

Julia Noordyk
Water Quality Outreach Specialist
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Credits:

Juli Beth Hinds

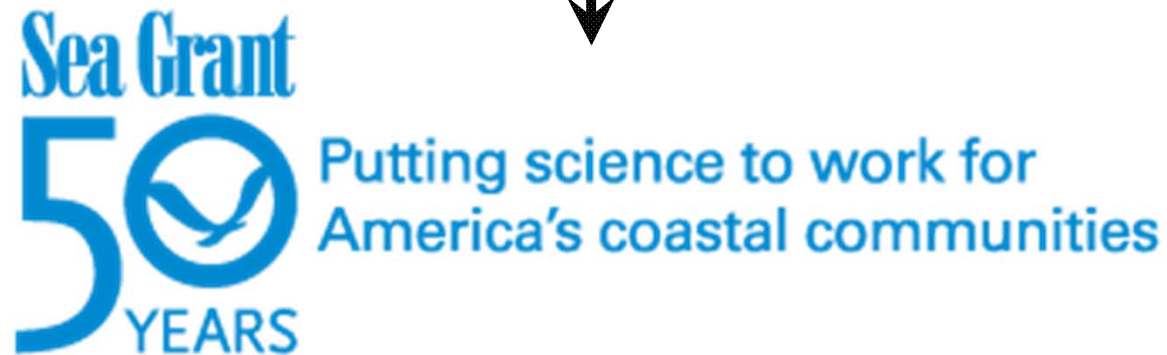
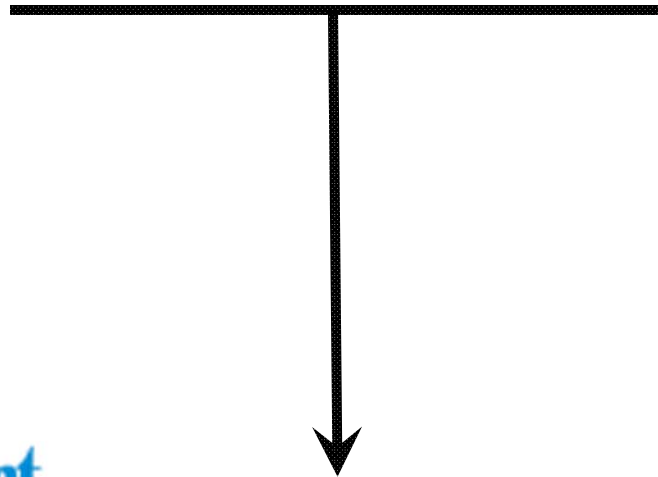
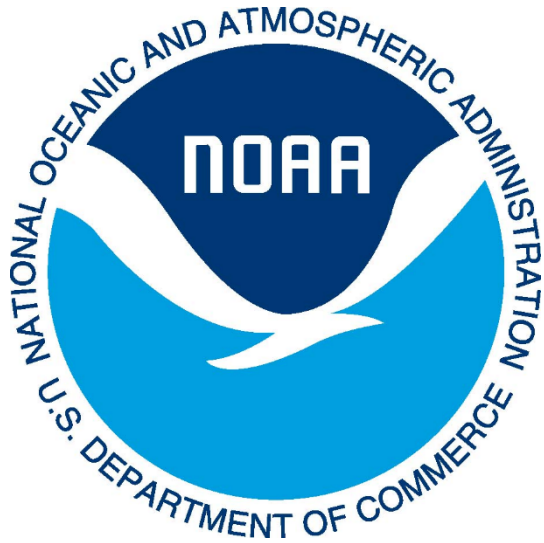
Birchline Planning, LLC

Kate Morgan

*Milwaukee Metropolitan
Sewerage District*

Building Resilient Communities One Code at a Time

Sea Grant? In Wisconsin?





“County agent in hip boots”

NOAA GREAT LAKES COASTAL STORMS PROGRAM

Great Lakes Planning and Mitigation Needs Assessment of Coastal Storm Hazards

Survey Summary

PREPARED BY THE UNIVERSITY OF WISCONSIN SEA GRANT INSTITUTE

JUNE 2014



The Great Lakes Coastal Storms Program seeks to provide resources to Great Lakes communities to help them plan and implement mitigation strategies to reduce the impacts of these coastal storm hazards.



Top Hazards

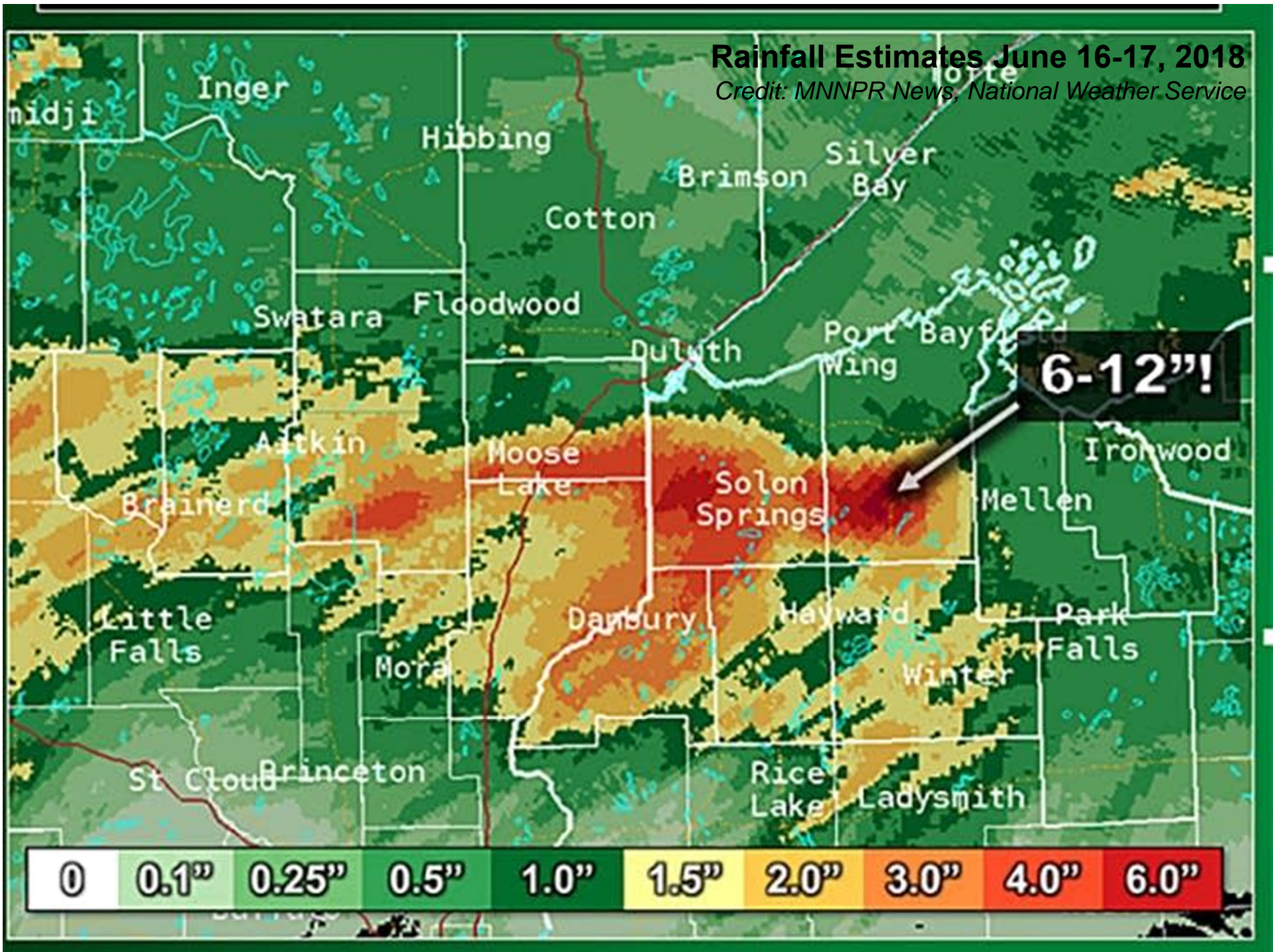
- 1) Bluff and shoreline erosion (67%)
- 2) Stormwater/agricultural runoff pollution (62%)**
- 3) Stormwater/agricultural runoff sedimentation (60%)**
- 4) Overflow of combined sewer and stormwater systems (57%)**
- 5) Residential and commercial stormwater flooding of residential and commercial developments (55%)**

