The DNR Tackles a Salty Problem

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People

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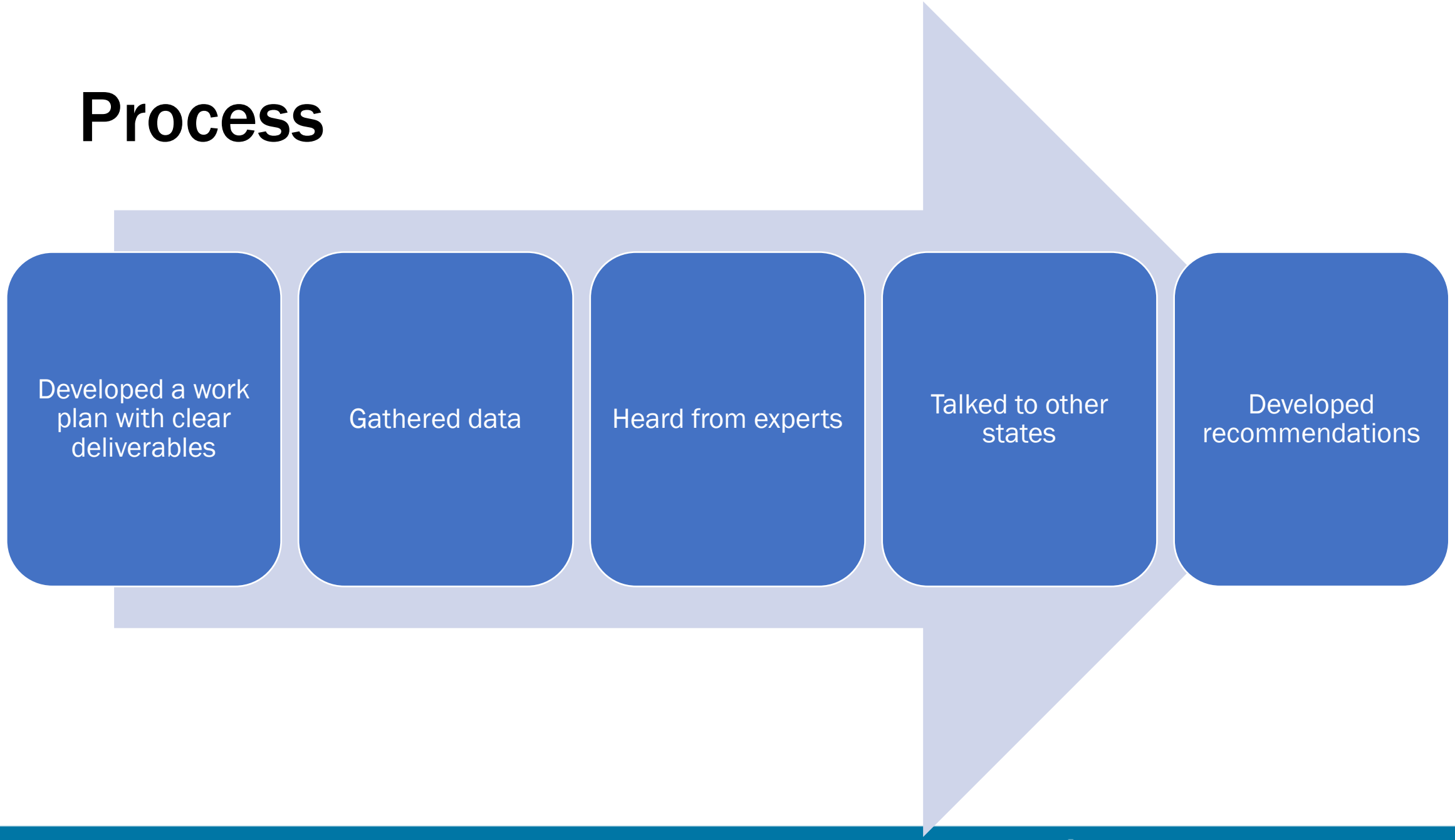
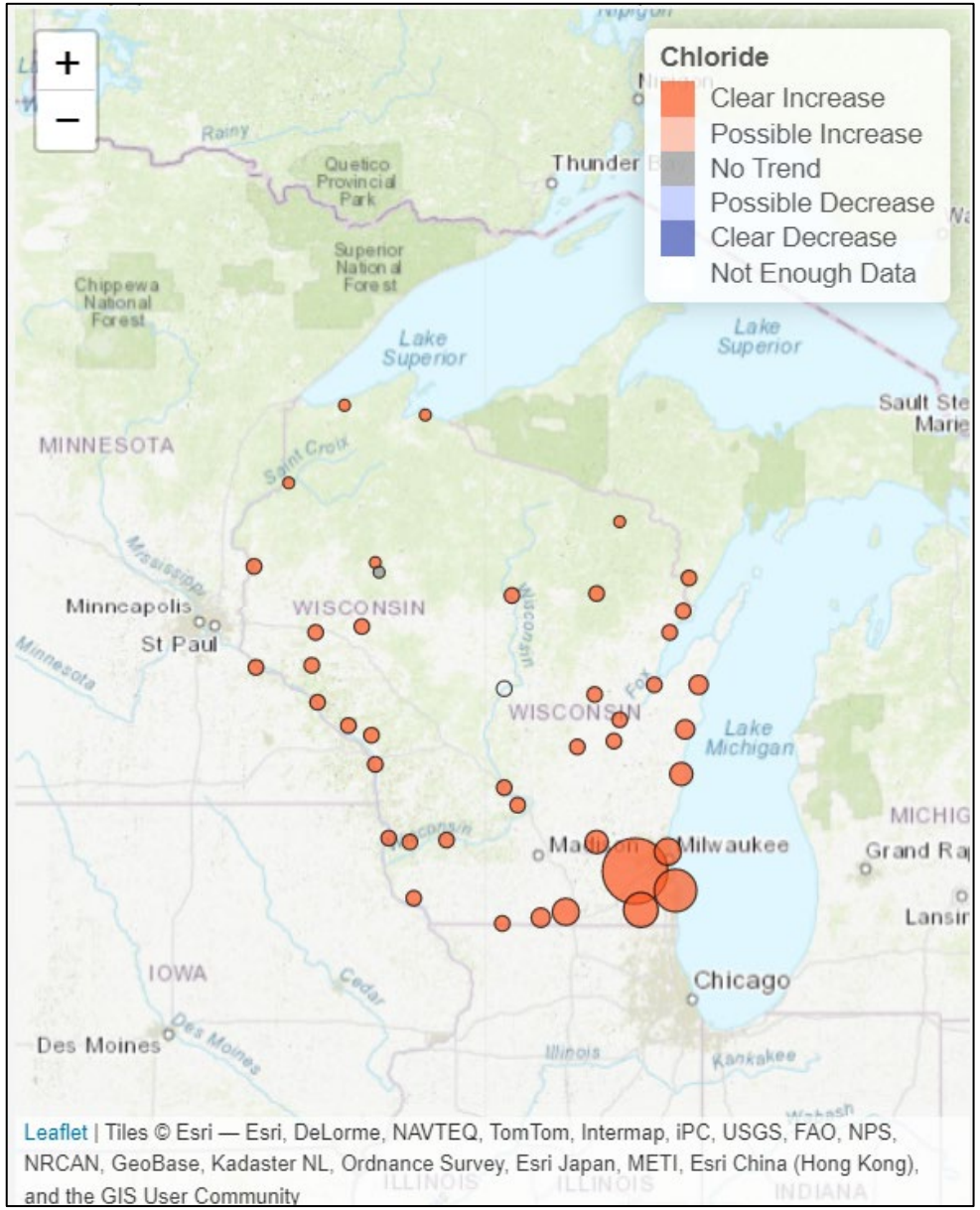
Water Resources:	Craig Helker
Urban Runoff Management:	Samantha Katt, Lexi Passante

