Connecting Home Landscaping With Healthy Lakes and Streams

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Growing Groundwater Concerns

Aquifer Level Change in the Prairie du Chien-Jordan
Aquifer 1945-2012
Orono
Climate Uncertainties in Minnesota

• More days over ninety degrees

• Increased intensity of humid and dry days

• Increased rainfall intensity with decreased frequency

• Decreased snow cover & increased average winter temperatures

• Increased wind & soil drying
Rainwater and Runoff
In natural areas, ~3” of the ~29” annual rainfall runs off the land.
In developed areas, ~20” of the ~29” annual rainfall runs off the land.

- ~35% significantly increase hard cover.
- ~15% remove trees and most native plant areas.
- ~55% compacted soil.

Significantly increase hard cover.
Where does all that runoff go?
Stormwater infrastructure takes runoff away from the area...
...to a place where it is captured and *maybe* treated...or not...
What is in it?
Nutrients

• Phosphorus (P)
• Nitrogen (N)

*1 lb of P supports 500 lbs of algae
Nutrients

• Phosphorus (P)
• Nitrogen (N)

*1 lb of P supports 500 lbs of algae
Eroded Soil and Sediment
Chemicals

- Oil
- Gas
- Pesticides
- Other...
Other pollutants...

- Garbage
- Bacteria and pathogens
- Thermal Stress
- Pollutants of emerging concern
Many Minnesota lakes and rivers don’t meet water quality standards

3,638 impairments on 400+ rivers and 1,696 lakes statewide
Our challenge:

Get this...

...to function like this.
Beyond Raingardens
Beyond raingardens...

- Plant areas of unused lawn with alternative plantings
- Build soil structure and increase organic content
- Contour the landscape to catch water and direct it to where it is needed
- Reduce the footprint of hard surfaces
- Manage lawns to conserve water
- Irrigate wisely
- Plant the right plant in the right place
- Plant deep rooted native plants (maybe?)
- Plant densely to shade the soil
- Mulch
- Combine all these methods!
Plant areas of unused lawn with alternative plantings
Replace large lawns with native plantings
Reforest, native grasses & wildflowers
Plant deep rooted native plants
Build soil structure by incorporating organic matter
Goal is to manage soils to:

• Readily infiltrate stormwater
• Store stormwater in the upper parts of the soil profile
• Prevent erosion
• Build fertility
The cheapest place to store water is in the soil

12” un-compacted soil holds 3” rainwater
Build soils that support resilient plant communities that are:

- Resistant to insects and disease
- Drought tolerant
- Productive
- Low maintenance
- Long lived
Avoid this!!
Plant the right plant in the right place
Contour the landscape to catch water and direct it to where it is needed
Prairie
Wet Prairie
Aspen-Oak Woodland
Oak Savanna
Reduce Hard Surfaces
Reduce Hard Surfaces
Rainwater Storage
Plant densely to shade the soil
Mulch
Mulch:
• Prevent erosion
• Enhance water percolation
• Retain moisture and nutrients
• Keep soil cool
• Feed the microbial community
Nature builds soil from the top down.
Conclusion

- Plant areas of unused lawn with alternative plantings
- Manage lawns to conserve water
- Irrigate wisely
- Build soil structure and increase organic content
- Contour the landscape to catch water and direct it to where it is needed
- Reduce hard surfaces
- Plant the right plant in the right place
- Plant deep rooted native plants
- Plant densely to shade the soil
- Mulch
- Combine all these methods
A few resources...

• Bluethumb.org
• Local county SWCD or watershed - $$ often available!
• U of MN Extension website – Yard and Garden
• Sustainable Urban Landscape Information Series – SULIS (http://www.extension.umn.edu/garden/landscaping/)
• Minnesota Department of Natural Resources (http://www.dnr.state.mn.us/gardens/nativeplants/index.html)

Thank you!
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