Agriculture and Water Quality in SW Wisconsin

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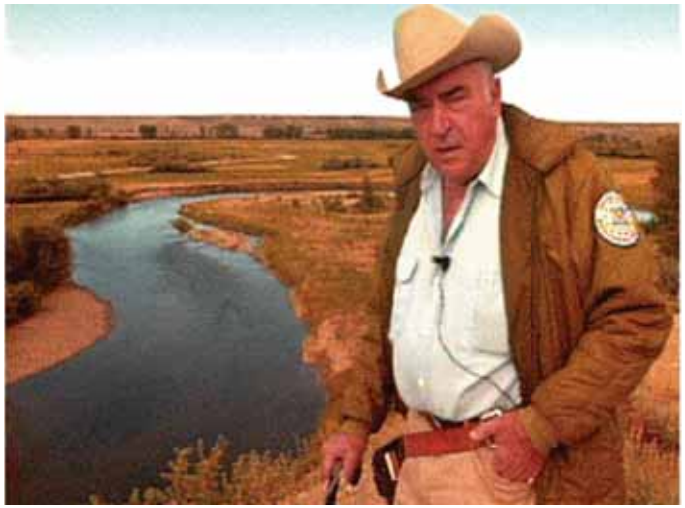
Why should you be thinking about water?

Farming practices affect…

- Quality and quantity of groundwater
- Quality and quantity of surface water runoff
- Soil health and farmland productivity
- Wildlife
- Downstream communities



"The health of our waters is the principal measure of how we live on the land."

Luna Leopold

1st Chief Hydrologist at US Geological Survey and son of Aldo Leopold

What I’m going to talk about

- Groundwater and Surface Water in SW Wisconsin
  - Factors that influence water quality
  - What we know about water quality
  - Implications for landowners & farmers

- Summary and final thoughts

Groundwater

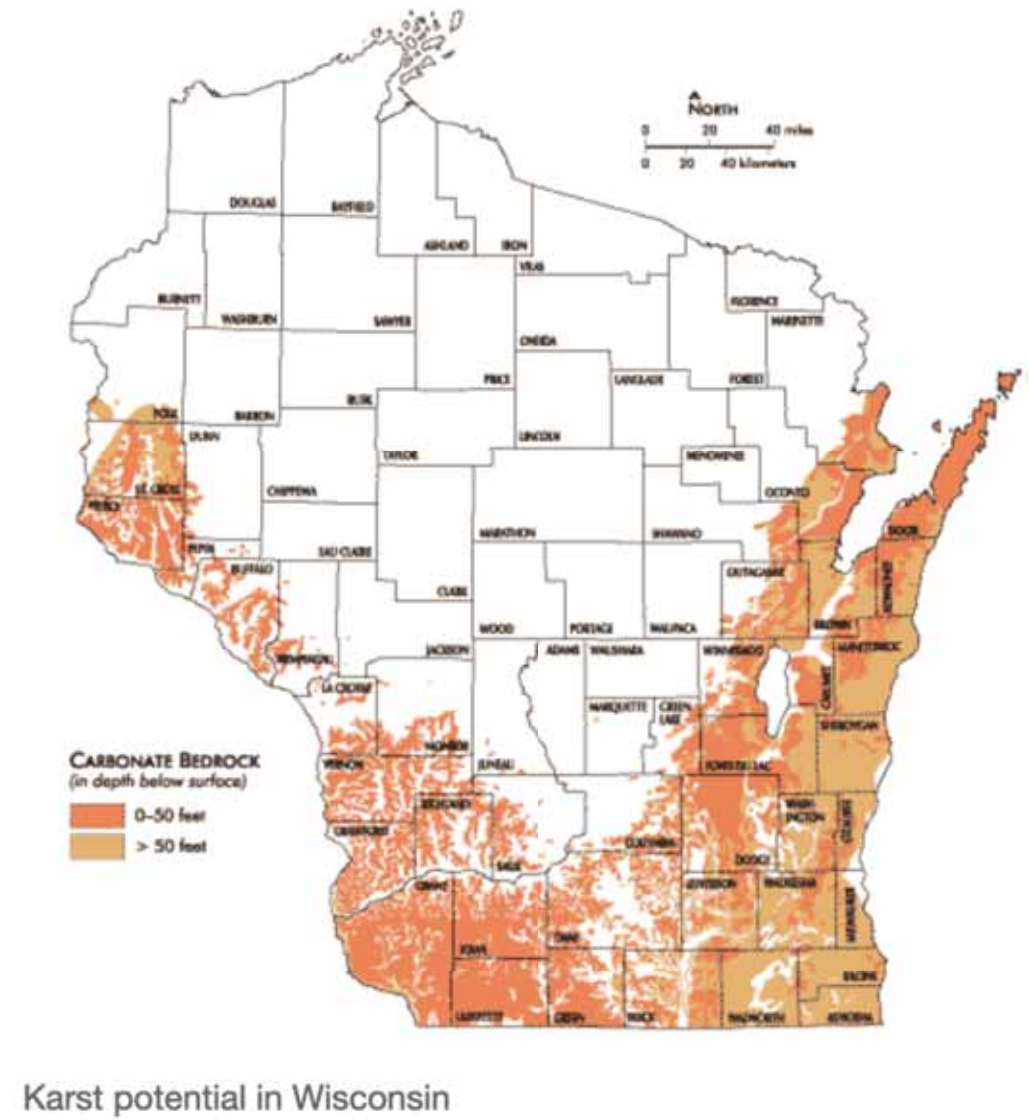
Geology in Driftless Region:
Influences how water moves through the ground

