

# City of Madison Streets & Urban Forestry Division

ONBOARDING VIDEO #3

Frequently Asked Questions – Snow & Ice Control

March 2023



# Snow & Ice Basics

- **Two core elements of snow and ice response**

- 1. Salt Routes**
- 2. Citywide Plowing**







# Salt Routes

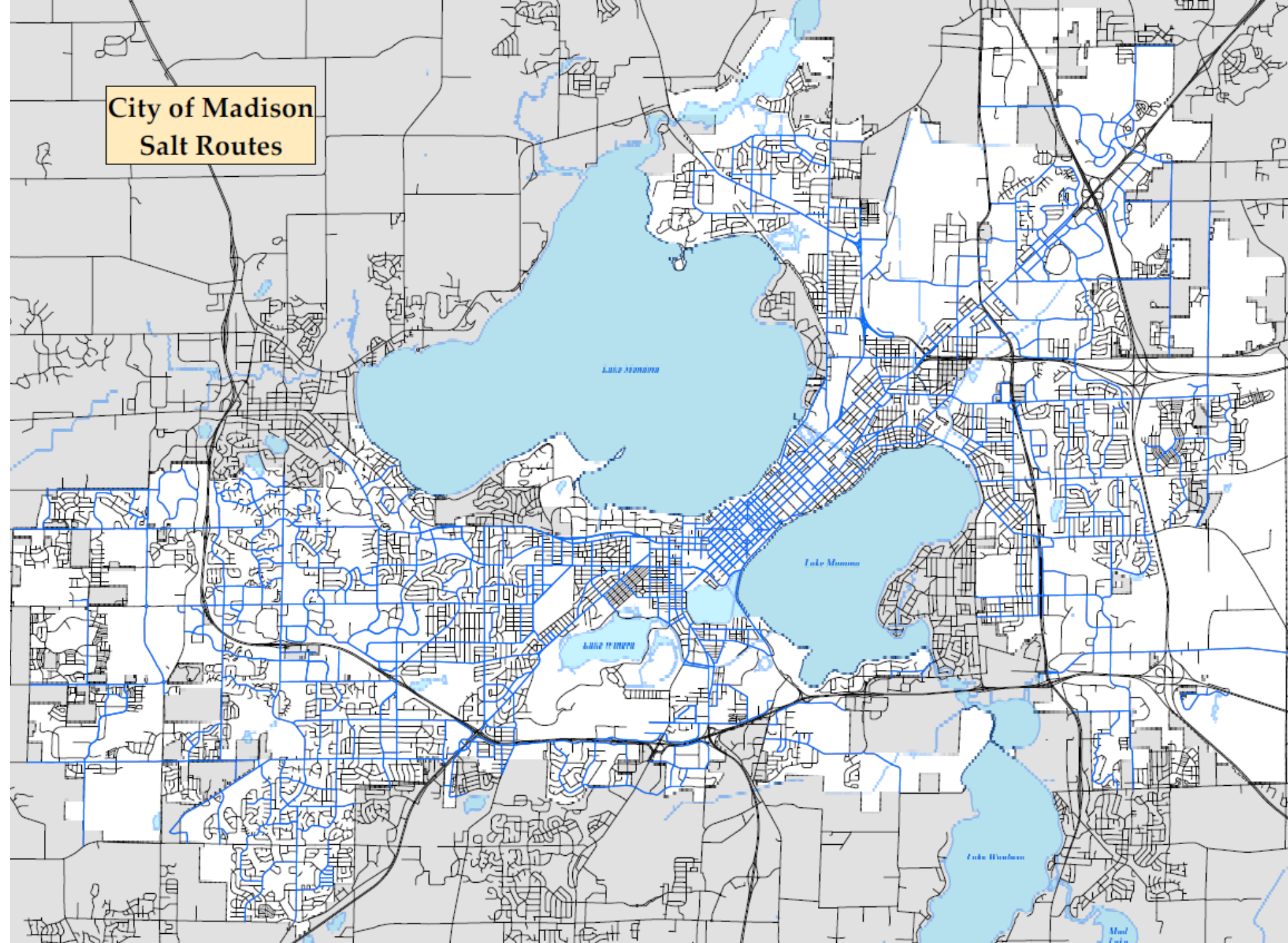


# What are salt routes?

861 miles of traffic lanes that make up the main thoroughfares.

