

Julia Noordyk

Water Quality Outreach Specialist

Wisconsin Sea Grant

@NoordCoast



Credits:

Juli Beth Hinds

Birchline Planning, LLC

Kate Morgan

Milwaukee Metropolitan

Sewerage District

**Tackling Barriers to Green Infrastructure
One Code at a Time**

Underwater video of an urban stormwater outfall



Green Infrastructure



Rain Gardens and Bioretention

Permeable Pavements and Pavers



Planter Boxes



Green Walls



Green Roofs



Stormwater Trees



Native and Deep Rooted Plants



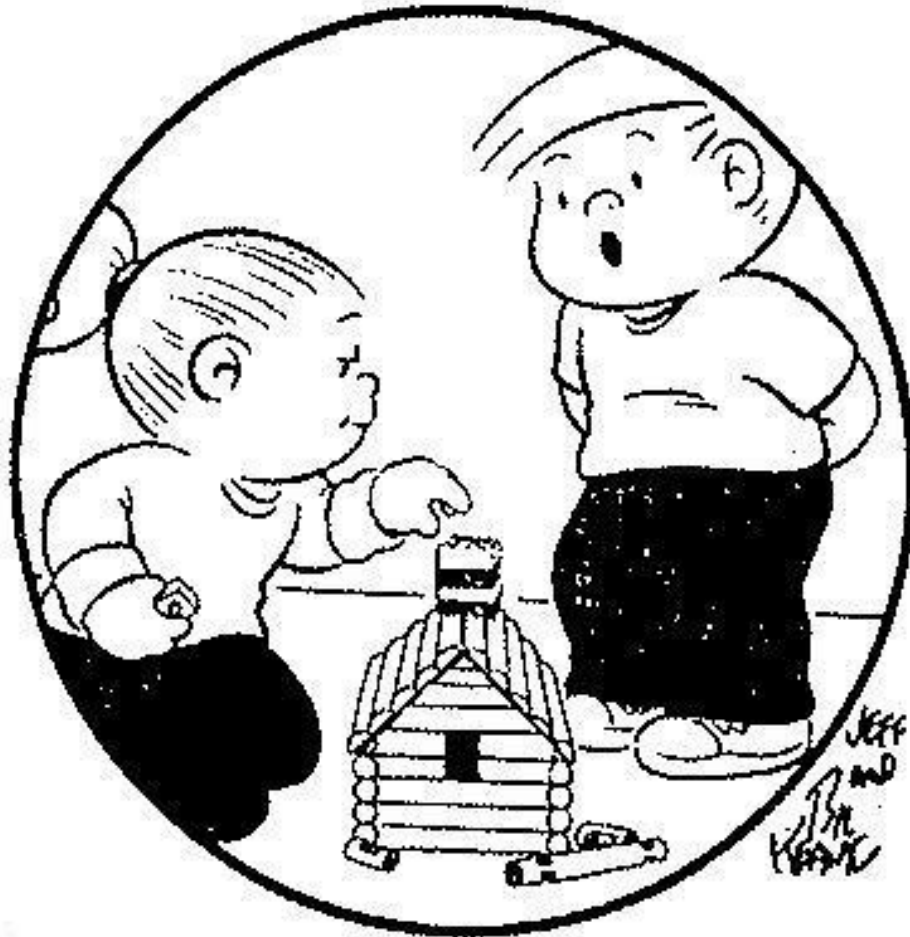
MARY BETH DOYLE
PARK AND WETLAND
PRESERVE



Restored Floodplains and Wetland Basins



Why are Codes & Ordinances important for Green Infrastructure?



“The building code doesn’t allow a LEGO chimney on a Lincoln Log cabin.”



THE CITY OF STEVENS POINT, WIS.

STEVENS POINT, WIS.

1891.

CHAS. H. WELLS.

STEVENS POINT, WIS.
CHAS. H. WELLS.

STEVENS POINT, WIS.
CHAS. H. WELLS.

