

# The triple bottom- line of winter salt

Presented to: Partners in Project Green

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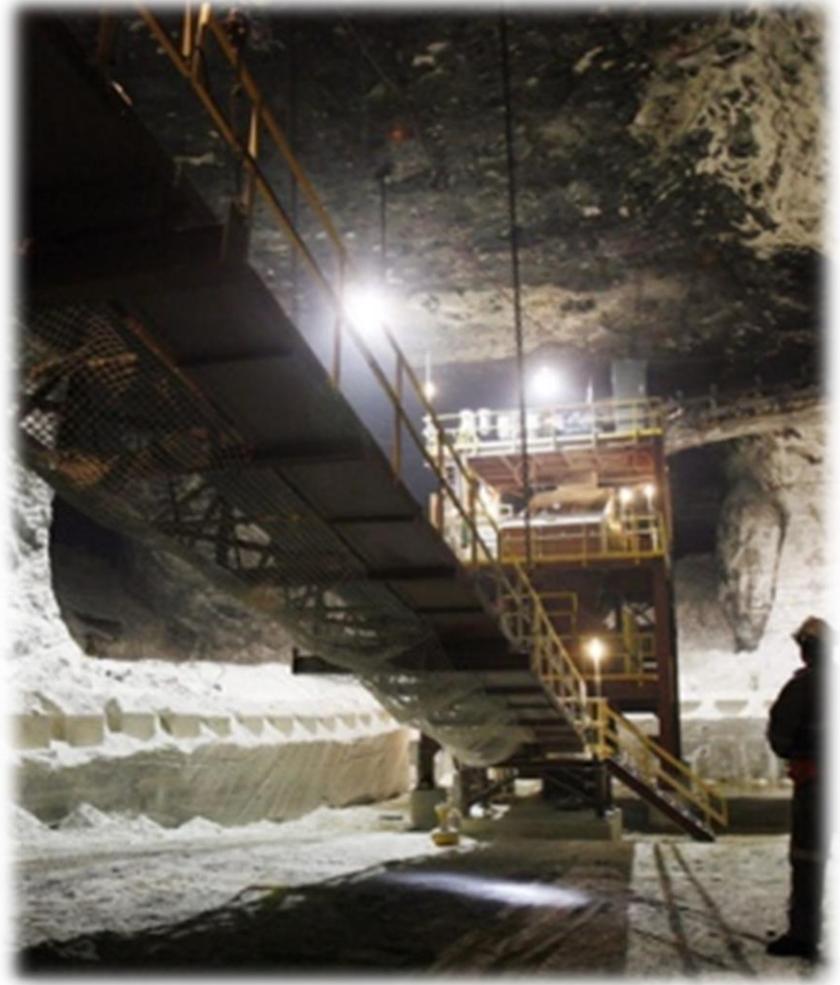
**Lake Simcoe Region**  
conservation authority



Member of Conservation Ontario

# What is winter salt?

- A cheap and effective way to protect public safety in winter
- Most commonly used is Sodium Chloride (NaCl)
- Estimated 5 million tonnes used on roads in Canada