Dominant factors:

- Type of bedrock (fractured dolomite, limestone, sandstone, shale)

- Depth of soil to bedrock

Shallow soil depth to bedrock increases risk of groundwater contamination



Karst potential in Wisconsin

https://wgnhs.wisc.edu/water-environment/karst-sinkholes/

Groundwater Quality

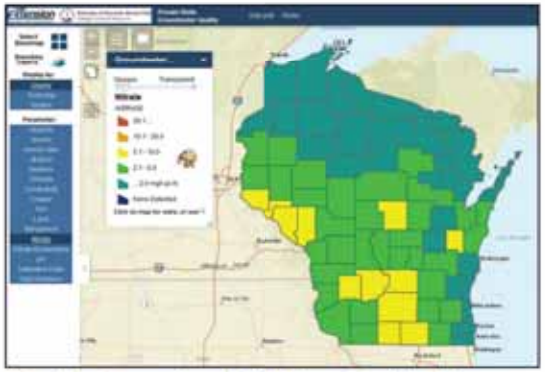
University of Wisconsin Stevens Point

Center for Watershed Science and Education

- Home
- Water & Environmental Analysis Lab (WEAL)
- Groundwater Center
- Activities
- Reports
- Presentations
- WI Well Water Quality Viewer
- Student Involvement
- Staff/Contact Us
- Archives

Well Water Quality Viewer: Private Well Data for Wisconsin

WI Well Water Quality Interactive Viewer



Use the Interactive Well Water Quality Viewer

Homeowners and local units of government can use this tool to:

Introduction

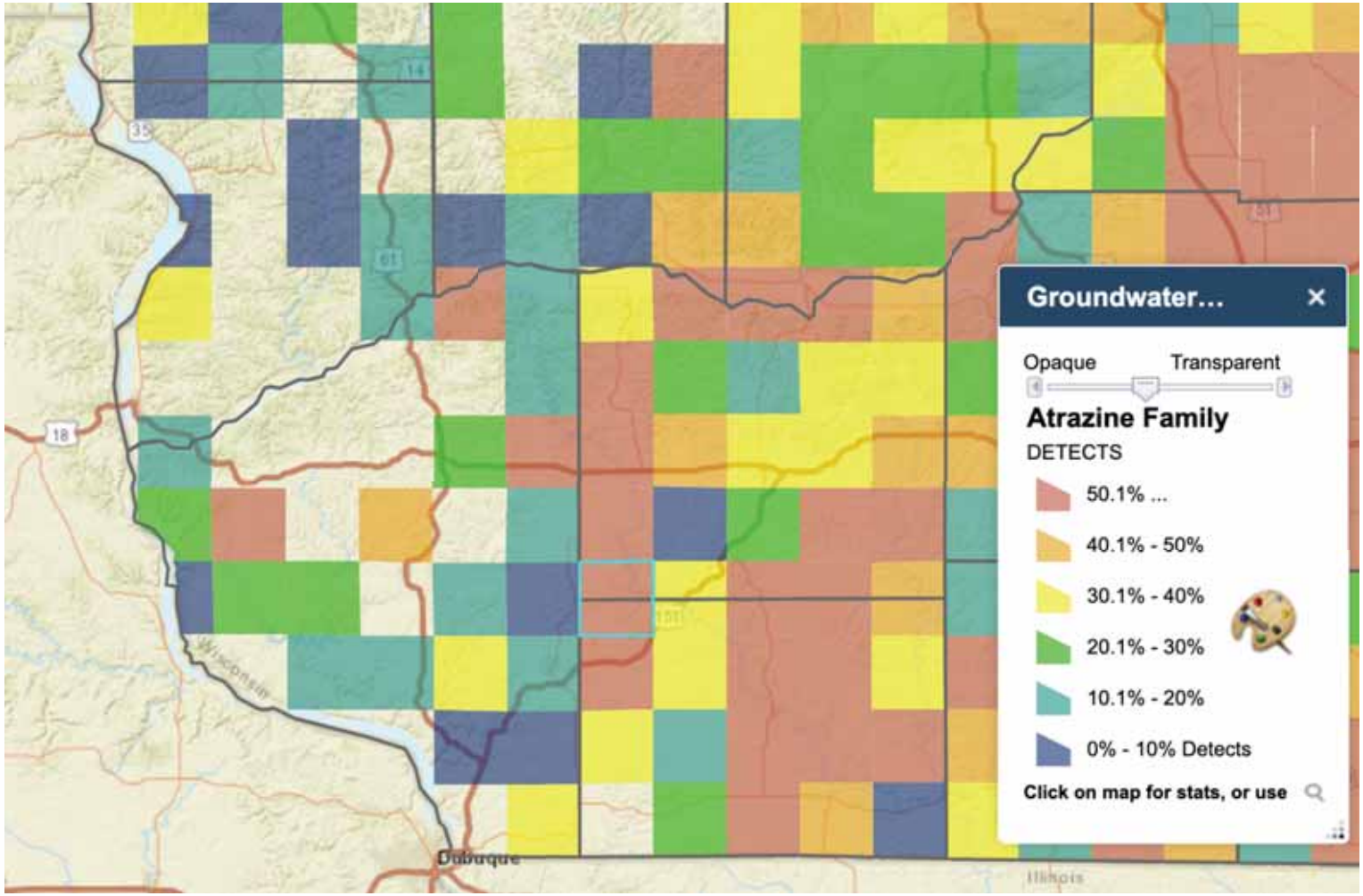
The WI Well Water Quality Interactive Viewer was created as an educational tool to help people better understand Wisconsin's groundwater resources that many of us rely on for our drinking water.

Nearly 900,000 households rely on private wells as their primary water supply. Homeowners with private wells are encouraged to have their well tested on a regular basis to determine the safety of the water supply for purposes such as drinking and cooking. While testing is the only way to determine the types and amount of contaminants in a well water system, homeowners and local officials often want to know more about water quality issues in their community.

How does the viewer work?

The viewer relies mostly on voluntarily submitted well water samples from homeowners and other well water data collected by state agencies over the past 25 years. It would not have been made possible without the many well owners who took the initiative to have their wells tested.

Atrazine in private drinking water wells



SOUTHWEST WISCONSIN GROUNDWATER & GEOLOGY (SWIGG) STUDY

A PROJECT OF GRANT, IOWA & LAFAYETTE COUNTIES

Table 1. Percentage of wells positive for total coliform, *E. coli*, and high nitrate* for two sampling events.