Top Planning Needs

- 1) Updated 100/500-year flood maps (80%)
- 2) Local ordinance, zoning and building code assessment and analysis maps (79%)**
- 3) Shoreline erosion mapping and predictions (69%)
- 4) Public communication of risks and disaster response (69%)
- 5) Predictions about public health impacts (66%)

Rainfall Estimates June 16-17, 2018

Credit: MNNPR News, National Weather Service



Lake Superior June 21, 2018
NOAA/UW-Madison SSEC





*Credit: David Archambeau,
The Daily Mining Gazette*



*Credit: David Archambeau,
The Daily Mining Gazette*



Credit: Mike Werthman

Hmmm...





Get this water outta here!

What is going with all that water?







Coal Tar Sealcoat Runoff Study



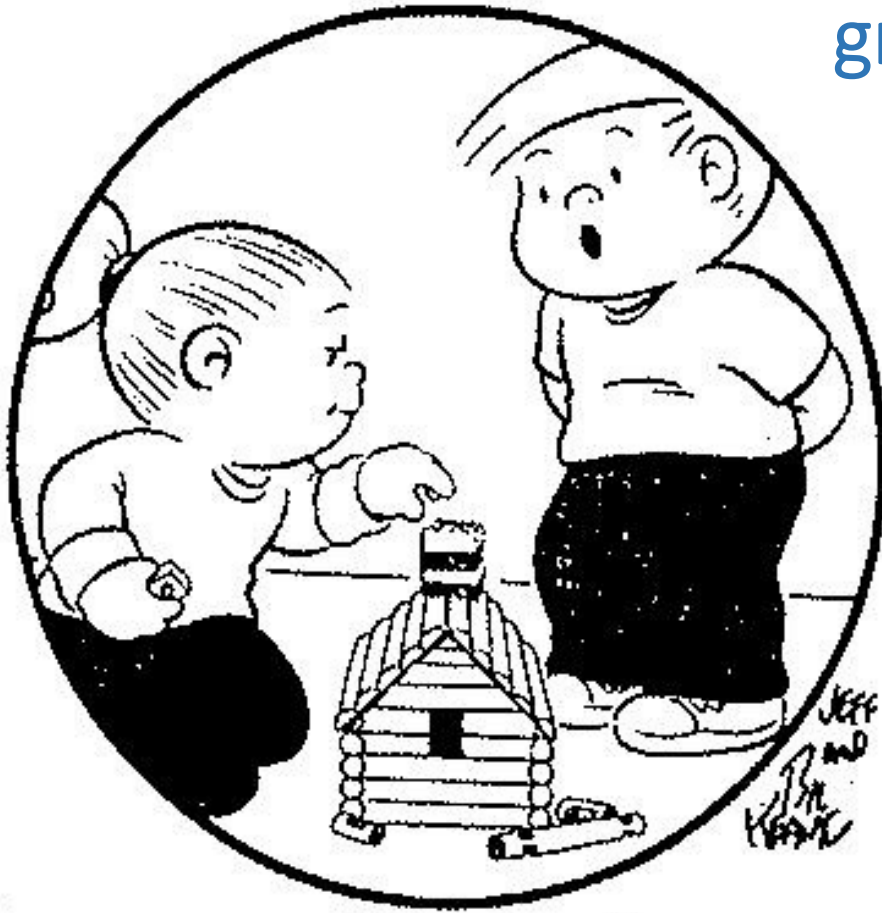
A new way think about stormwater....



....As a resource.



Why are codes & ordinances important for green infrastructure?



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



LOOKING TOWARD NATURE BE & RIVER

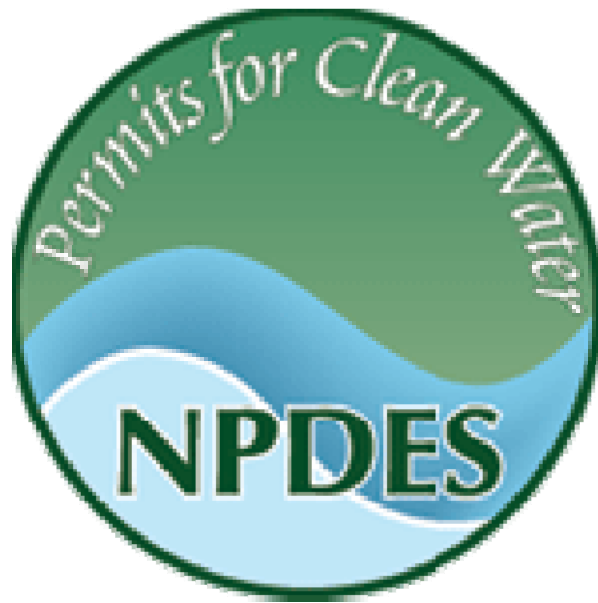
WINDY JACOBSON & CO. N.Y.