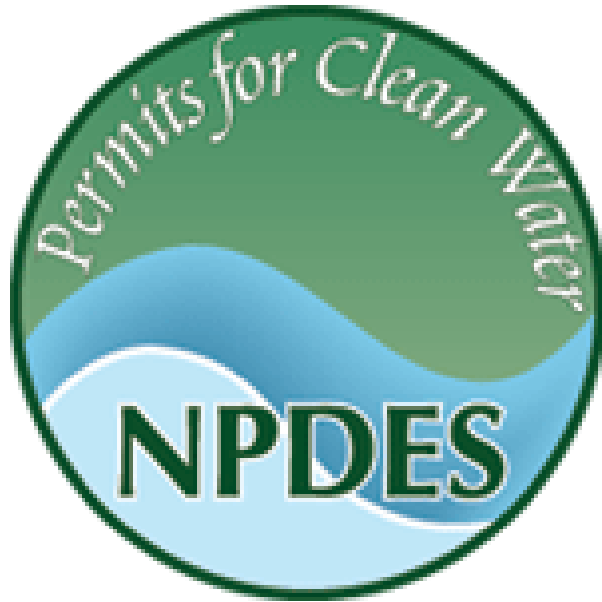
STEVENS POINT, WIS.
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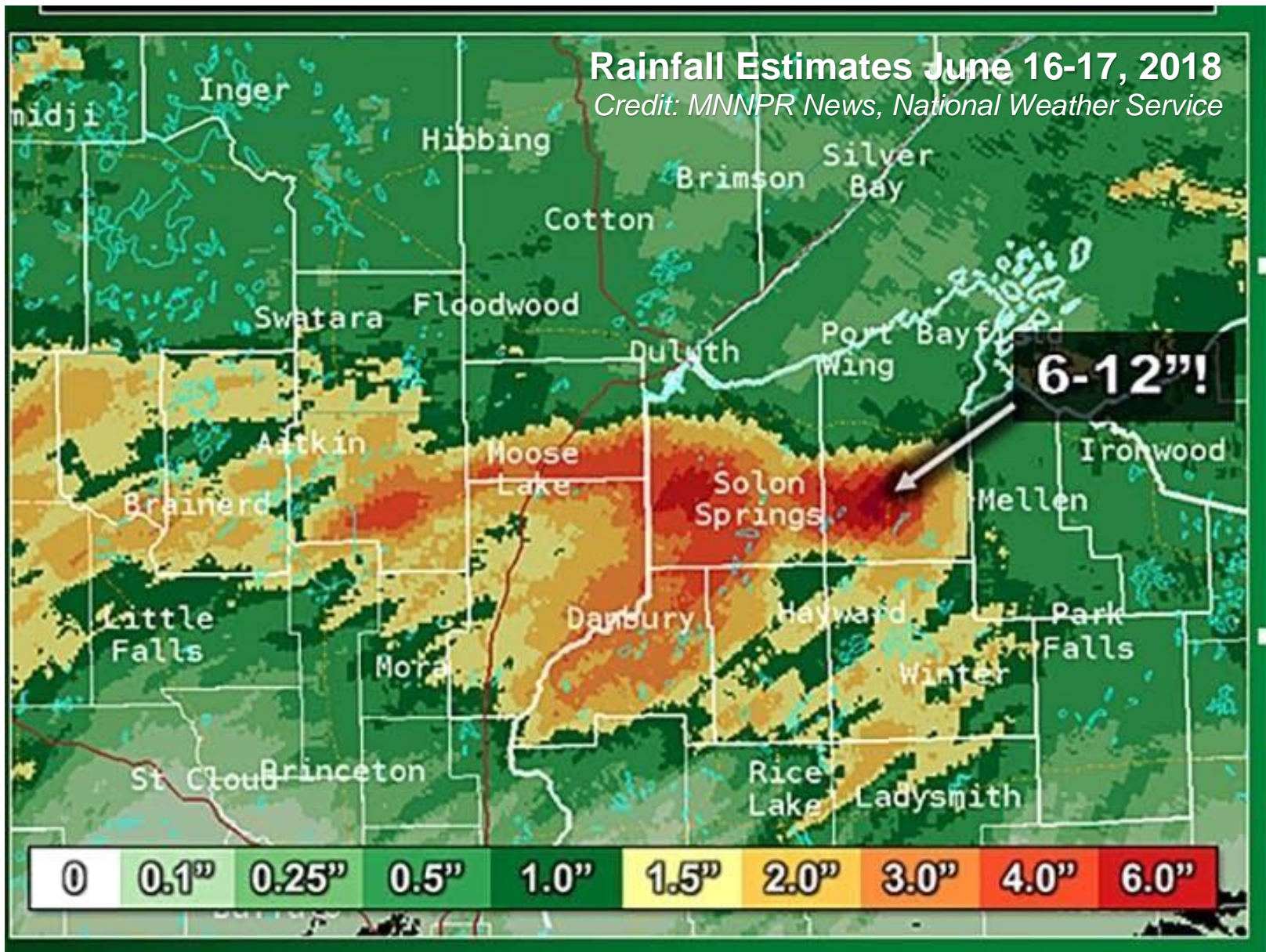
STEVENS POINT, WIS.
CHAS. H. WELLS.

