

WELCOME TO THE DRINKING WATER QUALITY WORKSHOP!



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**ABOUT me -
MS. NAVI**



SPECIAL THANKS

ENGINEERING
WITH



F.E.W.
RESOURCES

<https://fews-us.org/>



UNIVERSITY OF CALIFORNIA
Agriculture and Natural Resources



<https://ciwr.ucanr.edu/index.cfm>



<https://www.ameriacorps.gov/>

**GRIZZLY
CORPS**



<https://www.grizzlycorps.org/>



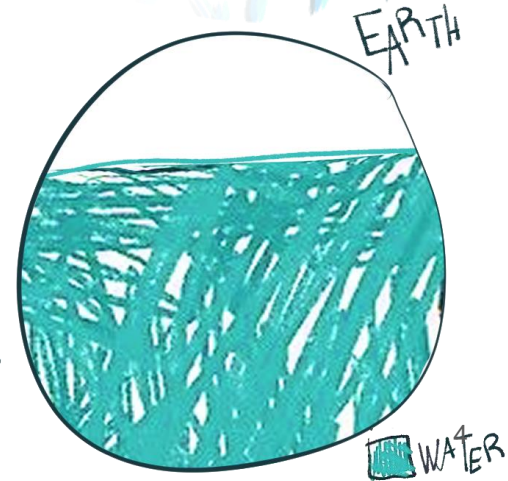
WHY CARE ABOUT WATER?

Water = Life

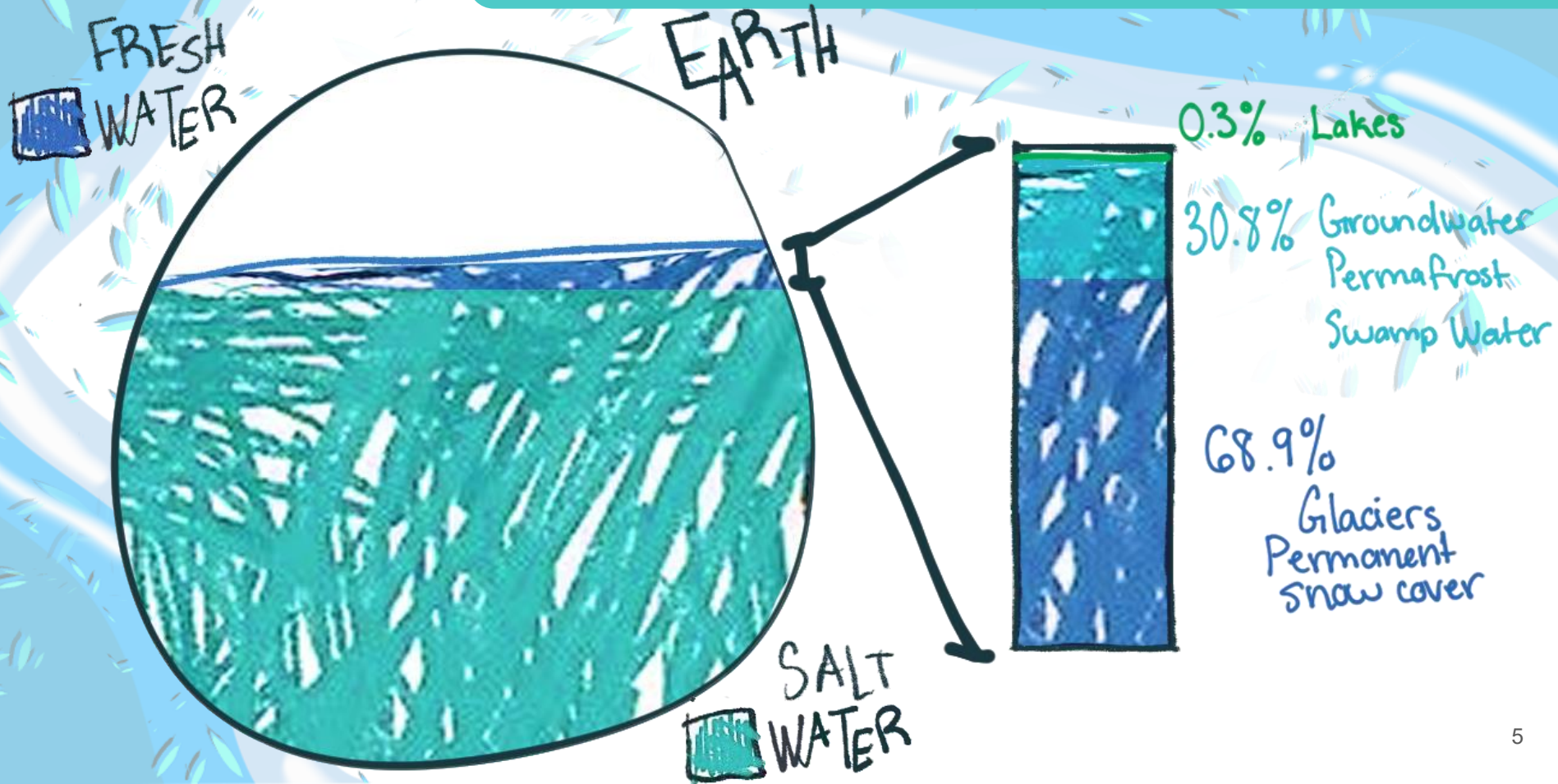
- Cali. AB 685 = Your Right to Safe Drinking Water

