

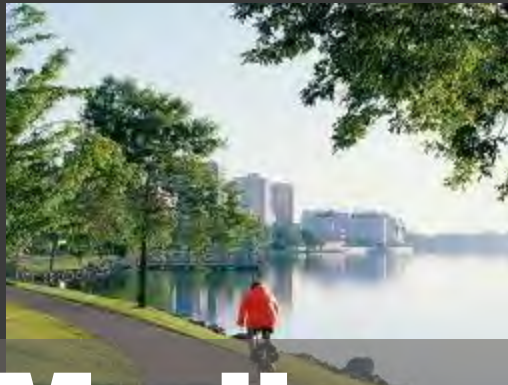
Building Resilience into Processes

Michael Mucha, Chief Engineer and Director, MMSD



Madison Metropolitan Sewerage District



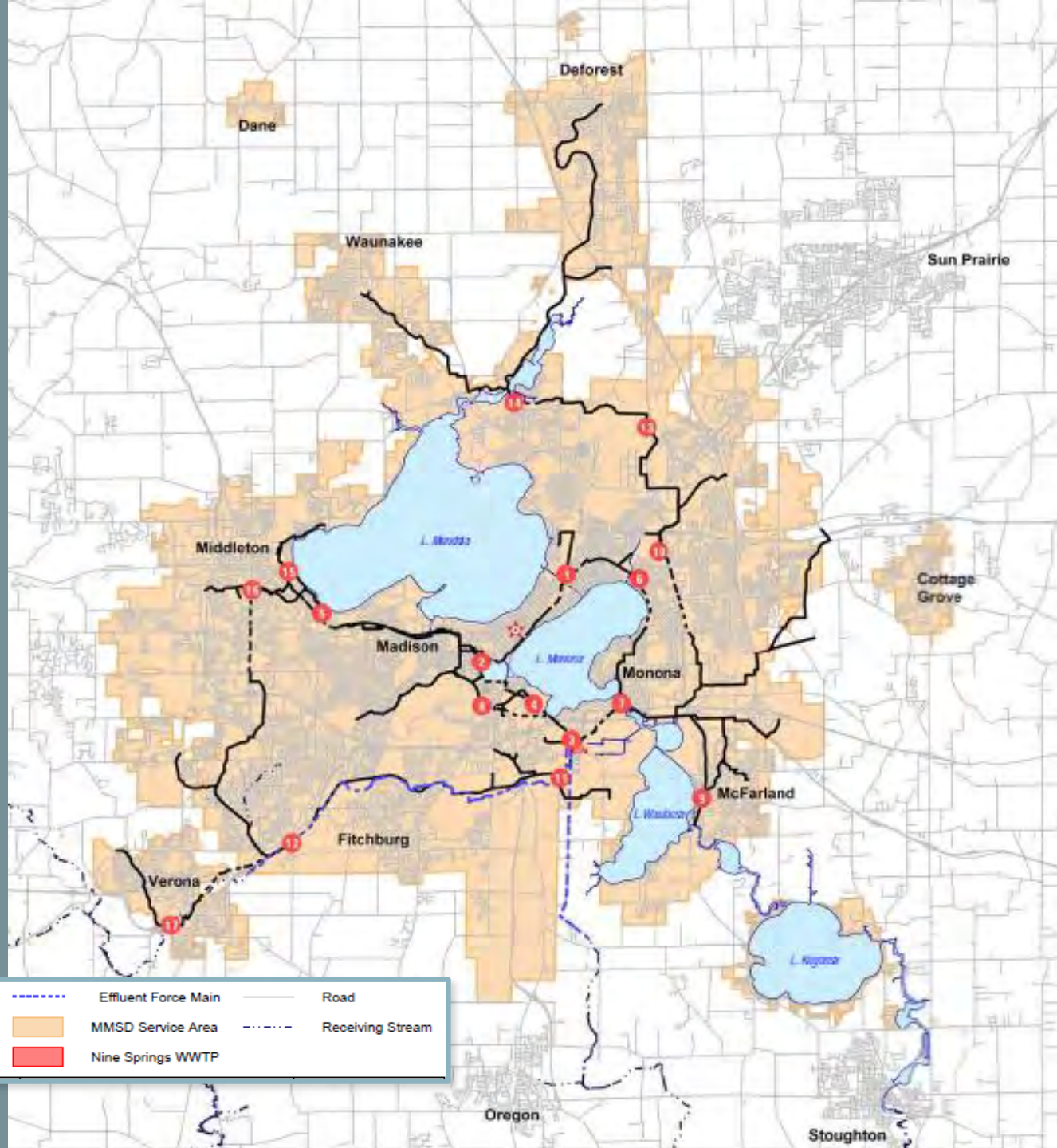


Madison





Collection System Overview



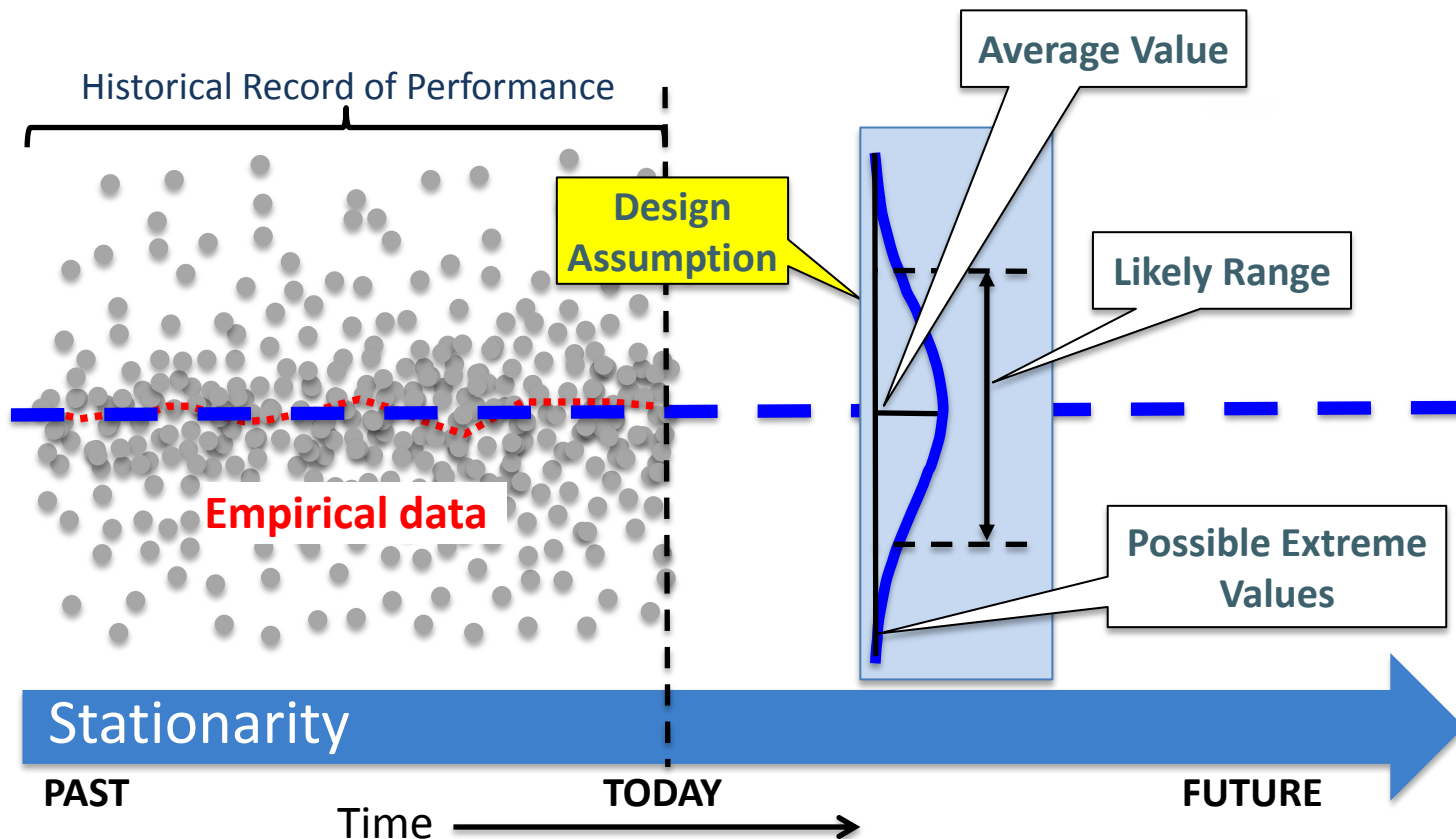
An aerial photograph of a large wastewater treatment plant. The facility includes numerous circular aeration tanks, rectangular clarifiers, and several large cylindrical storage tanks. The plant is surrounded by green grass and trees, with a road and parking areas visible. In the background, a city skyline and a body of water are visible under a clear sky.