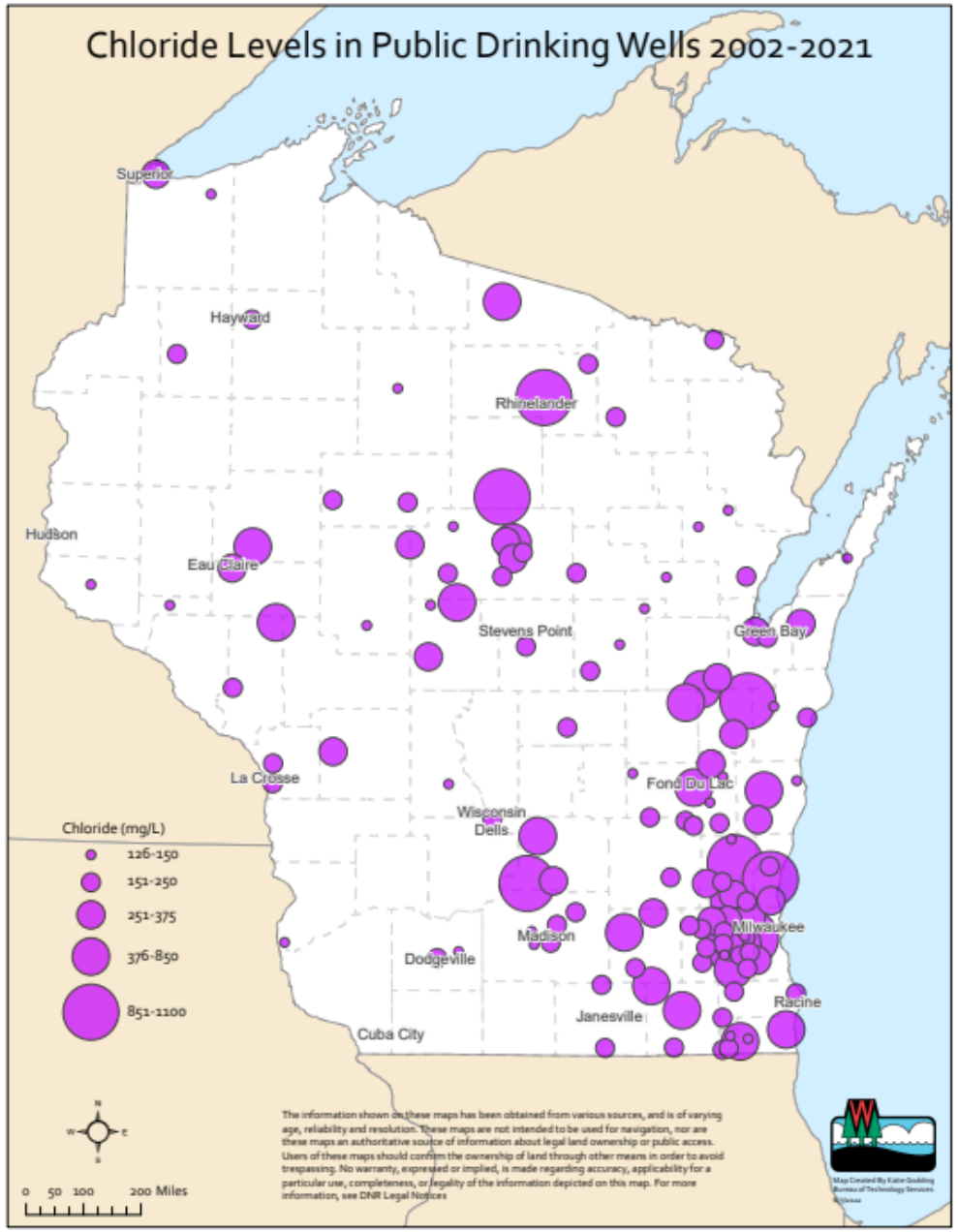
Process


Developed a work plan with clear deliverables
Gathered data
Heard from experts
Talked to other states
Developed recommendations

Trends

Currently, fifty rivers and one lake in Wisconsin exceed the state's 395 mg/L chronic water quality criteria (WQC) and are on the 303(d) impaired waters list for chloride.