Used by Metro Buses, near schools, near emergency services (hospitals, fire stations, etc.)

*This map is for the winter of 2022/2023. It will be different next winter.*



# When we treat the salt routes

- When it is actively snowing, the Streets Division deploys trucks to maintain the “salt routes.”
- These roads are plowed and salted as needed for the entirety of the storm.
- 32 trucks citywide circle through salt routes.







# Salted roads

Salt, time, temperature, and traffic combine to help make roads free from snow (mostly).

This is Olin Ave between S. Park Street and John Nolen Drive.



# The Trouble with Salt

- All the salt put down on sidewalks, parking lots, and roads finds its way into our waters
- Enters the storm drains and out into our lakes & infiltrates our drinking water.
- This has been a known problem *for decades*. See the article in the photo from 1977.
- We **must** be cautious with salt

## City wells fail to meet EPA salt standards

By WHITNEY GOULD  
Of The Capital Times Staff

Although the city has cut back drastically on its use of de-icing road salt in recent years, the water in several Madison wells still contains salt concentrations above the level at which the Environmental Protection Agency recommends a warning for the sake of hypertension sufferers, University of Wisconsin researchers have found.

Dan Willard, the environmental studies professor who did the study, thinks the city probably should alert residents whose water comes from the affected wells. But City Health Director Karl Mohr says that would upset people needlessly when there is no real cause for alarm.

Using data collected by the city, Willard, Prince Beach and Tim Diehl traced the rise in sodium and chloride levels in 13 of the city's 27 wells between 1951 and 1975.

The increases, also reflected in the water in our lakes, parallel what until recently was a continuous growth of road salt use dating back to the '50s, Willard concluded. Much of the salt flushed off the streets seeps through soil into ground water which is the source of our drinking water.

The most dramatic jump was in Well No. 5 on North Randall Avenue, where sodium levels rose from three to 25 parts-per-million (ppm) in the 24-year period and chloride escalated from 19 to 55 ppm.

Two other wells of 14 tested had sodium levels above 20 ppm, the level at which the EPA advises a warning for those with high blood pressure, which is linked to the water-retention properties of sodium.

They were Well No. 2 on Vilas Avenue and Well No. 17 on South Hancock Street, according to Willard. Well No. 2 near Lake Wingra showed an increase in sodium from 10 ppm in 1951 to 35 ppm in 1972 and an increase in chloride of 3 ppm in 1951 to 23 ppm in 1975.

(The wells throughout the city are all interconnected. But in most cases, people living in a given area are getting their water from the nearest well, according to Water Utility officials.)

The elevated salt levels are well  
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MADISON, WIS., Monday, June 27, 1977

## City wells rather salty

(Continued on Page 4, Col. 3)

within the 250 ppm safety limit set by the U.S. Public Health Service for drinking water, and Willard stresses there is "no cause for alarm."

But he thinks it might be a good idea for the city to include a note in the water bills of people whose water supply comes from the affected wells, to alert those on low-salt diets.

"It probably should be something more than the warnings on cigarette packages, which nobody pays any attention to, and something less than 'Everybody should get out of town,'" he said.

But Mohr said he saw no need for such a notice. "I hate to do something like that unless it's absolutely necessary," he said. "In many cases you just alarm people for no reason. And in most instances where people have been diagnosed as hypertensive, their physicians are taking these things into account" in recommending limits on salt intake.

City Water Utility Manager Larry Russell agrees with Mohr. "Any kind of a general warning would be more of a scare than anything else," he says, noting, however, that at one point the city did send out a note to dieticians advising them of the rise in salt levels.

At the current levels, a person would have to consume huge quantities of water to be affected by the salt content, Russell said, and short of drinking distilled water, there's not much that anybody can do about the situation.

But Russell added that the city is watching the salt figures as indicators of ground water quality.

