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Solutions to Address Chloride and Other Salty Parameters

Presentation Overview

- Salty Water Problem Overview
- Background on chloride and class 3 & 4 salty parameters
- Summary of regulatory tools available
- MPCA chloride permitting strategy (variances/compliance schedules)
- So you have your ASAP letter



Disclaimer

- Presentation intended to provide general information—not intended as legal advice
- Does not establish attorney-client relationship
- Each individual permitting situation is different and each permittees interests are different



Why are we here?

- Recent data demonstrates that chloride and other salts are increasing in MN's lakes and rivers
- Primary sources are:
 - Road salt and stormwater
 - Home water softeners
 - WWTPs
 - Hard source/ground water



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MPCA Required to Take Action

- MPCA has water quality standards for chloride and other salty parameters (class 3 & 4)
- MPCA is required by law to determine if WWTPs contribute to violations of the chloride or salty parameter standards and if so, put limits in permits
- MPCA anticipates that more than 100 cities need permit limits for chloride or other salty parameters based on current data



Most cities impacted have a population of 5,000 or less:

Minnesota communities that may need chloride reduction in wastewater

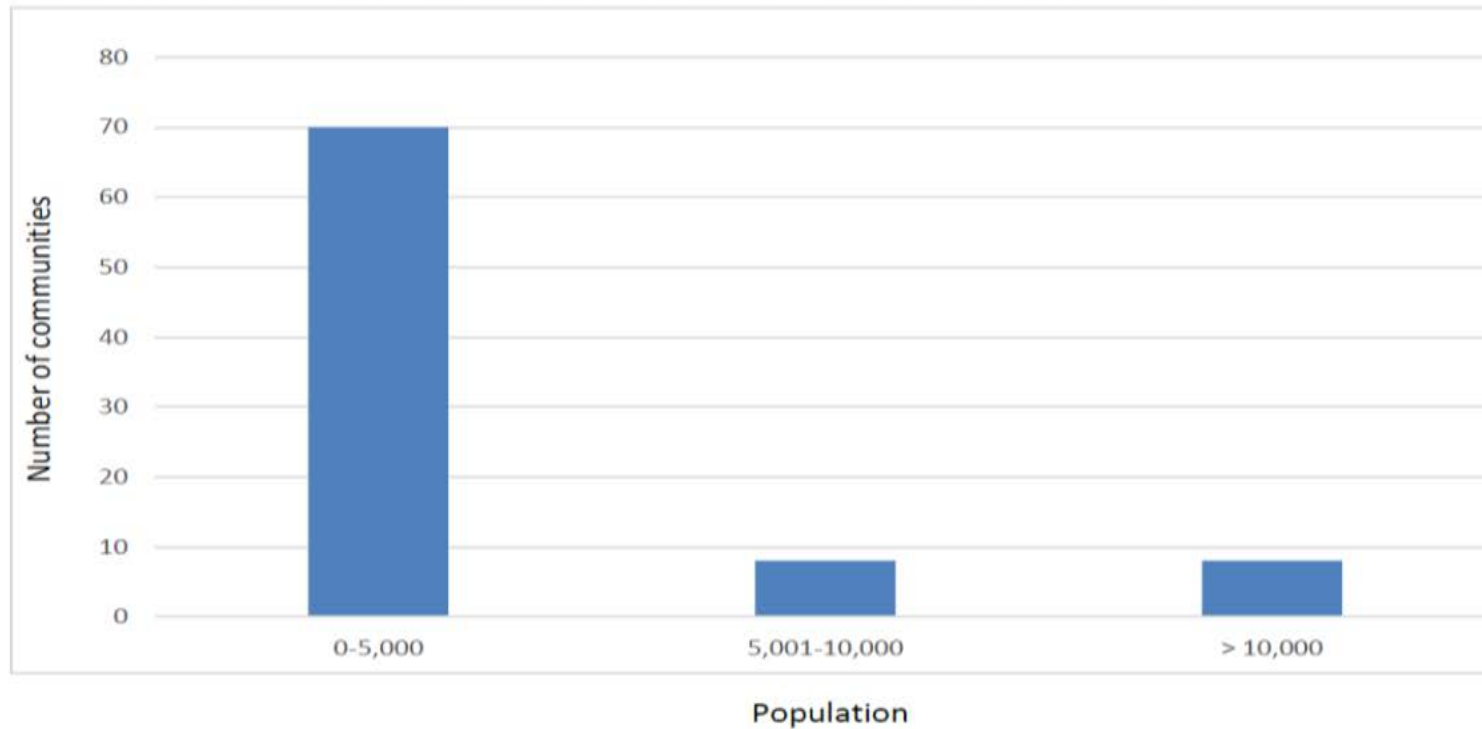


Figure 2. Number of Minnesota municipalities with reasonable potential for exceeding the chloride standard in wastewater.

(Credit MPCA)



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No Feasible Solution at WWTP

- Most WWTP's are not designed to treat for chloride/salty parameters—MPCA has determined **treatment at WWTP is infeasible**
- MPCA determined only **potentially** feasible options are:
 - Installation of high efficiency water softeners
 - Centralized lime softening at WTP and remove softeners
 - (MPCA: cost prohibitive—most cities eligible for variance)
 - Centralized RO softening and remove softeners
 - (MPCA: cost prohibitive—most cities eligible for variance)



Significant Cost—Long term Impacts

- Projected costs of compliance for individual cities via centralized water softening--\$millions to \$10's of millions in capital costs
- Significant operation and maintenance costs
- Major potential statewide impact on infrastructure spending (\$100's of millions +)
- Limits in permits will have long-lasting impacts for cities with uncertain long-term costs