	(2018) November event (301 wells tested)				(2019) April event (539 wells tested)			
County	Total coliform	*E. coli*	High Nitrate*	Total coliform or High Nitrate*	Total coliform	*E. coli*	High Nitrate*	Total coliform or High Nitrate*
Grant	38	7	12	43	14	1	14	25
Iowa	26	3	13	33	14	1	13	25
Lafayette	40	3	27	55	23	4	21	36
All	**34**	**4**	**16**	**42 %**	**16**	**2**	**15**	**27 %**

*High nitrate exceeds the health standard of NO_3^--N > 10 mg/L

Groundwater
Considerations for Landowners and Farmers

- Monitor soil nutrient levels (soil test)
- Monitor drinking water wells
- Develop and follow a Nutrient Management Plan
- Maintain buffer around drinking water wells

Surface water in SW Wisconsin

https://dnr.wisconsin.gov/topic/Fishing/streambank/SWDriftlessTrout.html

Factors affecting surface water quality

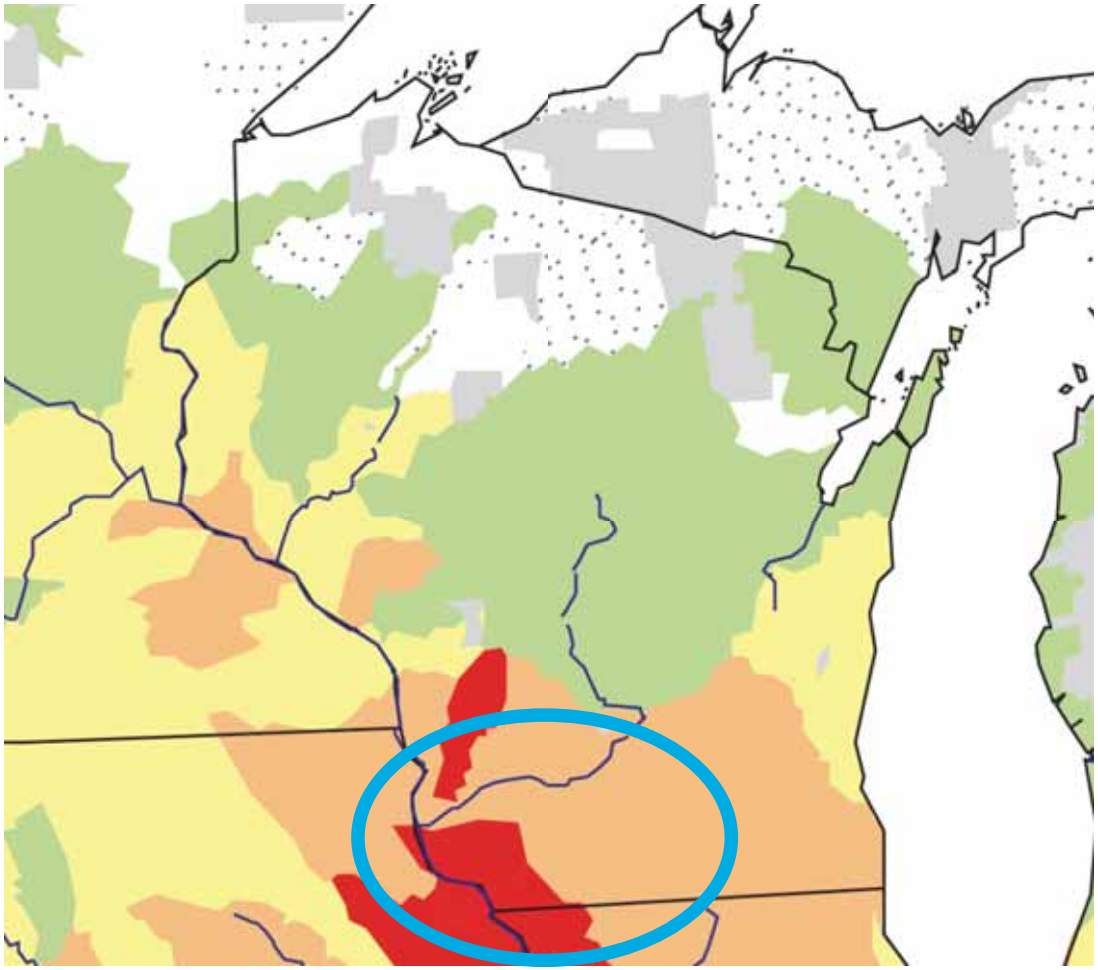
- Rolling terrain
- Increasing storm intensity
- Soil erodibility

