Policy Committee Meeting Agenda
Clean Water Council
October 23, 2026
9:30 a.m. – 12:00 p.m.
WebEx Only

Policy Committee: John Barten, Rich Biske (Chair), Gail Cederberg, Kelly Gribauval-Hite, Chris Meyer (Vice Chair), Peter Schwagerl, and Jessica Wilson

9:30 Regular Business

- Introductions
- Approve today's agenda and August meeting minutes
- Chair update
- Staff update

9:45 Public Comment

Members of the public who would like to provide comment about something not on the agenda are welcome to do so at this time.

10:00 (DISCUSSION ITEM) Conference special session outcomes

Nearly 80 people participated in a special session that invited attendees to provide feedback on content and insights into how to make progress in addressing chloride contamination. Outcomes from the session are included in the packet. Council members are asked to review and consider how to incorporate or respond to the input.

10:45 Break

(ACTION ITEM) Updates to chloride deicer policy statement

In addition to feedback from the conference, Council members are encouraged to consider the feedback received in previous Policy Committee and Clean Water Council meetings. A final draft is requested to go to the Clean Water Council for adoption.

12:00 Adjourn

Policy Committee Meeting Summary
Clean Water Council (Council)
August 28, 2026, 9:30 a.m. to 12:00 p.m.

Committee members present: John Barten, Rich Biske (Chair), Gail Cederberg, Kelly Gribauval-Hite, Chris Meyer (Vice Chair), Peter Schwagerl, and Jessica Wilson.
No members are absent.

To watch the Webex video recording of this meeting, please go to https://www.pca.state.mn.us/clean-water-council/policy-ad-hoc-committee, or contact Brianna Frisch.

Regular Business

- Introductions
- Motion to approve the August 28th meeting agenda by Chris Meyer, seconded by Peter Schwagerl. Motion carried unanimously.
- Chair update
  - Reminder of the upcoming University of Minnesota (UMN) Water Resources Conference will be held October 13-14. Connect with Jen Kader if you plan to attend. The deicer policy statement will be out for feedback. We will bring the feedback back to a future meeting, to see what should be updated.
- Staff update
  - Jen Kader presented at the Minnesota Watersheds tour. Several people have requested copies of the presentation. In the presentation I invited folks to share success stories regarding Clean Water Funds (CWFs) making a different locally. This helps to give them space to provide that information. This impacts locally. I have some already. I want to include it as a short highlight soon. There were several CWF projects highlighted. This is helping me plan for our next tour in September 2027.

Public Comment *(Webex 00:26:00)*

- Sue Nissen: I emailed the committee leadership earlier this week. I have volunteered for over a decade for chloride reduction. I am happy to see this policy going to the legislature. About a decade ago, I was a part of the group putting forward the limited liability bill. That was the center of what we were talking to the legislature about, but there is so much more. Thank you to the committee for all the work and time you have put into it. Over the years, I have heard about safety concerns, I think these have been answered in so many ways. We need industry to step up and embrace change. We need the decision makers to change.

Policy Priorities Going Forward *(Webex 00:29:30)*

At the last Policy Committee meeting, the committee identified implications for ideas that have come up over the last several months that may be very relevant for consideration and attention from this committee.
Discussion:

- Rich Biske: Over the course of this process, I have heard more about how we want to create a process and structure for our committee. Perhaps, even categories. Something that comes to mind are transition periods. We have identified several items that may need alternative funding sources. I also want to mention significant issues as another category (like shoreline or wake concerns). Perhaps, this meeting can help us have directions to move towards.
- Jen Kader: We can review and keep going with the list we already have. We have from now until November. So, if there is one thing to be included in the report, it would need to be completed soon, so it can be included in November.
- Gail Cederberg: I do not see a topic that we could get complete by November. The deicer policy has had a lot of work, and we have been thoughtful with it. With the budget coming up, I think that is the most important thing we need to focus on.

- Chris Meyer: One topic that jumps out at me was the wake boats concern. However, I do not think it is possible to do something by November.
- Gail Cederberg: Aquatic Invasive Species is also another topic to include.
- Jessica Wilson: These policies often take longer than we expect, but they are being done well. Perhaps, we can address our concerns and share these ideas ands concerns, even if we do not have our deep dive. Perhaps, a few sentences that can be included. These would be quick hits to get these ideas in front of them. I think we could have them ready by January. Additionally, we could make progress on the shoreline idea. I think we can take a position in the value of aquatic vegetation. I think it would be valuable. We could take a position on AIS, but I have some thoughts on it. I think we could get one more product out of us in these last few months.
- John Barten: If we do a shoreline policy, I think it will take time. We have the vanishing shorelines, wake boats, aquatic vegetation, invasive species, zoning issues, etc. Last time the policy committee looked at the zoning issue, we were saying we needed an update to the zoning issues it was during the Pawlenty administration. It is long overdue, but there are multiple issues. So, we might want to do a comprehensive one, it would take time. Otherwise, it would need to be just one item, but it is difficult to separate them because they are all interrelated. I would prefer we bite off the entire thing because it is difficult to separate. Alternatively, we could have some conversations about the funding for the River Watch programs or Voyageur's programs. Perhaps we need to consider if we need a policy to address them. It seems like these are small amounts of funding in our budget but takes an inordinate amount of discussion time. Perhaps, we need to deal with them, like an educational grant program or place it in an existing program. One or two individual groups wanting funds will likely grow over time. We have bigger issues to discuss. That is my suggestion for the short time frame we have now. We can work with the BOC as well.
- Rich Biske: We need to allow a level of ability to adjust to the policial climate for which we are operating. If we make a hard and fast decision, it may come back to haunt us.
- Jessica Wilson: It may not look like the policy statements we have already created. Perhaps, it is a different document, the thoughts and feelings around this topic, and bring in the realities of these items. It would be to document these items. It may be more helpful to document the conversation we have had. So, as new members come to the Council, they can be updated on thoughts and feelings of the Council on it. So, it does not come up repeatedly. It is finding that balance.
- Rich Biske: We spend a lot of time on these. We do get called out on it, but I hear it from feedback from my constituents. It is an important distinction.
- John Barten: Did someone mention systems change as a topic?
    - *Answer from Rich Biske:* We would need to start categorizing those systems. One that has come up during the engagement process has been an innovation catalyzation fund.
    - *Answer from Jen Kader:* Trevor Russell (Friends of the Mississippi River) and a cohort of folks mostly with the Forever Green Initiative (FGI) pulled together a three-pager on what that could look like to start the conversation. After the last full Council meeting, the Steering Committee thought it might be good to get that in front of the Ag folks first, to receive feedback. So, they have a chance to react. It has started, so this is an update on it.
- Jen Kader: Some items on the list have a broader perspective, before the Council can begin on a potential policy statement. We are entering our strategy year soon. Perhaps, we need to pull folks to help and even have it at the full Council. The four items at the top are the ones highlighted in 2025: Mitigation support for private well users, sustainable aviation fuels, shoreline protection and restoration (including wake boats), and de-risking agricultural transition. The items discussed back in July were grouped into themes. There are a handful of items to review.
- Rich Biske: I think we previously talked about a summary of "watch items" would be useful for the Council, for the upcoming biennium. I don't want to lose sight of that as one of the products of our committee. *This item was added to the priority list*.

- Peter Schwagerl: I think we should also keep in mind where we can make the best bang for our buck. Some items can be funded elsewhere. Some items are less ready for change. We need to consider these when tackling the topics. I also think part of why the FGI program has the public and Council support; is they address most of the buckets. They take it from the first step to market development. It is a cohesive story versus a singular program. I think the shoreline or well work are more pressing for a formal statement, but there could be something we could put out in the Ag space.
- Rich Biske: You mentioned FGI has these elements. Are there similar frameworks to start or build from? Along those lines, what are the gaps you see with FGI that this committee could address? Are there areas we can focus on to compliment the existing work done. Response: FGI touches those things. They intentionally are not doing direct farm infrastructure and equipment to get those out there but are doing new crop development and market development. Regarding a gap, they may be too focused on cash crops rather than cover crops. New crops could change significant acreage, that are not for fuel or food. When looking at systems change for cover crops, that is an area I see. There are different categories, we just have to decide where we think the best bet is at, and equipment and education are two arenas for us. Open to different thoughts.
- Jessica Wilson: It might be good to map this out, to have a better perspective. Perhaps we should do it from our policy committee approach. Then, it may help us see the gaps easier, and it can paint a comprehensive picture for a shift. A visual model would be helpful. Perhaps, we can do this as a committee. It would help communicate with everyone as well.
- Chris Meyer: Some of the heartburn I have over FGI, is talking about the cash crops versus continuous living cover, and how do we do it well to help shift the influence. I appreciate that focus, Peter.
- Rich Biske: Some programs are running parallel to FGI. We hear from the oats folks too, which is a gap in FGI. I would be interested in the programmatic gaps. I am also interested in the post incentive perspective. How does that body of work continue without incentives (thinking post Legacy funds).
- Peter Schwagerl: We can't just buy practices, as it is not a good long-term vision of change. Making the economic model for sustainability is good. We could do economic modeling and sample demos on the economic strength on building towards that model. For farmers, inputs are volatile and expensive (international shipping of fertilizer for example). There is an incentive to make it a strong long-term impact. However, we are focused on water quality. We can aim to promote it.
- Gail Cederberg: Continuous boots on the groundwork is important. It is systems change from the bottom up. It is an important aspect for clean water for future generations. One lake at a time, one boat at a time. It is as important as FGI, because little things put together can have a big impact if we can get the message out. That is why 1W1P can be really impacting. Education and engagement are important here for this kind of systems change too.
- Jessica Wilson: I think we should do a paragraph of the items listed here, include it in the report to the Legislature. I think we can work on a map of the systems change perspective. We can look at creating a visual model for the systems change, and we can do Ag. We could do something like Chloride as well. Perhaps, Shoreline protection. We can do some systems change without getting too specific. We can work on this together with the BOC. Then, we can see the policy gaps or funding gap, and it can be a powerful story. It can be useful for the legislature too, because it can help propel that systems change for them too. Once we move along, we can invite the BOC to be included. So, we can work well with each other. We have some talented folks. As for future proposals, we can see how items fit into a systems change model. In the next strategy year, we can work on it together.
- John Barten: Perhaps, a new recommendation to the legislature, so when new programs are developed to address these issues for necessary program (significant environmental issues) that there could be a recommendation that the state develop a fee to offset the costs. The money would go into supporting the research. We do not have enough funding forever, to keep these items going. It would help the local, county, and city level as well. So, identifying new fees or other funds could support new efforts besides just starting in the CWF. Perhaps, new fee structures.

    - Peter Swagerl: I think this is a good idea. It is important to make the case for a be cognizant of who benefits from that fee. The push back in the Ag community is the assessment of the fee on the farmer and what that does to their business to benefit private well owners. We need to be aware of who is bearing the cost, and who the fee structure should be towards.
    - John Barten: I think fertilizer and pesticide folks should be held accountable.
    - Rich Biske: So, a retail tax or wholesale tax.
    - Peter Schwagerl: It will eventually be the farmer, because it will be passed on. Until you are using less input and have an economic model to use less input, that is the only way to get out of it.
- Rich Biske: I like the idea of visualizing the systems, and identifying the different roles, is a better way. It will serve us to move forward. I like this concept and how we can apply it to several of these items.
- Jen Kader: If we can leverage the time and energy of students Bonnie works with, could help further these conversations. There could be some areas to explore. *Answer from Rich Biske*: That would be great.
- Jen Kader: For the biennial recommendations report, I will bump "Product: Watch list" to the top. That could be the first thing the committee works on next. What are the next two to focus on?
- John Barten: My vote is for the shoreline. It is a heavy lift. We have not had an update for the shoreline ordinances for a while. There is also research coming out from wake boats.
- Jen Kader: There are also changes that have come forward from the Natural Shorelines Partnership. They have been working on identifying items, and work that could be leveraged as well.
    - Rich Biske: What is the timeline for the wake boat research? *Answer from John Barten:* About a year and a half, likely for their final report. They are trying to develop a template for citizens to take actions. So, people know who to approach. I do not know if that would influence the policy.
    - Rich Biske: We have heard a few different approaches to shoreline. Perhaps, how CWFs are spent, because I am curious about alum treatments and wake boats. What is the viability of that alum treatment, and the lack of restrictions on wake boats. The relationships between these two should be considered.
    - John Barten: There is a lot of research on alum treatments. Shallow lakes were not good candidates (wind actions were impacting) and the deeper lakes were found to be more effective. The alum gets covered in shallow lakes, and likely wake boats are impacting. Boat activity should be considered. It is something I have been thinking about. Why should we spend public money on alum treatments, when we know it will not persist for more than a few years. It should defiantly be included in a policy statement.
- Rich Biske: I am interested in sustainable aviation fuel, being lumped into the general de-risking agriculture transition? *Answer:* Yes. There is a million-acre study coming out this fall regarding continuous living cover that may be relevant to this item. That could be good additional information to tie into this topic.
- Jen Kader: We have not talked about mitigation support for private well users and it is high in the policy topics? Response from Frieda von Qualen, Minnesota Department of Health (MDH): One of the things we are working on with the UMN is building a comprehensive statewide cost-benefit analysis as it relates to offering private well testing and some type of income-based mitigation. The idea is modeled from the lead report, which was very persuasive at the legislature. We expect it to be completed within the next six months, but likely will refine a few things at the start of the next year. From the MDH perspective this is important. We need them to be able to address the issues, and it does not help them to know about their water quality without support to address the issues.
    - Jessica Wilson: In this short list, the one that impacts people the most should be the top one. So, this ordering feels appropriate. We want health and human services at the top.
    - Rich Biske: The results of the cost benefit could help us. Does it include human health costs too? *Answer*: Yes, it will be robust. It will look at health end points for those contaminants. They are

scaling things to geographic parts of Minnesota as well, so the cost-benefit is compared there as well. The MDH is trying to look at all the parts.
    - Jamison Wendel, DNR: Are they also looking at water availability? We are in the drought season and seeing well interference, for water for their domestic needs. Water availability around these needs as well. *Answer:* I will connect with the team; we might be able to build it in or provide a follow-up part for it. Thank you for bringing it up. We only discussed the quality part so far.
    - Rich Biske: Putting this watch list together could include an outline of the recommendation. One could be to request the legislature to come up with a solution. We spend a lot of time thinking about those possible solutions. This might be at a higher level of importance, with the Council's limitations, so it can be placed back on the legislature. It could be a simple request and short.
    - Chris Meyer: Thank you. I think if it is at the county level, it may not happen, at a local level it takes on a political significance and can be hard to move it forward. If we ask the legislature, it will come from the state, and that makes more sense.
    - Jessica Wilson: The tone may be influential too. Urgency and sense of responsibility can come across as well in our recommendations.
- Rich Biske: Should we do an overview of the product watch list first? Looking at for November. From there we will build out past November with the other items.
    - Jen Kader: Yes, that can work.
    - Jessica Wilson: I agree. We should put it out there, so they know we are looking at it.
    - Gail Cederberg: Yes, something short and sweet. They are hearing about it already, but from us as well is supportive too.
- Jen Kader: Everyone is comfortable with the order of the list? *Committee members agree. Items were changed from bullets to numbers on the list as well.*

Adjournment *(Webex 01:57:48)*

Outcomes from the Water Resources Conference chloride special session

For October 23, 2026 Policy Committee meeting

Background and workshop overview

The draft chloride deicer policy statement was used to anchor a 90 minute workshop at the Water Resources Conference. Hosted by Jess Wilson, Jen Kader, and Greg Wilson (Barr Engineering), the workshop provided an opportunity to think optimistically about addressing the worsening trend of chloride contamination and strategize about the next steps needed. Roughly 80 people participated from a range of backgrounds, including state government, watershed districts, cities, University of Minnesota, consulting firms, counties, and Metro Transit.

Following an overview of the challenge and updates regarding new data on chloride contributions from the private sector, participants were introduced to the Clean Water Council's draft policy statement on chloride deicers. Using a Menti.com poll, they were invited to share their thoughts regarding level of effort and degree of impact for each of the 12 policy actions. Their responses are included in the next section.

Then, the participants were invited to take the high effort, high impact items identified by the Clean Water Council (or another from the list they felt strongly about) as their topic of focus of the remainder of the workshop, which was split into two activities.