Capital Costs of Lime Softening

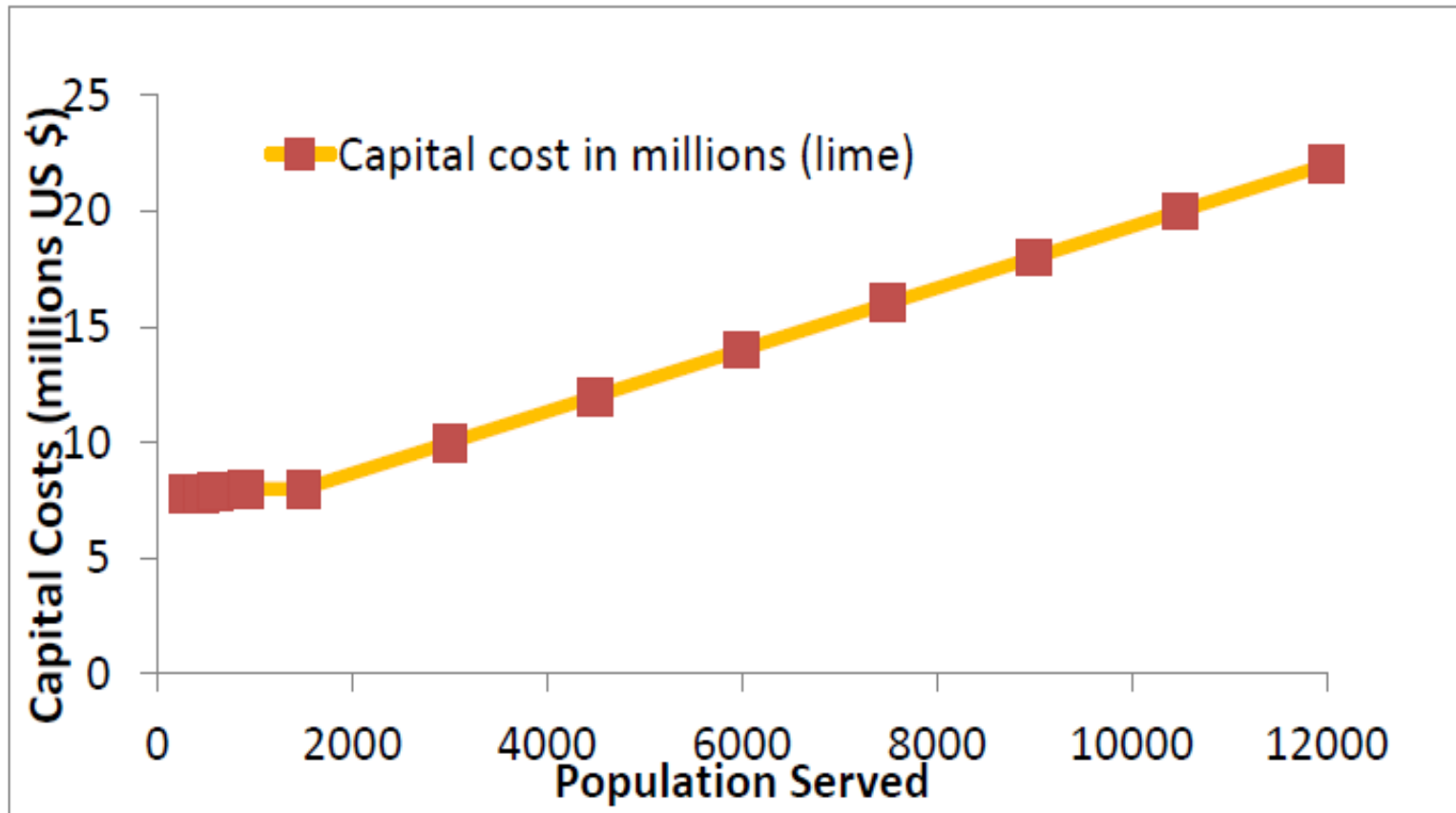


Figure 4. New lime softening drinking water plant capital costs by population size.

(Credit MPCA)

