

The Ebb and Flow of our Lakes



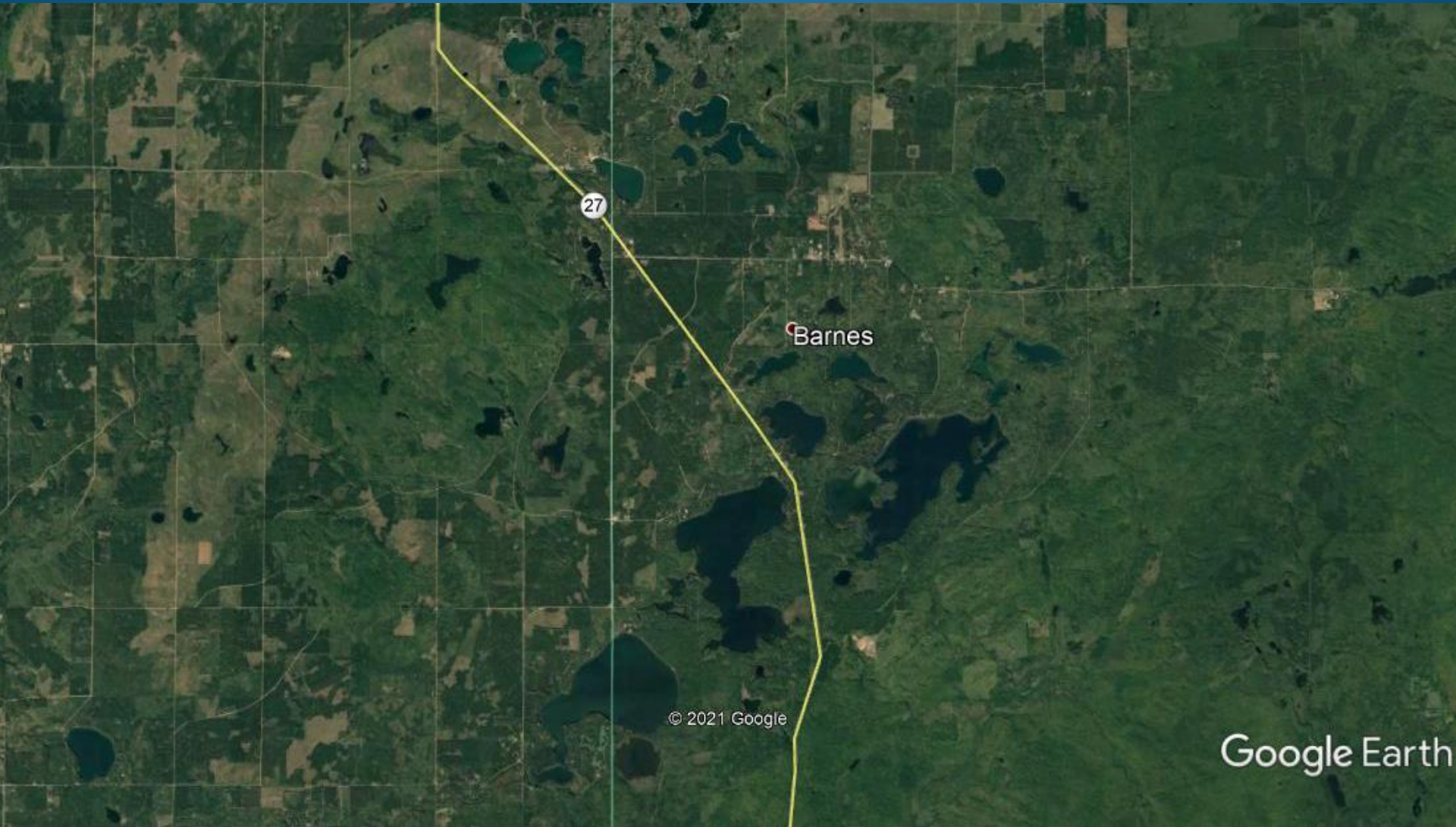
Jim Bakken
FOECLA Annual Meeting
July 17, 2021

FOECLA Mission Statement

“Our purpose is to protect, preserve and improve the environmental and aesthetic qualities of the Eau Claire Lakes Area Watershed including, the lakes, rivers, shore lands, forests and attendant wildlife resources.”

