

Groundwater & Lakes

Introduction to Groundwater

Paul McGinley

Measuring Groundwater

Nancy Turyk

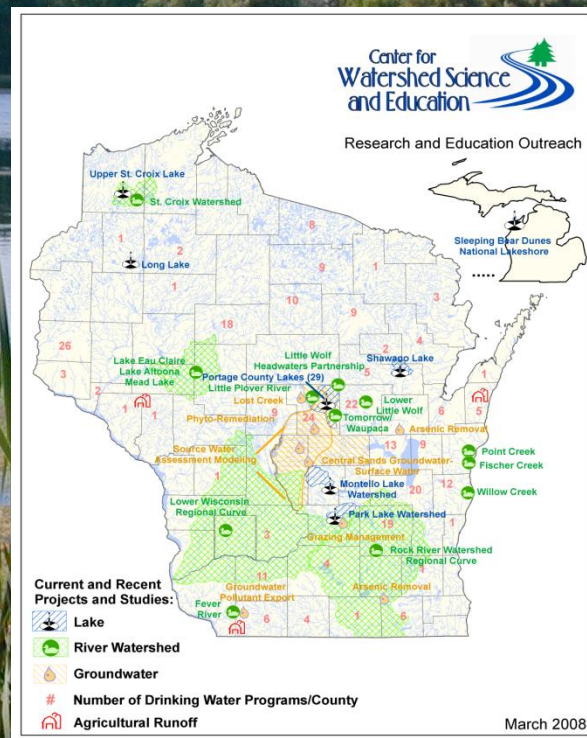
Drinking Groundwater

Kevin Masarik

Center for Watershed Science and Education



UW
Extension





UW-STEVEN'S POINT

MEN'S BASKETBALL

THE OFFICIAL SITE OF THE UNIVERSITY OF WISCONSIN-STEVEN'S POINT ATHLETICS

University of Wisconsin Stevens Point Athletics

Pointers Capture Third National Title



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3/20/2010 3:21:40 PM

[Box Score](#) | [Photo Gallery](#) | [Photo Gallery by William Mahone](#)

Also coming this week, Scott Krueger and John Zellmer's call of the game's final minute(s).

SALEM, Va. - A 22-5 run in the second half turned a 10 point University of Wisconsin – Stevens Point deficit into a seven point lead, 66-59, as the Pointer

men's basketball team held on for a 78-73 victory over the Ephs of Williams College in the 2010 NCAA Division III National Championship Game.

The 29th victories ties a school record for most wins in a season by a Pointer men's team, equaling the mark set by both the 2004 and 2005 National Championship teams.

"All I can say is we had tremendous courage at about that 10 minute mark when we fought back and put ourselves in position to reach our dreams," said Pointer head coach Bob Semling. "To be able to finish this game and finish this season with a victory...I'm extremely proud."

The first half was a see-saw battle with three ties and two lead changes as neither team led by

March Madness Raffle Winner

Live Stats

2009-10 Media Guide

Schedule

Roster

Team Statistics

Game Notes

Head Coach Bob Semling

2010 Boys Basketball Camp

Backcourt Club

Archived Stories

Records

All-Time Scoring List

Past Seasons

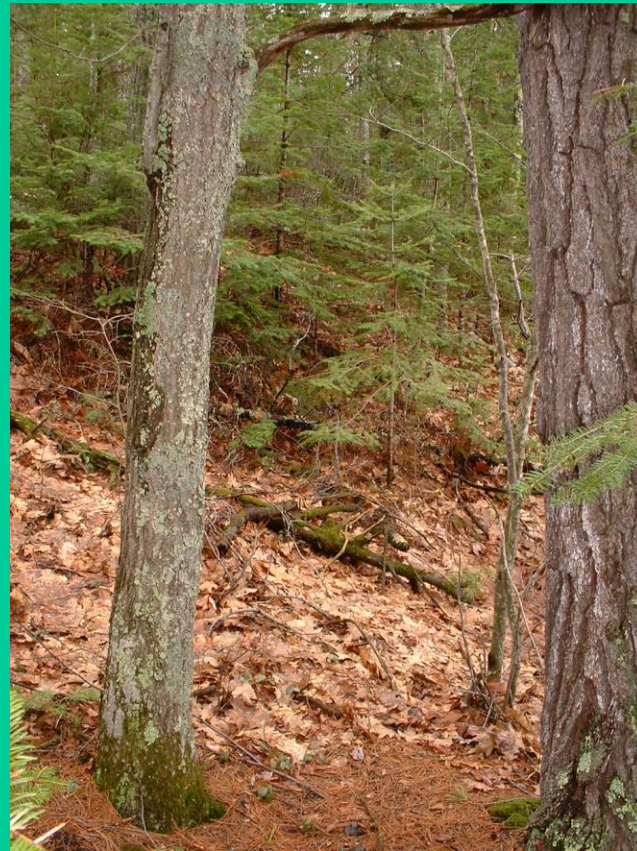
Other Links

Recent Results

There are no recent results.

- MEN'S SPORTS
 - Baseball
 - Basketball
 - Cross Country
 - Football
 - Hockey
 - Swimming & Diving
 - Track & Field
 - Wrestling
- WOMEN'S SPORTS
- WELCOME RECRUITS
- INSIDE ATHLETICS
- POINTER TRADITION
- GIVING TO ATHLETICS
- YOUTH CAMPS
- VISITOR INFO

See any groundwater?



See any groundwater?

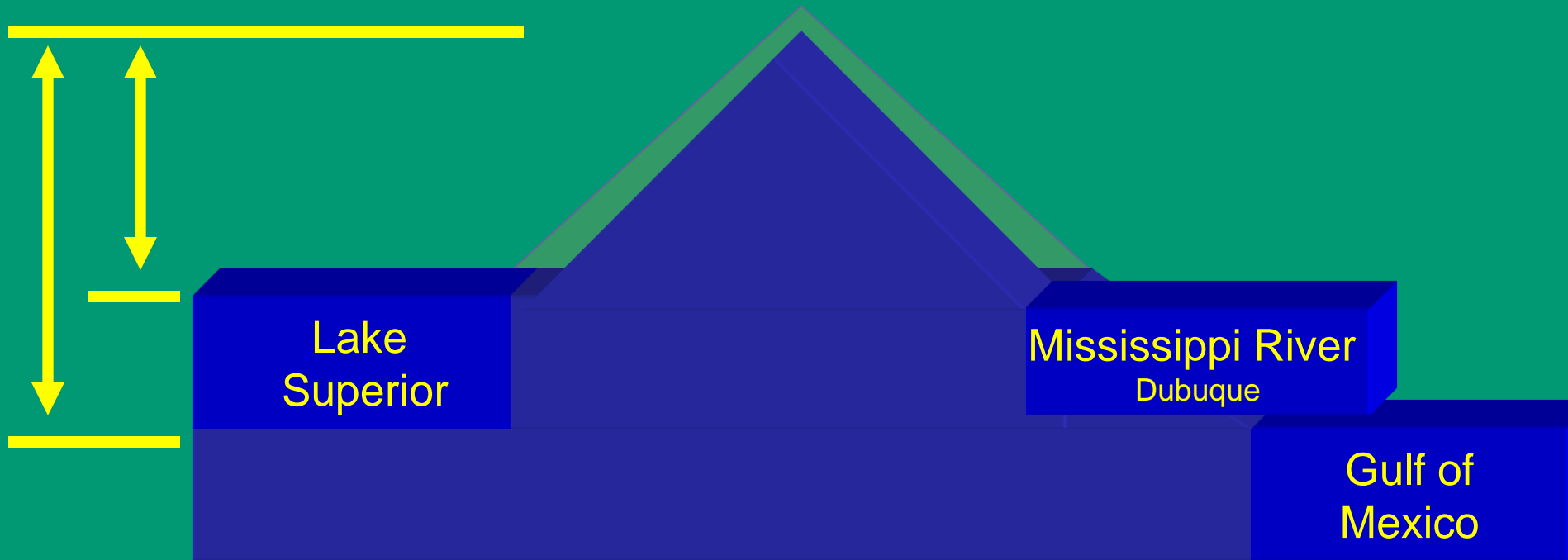


A 3D map of Wisconsin showing groundwater resources. The map is rendered in a dark blue color, with a lighter blue gradient at the top. The map is set against a dark blue background with a red-to-orange gradient at the bottom. The map shows the outline of Wisconsin and its major water bodies.

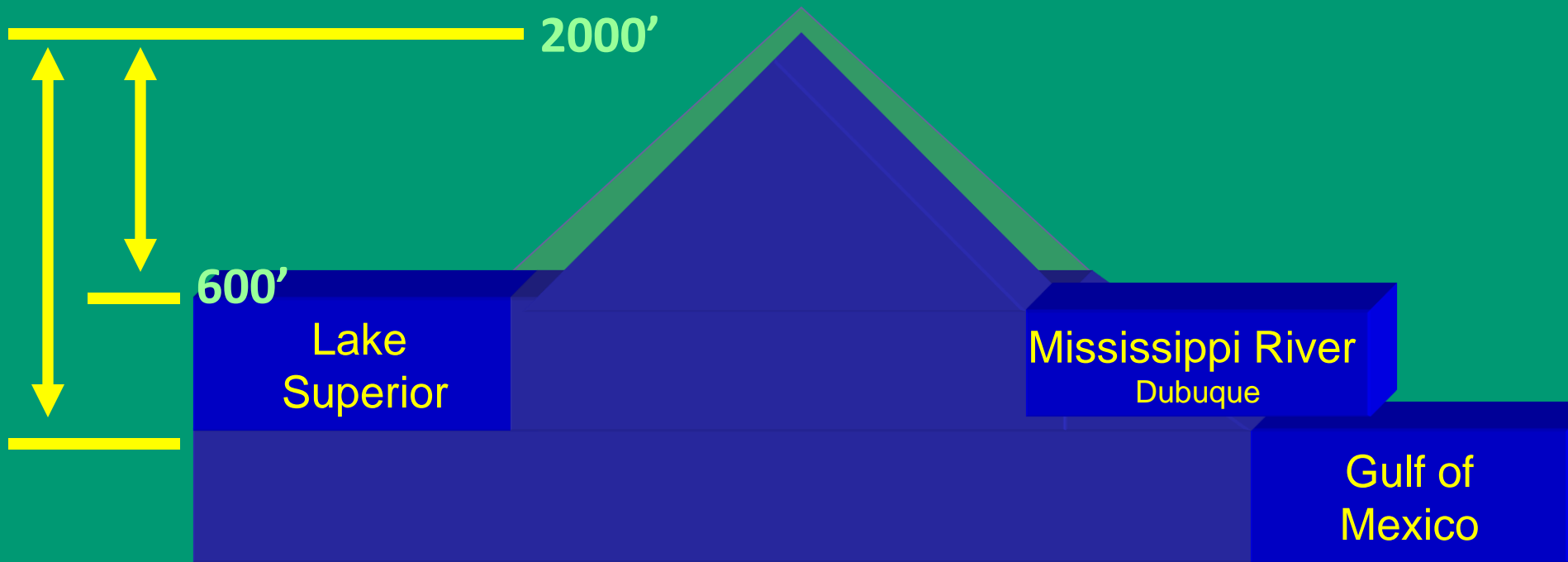
WISCONSIN GROUNDWATER

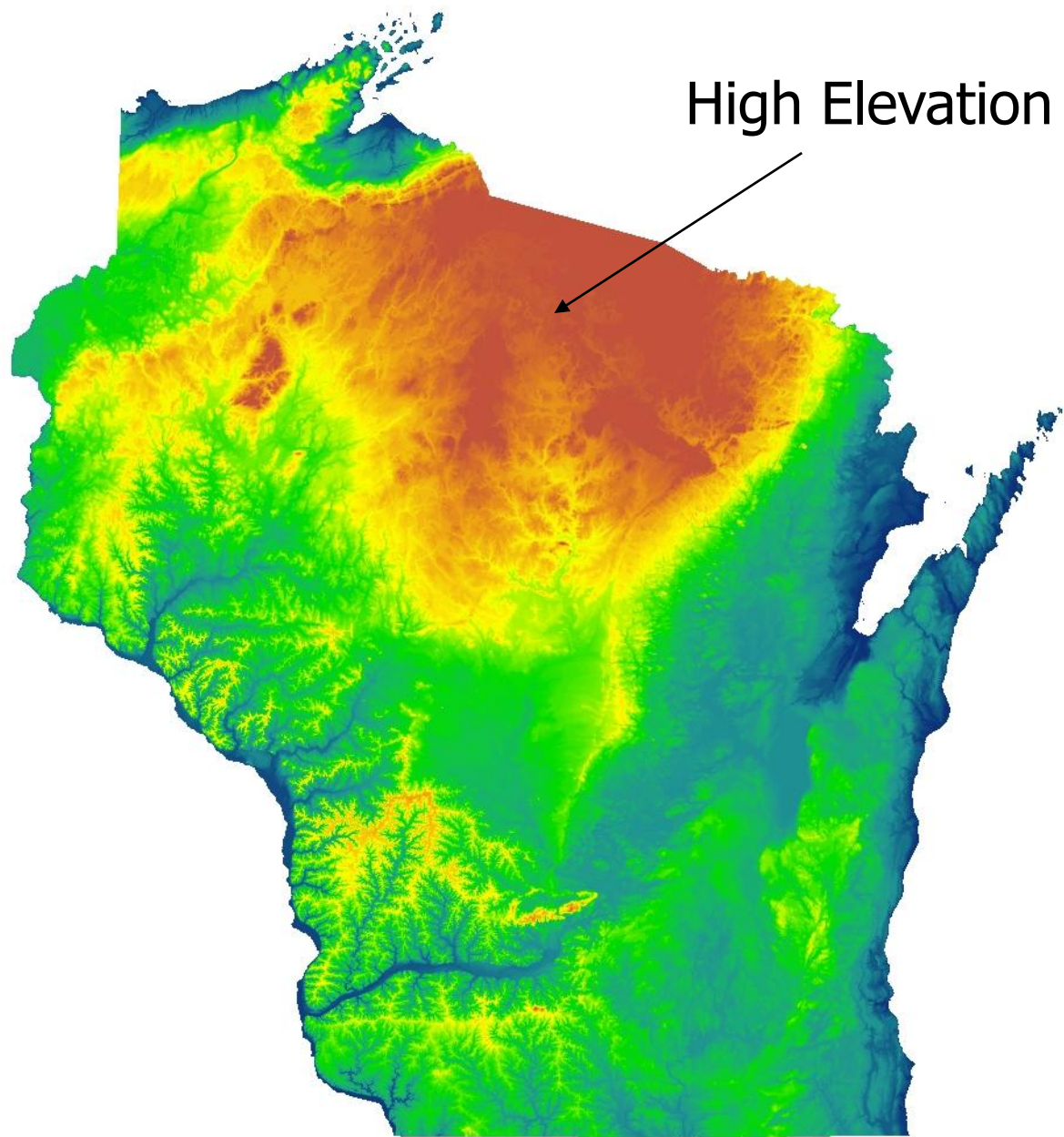
**Could cover
the state
100 feet deep**

WISCONSIN?