Resilience Mindset

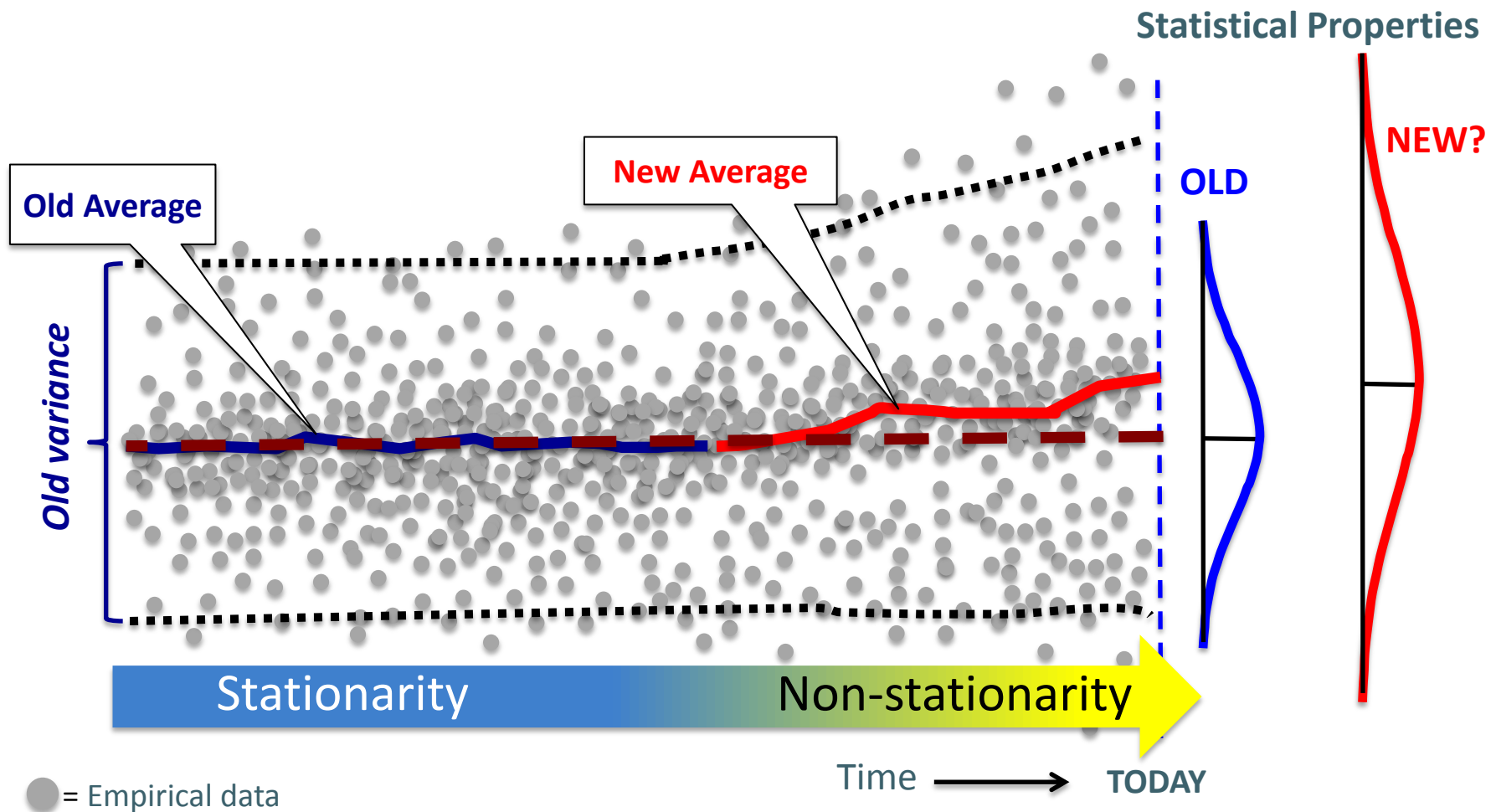
- A way of thinking and acting
- No playbook or silver bullet
- Context means everything
- Must have a beginners mind