The Ebb and Flow of our Lakes

Outstanding Resource Waters
Top 1% of 15,000 lakes



The Ebb and Flow of our Lakes

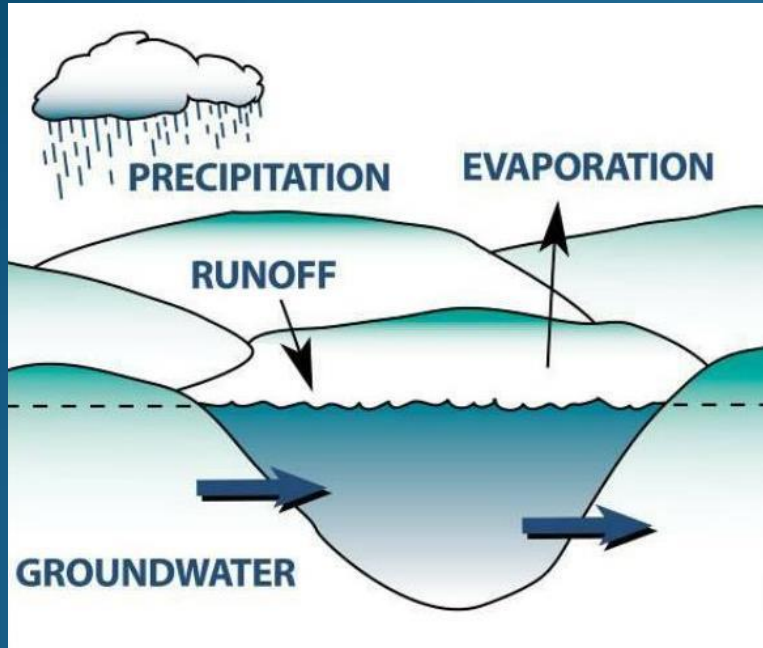
River Basins of Wisconsin

Continental Divide

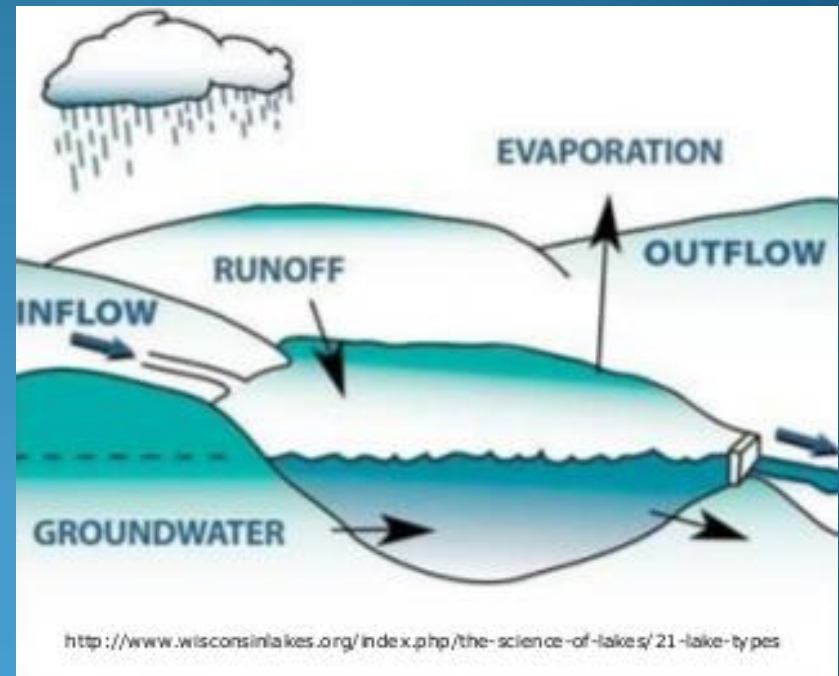
Eau Claire Lakes Area



The Ebb and Flow of our Lakes



Seepage Lake



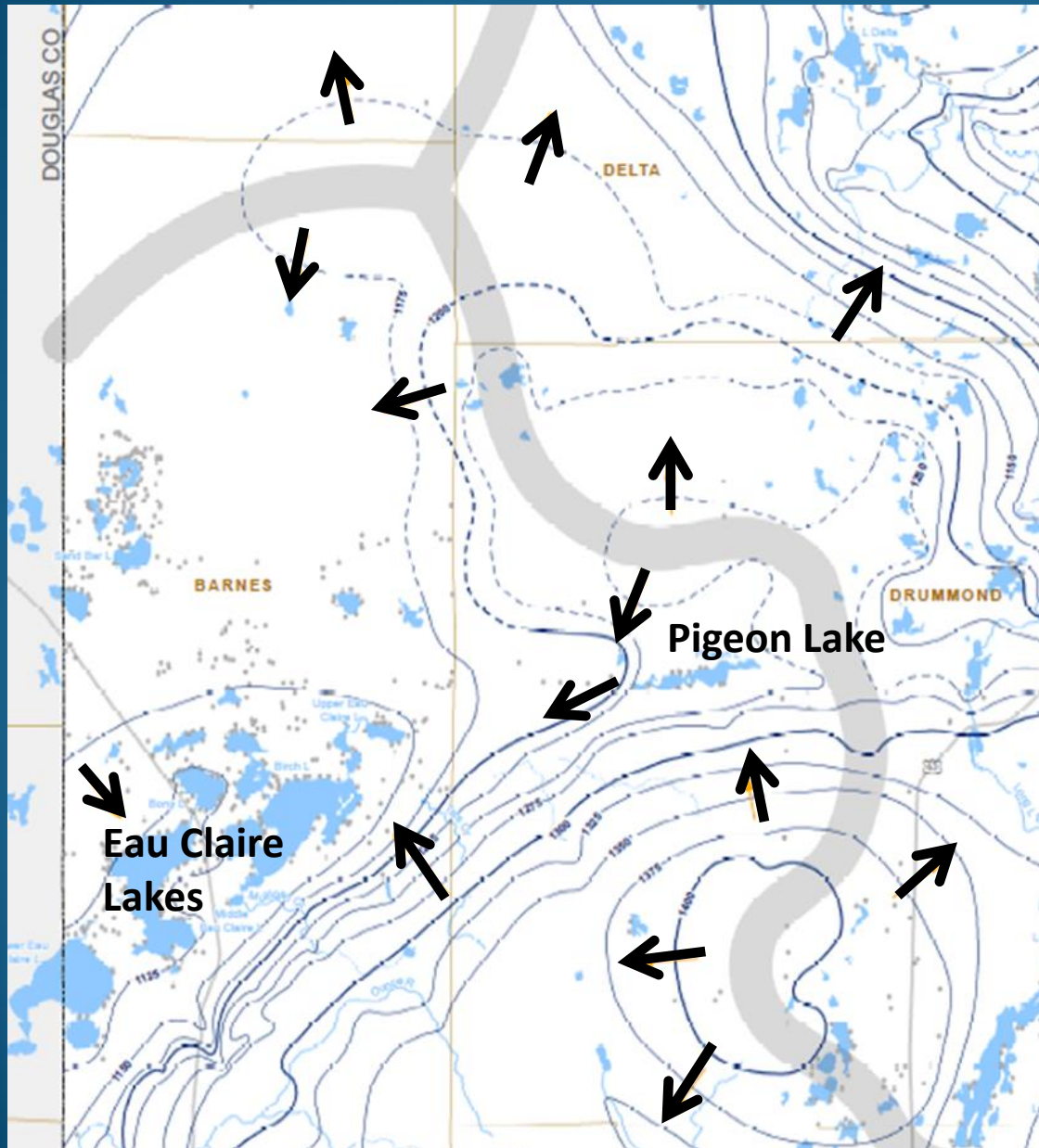
Drainage Lake

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Pigeon Lake 2008 and 2021