WISCONSIN?





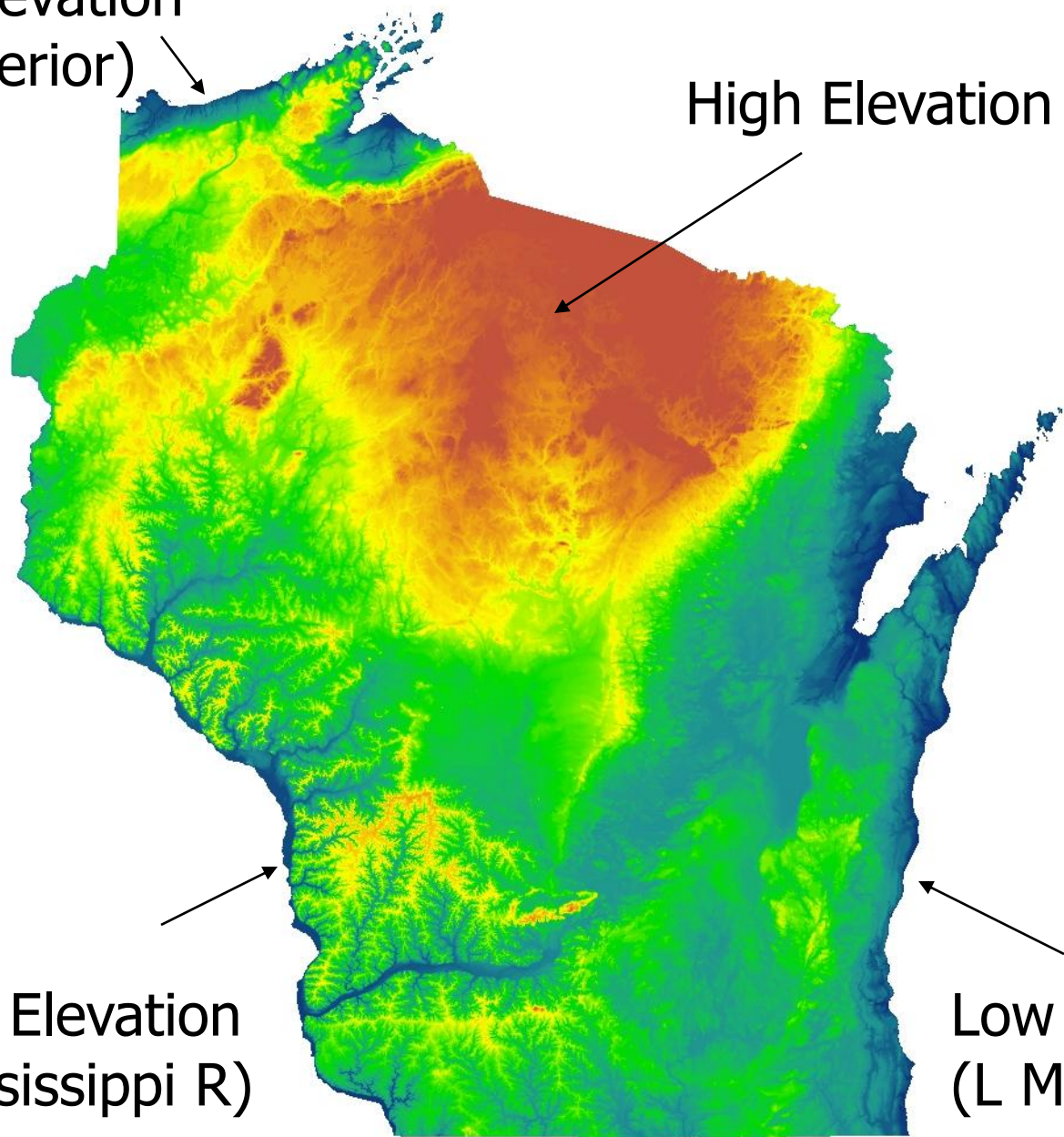
High Elevation

Low Elevation
(L Superior)

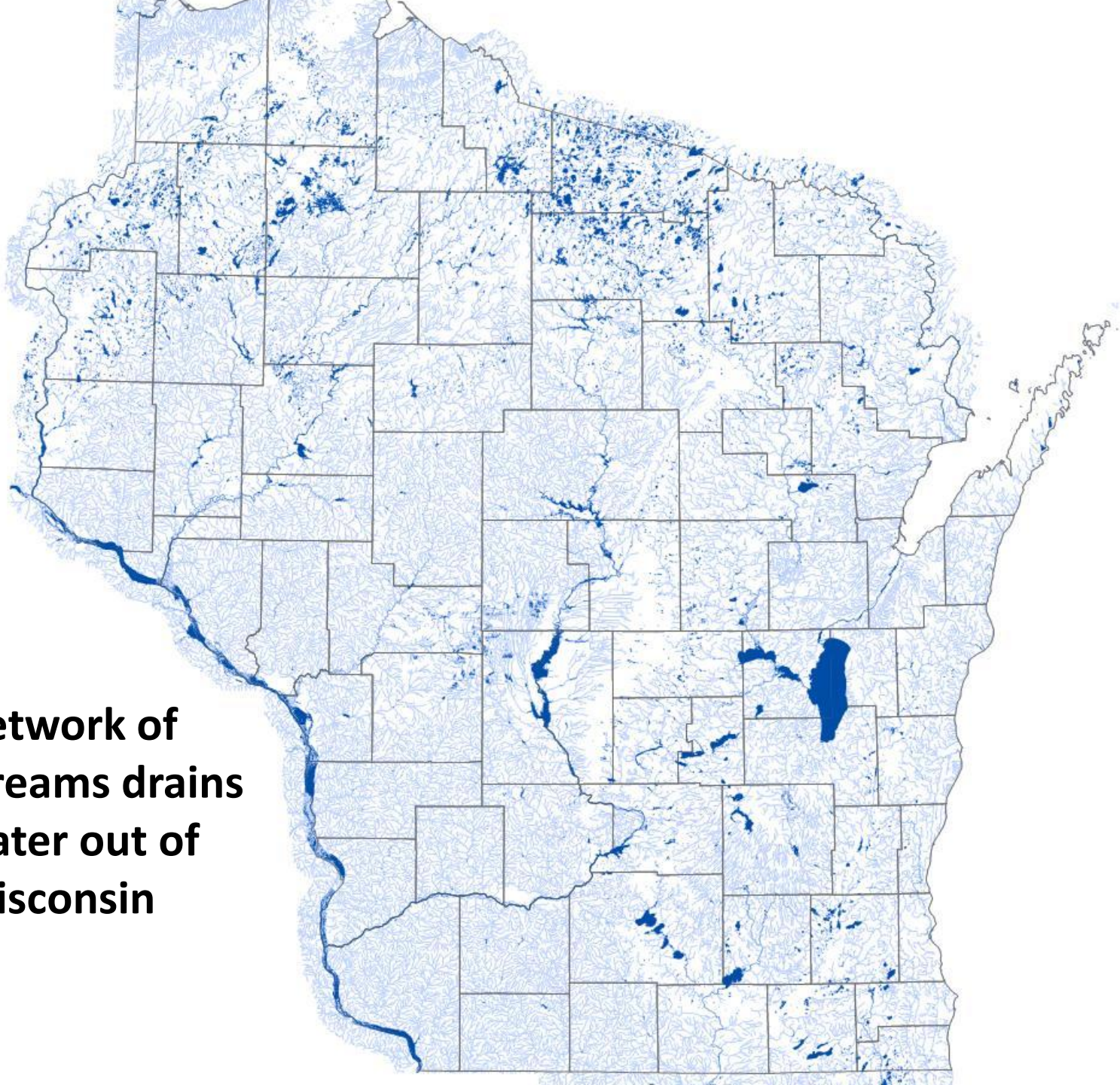
High Elevation

Low Elevation
(Mississippi R)

Low Elevation
(L Michigan)



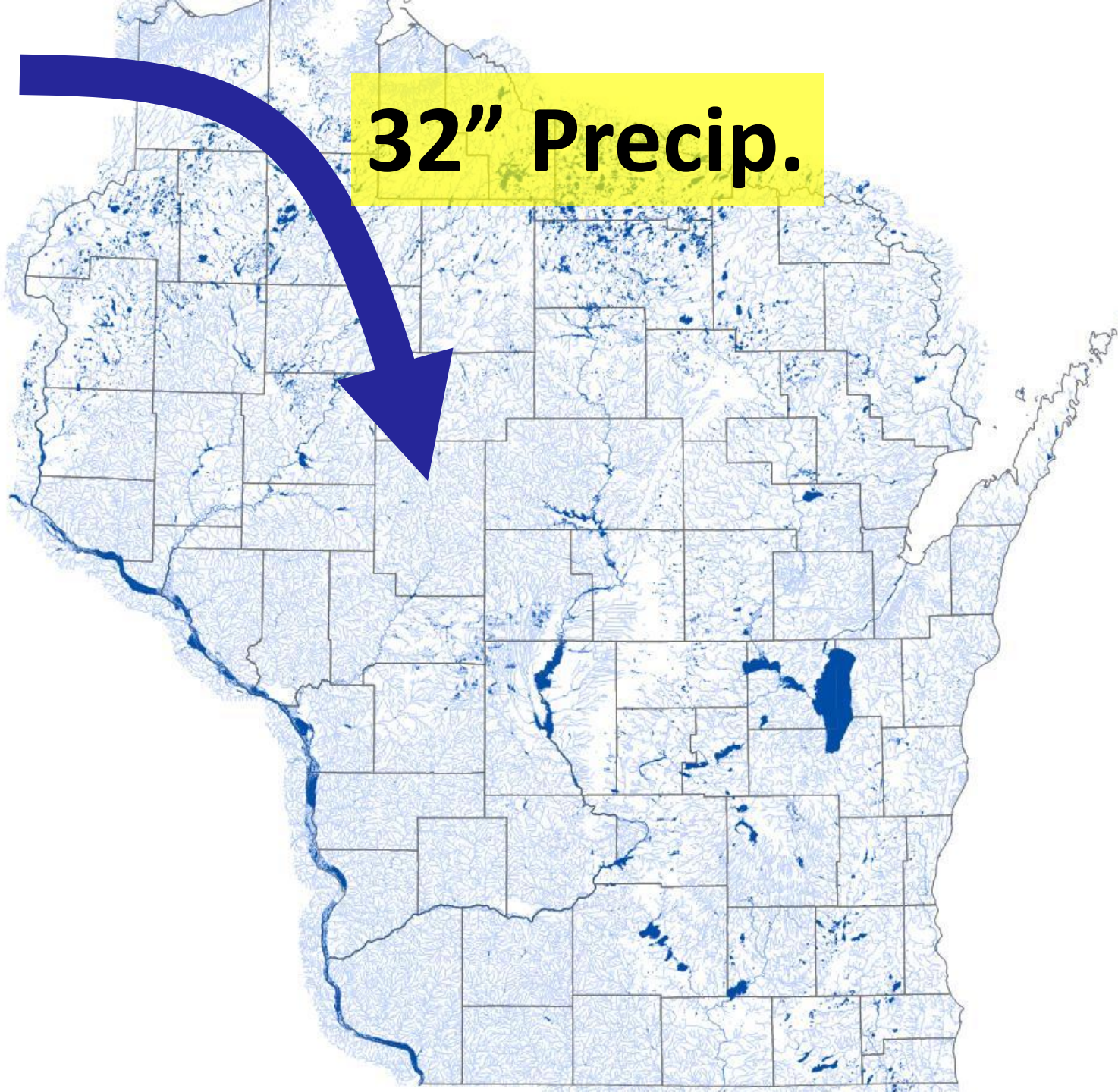
**Network of
streams drains
water out of
Wisconsin**





**This water keeps
moving
downhill...**

32" Precip.



A map of Wisconsin showing county boundaries and a network of blue lines representing water bodies and streams. Two large, thick blue arrows are overlaid on the map. One arrow starts at the top left and points down towards the center. The other arrow starts at the bottom center and points up towards the right. A grey rectangular box is positioned at the top, and a yellow rectangular box is positioned on the right side.

32" Precip.

20" EvapoTrans.

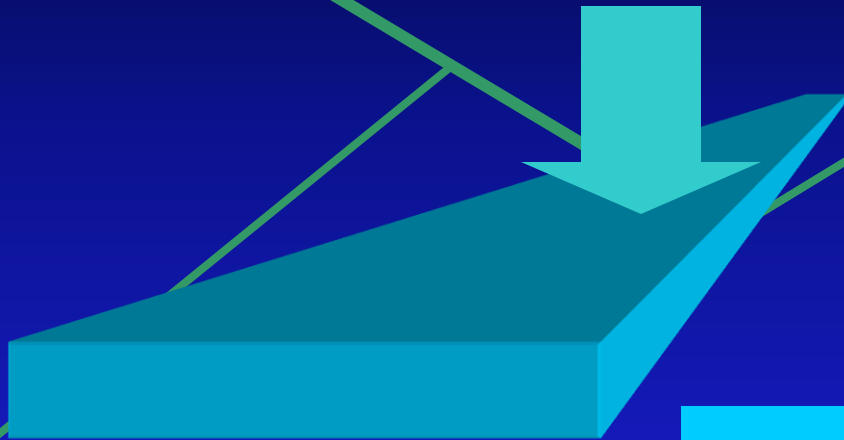
A map of the United States with a blue-toned topographic background. Three large blue arrows are overlaid on the map. The first arrow starts in the upper left and points down towards the central US. The second arrow starts in the upper right and points down towards the lower right. The third arrow starts in the lower right and points down towards the lower left. Three text boxes are also overlaid: a grey box at the top center, a grey box on the right side, and a yellow box at the bottom left.

32" Precip.

20" EvapoTrans.