Stationarity

The statistical properties of project design are assumed to be the same in the future as they have been in the past.



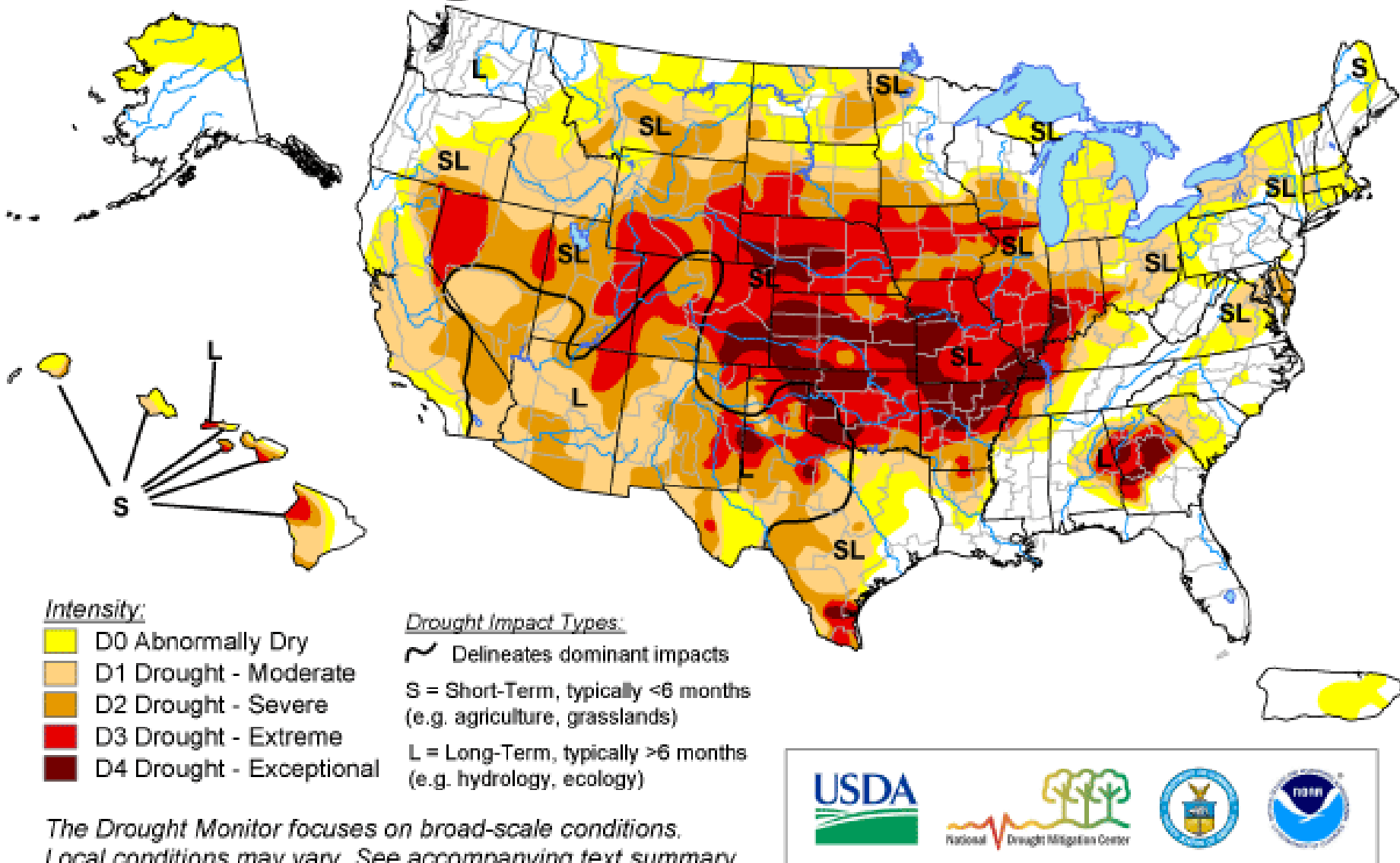
Non-Stationarity



U.S. Drought Monitor

August 28, 2012

Valid 7 a.m. EDT



The Drought Monitor focuses on broad-scale conditions. Local conditions may