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Groundwater Flow

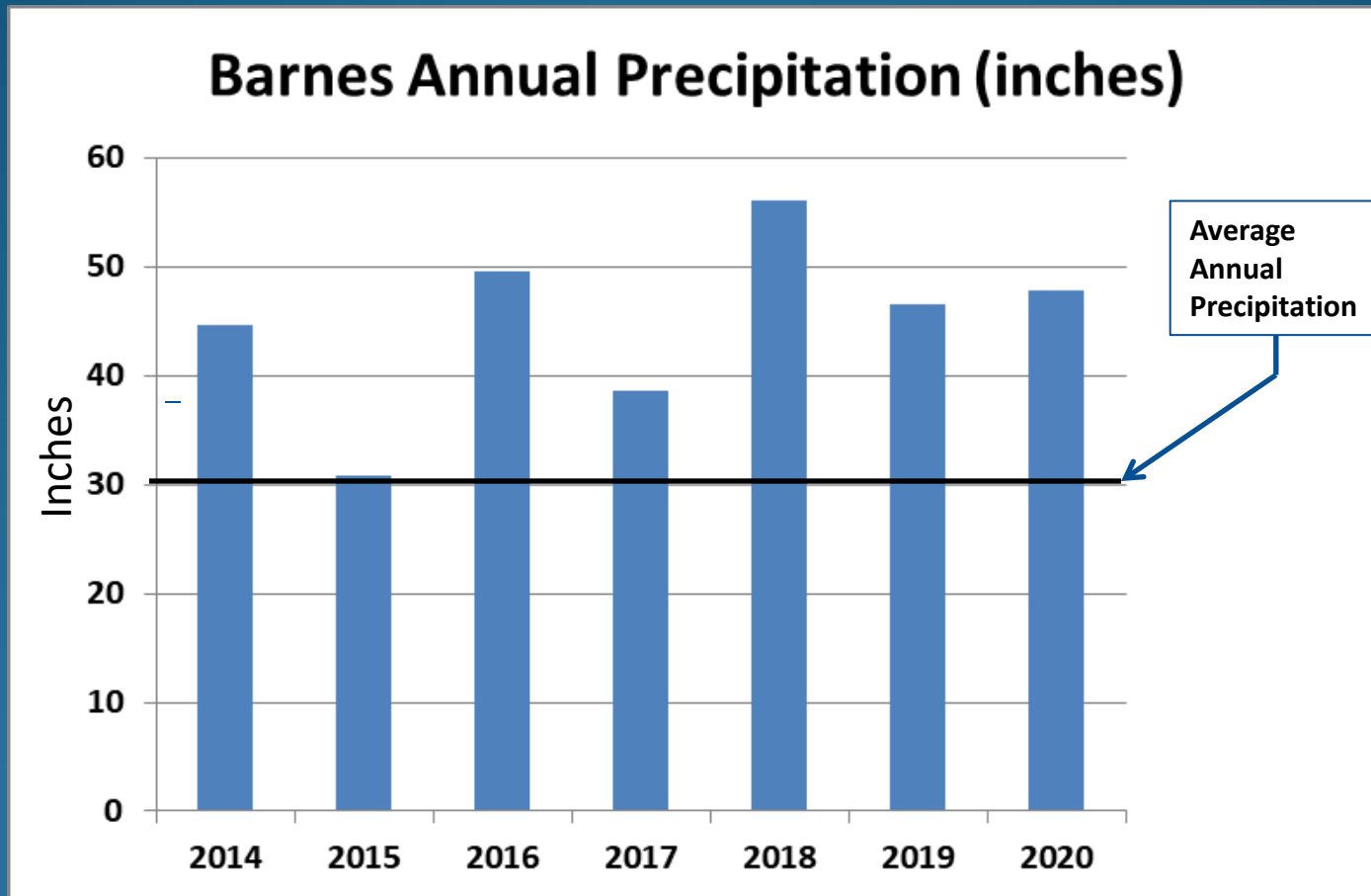
Generalized water-table elevation map

Anna C. Fehling and Madeline B. Gotkowitz
Open-File Report 2017-02, Plate 1, 2017

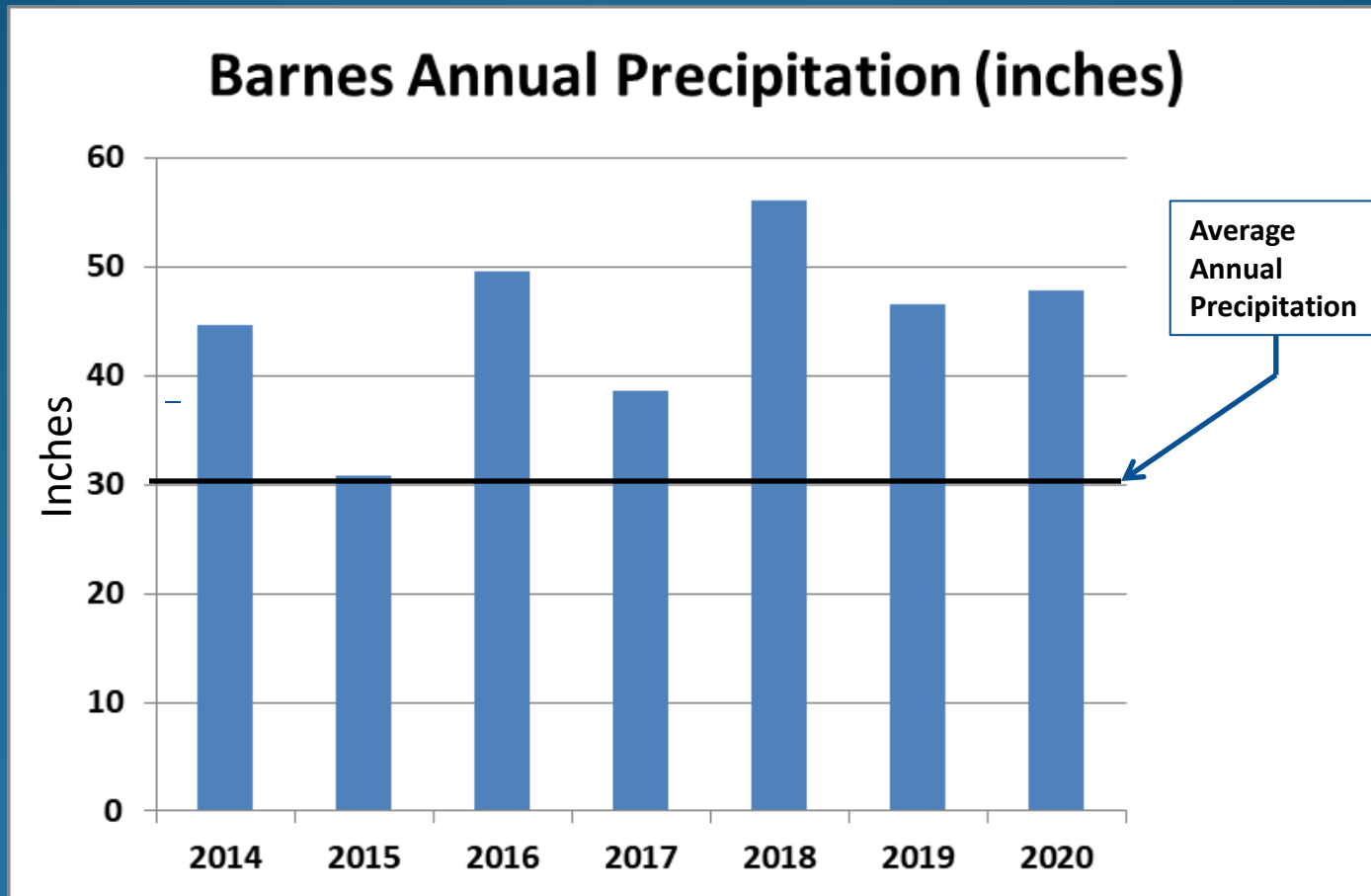
Symbols

- Water-table elevation, contour = 25 ft; datum is sea level, dashed where inferred
- index contour
- Approximate direction of shallow groundwater flow
- Groundwater divide, approximately located
- Well location
- Town boundary