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Emerging and evolving needs & issues



Permit updates

Emerging and evolving needs & issues



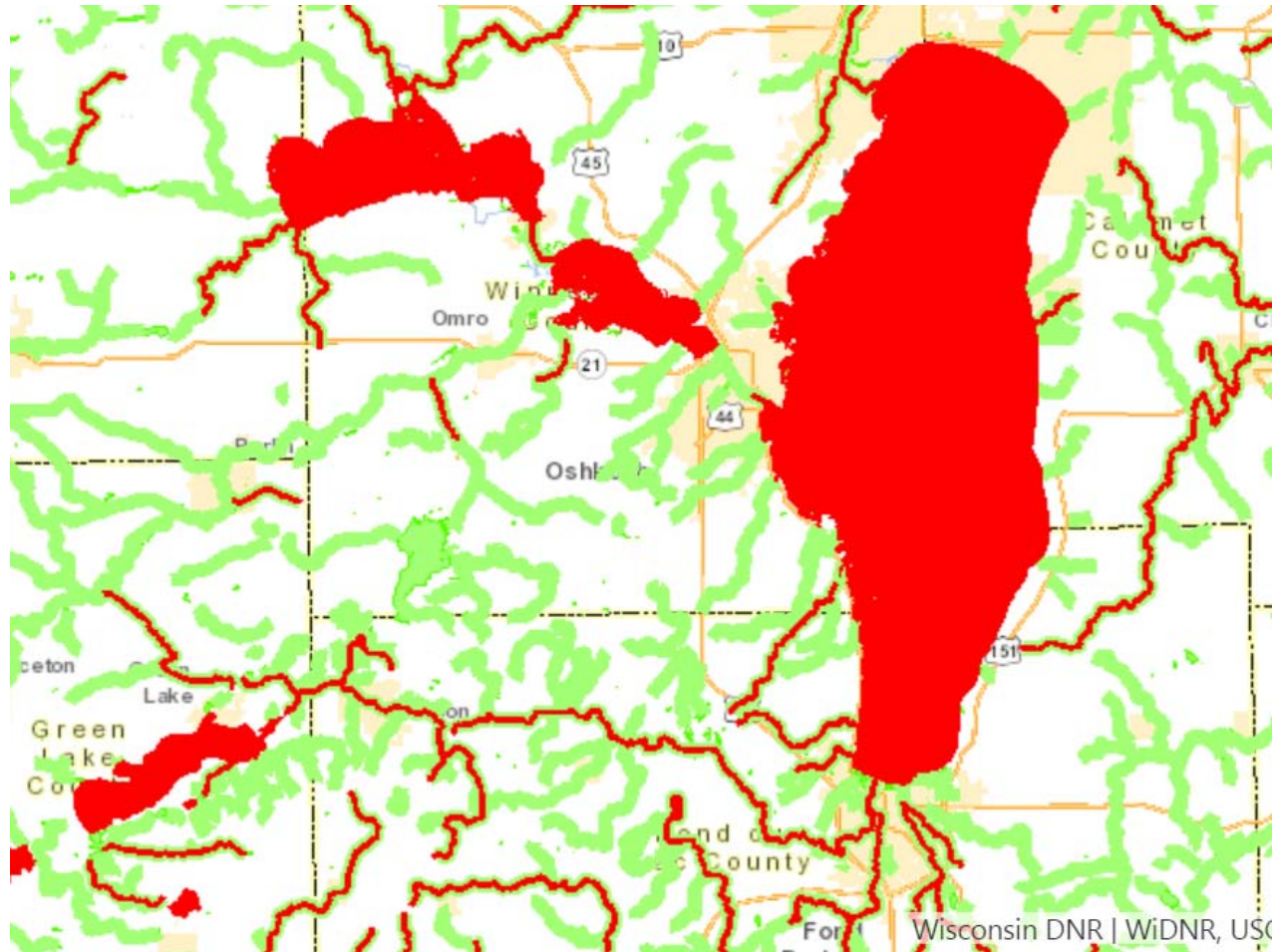
Intense storm events

Emerging and evolving needs & issues

Changing
technical
standards



Emerging and evolving needs & issues



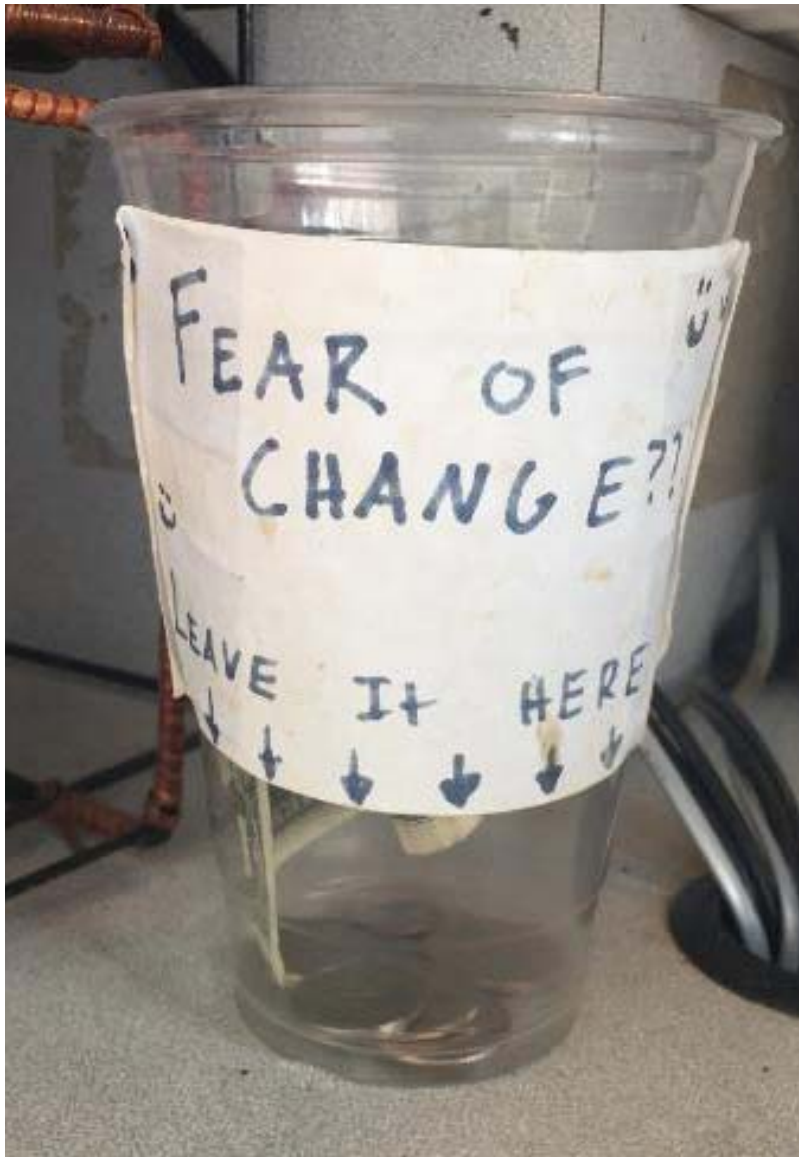
Total Maximum Daily Loads (TMDLs)

Emerging and evolving needs & issues



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 and MS4 permit....



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.

A tale of two cities...



Two different outcomes for water quality:



It's not about more regulation or cost!



