

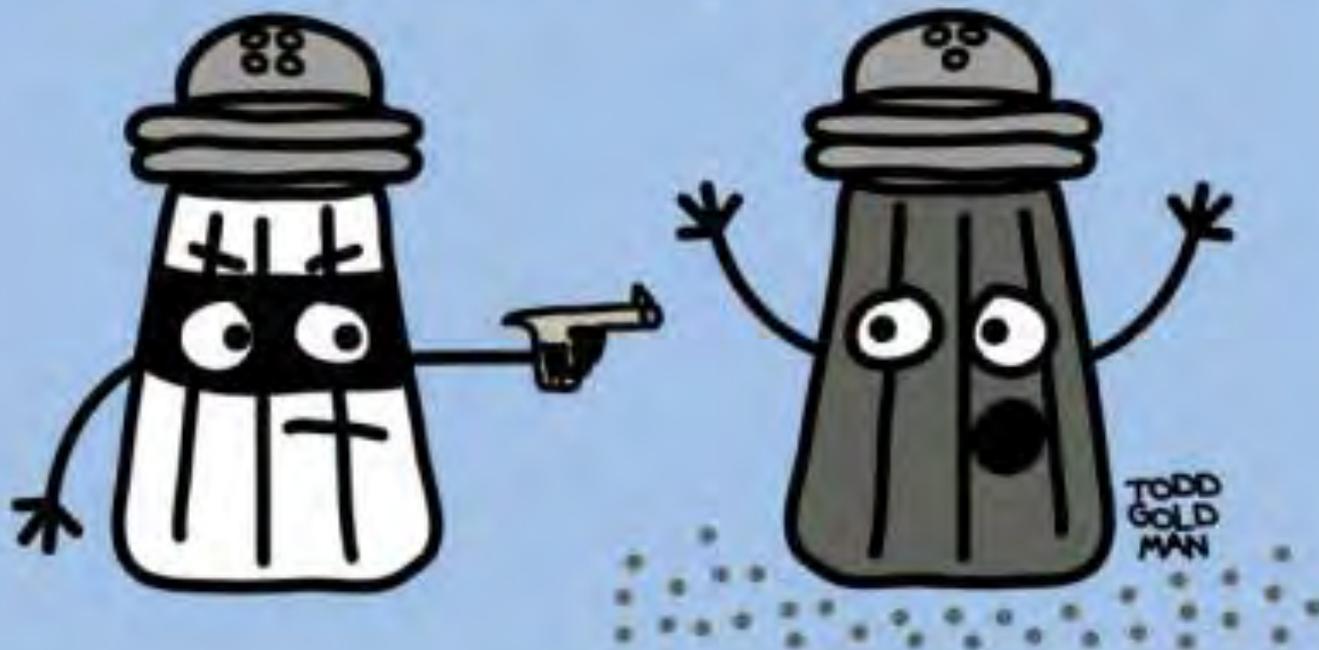
A rise in Chlorides: a case for reducing road salt application

Emily Starzynski, M.S.

