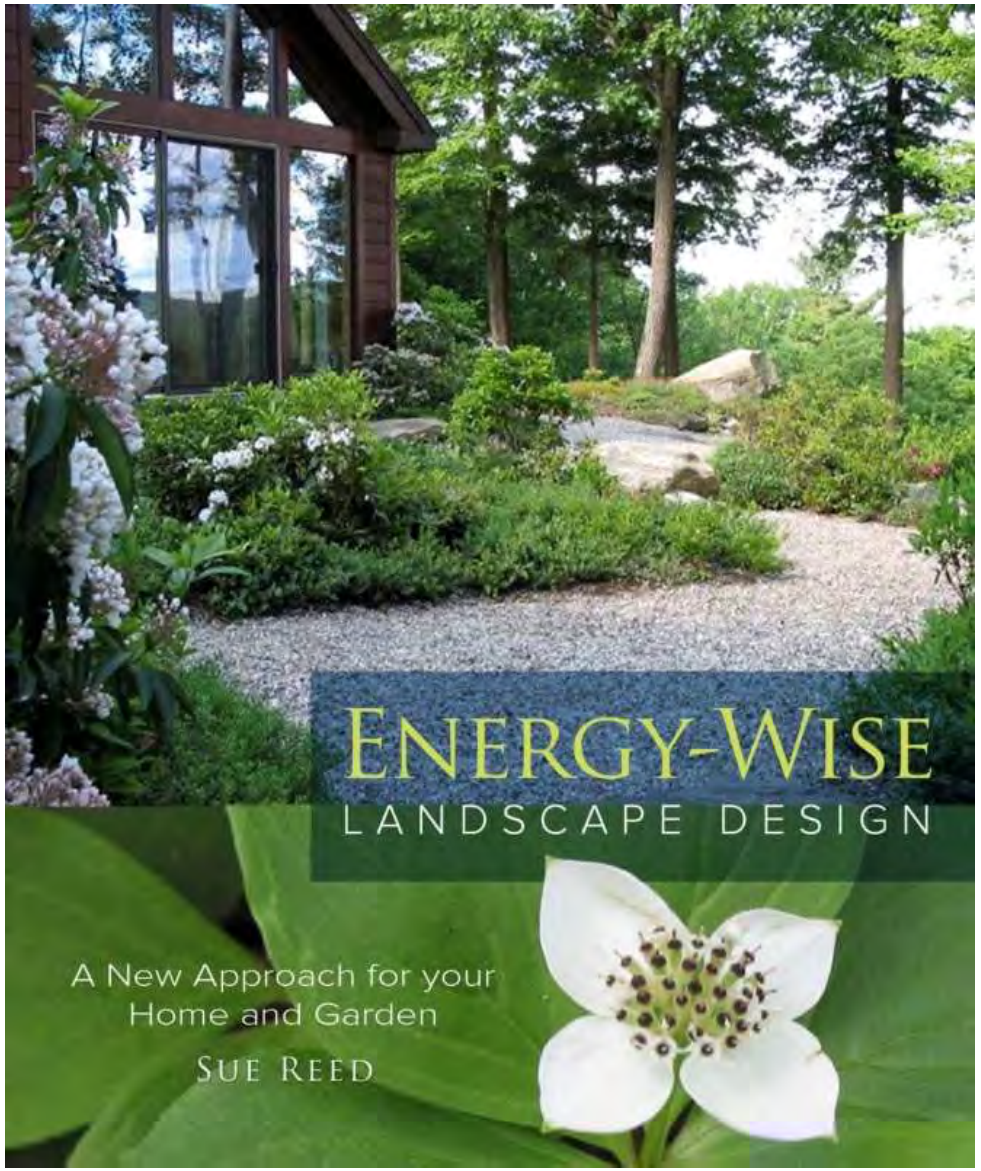
Plant deciduous trees to the south and west to keep your house cool in the summer and let the sun warm your home in the winter, reducing energy use.