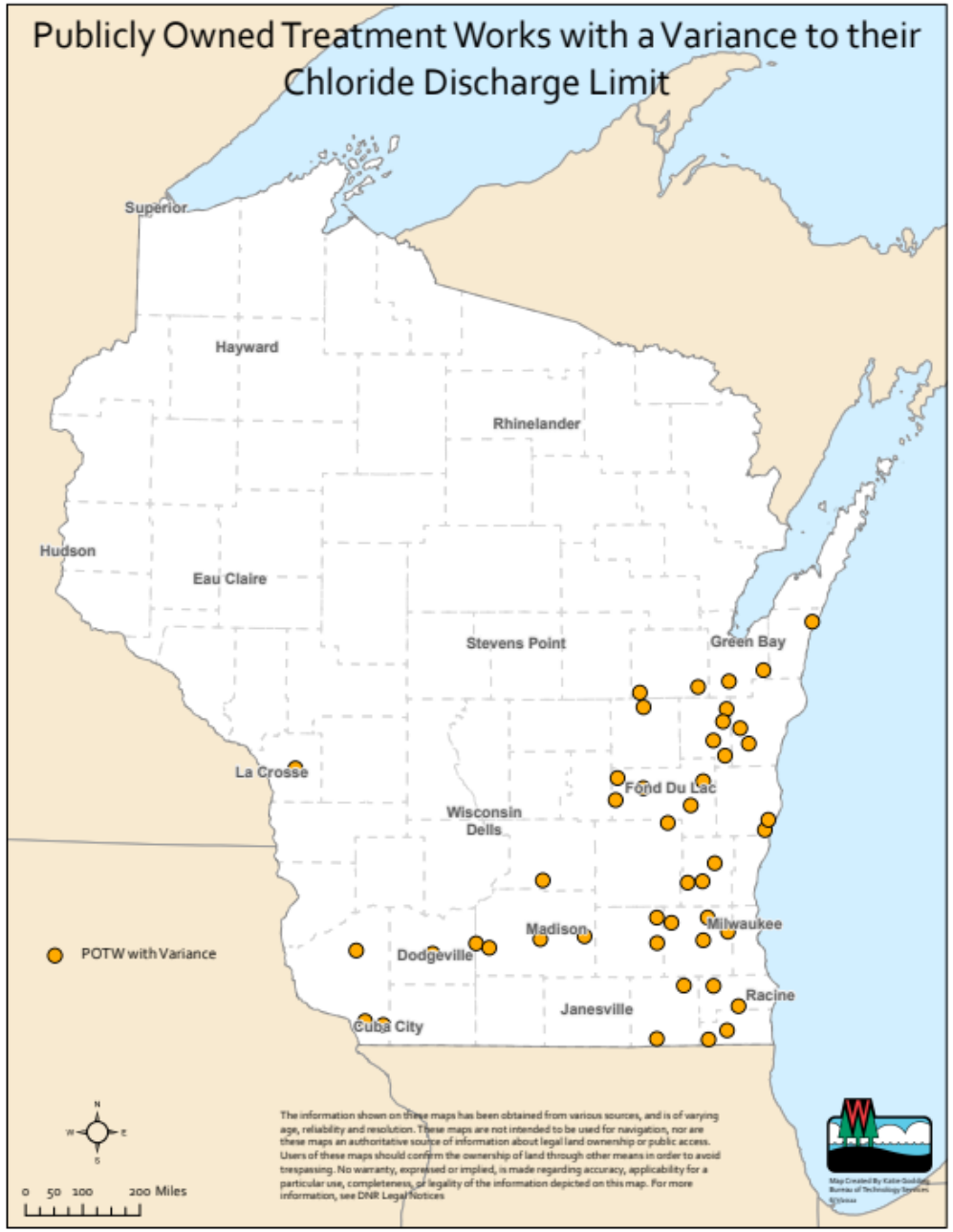




Chloride Levels in Public Drinking Wells

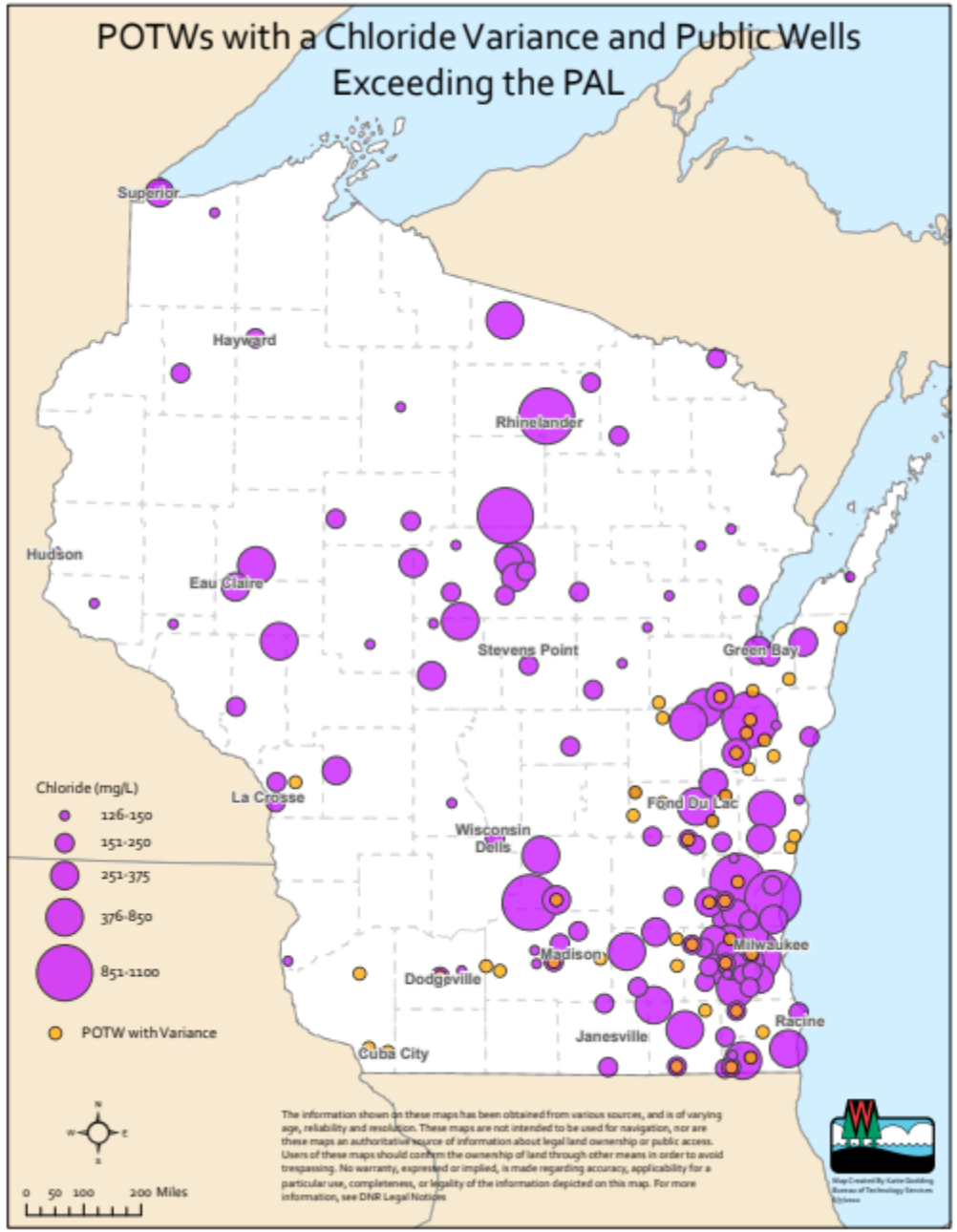
- Wisconsin's Public Welfare Groundwater Quality Standard is 250 mg/L
- Creates issues with odor, taste and color
- Does not have the same public health concerns as other pollutants such as nitrate, arsenic or lead
- Could be an issue for individuals on a low salt diet

