Water: From Trouble to Treasure

A Pocket Guide to "Green" Solutions
Water: From Trouble to Treasure is a field guide to understanding and advancing “green” stormwater management, a critical element of a sustainable future.

Look inside to find:

A new vision
Understand an innovative field in the “green” movement: restoring the natural ability of our landscapes to manage stormwater.

Immediate action steps
DON’T WAIT—Get started without funding, expertise, or fear of adverse consequences.

Useful resources
Information on the web, in the literature, in the community, and in person.

Ways to scale up
Transform successful small solutions into a movement of regional significance.

Fun projects
Enjoy being outdoors. Your efforts can result in important benefits, and you can have a good time while you’re at it!

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Copies may be downloaded free from http://greenvalues.cnt.org

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All of us as citizens have a responsibility to take an active role in protecting our environment. As the old American Indian proverb reminds us, “we do not inherit the earth from our ancestors, we borrow it from our children.”

Some of the most dedicated and determined people I have met as Lt. Governor are the passionate citizens who preserve our water resources. Their tireless efforts keep our elected officials, businesses, communities and property owners focused on working together for the public good.

I invite each of you to read this manual and to start managing the water resources at home using green solutions that are enjoyable, effective and rewarding.

This manual is for environmental advocates and everyday people looking for simple ways to help solve community problems. It is for anybody who believes that when large numbers of people each do their share, we can accomplish wonderful things.
Troubled Water

Rain water pours off our roofs and rushes under our streets, often combining with the black water of our sewers before draining into our local streams, rivers, and lakes.

Conventional infrastructure for managing stormwater relies on gutters and pipes. A large storm can overwhelm the system’s capacity, creating overflows, backups, and flooding. Storms don’t always result in flooding, but untreated stormwater always carries pollutants into water resources and damages the shores and banks that protect them.

The chemicals used on lawns and spilled from cars, and the trash and dirt on the ground, are carried by stormwater into streams, rivers, and lakes, making them unfit for human recreation and damaging natural ecosystems.

Illinois and many other states must invest billions of dollars to improve their existing water infrastructure to meet the requirements of the Clean Water Act, a federal law. Research suggests that much of this spending could be avoided by the aggressive adoption of alternative stormwater policies, strategies, and investments.
Green Solutions

Green solutions manage stormwater where it falls. They treat stormwater as an asset, rather than a waste product. Green solutions can involve protecting open space, like wetlands and nature preserves, and designing new developments using sustainable principles.

Simple green solutions include activities and landscape features that can start at home. They can solve local water problems quickly and at a reasonable cost, and add up to a big environmental impact.

- **Increase Tree Canopy**
  Preserving existing trees and planting new ones increases the natural canopy of leaves that catch rain drops before they hit the ground. Tree roots also break up tightly packed soil, increasing the amount of water it absorbs.

- **Rain Gardens and Native Vegetation**
  Rain gardens and native vegetation can capture runoff and slow it down, letting it infiltrate into the soil and protecting roads and stream banks from erosion, while bringing nature into the yard.

- **Disconnect Downspouts**
  Disconnecting the downspout of a roof or a basement sump pump from the sewer reduces the chance of overwhelming the system by keeping the stormwater on site.

- **Rain Barrels**
  Rain barrels can store water that runs off the roof, providing for future watering needs.

- **Permeable Pavement**
  Porous surfaces, from pavers to gravel, in driveways, alleys, and sidewalks allow water to soak into the ground instead of directing it into a sewer.
Simple Solutions

Rain gardens are slightly sunken areas filled with native plants. Water is caught in the depression and the long-rooted plants help soak it into the ground. This both slows down the speed of runoff, which causes erosion when traveling quickly, and naturally filters the pollutants from the water.

Rain gardens and native plants are featured in this guide because they are simple and low-cost.

Rain gardens provide multiple benefits, from handling stormwater and recharging water supplies to beautifying a lawn and attracting birds, butterflies, and children.

They can be implemented without professional assistance.

Discover the Wild

Native plants are those that are ideally suited to our soils and climate and can thrive in wet or dry conditions.

Native plants require no fertilizers or pesticides and enrich the soil rather than depleting it.

Native plants produce beautiful flowers and greenery, offering a variety of shapes, sizes, and colors.

Native plants provide natural habitats, encouraging biodiversity.
Successful Green Solutions: Trouble to Treasure

A Native Prairie at Cumberland Elementary School
Golf Road, Des Plaines

For many years, a corner of the Cumberland schoolyard was frequently flooded with up to a foot of water, concerning school administrators and giving students wet feet. On the last day of school in June 1999, students, teachers, and parents planted a few plants and spread seed donated by stewards from a local forest preserve. No excavation was required. The school reports that water no longer accumulates and the 1/4-acre prairie provides a valuable learning experience and symbol of school pride.