(U.S. Department of Energy)

Plant to shade air conditioners – they'll use less electricity. A unit operating in the shade uses as much as 10% less electricity than the same one operating in the sun. (U.S. Department of Energy)

Plant a windbreak to the north and south – leave wild areas

Plant for the future – anticipate loss of trees to disease, storms, natural plant succession



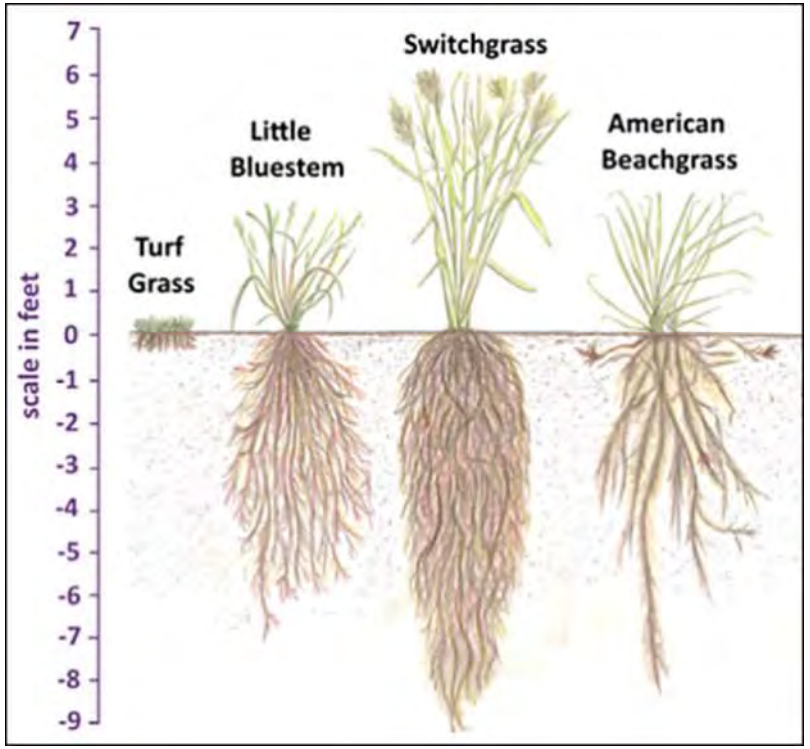
Moderate Temperatures

- Use “Cool Pavement” on driveways – light colors, grass strip, shell
- Minimize heat-holding stonework

Reduce Energy Usage & Input

- Go chemical-free
- Choose native plants – soil amendments are *not necessary*
- **“Right plant, right place”** for success
- Fill in with plants – *edit, don’t weed*
- Outdoor lighting – if it’s *really* needed
    - ❑Energy-saving applications
    - ❑Photo-sensors; Motion sensors
    - ❑Point *down*

Minimize Lawn



Lawn Alternatives

- Wild Strawberry – *Fragaria virginiana*
- Appalachian Barren Strawberry - *Geum fragarioides*
- Pennsylvania Sedge – *Carex pensylvanica*
- Golden Groundsel – *Packera obovata*
- Bearberry - *Arctostaphylos uva-ursi*
- American Ginger – *Asarum canadense*
- Hay Scented Fern - *Dennstaedtia punctilobula*
- Prairie Dropseed - *Sporobolus heterolepis*
- Purple Lovegrass - *Eragrostis spectabilis*
- Foam Flower – *Tiarella cordifolia*

Meadows

Wood Mulch Mania

Maintenance Methods – reduce energy input & usage

One new gas-powered lawn mower produces as much air pollution emissions in one hour of operation as 11 new cars being driven for one hour. (from EPA)