- Wisconsin's chronic standard for SURFACE WATER is 395 mg/L and the acute standard is 757 mg/L



Wastewater Treatment Facilities with Chloride Variances

- 93 facilities that were granted a water quality standards (WQS) variances for their chloride discharges.
- Over half of the original 93 facilities with chloride variances have been able to reduce their discharge amounts enough to meet their WQBELs, either via source reduction activities or due to new or updated information that became available regarding characteristics of the receiving water.
- Through the implementation of source reduction measures average discharge concentrations of permitted variance facilities have decreased by approximately 32%.
- As of July 1, 2022 there are 46 municipal dischargers covered under a variance.



Wastewater Treatment Facilities with Chloride Variances & Public Wells Exceeding the Preventative Action Limit

Experts

- Allison Madison, Wisconsin Salt Wise
- Jim Hughes, WDOT
- Laura Herrick, SEWRPC
- Lexi Passante, UW Milwaukee School of Fresh Water Sciences
- Shawn Giblin, WDNR Chloride Research, Mississippi River at LaCrosse
- Stephen McCraken, Illinois Dupage Salt Creek Workgroup

Other States

Illinois

- 2004- TMDL approved DuPage River and Salt Creek
- 2009- Additional TMDLs were created
- 2012- O'Hare Western Access permit was scrutinized for chlorides
- 2015- Water quality permits for construction projects were scrutinized for chlorides. A time limited water quality standard was implemented for the DesPlains River Watershed.
- 2016- New ILR40/MS4 permit was issued with references to chlorides.
- 2019- TMDLs started in 2009 were officially published.
- 2021- Time limited water quality standard for DesPlains River was approved.

Other States

Maryland

- 28 waterbodies impaired for chloride
- Nearly ½ of the land area of the state is covered by an MS4 permit
- No POTWs have a chloride variance; two of the largest POTWs discharge to brackish water and have no chloride limit
- In 2011 the highway administration was required to reduce salt use and began requiring to all contractors and employees to attend “Salt University” training
- Created a draft TMDL as a framework for addressing the chloride impairments
  - Legislation was proposed to require the TMDL to be implemented, but did not pass
  - Maryland believes voluntary compliance will be best

Other States

Minnesota

- 50 waterbodies listed as impaired for chloride, 40 chloride TMDLs
- Chloride strategy was primarily driven by need to spend 319 money
- Twin Cities Metropolitan Area Plan was developed in 2016
  - Converted to a statewide plan in May 2021
- Developed a model ordinance for communities to manage salt use
  1) The ordinance requires anyone applying salt to be trained.
  2) Anyone who stores salt must store it properly.
  3) Any new or reconstruction of commercial property must have a salt management plan and a person to act as a point of contact if there is an overapplication.
  4) There is a sweeping requirement if salt is overapplied or spilled
- Liability limitation legislation was passed by the legislature in 2022
- Studies show that salt training reduces salt use by 30-70%

Other States

New Hampshire

- NH DOT was issued a consent decree from USEPA to reduce chlorides
- Between 2013 and 2014 developed their liability limiting law
  - Burden is on the state to maintain documentation
  - Program is very administratively intensive
- Build the program framework first- NH built it as they went