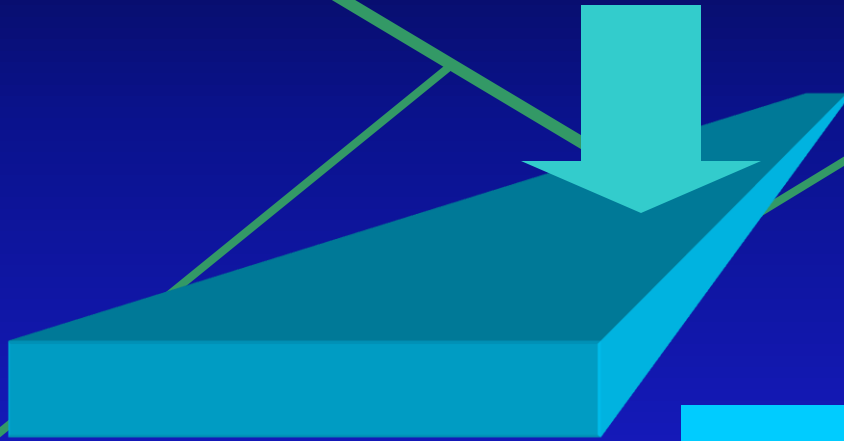
~12" Remains

12 inches water on 1 square mile
in a year



= 28 Million Cubic Feet
Of water each year

12 inches water on 1 square mile
in a year

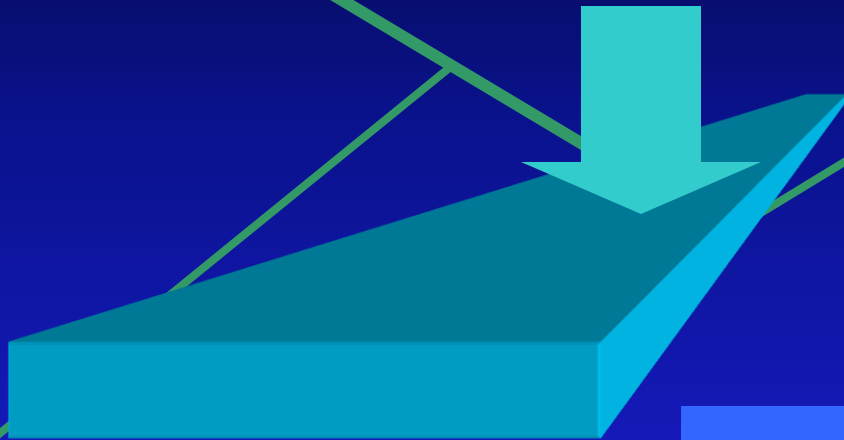


~ 31 million
seconds in
a year

= 28 Million Cubic Feet
Of water each year

**12 inches water on 1 square mile
in a year**

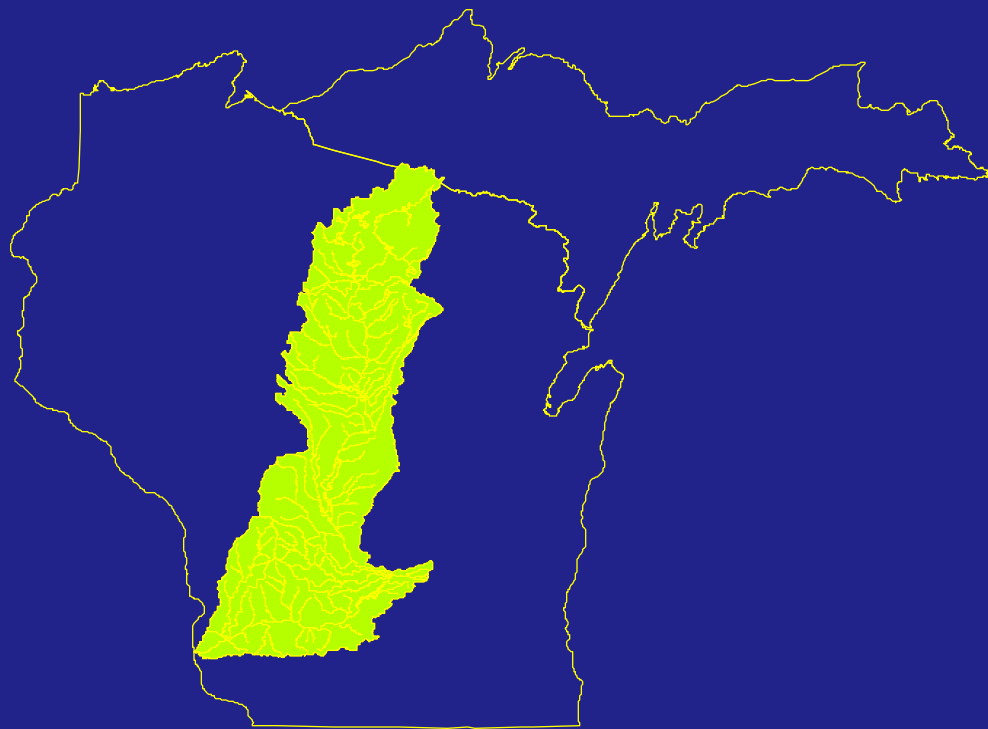
~ 31 million
seconds in
a year



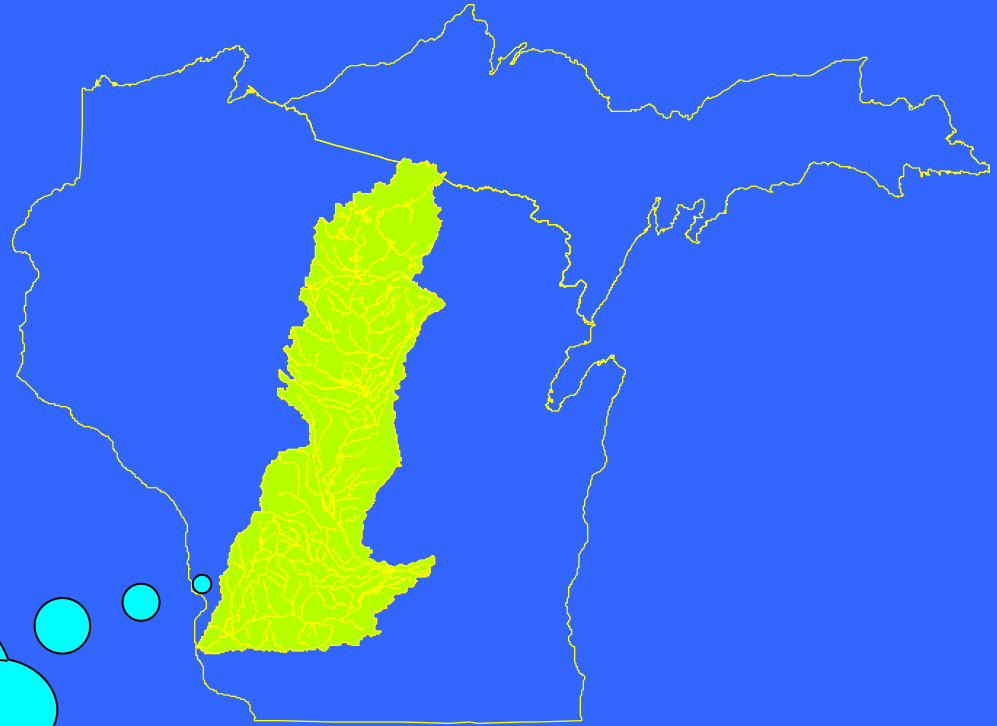
= 28 Million Cubic Feet
Of water each year

= almost 1 cubic foot
of water
every second!

WISCONSIN RIVER BASIN



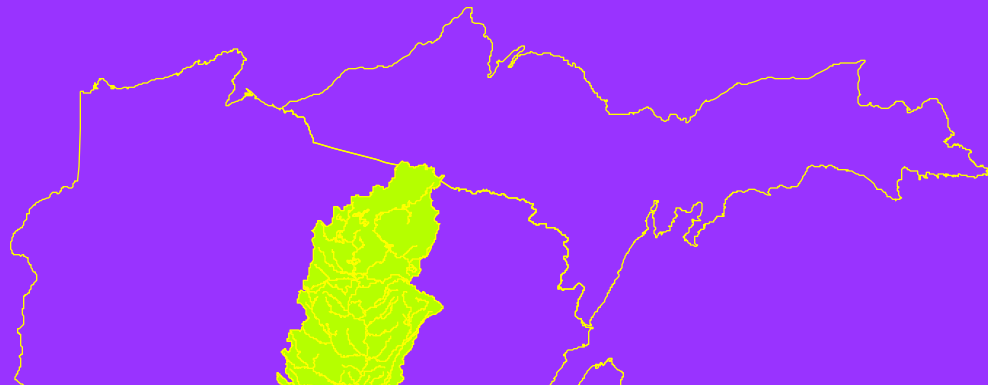
WISCONSIN RIVER BASIN



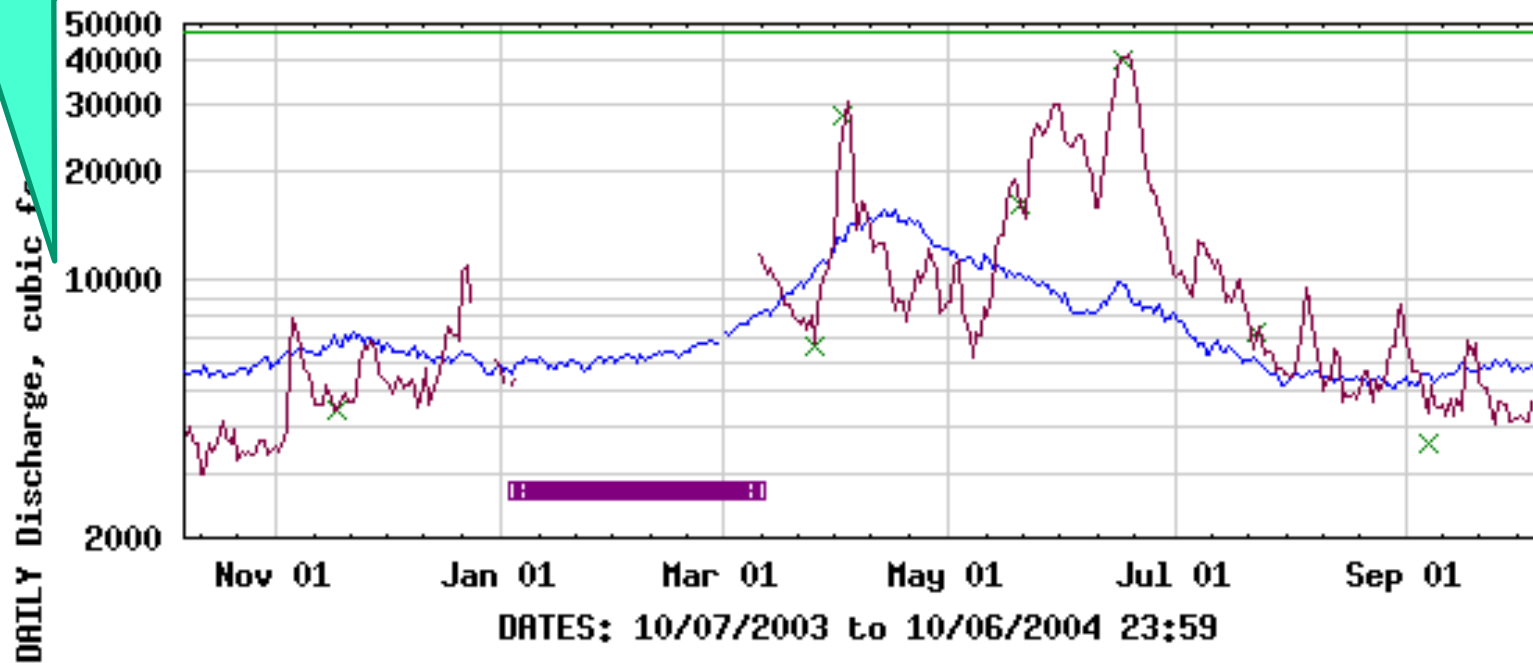
**10,000
square miles**

WISCONSIN RIVER BASIN

10,000
cubic
feet
per
second



USGS 05407000 WISCONSIN RIVER AT MUSCODA, WI

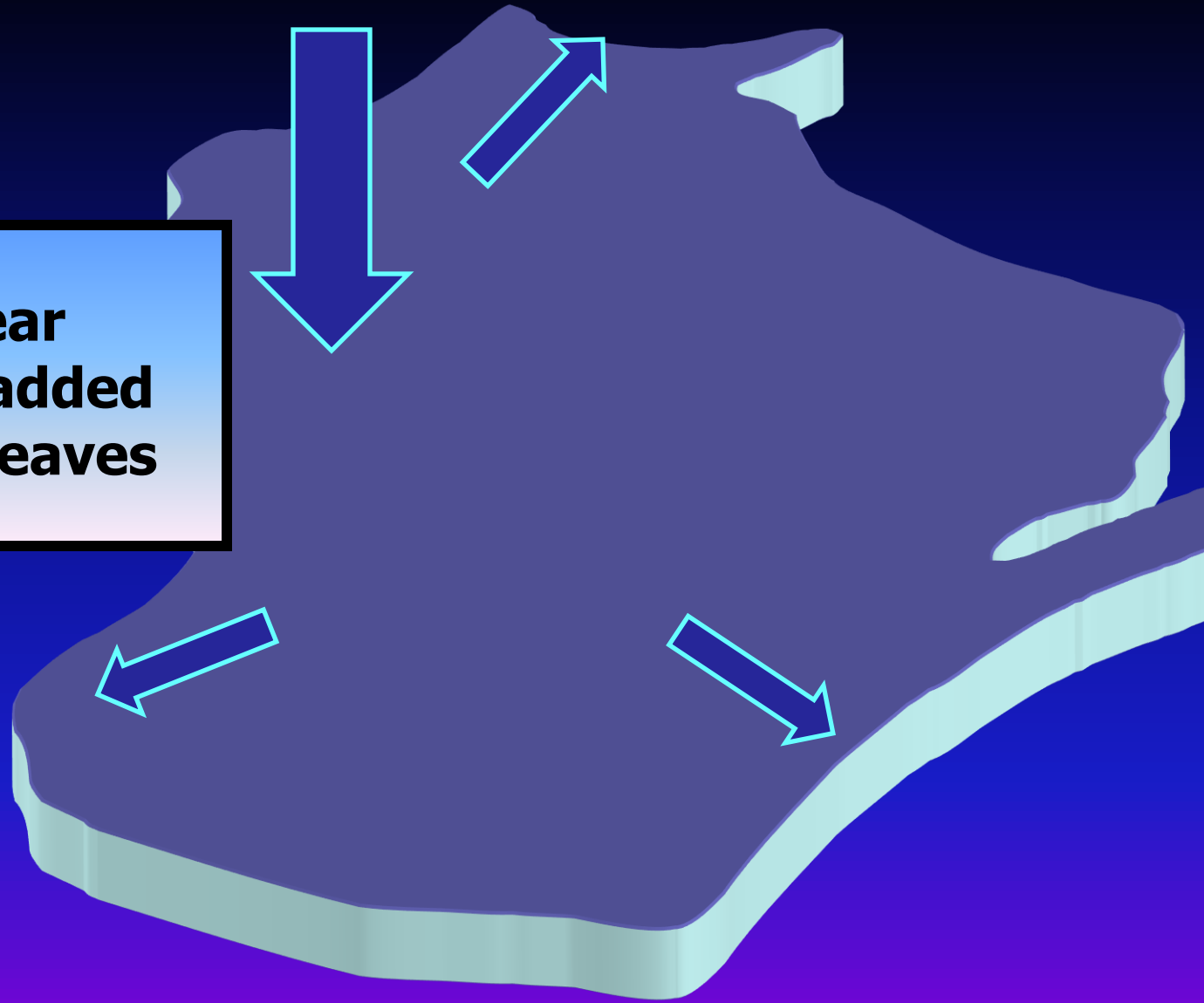


A 3D map of Wisconsin, colored in a light blue/purple hue, set against a dark blue background. The map is shown from a perspective that gives it depth, with a white shadow underneath. The map is the central focus of the image.