1) Headlines of success: Participants were asked to imagine that they were successful in responding to the recommended policy action and write what they thought the headline would be in 10 years. Then, they were asked to identify what barriers had to be overcome, who was involved, and what they did.
2) Making progress towards the headline: After a brief report out on the previous portion, participants were then invited to consider what next steps or resources might make sense to begin to work towards the actions and headlines they had just identified. If people discussing wanted to keep the conversation going after the workshop ended, they were asked to leave their contact information.

Where to look

Menti Poll Results..... Pages 2-9

Effort and Impact grids..... Pages 2-7

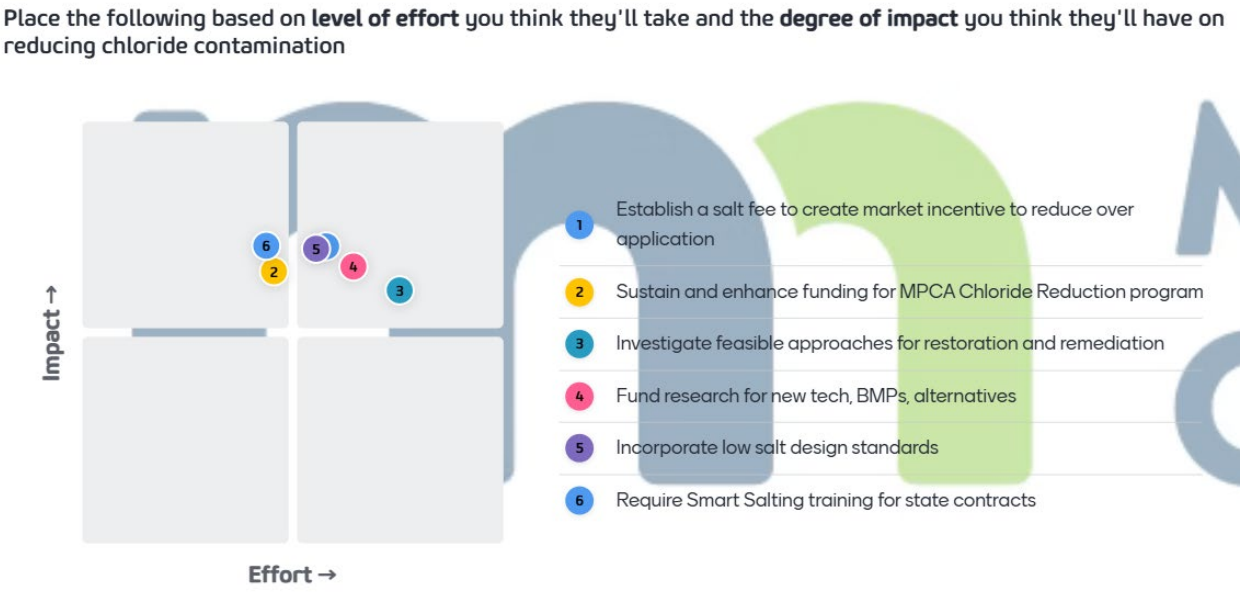
Open-ended responses..... Pages 8-9

Headlines and next steps activities..... Pages 10-22

Menti Poll Results

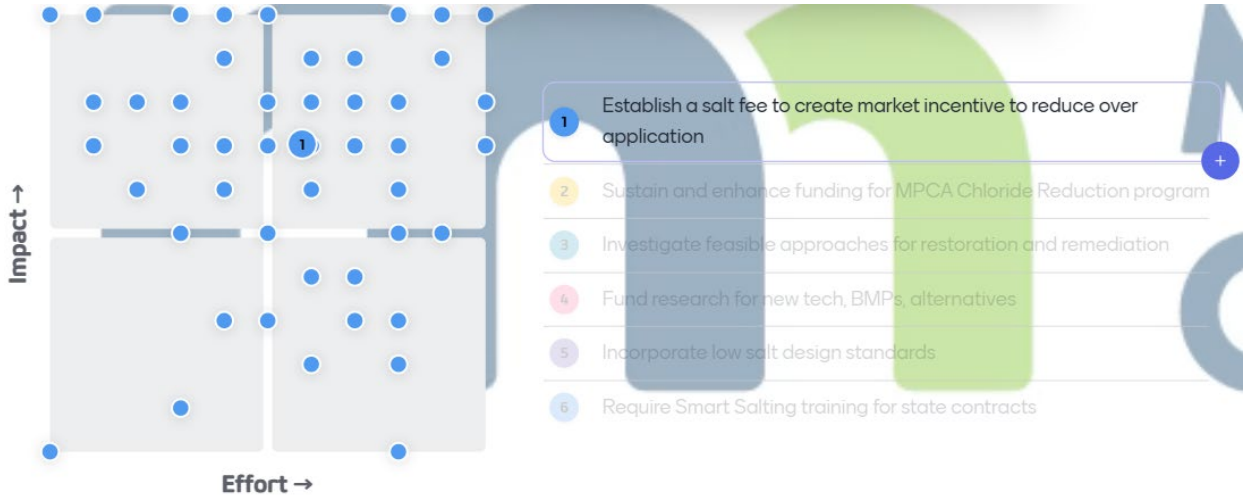
The 12 policy recommendations were split into two Menti polls, and 71 people responded to the poll over the course of the conference (a link was also provided on a poster in the poster gallery, though only a handful of people used that option). The images below contain the average responses for each. However, almost as interesting as the averages is the difference of opinion among participants. To that end, the responses are organized by poll section, starting with the average response and then looking to the spread of opinion for each recommendation.

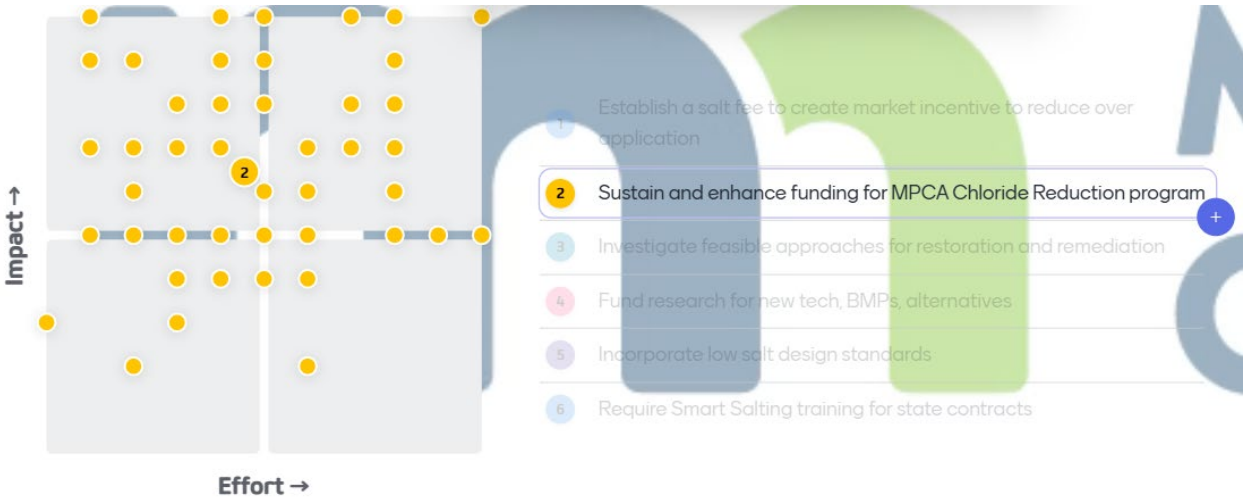
First six options



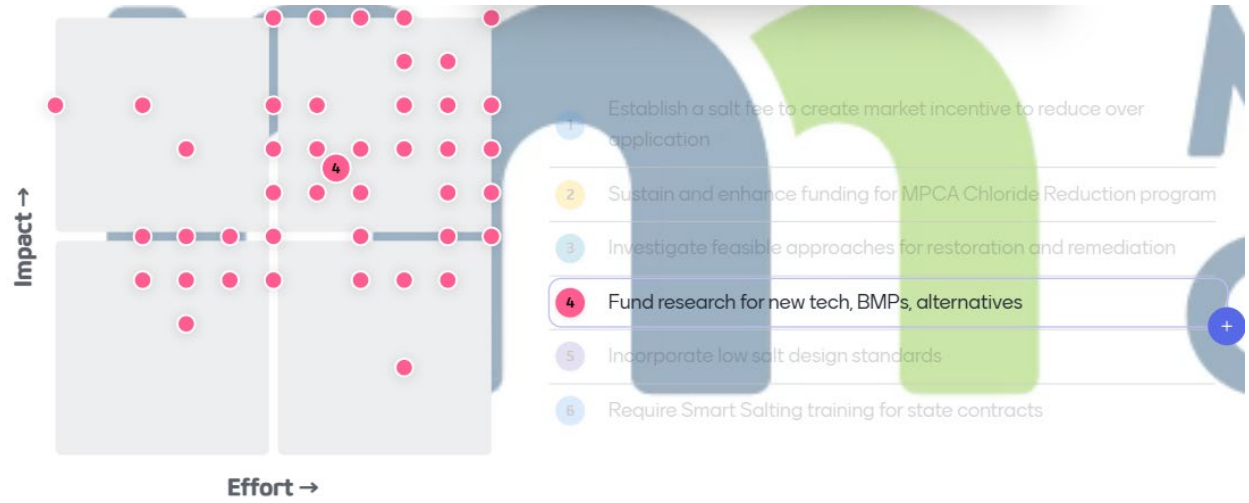
Generally speaking, the first six options were all considered by participants to be high impact activities, with the greatest difference being a consideration of how much effort each recommendation would take. Only two, “Sustain and enhance funding for MPCA Chloride Reduction program” and “Require Smart Salting training for state contracts” were considered to be lower effort, but only marginally so.

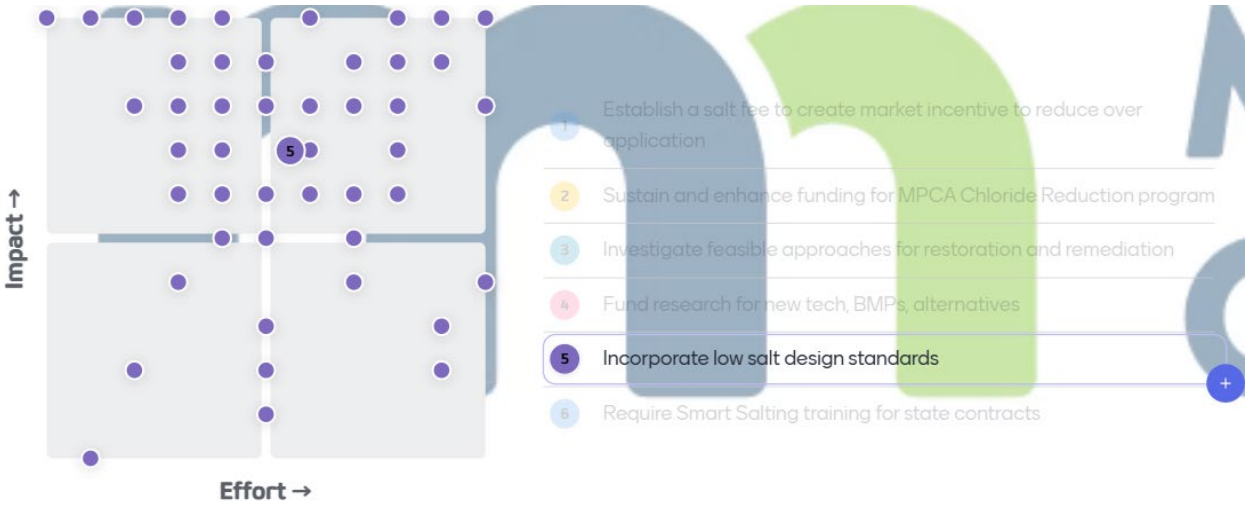
More detail for each of the responses is provided below.

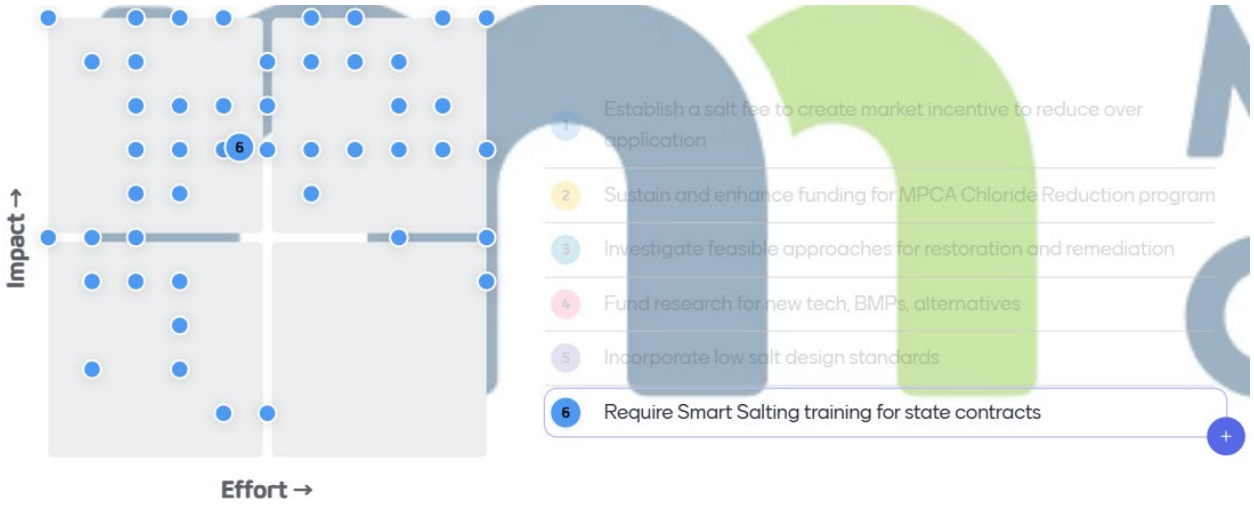

Impact →
Effort →
1
Establish a salt fee to create market incentive to reduce over application
2
Sustain and enhance funding for MPCA Chloride Reduction program
3
Investigate feasible approaches for restoration and remediation
4
Fund research for new tech, BMPs, alternatives
5
Incorporate low salt design standards
6
Require Smart Salting training for state contracts


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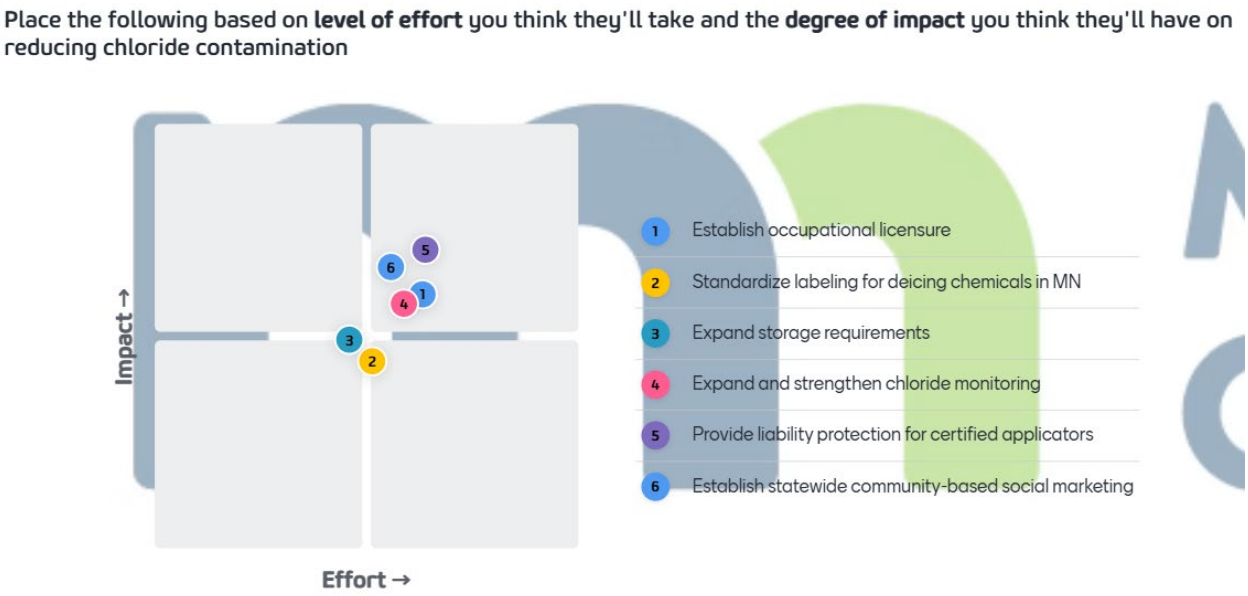