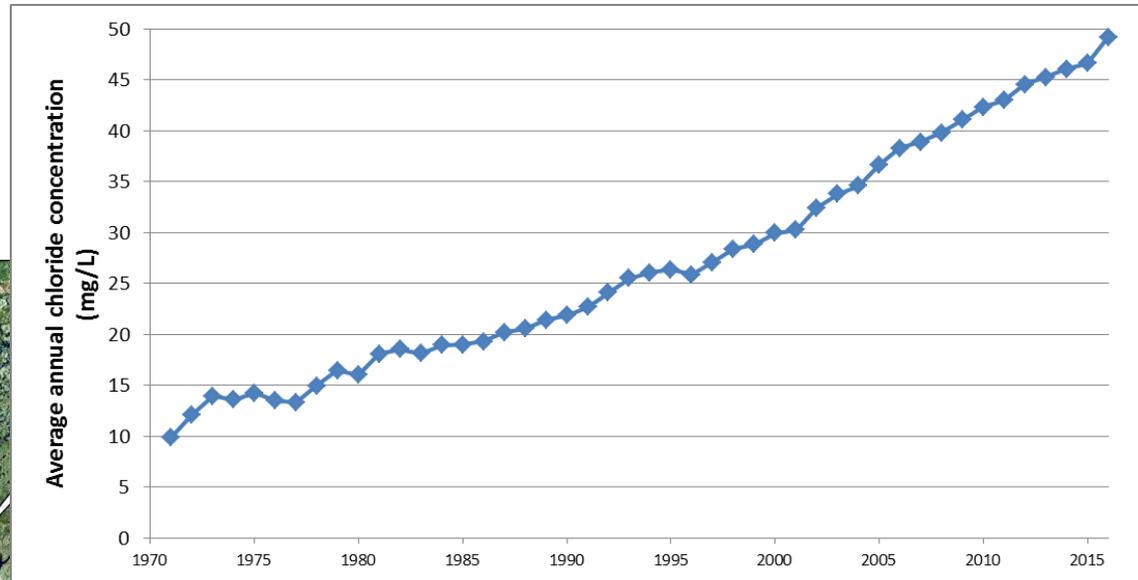
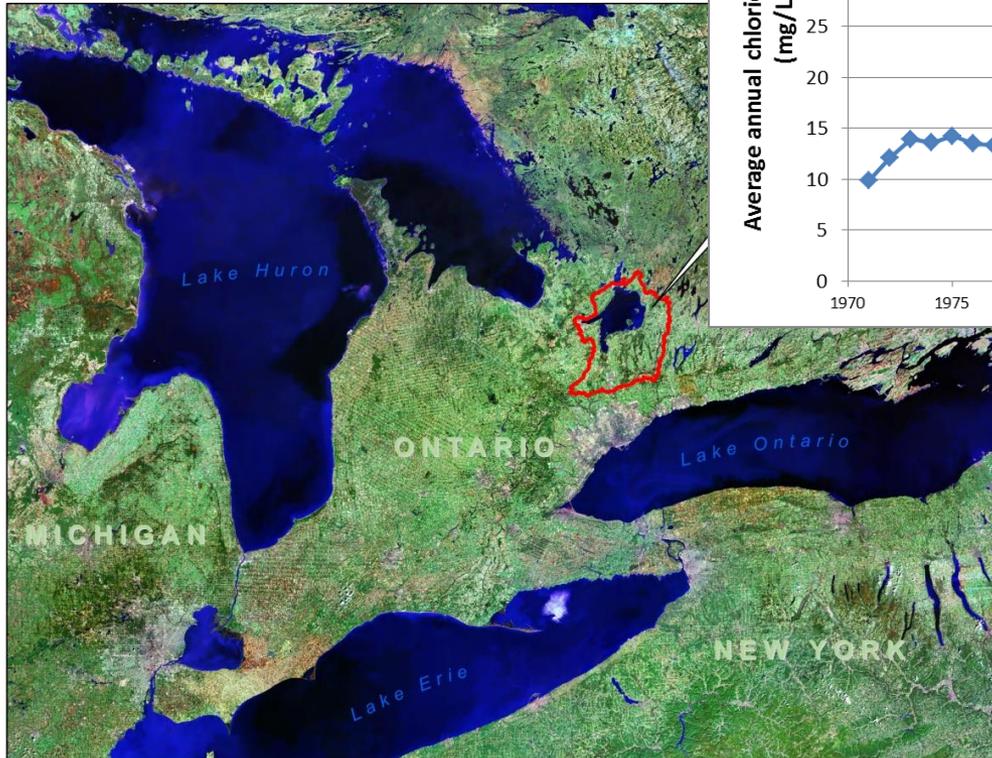


# What is winter salt?

- Highly soluble and concentrations in water are unaffected by chemical reactions
- Vast majority of salt will end up in surface / groundwater
  - days to decades