- Your body is ~70% Water

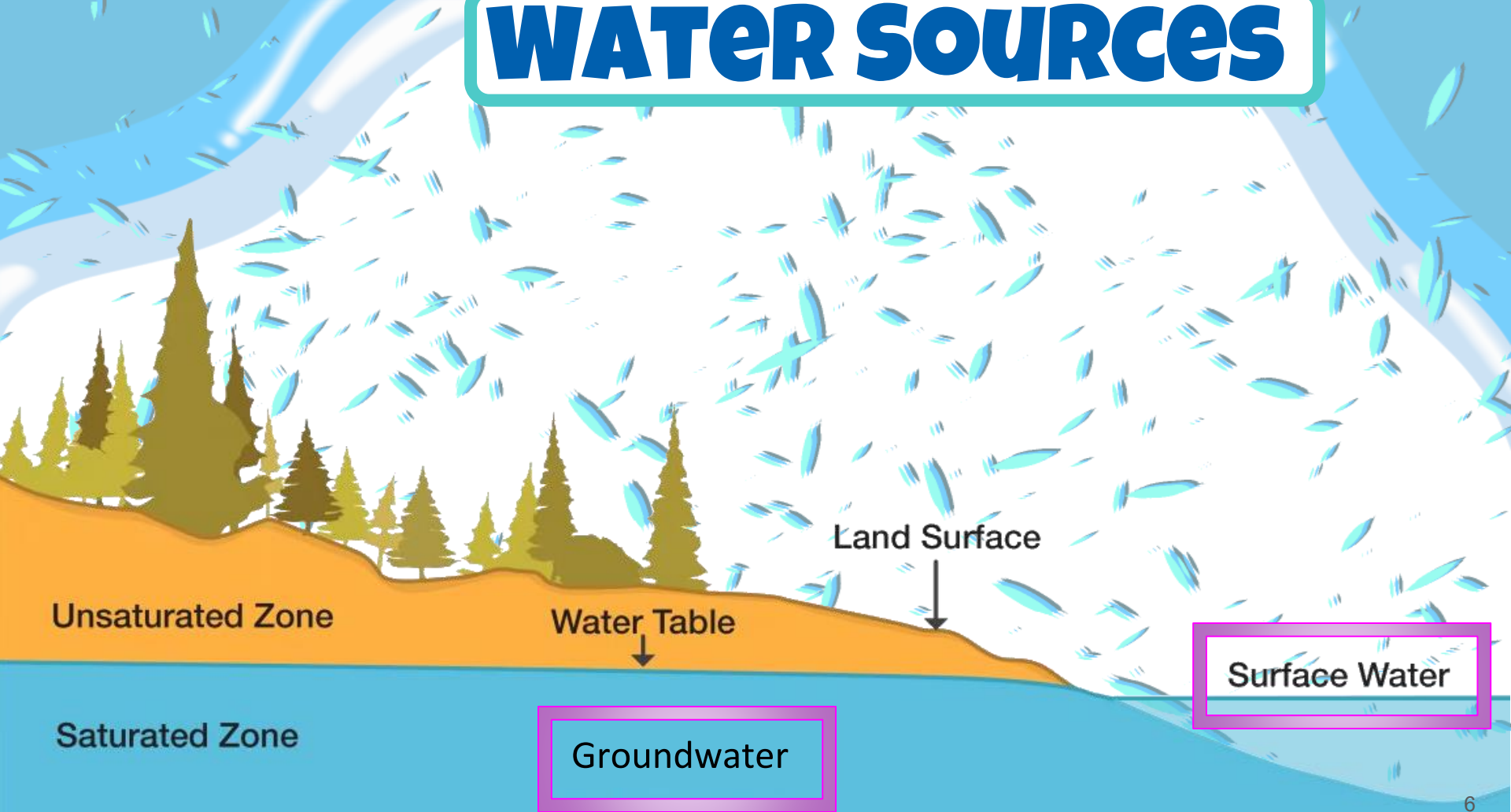
- Earth is ~70% Water



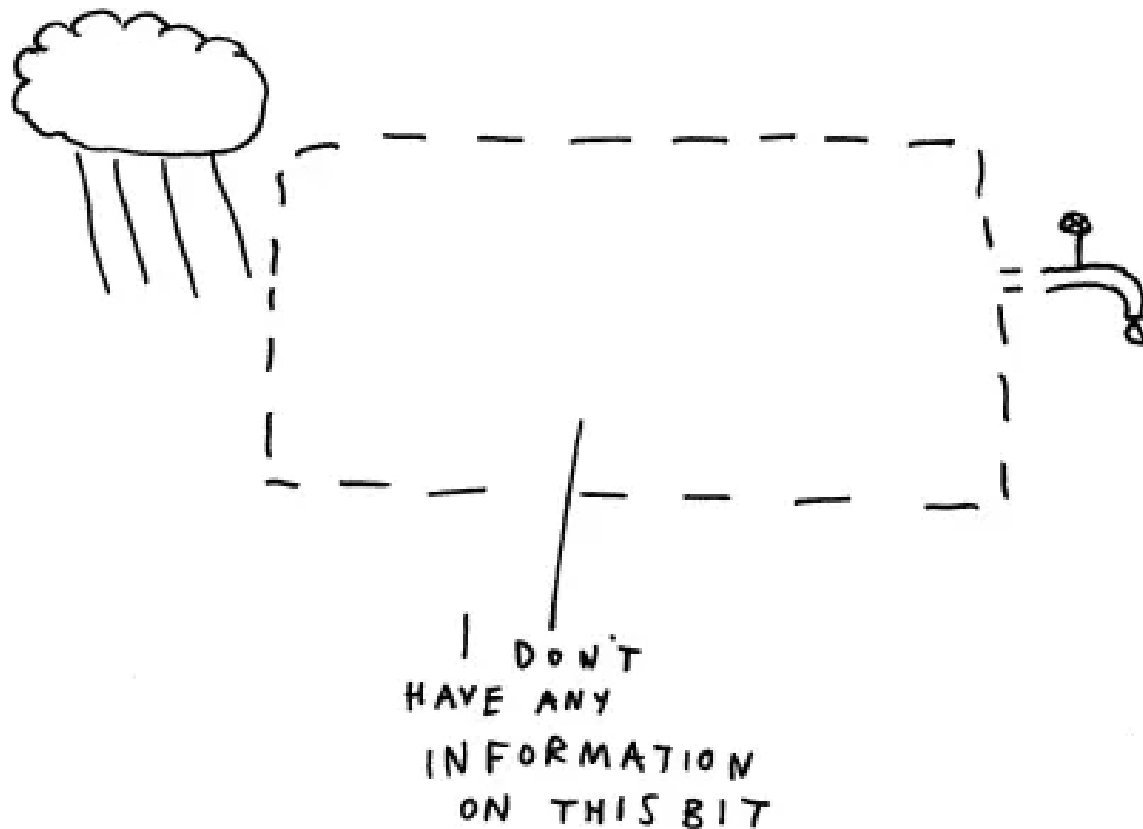
WATER AVAILABILITY



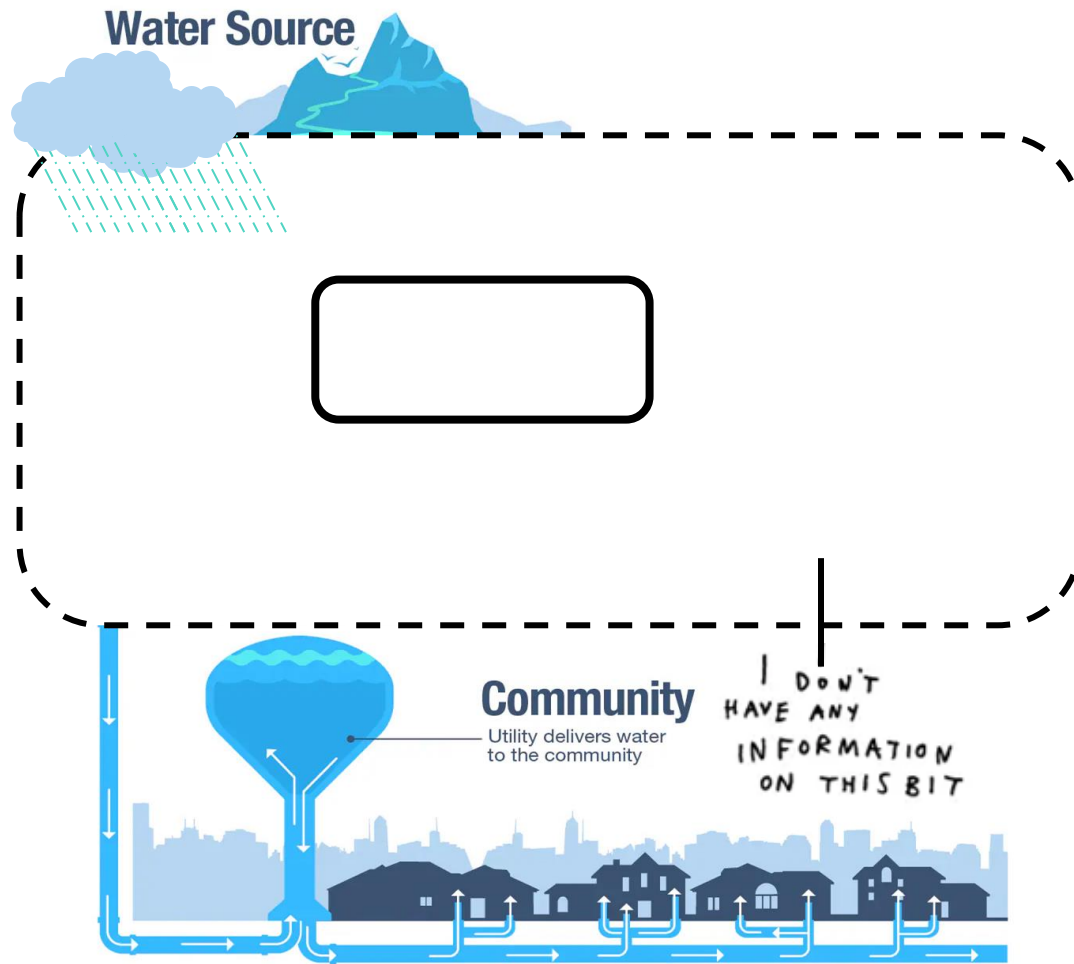