vary. See accompanying text summary for forecast statements.

<http://droughtmonitor.unl.edu/>



Released Thursday, August 30, 2012

Author: Brian Fuchs, National Drought Mitigation Center

The drought of 2012 was hard on Wisconsin









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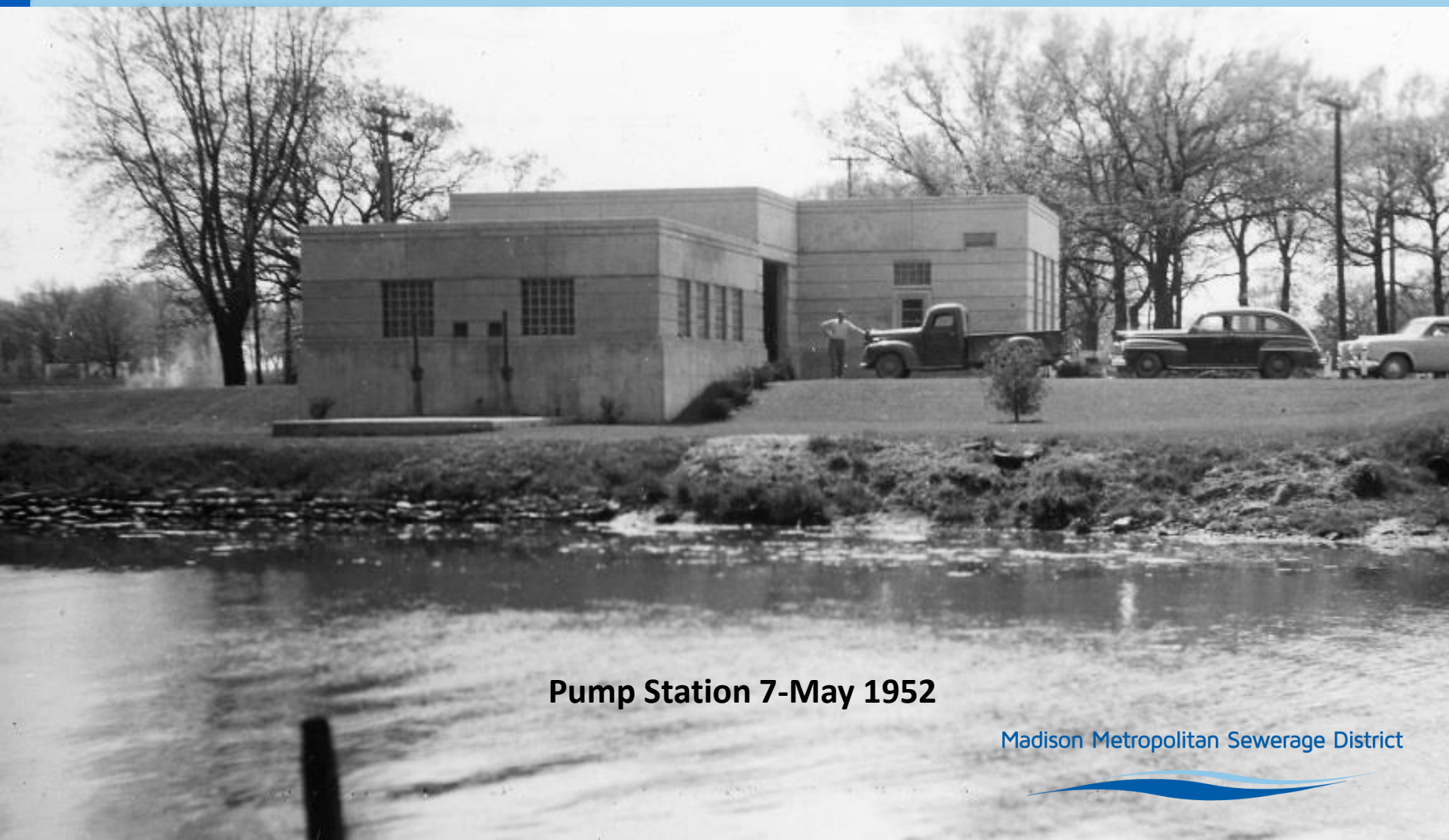