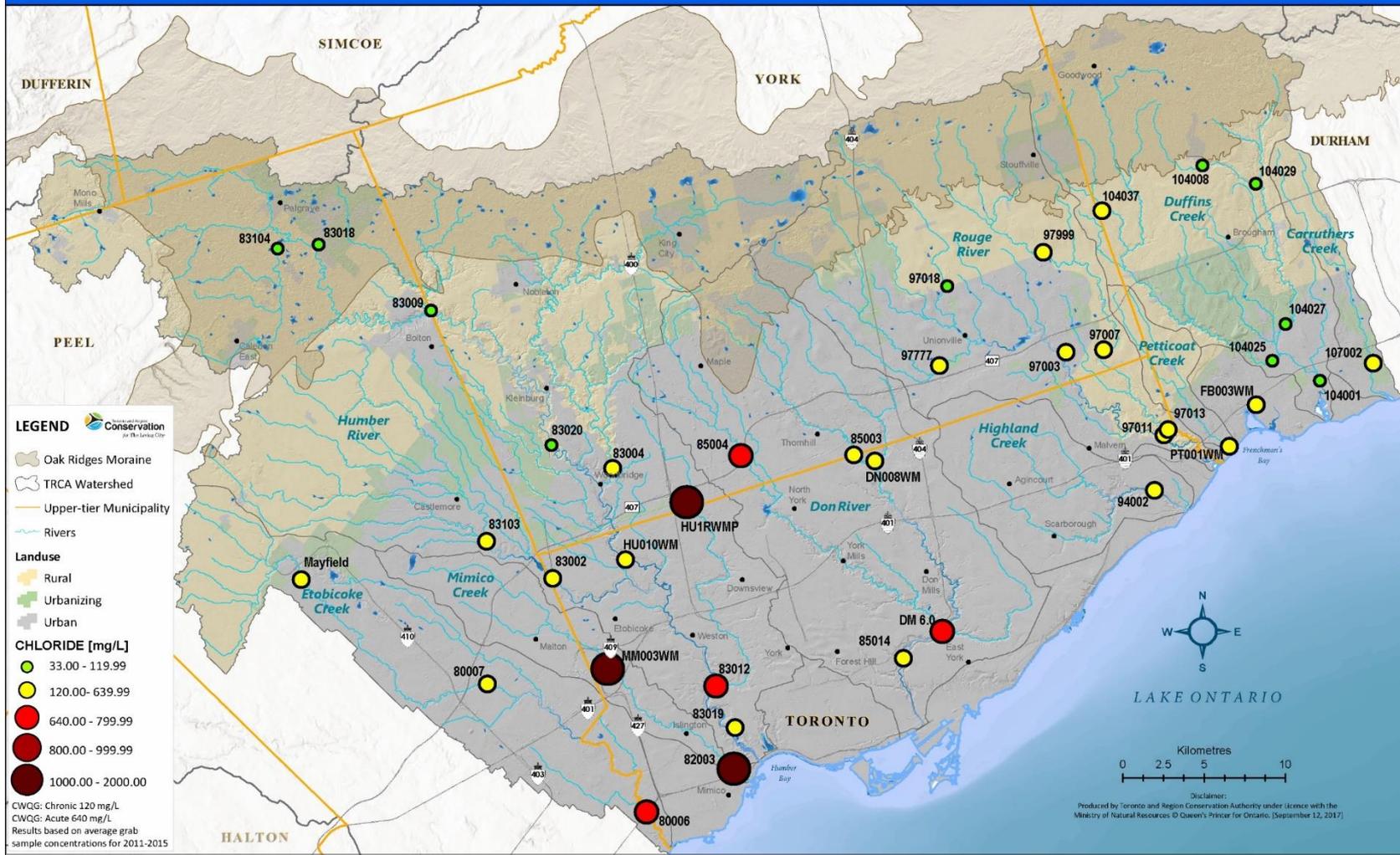


# Increasing chloride concentration in Lake Simcoe



- Chloride concentration has increased 5-fold since 1970
- If unchecked, will exceed Federal guideline by 2120