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90" Cumulative excess precipitation 2014-2020

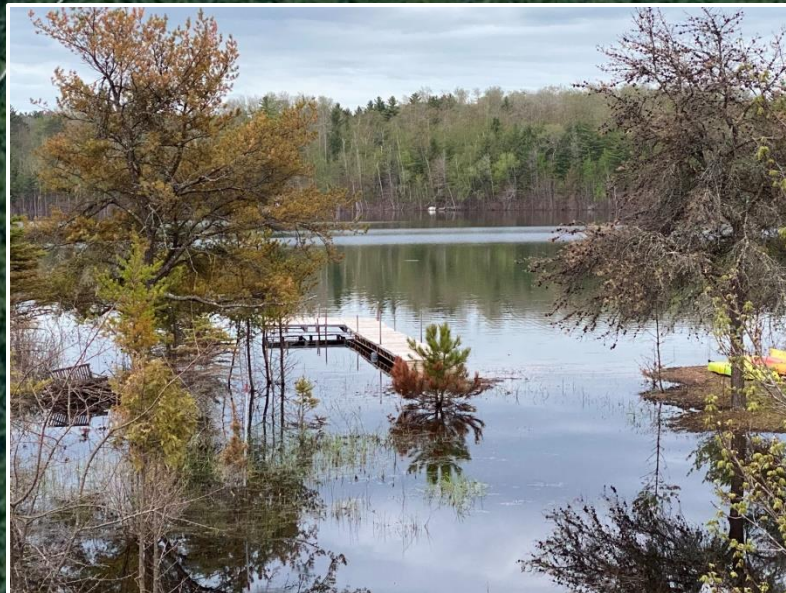
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Rd-13

Kelly Lake

Kelly-Lake-Rd



Twin Lake

Google

The Ebb and Flow of our Lakes



Lower Eau Claire Lake 1121.5 'msl

Mooney Dam
Douglas County



Middle Eau Claire Lake 1126.4 'msl

Middle Dam
Bayfield County



Upper Eau Claire Lake 1134.3 'msl

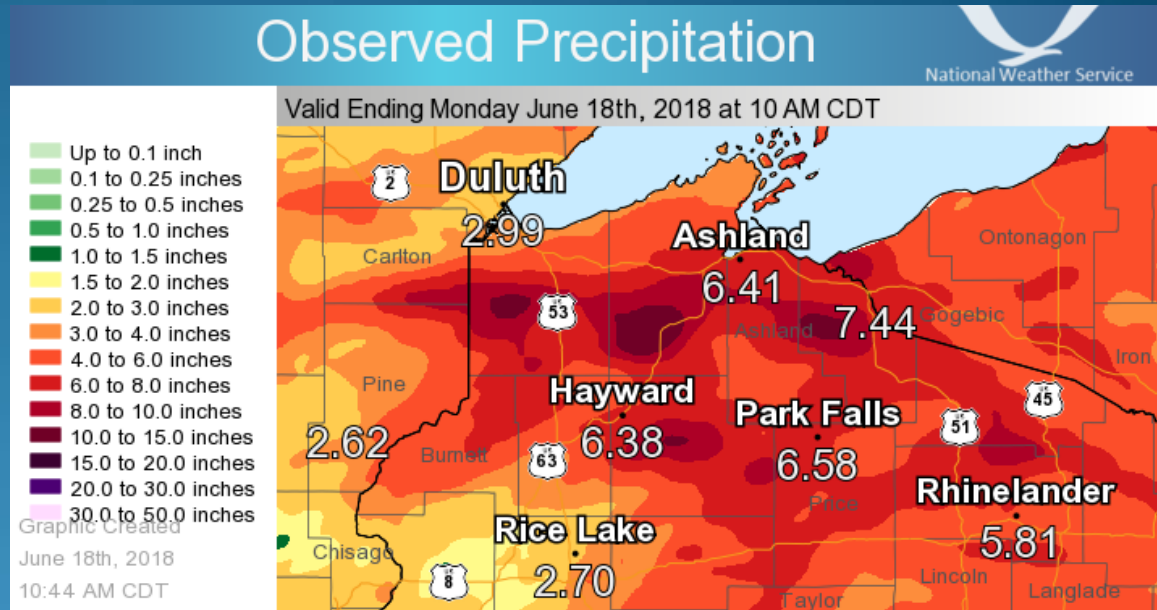
Upper Dam
Scott Lundberg

Profile of the Chain of Lakes

The Ebb and Flow of our Lakes

High Water

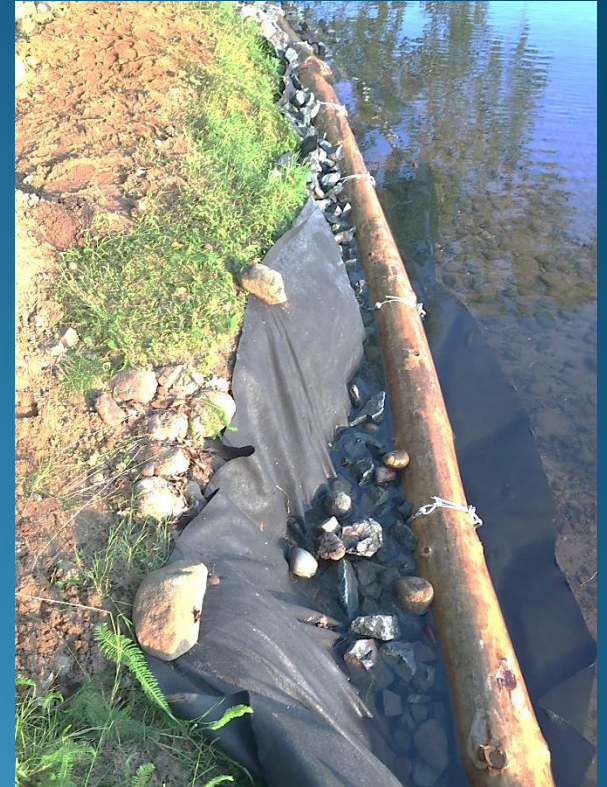
- Wet period - High Groundwater and increased base flow
- 2016 July Storm – 9”
- 2018 June Storm –13.5”