OR

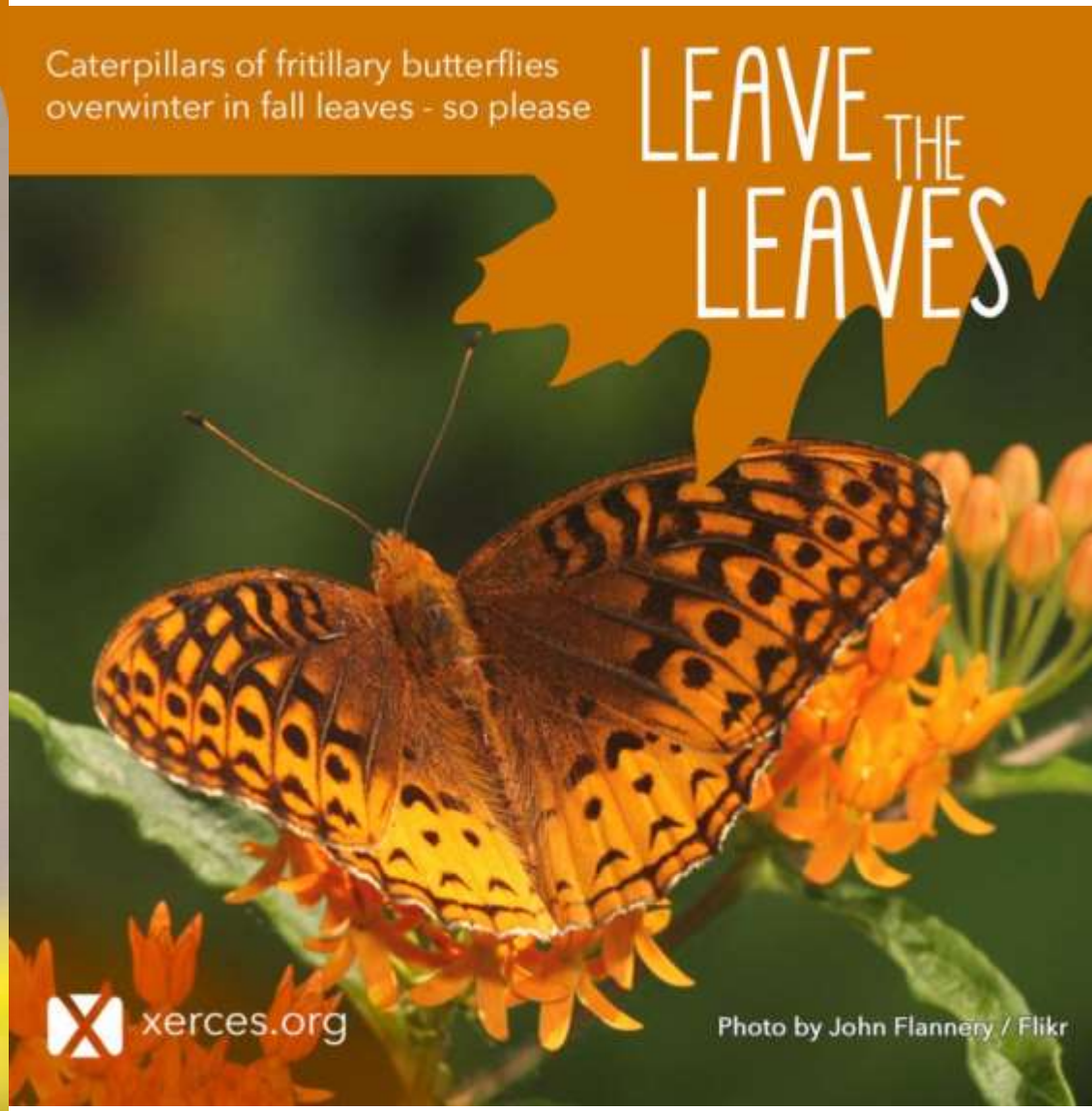
Replace gasoline-powered with electric and handheld equipment for "**Quiet Communities**"

QuietCommunities.org

More Plants! More Plants!
Diversity is the spice of life!

Biodiversity in our ecosystems offers stability and resiliency. Same for our landscapes.


At the end of summer, bumble bee queens burrow just below the soil to wait out winter. Give them the extra protection they need.
LEAVE THE LEAVES
xerces.org
Photo by Rich Hatfield


Caterpillars of fritillary butterflies overwinter in fall leaves - so please
LEAVE THE LEAVES
xerces.org
Photo by John Flannery / Flikr

What is stormwater?