Tazewell County Health Department



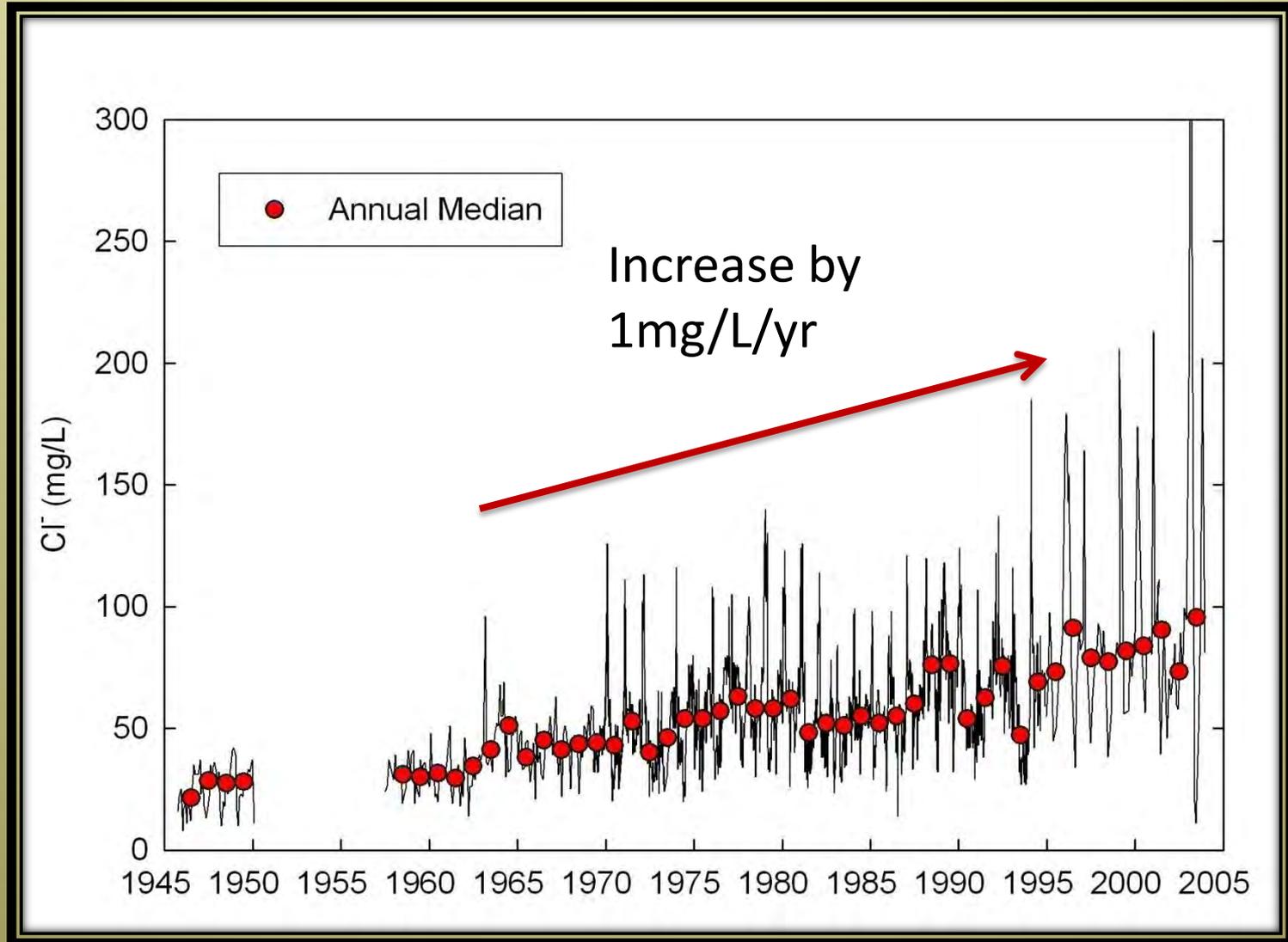
A Salt With A Deadly Weapon



Safe roads are needed



Chloride levels in IL River in Peoria, IL



Shallow Wells (less than 500 ft deep) with High Chloride Concentrations in the Central Region (samples 1970 - Present)

Legend

Wells with high chlorides
(in mg/l)