**FIGURE 5: AVERAGE CHLORIDE CONCENTRATIONS 2011 - 2015**





# So why do we care?



**Increased collisions  
with wildlife**



**Roadside plants**



**Drinking water**



**Toxic to fish**



**Other contaminants**

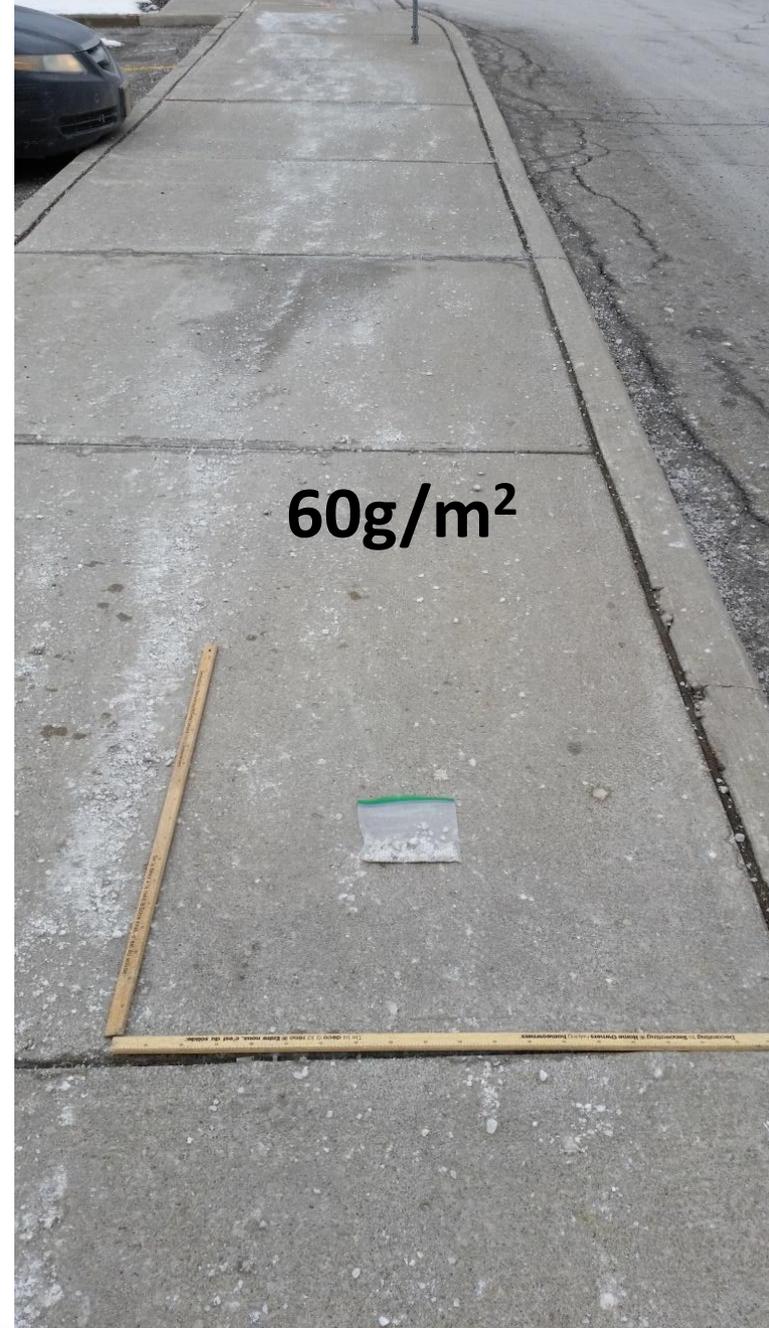
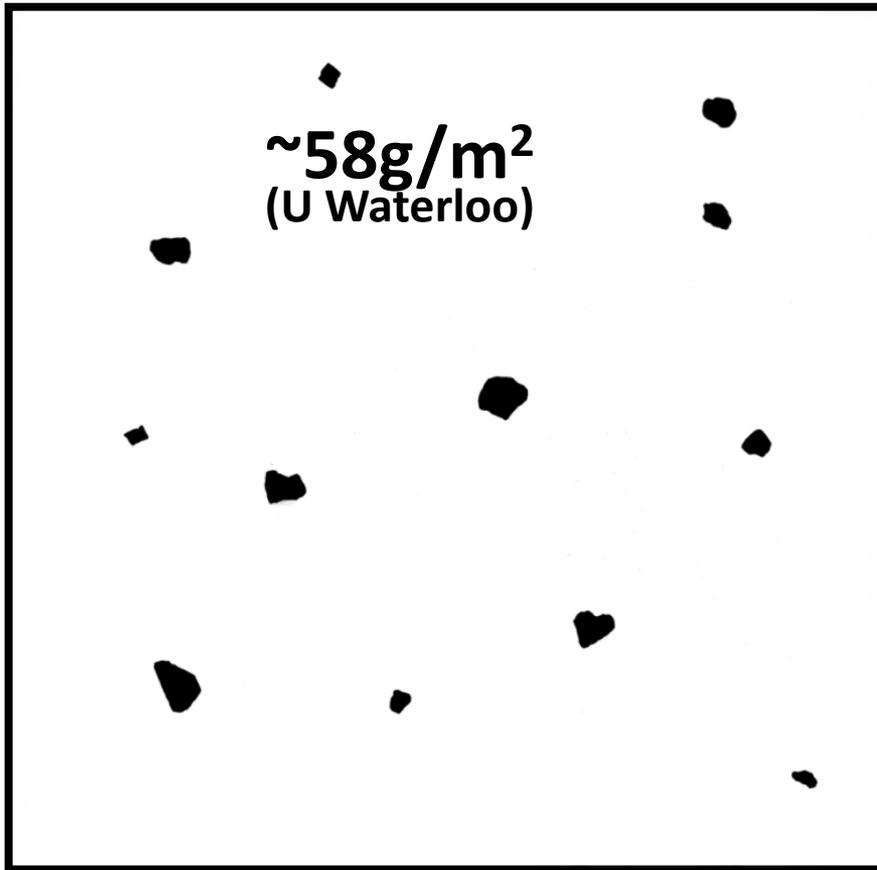
# But ... salt is a necessity