Capital Costs of RO softening

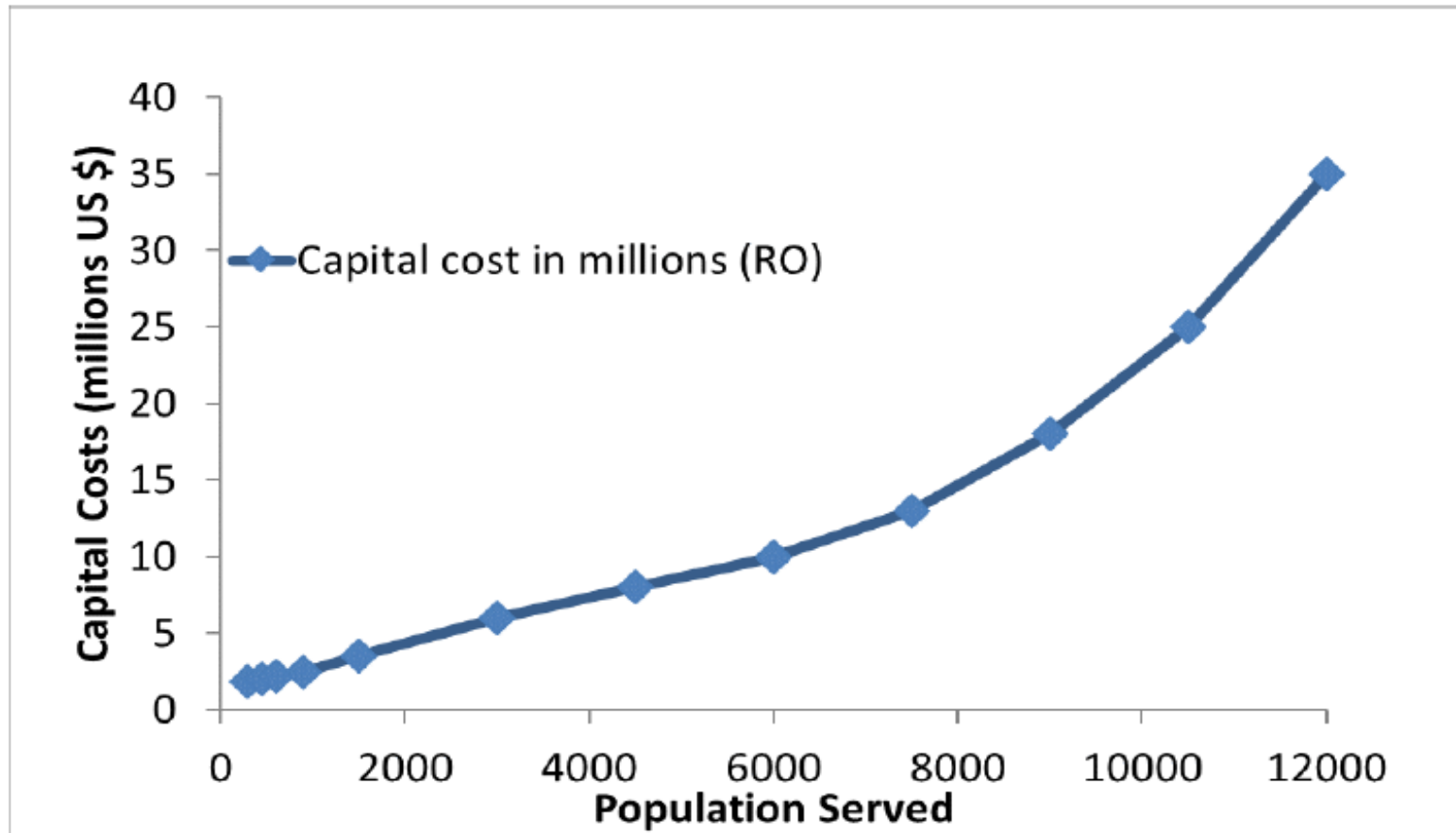


Figure 9. New RO softening drinking water plant capital costs by population size.

(Credit MPCA)



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Background on Chloride Standard



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Chloride Water Quality Standard

- Purpose is protect aquatic life
- Too much salt can be toxic to:
 - Fish
 - Mussels
 - Mayflies and other aquatic organisms in food chain

Standard:

- chronic 4-day average of 230 mg/L
- acute 1-day average of 860 mg/L



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Salting your fish after you catch it



= #delicious



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Salting your fish (its food and habitat) before you catch it



= #SAD



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Alternative Standard?

Do we have the right standard?

- Some debate, but probably pretty close
- If updated it could become more restrictive
- Standard not likely to change

MESERB Position: Unless significant scientific evidence comes to light, we will focus on implementation issues



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Chloride Standard Implementation

- Chloride standard applied **at low flow (7Q10) per state rule**
- **7Q10 is the lowest 7-day average flow** that occurs on average once every 10 years
- **MESERB agrees this is appropriate**
 - Necessary to protect aquatic life



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The Q about 7Q10?

- MPCAs rely on the 7Q10 developed for your facility/stream to:
 - Determine if you need limits (RP analysis)
 - To calculate limits
- Check to ensure 7Q10 and RP analysis are correct
- MPCAs will provide back-up data on both the 7Q10 and RP analysis if you have questions



Class 3 & 4 Salty Parameter Standards

Not aquatic life standards:

- Hardness: industrial use (3C)
- TDS: ag/irrigation use (4A)
- Bicarbonates: ag/irrigation use (4A)