Soil Loss from Cropland

Tons/Acre/Year

8 or more

5-8

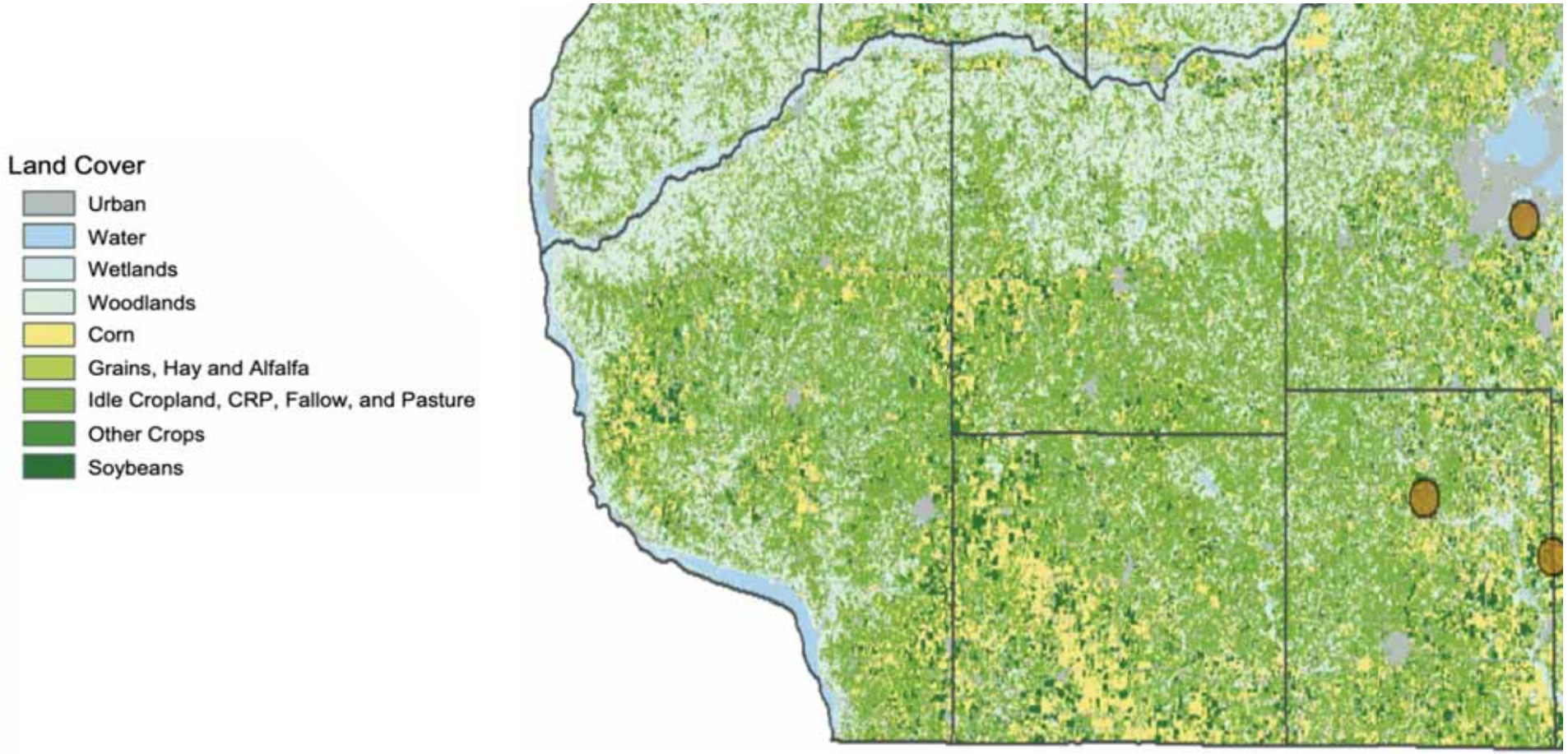


NRCS map 5055

Factors affecting surface water quality

- Rolling terrain
- Increasing storm intensity
- Soil erodibility
- Land use

Agriculture is the dominant land use in SW Wisconsin



What is the quality of surface water in SW Wisconsin?

https://dnr.wisconsin.gov/topic/Fishing/streambank/SWDriftlessTrout.html

Assessed and impaired streams

Map of SW Wisconsin showing assessed streams that are considered healthy (green) and streams designated as impaired (red) by Wisconsin DNR. Iowa County is in the top center of the map. This screenshot was taken from the WDNR Surface Water Data Viewer on April 24, 2020.