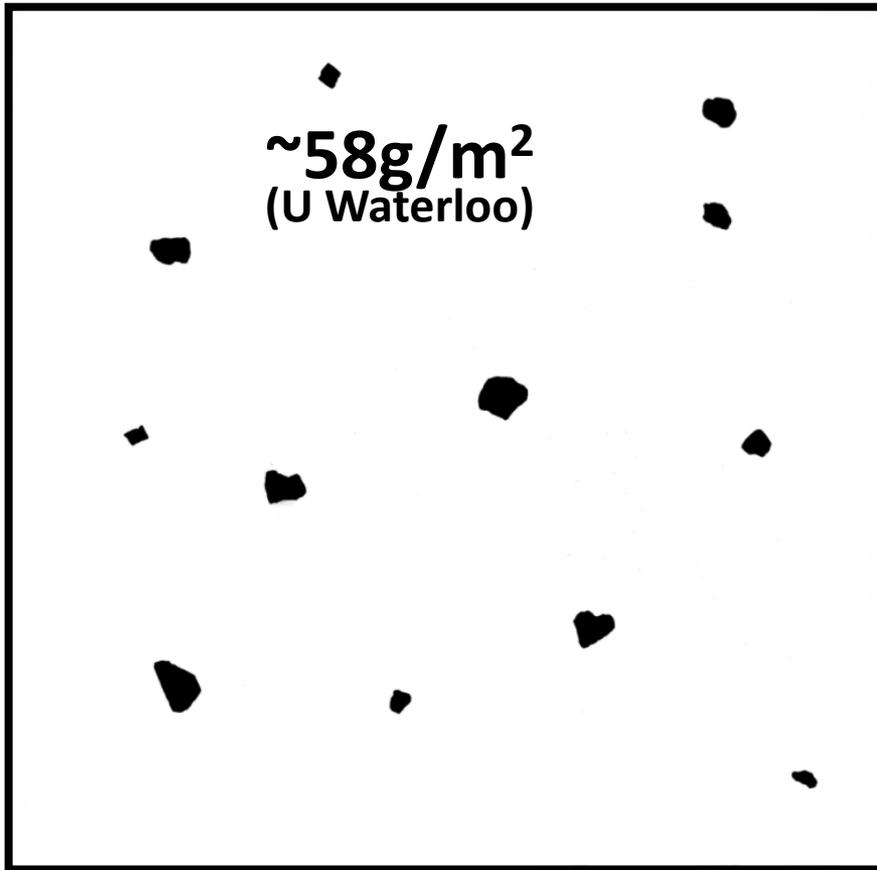
# But ... salt is a necessity



# How much salt?



# How much salt?



# Sidewalks can be a challenge



488 g/m<sup>2</sup>



# Yikes



4,766 g/m<sup>2</sup>



# Concerns about liability

A silhouette of a person's head and hand holding a mobile phone, with a bright light source behind them, creating a glow. Three small circles lead from the person's head to the first thought bubble.

Road salt use is required to ensure winter safety

Concerned about getting sued for slip-and-falls

It is better to err on the side of over-salting to avoid liability

# Does more salt = more safety?

Does more salt  
*really* reduce  
liability?