Resulted in

- Temporary and long term surcharge of Lower, Middle, Upper Lakes
- Increased erosion of shorelines
- Groundwater rose resulting in seepage lake surcharges, several feet in some cases

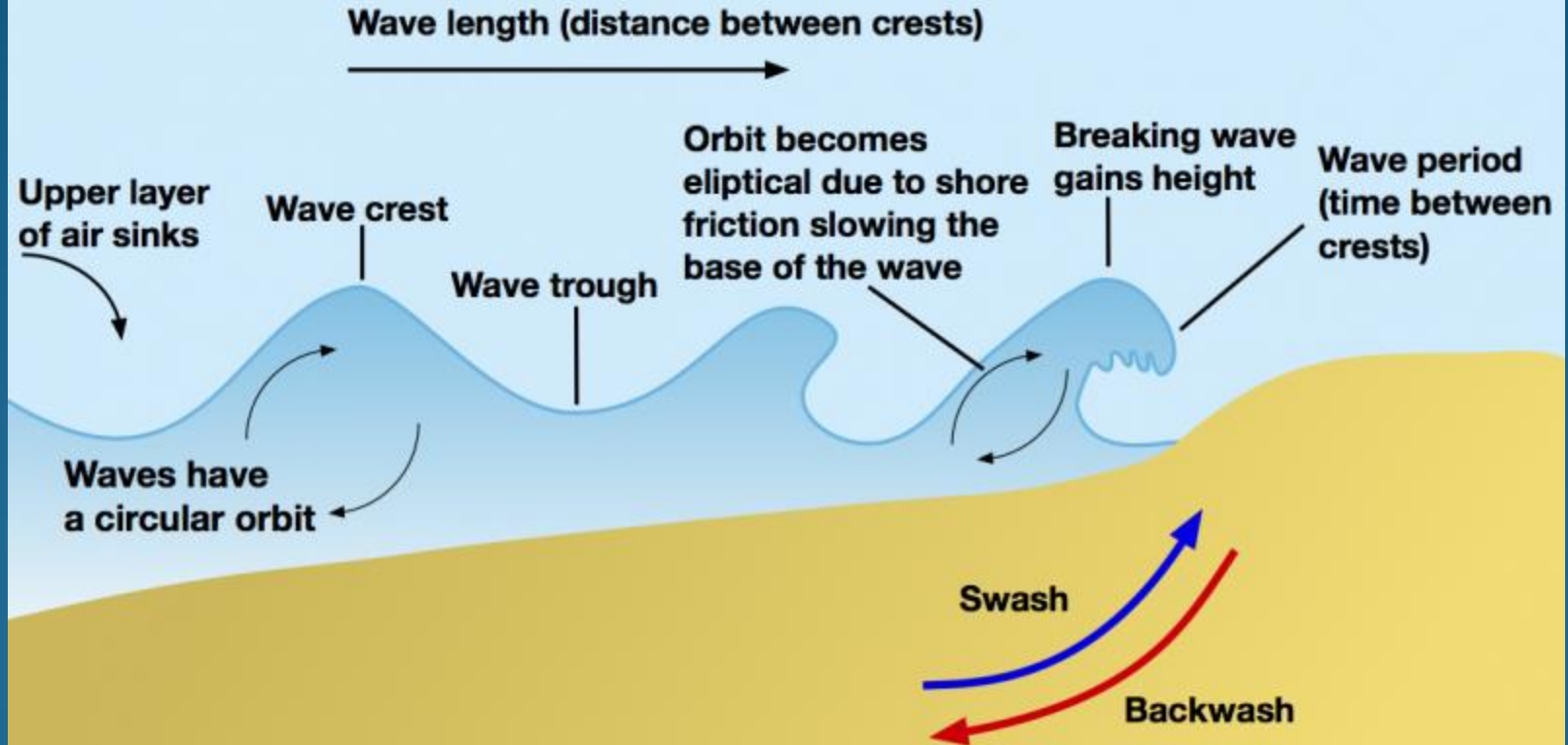
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Erosion reported
to us by local
shoreline owners

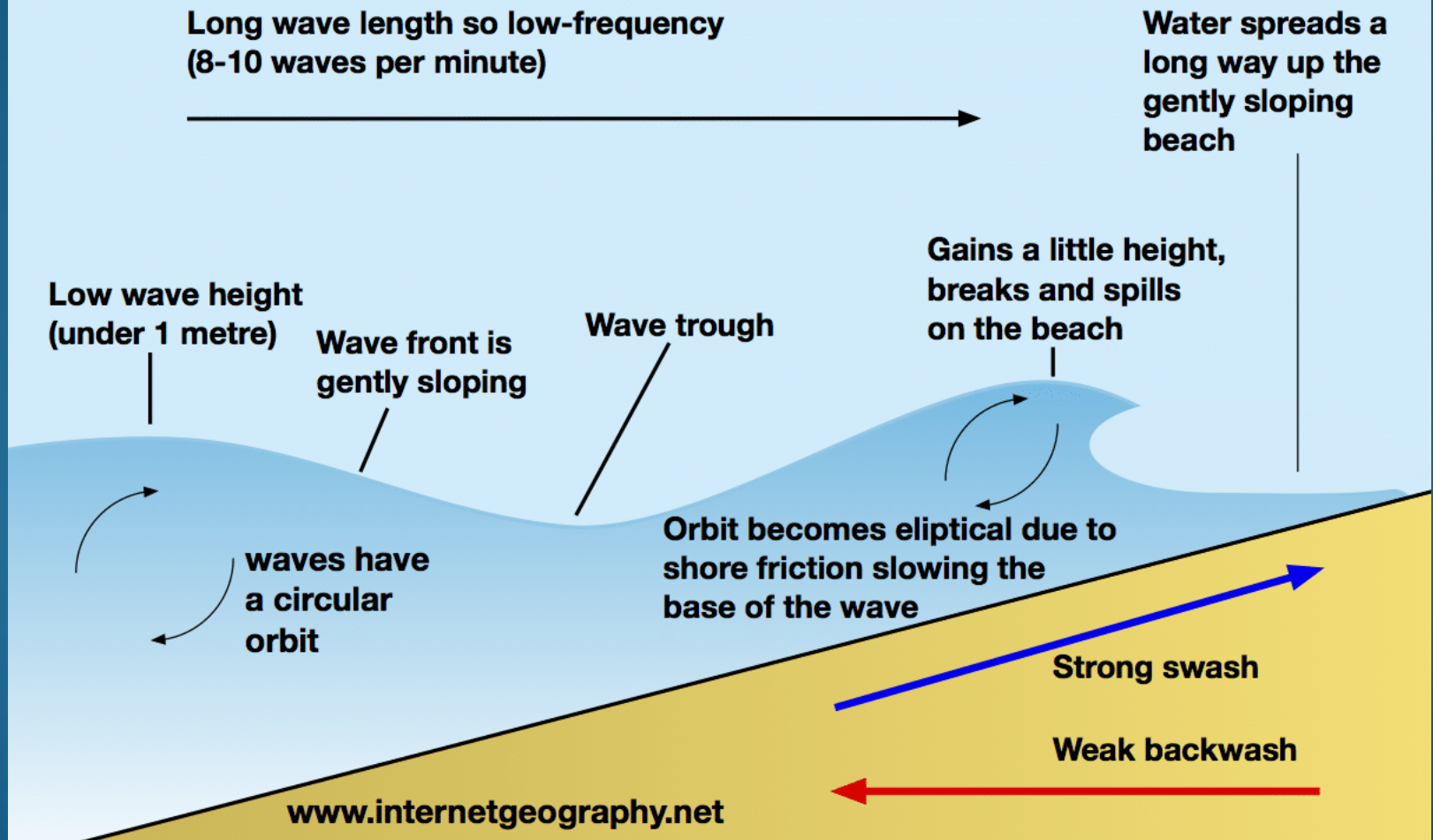
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Characteristics of waves



