Welcome to our Zoom Webinar Series
Watering Wisdom: Growing a Healthy Lawn with Less Water

Part 1: Outdoor Water Use in the Twin Cities: Am I Using Too Much?
We will begin at approximately 2:00 PM Central Time
Future Webinars

• Learning to Control Your Irrigation Controller  
  Tuesday, July 28, 2020 at 2:00 p.m.

• Turfgrass Species for Low-Input Minnesota Lawns  
  Tuesday, August 18, 2020 at 2:00 p.m.

• Lawn Care Best Management Practices  
  Tuesday, September 8, 2020 at 2:00 p.m.

• Winterizing Your Lawn  
  September 29, 2020 at 2:00 p.m.
Using Zoom

• Use Q&A to ask questions
  • Mouse over bottom of Zoom window to access Q&A
• Chat is disabled
• Live transcript can be turned off depending on device
Watering Wisdom: Growing a Healthy Lawn with Less Water

*Outdoor Water Use in the Twin Cities: Am I Using Too Much?*

Presenters: Brian Davis and Shane Evans
Water Supply in the Metro Area

- 3 million people
- 186 communities, 106 water suppliers
- 70% of residents use groundwater
- Municipal water use:
  - Current: **300+** million gallons per day
  - Projected (2040): **450** million gallons per day
What Makes Us Different
Four Extensive Aquifers
Metro Area Wells
1940 - 2010

Public Well (800)
Private Well (60,000)
Darker blue = older well

1940-2010 data reported for 7-County Metro in 2013 Minnesota County Well Index
Groundwater and Surface Water

![Graph showing the comparison between groundwater, surface water, and total water sources from 1940s to 2010s]
Growing Population Increases Water Use

- **Population Estimates:**
  - 2017: 3,075,563
  - 2020: 3,180,000
  - 2030: 3,500,594
  - 2040: 3,738,800

- **2015 Water Use:** 350 Million Gallons per Day
- **2040 More Use:** +100 Million Gallons per Day

*Note: Population: Estimates, Population: Forecasts*
Big City

Historical municipal water use in the community

Average daily water use (million gallons/day)

- Over the year
- In the summer
- In the winter

Developing Suburb

**Historical municipal water use in the community**
Outdoor Water Use

The chart shows the gallons of water used per month for the years 1990s and 2010s. The usage peaks in the summer months, particularly in July, and drops significantly in the winter months.
Aquifer Drawdown

Model results of 2040 pumping vs. today

Darker blue = more aquifer drawdown
Excess Infrastructure
Why we Need to Conserve Water

• Environmental sustainability
• Resource competition (Agriculture, Industry, Commercial, Residential)
• Decreasing supply → Increasing demand (urbanization)
• Utility Costs ($$$)
Why we Need to Conserve Water
Why we Need to Conserve Water

**Turf war: Overwatering our lawns is sucking up our water supply**

Researchers are looking at changes because current water use rates mean aquifer levels in some areas could drop more than 40 feet by 2040, according to Met Council estimates.

Getting her first $300 water bill was all it took for Hefle Jones to yank the sprinkler system off and start conserving water.

"It blew me away," said Jones, who was new to yard upkeep when she moved into her Brooklyn Park home four years ago. "I was wasting tons of water and turning my yard into a barren wasteland." For Jones, the decision to start running her sprinkler system on an as-needed basis made financial sense, but scientists say this kind of trend in lawns could yield crucial benefits in water conservation. During the summer months, water use in the metro area's suburbs, in some places rivaling the amount of water pulled from rivers and aquifers in the western United States, is widely believed to be unsustainable. Researchers from the Metropolitan Council and the University of Minnesota Extension service have found that watering habits are largely to blame.

**Overwatering lawns — and pavement — is the norm in the Twin Cities**

A survey of 1,000 homeowners shows that nearly half of Twin Cities lawns are watered 250 square feet of pavement.

Most homeowners overwater their lawns — to say nothing of their pavement — and have a love affair with a type of grass that doesn't really belong in Minnesota.

That's the wrap-up from a survey of 1,000 Twin Cities residents conducted in an effort to reduce the pointless lawn watering that is driving the metro area's aquifers and was one of the major issues behind a local battle over shrinking White Bear Lake.

Conducted by the University of Minnesota researchers and the Metropolitan Council, the survey found that more than half of homeowners have their sprinklers systems running on the automatic cycle. That means their lawns are watered whether they need it or not.

Three-fourths of the systems had at least one leaking sprinkler head.

On average, residents watered 1,000 square feet of pavement — which doesn't seem like a lot until you see all the water spraying down on a cornice

**Sprinkling sidewalks: Hey, watch where you're pointing those things:**

Think of the waste. Think of pedestrians.