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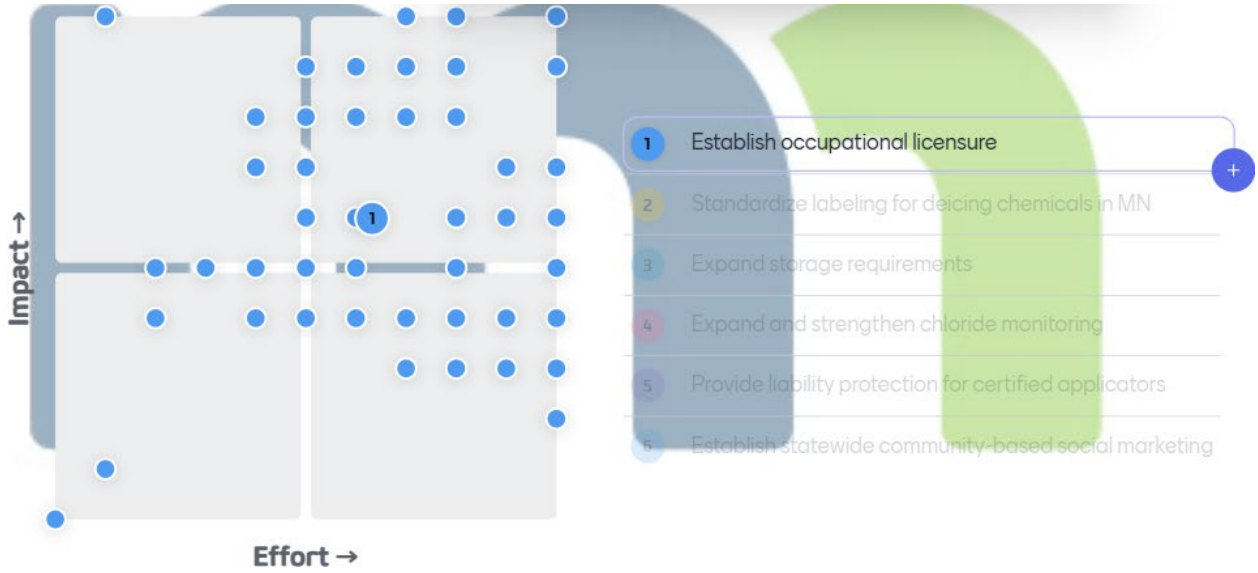

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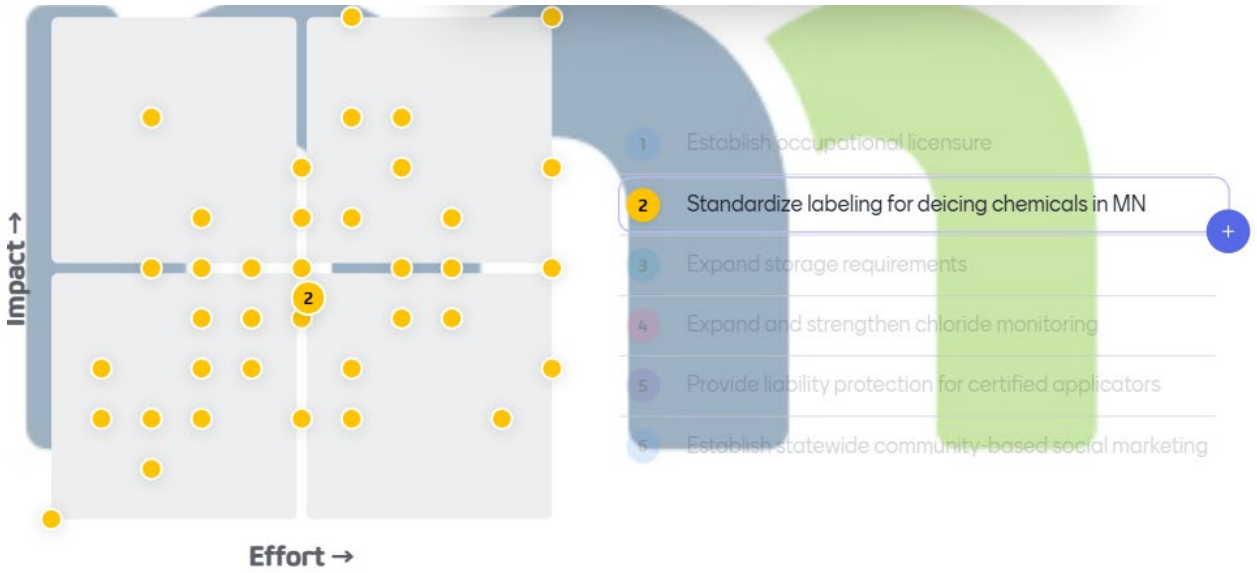
Last six options



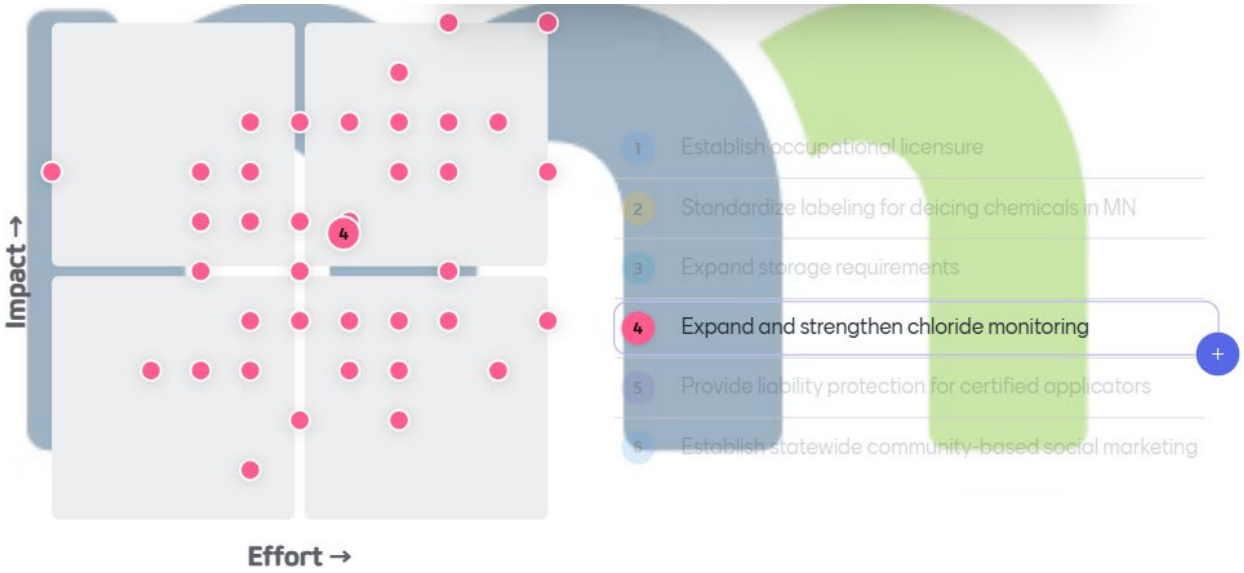
Similarly, four of the six options in the second set of recommendations were also in the high impact side of the scale, but more clustered for the degree of effort. An important change with this set is the two that were identified as being lower impact but still a decent amount of effort. These were “Standardize labeling for deicing chemicals in MN” and “Expand storage requirements”, with the labeling option nudging into the high effort and low impact grid.

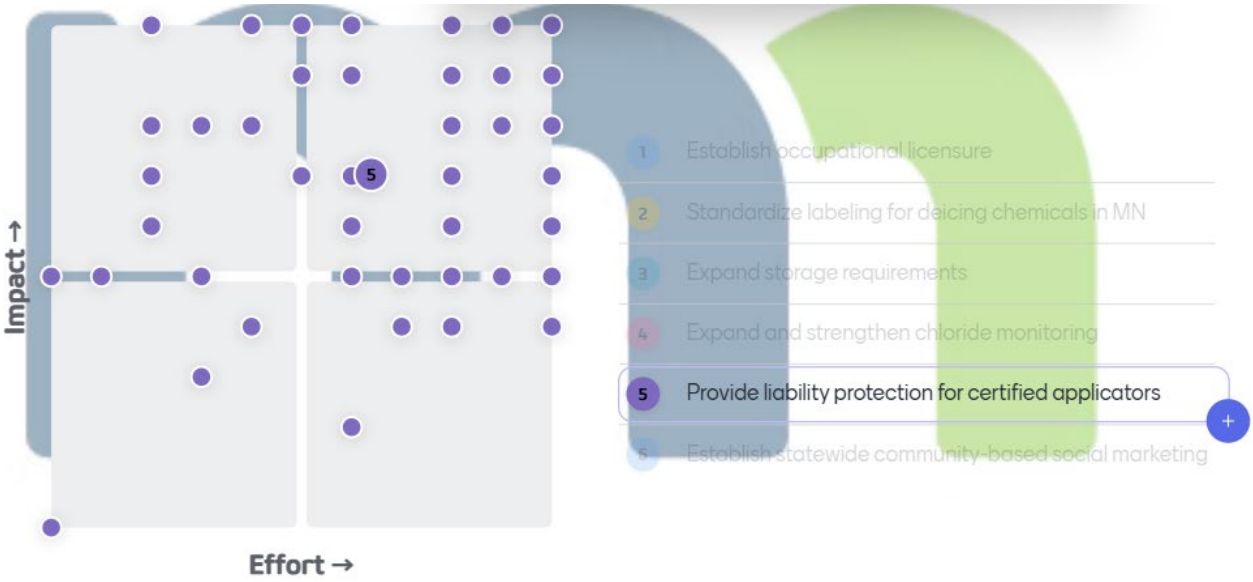
More detail for each of the responses is provided below.

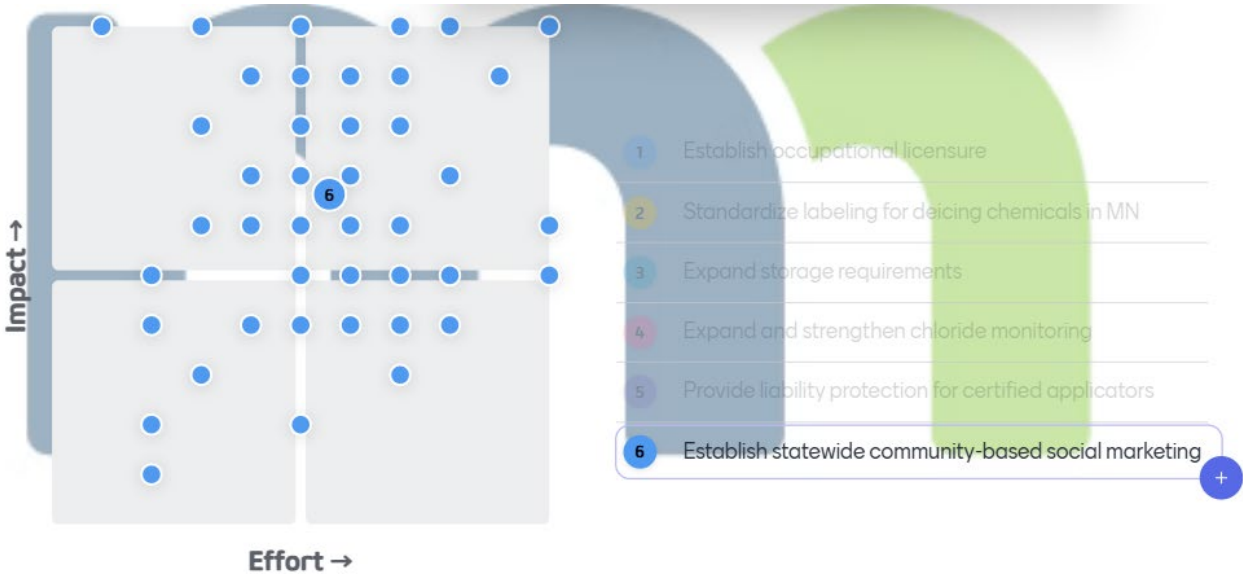

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Expand storage requirements
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Expand and strengthen chloride monitoring
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Provide liability protection for certified applicators
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Establish statewide community-based social marketing


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Open-ended responses

The final question in the menti poll invited participants to respond to the question "What else should we know or be thinking about with regards to reducing the overuse of chloride-containing deicing chemicals?" 26 participants contributed 33 responses, which have been organized into seven categories. In some instances, the comment spoke to multiple categories, so some have been duplicated below.

Overarching comment:

- We seem to be having more winter ice events due to climate change, so it is even more important to develop alternatives and strategies to what has been done in the past.

An option besides chloride-containing deicing chemicals is needed.

- It is imperative to develop alternative deicing materials.
- There are alternatives to chloride based salts. We need to put more funds into their investigation. Chloride based salts are not low cost when one considers the damage to the infrastructure.
- Use more sand and less salt
- Educating about water softners and alternatives to chloride based

Public awareness and engagement in reducing chloride use is imperative.

- Public education and consistent messaging
- Educating the public! In my experience, many don't know about the permanent effects of chloride.
- An emphasis on public understanding of why reduction is needed. A standard without public support will be relatively ineffective.
- Education of general public on the impacts of salt on our water, and permanence of the impacts
- More awareness campaigns for private residents.
- Public awareness of the problem
- Police departments need to be brought into discussion as they demand salt when accidents happen. The public needs to make sure vehicles are in shape for winter with good tires and brakes and expectations
- Provide free salt measuring cups at stores where salt is sold.
- Provide free salt measuring cups at stores that sell salt.
- Provide free salt measuring cups.
- There are alternatives to chloride based salts. We need to put more funds into their investigation. Chloride based salts are not low cost when one considers the damage to the infrastructure.
- Educating about water softners and alternatives to chloride based
- Researching, quantifying, and communicating the external costs related to chloride containing deicing chemicals. Focus on pocket-book costs like impacts vehicles
- I think there is still low awareness outside of this field about the salt issues so focusing on carrots/sticks as well as ongoing campaigns is a great approach!

- Need a lot of public outreach and education. Think of incentives, such as a watershed district rebate from annual fee for applying chloride BMPs.

Enforcement should be enhanced

- Enhance enforcement!
- Penalty of some kind that addresses renters. Landlords and their property managers often leave huge piles of salt, or renters are unaware they need to manage their sidewalk. 311 complaint would help

We can learn from others

- Investigate other incentives for reducing
- What are places with similar climates, like Scandinavia, doing to address winter conditions? Do they have similar chloride problems?

Land use and transportation policy drive the need for deicers

- Perhaps looking at emphasizing less areas that need the deicing in the first place. As long as there are are surfaces that need deicing, people will use salt.
- Given the low redevelopment rate within our impaired watersheds, it will be difficult for low salt design to have an impact on reducing chloride in the next few decades
- Over decades, our cities have become sprawling, car-dependent spaces that require salt to function. Long term, let's think big about how land use and transportation policy drives the need for deicers.
- Expansion of public transit and decreased use of cars and roadways.

Policy change with carrots and sticks can make a difference

- Assess a fee on property taxes for salt application. Give discounts to those that have a plan for reduced salt use and/or attended training.
- Drop speed limits by 50% during snow events. Behavioral change law, just like you have to turn your lights and wipers on during rain
- I think there is still low awareness outside of this field about the salt issues so focusing on carrots/sticks as well as ongoing campaigns is a great approach!
- Need a lot of public outreach and education. Think of incentives, such as a watershed district rebate from annual fee for applying chloride BMPs.
- Provide funding for municipalities and MNDOT for smart salting trucks and remated equipment.
- A chloride "tax" will be very difficult politically.
- I think the number one problem is the liability aspect. That needs to be solved before anything will change.
- Mandatory reporting on volume of salt used

Headlines and next steps activities

Responses below are grouped by topic. In most cases, there was more than one table discussing a topic. To preserve the input from each table, within the topics the responses are further broken down by table, with the headlines activity responses listed first and the next steps responses included after that.