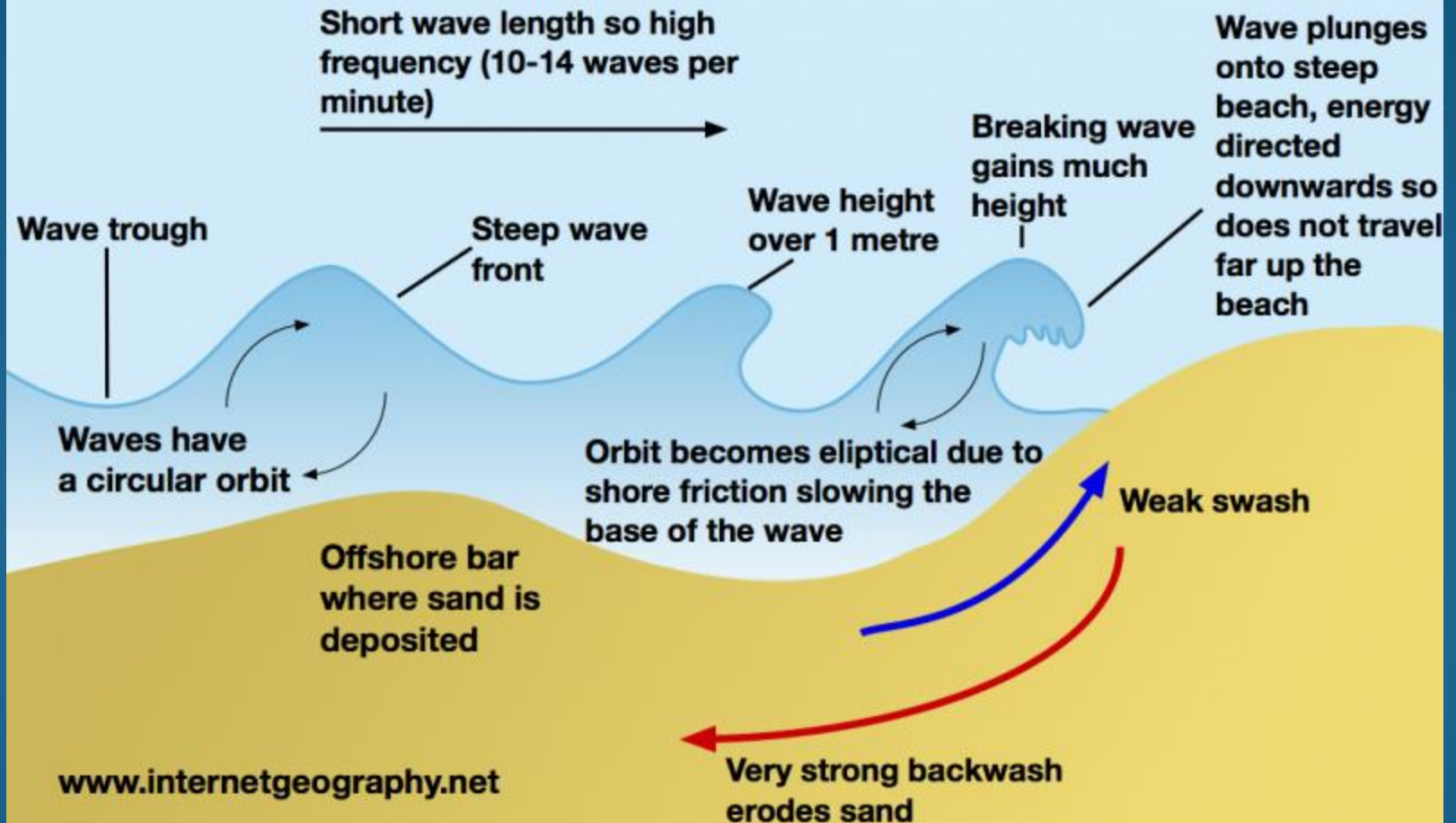
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Constructive Wave



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Destructive Wave



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High Water and Waves

- ❑ Wind Generated Waves
- ❑ Watercraft Wakes
 - Boats – Slow, no-wake speed within 100 ‘ of shoreline, dock, or swimmer
 - PWC – Slow, no-wake speed within
 - 100’ of any other vessel
 - 200’ of shore
 - 100’ of a dock, pier, or raft

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Environmental impacts of wakes

- Shoreline erosion
- Impaired water quality
- Loss of shoreline vegetation, which helps stabilize the shore and provides important habitat for fish and wildlife.
- These impacts are greater when water levels are high