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Pump Station 7 Improvements



Pump Station 7-May 1952

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Questions?



Pump Station 7 Under Construction - October 1949





PHOTOART
12-98-51

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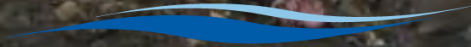
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The Water Resources Utility of the Future: *A Blueprint for Action*



Low Cost/High Value Strategies

Break things down


Do the right project

Avoid configuration traps

Maintain a flexible platform

Make friends



A man in a dark plaid shirt, dark pants, and a baseball cap stands next to a large pile of white salt. He is holding a shovel. The background shows a concrete wall and wooden beams.

100 tons of salt
pass through plant
each day

Madison Metropolitan Sewerage District



Treatment plants are
not designed to
remove salt



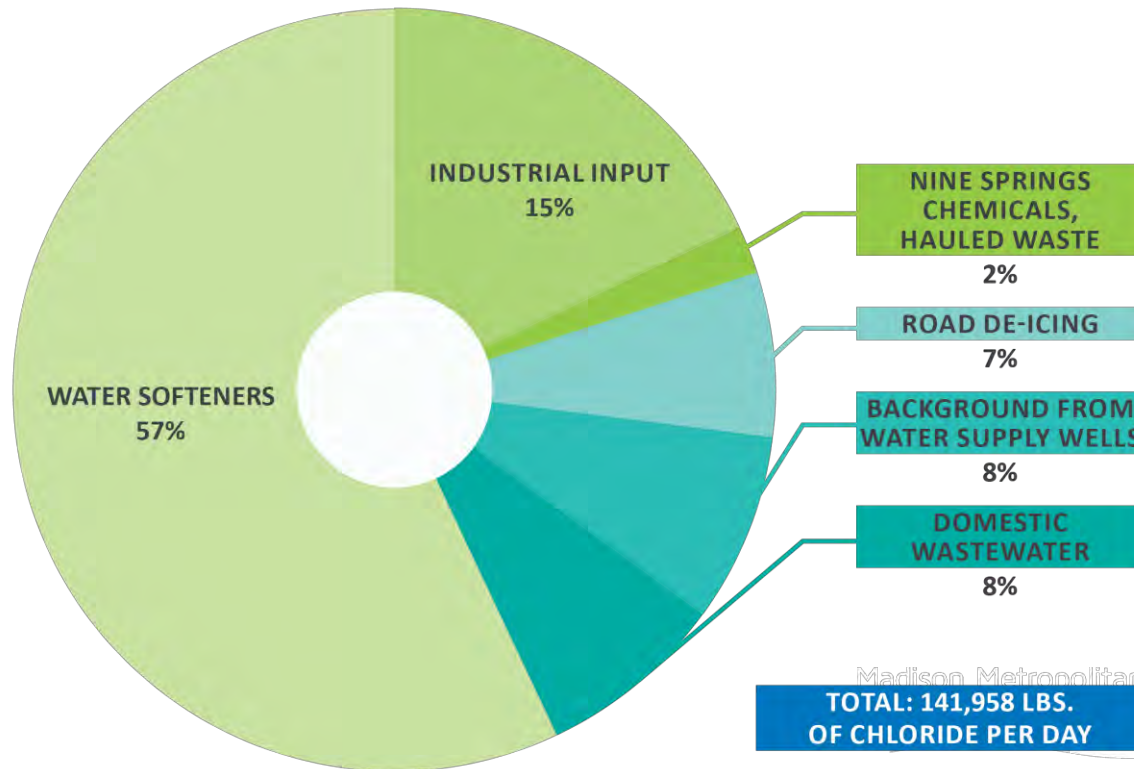
Water softeners are biggest chloride source