Recommendation: Implement a granular salt fee

- What does the headline say in 10 years?
    - Salt fee revenue drops to all time low
    - Chloride trends down for the 8th year in a row
- What barriers had to be overcome?
    - How to differentiate between retail sales vs. whole sale
    - Low cost of salt now—how much would the fee be?
    - Affordability and understanding
    - Setting the correct fee amount
- Who was involved?
    - MNDOT (whole sales)
    - Applicators
    - Municipalities
    - Lake shore owners
    - Media outlets
    - MPCA
    - Agency support researchers
    - Landscape associations
    - Commercial property owners
- What did they do?
    - Educate public about impacts from salt—environmental and infrastructure costs
    - MPCA—complete a SONAR
    - Conducted an ROI study for reduced salt use
- Making progress towards the headline
    - What next steps might make sense?
        - ROI study
        - Draft legislation—ready for the moment
        - PCA develop a program scope and fiscal note on implementation
        - Communications campaign
        - Coalition building—supporters, detractors
        - Develop oversight and body for administration of salt fee revenue
        - List out all of the potential uses of fees
        - Ash applicators and contractors—what they need and how they could support a fee
    - What resources would be needed?

        - Multi-phase media
        - Facilitation
        - Research funding for ROI
        - Scoping of fee need
        - Legislative champions—to carry
        - Stakeholder analysis and power analysis

Recommendation: Investigate feasible approaches to restoration and remediation

Table 1

- What does the headline say in 10 years?
    - Zero chloride-impaired waterbodies remain in MN after successful remediation efforts
- What barriers had to be overcome?
    - Chloride is a surface and groundwater issue – even more difficult to address in aquifers
    - Disposal of material from remediation
    - High cost – energy intensiveness of commercial desalination process
- Who was involved?
    - Municipalities
    - State colleges and universities—statewide competition for project ideas
    - Clean Water Council
    - LCCMR
    - Stormwater Research Council
    - MPCA
    - Watershed Districts
    - DOT
    - DNR
- What did they do?
    - Novel biological treatments – capturing saltwater (unreadable—with?) microbes
    - Chemical treatments: bind Cl- ions in the water
    - Phytoremediation using plant harvesting
    - Capture salt-laden water at the point of discharge/highest concentration
    - Develop reuse/disposal options for chloride capture in remediation
    - All of the above approach!
- Making progress towards the headline
    - What next steps might make sense?
        - More funding
        - More coordination of funding towards highest priority items
        - Take the salt fee and direct that funding to research $
        - Increase awareness of issue so more universities want to fund
        - Prioritize (initially) highest impaired

    - What resources would be needed?
        - More funding, data, people
        - Re-prioritization of types of projects we work on and where funding goes
- Contact info
    - Sarah Wein (swein@capitolregionwd.org)
    - Vanessa Demuth (vanessa.demuth@co.dakota.mn.us)
    - Terry Zien (tzien@myctl.net)
    - Mattias Oddsson (moddsson@richfieldmn.gov)

Table 2

- What does the headline say in 10 years?
    - Minnesota removes water body/section of stream off the impaired water bodies list
- What barriers had to be overcome?
    - Interactions between cities/WDs/WMOs/LGUs—getting people to agree/work together
    - Residence time of chloride in water bodies
    - Funding for research into remediation/restoration
- Who was involved?
    - Cities/LGUs
    - Researchers—maybe Stormwater Research Council?
    - Businesses! People investing in new strategies
- What did they do?
    - Stormwater Research Council funded things!
    - LOTS and LOTS of research to find new and innovative ways to mitigate pollution
        - Cities adopted these new methods in an effort to remove lakes off of the impaired waters list.
- Making progress towards the headline
    - What next steps might make sense?
        - Make chloride remediation a priority for groups that already fund water quality grants
        - Advertise grant opportunity to researchers
        - Study on economies of scale for chloride treatment (similar to PFAS in WW study)
    - What resources would be needed?
        - Chloride research partnerships
        - $$
        - Public buy-in on ROI/use previous success stories/tell costs of inaction
        - Dismantle liability culture in the US
- Contact info
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    - Brian.leyendecker@eaganMN.gov
    - Forgr001@umn.edu

Table 3

- What does the headline say in 10 years?
    - We did it!
- What barriers had to be overcome?
    - Holisitc cost accounting (source alternatives for complete infrastructure and water quality benefit, what different effectiveness of treatment options (WWTP, onsite, (unreadable))
    - Lag time of remediation/restoration efforts and observed benefits
    - Impacts more downstream, future looking attitude changing efforts needed
    - Where does concentrated brine from treatment end up?
- Who was involved?
    - Others across nation/world who deal with desalinization
    - Private and public stakeholders
    - Regulation for stormwater and wastewater
    - Stormwater and wastewater experts/orgs
- What did they do?
    - Develop and adopt new remediation process—phytoremediation with cattails, nutrient and multiple stacking benefits
    - Created a closed loop chloride system
        - Reuse salt
        - Captured salt from harvesting after use
    - Target hotspots for remediation (ex: groundwater near impervious surfaces)
        - Models can help identify these
    - Implemented flexible regulatory framework and/or incentives for stormwater/wastewater collaborative efforts on chloride
- Making progress towards the headline (specifically focused on phytoremediation)
    - What next steps might make sense?
        - Awareness campaign to promote phytoremediation
        - More scalable case studies
        - Testing other vegetation options (cattails, sunflower), treatment trains
    - What resources would be needed?
        - Research grants ($) – talk to Jen Kader to get $
        - Byproduct harvesting/disposal options (also needs research/testing)
            - Mulch, ash, etc.
            - Salt tolerant plants and reed
- Contact info
    - Daniel Henely (Daniel.henely@metc.state.mn.us)
    - dmensign@res.us
    - Xue Feng (feng@umn.edu

- John Gulliver, gulli003@umn.edu
- Greg Johnson (greg.johnson@metc.state.mn.us)

Recommendation: Incorporate low-salt design standards into building and site development

Table 1

- What does the headline say in 10 years?
  - "Salt study finds improvements"
  - "Cost savings and environmental impact are up!"
  - "No traffic accidents"
  - "Health and safety plus low salt are priorities"
  - "Institution adopts mandatory low salt design into engineering degree"
  - "Local mall moves low salt design into action"
  - "City/county models low salt design"
- What barriers had to be overcome?
  - Planning
  - Pessimism
  - Elected officials
  - Behavior change
  - Education/misconceptions/social perceptions
  - Fiscally conservative areas (less cost now but more expensive later, proactive—shift to return on investment)
  - Funding
  - Critical thinking and science literacy
- Who was involved?
  - Public
  - Schools
  - Civic agencies
  - Road authorities
  - Engineering firms
  - Voters
  - Politicians
  - City planners
  - Lake associations and other advocates
  - Applicators
- What did they do?
  - Grassroots effort, learn from examples
  - Lead with safety (because salt turns people off) in discussions
  - Addressed funding

    - INDUSTRY STANDARD
    - Multi-faceted, multi-perspective, multi-partner approach
- Making progress towards the headline
    - What next steps might make sense?
        - Approach professors that teach local/urban engineering and planning to address:
            - Low salt design issues
            - Snow storage
            - Salted water flow/discharge
        - Create education plan for salt applicators
        - Intervention for public safety calls within the county system…accountability to drivers to NOT drive
        - Increased clarity for state grant program for funds to implement chloride reduction/low salt design
        - Education and awareness of low salt design practical solutions, examples, stories including cost short term and long term (aka case studies)
    - What resources would be needed?
        - Funds to develop case study education tool
        - Partnerships between CH, Hopkins, Bloomington, etc. that have done it
        - (GIS Storymap) clearing house for stories and data—tech/writer person and incentive to share—Kayla Westerlund @ Water Resources Center and MNSC
- Contact info
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    - Jane.byron@rosemountmn.gov

Table 2

- What does the headline say in 10 years?
    - (No headline would be a good outcome, too)
    - A little goes a long way: safe sites, less salt, saving money
    - Minnesota fish go on a low-salt diet
- What barriers had to be overcome?
    - Developers associations
    - City councils
    - Watershed boards?
    - Different standards in different places – can we have one statewide standard?
    - Legislative changes
- Who was involved?
    - LEED?

    - B3?
    - Watershed districts
    - Public education community events
    - Local units of government
    - ASCE/engineers
    - MS4 permitting?
    - Outstate involvement/SWCDs…
    - EIS/NEPA framework
- What did they do?
    - THIS WILL TAKE ALL OF US
    - Spread awareness
    - Develop standards: LEED, cities, state, engineers, watersheds, universities
    - Implement standards: cities/counties, Met Council require in Comp Plans. EIS/NEPA?
    - Advocating for standards
        - (Question about scale—individual comms vs standards)
        - Conservation districts
        - Watershed districts
        - NGOs focused on water recreation
        - MDH: out state drinking water (starting to detect in wells)
    - Economic angle—cost of removing chloride from drinking water
    - RESEARCH still needed around the role that vegetation (cattails, sunflowers)
    - How does low salt design apply to retrofit sites?
- Making progress towards the headline
    - What next steps might make sense?
        - Identifying a champion—CWC? PCA? Need to get in front of cities as they approach their comp plans. Start in the metro. WMOs? Met Council? Woodbury, Edina.
        - Model ordinances and policies—establish modeling and language to demonstrate to others
        - Build examples
        - Calculate cost-benefit. “Number talk” about chloride reduction.
        - Obtain grants to help
    - What resources would be needed?
        - Incentives to encourage “poster children”
        - Be good examples/champions
            - Big churches?
            - Universities
            - Big boxes
            - (Success stories from Low Salt/No Salt program)
        - Woodbury public works idea brine facility (examples in Anoka)
- Contact info

- Erin Anderson Wenz, eandersonwenz@barr.com
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- Ashlee Ricci, ashlee.ricci@rwmwd.org
- Chantill.kahlerroyer@rockleafwater.com
- John.loomis@swwdmn.gov

Table 3

- What does the headline say in 10 years?
  - State legislature protects water, passing law requiring low salt design standards
- What barriers had to be overcome?
  - Incentive (financial) – developer lobbying, unions
  - Political will, ability to legislate statewide—cities have different levels of resources, subcontracting
- Who was involved?
  - Municipalities
  - Trade unions
  - State legislators
  - Developers
- What did they do?
  - Certification programs (like LEED, e.g.)
  - Change the economics of the situation—i.e. salt use fee, tax incentives
  - Community social incentives—make it appealing to businesses to implement standards
  - Municipal snow shoveling, municipal responsibility for addressing snow vs private (well-resourced cities like Mpls leading the way)
  - Create jobs
- Making progress towards the headline
  - What next steps might make sense?
    - Community engagement/organizing
    - Look at zoning standards
    - Create a shared definition of low salt design benchmarks
    - Define the true economic realities around liability and benefit tradeoffs
  - What resources would be needed?
    - Shared convening time (effort) across interested parties
- Contact info
  - Maya.gilchrist@state.mn.us
  - lauren@youngecg.com
  - mlundberg@capitolregionwd.org

Recommendation: Establish an occupational commercial licensure program for winter maintenance professionals

Table 1

- What does the headline say in 10 years?
    - Private winter maintenance professionals reduce their salt use by 50%!
- What barriers had to be overcome?
    - Voluntary compliance—who enforces it?
    - Legislation/funding
    - Customer education
        - Reduce amount available to customers to apply more
        - Visuals to help
        - Pedestrian foot traffic zones especially
    - Alternative deicers need to be better/accessible
    - Better/more training
        - Better retrofit site design
        - New methods for application
- Who was involved?
    - Winter maintenance professionals
    - Chamber of commerce community and businesses and property management
    - Legislators
    - Non-profit lobbyists
    - MPCA
- What did they do?
    - Got legislation passed with funding—got it passed through strong advocacy
    - Created program—MPCA→incorporating/engaging with maintenance professional
    - Develop education materials for both owners and professionals
    - Make sure that winter safety is #1
    - Create a quote/amount max per day? Under certain conditions?
- Making progress towards the headline
    - What next steps might make sense?
        - Agency collaboration—who's responsible? MPCA, with legislature support
        - Details of what triggers licensure requirements
            - Amount of salt used
            - Type of business/application/use
            - How long is licensure good for?
            - License for individuals? For applicator business?
        - Build coalition to build support
        - Outreach to let people know when license is required

    - What resources would be needed?
        - Funding
            - Administer
            - Development
            - Outreach
            - Enforcement staff
            - Programming/education
        - Legal resources, rule making
        - Buy in
        - Time
- Contact info
    - Jenna Wolf, jwolff@robbinsdalemn.gov
    - Marit Isaacson, maritisaacson@gmail.com
    - Valerie Neppl, Valerie.neppl@co.dakota.mn.us

Table 2

- What does the headline say in 10 years?
    - License professionals lead the way!
    - Winter warriors: licensed professionals lead the way!
- What barriers had to be overcome?
    - Uneven adoption
    - Small operators with multiple licenses
    - Enforcement problems
    - Public perception
    - Developing continuing education
- Who was involved?
    - Private operators
    - State Agencies
    - Clean Water Fund
    - Municipalities
    - County
    - Landscaping industry
    - Pet Organizations
    - Commercial property management groups
    - Marketing/communication/public outreach groups
- What did they do?
    - Establish regulatory standards
    - Provide feedback
    - Enforcement
    - Communicating to public/other stakeholders

- Funding sources

Recommendation: Establish a statewide community-based social marketing campaign

Table 1

- What does the headline say in 10 years?
  - Man wakes up from 10-year coma, can't find salt on Home Depot shelves
- What barriers had to be overcome?
  - Sense of vulnerability
  - $
  - Values shift to water quality
  - Legislature—liability
  - Social norms
- Who was involved?
  - Private residents
  - Cross-sector (government, private/business)
- What did they do?
  - Changed public perception that more salt is the best management
  - Campaign that was cross-sector and went beyond information and training
    - Neighborhood ambassadors? "Don't be salty"
- Making progress towards the headline
  - What next steps might make sense?
    - Grants for chloride-based outreach to local level group with trusted messengers sharing state guidelines and include free/discounted grit
    - Identify specific behaviors we want to change, the behavior we want to see
      - Residential level: cut salt use
      - Who do we want to change behaviors?
    - Who are the community messengers?
      - Trusted, part of the community
      - Credibility, emotion, logic.
      - What are their barriers and benefits? Values? Habits?
  - What resources would be needed?
    - Funding for outreach
    - Incentives for behavior change
    - Training
- Contact info
  - Lauren Hazenson, lauren.hazenson@rwmwd.org
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  - Kristen Poppleton, Kristen.poppleton@metc.state.mn.us

- Abby Moore, Abigail.moore@metc.state.mn.us
- Jordan Labat, Jordan.labat@hennepin.us
- Akia Vang, akia.vang@metrotransit.org

Table 2

- What does the headline say in 10 years?
  - Hold the salt! Businesses proclaim as social media witch hunt reaches new heights
  - Businesses Post "Certified slug friendly" signs after social media witch hunt reaches zenith
- What barriers had to be overcome?
- Who was involved?
  - Social media influencers, public, corporate partners get incentivized to shame
  - Create "slug scale" for companies utilizing low-salt practices
- What did they do?
- Making progress towards the headline
  - What next steps might make sense?
    - Find social media influencers to pay and spread message
      - Hire consultant to create messaging campaign
    - Create system and resources for businesses to adopt smart salting practices
  - What resources would be needed?
    - Time and money
- Contact info
  - Apeterson@carollo.com
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  - Ara.gallo@state.mn.us
  - Anne.sawyer@state.mn.us
  - Jeff.dunn@co.dakota.mn.us
  - dpereira@vbwd.org

Table 3

- What does the headline say in 10 years?
  - City of Lakes first to eliminate salt city-wide
  - Minneapolis residents learn they are next to lakes
- What barriers had to be overcome?
  - Public perception of safety
  - Limited liability – people less afraid of lawsuits
- Who was involved?
  - Schools implement salt education and change their own practices
- What did they do?
  - Change their own practices
  - Kids take materials home

    - Mascot
- Making progress towards the headline
    - What next steps might make sense?
        - Use a Adopt-a-Drain as a model
        - Fundraising
    - What resources would be needed?
- Contact info
    - kweste@umn.edu
    - Paige.ahlborg@rwmwd.org
    - Kyle.axtell@swwdmn.gov

The Water is Getting Saltier.

How do we take on chloride pollution from de-icing chemicals at scale?