Contact: Bill Eyring (773) 269-4016.

A Rain Garden at the Chicago Zoological Society/Brookfield Zoo
Golf Road, Brookfield

This rain garden (right) manages water draining from the roof of the Reptile House. It was planted in a slight depression that used to fill with rain and overflow onto a busy sidewalk. The garden, measuring 8 by 15 feet, was built in a day in 2002 by four volunteers. Now the water seldom leaves the garden and the Zoo has constructed another attractive green solution (below) just south of the 31st Street underpass.

For more information, contact Krista Mozdzier-Skach at the Chicago Zoological Society: (708) 485-0263 x585.
A Green Solution for the St. Charles Park District Headquarters

The St. Charles Park District headquarters building is located where runoff from a maintenance facility parking lot rushes into the Fox River. The district decided to seek assistance in finding an effective green solution to slow down the runoff and filter out pollutants. When they first approached a landscape design firm, the cost was so high that grant money would be required to implement the improvement. With some encouragement from the Natural Resources Conservation Service and CNT, the park district designed and volunteers helped construct a rain garden that is beautiful and has effectively solved the problem. Contact: Mary Ochsenschlager at St. Charles Park District (630) 584-1885.

A Wauconda Community Project; The Rain Gardens of Bangs Lake,

Lynda Wallis was awarded a grant from the Lake County Stormwater Commission to build several rain gardens in her community to help protect the water quality of Bangs Lake. Deep into planning the first rain garden workshop, she learned that the funds wouldn’t actually be available for an entire calendar year. Determined to conduct the workshop despite the lack of funding, Lynda went ahead with the project. With $200 in donations, Lynda bought and collected appropriate plants. Wauconda Township offered their support by moving earth and sod. Twenty residents volunteered to prepare the garden bed and install native plants. The first Rain Garden of Bangs Lake was a success! Residents were inspired to help with upcoming projects and to build similar gardens in their own yards. Contact: Lynda Wallis (847) 487-1752.
**Getting Started: The First Step**

The first step in supporting green solutions is to create one at home, at school, or at any accessible area with water trouble.

1. Refer to the diagram of green solutions integrated into a yard (Green Solutions, p. 4) and the index of existing sites at the end of this book (Visit Green Solutions Near You, p. 20) for ideas on how to incorporate green solutions into a single lot.

   *A sample garden design. Making your own can be easy!*

2. Visit the websites on the facing page to find how-to manuals for building rain gardens, native plant lists for different garden designs, and education kits for classrooms.

3. Use the Material Resources list in the back of this guide (p. 26) to find local native plant nurseries and green landscape professionals. Do-it-yourself is not required!

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**Web Resources**

**Office of the Lt. Gov.**

[www.standingupforillinois.org/cleanwater/raingarden.php](http://www.standingupforillinois.org/cleanwater/raingarden.php)

The Illinois Rain Garden Initiative offers resources on how to install and maintain a rain garden, types of native plants, and links to other sources of information.

**City of Chicago Department of Environment**

[www.cityofchicago.org/environment](http://www.cityofchicago.org/environment)

Discover opportunities to disconnect your downspout, build a rain barrel, get funding for building your own green roof, and learn about Mayor Daley’s Landscape Awards program.

**Rain Garden Network**

[www.raingardennetwork.com](http://www.raingardennetwork.com)

Rain Garden Network designs, builds, and maintains rain gardens. They share their experience through the web site, with technical guidance on a range of topics and suggestions on how to spread the word in a community.

**Rain Gardens of West Michigan**

[www.raingardens.org](http://www.raingardens.org)

Rain Gardens of West Michigan is a regional center for information. The site offers garden plans, plant lists, and educational materials, including Spanish language resources.
Imagine...

When a heavy rainstorm doesn’t back up into the basement or flood into the garage!

When you can walk out your door to see beautiful patches of native landscape, and know they’re working for you and your neighbors.

When your neighbors talk more now that you are working together to solve a communal problem.

When your mayor holds a press conference to celebrate what you’ve been doing, and encourage others to do it as well.

When students are learning about environmental science outside of the classroom.

When being “green” is recognized as something anyone can do—and something everyone benefits from.
The next level is organizing a community to implement green solutions on a neighborhood scale. Look around your neighborhood and locate places where stormwater causes problems. Can the problem be reduced significantly with green solutions?

- Where does a roof downspout make walking on a sidewalk difficult, or cause a problem on adjacent land?
- Is there a sloping area where a rain garden could trap water and keep it away from houses and yards, or from rushing into a stream or sewer?
- What public areas become flooded and unusable after a rain? Are they next to a sizable parking lot or large building whose runoff could be directed into a rain garden?