Primary causes of water quality impairment

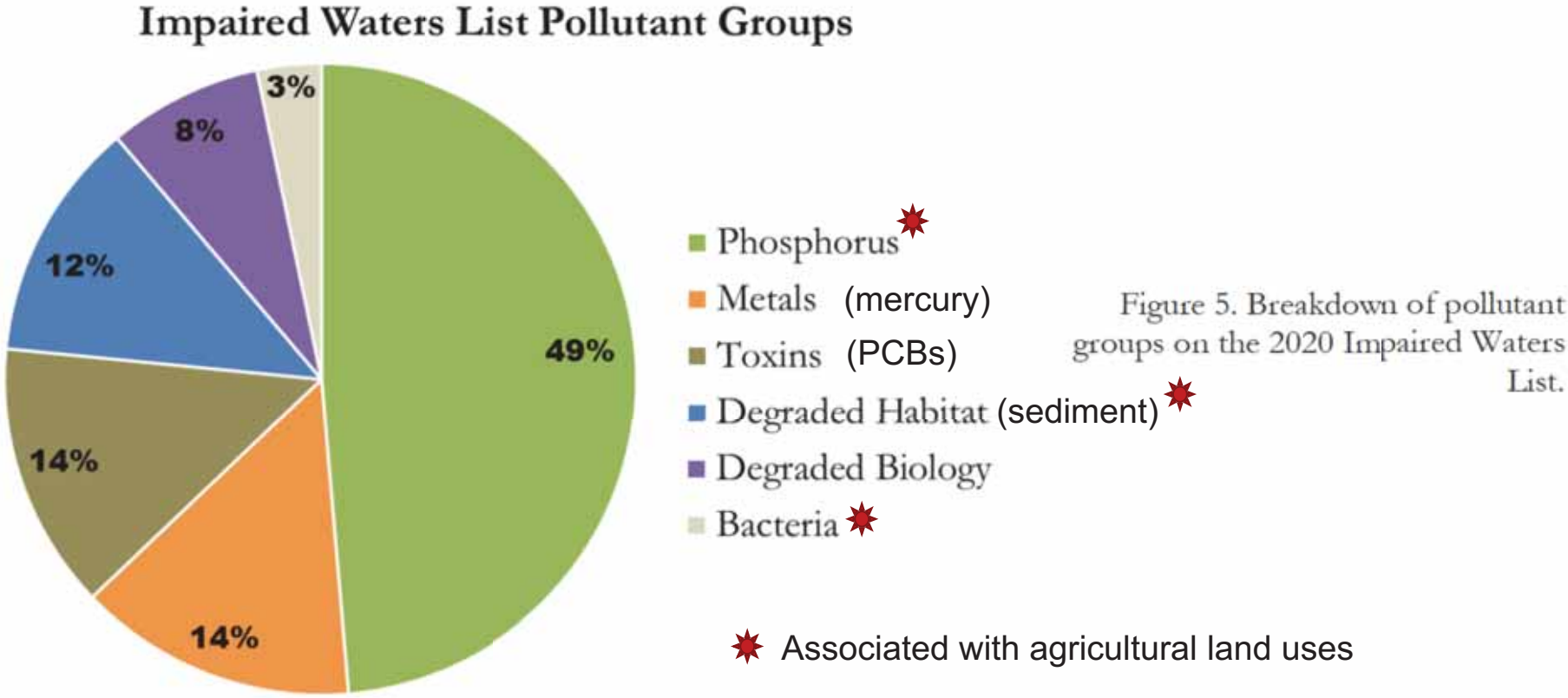


Figure 5. Breakdown of pollutant groups on the 2020 Impaired Waters List.

Associated with agricultural land uses

Surface Water
Considerations for Landowners and Farmers

- Utilize Nutrient Management Plans
- On sloping ground:
  - Perennial cover > living cover > crop residue
  - No till > reduced tillage
  - Managed grazing
- Along streams and concentrated flows:
  - Exclude livestock > stream crossings
  - Buffer strips

https://dnr.wisconsin.gov/topic/Fishing/streambank/SWDriftlessTrout.html

Summary and Final Thoughts

Stewardship of land and water resources is a shared responsibility

Know your land:

- Risks to ground and surface water quality
- Options for reducing risk