In the meantime, warns Russell, a larger health hazard for some people is softened drinking water, which contains salt concentrations as high as 100 ppm.

In most cases, the cold water coming out of a home faucet is not softened. But city inspectors, according to Russell, occasionally come upon a home where a water softener has been attached directly to the incoming water line, thus adding softening salts to the drinking water as well as that used for washing.

"It's not a large problem," he said, "but there probably are some people who are drinking softened water and don't know it."

Willard expects salt concentrations in the wells to decline in the next few years, to reflect reductions in the use of road salt. But it won't happen right away, he said, because ground water moves very slowly.

In the winter of 1972-73, the city dumped some 5,001 tons of de-icing salt on its streets, according to streets supervisor Lloyd Sarbacher. Concern about salt contamination prompted the City Council to order a program of gradual reduction. And by last winter, salt use had been cut back to 1,519 tons — a drop of 73 per cent.

"A rare example of protective legislation in time," Willard said of the salt cutbacks.



# How the Streets Division Controls Salt Use

- Operators go through salt usage trainings
- Careful evaluation of which streets are salted
- Deploying what is appropriate for road conditions & temperatures
- Pre-treating roads when possible with saltwater brine
- Salt scales





A yellow snowplow is shown from a front-quarter perspective, clearing a residential street during a snowstorm. The plow has a large black blade with orange safety paint on the lower edge. The truck's headlights and amber warning lights are on. Snow is being pushed to the side of the road, and the air is filled with falling snow. In the background, there are snow-covered houses and bare trees. A speed limit sign for 30 is visible on the right side of the road.

# Citywide Plowing



# WHEN WE PLOW



- Three or more inches of snow accumulated on the roads and the storm is at or near its end.
- Citywide plowing takes 12 – 14 hours from start to finish



# This is a plowed residential street.



Without salt and regular traffic, residential streets will have a compacted layer of snow and ice on them after plowing.

Plows cannot push down to peel up snow and ice from the road.

And roads are crowned to help drainage while plows are flat.