Emerging and evolving needs & issues



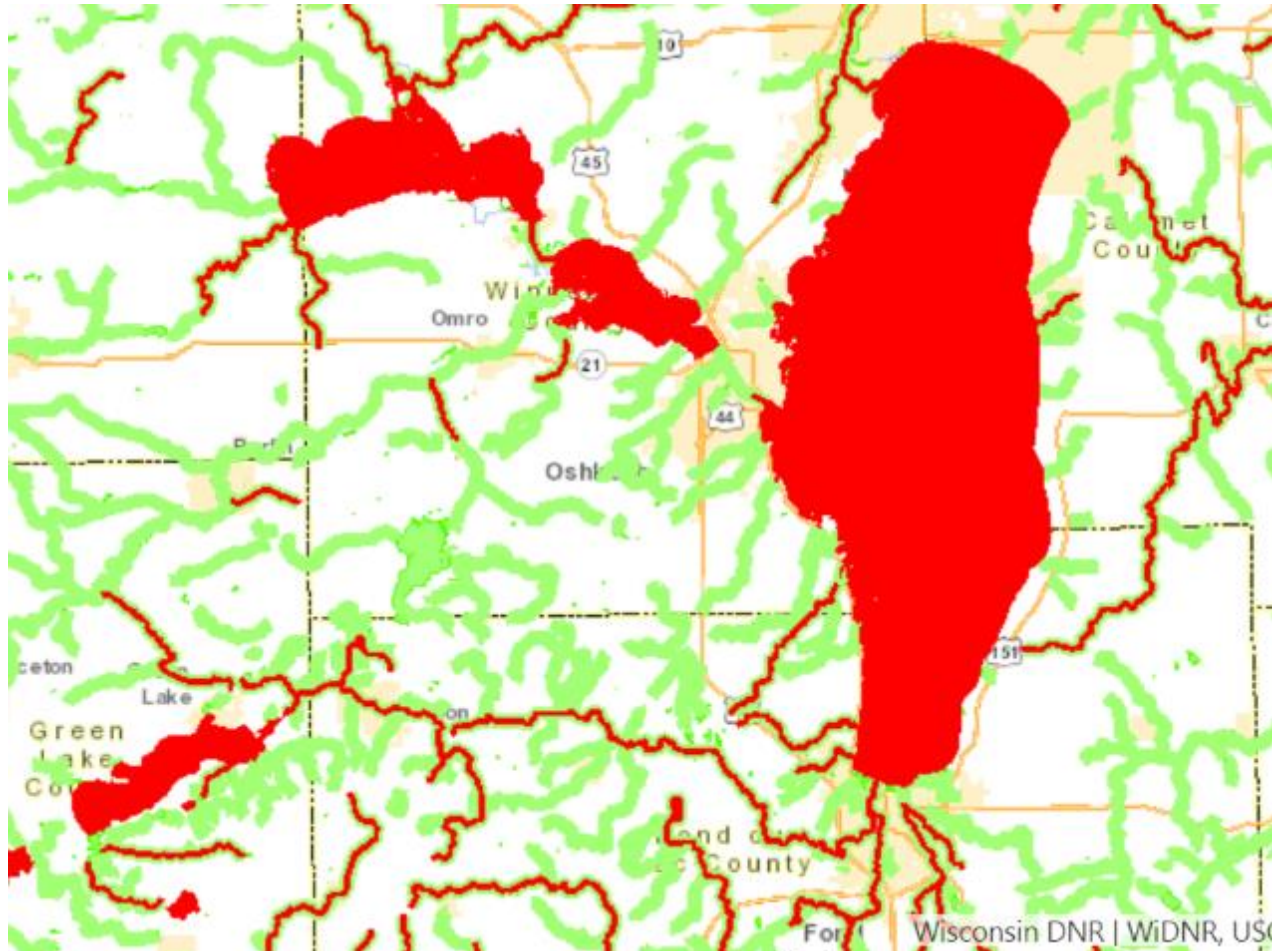
Stormwater permit updates

Emerging and evolving needs & issues



Intense storm events

Emerging and evolving needs & issues



Environmental Protection Agency
Total Maximum Daily Loads (TMDLs)