- Rainwater
- Melted snow and ice

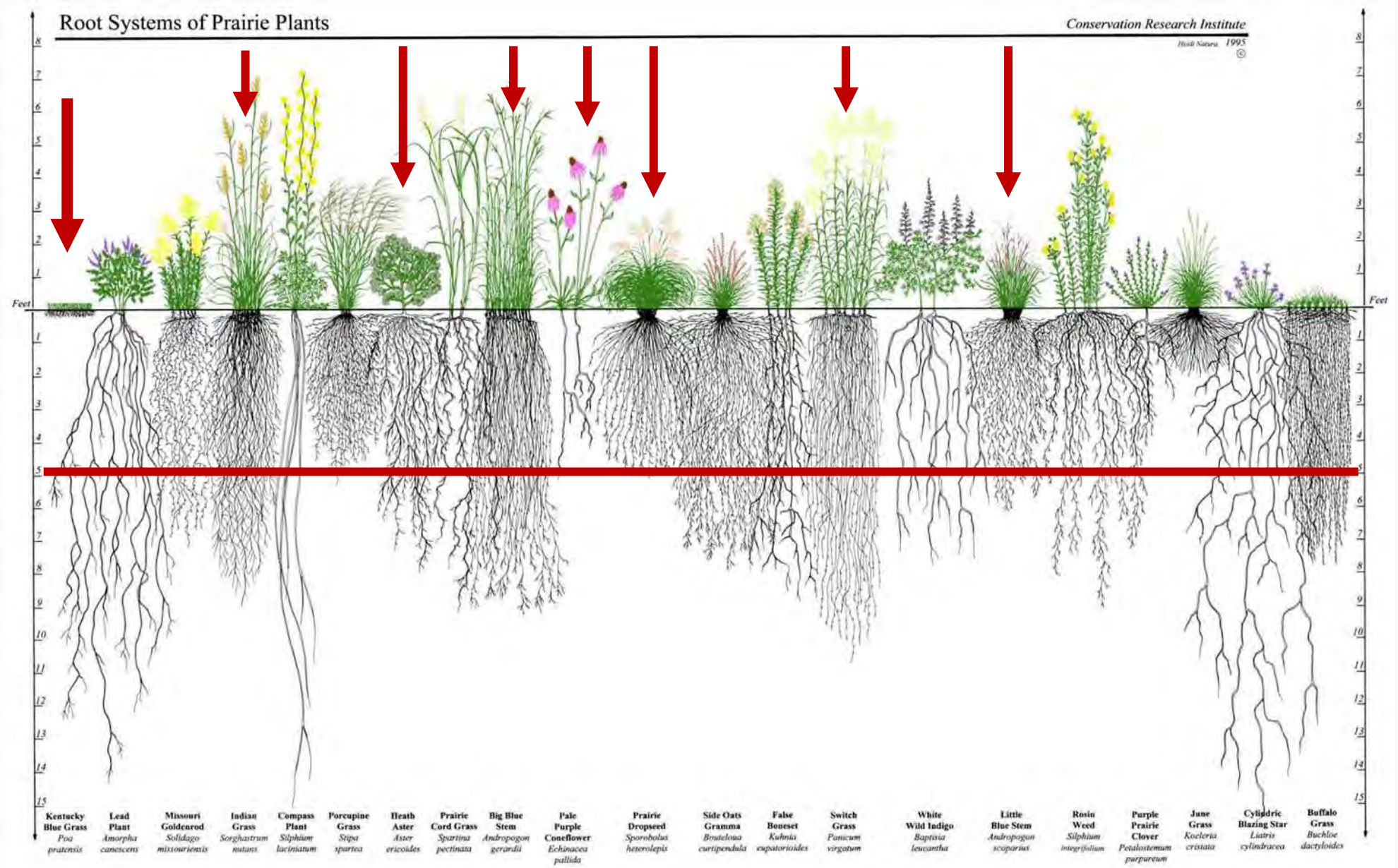
Why do we need to manage it?


WORKS


STORMWATER
DEMONSTRATION
Here are four containers of different substrates of about the same volume:
BARE SOIL
STONE
LAWN
MEADOW
Each container has two pipes. One pipe drains the water that runs over the surface of the substrate. The other pipe drains what passes through the substrate.
Containers collect the water from these pipes. You can observe how much of the water moves over and through each substrate and how fast it moves relative to each of the substrates.
Pour water onto the upper area of the container and see what seasonal flow issues arise!