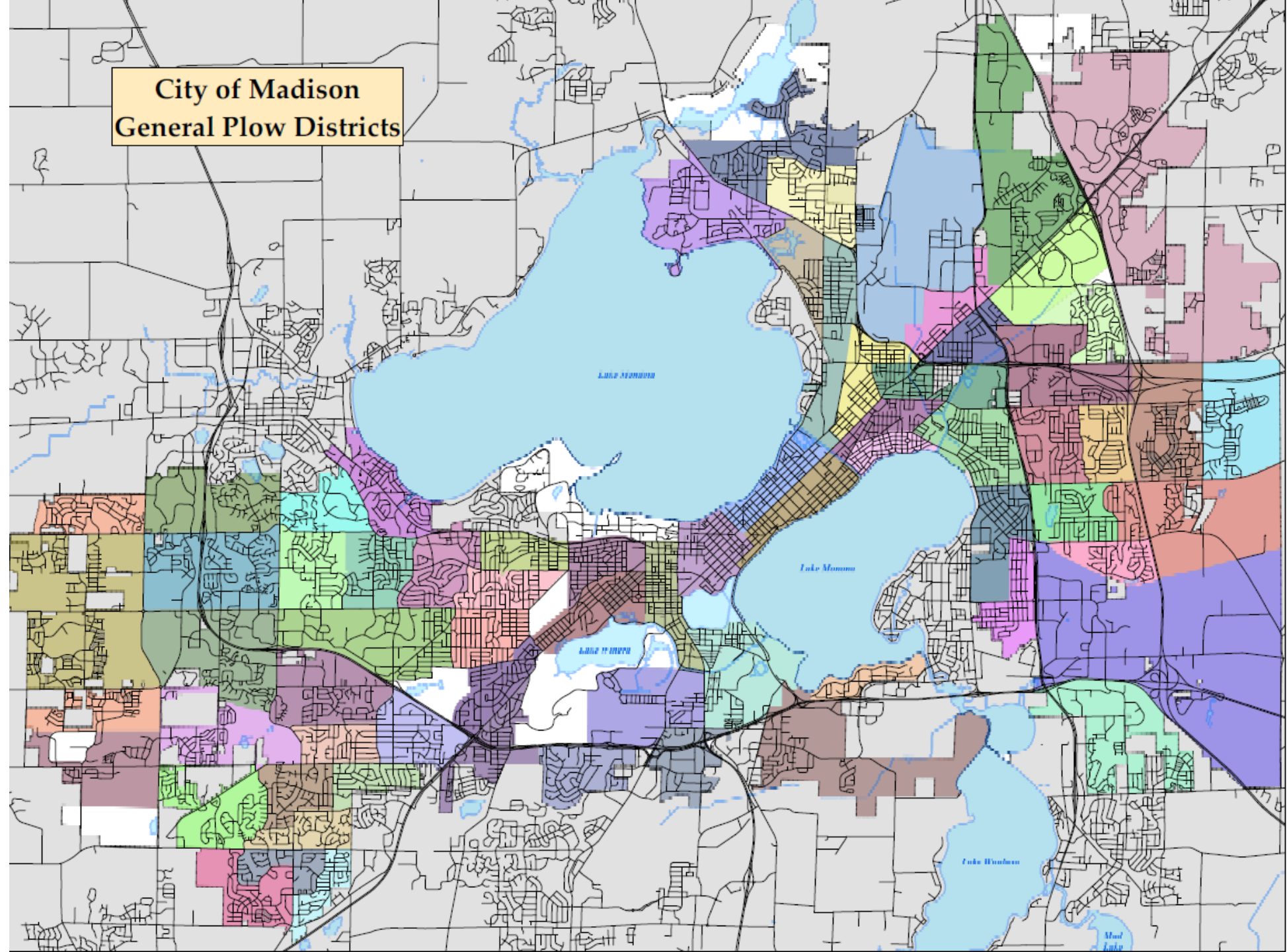


# Plow deployment

For citywide plowing, city is divided into over 60 different sub-areas.

All of these areas are assigned equipment and they start plowing at the same time.

No one is assigned to be last.





# What does it take to plow Madison streets?



## From City Fleet:

- 10 Bobcat-like vehicles
- 9 Pickup truck plows
- 2 Grader
- 11 Loaders
- 68 Plow trucks

## From Heavy Equipment Contractors:

- 3 Graders
- 33 Loaders
- 9 Plow trucks
- 7 Tractors

**Total combined vehicles:**

**152**



# Why does it take so long to plow the whole city?

Madison has roughly 1,861 miles of traffic lanes to cover.

That's like driving from Madison, WI to the Mojave Desert in California

It just takes a lot of time.

(Plows have to drive up and down streets multiple times - likely traveling well over 1,800 miles to plow everything)





# *Why did the snowplow block my driveway?*



- It's the physics of plowing a street curb-to-curb
- It is not intentional
- Yes, it is unavoidable



*I live in a cul-de-sac and I have concerns about plowing...*

Roads like this have many problems that are inherent to their design.





*There's snow in front of my mailbox and the USPS won't deliver my mail.*

The Streets Division aims to plow snow all the way to the curb, but sometimes homeowners will still need to clear out an area for their mail carrier.





# *What is alternate side parking?*

Alternate side parking is in effect each night 1am to 7am from November 15 to March 15 for people who park on the street outside of the Snow Emergency Zone.

On ODD numbered days, you need your car parked on the ODD side of the street between the hours of 1am and 7am.

On EVEN numbered days, you need your car parked on the EVEN side of the street between the hours of 1am and 7am.

Parking Enforcement issues tickets for violations of these rules.