Emerging and evolving needs & issues

Changing
technical
standards



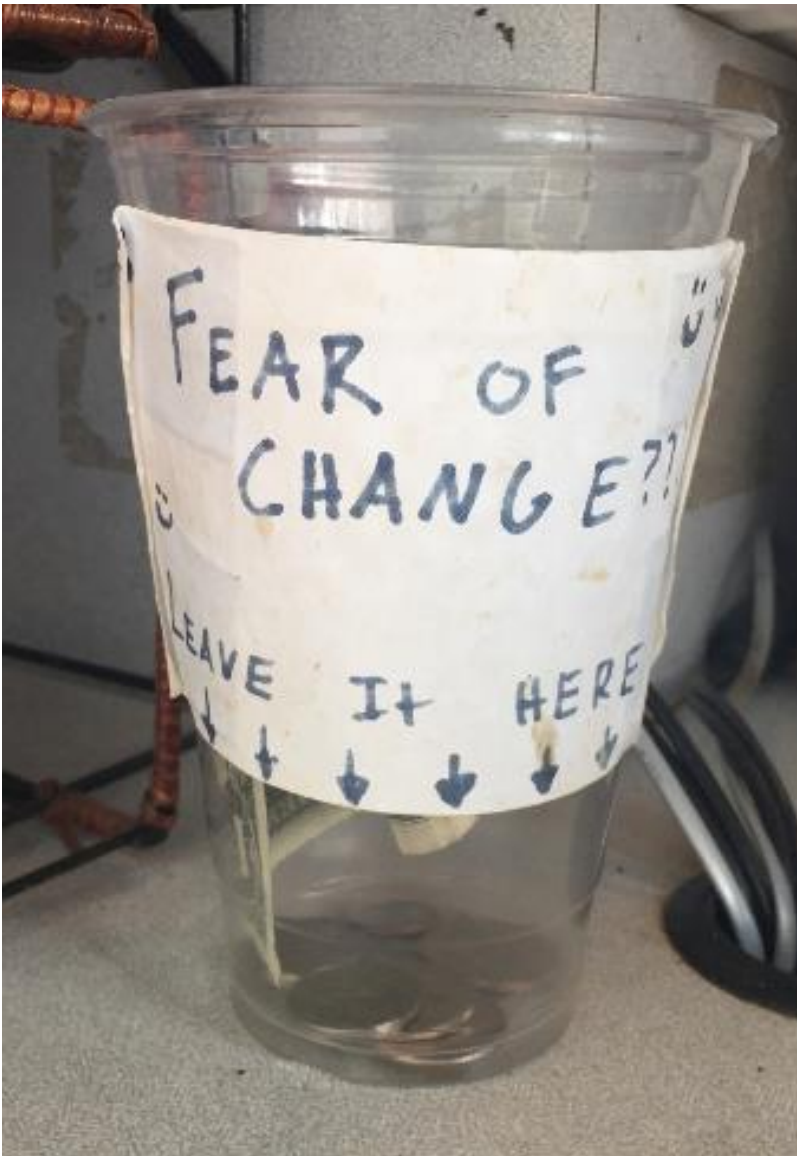
Emerging and evolving needs & issues



PaveDrain

New products
& technology

And Finally: The Discretion & Decider Barriers



WHO'S IN CHARGE HERE?!