The easiest way to achieve results quickly may be to locate people already invested in green solutions.

Identify a local watershed group at the IL Dept. of Natural Resources Ecosystem Partnership website. 

dnr.state.il.us/orep/C2000/ecosystem/partnerships/

They may have members interested in taking action on green solutions.

Find retired public officials or engineers, familiar with the local system of water management and obstacles to overcome.

Use the Human Resources list at the back of this guide (p. 28) to find other organizations working in your area.
Keeping Track

Scaling up the benefits of green solutions relies on linking success at a lot or neighborhood scale to a watershed or a regional goal. To make these connections it is essential to know where green solutions already exist and how well they are working. Every new green solution built should be documented so that the public and water resource planners can stay up-to-date on the region’s real water infrastructure capacity.

Help us map your green solution and share some lessons learned with a community of practitioners. Watch for a registration link on the Green Values Stormwater Toolbox website:

http://greenvalues.cnt.org

Bill’s Tip # 5
Rain gardens fill quickly with plants; to relieve overcrowding, give transplants to interested neighbors so they can get involved. The costs of green solutions can be reduced even more if the community works together.

Green Values Stormwater Toolbox
http://greenvalues.cnt.org

One of the major challenges to widespread acceptance of green solutions has been the inability to evaluate their costs and benefits against those of conventional infrastructure.

The Green Values Stormwater Toolbox calculator was designed by CNT to remedy that problem. The calculator models conditions in a neighborhood or lot defined by the user. It shows:

1) A comparison of the dollars spent and saved over the life cycle of a conventional system vs. a system improved with green solutions;

2) The amount of runoff produced in the defined scenario and how much that runoff can be reduced using green solutions.

Regional green infrastructure maps available at www.greenmapping.org
Visit Green Solutions Near You

There are green solutions already in place all over the Chicagoland region. Visiting a living example is worth a thousand manuals, and many sites offer education opportunities on a wide variety of subjects.

Chicago:

- Chicago Park District:
  North Park Village Nature Center
  5801 N. Pulaski Road
  [www.chicagoparkdistrict.com](http://www.chicagoparkdistrict.com)
  The North Park Village Nature Center houses a variety of native Illinois landscapes – wetland, prairie, savanna, and woodland. The center provides numerous educational opportunities and hosts family-friendly festivals and fairs throughout the year. Attend a special event or ask staff members your native gardening questions.

- Eden Place
  W 43rd Place and S. Shields Avenue
  [www.fullerpark.com/My_Homepage_Files/Page1.html](http://www.fullerpark.com/My_Homepage_Files/Page1.html)
  This South Side nature center showcases a bio-diverse wetland, prairie, and woodland habitat with an emphasis on education and children. A visit here is an excellent way to enjoy nature in the city, and learn how you can create your own little eden.

Chicago Center for Green Technology

- 445 N. Sacramento
  [www.cityofchicago/Environment/GreenTech](http://www.cityofchicago/Environment/GreenTech)
  The Chicago Center for Green Technology (CCGT) is the most comprehensive green design educational resource in the Midwest. CCGT offers self-guided tours that illustrate many examples of innovative storm water management, including permeable paving, cisterns for collecting roof runoff, native landscapes, vegetated bioswales, and a wetland. Guided tours are available for groups of 10 or more. In addition, the Green Tech U education program presents free seminars on green practices ranging from rooftops to countertops. CCGT strives to maintain and reuse the major portion of its site runoff, reducing it by over 60%.
The Notebaert Nature Museum
2430 N. Cannon Drive
www.naturemuseum.org
This nature museum has turned its “greening project” into its largest exhibit! See their “use every drop” water conservation system and use their in-depth resources to understand how you can create a similar “greening project” on your own land.

South:
Village of Park Forest
Central Park
www.backtowetlands.com/
Park Forest, in south suburban Cook County, has been restoring a 45 acre wetland in Central Park since early 2000. The park, located in the heart of downtown, aims to manage stormwater, reduce maintenance costs, and educate the community. Guided walks and group presentations are available from the Park Forest Recreation and Parks Department.

West:
Morton Arboretum
4100 Illinois Rt 53, Lisle
www.mortonarb.org
The Visitor Center here embraces the Arboretum’s naturalistic style, incorporating a variety of environmentally friendly materials. The newly designed parking lot uses permeable paving to absorb water. Bio-swales treat and channel surplus water, and a restored wetland treats runoff before it seeps into Meadow Lake, on its way to the DuPage River.
Prairie Sun Consultants:
612 Staunton Road, Naperville
Prairie Sun, home to the
Armstrong family and their
consulting firm, has a 100% native
yard and a 1500 sf prairie planted
on the roof! The Armstrongs
are happy to explain the natural
benefits of their landscaping
to interested visitors, and even offer tours for classes. Pat
Armstrong is an active member of Wild Ones, a region-wide
native gardening club.
(www.for-wild.org)

North:
Prairie Crossing
Libertyville/Grayslake
www.prairiecrossing.com
Prairie Crossing is an acclaimed
conservation community.
Native prairie covers much of
the open space, maximized by clustering of homes. Many
homes feature rain gardens and other innovative landscape
designs. Managing stormwater runoff with green solutions
keeps the water quality in Prairie Crossing’s Lake Aldo Leopold
so pristine that the Illinois Dept. of Natural Resources selected
it as a site for stocking endangered fish populations.