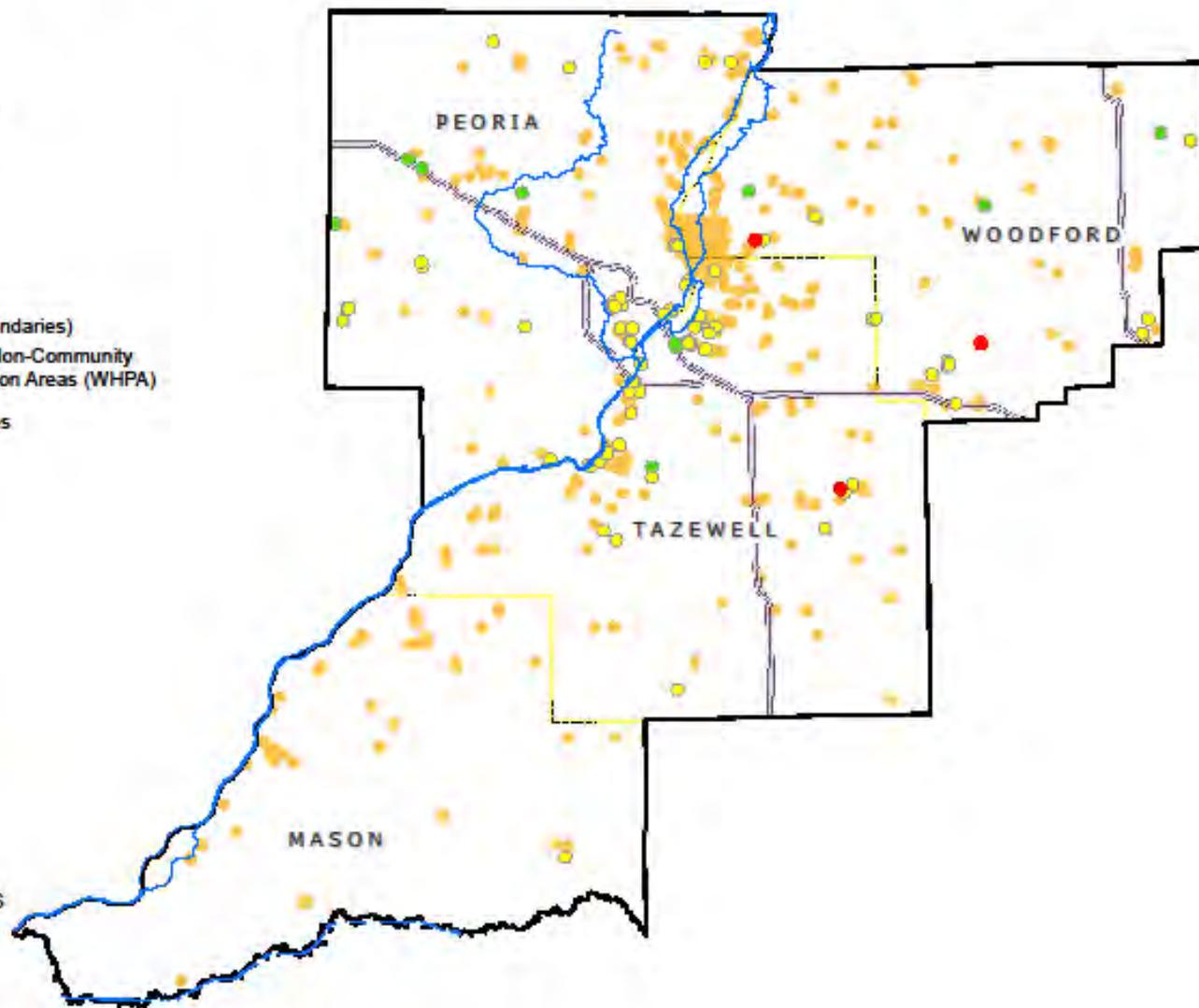
- 50 - 200
- 200 - 1000
- > 1000

Interstates

Major Rivers (boundaries)

Community and Non-Community
Wellhead Protection Areas (WHPA)

County Boundaries



Well sample data from ISWS
WHPAs from IEPA
Map compiled by IEPA -
Groundwater Section
2012

Chloride Concentrations in Shallow Wells (less than 500 ft deep) in the Peoria Metro Area (samples 1970 - Present)