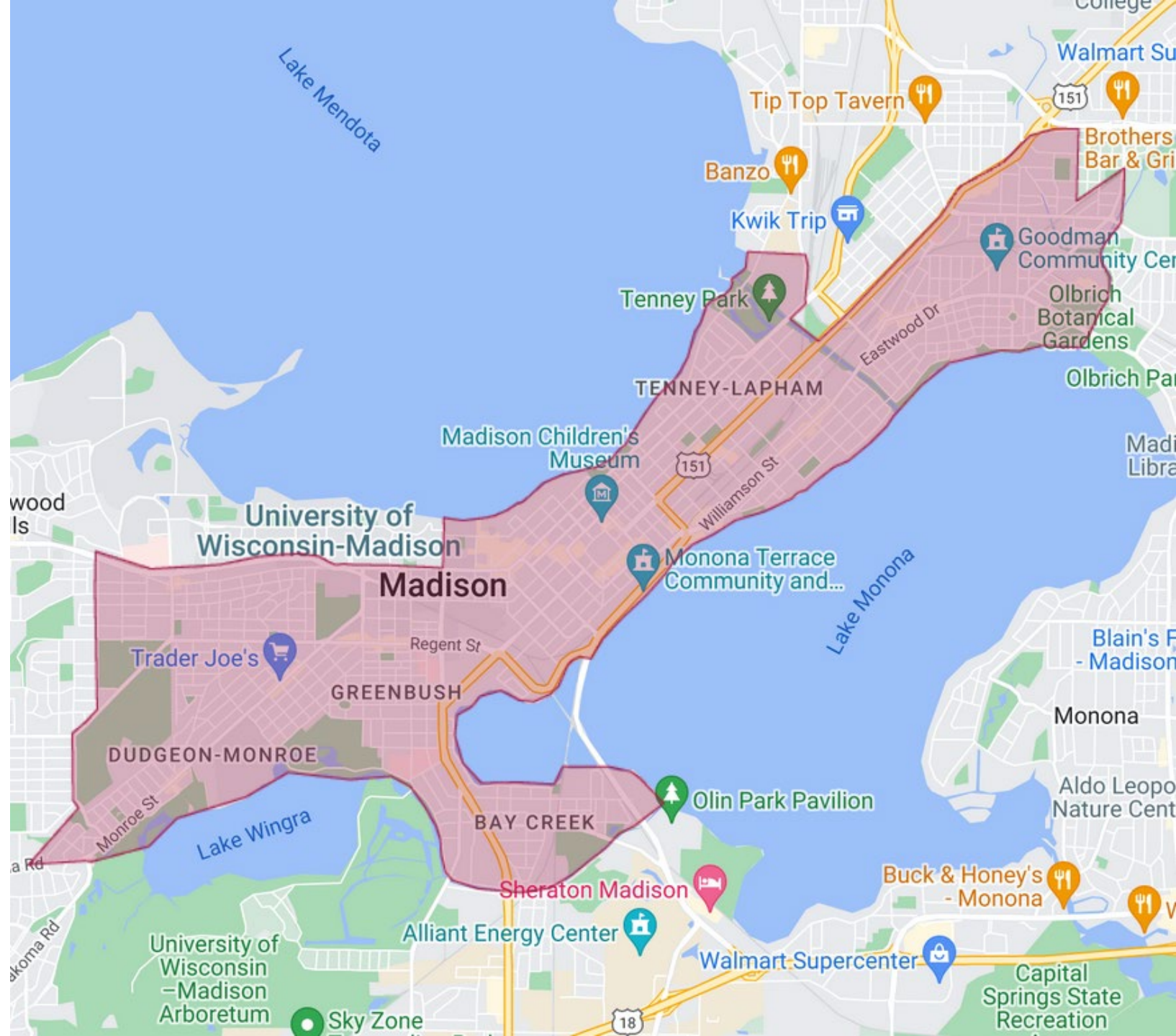
Tickets are \$20 when a Snow Emergency is not in effect.





# What is a “snow emergency”?

When snow emergencies are declared, every vehicle parked on the street within the entire City must follow alternate side parking rules - including Snow Emergency Zone.





# Stay Informed

[www.cityofmadison.com/winter](http://www.cityofmadison.com/winter)

- Snow Plow Updates
- Snow Emergency Alerts
- Snow Emergency Text Alerts
- Alternate Side Parking Text Alerts
- Sidewalk Snow Shoveling Updates
- Salt Usage Guidance
- Locations for Free Sand
- Winter Recreation Opportunities
- Winter Biking Tips





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