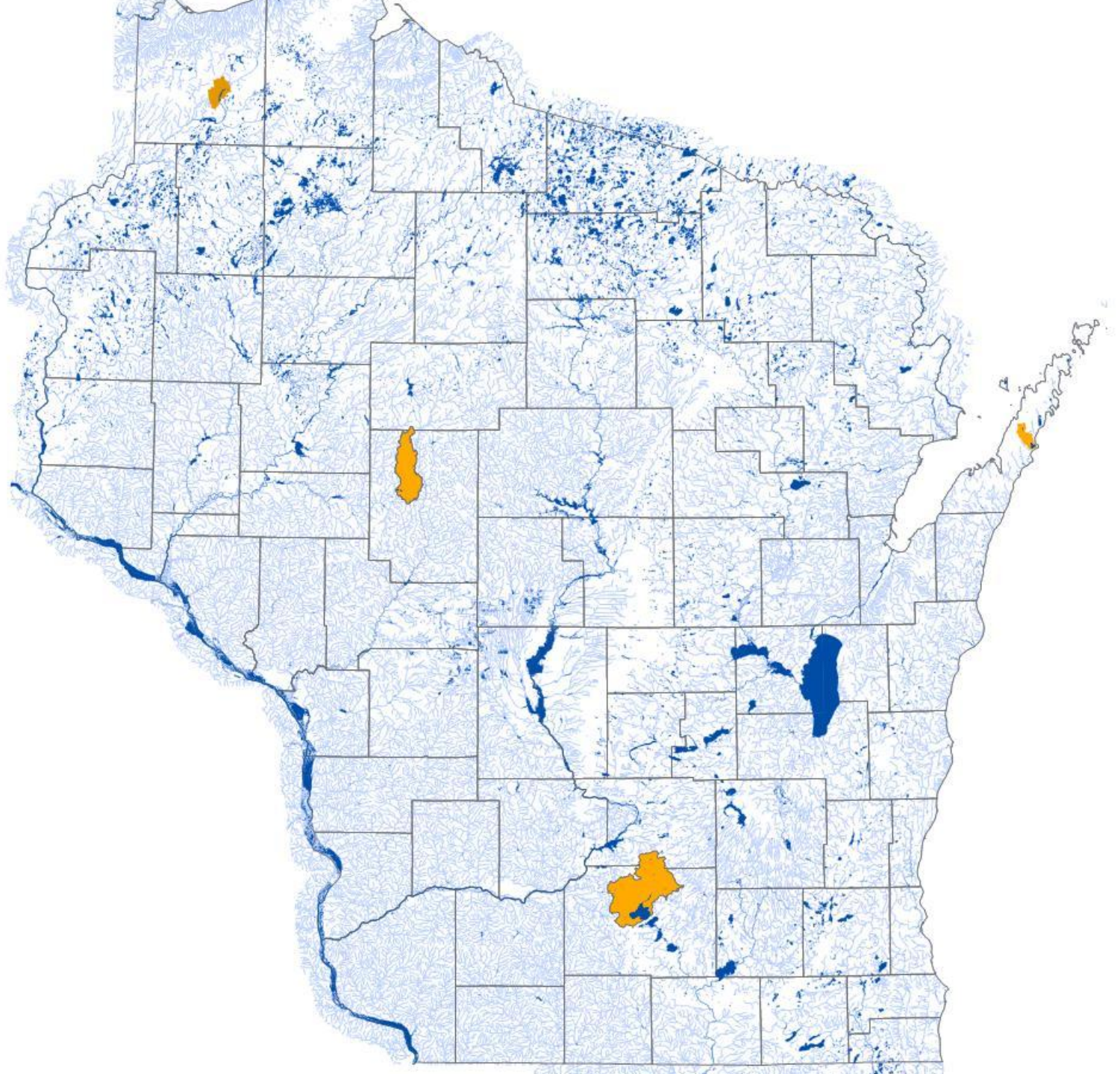
WISCONSIN GROUNDWATER

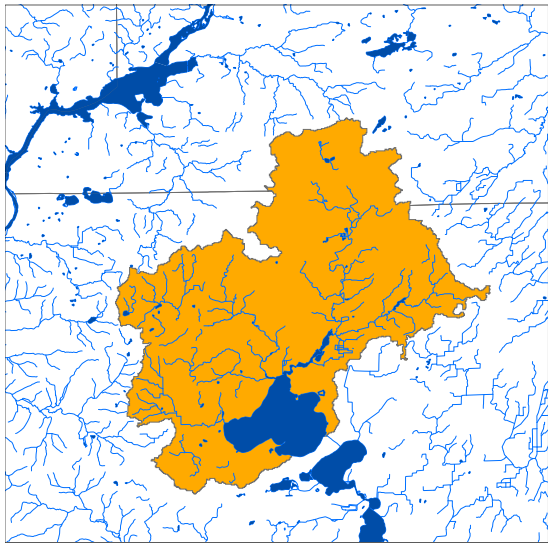
**Could cover
the state
100 feet deep**

**Each Year
12 inches added
12 inches leaves**



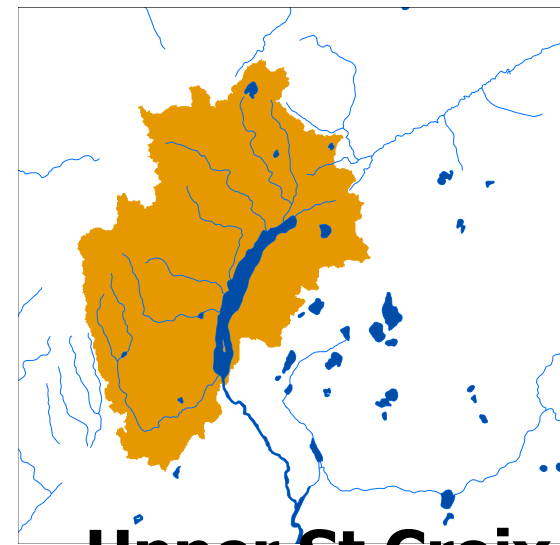
**How does your lake fit into
this?**





Lake Mendota

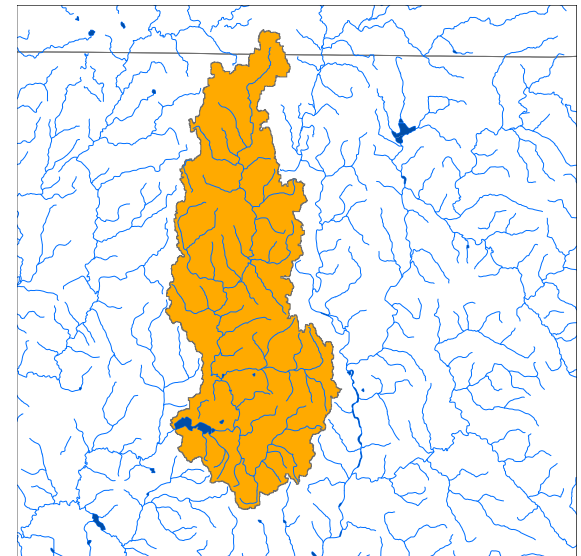
**Consider the
WATERSHED**



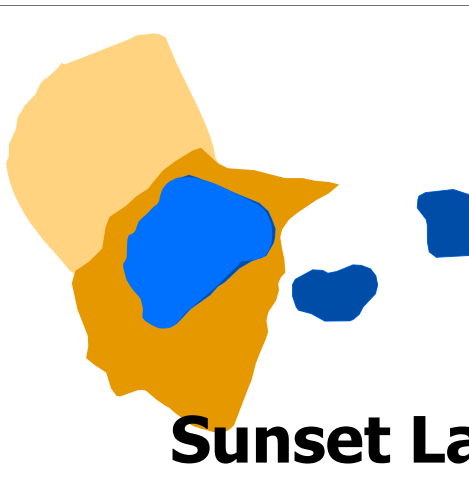
Upper St Croix



Clark Lake



Mead Lake

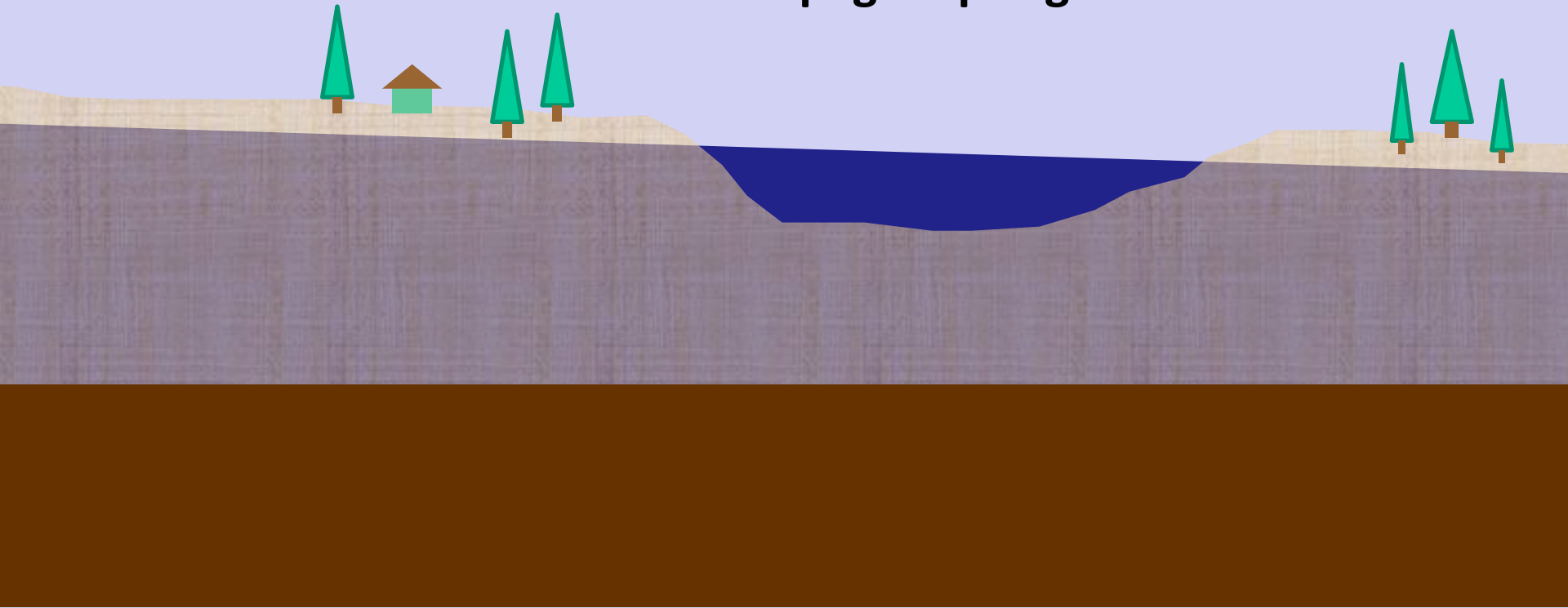


Sunset Lake

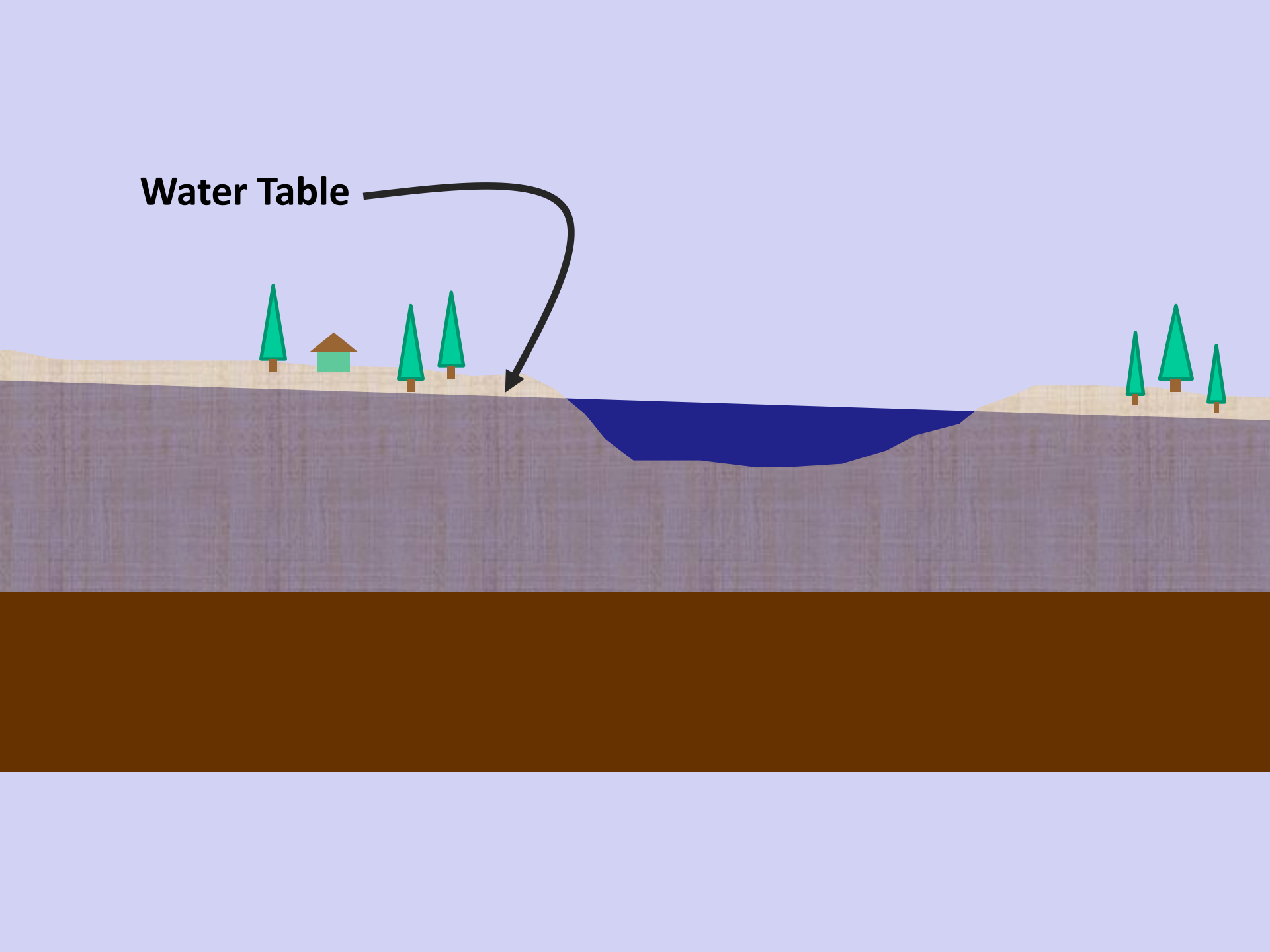
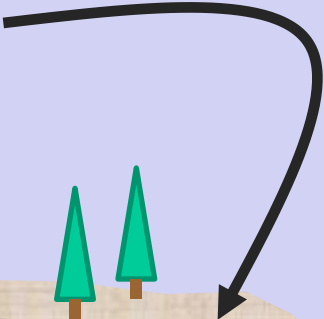