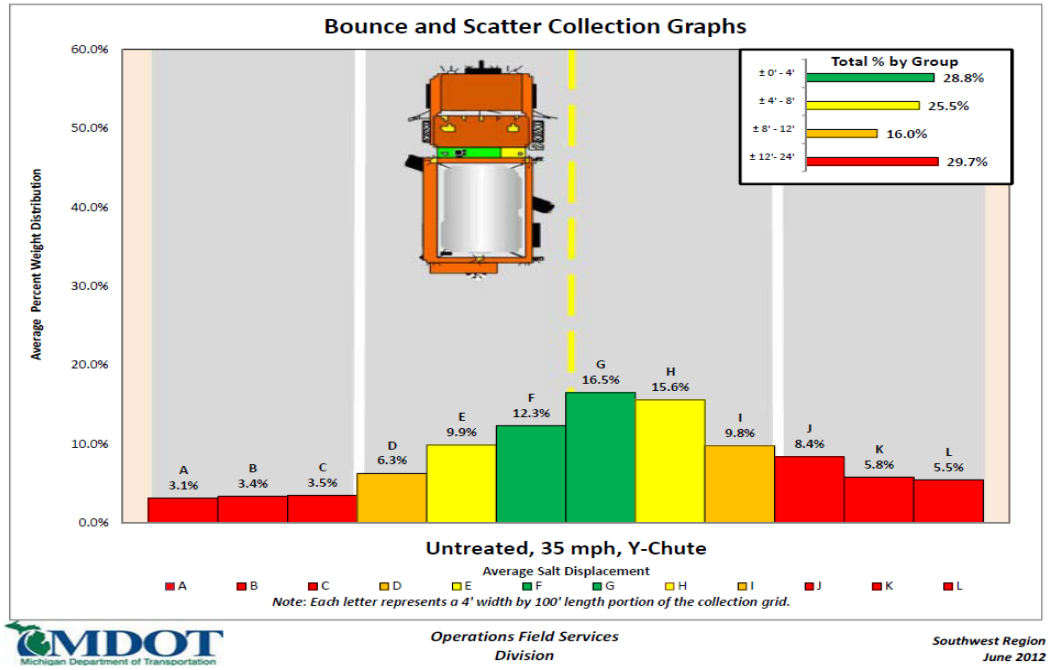
Other notable takeaways

- Staff noted that for their MS4 permittees, it is much easier to count BMPs and document calibration than it is to count salt use.
- New Hampshire DOT pays into municipal TMDL and implementation plans.
- With climate change, New Hampshire is seeing more ice events than snow events, leading to more drought and less baseflow. This results in more salt use and higher chloride concentrations in surface waters.

Chlorides Programs in the State of Wisconsin

Wisconsin DOT
Upper Mississippi River Basin Association- UMBRA
Wisconsin Saltwise
Research

- Southeast Wisconsin Regional Planning Commission
- University of Wisconsin Madison
- University of Wisconsin-Milwaukee School of Freshwater Science



Chlorides Programs in the State of Wisconsin

DOT Highlight

"Final" Wisconsin 2019-2020 Winter Report					
	Wisconsin	Minnesota	Iowa	Michigan	Illinios
Lane Miles	34,859	30,341	25,767	31,958	45,304
Salt use (Tons)	426K	210K	185K	444 K	428 K
Brine/Liquid Use (Gallons)	11.4 M	6.5 M	31.5 M	1.7 M	3.0 M
Material Costs	$35.3 M	34.3 M	20.0 M	N/A	35.1 M
Equipment Costs	$26.3 M	52.5 M	9.5 M	N/A	15.5 M
Labor Costs	$23.0 M	40.2 M	17.6 M	N/A	20.1 M
Total Costs	$84.6 M	127.0 M	47.1 M	N/A	70.7 M
COST/LANE MILE	$2,428	$4,188	$1,828	N/A	$1,562