Legend

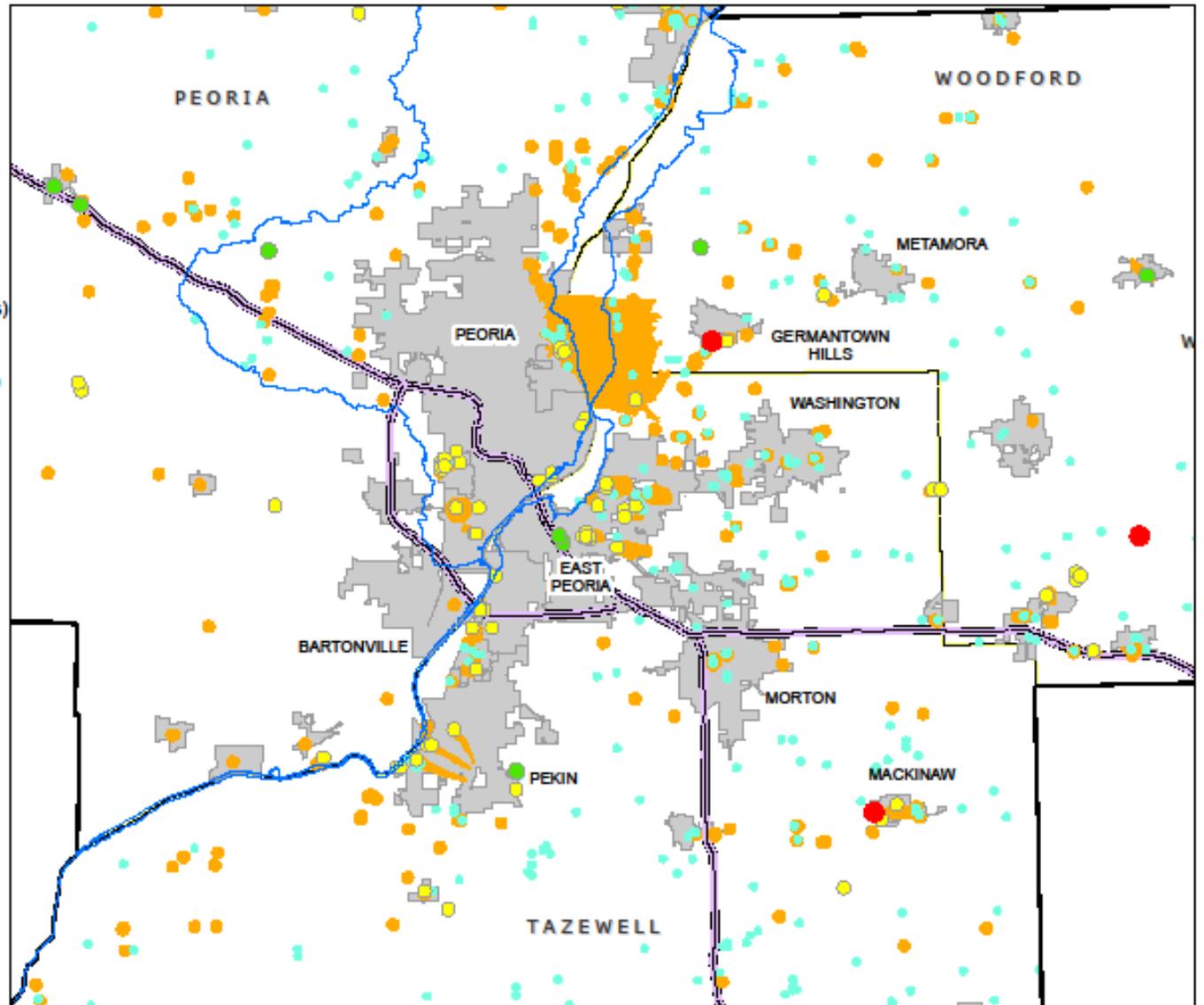
Wells with high chlorides
(in mg/l)

- < 50
- 50 - 200
- 200 - 1000
- > 1000

-  Interstates
-  Major Rivers (boundaries)
-  Community and Non-Community Wellhead Protection Areas (WHPA)
-  County Boundaries
-  Municipal Boundaries