Welcome

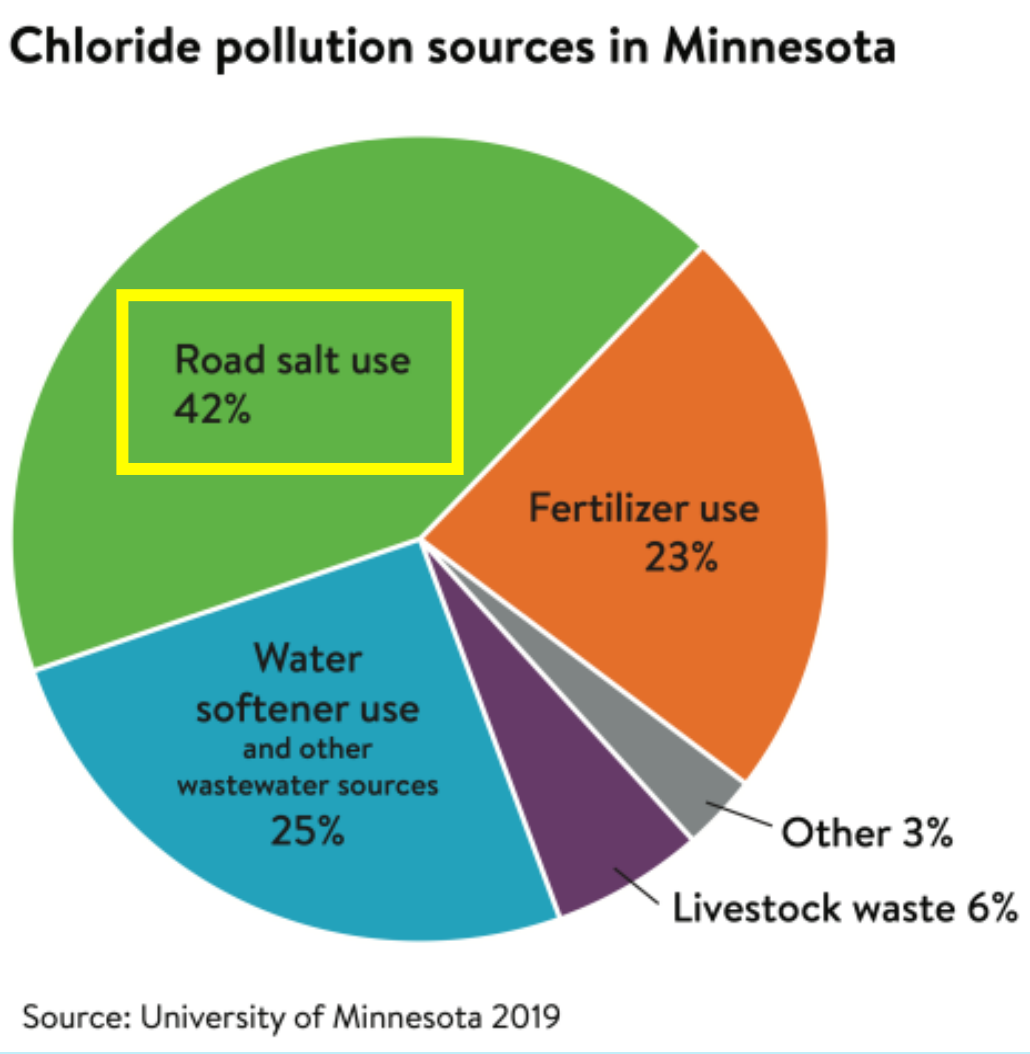
- Purpose: Gather feedback and ideas to advance high impact recommendations
- How we'll get there
  - Background and new findings
  - Clean Water Council policy statement
    - Purpose, recommendations
    - Menti poll
  - Workshop





Chloride Pollution: The Basics

- Soluble, permanent pollutant
- Disrupts aquatic ecosystems, alters food webs and mixing dynamics, damages soil, damages infrastructure, and contaminates groundwater and drinking water
- Statewide, approximately 404,000 tons of de-icer is used annually





Safety is #1

The goal is to reduce salt, not reduce safety



Conditions are poor and getting worse

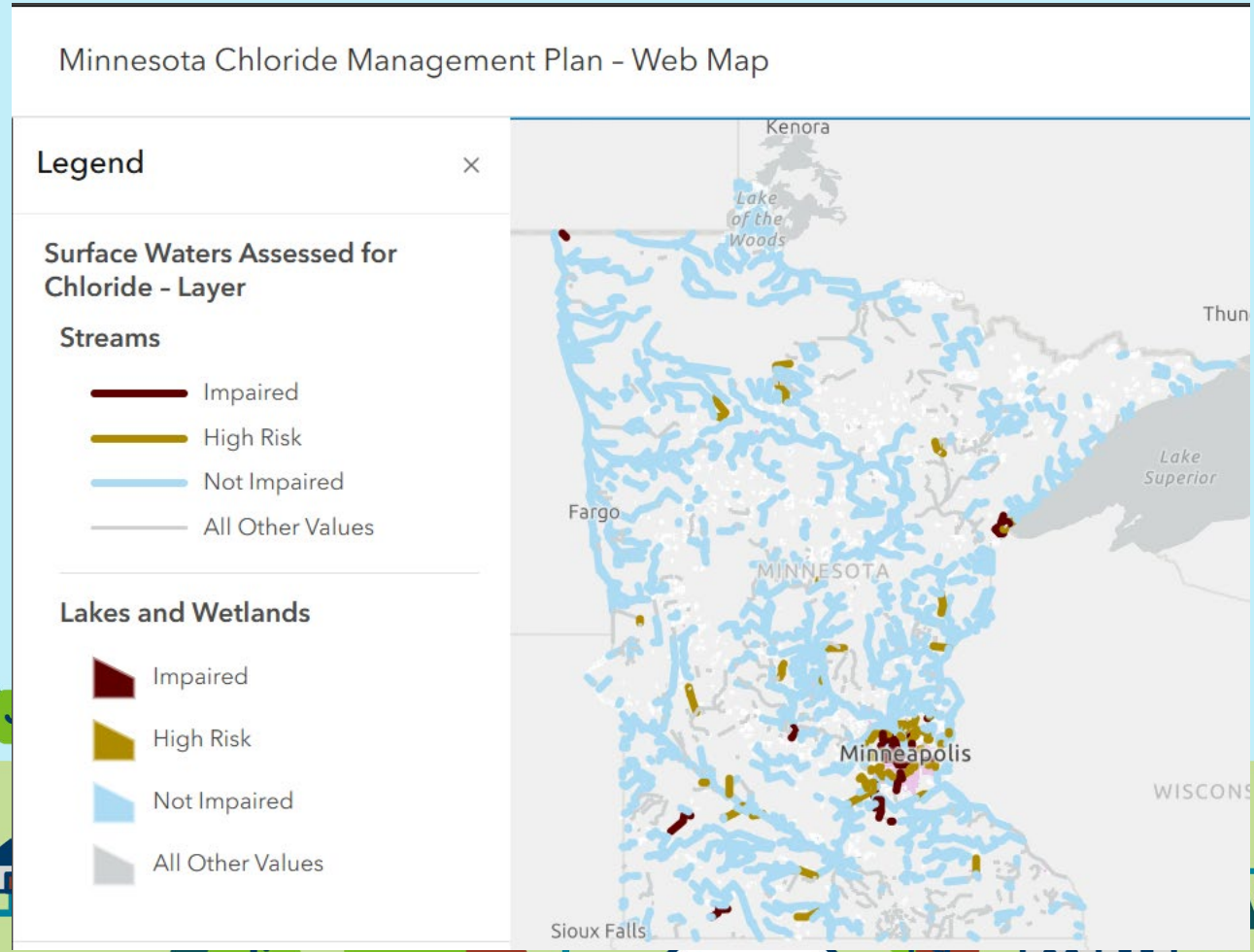
Changes over time in key water quality parameters: Chloride in streams and rivers	Poor	Getting worse	Chloride in rivers in streams — Concentrations from are increasing in almost all metro area rivers and streams as of trends through 2019.

Clean Water Fund Performance Report (2026)



A problem that goes beyond the metro

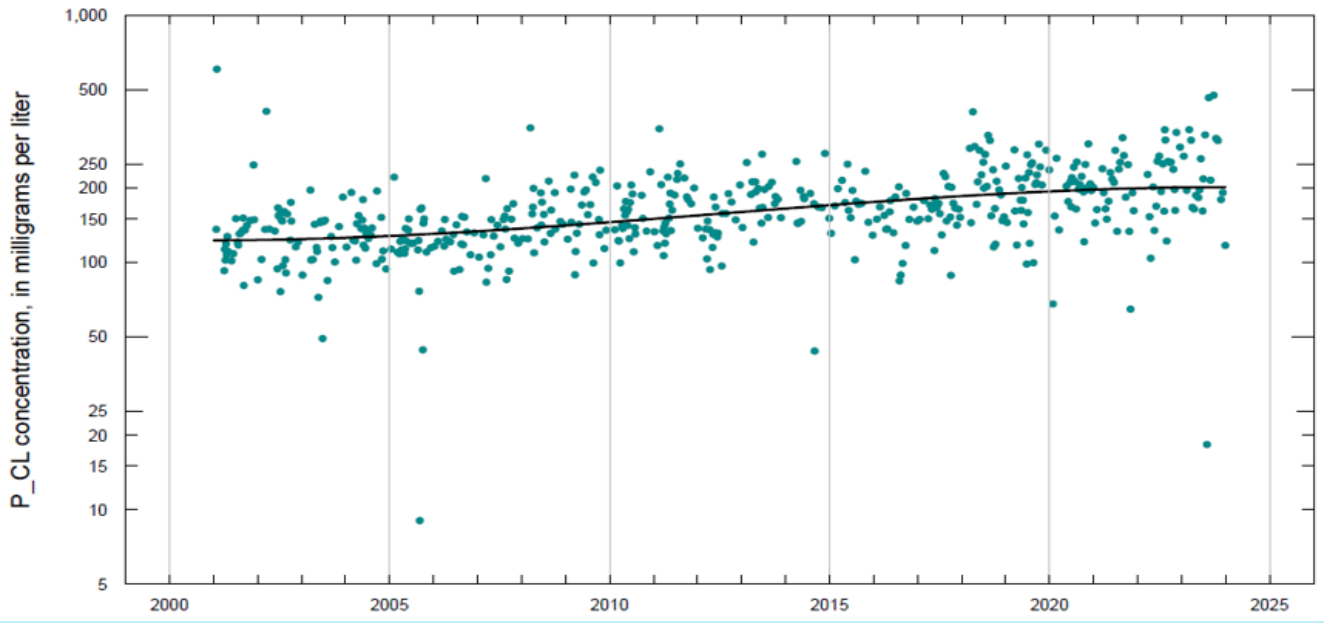
- 68 impairments statewide for chloride, and 14 were added in just the last two years.
- Water Quality Trends for Minnesota Rivers and Streams at Milestone Sites (MPCA, 2014) identified significant, largely statewide increases in chloride concentrations.





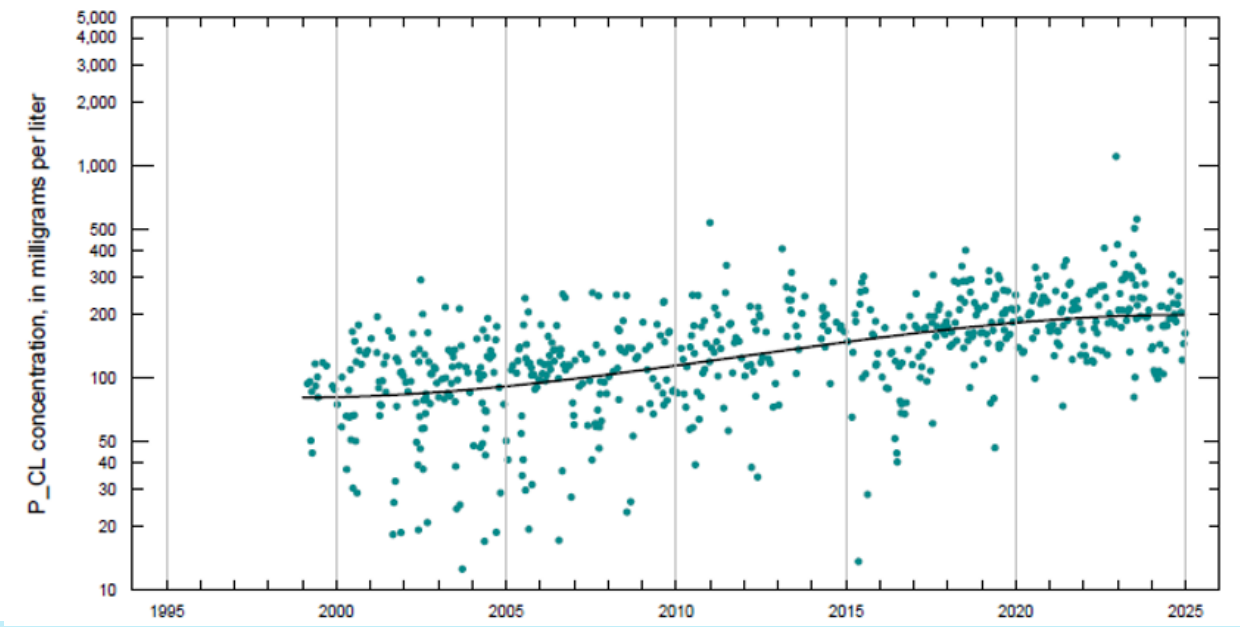
Conditions are poor and getting worse

Source: MCES



Bassett Creek

Trend Period	Change in Conc. (%)	Change Rate (mg/L/yr)	*p*	Trend
2001 – 2023	64.0%	0.0212	0	↑



Nine Mile Creek

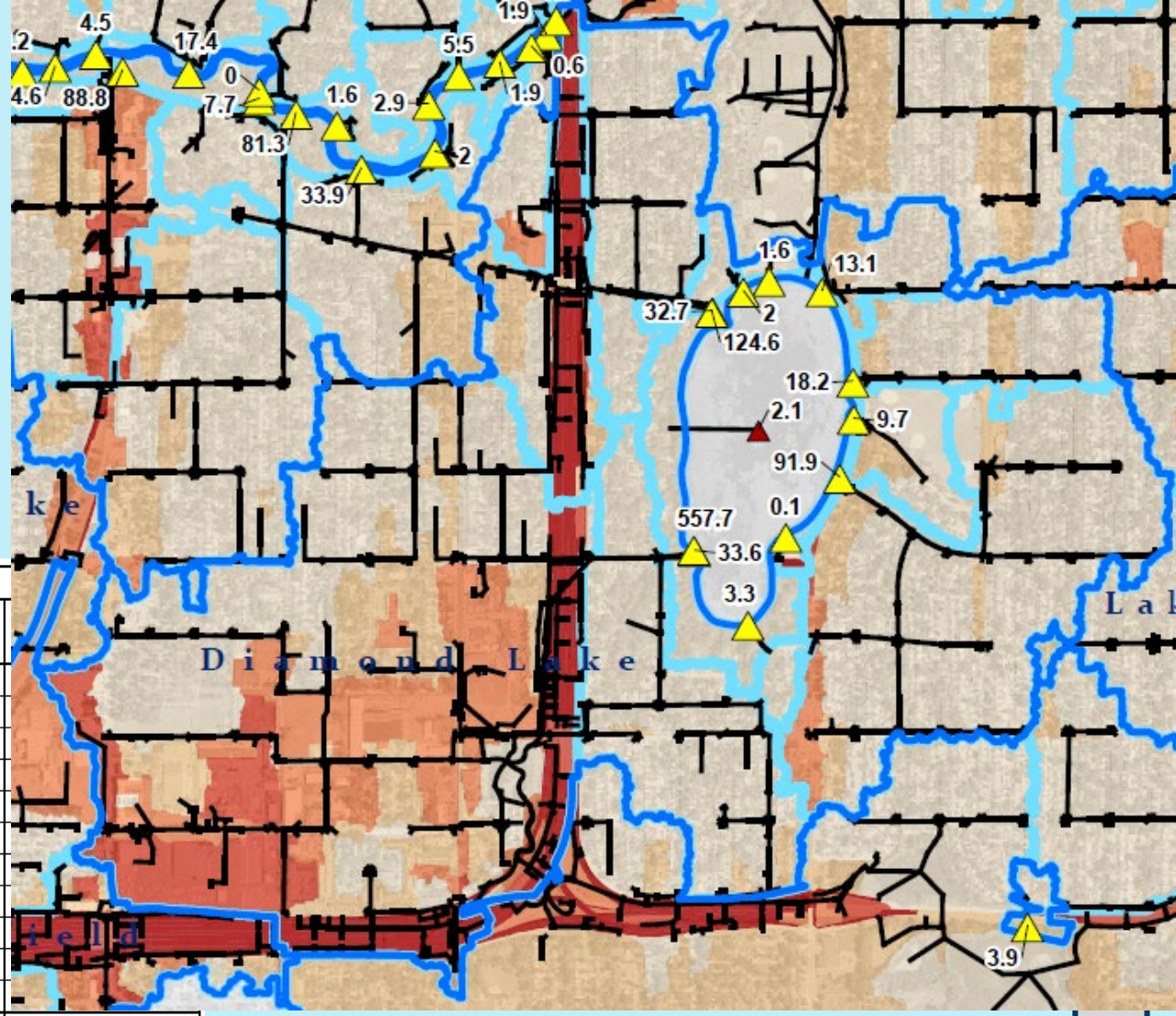
Trend Period	Change in Conc. (%)	Change Rate (mg/L/yr)	*p*	Trend
1999 – 2024	145.1%	0.031	0	↑