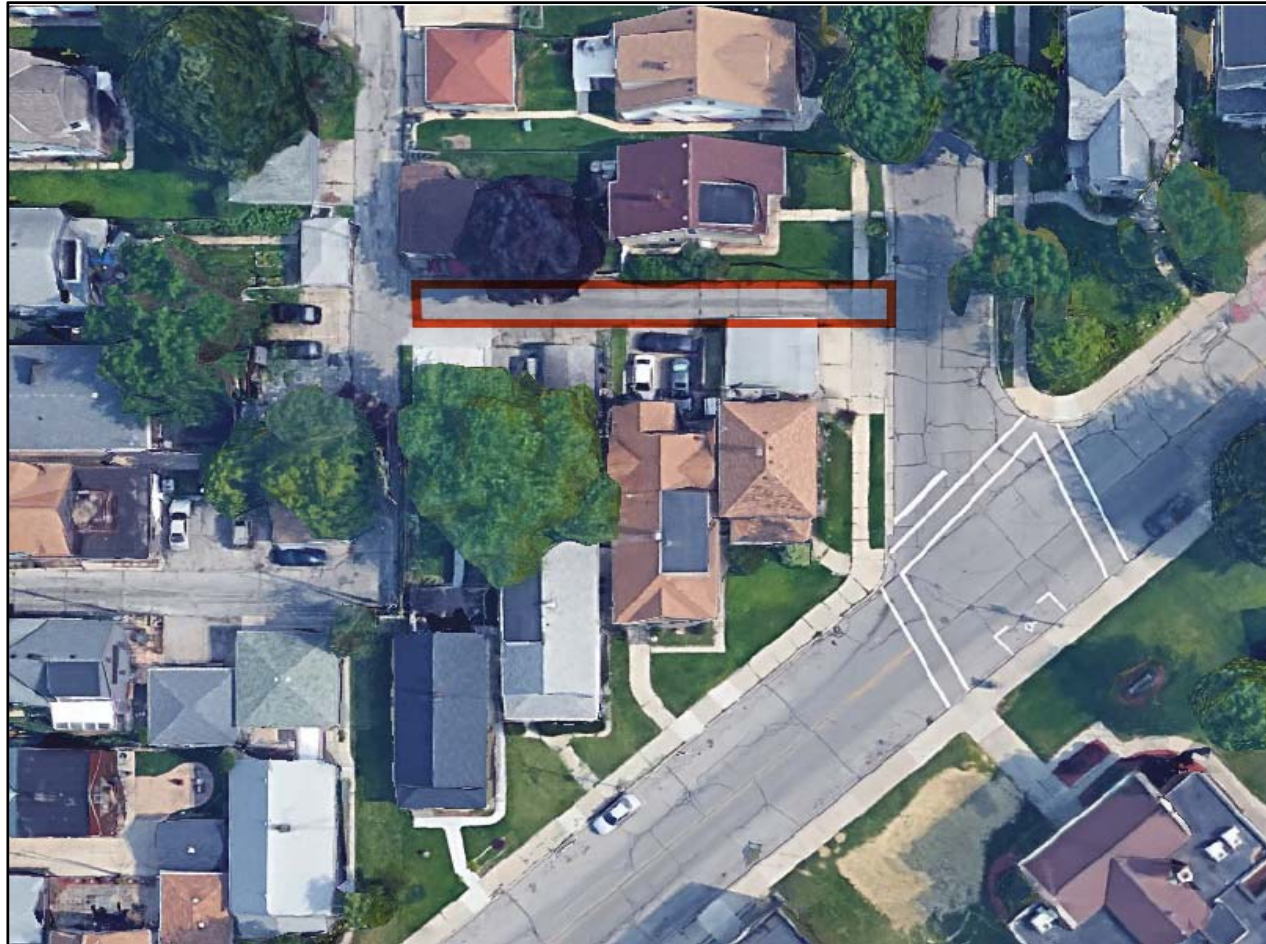
An aerial photograph showing a city with a large body of water in the foreground. The city is densely packed with buildings and trees, and the water is a deep green color. The text "DOES THIS ACTUALLY MATTER?" is overlaid on the image in white capital letters.

DOES THIS ACTUALLY MATTER?

Code Revision: Allow use of permeable surfacing in driveways and alleys

- (3) *Surfacing.* All driveways shall be surfaced ~~with an asphaltic or Portland cement pavement~~ in accordance with village standards and specifications so as to provide a durable and dust-free surface, and shall be so graded and drained as to dispose of all surface water. Permeable surfacing may be used upon review and approval by the village engineer.

What's the Impact: Permeable Alleyways



63% runoff volume reduction

63% total suspended solids reduction

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 Native Vegetation for Turf Grass



74% runoff volume reduction

64% total suspended solids reduction

Code Revision: Reduce minimum parking ratio and set a maximum number of drive-through lanes.

Sec. 13-1-92 Parking Requirements.

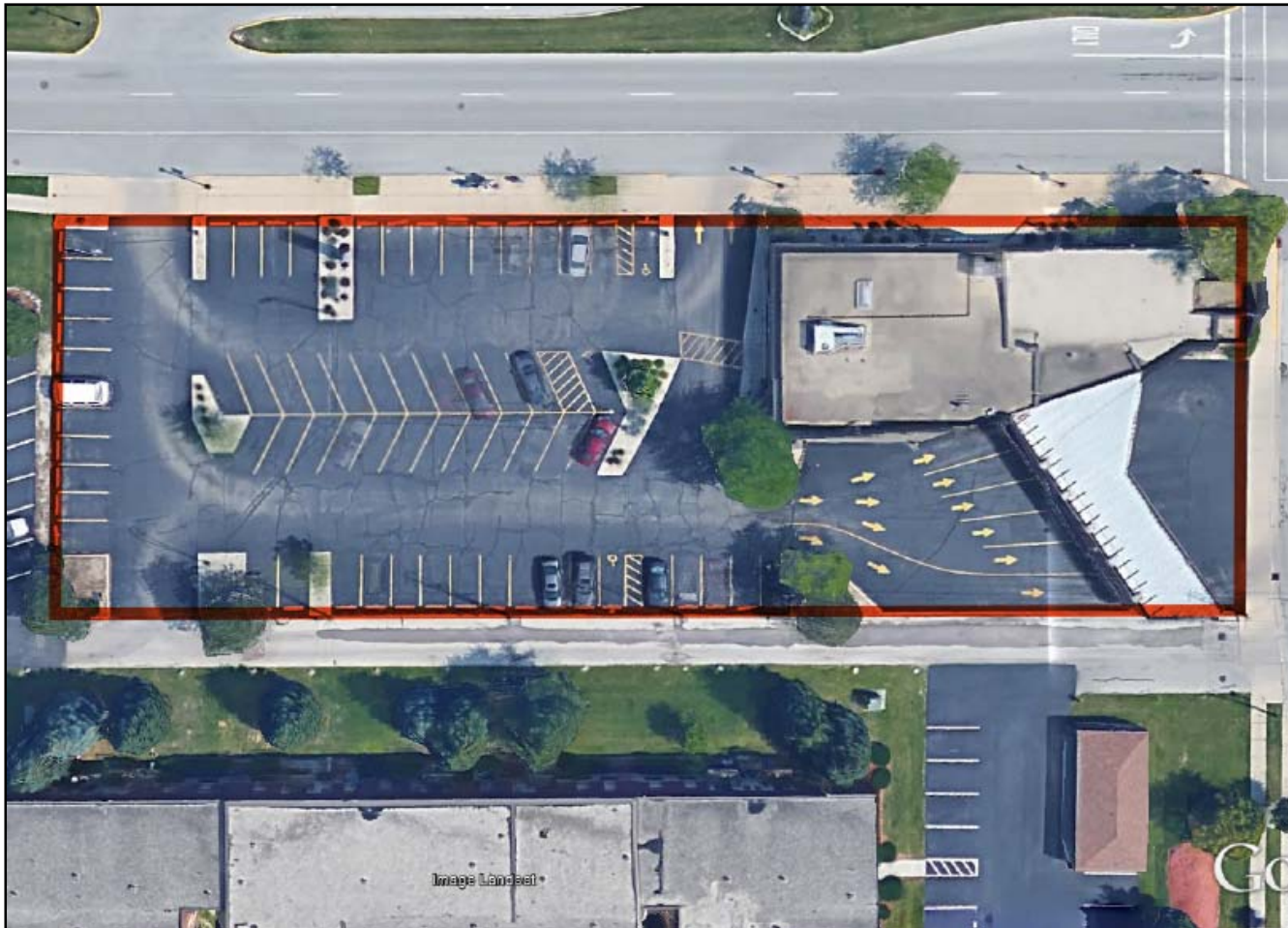
(2) Retail Sales and Customer Service Uses; Places of Entertainment.