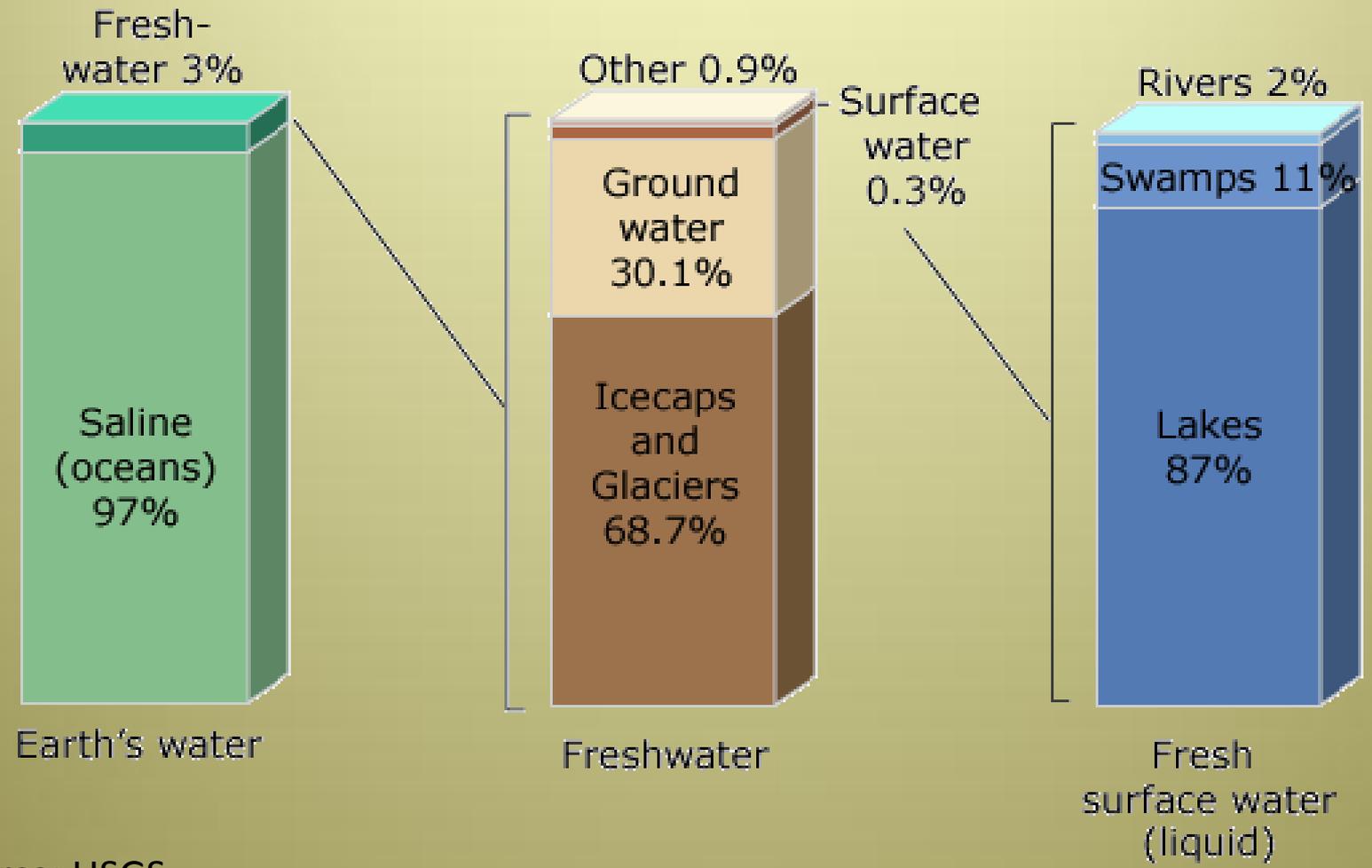


Well sample data from ISWS
WHPAs from IEPA
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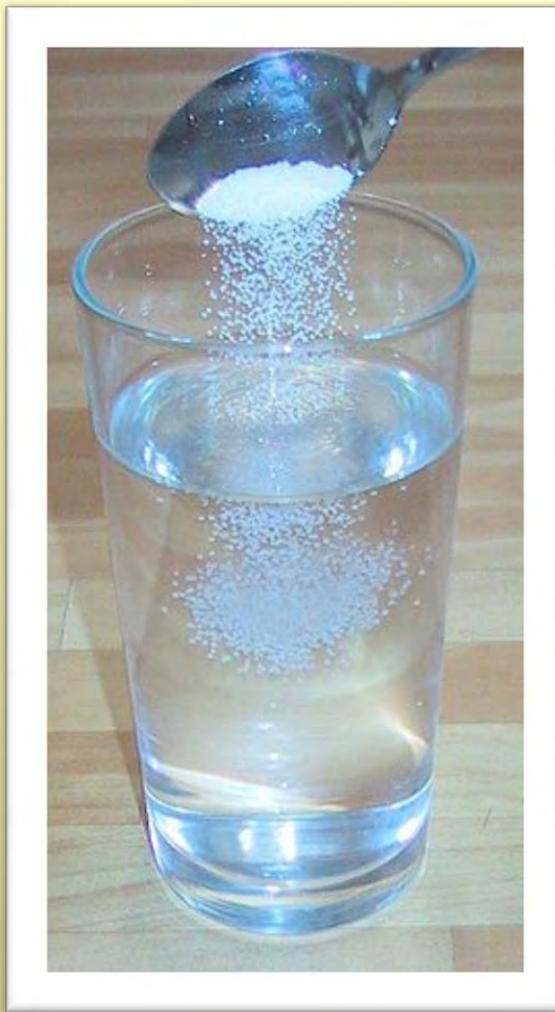