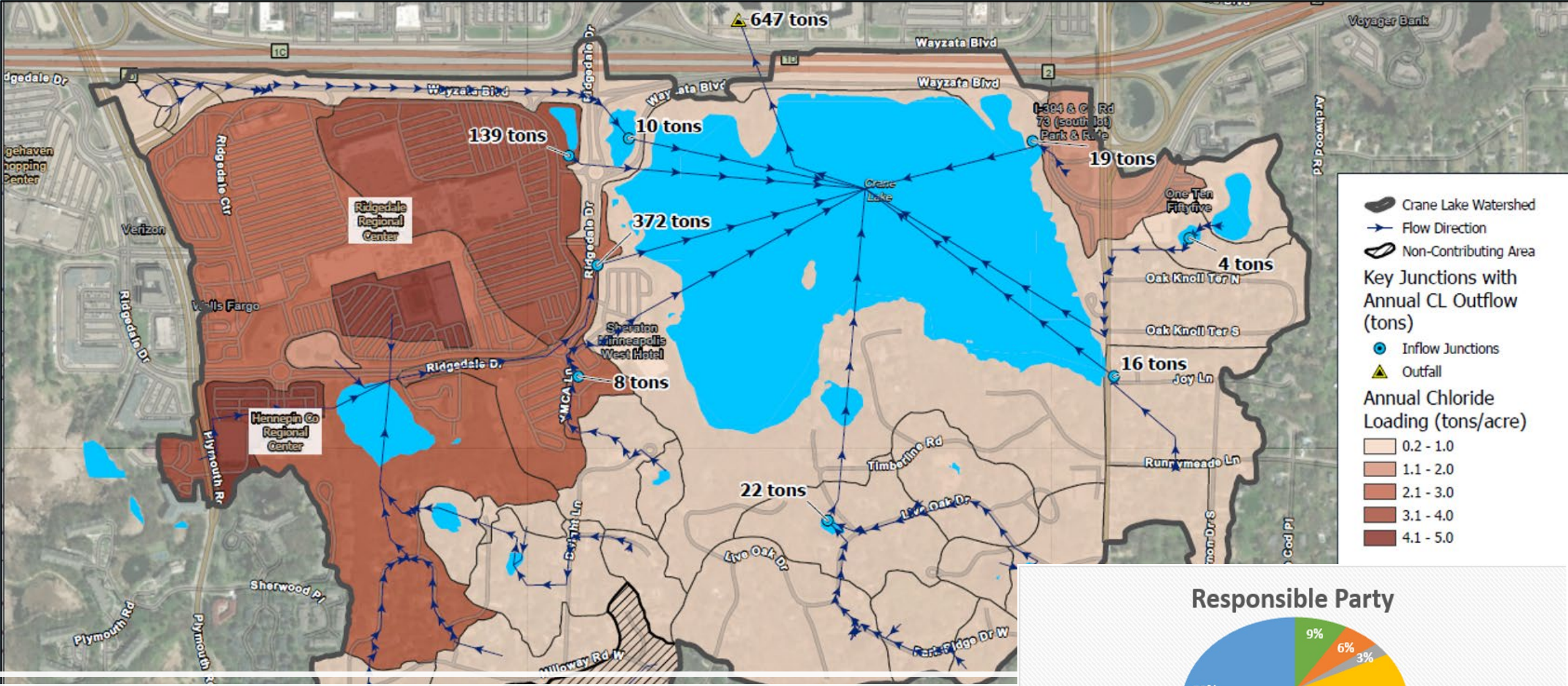
Land use/land cover contributions

- Developed Minneapolis' GIS water quality model to estimate chloride loads based on parcel-scale land use and land cover

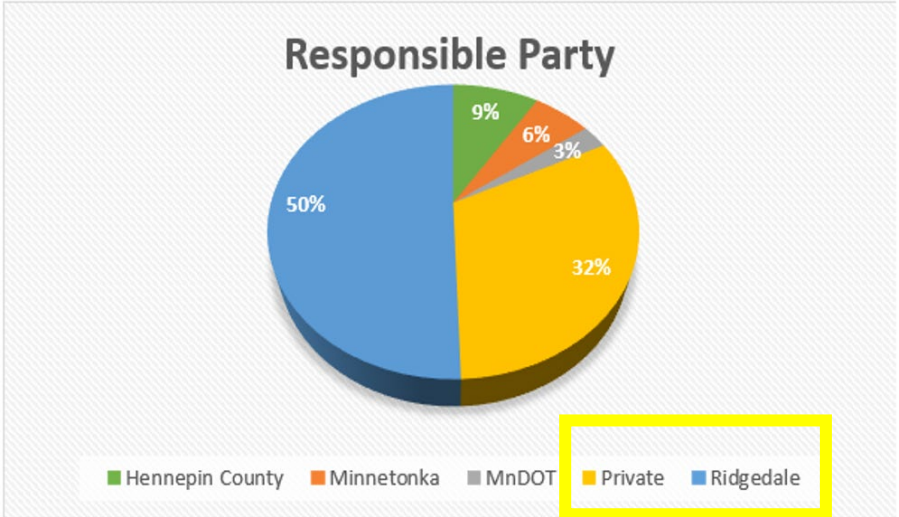
	MINNEAPOLIS SOURCES					
Impaired Receiving Waters	City of Minneapolis	Hennepin County	Minneapolis Park and Recreation Board	Private	State of Minnesota	
Lake Hiawatha	25%	18%	1%	56%	0%	
Bassett Creek*	15%	13%	1%	54%	15%	
Minnehaha Creek*	23%	15%	2%	52%	3%	
Powderhorn Lake	25%	21%	2%	52%	0%	
Diamond Lake	12%	5%	0%	51%	31%	
Shingle Creek*	7%	5%	0%	41%	9%	
Spring Lake	5%	0%	25%	39%	32%	
Silver Lake*	9%	15%	0%	25%	0%	
Brownie Lake	1%	0%	0%	11%	0%	
Loring Pond	28%	0%	62%	2%	8%	
Wirth Lake*	0%	0%	12%	0%	0%	
Total (%)	12%	10%	1%	59%	15%	3%







Land use/land cover contributions



Public Road Authority progress

- Regulatory requirements of MS4 permits
  - Training
  - Benchmarking
  - Policy
  - Proper storage
  - Educate the public
  - 'make progress'
- MPCA reports 30-70% reductions for trained organizations that implement best practices, without compromising safety.
- More work to do, and, as the share from public sector shrinks, the share from private sector grows.



BOARD OF WATER AND SOIL RESOURCES

2025 August Snapshots
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Leech Lake River plan protects waters by cutting the (road) salt

CLEAN WATER LAND & LEGACY AMENDMENT

YOUR Clean Water Fund AT WORK

The Clean Water Fund is the sole source of Watershed-Based Implementation Funding. Thirty-three percent of sales tax revenue from the Legacy Amendment, passed by Minnesota voters in 2008, is allocated to the Clean Water Fund.

The Leech Lake River Comprehensive Watershed Management Plan (CWMP) focuses strongly on protecting lakes and rivers within the watershed from pollution. Other than the omnipresent mercury found throughout Minnesota, few impairments exist within the watershed. Improved management of forests, shorelines and stormwater are some of the identified activities in the watershed plan that will provide long-term water quality protection.

Another problem pollutant that hasn't yet shown up in water quality sampling but whose impacts can be seen in other ways is chloride. For a long time, chlorides have been used to clear paved winter roads and to protect gravel road surfaces, and to reduce dust. The effects of chloride use can be seen in salt-burned vegetation along highways, and in the impacts on insects and amphibians along gravel roads.

Less obvious is the salt that dissolves, permanently affecting the water quality of both surface and groundwater.

The main water-quality benefit is that it takes less salt to accomplish the same results. During an average winter, the Cass County Highway Department estimates using brine could cut salt use by up to 430 tons.

LEECH LAKE RIVER WATERSHED

In extreme circumstances, that chloride can interfere with the natural mixing cycle of lakes and affect the food web within those lakes.

Cass and Hubbard county highway departments are among the road authorities gradually moving away from using salt/sand mixtures for winter safety, instead turning to the application of salt brine, a solution of salt and water. Brine starts working immediately and can be applied proactively before it snows. Brine stays on the road and doesn't bounce off like rock salt. At lower temperatures, it can be more effective than rock salt.

Brine-making equipment, ***left and right,*** *is seen at the Cass County Highway Department. Cass and Hubbard county highway departments are among those gradually turning to brine instead of the salt/sand mix applied to icy roads. Watershed-Based Implementation Funding from BWSR supports retrofitting highway department snowplow trucks with tanks and brine application equipment.* **Photo Credits: Cass County Highway Department**
Center: *Lower Trelipe Lake near Longville in Cass County is among the water bodies within the Leech Lake River watershed, where efforts are underway to protect lakes and rivers from chloride pollution.* **Photo Credit: Cass SWCD**

www.bwsr.state.mn.us

Public Road Authority progress is often a result of training, equipment modernization (brine) and more precise application, applying only where and when it's needed to achieve safety goals.

Given these challenges, how do we move forward?



This is a WICKED problem

- There is no alternative that doesn't have other tradeoffs in effectiveness, cost, scalability, or other environmental harm
- Conventional infrastructure solutions aren't applicable
- Restoration is currently not feasible
- Minnesotans hold strong attitudes, behaviors, beliefs, and perceptions around managing winter hazards, particularly around safety, risk, and level of service
- Every winter hazard event is different, and climate change may bring more challenging storms and freeze/thaw cycles
- There are gaps in knowledge and training
- Market conditions reward salt use more than salt efficiency
- There is a lack of incentives and controls beyond public property


Time for a Strategic Expansion

Clean Water Council Policy Committee

- Started in 2014
- Can't buy our way to clean water
- Policy to shift systems & accelerate progress
- Typically focuses on the "what" vs "how"

- Examples: Lead pipes, private drinking water well testing





Draft update: Chloride de-icer

- Comprehensive approach
  - Multiple pathways needed
  - No silver bullet
- Incentives and financial sustainability
- Research and remediation
- Standards and requirements
- Data and accountability
- Risk and liability
- Awareness and behavior change
- *An * means CWC has it as top priority*

Incentives and financial sustainability

1. Implement a granular salt fee for private applicators *
2. Sustain and enhance funding for the MPCA's Chloride Reduction Program

Continue to support and increase available funding for chloride reduction efforts



Research and remediation

3. Investigate feasible approaches for restoration and remediation *

4. Provide research funds to develop new tech, BMPs, or alternatives to chloride

Answer the hard questions and build a suite of options



Standards and requirements

5. Incorporate low salt design standards into building and site development *

6. Require Smart Salting for state contracts and facilities *

7. Establish an occupational licensure program for winter maintenance professionals *

8. Develop standardized labeling requirements for de-icing chemicals sold in Minnesota

9. Expand requirements for proper storage

Make it easier to do the right thing from the beginning



Data and accountability

10. Expand and strengthen chloride monitoring statewide

Better understand current conditions, trends



Risk and liability

11. Provide liability protection for certified applicators using best practices

Support those reducing use while protecting safety



Awareness and behavior change

12. Establish a statewide community-based social marketing campaign

(2.) Sustain and enhance funding for the MPCA's Chloride Reduction Program

Increase awareness and understanding



Where do you think we should focus efforts?

Go to

www.menti.com

Enter the following code to participate:

9484 4945




Clean Water Council's current top 5

Continue to support and increase available funding for chloride reduction efforts



1. Implement a granular salt fee for private applicators

- Creates a direct market incentive to:
  - reduce unnecessary salt use
  - encourage innovation and efficiency,
  - generate sustainable funding for:
    - Chloride reduction efforts
    - Research
    - Training
    - Remediation
- Public road authorities could be fee exempt
- Requires legislation

Answer the hard questions and build a suite of options



3. Investigate feasible approaches for restoration and remediation

- Source control is and should remain a primary strategy;
- **AND**, what do we do about those that are already or nearly impaired?
  - Minnesota lacks a practical strategy for addressing the growing inventory of waters impaired by chloride pollution.
  - Research is needed to identify feasible remediation technologies and long-term management approaches.

Make it easier to do the right thing from the beginning



5. Incorporate low salt design standards into building and site development

- Design with winter in mind to reduce maintenance headaches that create winter hazards and can drive chloride demand.
- Incremental approach, timeline driven by landowners. Biggest opportunity for developing areas.
- The American Society of Civil Engineers voted in September 2026 to move low salt design principles into a manual of practice. Cities and Watersheds are also piloting development standards.

Make it easier to do the right thing from the beginning



6. Require Smart Salting for state contracts and facilities

- The State of Minnesota should **lead by example** by requiring best practices and certified applicators for its winter maintenance activities at public facilities.

Make it easier to do the right thing from the beginning



7. Establish an occupational commercial licensure program for winter maintenance professionals

- Commercial winter maintenance professionals should meet standardized training and competency requirements because their work directly affects public safety and environmental health.
- State level licensure would require legislation.
- Licensure requirements could occur at a municipal level.

Support those reducing use while protecting safety



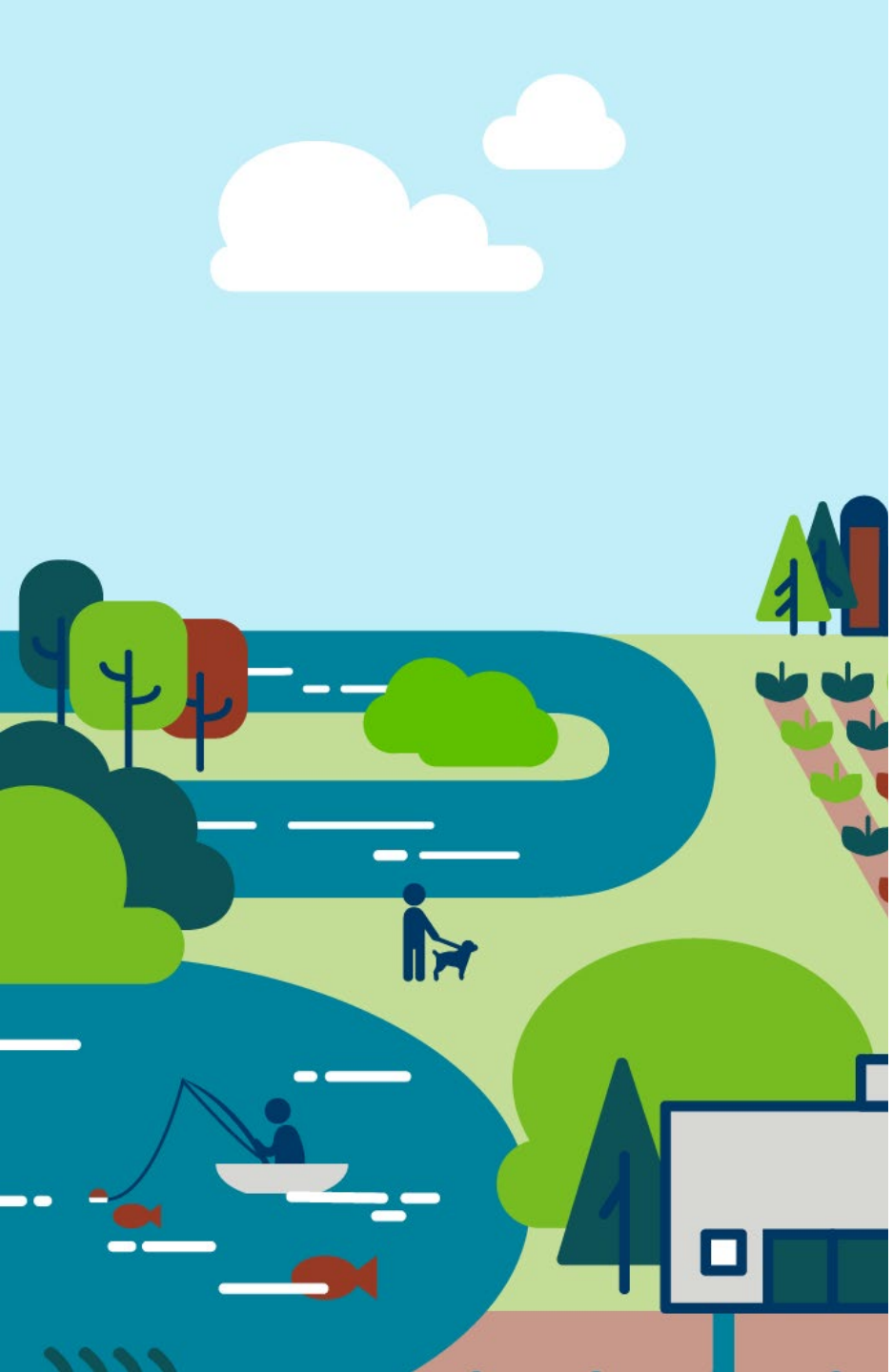
A note about limited liability legislation

- Despite several attempts over the last decade, common ground for liability language at the legislature has not been found.
- Conversation at the legislature is hung up on which negligence standard should apply; the conversation is no longer about pollution prevention.
- This is in limbo at this time. Let's shift our energy into something more productive for the time being.
- Occupational commercial licensure could be another path for addressing liability.