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Road salt contributes 7% of chloride load

Summary of Annual Average Wastewater Chloride Contributions to Madison Metropolitan Sewerage District



Technological solutions are costly

Chloride Treatment Technology Options

*Triple bottom line analysis: community, environmental
and financial factors considered*



One Water Partnerships

Brought to you by the WI Salt Wise Partnership

Dane County, City of Madison, Madison Metropolitan Sewerage District, Madison Water Utility
Public Health Madison Dane County, UW-Madison Department of Environment, Health & Safety, MAMSWaP



Wisconsin Salt Wise Partnership · 1610 Moorland Rd, Madison, WI 53713 · Ph. 608.222.1201 · Fx. 608.222.2703 · E. kathyl@madsewer.org

**Madison Metropolitan
Sewerage District**



Changing Social Norms & Behavior

Let's be **Salt Wise!**

What did WI spend on salt for its highways last year?

\$40,456,343!

So, how many tons of salt is that?

669,807

That many tons permanently pollutes almost half a trillion gallons of Wisconsin's water.

That's about:

- 4,400 blue whales
- 121,800 elephants
- 121,800 school buses
- 1,630 commercial airplanes

And costs \$2,304 per lane mile!

We can all work together to improve our salt use!

Use less than **4 pounds** of salt

Be Salt Wise!

Once you put salt down, it doesn't go away. It washes off surfaces and accumulates in local lakes, streams and drinking water. You can keep sidewalks and driveways safe this winter while protecting our waters by following these simple steps:

- 1. Shovel**
- 2. Scatter**
- 3. Switch**

Clear walkways and other areas before the snow turns to ice. The more snow you remove manually, the less salt you will have to use and the more effective it will be.

If you apply salt to pavement, aim for a pattern like this, leaving space between salt grains. A coffee mug full of salt is enough for about 60-70 feet of sidewalk. A hand spreader can help create this pattern.

When the pavement temperature is below 18 degrees, salt won't work. Switch to a different ice melter (like a blend) that works at a lower temperature, or use sand for traction.

Brought to you by the WI Salt Wise partnership:

Learn more at www.wisaltwise.com.

www.WiSaltWise.com

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Tidal datum elevation 22 feet
Elevation accuracy +/- 1 foot