Retail sales and customer service uses, and places of entertainment, except as specifically set forth below: one (1) space per two hundred (200) ~~one hundred fifty (150)~~ square feet of gross floor area of customer sales and service, plus one (1) space per two hundred (200) square feet of storage and/or office gross floor area, or if the use has at least eighty thousand (80,000) square feet gross floor area, one (1) space per two hundred (200) square feet of gross floor area.

a. Financial Institutions: One (1) per two hundred (200) ~~one hundred fifty (150)~~ square feet of gross floor area of customer sales and service, plus one (1) space per employee for the work shift with the largest number of employees. Financial institutions with drive-through service facilities shall provide sufficient space for up to four (4) waiting vehicles at each drive-through service lane.

What's the Impact:

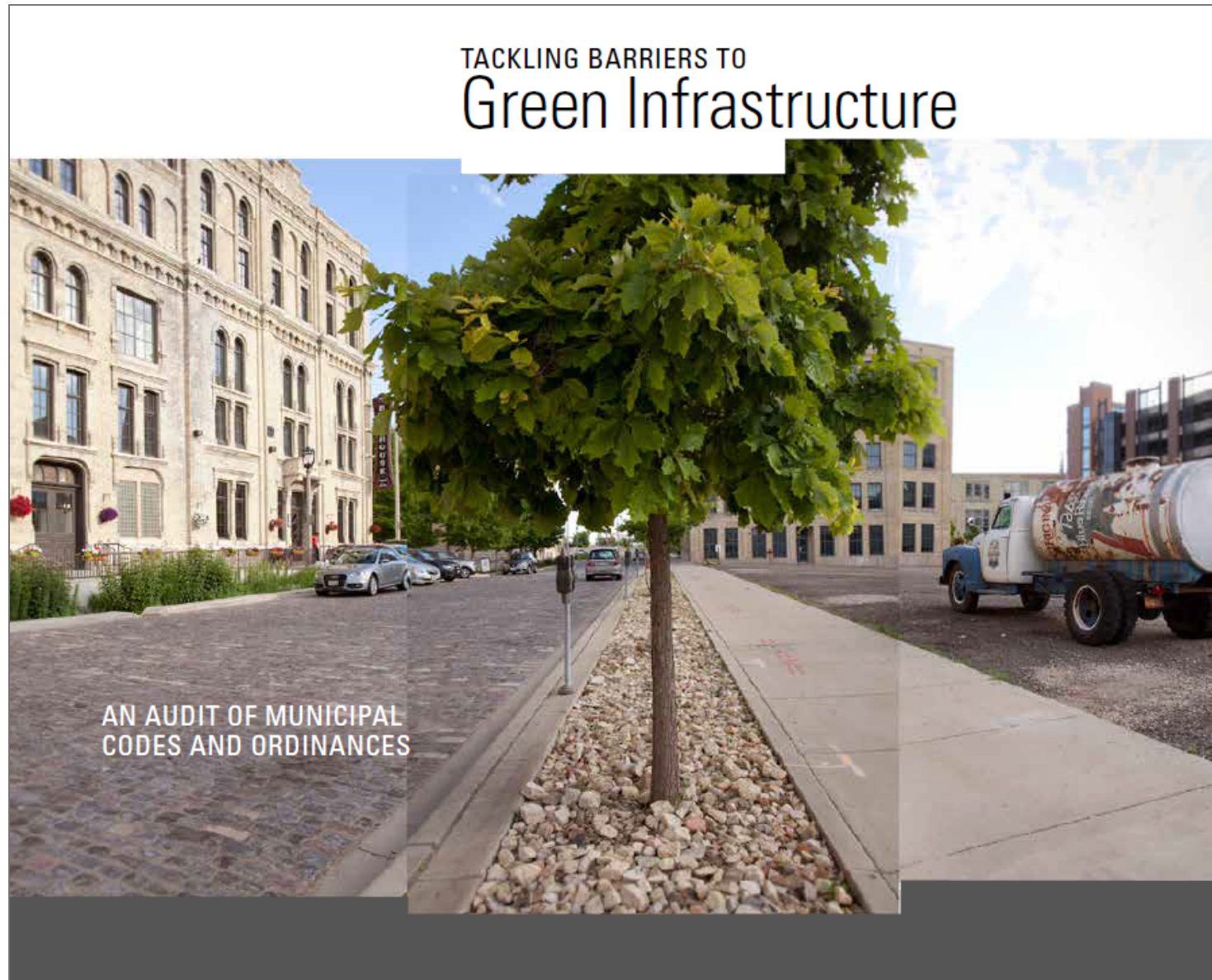
Reducing Total Impervious Area Associated with Parking