Groundwater Flow System

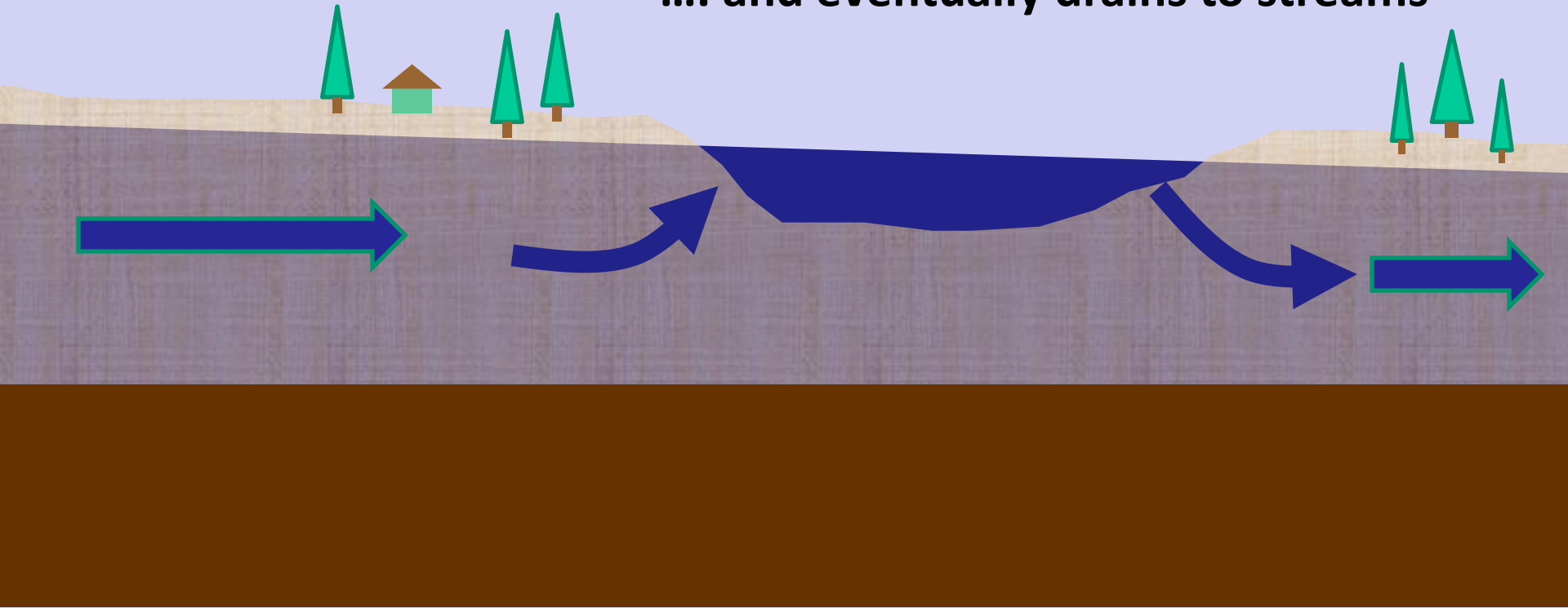
Seepage “spring-fed” Lake



Water Table



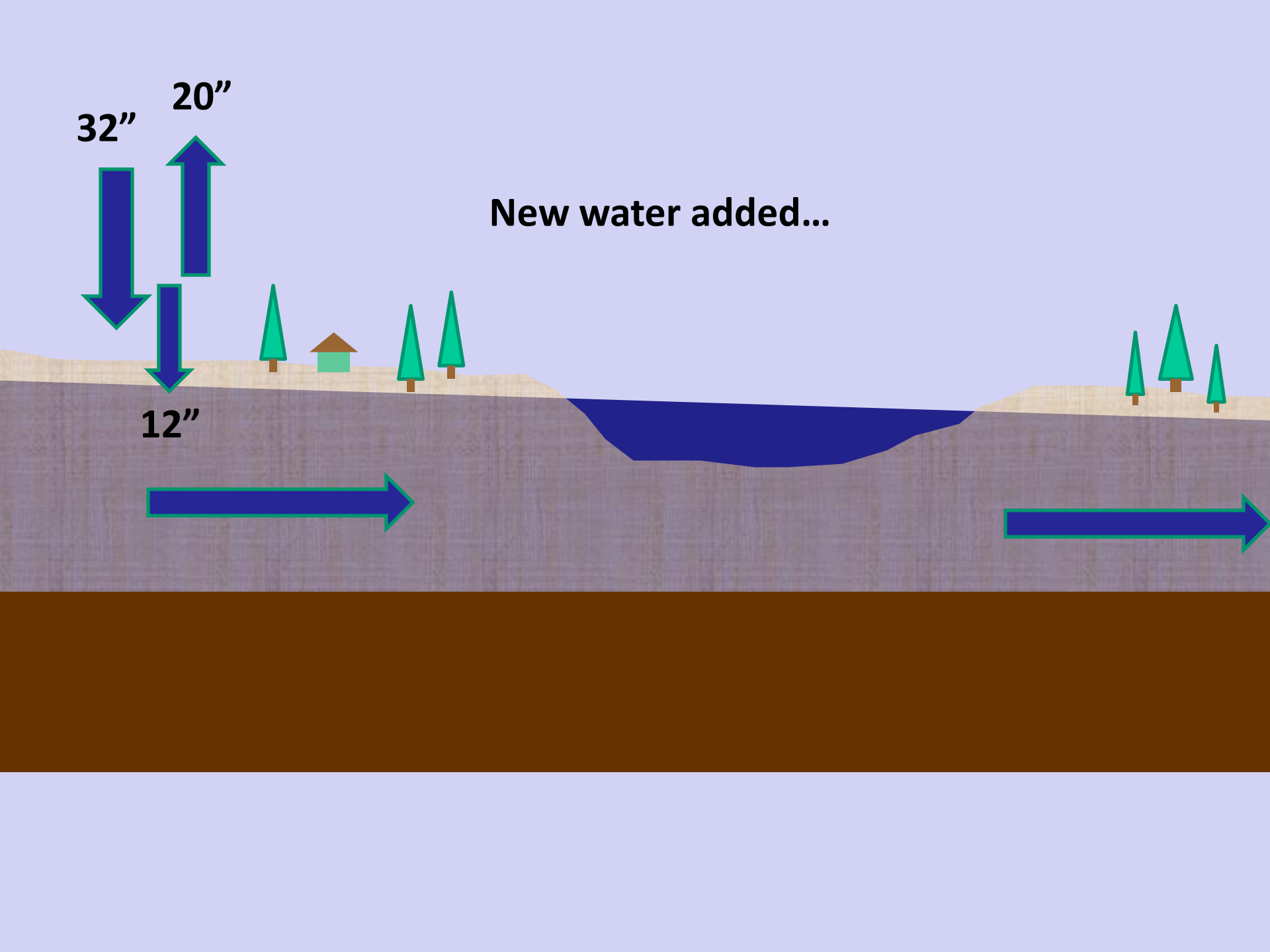
**The groundwater flows downhill
... flows through the lake
... and eventually drains to streams**



32"
20"

New water added...

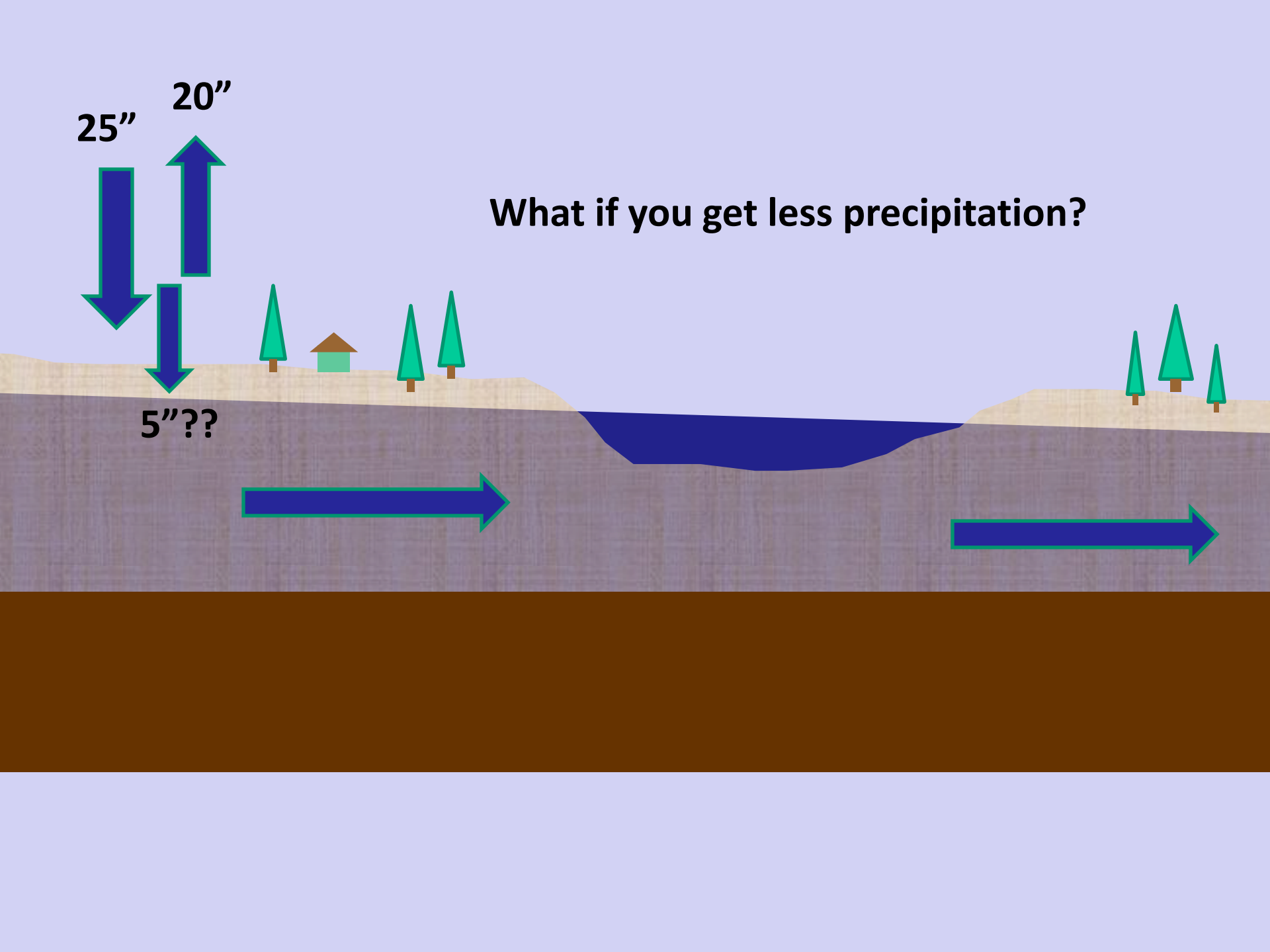
12"



25"
20"

What if you get less precipitation?

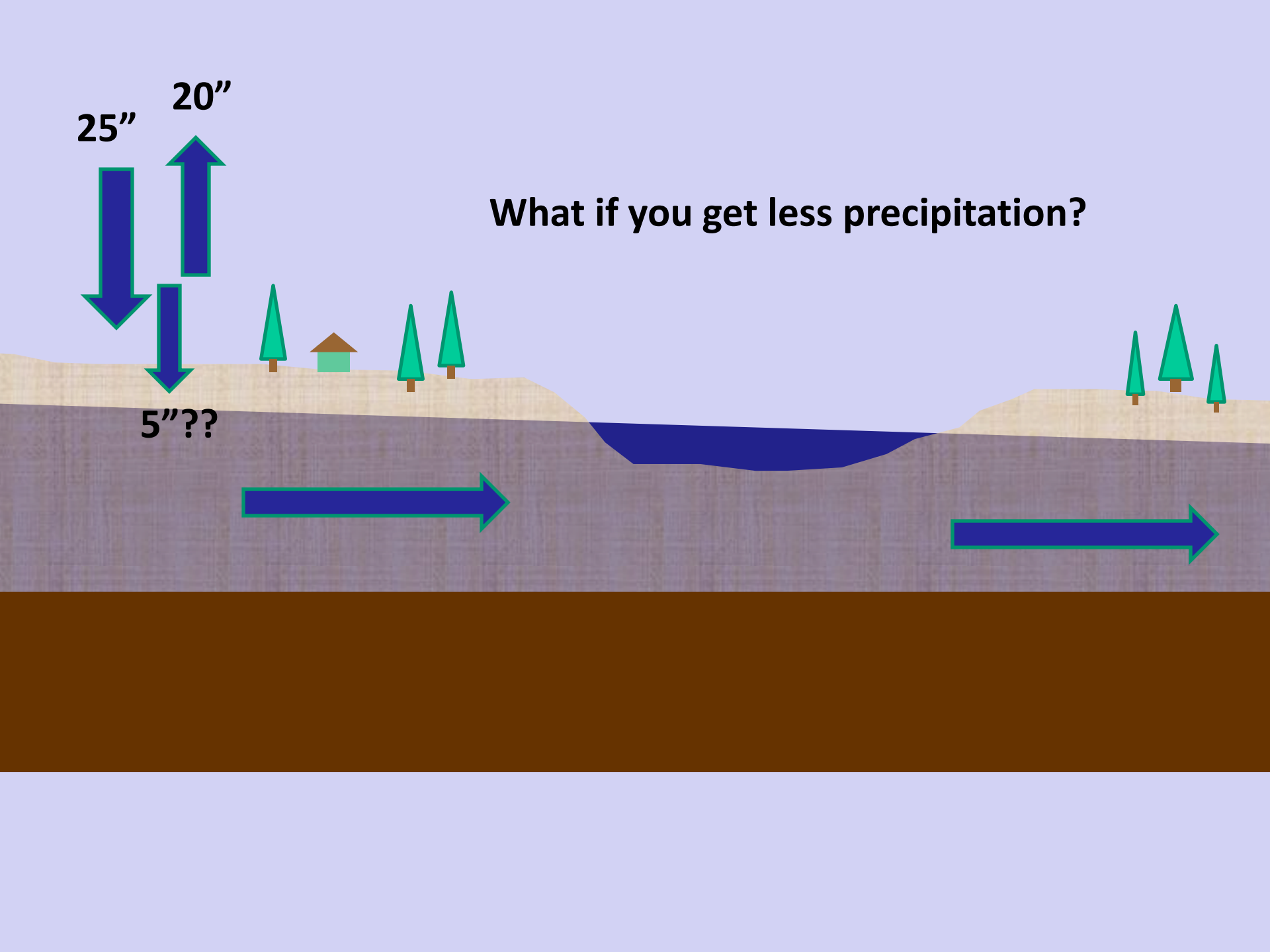
5"??



25"
20"

What if you get less precipitation?