02/2006

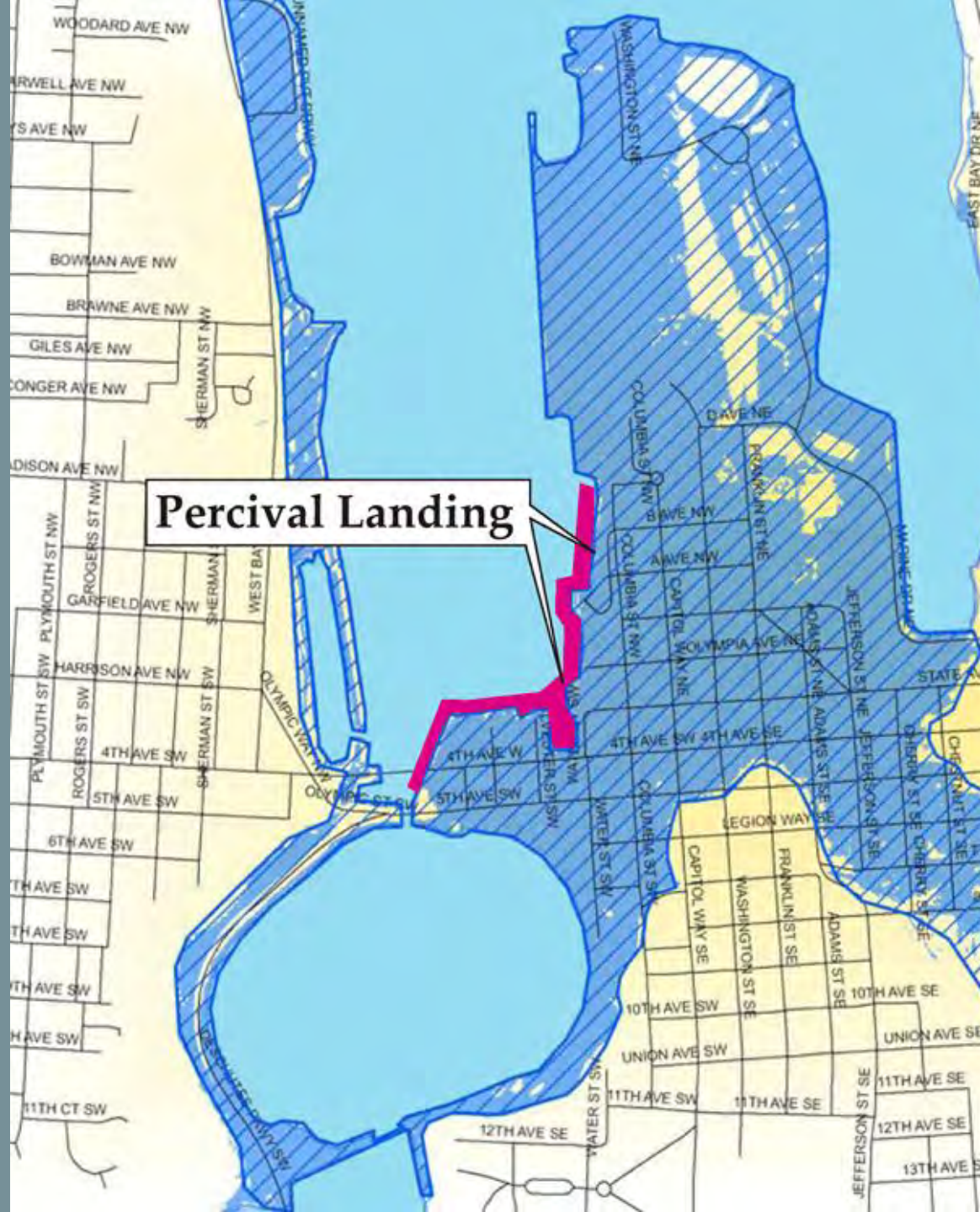


Percival Landing



City of Olympia Parks,
Arts & Recreation
**Percival Landing Major
Rehabilitation**
Design Life and Sea Level Rise

1. Source City of Olympia Public Works, 2007.
2. Percival Landing is approximately 14% of the total shoreline affected (blue area)







FAIRY

MESSENGER

S.G.

IPSON

NISQUALLY

WELCOME TO DEERVAL LANDING



Summary

Simplify

Learn as you go

Make friends

Thank you!

A young girl with blonde hair tied back, wearing yellow swimming goggles with green straps, is smiling at the camera. She is standing in a body of water, with her chest and shoulders above the surface. The water is calm and reflects the blue sky. In the background, there is a distant shoreline with green trees under a clear blue sky with a few wispy clouds.

Respect
every
drop.

Madison Metropolitan Sewerage District





Rx

TAKE 2 CAPSULES
ONCE DAILY
1125-65844

REFILL 4 TIMES

Rx

Rx

TAKE 2 CAPSULES
ONCE DAILY
1125-65844

Simple steps make a difference



Keep medicines out of the water!



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Pumping Station 15



Pumping Station 15