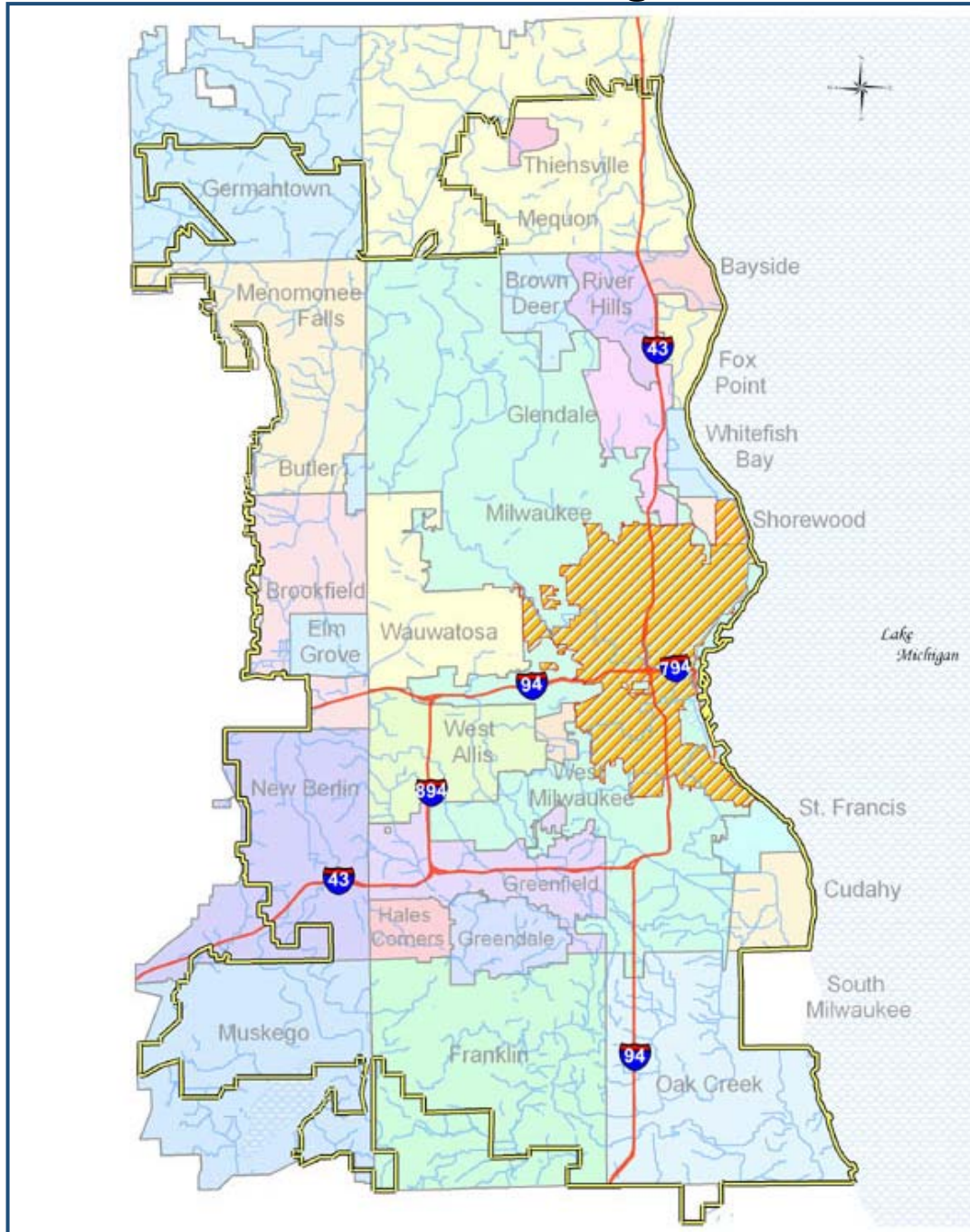
19% runoff volume reduction

23% total suspended solids reduction

...So, yes...Codes matter and we can do better!



Milwaukee Sewerage District



Advancing Green Infrastructure through Code Revision



What makes this audit unique?



One code to rule them all....





Nuanced Code Ranking

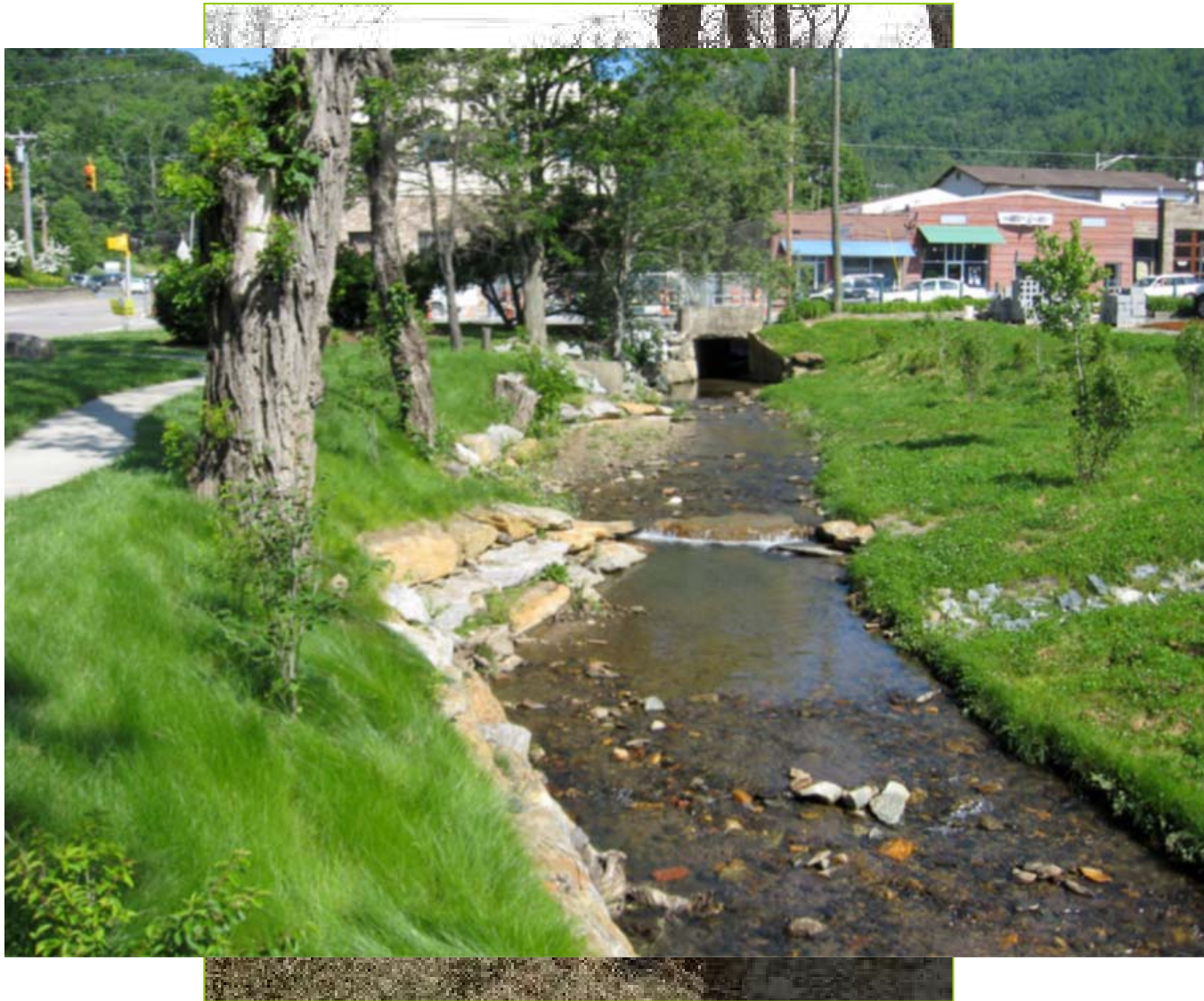
GI practice clearly allowed and approved as-of-right	GI practice allowable but some ambiguity or potential conflict	GI practice allowed with discretionary approval	GI practice mentioned but w/o standards or guidance	No policy or standards adopted, but not disallowed	Limitations or prohibitive language,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

Permeable Materials

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

Reduce impervious surfaces and maximize vegetated and landscaped areas





Buffers, buffers and more buffers!