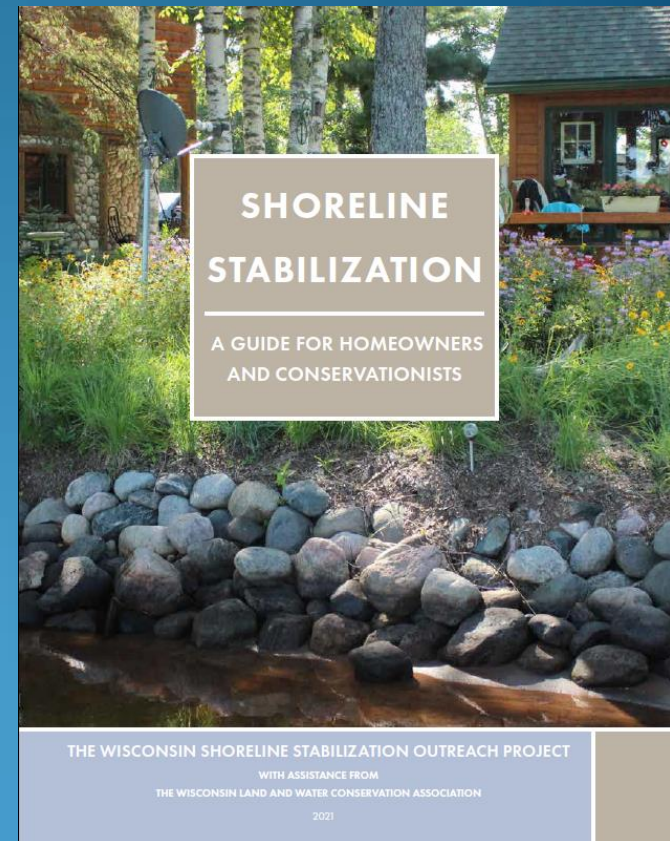
**OWN YOUR
WAKE**

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What Can We do?

- Boat wisely; own your wake
- Restore and/or maintain natural shoreline
- Stabilize eroding shorelines
- Adapt to high water

<https://www.bayfieldcounty.org/903/Shoreline-Protection-Resources>



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FOECLA High Water Proposal:

“Adapting to High Water Trends to Protect our Lakes”

- Establish gauges on area lakes to generate a database of historic lake levels to help manage and protect our lakes.
- Implement an educational approach for encouraging boaters to voluntarily restrict their boating to slow speed with minimal wake during periods of high water.

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- Gauges were installed by FOECLA and the ECL Conservation Club
- Twelve gauges are read weekly by nine Citizen Scientist Volunteers
- Water level is recorded and entered into DNR SWIMS database



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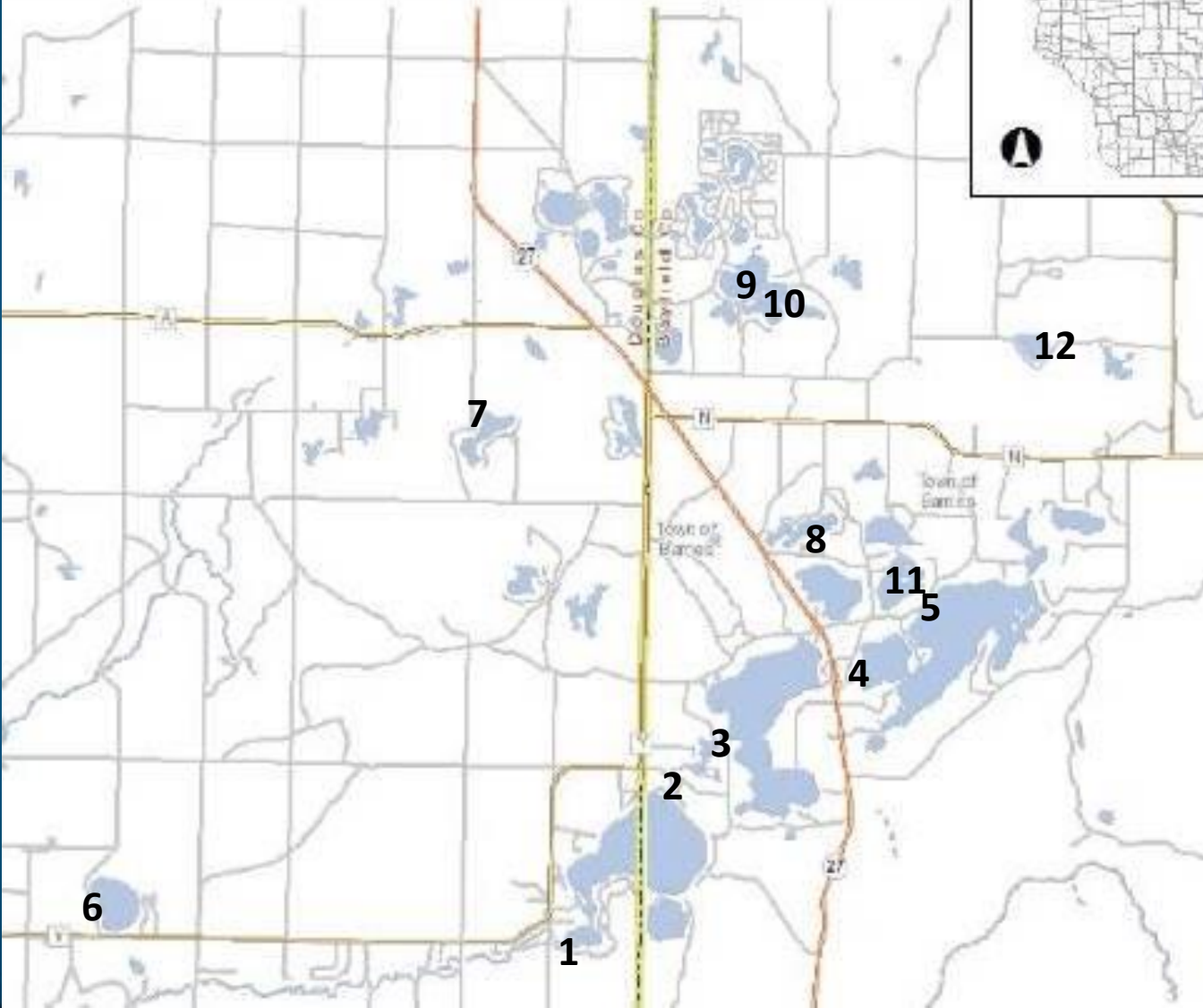
Gauges

- Data may be accessed through DNR Surface Water Data Viewer (SWDV)
- Data will be used to evaluate need to declare a “cautionary slow speed safety condition”



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Surface Water Data Viewer Map



Gauge Locations

1. Lower ECL
2. Middle, Dam
3. Middle, River Rd
4. Upper, Dam
5. Upper, Lake Rd
6. Simms Lake
7. Beauregard Lake
8. Pickerel Lake
9. Sand Bar Lake
10. Tomahawk Lake
11. Birch Lake
12. Kelly Lake