The charismatic leader, "Make it so!"

Discretionary approval needed...



“The applicant shall incorporate the comments of the...”

Aesthetic Habits



“Because we’ve always done it that way.”

When no one is deciding



What's missing here?

"I heard it failed in..."



So what? We comply with the state stormwater standards....



Why are Codes and Ordinances Important?

If the code language is not clear that green infrastructure is an acceptable or preferred approach to managing stormwater, green infrastructure will not likely be considered in development proposals, design plans or capital projects.

It's not about more regulation or cost!



Do codes actually matter?



Photo: Kuglin/AP

Code Revision: Encouraging use of bioretention areas with curb cut inlets as parking lot landscaping

24.12.020 Perimeter Vehicular Use Area Landscaping and

24.12.030 Interior Vehicular Use Area Landscaping

The integration of depressed bioretention areas used for landscaping and stormwater management is are strongly encouraged. Where perimeter areas are designed specifically for stormwater management, the planting and dimensional requirements of 24.12.020(B)(1) above may be varied as necessary to ensure that the area functions effectively for stormwater treatment, so long as in the judgment of the [plan commission, city engineer] an equivalent amount of landscaping, planting or screening is provided.

What's the Impact:

New Standards For Parking Lot Landscaping



46% runoff volume reduction

59% total suspended solids reduction

Code Revision: Encourage use of natives in lawn areas and limit total percent of site in turf grass

CODE OF ORDINANCES
Chapter 122 – ZONING

7. Landscaping. A general description of landscaping standards, screening, and parking lot treatments. Naturalized landscaping, the use of native vegetation, preservation of existing trees and wooded area, and tree planting that will provide additional tree canopy on the site are encouraged. The use of turfgrass should be limited to those areas intended for outdoor recreation or gathering areas.

What's the Impact:

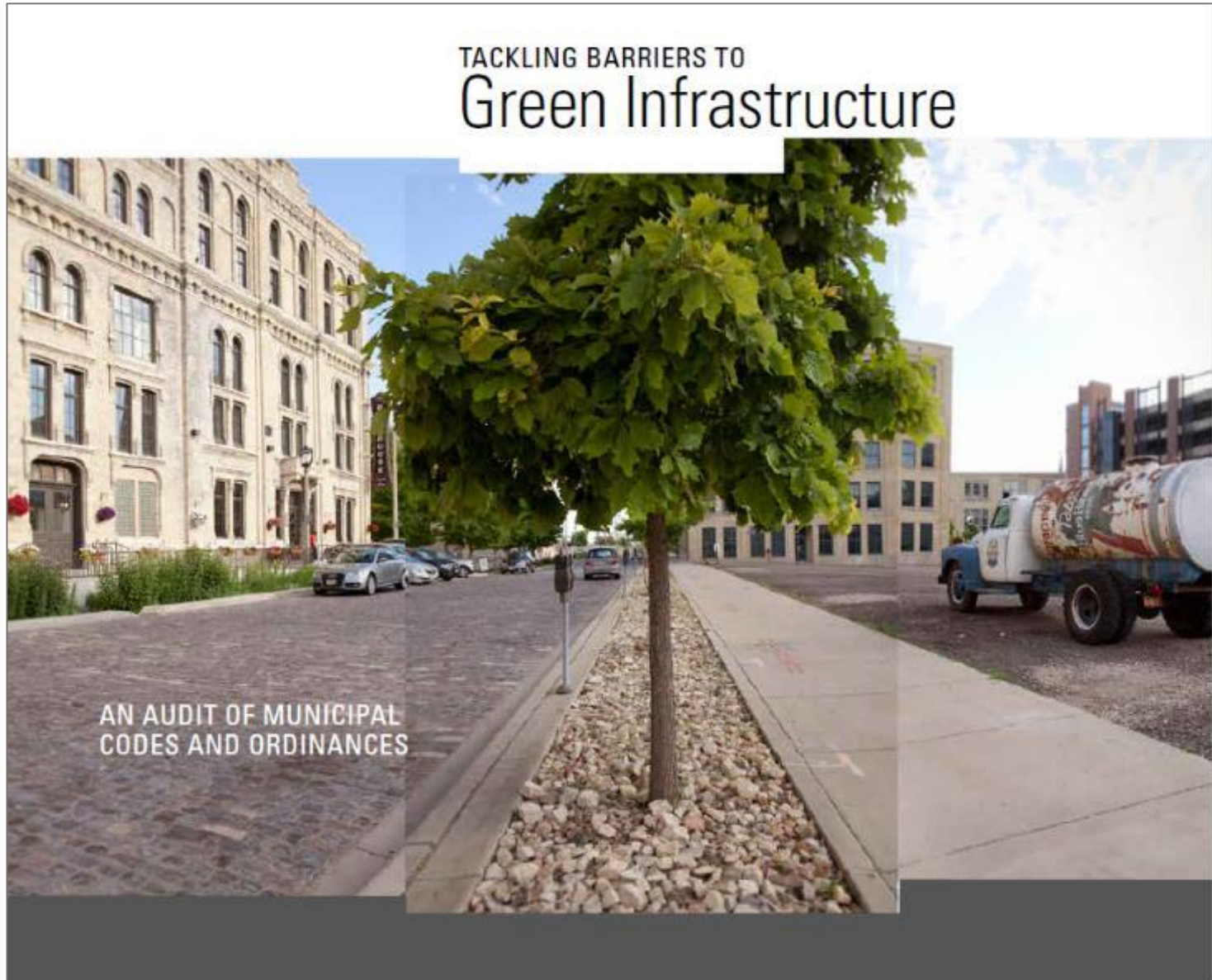
Substituting Deep Rooted Plantings for Turf



74% runoff volume reduction

64% total suspended solids reduction

...Yes, codes matter and we can do better!



www.seagrant.wisc.edu/greeninfrastructure

What makes this audit unique?



One code to rule them all....