Nature Does It Best

Roots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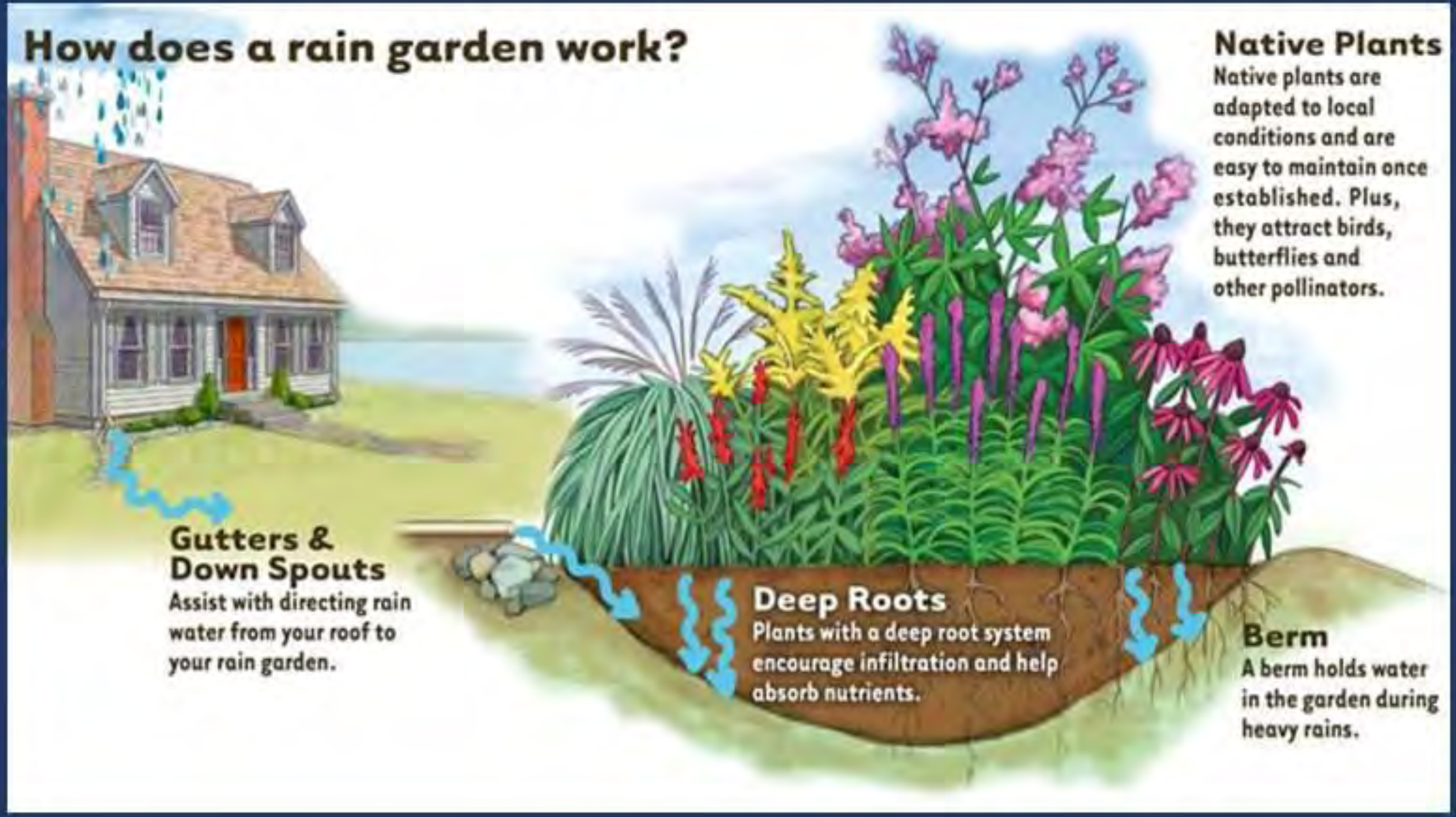
Cylindric Blazing Star Liatris cylindracea
Buffalo Grass Buchloe dactyloides