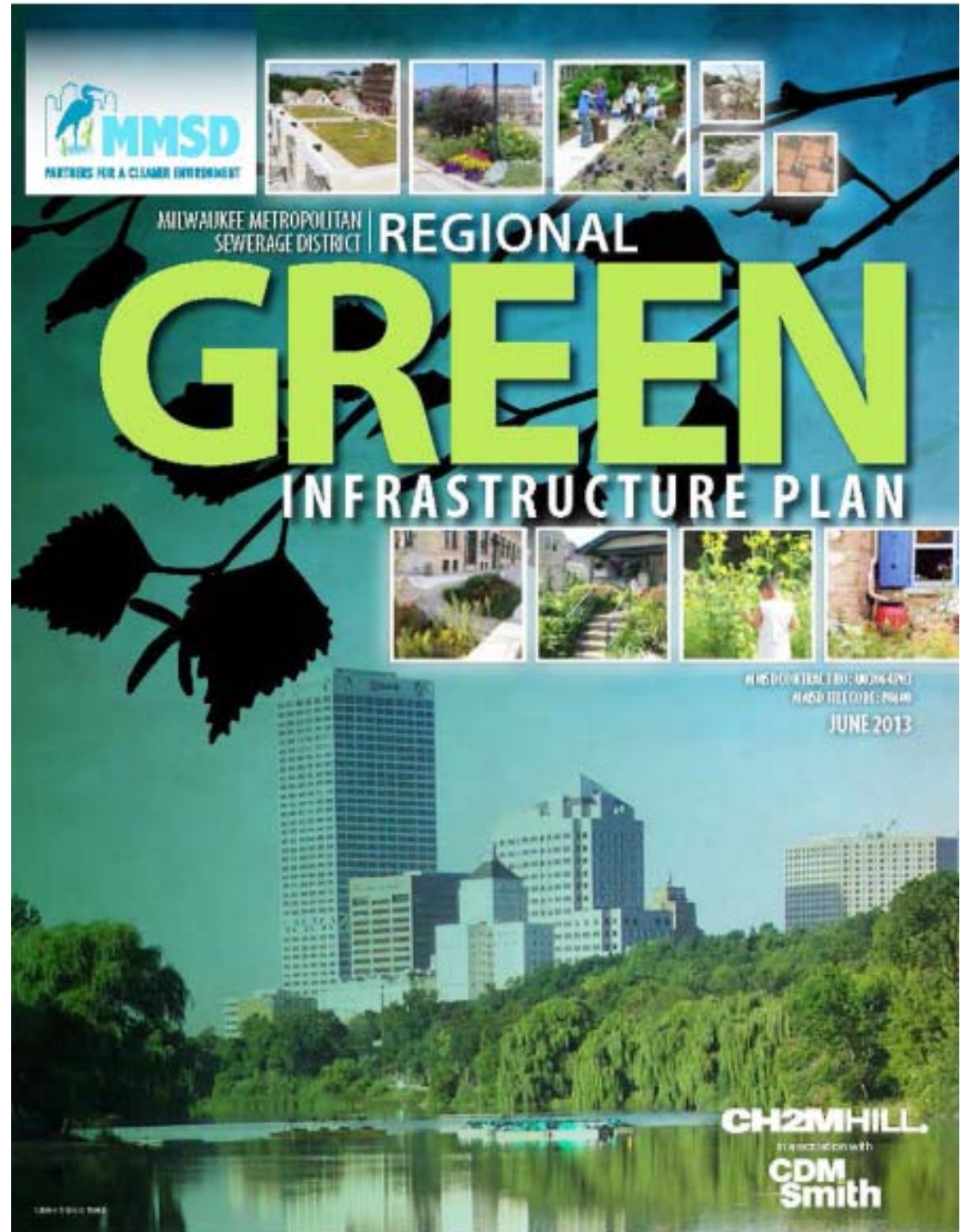
Restore and protect natural functions of soils and vegetation



Control pollution from yucky things!



Clarify the intent and purpose of codes to encourage green infrastructure use



THE AUDIT PROCESS

Step 1: Community Scoping

Step 2: Audit Community's
Codes and Ordinances

Step 3: Prioritize Recommendations

A Community Scoping Exercise

The word cloud features the following terms:

- community
- acceptance
- local
- broader goals
- regulations
- information
- changes
- context
- help
- code
- identify
- implementation
- understanding
- experiences
- background
- preferences
- opportunities
- local
- broader goals
- regulations
- information
- changes
- context
- help
- code
- identify
- implementation
- understanding
- experiences
- background
- preferences
- opportunities













Audit 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



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)?

COMMUNITY SCOPING WORKSHEET

Community Planning

1. Has a comprehensive plan been adopted for the community?
☐ Yes ☐ No

If yes, how are the community's natural resources addressed in the comprehensive plan?

2. Is there specific attention to the community's water resources in the comprehensive plan?
☐ Yes ☐ No

If yes, is green infrastructure implementation listed as a key element in the watershed restoration implementation plan?
☐ Yes ☐ No

3. Has your municipality taken part in the development of a watershed restoration or other similar plan?
☐ Yes ☐ No

Natural Assets

1. Are there rivers or streams flowing through your community?
☐ Yes ☐ No

How aware are residents of these resources? _____

2. Are there private or public properties within your community that have frontage on a lake, pond or river?
☐ Yes ☐ No

3. Are there important natural areas adjacent or within the community?

4. Are these areas incorporated into the community events?

I'M
BACK!!!!

Development pressures?