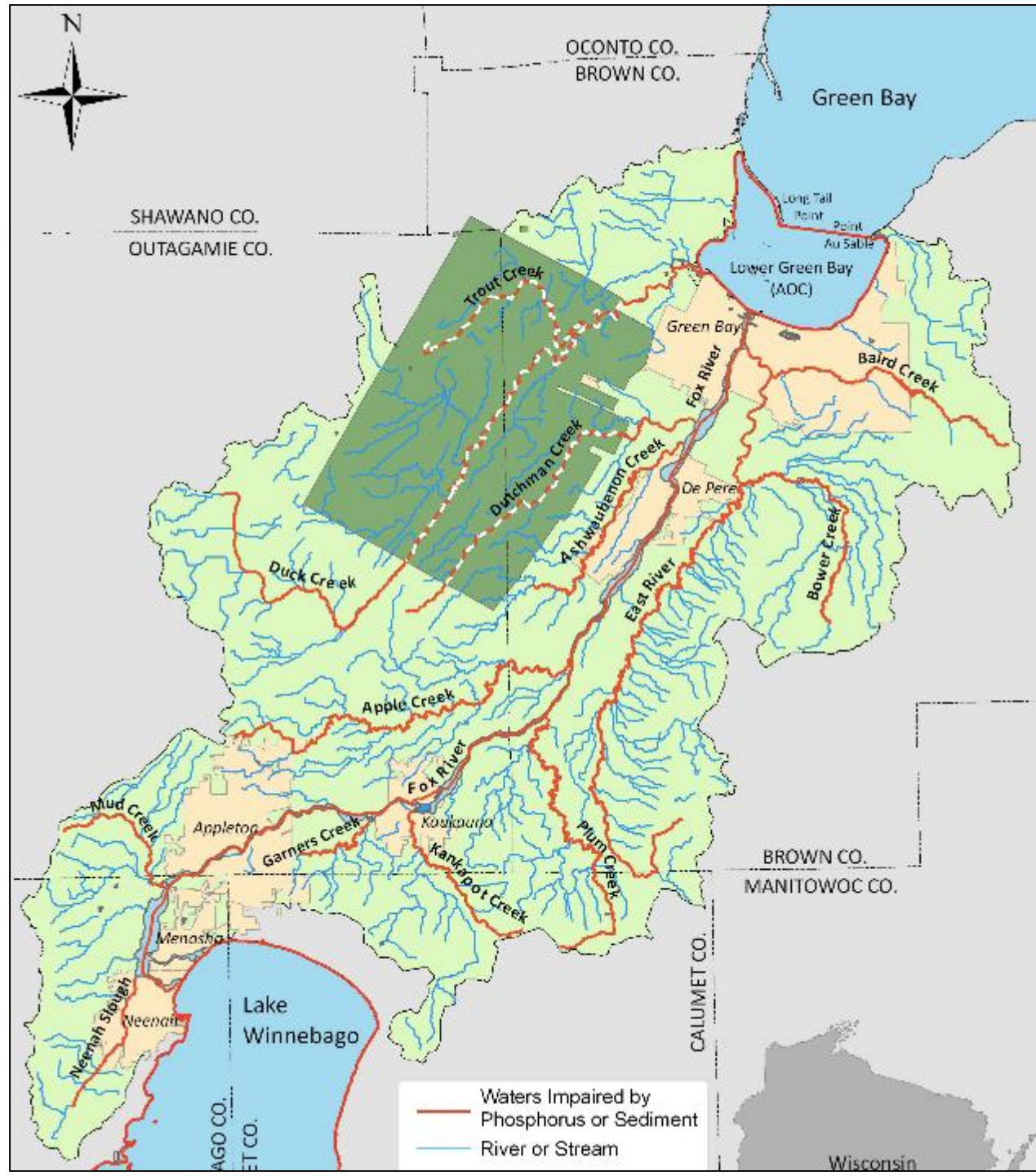




Natural Assets?

Stormwater Permit?

Pollution Limit?
(e.g., TMDLs)



Hazards?



Community Identity and Character?





Green
Infrastructure
Usage?

Acceptance?



Down in the weeds



Nuanced Code Ranking

GI practice clearly allowed and approved as-of-right	GI practice allowable but some ambiguity or potential conflict	GI practice allowed with discretionary approval	GI practice mentioned but w/o standards or guidance	No policy or standards adopted, but not disallowed	Limitations or prohibitive language, but could potentially be approved	GI practice prohibited or prevented by conflicting code
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Permeable Materials

	1	2	3	4	5	6	7	8	9
May alleys be permeable or widths varied?	Blue	Orange	Blue	Blue	Red	Blue	Green	Yellow	Blue
Are parking areas allowed to be permeable?	Red	Red	Green	Orange	Red	Red	Green	Green	Red
Are loading areas allowed/encouraged to be permeable?	Orange	Orange	Blue	Red	Red	Blue	Light Blue	Orange	Red
Are sidewalks allowed/encouraged to be permeable?	Yellow	Orange	Orange	Red	Red	Red	Green	Orange	Orange
Are driveways allowed/encouraged to be permeable?	Blue	Orange	Blue	Orange	Blue	Green	Green	Yellow	Blue
Are low-volume street sections allowed/encouraged to be permeable?	Red	Orange	Orange	Red	Red	Blue	Light Blue	Red	Orange
Does the use of permeable materials reduce the stormwater quantity required to be managed? If so is this a written or informal standard?	Orange	Grey	Blue	Yellow	Light Green	Yellow	Yellow	Yellow	Yellow
Is there a provision that driveways may/shall be partially permeable or drained to pervious area if exceeding a certain width/total SF?	Blue	Green	Blue	Blue	Red	Blue	Green	Blue	Blue
Is permeable surfacing allowed for parking lanes?	Orange	Orange	Orange	Red	Red	Blue	Green	Orange	Red
Must driveway aprons be made of impermeable surfaces?	Blue	Orange	Orange	Blue	Red	Red	Green	Blue	Blue
Must a sealant be used and can that provision be waived?	Blue	Orange	Orange	Blue	Red	Blue	Green	Red	Blue
Can grasscrete be used to meet public safety/fire access needs?	Light Green	Light Green	Blue	Light Green	Light Green	Light Green	Green	Dark Green	Blue
Is there municipal experience with permeable material, curbless streets, or other GI measures?	Light Green	Light Green	Dark Green	Light Green	Light Green	Dark Green	Green	Light Green	Blue
Are standard specifications or performance standard adopted or referenced for permeable materials?	Red	Orange	Blue	Red	Blue	Blue	Light Green	Blue	Blue