- Spec. conductance: ag/irrigation use (4A)

Purpose or environmental benefit is critically different than chloride



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Use protected = Agricultural/Industrial



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Salt on potato chips



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**= #delicious
#meonSunday**



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Too much salt on potato crops



= #mrpotatodead

Concerns re Standards

- Most of state's waters are protected by class 3 & 4 standards—based on assumption via regulation not site-specific analysis
- For some WWTPs there is no **existing** agricultural/industrial use that exists or needs downstream protection
- MPCA acknowledges standards are outdated



Concerns re Standards

MPCA has initiated rulemaking that will change standards:

- **Hardness (class 3C)**
 - Change to narrative standard
 - Only applies where MN DNR water permit exists
- **TDS, Spec. Condt., Bicarb (class 4 A)**
 - No longer applicable
- **Salinity (class 4B)**
 - Numeric standard applicable state-wide



Implementation Concerns

MPCA applies the standard at 7Q10—
required by state rule

MESERB position: state rule in error

- 7Q10 (drought flow) **not appropriate/necessary** to protect agricultural/industrial uses
 - Protection of crops/irrigation is long-term exposure concern—not short-term acute impacts in drought conditions
- MPCA's use of max concentration to evaluate RP not appropriate/necessary



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Summary of Concerns re Chloride/Salty Parameters

Chloride

- MPCA required to enforce chloride standard
- Major costs for WTP infrastructure
- Limited options for compliance

Salty parameters

- Standards outdated
- In some cases limits not necessary to protect **existing** uses
- MPCA imposing limits using 7Q10 concerns with existing law
- MPCA performing RP analysis using max concentration to evaluate