The Ebb and Flow of our Lakes

Citizen Scientist Volunteers

Clint Meyer

Jack Gribble

Susan Jansen

Jim Bakken

Susan Isernhagen

Bill Torguson

Kurt Beaver

Mary LaBadie

Dick Keifer

Susan Diedrich

Lower ECL

Middle ECL, River Rd

Upper ECL, Dam

Upper ECL, Lake Rd & Middle ECL Dam

Simms Lake

Beauregard Lake

Pickerel Lake

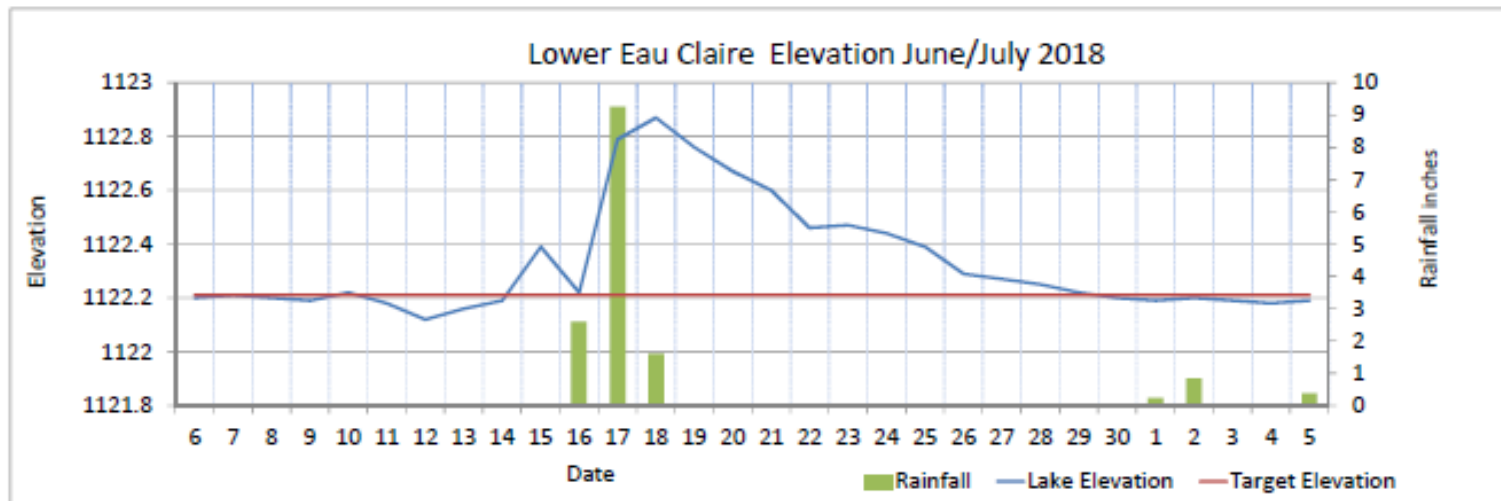
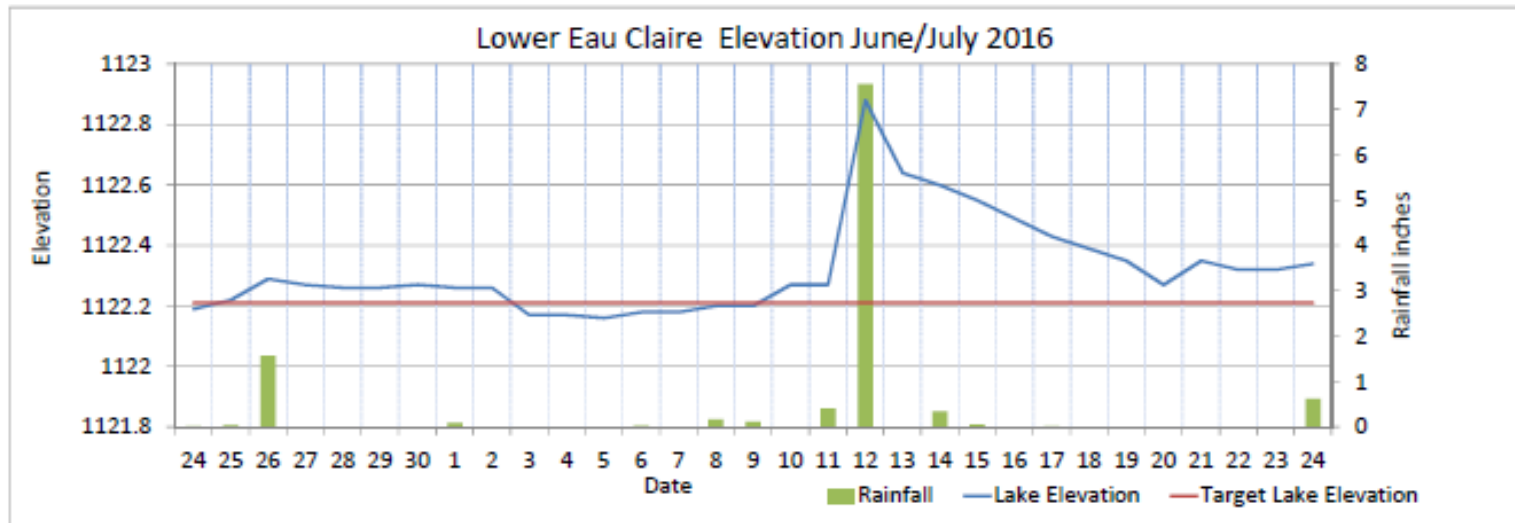
Tomahawk & Sand Bar Lakes

Birch Lake

Kelly Lake

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Example of data that can be generated with gauge data



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Future Tasks

- Public education on boater safety
- Establish lake trigger levels via public input
- Declare cautionary slow speed conditions during high water

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In fall 2020 we submitted a [WDNR Healthy Lakes & Rivers](#) grant application to help landowners with projects to help protect shorelines. Healthy Lakes Grant Program includes five practices

- Fish Sticks
- Native Plantings
- Diversions
- Rock Infiltration
- Rain Gardens



PURPOSE

To protect and restore the health of our lakes and rivers by increasing property owner participation in habitat restoration and runoff and erosion control projects.



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Fish Sticks



Native Plantings



Diversions



Rock Infiltration



Rain Gardens



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Healthy Lakes Grant Program

- **\$13,000 Grant**
- **Grant period ends December 31, 2022**
- **Maximum State contribution \$1,000 per practice**
- **Landowner pays 25% of practice cost**

Practices in the works for this grant

- **Fish Sticks**
- **Native Plantings**
- **Diversions**
- **Rain Garden**



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Diversion & Rain Garden Middle Eau Claire Lake



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Questions & Comments