Final Menti results


EXTRA! EXTRA!
READ ALL ABOUT IT!
BREAKING NEWS!!!
FROM U.S., MEXICO



Headlines of success

- Small groups by policy action
- Worksheet:
  - What does the headline say in 10 years?
  - What barriers had to be overcome?
  - Who was involved?
  - What did they do?

- 20 min to discuss, followed by *brief* report outs of your headline and actions


Go to your tables!

Reducing Chloride Pollution from Winter De-icing Chemicals

Summarized Policy Statement

The Clean Water Council recommends that the State of Minnesota implement the following actions to reduce chloride pollution from winter de-icing chemicals (salts) in Minnesota's surface water and groundwater while protecting public safety.

Highest Priority Recommendations

While all recommendations are important and interconnected, the Clean Water Council identifies the following as especially critical near-term actions for the legislature to consider:

(1) Implement a granular salt fee for private applicators.

A granular salt fee would create a direct market incentive to reduce unnecessary salt use, encourage innovation and efficiency, and generate sustainable funding for chloride reduction efforts, research, training, and remediation.

(3) Investigate feasible approaches for restoration and remediation.

Minnesota currently lacks a practical strategy for addressing the growing inventory of waters impaired by chloride pollution. Research is needed to identify feasible remediation technologies and long-term management approaches.

(5) Incorporate low salt design standards into building and site development.

Many sites are unintentionally designed in ways that require excessive salt use. Updating development standards can reduce long-term winter maintenance needs while improving safety and reducing costs.

(6) Require Smart Salting for state contracts and facilities.

The State of Minnesota should lead by example by requiring best practices and certified applicators for its winter maintenance activities at public facilities.

(7) Establish an occupational licensure program for winter maintenance professionals.

Similar to Minnesota's pesticide applicator licensing program, winter maintenance professionals should meet standardized training and competency requirements because their work directly affects public safety and environmental health.

Full List of Recommendations

Incentives & Financial Sustainability

(1) Implement a granular salt fee for private applicators.

(2) Sustain and enhance funding for the MPCA's Chloride Reduction Program including the Smart Salting training and certification program. *Included here for the grant and technical assistance elements of the program*.

Research & Remediation

(3) Investigate feasible approaches for restoration and remediation.

(4) Provide research funds to develop new technology, best management practices, and alternatives to chloride-containing de-icing chemicals.

Standards & Requirements

(5) Incorporate low salt design standards into building and site development.

(6) Require Smart Salting for state contracts and facilities.

(7) Establish an occupational licensure program for winter maintenance professionals.

(8) Develop standardized labeling requirements for de-icing chemicals sold in Minnesota.

(9) Expand requirements for proper storage of de-icing chemicals.

Data & Accountability

(10) Expand and strengthen chloride monitoring statewide

Risk & Liability

(11) Provide liability protection for certified applicators using best practices.

Awareness & Behavior Change

(12) Establish a statewide community-based social marketing campaign.

(2) Sustain and enhance funding for the MPCA's Chloride Reduction Program including the Smart Salting training and certification program. *Included again here for the training program contribution to behavior change*.

These actions are further expanded under the "Recommendations" section.

Additional Considerations

Recommendations 7 (occupational licensure) and 11 (liability protection) are especially important because they address major barriers to behavior change in the winter maintenance industry. Many applicators continue to overapply salt due to liability concerns, inconsistent training standards, and lack of professionalization within the industry. Creating clear standards and protections can support safer and more sustainable practices statewide.

From 2016-2025 a limited liability bill was introduced at the Minnesota Legislature, modeled after a limited liability bill that passed in New Hampshire. Despite many attempts, common ground for the liability language has not been found over the ten-year life of the bill. In light of this, local governments have begun to explore the feasibility of local licensing requirements though a state-level program would ensure consistency and lessen the burden on local governments to deliver a program locally.

Recommendations 2 (MPCA Chloride Reduction Program funding) and 4 (research funding) also represent areas where the Clean Water Council can have particularly strong influence in the near term through funding recommendations and program support. Expanding research, technical assistance, and Smart Salting training capacity can deliver immediate and measurable reductions in chloride use while supporting broader long-term implementation of the Council's recommendations.

Problem Statement

Chloride pollution from the application of de-icing salt for winter maintenance of roads, parking lots, and sidewalks disrupts aquatic ecosystems, alters food webs, damages soil, damages infrastructure, and contaminates groundwater and drinking water. Many waterbodies in the state have elevated levels of chloride pollution, with trends continuing upward. Further, a study by the University of Minnesota and referenced in the Statewide Chloride Management Plan found that about 70% to 78% of salt applied in the Twin Cities for winter maintenance is either transported to groundwater or remains in the local lakes and wetlands.

Chloride is considered a “permanent” pollutant because it does not degrade over time through typical environmental processes. Additionally, there is no practical way to remove chloride once it enters a waterbody, so it accumulates over time. As the adage goes, “an ounce of prevention is worth a pound of cure,” making source control the most practical and cost-effective strategy. Addressing chloride pollution will require a broad range of knowledge building, behavior change, implementation activities, and policy measures. At the same time, a remediation pathway must be investigated to address the existing and growing inventory of waters impaired by excess chloride.

Winter de-icing salts are among the primary sources of chloride pollution in Minnesota waters. The Minnesota Statewide Chloride Management Plan addresses pollution caused by de-icing chemicals, fertilizers, and water softeners. The Clean Water Council has an independent policy statement related to reducing chloride pollution from water softening to address the Wastewater Treatment Plan (WWTP) pollutant stream.

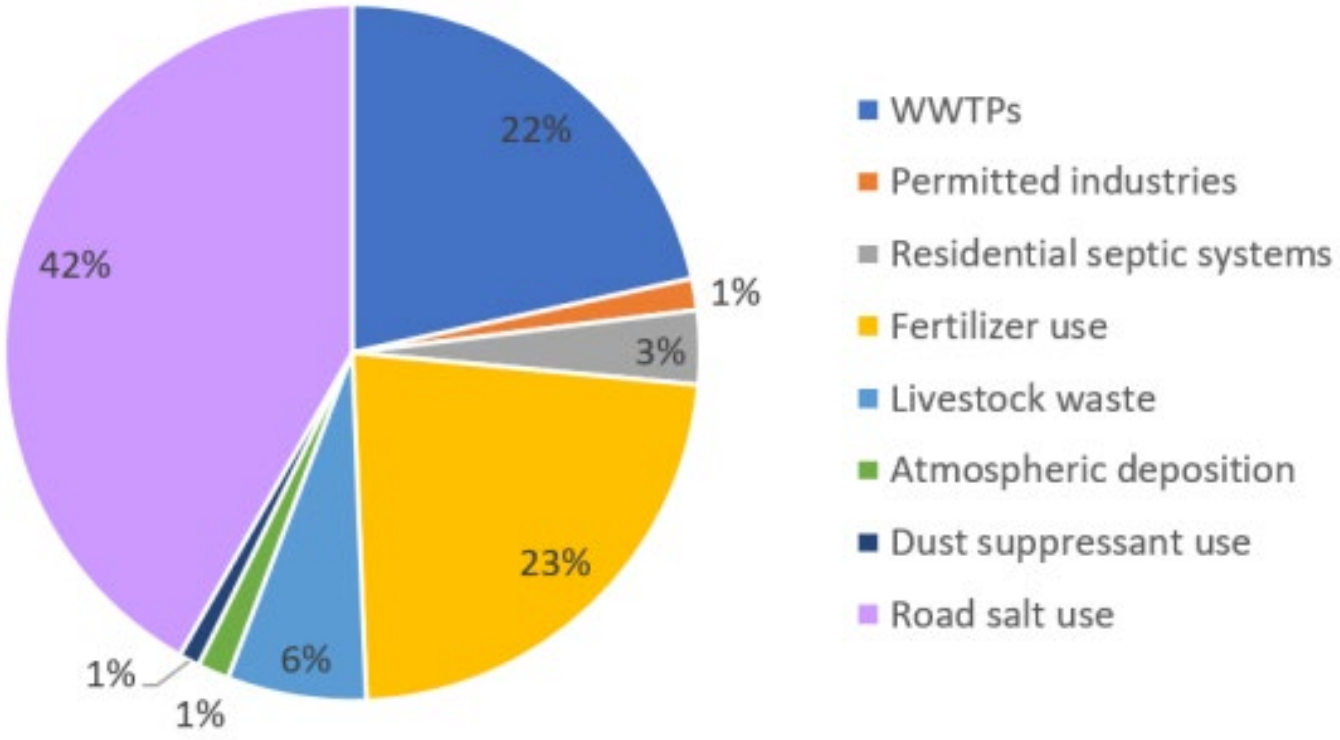


Figure 4: Fraction of annual chloride contributions from major point and nonpoint sources for State of Minnesota (Overbo et al. 2019)

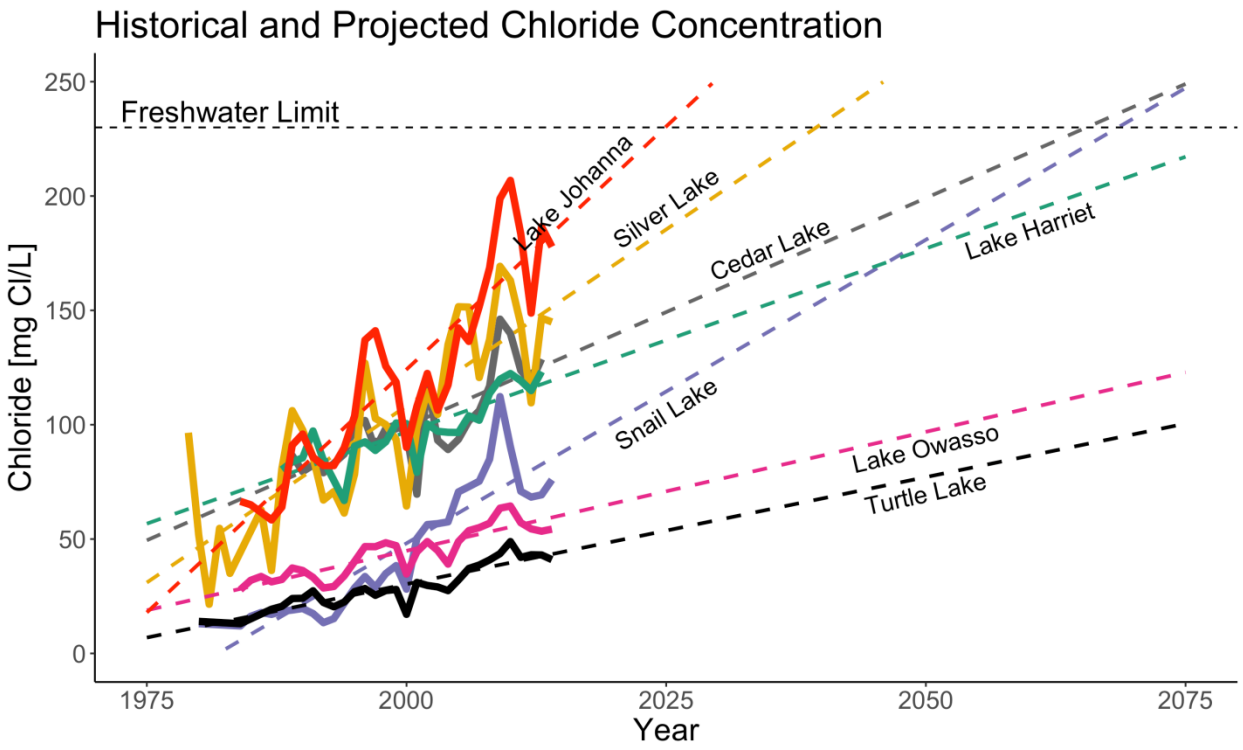
**Please note that Road salt use is actually all de-icing salt applied to roads, parking lots, sidewalks, and trails.*

Statewide, approximately 404,000 tons of de-icer is used annually. It takes just one teaspoon in 5 gallons of water to exceed the water quality standard and become toxic for freshwater fish and other aquatic life under long-term exposure. The de-icing salts applied to hard surfaces eventually wash off and/or infiltrate, contaminating nearby lakes, streams, wetlands, and groundwater.

One ton of salt costs more than its purchase price.

Cost to Buy	Cost to Society	Cost to Water Resources
$151/ton	$1,900-$4,600/ton	796,178 gallons/ton
Bulk road salt purchase price	Estimated infrastructure damage costs	Water permanently polluted
State Salt Purchase Report (2023-2024 avg.)	MPCA Smart Salting for Roads Manual	Based on 1 teaspoon polluting 5 gallons

The Metropolitan Council published a report (Regional Assessment of Chloride in Select Twin Cities Metro Streams (1999 – 2019) which revealed rising chloride levels in nearly all streams. While the metro has been most heavily studied, chloride pollution is not a metro-only problem. The Minnesota Pollution Control Agency published its Milestones report (Water Quality Trends for Minnesota Rivers and Streams at Milestone Sites) in 2014 which identified significant, largely statewide increases in chloride concentrations. Chloride from de-icing salts has been attributed in part to the impaired waters designations for chloride impaired waters in St Louis, Rice, Jackson, Meeker, Le Sueur, Douglas, Lyon, and Kittson counties. A study of chloride impacts to groundwater predicts groundwater in multiple Twin Cities aquifers is likely to reach chronic chloride exposure thresholds by mid-century due to de-icing salt (McDaris, John R et al. “Documentation and Prediction of Increasing Groundwater Chloride in the Twin Cities, Minnesota.” Ground water vol. 60,6 (2022): 837-850. doi:10.1111/gwat.13227). As of 2026, there are 68 impairments statewide for chloride, and 14 were added in just the last two years.



Graph credit: Freshwater Society

Excess chloride contributes to a phenomenon often referred to as freshwater salinization syndrome, mobilizing heavy metals and creating a chemical cocktail (Kaushal et al., 2022). It leads to direct toxicity and biodiversity loss, macroinvertebrate sensitivity and reduced reproductive success, amphibian mortality, reduced zooplankton populations shifting phytoplankton communities from green algae toward cyanobacteria, density stratification and anoxic conditions which can trigger phosphorus release from sediments.