Fresh water is a finite resource

Distribution of Earth's Water

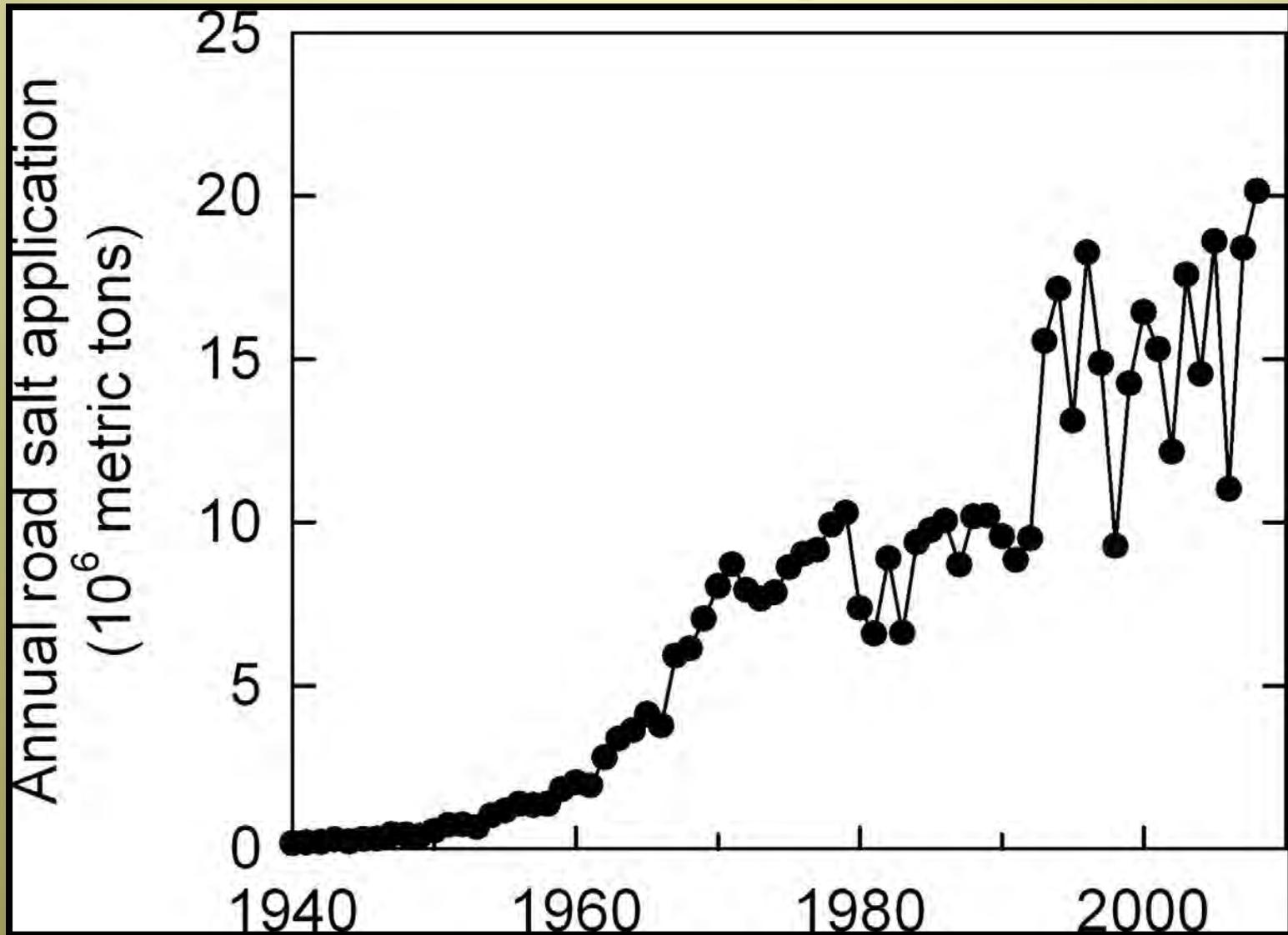


Source: USGS



ONCE IN SOLUTION, ALWAYS IN SOLUTION

Where is the salt coming from?



Source: Walt Kelly, Illinois State Water Survey

How does it get in our water?

- Road salt application/deicer agents were cited in the EPA's *Middle Illinois River TMDL* report as a possible source for chloride contamination in North Farm Creek Watershed (in Tazewell County)