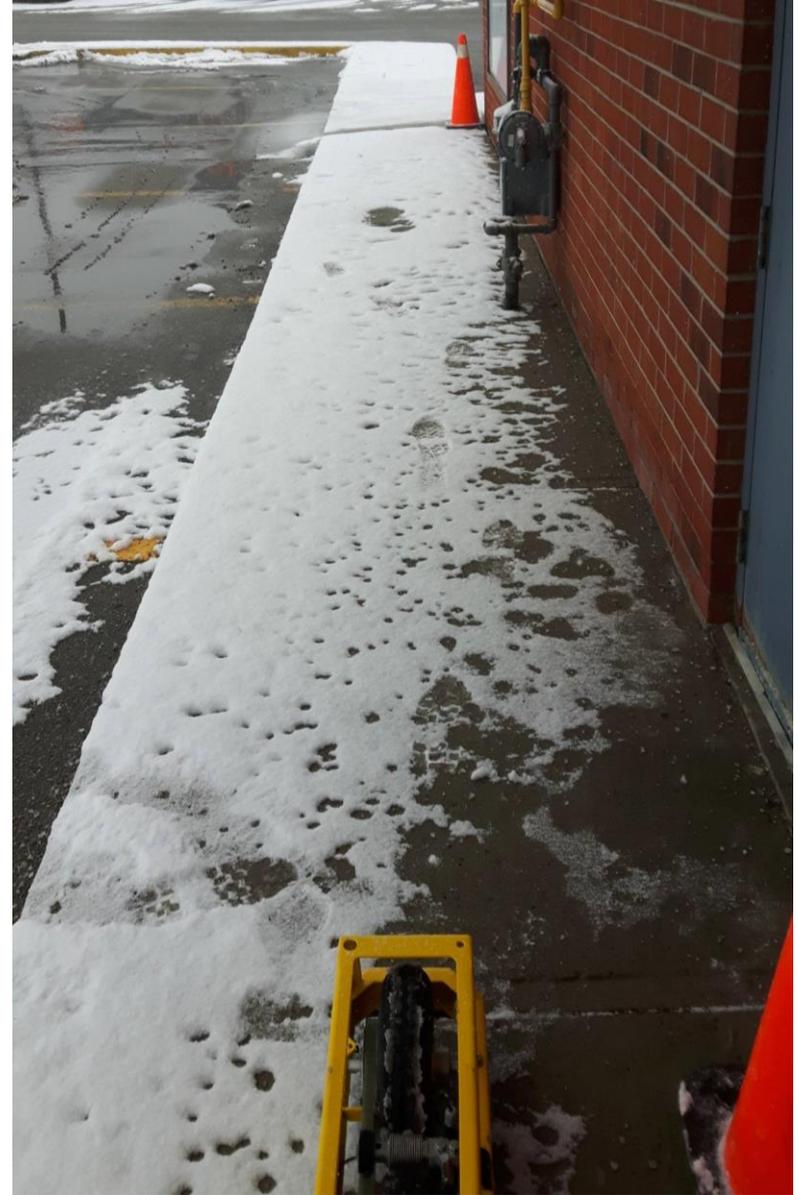


I don't know ...  
let's get some  
data!