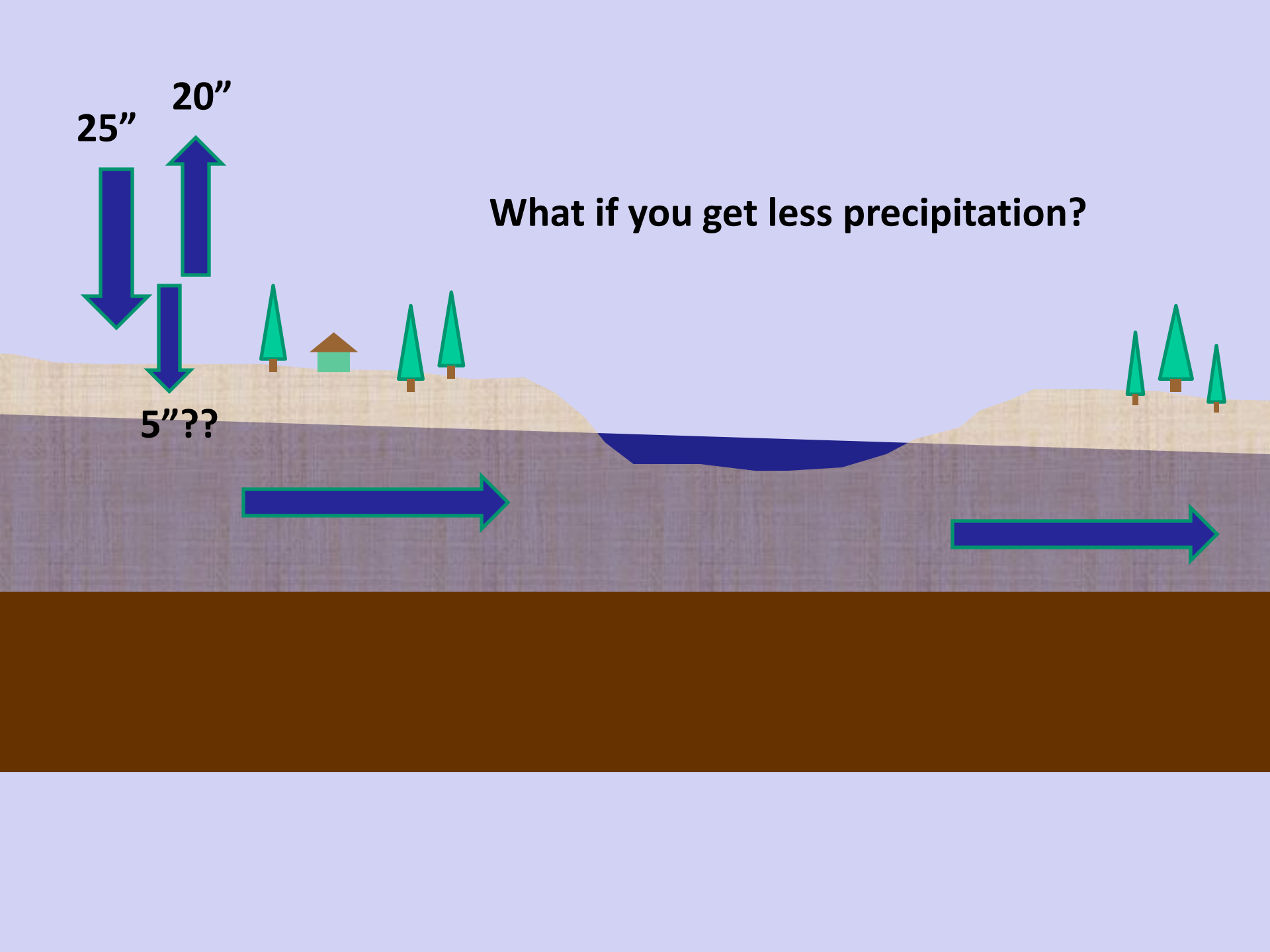
5"??



25"
20"

What if you get less precipitation?

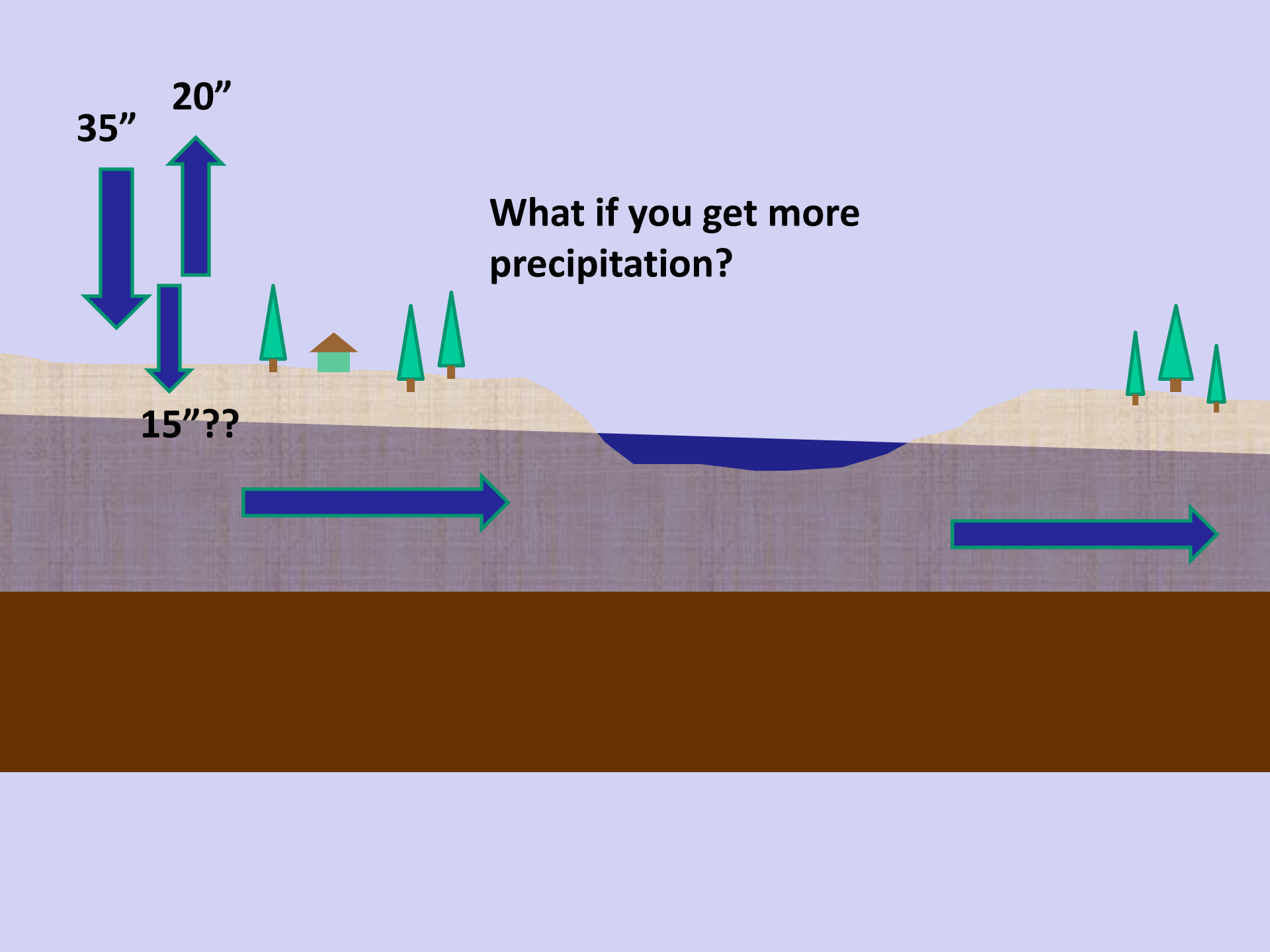
5"??



35"
20"

What if you get more precipitation?

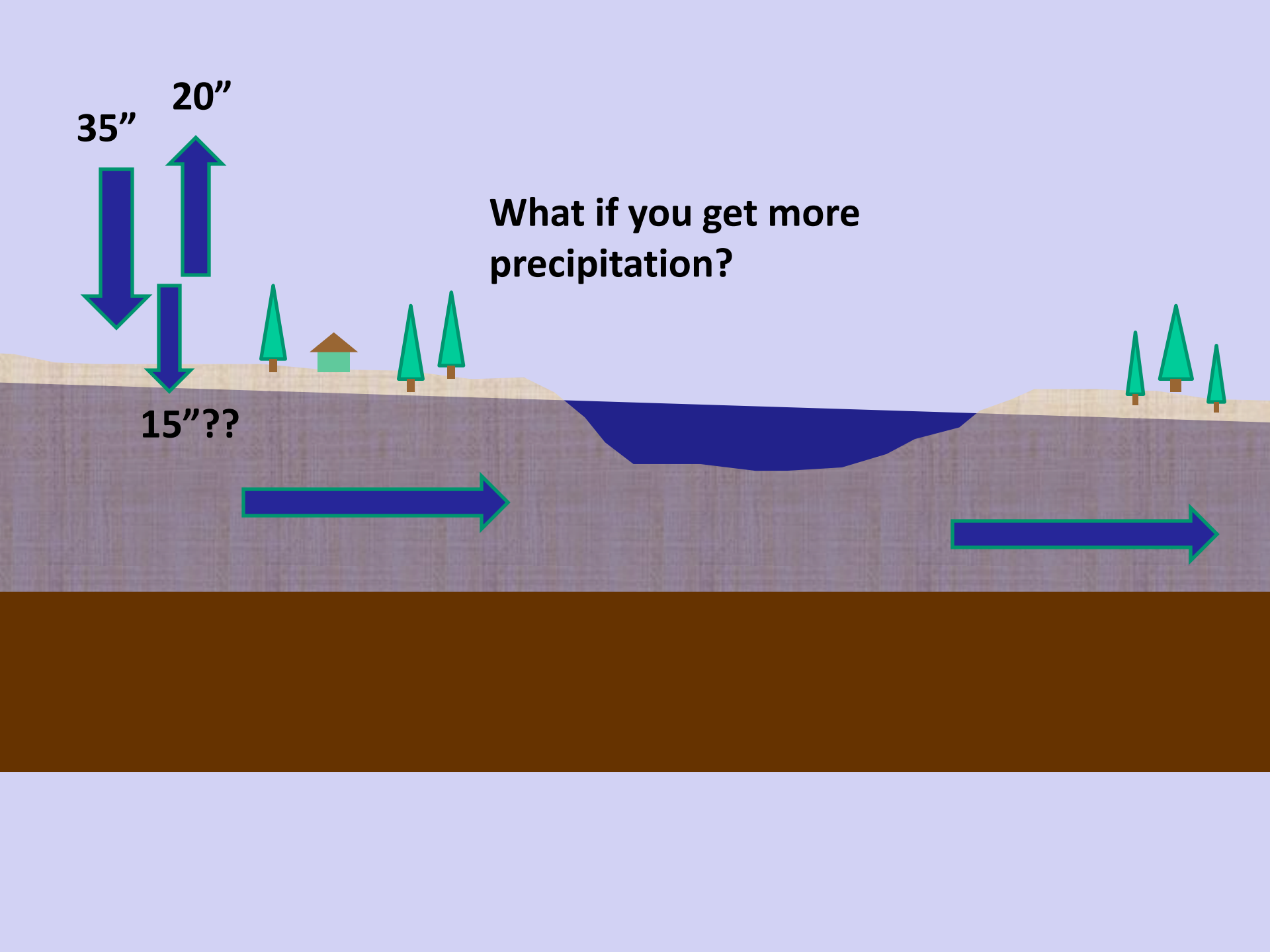
15"??



35"
20"

What if you get more precipitation?

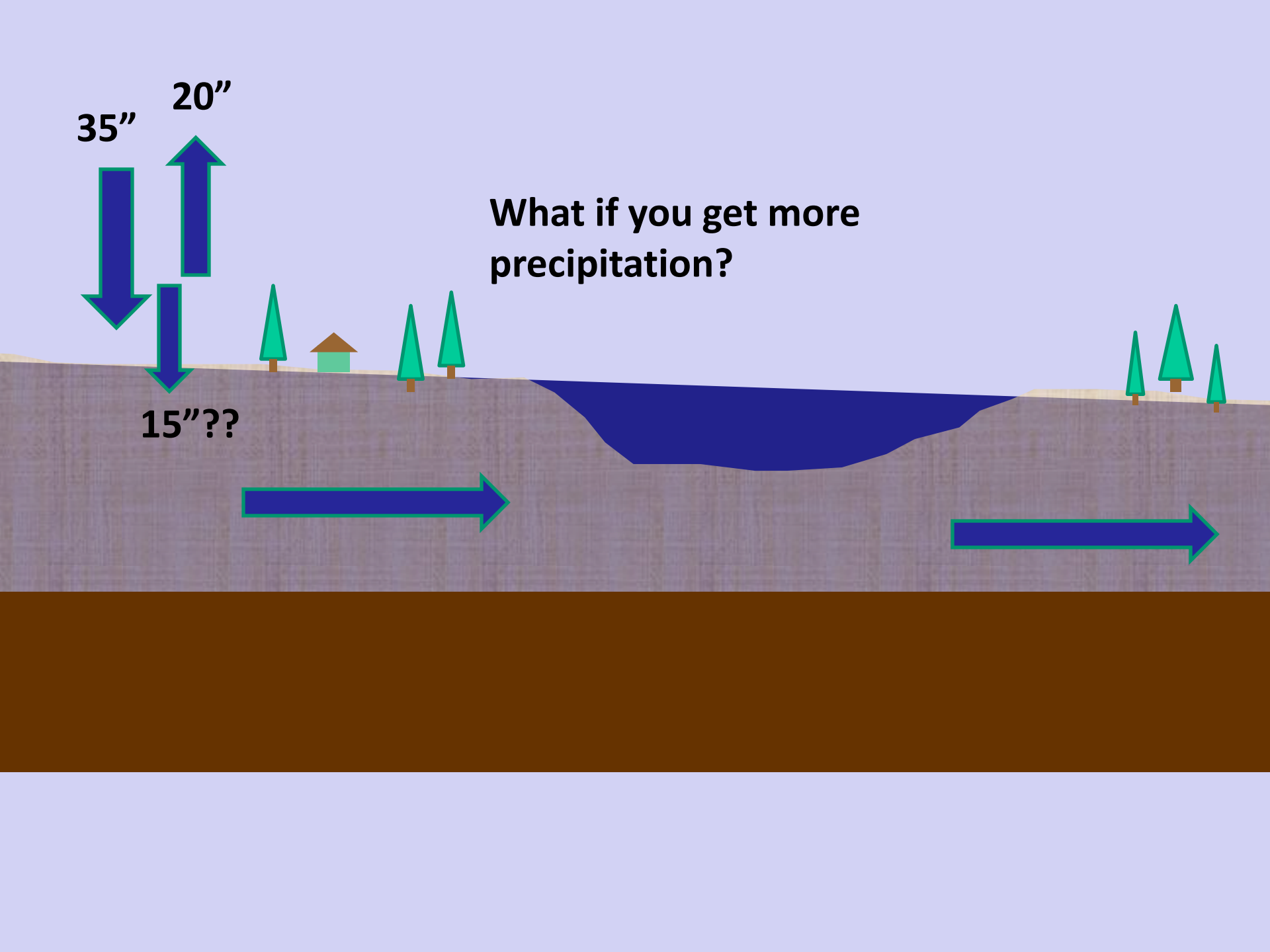
15"??