15 Code Topics

- ✓ ARCHITECTURAL DESIGN STANDARDS
- ✓ COASTAL COMMUNITIES
- ✓ COMMUNITY OUTREACH AND EDUCATION
- ✓ CONSTRUCTION AND POST-CONSTRUCTION MANAGEMENT
- ✓ LANDSCAPING
- ✓ PARKING
- ✓ PERMEABLE MATERIALS
- ✓ POLLUTANT REDUCTION THROUGH SITE PLAN REVIEW
- ✓ POST-CONSTRUCTION STORMWATER STANDARDS AND LONG-TERM MAINTENANCE
- ✓ PUBLIC WORKS STANDARDS
- ✓ PURPOSE STATEMENTS AND COMMUNITY PLANS
- ✓ SANITARY AND STORM SEWER DISCONNECTIONS
- ✓ STORMWATER MANAGEMENT STANDARDS
- ✓ SUBDIVISIONS AND NEW “GREENFIELD” DEVELOPMENT
- ✓ ZONING

Nuanced Code Ranking



Juli Beth Hinds,
Birchline Planning, LLC

A+	Practice is enabled and described specifically; clearly allowed and approved as-of-right
A	Practice is specifically allowable/ as-of-right approval, but some ambiguity or potential conflict
A-	Practice is enabled or encouraged, with discretionary approval
B	Practice is mentioned but without standards or guidance for use
C	No policy or standards adopted, but not disallowed
D	Limitations or prohibitive language in the code, but could potentially be approved
F	Practice prohibited by code language, or an active conflict would prevent approval

Landscaping

Audit Question	Type of Barrier	Tips	Grade
Is the use of deep-rooted or native plants, plants with habitat value, or edibles allowed or encouraged in the landscaping standards?	Landscape standards Design guidelines	Explicitly listing desired types of landscaping in the regulations tells site planners up front that the community encourages these types of plantings.	A-

Green Infrastructure Audit Tool Report Card

ARCHITECTURAL DESIGN STANDARDS

- A** Are rainwater-harvesting and stormwater-control elements acknowledged in design standards?
- B** Are green infrastructure practices suitable for high-density areas (e.g., planter boxes, cisterns) allowed to extend into the right-of-way or onto sidewalks?
- C** Do design standards allow siting of stormwater-control measures along façade?
- B** Do standards allow for the waiver of design or architectural provisions to accommodate stormwater-control measures (planters, cisterns, green roofs, etc.)?
- D** Are pitched roofs required? If so, is a waiver or provision for green roofs or rainwater harvesting made?
- C** Are green infrastructure practices suitable for high-density areas allowed or encouraged in streetscapes (e.g., tree boxes, sidewalk bioretention areas, curb bump-outs)?



“How do I choose?!”

What code changes will meet the community's goals?



Current and future development?





No Near-term Development or Redevelopment?



TBD....

Thank you!



Julia Noordyk
Water Quality Specialist
UW Sea Grant
920-465-2795
noordykj@uwgb.edu

www.seagrants.wisc.edu/greeninfrastructure