General Tools to Address Permit Limits



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General tools to address permit limits

- Keep limit out of permit
 - If significant error or major concern exists
 - Early engagement/credible analysis necessary
 - Difficult if MPCA does not agree (contested case/appeal)
- Immediate compliance (if feasible)
- Extended Compliance Schedule (ASAP)
 - Requires ASAP compliance (up to 20 years)
 - Time to evaluate & develop solution
 - Time to build/fund infrastructure upgrades
 - Requires enforceable set of actions to make progress



General tools to address permit limits

- **Variations**
 - Delay compliance for period of time (renewable)
 - Must be re-justified every five years
 - MPCA/EPA in discussion over variance term
 - Required MPCA/EPA approval
 - Requires enforceable steps to make progress toward final compliance
- **Site-specific standard**
 - Develop standard based on site-specific data
 - Requires MPCA/EPA approval
 - Significant technical analysis needed



General tools to address permit limits

- Petition to change/remove use
 - Assess existing and potential uses
 - Requires MPCA/EPA approval
 - State rule requires change through rulemaking
 - Class 3 & 4 standards do not require a UAA under federal law (non-CWA Section 101(a) uses)



MPCA's chloride permitting strategy

- Developed by a Chloride work group of municipal representatives (MESERB members included) working with MPCA
- Goal: make environmental progress and address economic constraints
- Adopted by MPCA and memorialized by Commissioner through official memorandum



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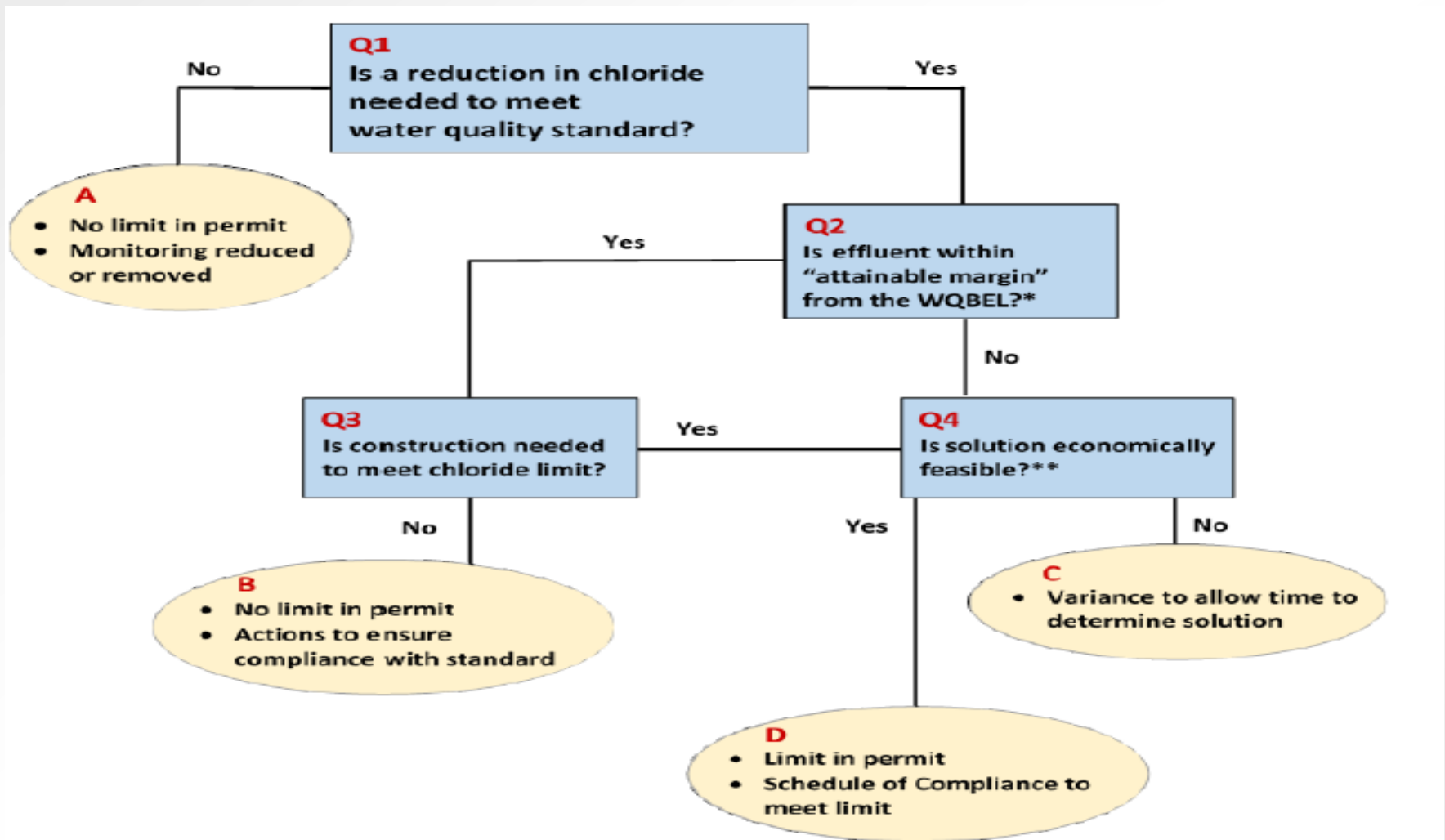
MPCA's chloride permitting strategy