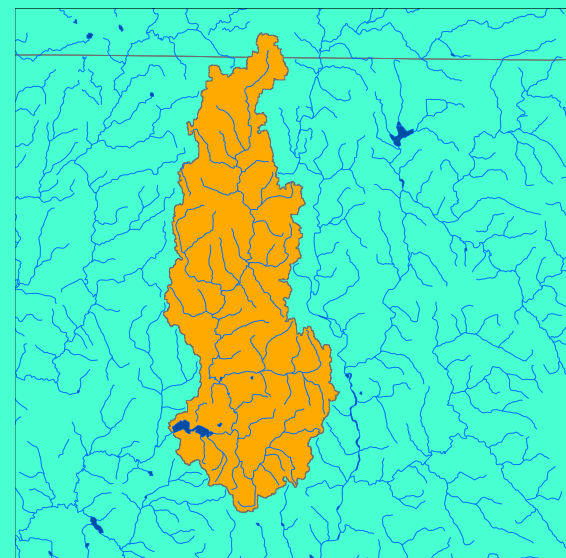
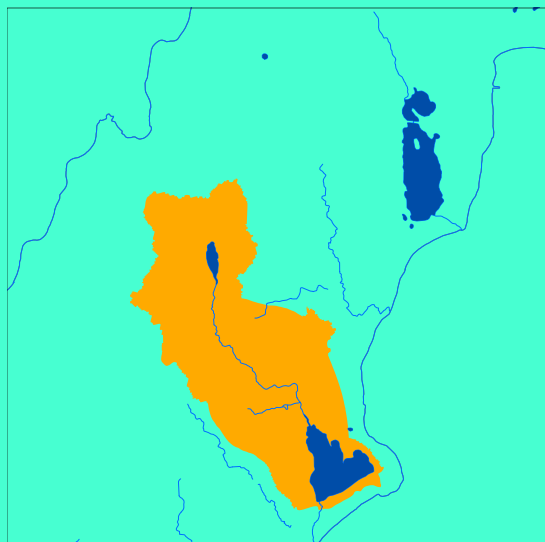
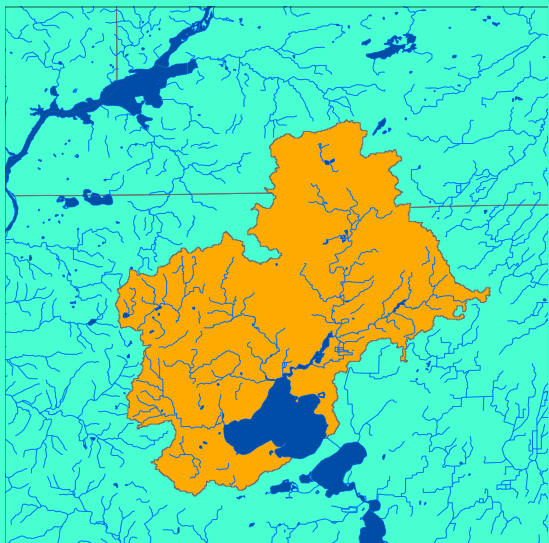
35"
20"

What if you get more precipitation?

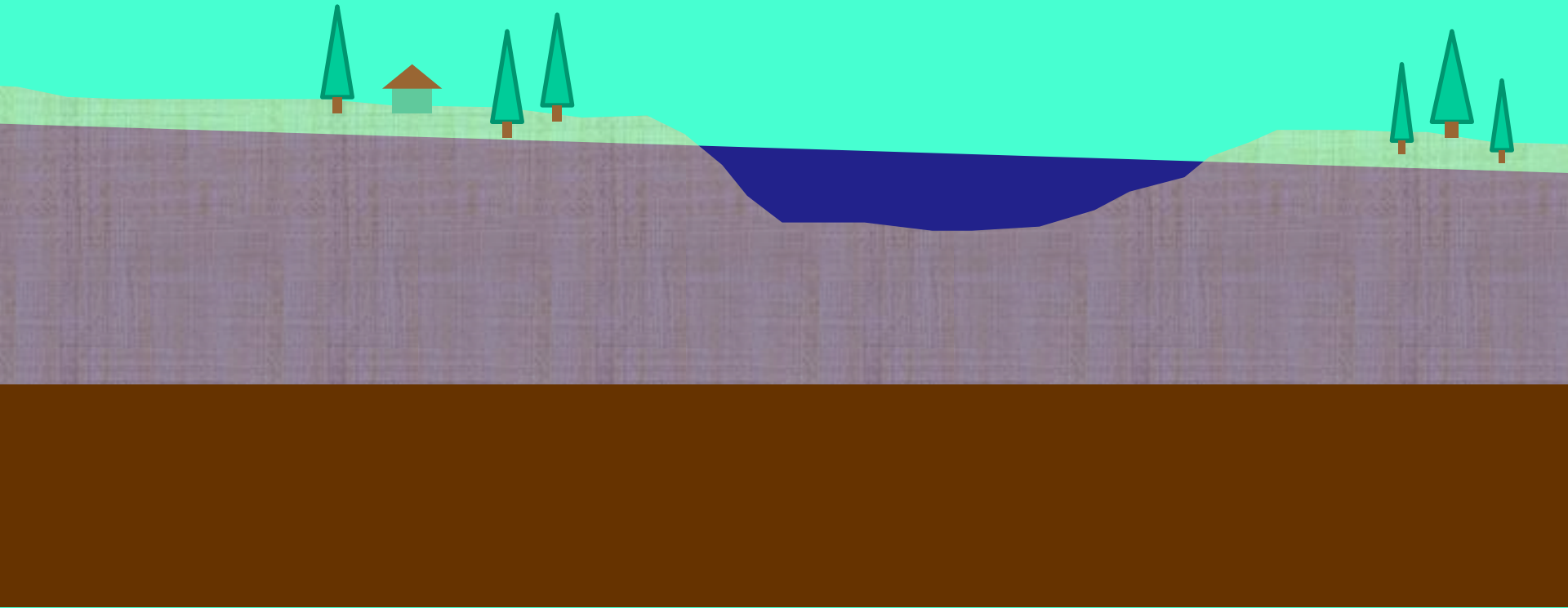
15"??

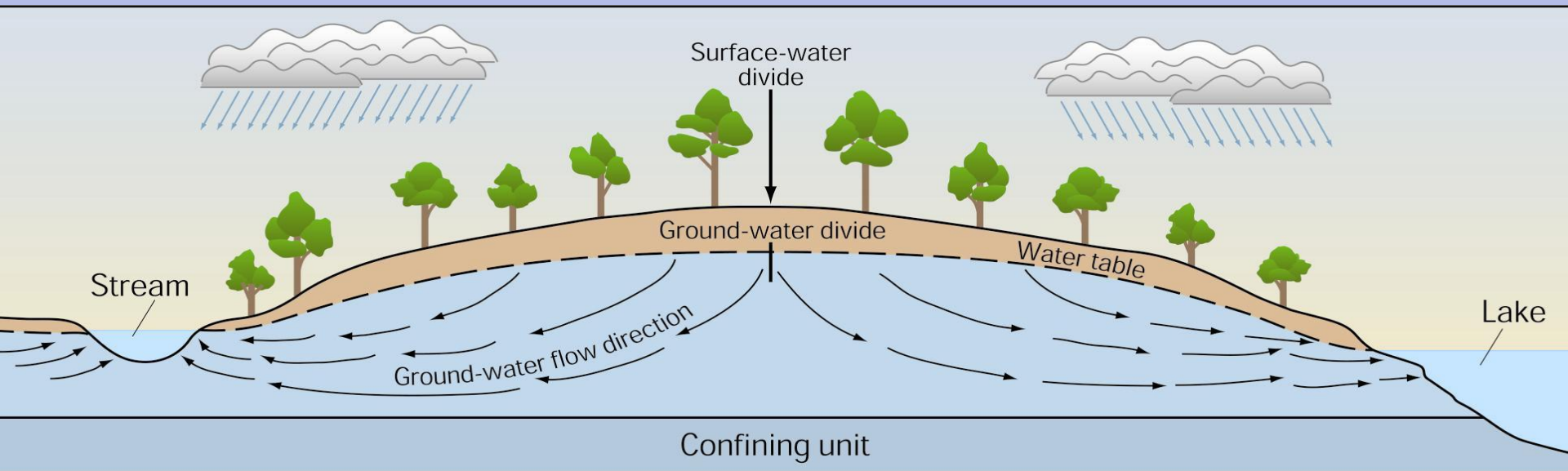


Apply these ideas to more complex watersheds...



Now let's talk about measuring groundwater...