As Twin Cities residents who occasionally walk, bike, drive, and ride transit, members of the Star Tribune Editorial Board are sometimes alarmed by the fact that many streets are lined with sidewalks that are regularly watered by sprinkler systems. The board called for the city to design streets with sidewalks that are watered separately from the rest of the street, to reduce the amount of water wasted.

The board noted that the city has already made progress in this area, but that more needs to be done.

"We do not want to see any more sidewalks being sprinkled," the board wrote. "We want to see sidewalks that are watered separately from the rest of the street, and that make sense of it all. Water-intensive is worth a thought."

It's time to think about the impact of our landscaping on the environment, the board said.

"But, again, the pavement. It's been estimated that half the irrigation used on landscapes is ineffective. To that we'll add: None of us even getting into the issue of rainwater that is wasted on a nonporous surface is worthless and should be re-used.

The water supply may not seem like much of a problem in our region just now. In recent months, an abundance has fallen from the sky, with consequences including flooding and delayed planting. In general, though, we're luckier to live in an area that don't depend on rain in the springtime and presents only occasional, tolerable droughts. But much of the world suffers more severe patterns of replacement. In India, the metropolitan area around Chennai, home to 9 million people, has been watching with envy. In California, a multi-year drought contributed to wildfires that killed more than 200 people last fall. If you have concerns about how your human behavior might alter our own aquatic bounty, you may want to add them here.

So, watch out: Where you point that water. Also, it wouldn't be wrong to be aware of bicyclists and pedestrians when you drive, follow expectations no matter your mode of movement, make eye contact at intersections, and always clean your plate.
Turfgrass Benefits (Beard and Green, 1994)

- **Environmental / Functional**
  - Erosion control, Dust prevention, Glare reduction, Heat dissipation, Carbon sequestration, Noise abatement, Groundwater recharge

- **Recreational**
  - Low-cost/safe surface, Provides opportunity for physical activity and social interaction

- **Aesthetic**
  - Beautiful, Enhances quality of life, Improves mental health, Increases property values
How Much Water Does my Lawn Need?

• Turfgrass water requirements are related to performance and quality
How Much Water Does my Lawn Need?

• 1-inch per week during drought period
  • Deep and infrequent
  • Two 0.5-inch applications (alt. three 0.33-inch apps)

• Cycle and soak to prevent runoff

• Conduct irrigation audit to determine run-time
Performing an Irrigation Audit

1. **Inspect Your Irrigation System**
   - Are you watering the sidewalk?
   - Check for broken heads

2. **Performance Test**
   - Place catch cans evenly throughout your lawn/zone

3. **Determine Precipitation Rate and Uniformity**
   - Measure how much water is in each cup

4. **Set an Irrigation Schedule**
   - Based on your audit you should know how long to run your system

https://extension.umn.edu/lawncare/auditing-home-lawn-irrigation-systems
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Inspect Your Irrigation System
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- Of 62 irrigation audits, 19 saw no “leaky” sprinkler heads.
- In other words, 70% of homes we audited had at least one “bad” sprinkler head.

Figure 31: Distribution of leaking heads
Performing an Irrigation Audit

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Performance Test
Performance Test

Recommended to place 20 catch cups for each zone you test

Run each zone for 30 minutes

Catch cans are found at irrigation supply stores but you can use old tuna cans or even coffee mugs
Performing an Irrigation Audit

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Determining Precipitation Rate

• Example Calculation
  • The average for all catch cups is 0.25 inches of water
  • The system ran for 30 minutes
    0.25 in x 2 = 0.5 in/hr
  • Your precipitation rate is...
    0.5 inches of irrigation applied every hour
Determining Uniformity

• Example Calculation
  • If you have 20 catch cups total, you divide the average of the lowest 5 catch cups by the average of all 20 catch cups
  • So if the average of the lowest 5 cups is 0.19 inches and overall average is 0.25 inches.....

  \[ 0.19 \div 0.25 = 0.76 \]

• Uniformity of your System is 0.76 or 76%
  • If below 60% you need to make adjustments to your system
Performing an Irrigation Audit

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https://extension.umn.edu/lawncauditing-home-lawn-irrigation-systems
Set an Irrigation Schedule

• Remember the precipitation rate (0.5”/hr)

• To apply 0.5” twice a week you would run your program for 60 minutes each time

• To apply 0.33” 3 times a week you would need to set the run-time for 40 minutes

\[
\frac{0.5”}{60 \text{ Minutes}} = \frac{0.33”}{? \text{ minutes}}
\]
Additional Information

https://turf.umn.edu/watering-wisdom-webinar-series

https://extension.umn.edu/lawncare/auditing-home-lawn-irrigation-systems

https://www.epa.gov/watersense

https://www.epa.gov/watersense/irrigation-pro
Questions?

Please use the Q & A feature in Zoom to ask any questions you have.

Please join us for our future webinars
sevans@umn.edu
Twitter - @WaterWiseShane