3 general options:

- (1) No limits—if no RP or discharge w/n attainable margin
- (2) Limits with 5 year **variances** (renewable)
- (3) Limits with **extended compliance schedule** (up to 20 years)
 - ✓ **Linkage**: chloride limit—no salty parameter limits—commitment to evaluate lime softening



MPCA's chloride permitting strategy



(credit MPCA)



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No limits (outcome A-B)

- **If no RP**, no limits and monitoring reduced or eliminated
- If RP exists, but can be eliminated through non-construction chloride reduction strategies—no limit—take required actions



Variations (Outcome C)

- If RP exists, but central softening (lime or RO) **not economically feasible**—variance
- Substantial and widespread economic and social impacts
- MPCA has preliminary screening tool to assess preliminary eligibility



Variations (Outcome C)

- Variance term unlimited—must be reevaluated every five years
- Permittees will be required to comply with interim limits
- Receive schedule of compliance activities
- MPCA waives fee for application



Extended Compliance Schedules (Outcome D)

- Up to 20 years compliance schedule if community plan to achieve compliance through central softening or other means
- Receive interim and final limits
- Management plans and reporting requirements
- Compliance plan evaluate compliance
- Option to pursue variance at end if eligible



Linkage = limit for Chloride no limits for other salty parameter

- Available if City has RP for chloride and other salty parameters depending upon site-specific water quality data
- City commits to evaluate centralized lime softening and removing homes softening at drinking water facility



Linkage continued

Positive: keeps salty parameter (class 3 & 4) out of permit and protects aquatic life

Concerns:

- Commits City to **evaluate** lime softening (generally more expensive than RO) to comply with class 3 & 4 parameters that may or may not be necessary in the future
- Does commitment to evaluate translate to commitment to perform?
 - Confirm with MPCA before agreeing



MPCA strategy summary

- MPCA strategy (variances/compliance schedules) will reduce chloride
- Minimize short-term costs (consultants)
- Delay/minimize capital/O&M costs
- Less administrative burden (to cities and MPCA)
- In many cases, likely the best option



Other reasonable options for chloride

Assuming 7Q10 and RP analysis are solid:

- Site-specific standard
- Petition for change of use



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Other options for Salty Parameters

- Keep limit out of permit (linkage eligible?)
- Site-specific standard
- Petition for change of use
- Re-opener language in permit?



So you have your ASAP letter

If you have RP for chloride only

- ✓ Evaluate RP and 7Q10
- ✓ MPCA permitting (variance/compliance schedule) strategy generally sound, but evaluate all options & make informed choice



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So you have your ASAP letter

If you have RP for chloride and salty parameters:

- ✓ Evaluate RP and 7Q10
- ✓ Linkage eligible? If so, evaluate carefully keeping salty parameter limits out of permit ideal
- ✓ If not linkage eligible . . . work with MPCA and other cities to develop solution



Questions?

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Thank you

Thank you for your participation

Thank you Hutchinson for hosting us

Have a safe trip home