Maine Township Hall
1700 Ballard Rd, Park Ridge
Maine Township is home to
the confluence of Farmer
and Prairie creeks, which have
flooded on a massive scale,
most memorably in 1987. The Town Hall
uses green solutions to help reduce future
flooding risk and provide an example for
residents. It includes a rain garden and
native prairie restoration. Ken Schaefer,
the naturalist and groundskeeper at
nearby Oakton Community College, installed and maintains
these features. Ken is a known resource around the area and
is happy to offer advice. Contact Ken at (847)635-2617 to
learn more.

Bill Eyring’s home
Williamsburg Road,
Evanston
Bill is the senior engineer
at the Center for
Neighborhood Technology.
He has planted 2 rain
gardens at his home to protect himself and his neighbors
from garage-flooding. Several native landscape features in
the back yard attract birds and his grandchildren.
Call Bill at (773)269-4016 for details.
Nurseries

Nurseries that specialize in native plants can become advisors. Wholesale and retail plant nurseries sell native plants and seedlings and offer tours of their ornamental and native landscapes. They also offer gardening tips and classes.

Midwest Groundcovers (shown above), St. Charles, IL
www.midwestgroundcovers.com
The Natural Garden, St. Charles, IL
www.thenaturalgardeninc.com
 Possibility Place, Monee, IL
www.posibilityplace.com
Earthwild Gardens, Grayslake, IL
www.earthwildgardens.com
JF New, Walkerton IN
www.jfnew.com
 Prairie Nursery, Westfield, WI
www.prairienursery.com
Taylor Creek Restoration Nurseries, Broadhead, IN
www.appliedeco.com/tcrn/default.htm

Professionals

Experienced professionals can help the public and private sectors implement green solutions.

Conservation Design Forum
www.cdfinc.com
CDF developed a stormwater management plan for the Tellab headquarters in Naperville (left) that includes native landscaping and bioswales to absorb parking lot runoff.

Rain Garden Network
www.raingardennetwork.com
designed and built this rain-train system in Chicago that directs runoff from the roof into a rain garden.

Applied Ecological Services:
www.appliedeco.com
Hey & Associates:
www.heyassoc.com
Pizzo Associates:
www.pizzo.info
Prairie Sun Consultants: (630) 983-8404
WRD Environmental: www.wrdenvironmental.com

Bill’s Tip 6

Deer, rabbits, and squirrels can seriously damage new seedlings. Ask your nursery for advice on deterring hungry wildlife.
Human Resources

Federal and State
U.S.EPA: www.epa.gov/region5/water
Illinois EPA: www.epa.state.il.us/water

Local Government
Homer Glen: www.homerglen.org
Lake County: www.co.lake.il.us/smc/
Rock Island: www.rigov.org/citydepartments/publicworks/raingarden.html

The Rain Gardens for Rock Island program compensates city residents $4/sf for constructing approved gardens. The public works department has an excellent website explaining the program and great demonstration gardens.

Non-profit
Chicago Metropolitan Agency for Planning: www.nipc.org/environment
Chicago Wilderness: www.chicagowilderness.org
The Conservation Foundation: www.theconservationfoundation.org
Openlands Project: www.openlands.org

Agencies in the public and private sectors are constantly expanding their programs for green solutions. These human resources can help you get connected with ongoing activity or start something new.

The Center for Neighborhood Technology

CNT is a non-profit organization that promotes the development of more livable and sustainable communities. CNT’s work on green solutions addresses many fronts:

Technology
Four demonstration projects are underway to collect performance data critical to convincing the engineering community that green solutions are a high-efficiency, low-risk alternative.

Outreach
The Green Values Stormwater Toolbox (see p. 18) is an open access educational resource with a unique ability to quantify the costs and benefits of green solutions in user-defined scenarios.

Policy
This is an ongoing effort to introduce and advocate green policies with legislators and planners to enact change on a system wide scale.

Practice
The CNT office building was the second in Chicago (and 13th in the nation) to receive LEED®-(Leadership in Energy and Environmental Design) Platinum certification. The building features a rain garden, native plants, and a permeable parking lot.