WATER SOURCES



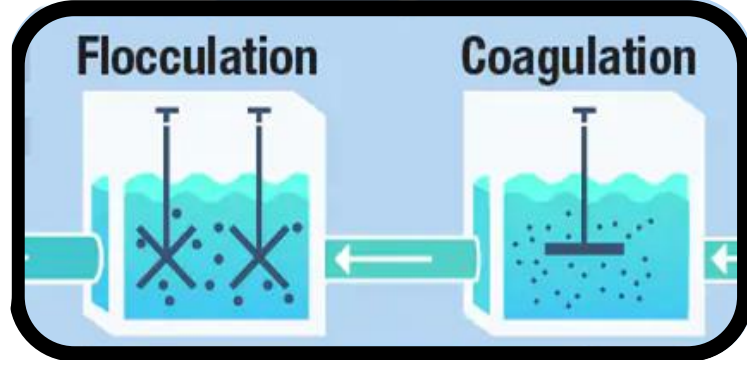
HOW WE GET WATER IN OUR HOMES



Water Treatment Steps



Water Treatment Steps



WHAT IS A CCR?

- Consumer Confidence Report
- Think of it as a Water Quality Report Card
- A CCR tells you what's in your water

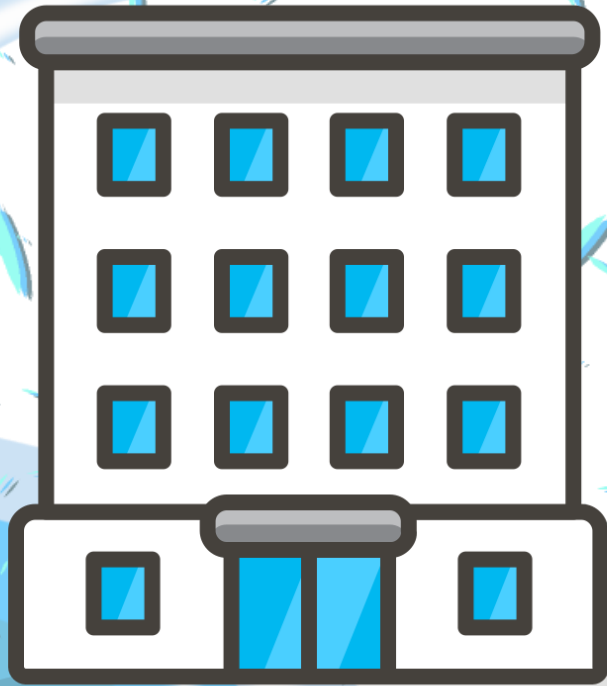
PRIMARY WATER STANDARDS: THINGS WE CHECK TO MAKE SURE THE WATER IS SAFE TO DRINK!