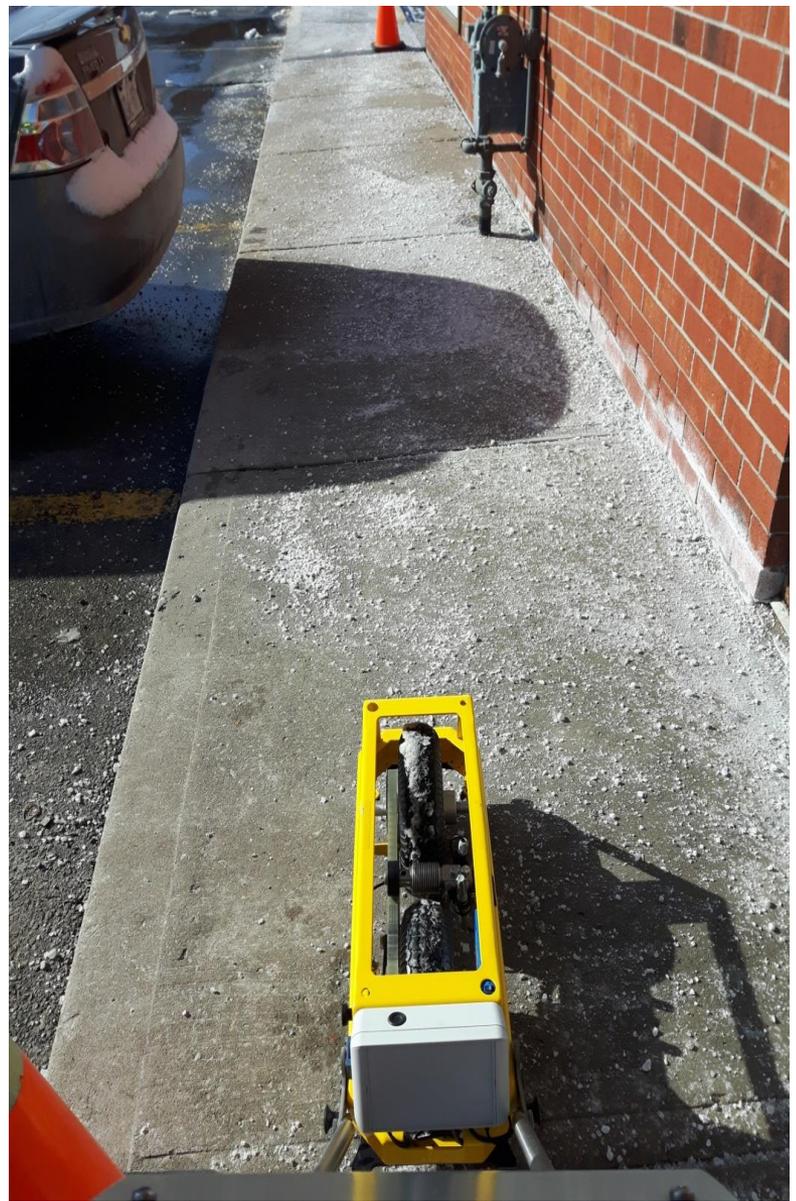
$\mu = 0.9$



$\mu = 0.11$



$\mu = 0.63$



$\mu = 0.26$



Application Rate = 969 g/m<sup>2</sup>  
 $\mu = 0.22$



Application rate = 0 g/m<sup>2</sup>  
 $\mu = 0.21$

# What about cost?

Year	Salt Application (tonnes)	Ave Application Rate (g/m <sup>2</sup> )	Number of applications	Total salt if application rate was 58g/m <sup>2</sup>
2015	1039	117	64	527
2016	556	65	60	494
2017	1052	102	72	592
2018	1148	81	99	815

- Applying best practices could have saved \$34,175 / yr in salt costs

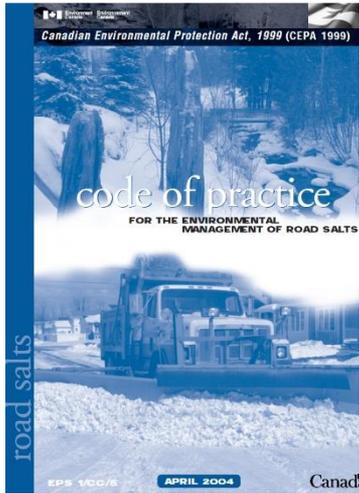
# As well as damage to infrastructure



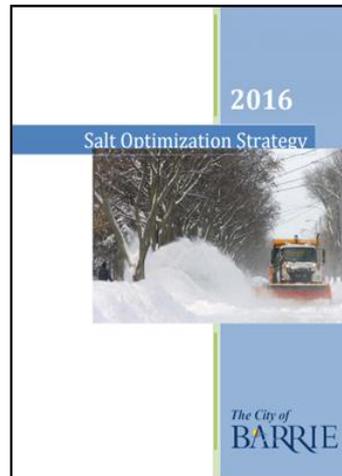
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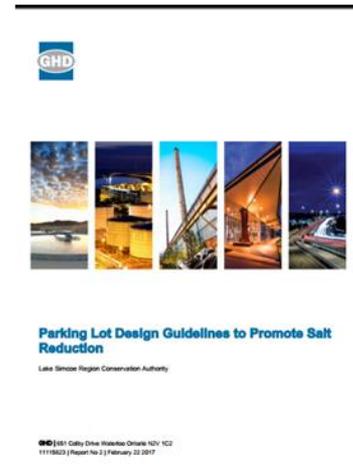
# What are others doing?



Code of Practice for roads



Municipal Salt Management Plans



Parking lot design guidelines



Advocating for legislation change

# Thank you

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