"Final" Wisconsin 2020-2021 Winter Report					
	Wisconsin	Minnesota	Iowa	Michigan	Illinios
Lane Miles	35,177				
Salt use (Tons)	324 K				
Brine/Liquid Use (Gallons)	11.5 M				
Material Costs	$22.7 M	20/21 Winter Data from other states is not published yet			
Equipment Costs	$23.0 M				
Labor Costs	$28.4 M				
Total Costs	$74.1 M				
COST/LANE MILE	$2,107	N/A	N/A	N/A	N/A

Reporting year:	2017-2018	2018-2019	2019-2020	2020-2021
Lane Miles	34,678	34,774	34,859	35,177
Salt (tons)	568,000	553,000	426,000	324,000
Tons/Lane Mile	15	16	12	9
Brine/Liquid	5.7M	9.4M	11.4M	11.5M

Recommendations

16 Recommendations in 3 general areas

DNR programs implementation and partnerships

State facilities and maintenance management

Governor's office and legislative initiatives

Recommendations

DNR programs implementation and partnerships

Sustainability & Business Support

1. Support a smart salting certification program for communities and businesses through the DNR's Sustainability & Business Support program.

Urban Runoff & Wastewater

2. Develop and support salt reduction education programs among permitted MS4s and POTWs with chloride variances via the DNR's urban runoff and wastewater permit programs.

3. Require permitted MS4s to report salt discharges as an illicit discharge.

4. Continue implementation of chloride WQBELs and WQS variances in wastewater WPDES permits.

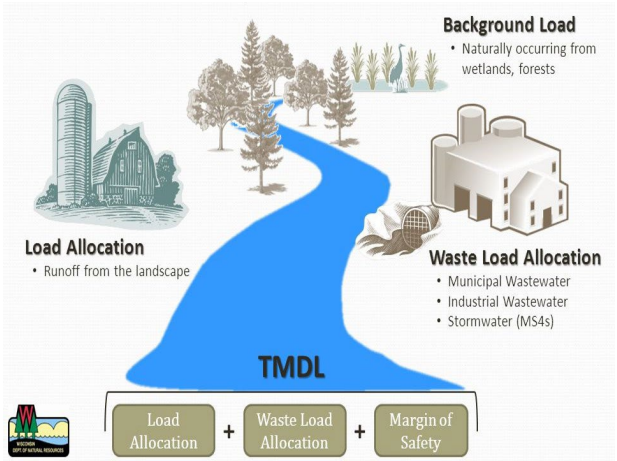
Recommendations

DNR programs implementation and partnerships

Water Quality

5. Develop a Total Maximum Daily Load (TMDL) for chloride.

6. Update the chloride surface water quality criteria for the state.



Drinking Water and Groundwater

7. Incorporate additional drinking water requirements for chloride and sodium.

Community Financial Assistance

8. Offer State Revolving Loan Funds (SRF) to cover the costs to acquire brining equipment and outreach programs.

Agency-wide/Multi-program

9. Rebate programs for communities that have high water softener use.

10. Develop a partnership with U.S. Environmental Protection Agency (EPA) in reversing the trends in chloride levels.

Recommendations

State facilities and maintenance management

11. For state-owned properties, have contractors and individuals conducting winter property maintenance take winter maintenance training and implement salt reduction strategies.

12. Reduce water softening salt use at state owned and operated facilities.

Governor's office & legislative initiatives

13. Reduce slip and fall claim liability for businesses.

14. Update statutes to allow private entities to take advantage of municipal resources for brining.

15. Promote opportunities for private contractors to unload salt and have it stored at a permitted facility (e.g., municipality, county, state) to prevent overuse in the spring.

16. Adopt the recommendations of the Upper Mississippi River Basin Association (UMBRA) resolution to reduce chlorides inputs into the basin.

Questions and Next Steps

CONNECT WITH US

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