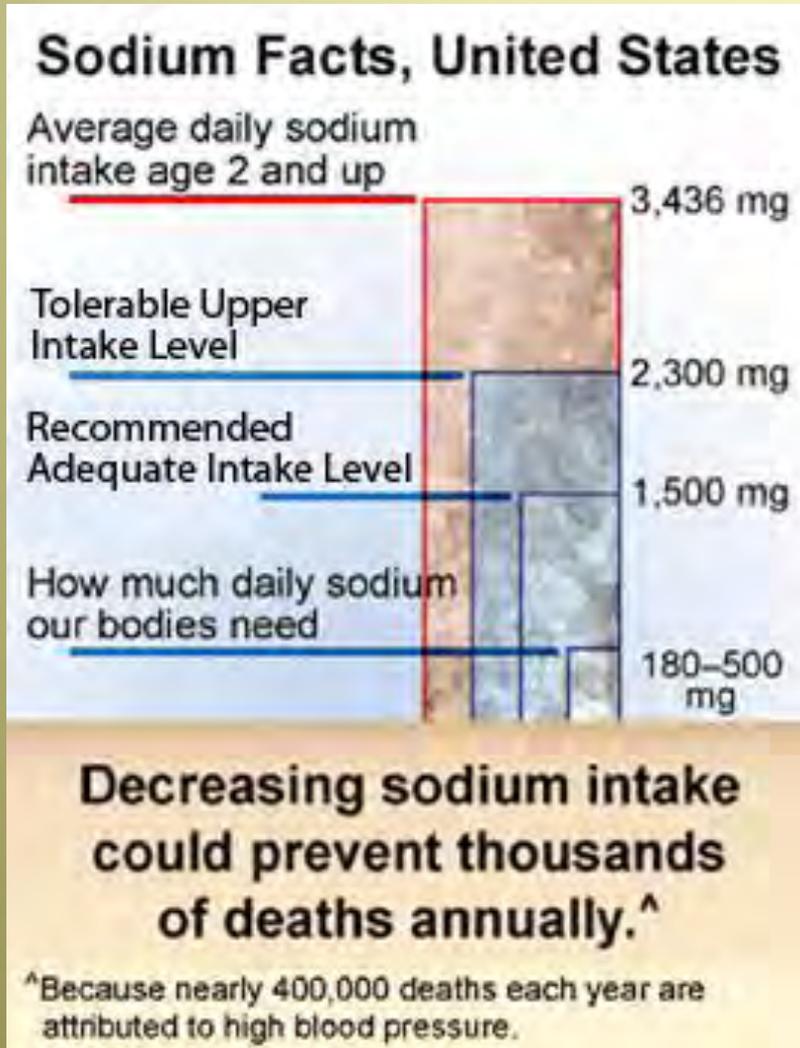
Roads are not the only surfaces salted.



NORTHWOODS MALL Peoria, IL

South Aerial View

When NaCl can do harm



- High blood pressure
- Stroke
- Heart attack
- High chloride levels in our *drinking* water can make sodium restricted diets difficult

Can we prescribe our roads to go on a low sodium diet?

How much sodium is in a glass of water?

- IL EPA Class 1 Potable Groundwater standard is 200 mg/L
- Reduced sodium diets 1500 mg/L per day
- 8 glasses at a concentration of 50 mg/L would be around 100 mg or around 6% of allotted intake



**1 tsp of salt in 5
gallons of water =
230 mg/L**

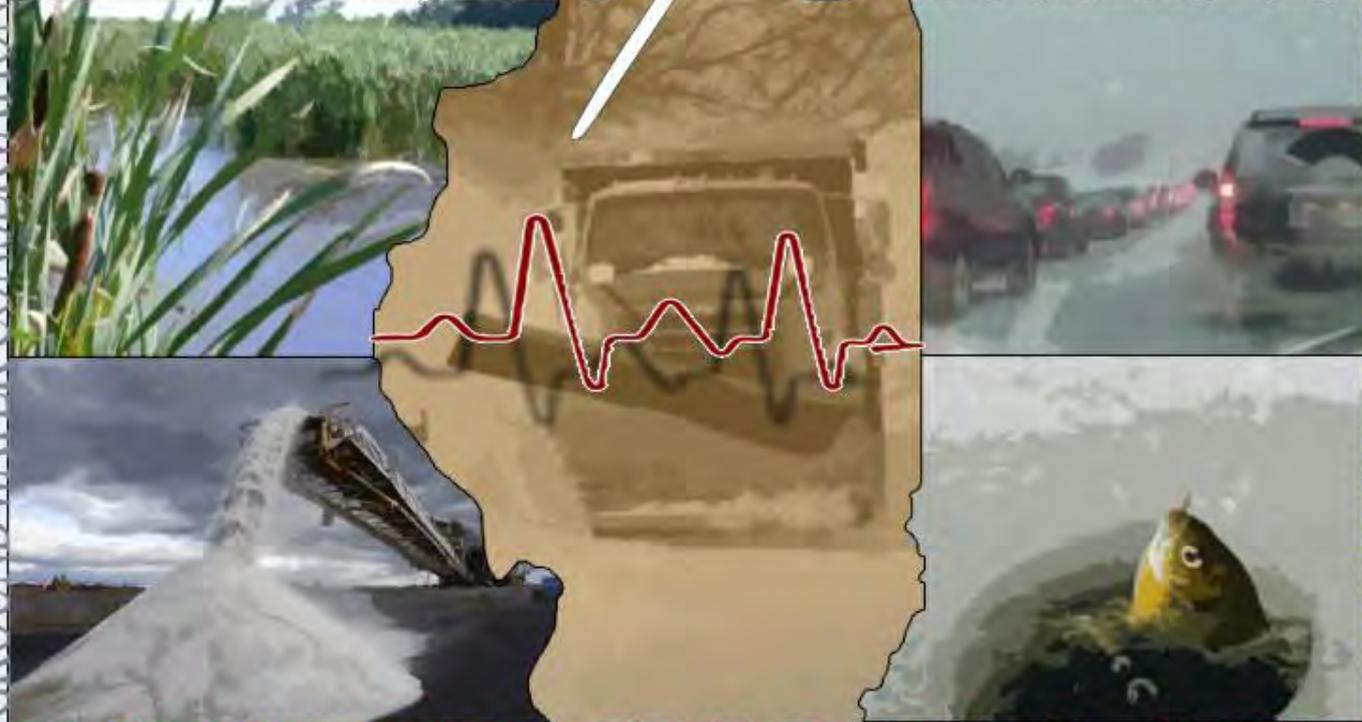
•8 glasses at 230 mg/L
would be 460 mg in a
day. Approx. 30% of
allotted intake → just
in drinking water!