There is currently no alternative to de-icing salt that doesn't have other tradeoffs in effectiveness, cost, scalability, or other environmental harm. While a variety of products are marketed as safer or more sustainable alternatives, most still contain chloride compounds, perform inconsistently in extreme winter conditions, or introduce their own environmental concerns. Organic additives such as beet juice are commonly blended with salt brine to improve performance at lower temperature and help reduce bounce and scatter, which can lower overall salt use. However, beet juice mixtures can increase biological oxygen demand in nearby waters, contribute nutrients and organic matter to aquatic systems, create odors, and add cost and storage complexity for winter maintenance operators. Other alternatives, such as calcium magnesium acetate or potassium acetate, may reduce chloride impacts but are often significantly more expensive and impractical for widespread use on roads, parking lots, and sidewalks. As a result, the most effective current strategy is not complete replacement of salt, but reducing unnecessary application through smarter winter maintenance practices and targeted use.

In recent years, calls for more enhanced and comprehensive approaches to reducing chloride pollution have gained momentum. The Environmental Quality Board (EQB) identified chloride pollution as an emerging issue in the 2015 Water Policy Report. In September 2025, the EQB published the Groundwater Policy Report and in the chloride section noted gaps and opportunities, specifically, "Implementation of policies that support chloride reduction are needed to move beyond voluntary chloride reduction actions". The Upper Mississippi River Basin Association issued a resolution in 2022 calling for collaboration and progress on chloride pollution. Minnesota Watersheds adopted a resolution in 2024 calling for a regulatory approach to addressing chloride pollution. The Minnesota Cities Stormwater Coalition issued a position statement in 2025 expressing urgency and offering ideas for a comprehensive approach to meet the challenge.

Audience and Purpose

The Clean Water Council has a statutory role to foster coordination and cooperation as part of the Clean Water Legacy Act. These recommendations are intended to inform legislative and regulatory decision-making, guide state and local program development, and support the adoption of best practices across public and private sectors.

This policy statement is intended for the Minnesota Legislature, the Minnesota Pollution Control Agency, other state agencies, and local governments responsible for water quality protection, transportation systems, and land use regulation. It is also directed toward private sector parties, including winter maintenance professionals, commercial applicators, property managers, developers, and de-icing product manufacturers whose decisions influence use across Minnesota. It applies statewide, with particular relevance to developed areas where impervious surfaces and winter maintenance activities are concentrated. While awareness has been increasing, continued progress depends on deepening that awareness across all groups (general public, decision-makers, practitioners, and industry leaders). At the same time, awareness alone is not sufficient to drive the scale of change needed. Progress will require translating awareness into more comprehensive and coordinated action.

The purpose of this document is to recommend a suite of actions to reduce chloride pollution from de-icing chemicals while maintaining public safety and effective winter maintenance. Further, this updated policy statement reflects an inflection point in chloride pollution management in Minnesota. Early efforts have focused on improving operational efficiency and advancing voluntary best practices, yielding measurable reductions in de-icing chemical use, particularly among public road authorities. However, chloride concentrations continue to rise in many waterbodies, indicating that additional progress will require a strategic shift beyond operational efficiency improvements in the public sector alone. A more comprehensive approach that integrates standards, incentives, research, accountability, and behavior change is necessary to make meaningful progress in source control and restoration of impaired waters.

Recommendations

1. **Implement a Granular Salt Fee for Private Applicators.** To curb overuse, the costs of infrastructure and environmental damage should be partially shifted to those who overapply salt. A granular salt fee, modeled after the agricultural fertilizer fee, would incentivize more judicious use while generating revenue for and supporting financial sustainability of chloride reduction efforts. Funds could be reinvested in training and certification programs, research and innovation, implementation of best practices, and equipment and facilities upgrades. A fee structure would also enable improved tracking of salt use statewide, supporting benchmarking and accountability.

2. **Sustain and Enhance the MPCA Chloride Reduction Program including the Smart Salting Training Certification program**. The MPCA Smart Salting training and certification program supports a range of audiences involved in de-icing decisions and operations, from private and public winter maintenance professionals who maintain roads, rural roads, parking lots, and sidewalks, to MnDOT, property managers, and community leaders. The Statewide Chloride Management Plan identifies the Smart Salting training program as the top implementation strategy to reduce salt overuse in the winter. Case studies have shown that participating organizations have been able to reduce salt use by 30% to 70%, without compromising safety. Further, the program provides low-interest loans and grants for equipment and retrofit projects.

   The program has been exclusively funded by Clean Water Funds since January 2021. The State should sustain and enhance the MPCA's **Chloride Reduction Program** to support the development and maintenance of tools, resources, policies, trainings and assistance programs to assist communities, private sector applicators, and property managers in their effort to reduce chloride pollution and at least half of the chloride reduction budget should be dedicated to adoption of best practices to reduce chloride from de-icing chemicals.

   Lastly, growing the chloride reduction program in Minnesota is critical as adoption of best practices and other policies in this document could accelerate progress and would put more demand on the training and cost share programs.

3. **Investigate Feasible Approaches for Restoration and Remediation.** While source control is and should remain a top priority, it is prudent to advance a solution to remediate surface water that is or is imminently impaired by chloride. The State should lead a feasibility effort to evaluate remediation options and assess engineering feasibility, cost and scalability, waste management challenges and opportunities, risks, tradeoffs, energy demand, ecosystem impacts, and policy barriers. The goal is to determine if, where, and how chloride remediation can be implemented effectively.

   Case Study: Leveraging Watershed Based Implementation Funding, the Bassett Creek Watershed Management Commission and City of Plymouth studied options for delisting Parker's Lake. The study analyzed two primary alternatives to reduce chloride in Parkers Lake: 1) pumping lake bottom water directly to the sanitary sewer, and 2) pumping lake bottom water, treating it, and returning treated water to the lake. Two different treatment systems were evaluated for this alternative – a small-scale reverse osmosis system (RO) and an ion exchange system (IX). Ultimately, the decentralized treatment systems were cost prohibitive. More information on the study is available at Parkers_Lake_Chloride_Dilution_Extraction_Tech_Memo_final.pdf

4. **Fund Research and Innovation**. The 2016 Twin Cities Metro Area (TCMA) Chloride Management Plan identified a broad range of research needs focused on reducing chloride pollution while maintaining public safety. Key research priorities including improving winter maintenance practices including in technology and equipment; evaluating alternative de-icing materials and additives; understanding and tracking chloride fate and transport; evaluating site design and infrastructure approaches; and understanding behavioral, institutional, and policy drivers that influence de-icer application decisions. Lastly, the plan recognizes a need to explore long-term management and potential mitigation strategies for chloride-impacted waters, given that chloride does not break down and accumulates in the environment.

   The University of Minnesota's Stormwater Research Program provides an existing framework and strong institutional partner for advancing applied winter maintenance research to support the development and evaluation of new technologies, decision-support tools, and other best management practices that reduce

chloride use while maintaining public safety. Expanded research capacity would also help test emerging de-icing products and operational approaches, accelerating the adoption of practical and scalable solutions.

The Forever Green Initiative could serve as a model framework for developing alternatives to chloride-based de-icing chemicals. Innovation in this sector is essential to develop a cost-effective alternative that can perform and is less harmful to the environment.

5. **Incorporate Low Salt Design Standards.** Infrastructure should be designed with winter maintenance in mind. Poor designs with inadequate snow storage, inefficient drainage, and snow removal obstacles drive salt overuse. Design improvements can reduce long term maintenance costs, improve safety, and minimize environmental impacts. The state should incorporate established low salt design principles into building and site development standards, state-funded project requirements, and sustainability frameworks such as the Minnesota B3 (Buildings, Benchmarks, and Beyond) Guidelines.

6. **Require Smart Salting for State Contracts and Facilities.** Require Smart Salting certification, use of best practices, and proper storage of de-icing chemicals for all winter maintenance conducted under state contracts and at state-owned or state-managed facilities. Contract specifications should clearly define performance expectations, documentation requirements, and compliance measures, including calibration of equipment, application rate tracking, and recordkeeping. State agencies should incorporate accountability mechanisms such as incentives, audits, or penalties. By leading through its own operations and procurement standards, the State can set a strong example and accelerate adoption across the private sector.

   A model contract for responsible snow and ice management that embraces best practices to minimize environmental impacts from de-icing chemicals while also maintaining safety and addressing liability risk allocation is available on the MPCA's Chloride Resources website.

   The February 2025 State Salt Purchase Report to the Minnesota Legislature included reporting from seven agencies that own property (MnDOT and leased properties excluded, with about half of agencies not reporting). The average annual purchase for 2023 and 2024 was 1,330 tons. If all the de-icing salt purchased were applied, it could permanently pollute more than a billion gallons and cause $2M to $22M in infrastructure damages annually.

7. **Establish an Occupational Licensure Program.** Establish a statewide occupational licensure program for winter maintenance professionals, or authorize counties to do so, to ensure consistent training and accountability. Licensure should include completion of an approved training program (such as the MPCA's Smart Salting certification program) and periodic continuing education. This approach would professionalize the industry, reduce overuse, and provide assurance to property owners and the public that winter maintenance services are being delivered safely and responsibly.

8. **Develop Standardized Labeling Requirements**. Develop standardized labeling requirements for de-icing chemicals sold in Minnesota to address misleading or incomplete information. De-icers can be labeled as "eco-friendly" or as an alternative to salt, but they may pose other problems for water quality. The MPCA should convene interested parties from a variety of sectors and lead a process to develop recommendations for new labeling requirements on packages of de-icing chemicals sold in Minnesota. Some key areas to establish requirements for include, but would not be limited to:
   - Ingredient disclosure
   - Verified environmental and safety claims
   - Realistic performance information
   - Clear application guidance

   Improved labeling would support informed decision-making and reduce unintended environmental harm.

9. **Expand Proper Storage Requirements**. Proper storage of de-icing chemicals is a cost-effective and common-

sense measure to reduce pollution.

Proper storage is required in communities regulated under the MPCA's Municipal Separate Storm Sewer System (MS4) program; the permit requires local controls for proper bulk storage of de-icing chemicals at commercial, institutional, and non-NPDES permitted industrial facilities. The MPCA's Chloride Reduction Model Ordinance Language document provides guidance for creating and implementing an ordinance.

10. **Expand Strategic Chloride Monitoring.** Incorporate strategic chloride monitoring into the Minnesota Pollution Control Agency's surface water and groundwater monitoring programs to better track statewide conditions and identify trends. This should include strategic enhancements to the MPCA's ambient groundwater monitoring network and the Watershed Pollutant Load Monitoring Network to sufficiently capture patterns in high-risk areas and across the state. Enhanced strategic monitoring and reporting of conditions and trends will support early detection of problems in vulnerable waterbodies, evaluate the effectiveness of chloride reduction strategies, and provide the data needed to guide policy, prioritize investments, and engage with interested parties on addressing chloride pollution.

11. **Liability Protection**. Provide liability protection to certified private salt applicators against slip and fall lawsuits who follow established best practices and document their work. The primary goal is to reduce overapplication driven by fear of litigation, encourage adoption of Smart Salting practices, and maintain safety while improving environmental outcomes.

12. **Establish a Statewide Community-Based Social Marketing Campaign.** A coordinated, statewide community-based social marketing campaign is needed to increase awareness and drive behavior change. The MPCA should lead a process to establish a baseline of the public's current knowledge and attitudes, identify gaps, opportunities and roles among interested parties (MPCA's Chloride Reduction Program, Tribal governments, cities, counties, academic institutions, watersheds, non-profits, other state agencies, etc.), support crafting and distributing coordinated messages, and evaluate progress. State leadership can amplify and align existing local efforts. Additionally, the MPCA should further support enhancing chloride pollution awareness into existing programs such as the successful We Are Water program, Eco Experience at the Minnesota State Fair, and supporting the regional Winter Salt Week campaign.

Conclusion

Chloride pollution from de-icing chemicals is a growing threat to Minnesota's water resources. Because chloride accumulates and cannot be feasibly removed, proactive and coordinated action is essential. This policy framework outlines a comprehensive approach that combines incentives, standards, knowledge building, monitoring, research, and accountability. Together, these actions can significantly reduce chloride pollution while maintaining public safety, protecting infrastructure, and preserving Minnesota's freshwater resources for future generations.

Welcome to The Minnesota Star Tribune! **Meet the new Strib**

TWIN CITIES SUBURBS

Minnesota Appeals Court clarifies when businesses are responsible for ice in parking lot

An Elk River man slipped on ice and broke his ankle in the parking lot of a Menards, raising the question of how much safety businesses need to provide Minnesotans in winter.

By Jeff Day
The Minnesota Star Tribune

SEPTEMBER 9, 2024 AT 9:18PM



A traveler fights through snow and ice to get to the Government Center Plaza station as the snow picked up in downtown Minneapolis on March 4. (The Minnesota Star Tribune)

As Minnesotans go about their day in the treacherous, baby-step conditions of winter, who bears the burden of responsibility when someone gets injured slipping on ice in the parking lot of a business?

The Minnesota Court of Appeals issued a ruling last week that provides some clarity. It ultimately boils down to this: Businesses have a responsibility to reasonably clear snow and ice from their parking lots. Beyond that, it's up to the citizens of Minnesota to tread carefully.

It was a moderate winter morning on Jan. 4, 2021, when Travis J. Maahs parked his truck in a remote area of the Menards' parking lot in Elk River.

Still, it was Minnesota in winter, frost had accumulated and previous accumulations of snow and ice lingered out of plain sight. Maahs, who was 49 at the time, went inside to shop. He owns his own business, Maahs' Floor Covering, so he was familiar with the store. His truck was large enough that he needed to park where there was some room to operate. He walked back to his truck pushing a rolling cart to carry his supplies. As he loaded plywood into the back, Maahs slipped on a 12-inch patch of "black ice."

He shattered his ankle so badly he needed surgery. A little over a year later, he sued Menards for damages over his injuries, his past and future medical expenses, wages lost and his mental and emotional pain and suffering.

His lawsuit was filed in Sherburne County and Maahs asked for a judgment in excess of $50,000.

Maahs argued that Menards was negligent for a few reasons – they had failed to inspect the parking lot, had failed to treat the ice and didn't warn customers about the ice. Menards asked for a summary judgment, arguing that Maahs couldn't prove the ice was there for a significant enough amount of time for employees to notice and treat it, and that ice is a completely normal condition of Minnesota winters and, as a Minnesotan, Maahs should have been cautious while walking.

The Sherburne County court sided with Menards. Maahs appealed.

The Court of Appeals was asked to consider what "duty of reasonable care" Menards owed their customers.

Maahs' lawyer, David Wandling, deposed several Menards employees and learned how they dealt with snow and ice removal.

Menards had contracted with Minnesota Lawn Care to remove ice and plow the parking lot. The agreement called for the company to plow the parking lot and prove "one (1) de-icing application" whenever an inch or more of snow fell. Treatment for any amount under one inch needed to be approved by the Menards general manager.

The general manager of the store had walked the parking lot on the morning Maahs fell. The manager didn't notice any slippery conditions and paid no mind to the frost on the ground. An employee who came out to help Maahs after the injury also said he only saw frost in the area and hadn't treated the place where Maahs fell because he hadn't noticed the ice until after the accident.

Other employees said the store typically treated high-traffic walking areas, including the entrance and exit.

While employees weren't required to treat the parking lot, they still regularly treated handicapped parking spots, a rental truck parking spot, the areas where shopping carts are left and busy walking paths to and from the parking lot. They also said if someone alerted them to a dangerous area in the parking lot, they treated it.

Still, there was no company policy or training regarding ice safety or removal, and safety protocols in the parking lot were based on observation.

Maahs argued that no matter what observational work the company did, "it's undisputed that Menards did nothing in terms of inspecting the property," and that lack of care led to his injury.

The Appeals Court rejected that argument, in a nonprecedential opinion written by Judge Renee Worke, pointing to past cases in Minnesota that focused on negligence and duty to care.

Judicial precedent in Minnesota showed a business needs to protect customers from "being injured by conditions on the property that represent foreseeable risk of injury" but businesses are not "insurers of safety." Another key element for duty to care comes from whether the business created the dangerous condition that led to injury.

The court found Menards had no knowledge of the ice until Maahs fell and they had not created the icy conditions. They also found that Menards took care of hazardous conditions in the parking lot once they knew about them and no one was aware of the ice until after the accident.

And in a footnote, the court added this: "The evidence also shows that the incident occurred on a winter morning in Minnesota. Maahs was a life-long Minnesota resident. It is expected that ice and frost will be on a surface on a winter morning in Minnesota."