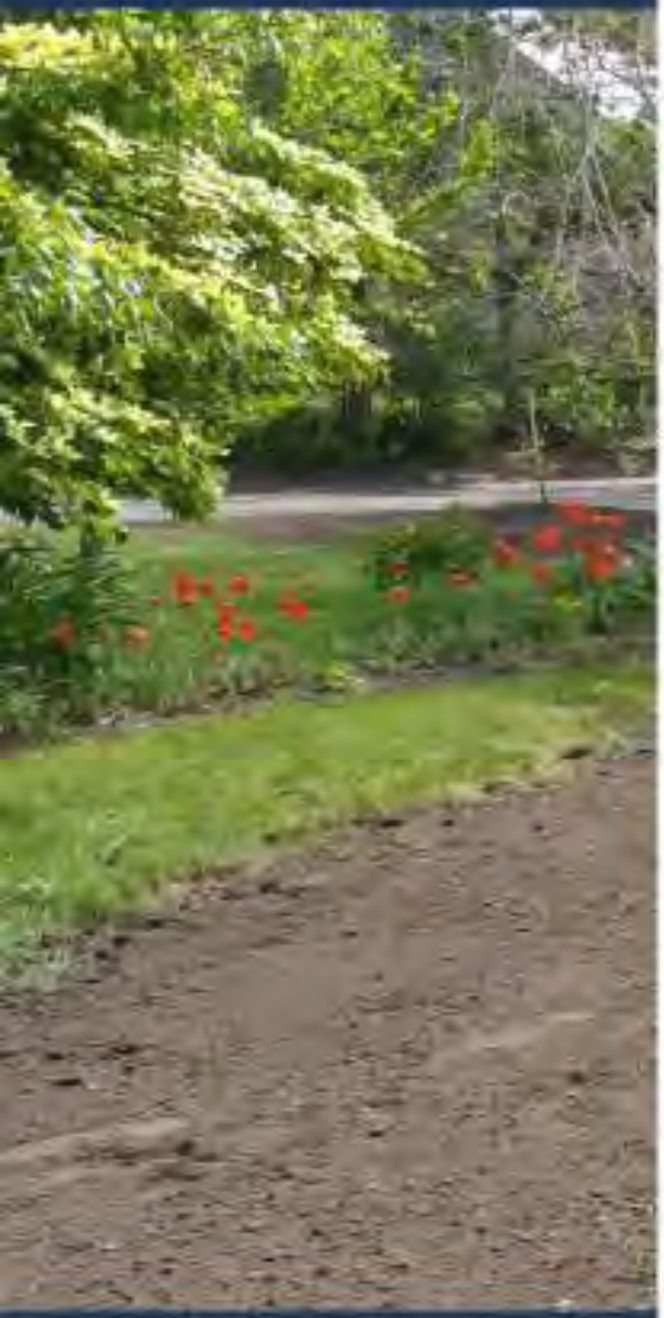
A Rain Garden

- A shallow depression, planted with deep-rooted native plants
- Captures stormwater
- Right plant, right place

How does a rain garden work?



APCC's Rain Garden



Symbol	Scientific Name	Common Name	Size	Quantity	Spacing	Wetland Status	Bloom Time
[illegible]	[illegible]	Winterberry holly	3 Gallon	[illegible]	4' On Center	FACW	Spring-Summer
[illegible]	[illegible]	Winterberry holly	3 Gallon	[illegible]	4' On Center	FACW	Spring-Summer
[illegible]	[illegible]	Purple coneflower	1 Gallon	[illegible]	18-24" On Center	FACU	Summer
[illegible]	[illegible]	Joe Pye weed	3 Gallon	[illegible]	24" On Center	FAC	Summer
NA	[illegible]	Fowery rush	9" Plug	[illegible]	12-18" On Center	FAC	NA
[illegible]	[illegible]	Blazing star	1 Gallon	[illegible]	18-24" On Center	FACW	Summer
[illegible]	[illegible]	Black-eyed Susan	1 Gallon	[illegible]	18-24" On Center	FACU	Summer - Fall

RAIN GARDEN DESIGN (MAY 12, 2014)
ASSOCIATION TO PRESERVE CAPE COD - 482 MAIN STREET, DENNIS, MA
BLUEFLAX DESIGN LLC | MATTAPOISETT, MA | 774-676-6677 | WWW.BLUEFLAXDESIGN.COM


Welcome to Our
Rain Garden!
What is a Rain Garden?
A rain garden is a shallow depression
that is planted with deep-rooted
native plants.
APCC's Rain Garden

Permeable Surfaces:

- Porous Pave
- Perk-crete
- Permeable Pavers


CAUTION CAUTION CAUTION CAUTION CAUTION CAUTION CAUTION

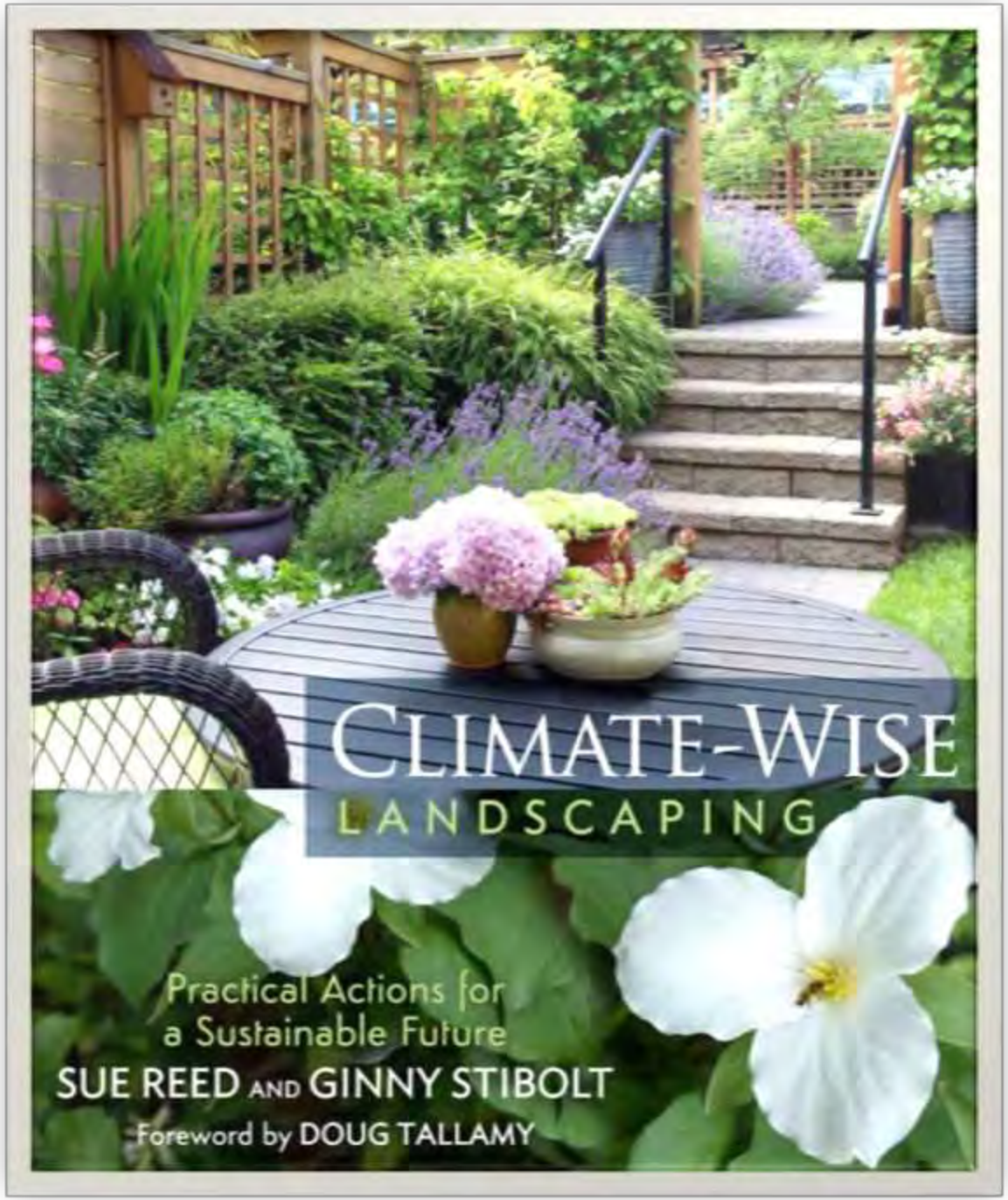

HANDICAPPED
PARKING

PERK-CRETE™

Cape Cod Ready Mix

Summary: Landscape Choices

- Stormwater control onsite
- Native Species, plant for diversity
- Create shade
- Preserve wild areas
- Minimize maintenance
- Conserve water
- Reduce input
- Work with nature
- Relax & Enjoy



Thank you

482 Main St, Rt 6A, Dennis