Heart of Illinois

GROUNDWATER CONSERVATION

ENVIRONMENTAL PROTECTION

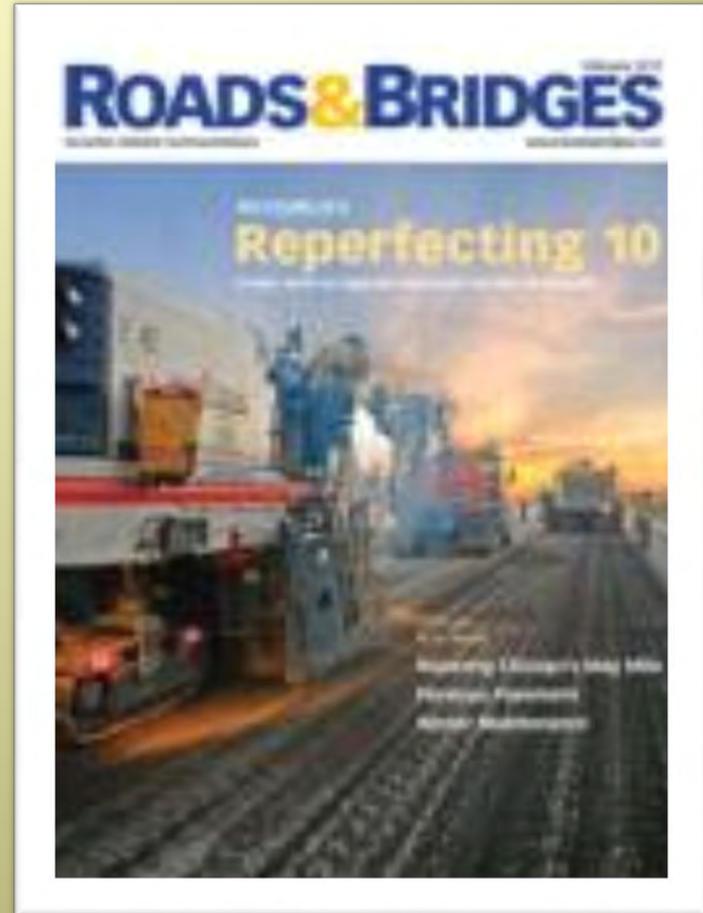


WINTER SNOW & ICE OPERATOR'S WORKSHOP



Tazewell County Highway Department

- Took initiative to calibrate their fleet of trucks
- Instructed 2012 HOI Winter Snow and Ice calibration clinic
- Article in Roads & Bridges Magazine



<http://www.roadbridges.com/winter-maintenance-engrained-mind>

Tazewell County Highway Department

Truck #15

Old Setting	(manufacturer setting)	New Setting	Calibrated
Setting #	lb/mile	Setting #	lb/mile
1	390	1	300
2	1320	2	360
3	2280	3	420
4	3150	4	480
		5	540
		6	600
		7	660
		8	720
		9	780

Tazewell County Highway Department

Truck #18

Old Setting	Manufacturer setting	New Setting	Calibrated
Setting #	lb/mile	Setting #	lb/mile
1	1050	1	300
2	1470	2	360
3	1920	3	420
4	2400	4	480
5	3000	5	540
		6	600
		7	660
		8	720
		9	780

Growing awareness

- Outreach to private sector
- Incorporating local knowledge expertise
- Collaborating within the Central Illinois region and beyond
- Approaching with the mentality “manage ourselves before someone manages us”



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