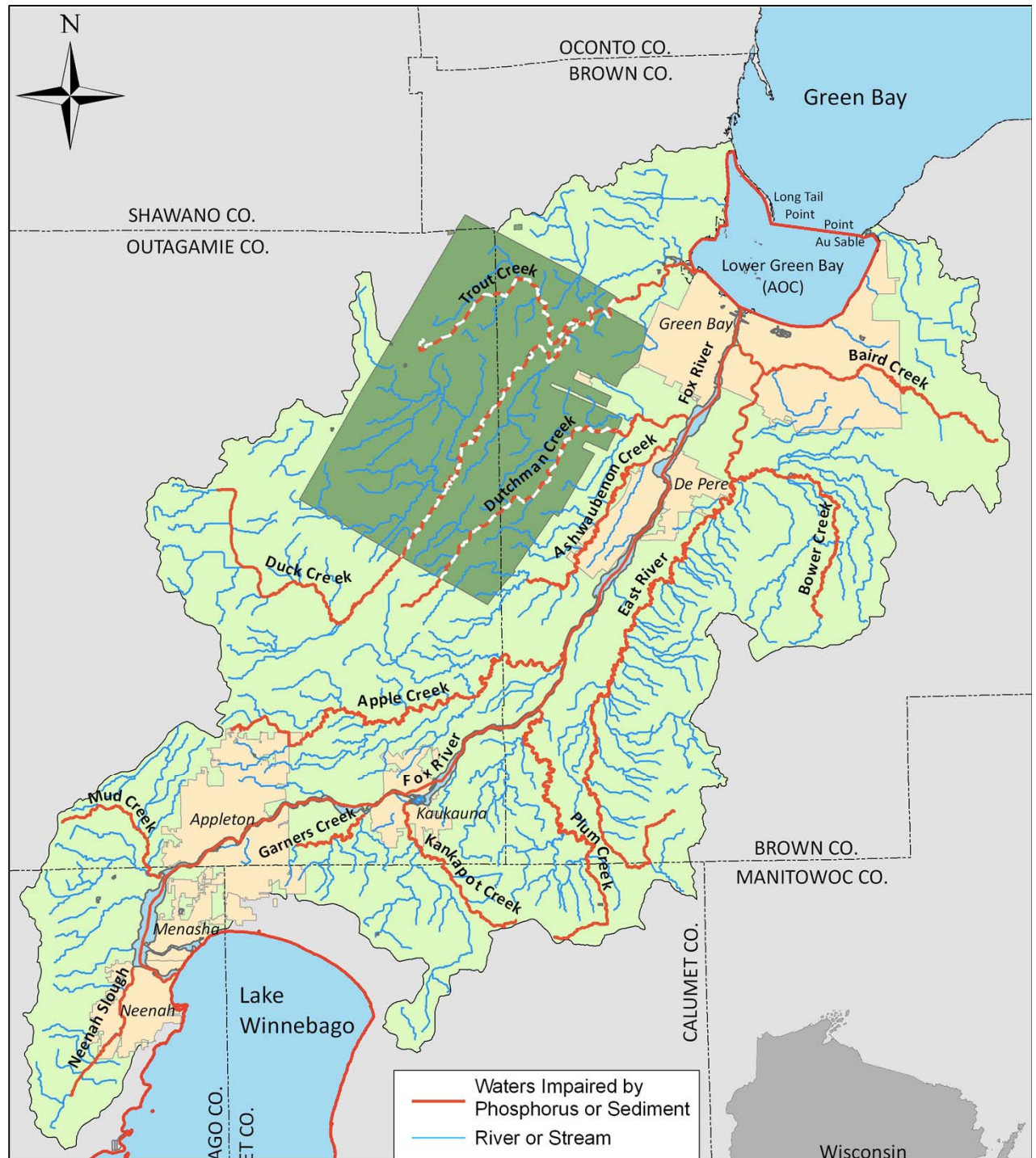




No Near-term Development or Redevelopment?

Stormwater Permits?

Pollution Limits?
(e.g., TMDLs)



MARY BETH DOYLE
PARK AND WETLAND
PRESERVE



Flooding or Combined Sewer Overflows issues?

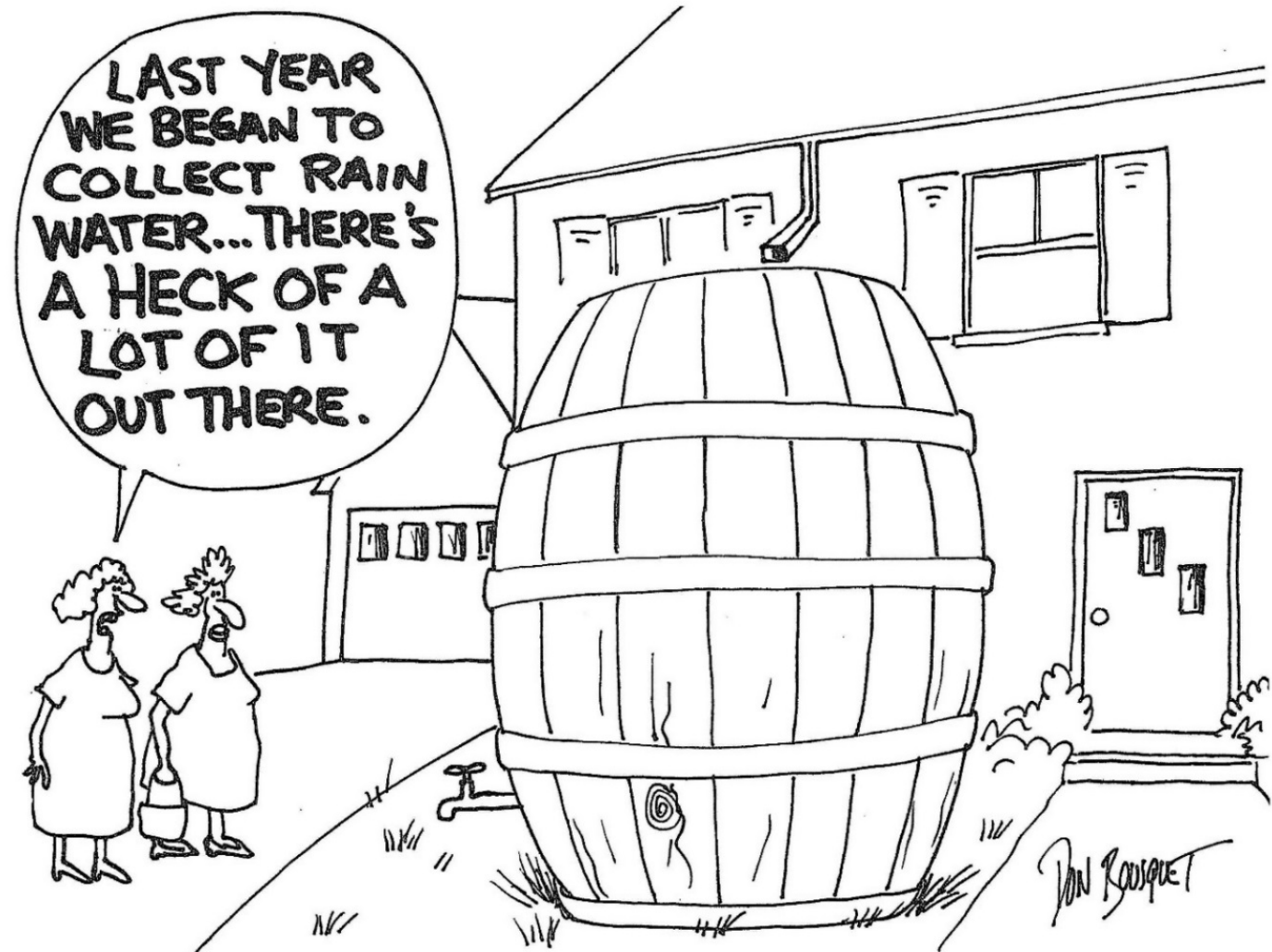
What code changes will meet the community's goals?





TBD....

Thank you!



Julia Noordyk

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