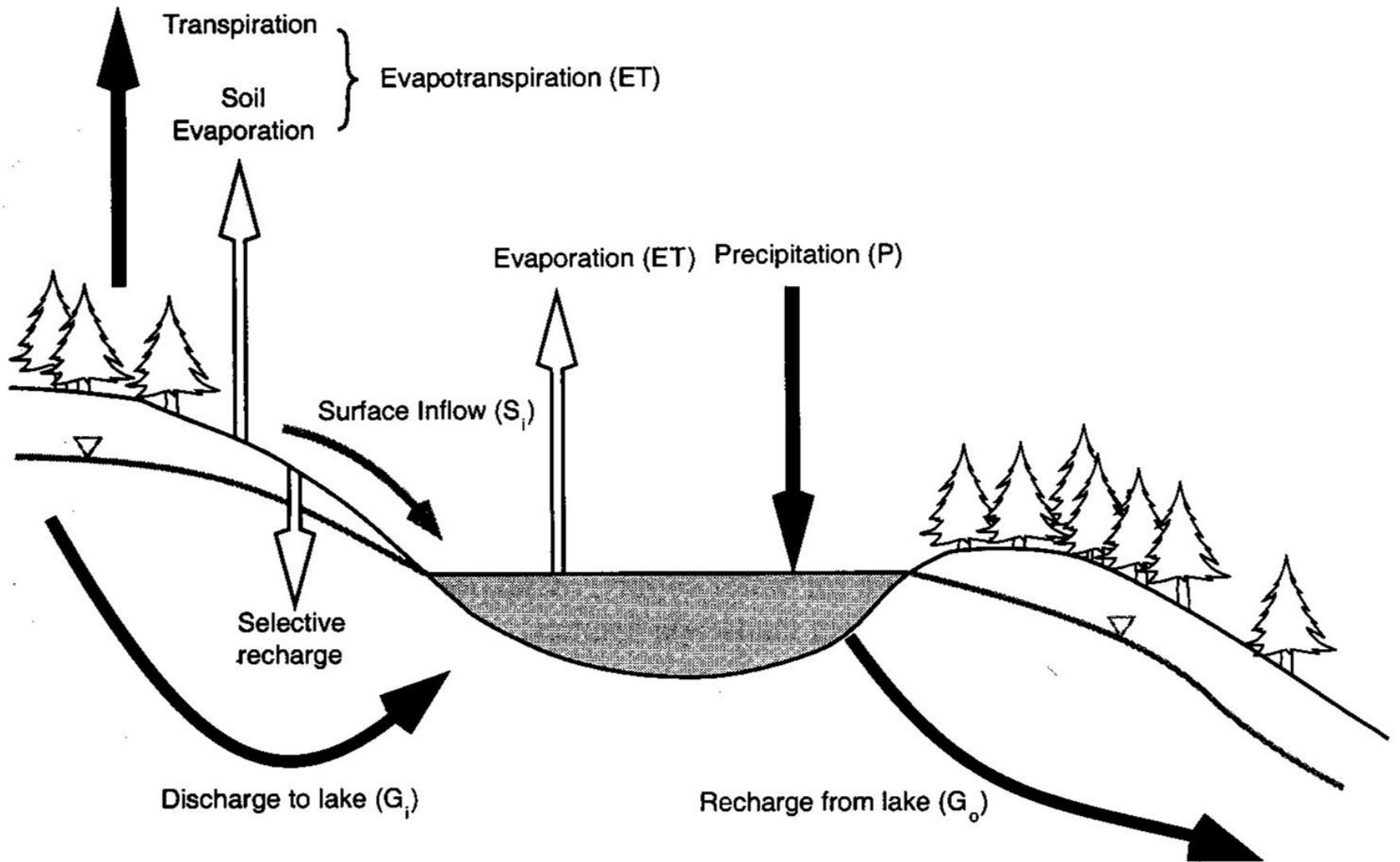




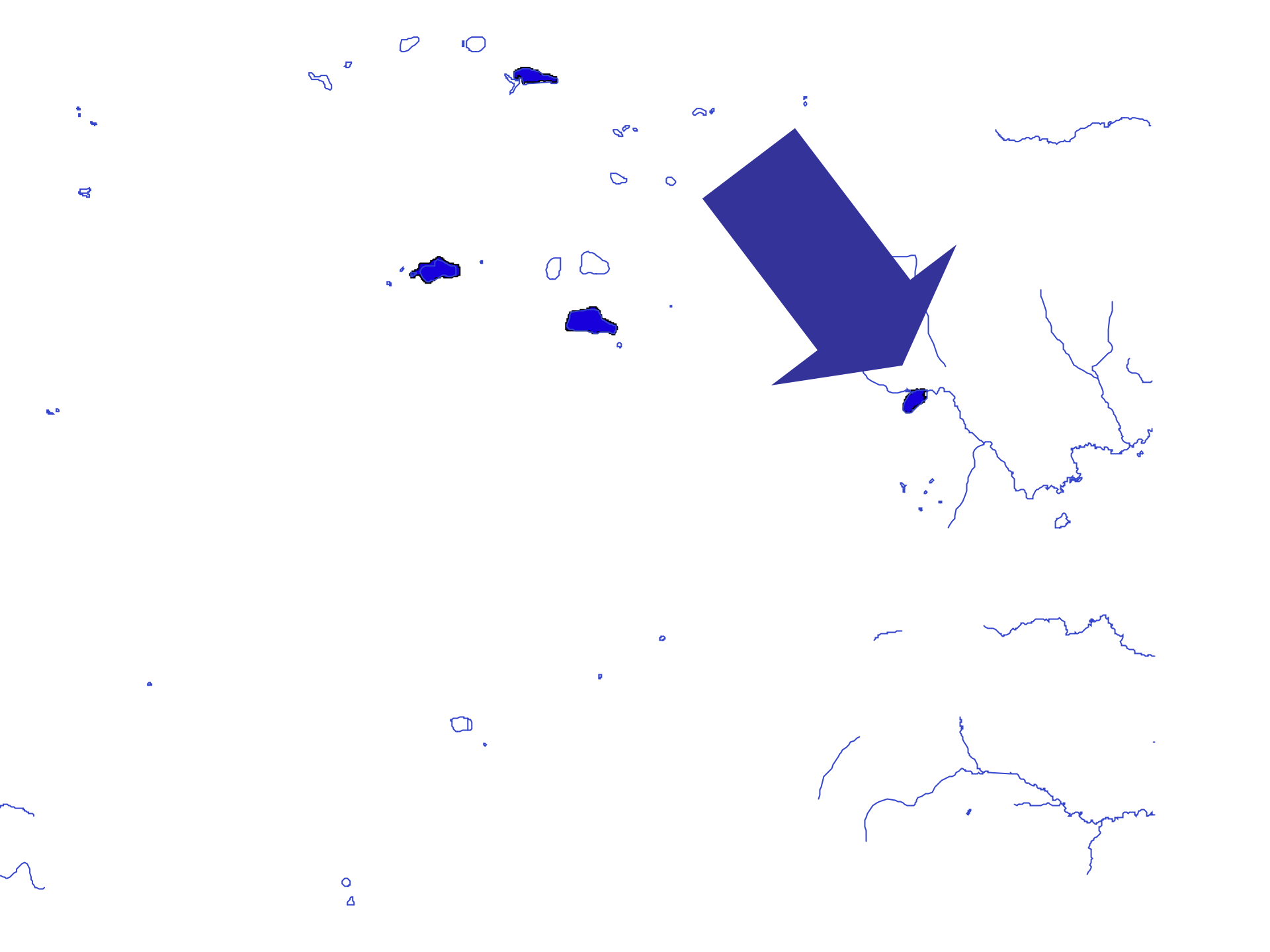


**Groundwater Pumping Effects on Groundwater Levels,
Lake Levels, and Streamflows in the Wisconsin Central Sands**

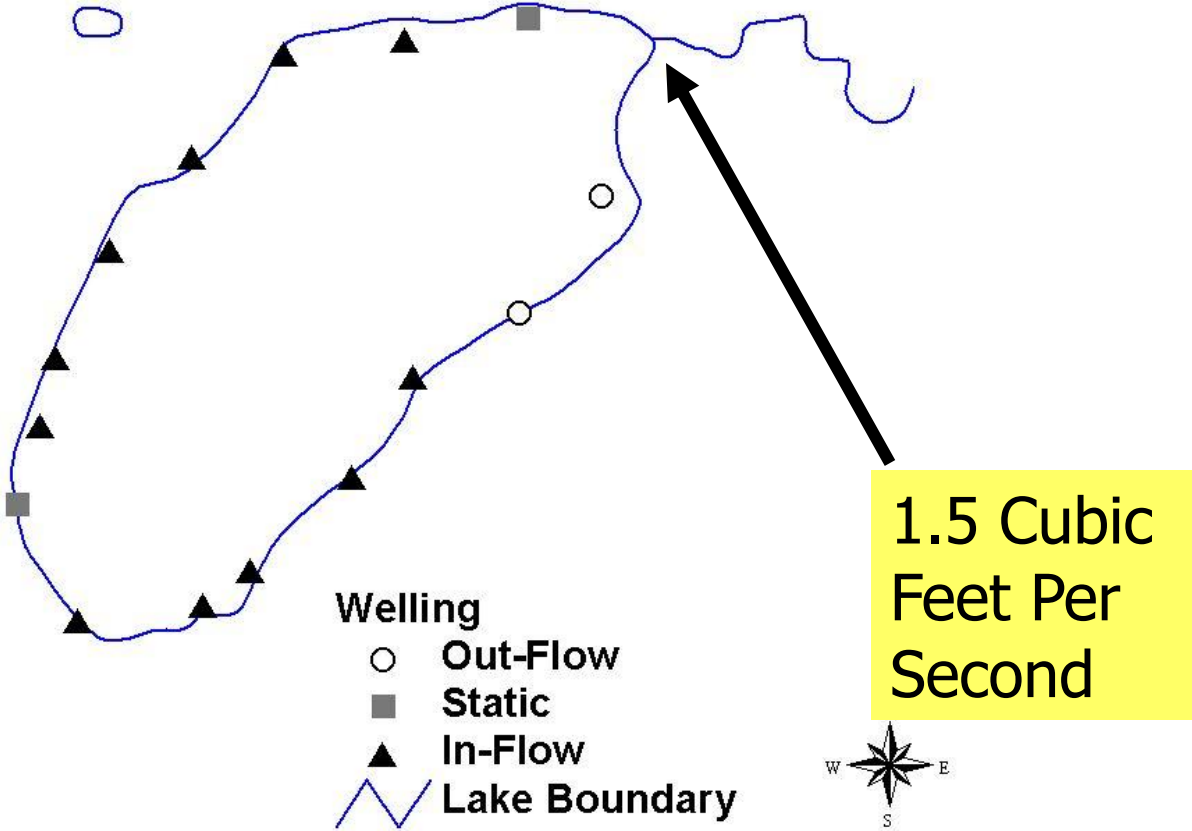
**George J. Kraft
David J. Mechenich**



Adapted from Walker et al.,



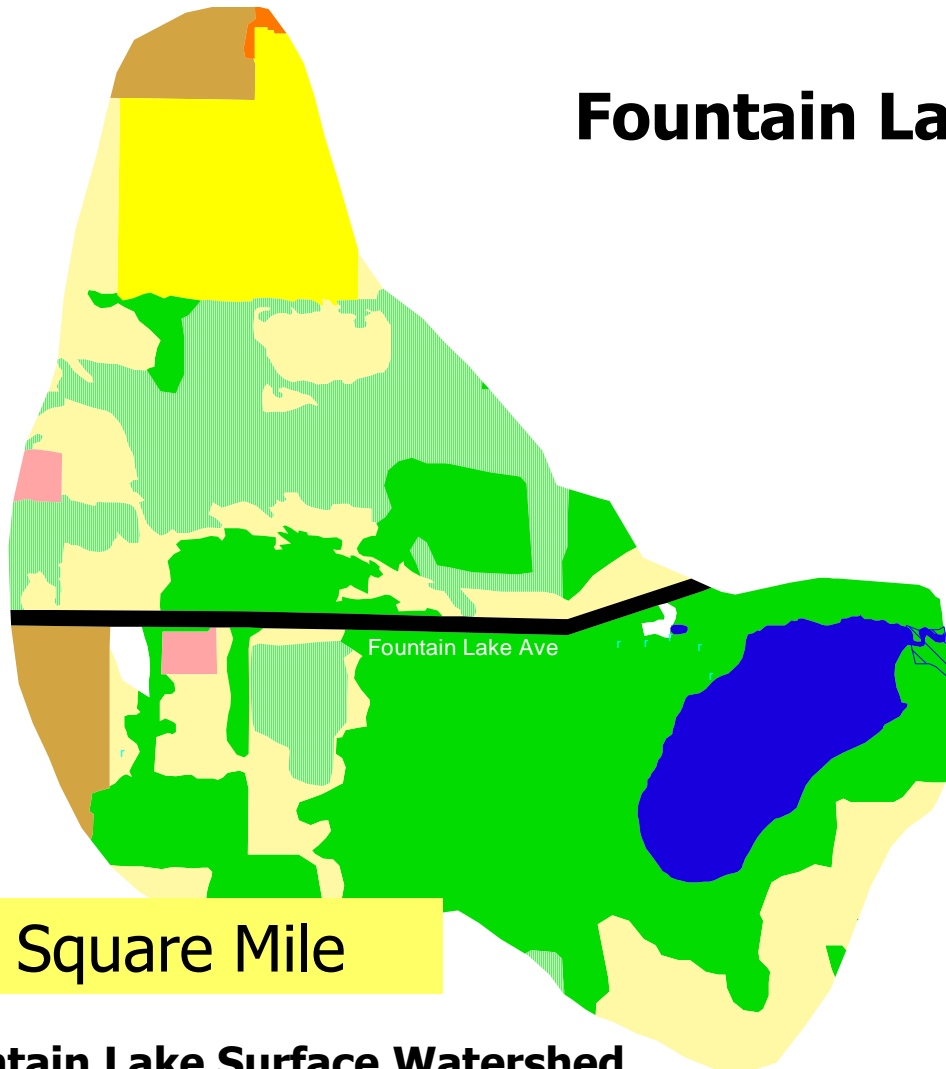
Fountain Lake
















Groundwater Flow System

Fountain Lake

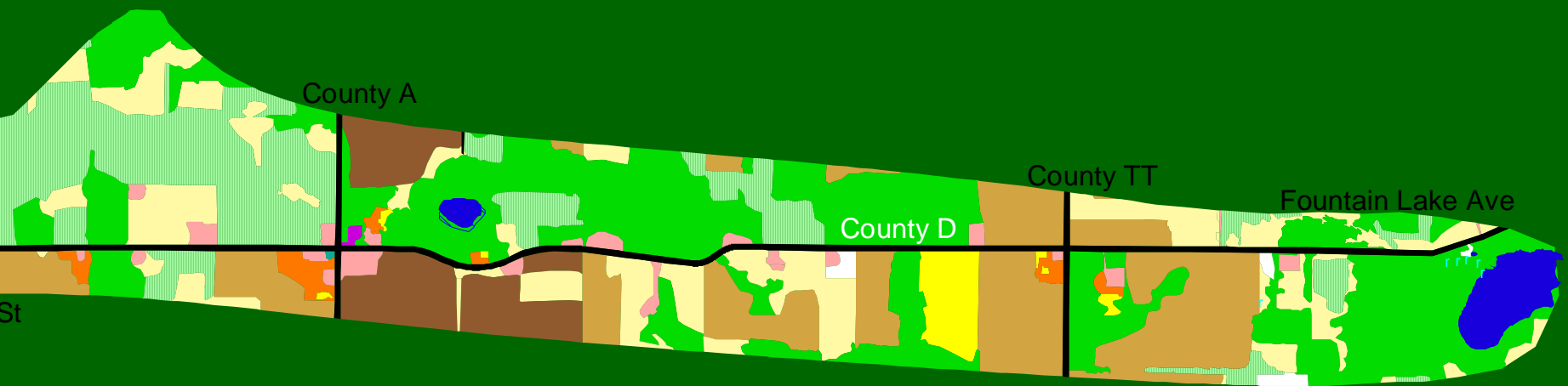


-  Wetlands 2 Acres or Greater
-  Wetlands <2 Acres
-  Residential
-  Commercial
-  Institutional
-  Transportation
-  Irrigated Agriculture
-  Non-Irrigated Agriculture
-  Permanent Pasture
-  Confined Animal Operations
-  Forest
-  Pine Plantation
-  Herbaceous Cover/Shrub Land
-  Water Body
-  Unknown Use, Unused

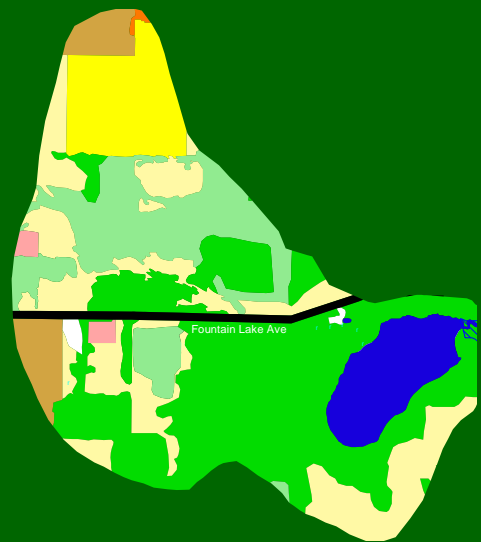


1/3 Square Mile

Fountain Lake Surface Watershed

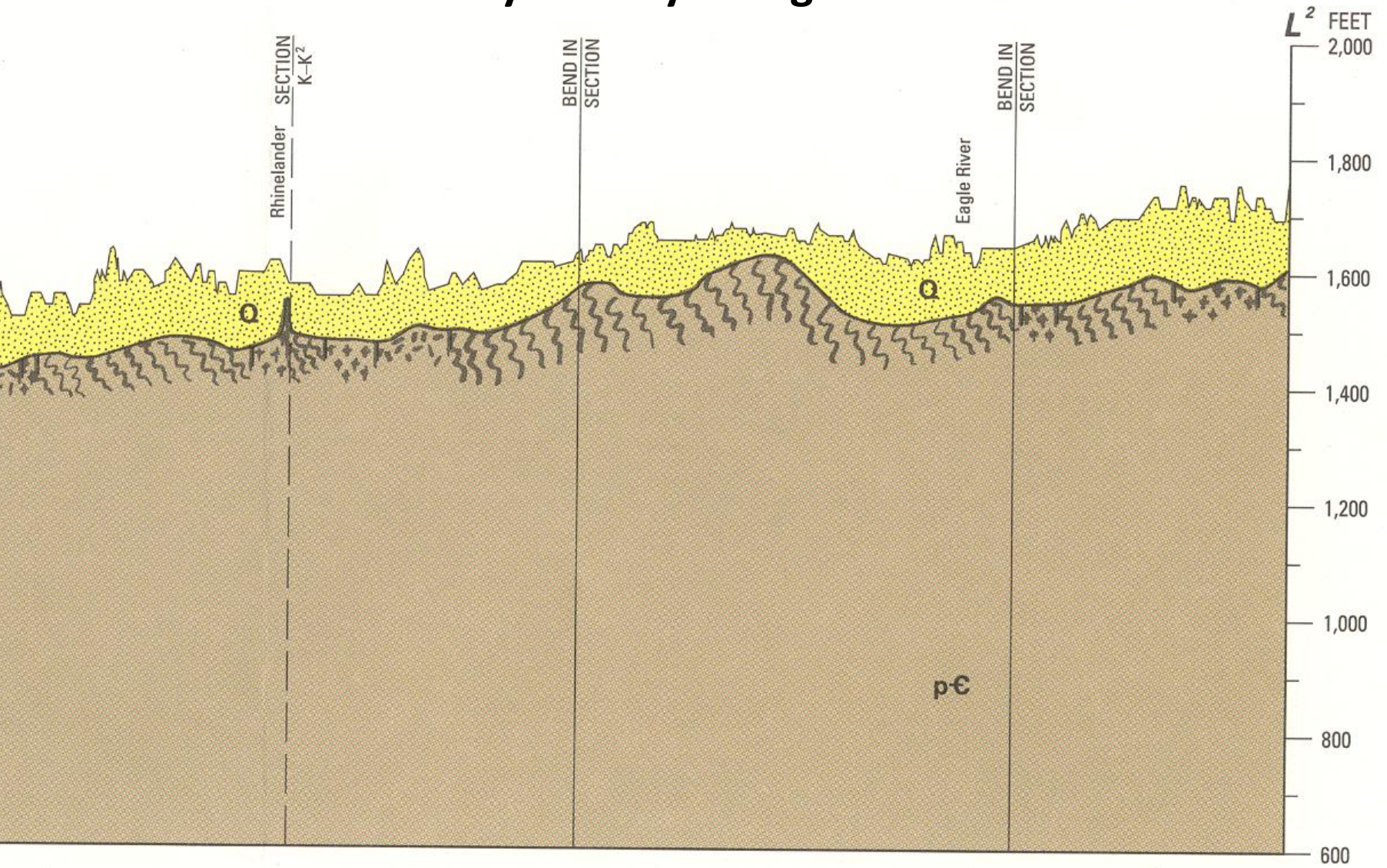


Groundwater watershed



Surface water watershed

Relatively thin layer of groundwater



See any groundwater?



But it's like a bathtub...