Substance	Units	Detected	Range	Typical Source
Chlorine	(mg/L)	x	0.23 – 0.97	Disinfectant added for treatment
Nitrate (as N)	(mg/L)	x	1.3 – 5.8	Runoff from fertilizer/sewage, erosion of deposits

SECONDARY WATER STANDARDS: THE LOOK, SMELL, AND TASTE TEST!

Substance	Units	Detected	Range	Typical Source
Water Hardness	(mg/L)	x	4.0 – 15	Groundwater that has passed through mineral-rich rocks
Color	Visually	x	Visually	Naturally occurring organic materials
pH	0-14	x	7.8 – 8.2	Aesthetic (taste/feel/corrosiveness)
Total Dissolved Solids	Visually	x	Visually	Runoff/leaching from natural deposits

YOUR UTILITY



Your Local
CCR



CONTAMINANTS AND INDICATORS

Biological

Bacteria, parasites, and viruses like E.coli and Giardia

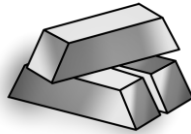


Turbidity

The measure of water clarity; high turbidity appears cloudy.



Metals



Naturally present in all water bodies, but commonly a result of human pollution

pH

Short for potential of Hydrogen, which measures how acidic a liquid is.



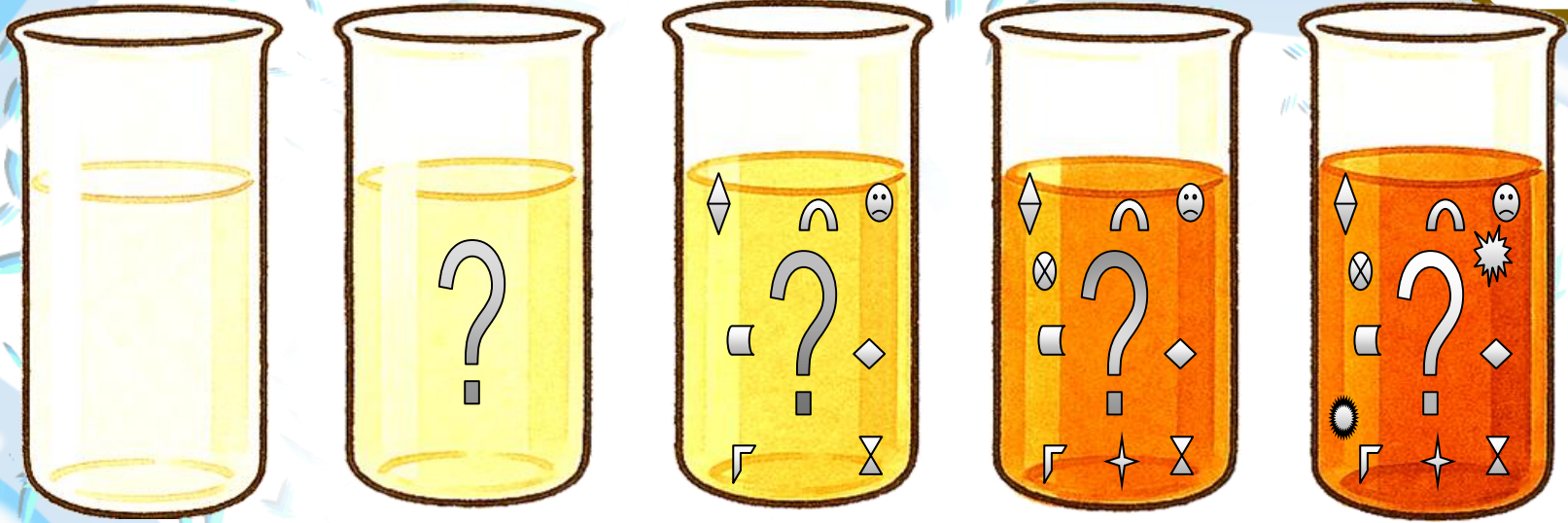
Chemical

A byproduct of industrial activity (agriculture or manufacturing).



TURBIDITY

Turbidity



Turbidity means **how cloudy or dirty** the water looks because of tiny pieces floating in it.

The **more stuff** floating in the water, the **higher** the turbidity.

This **stuff** can include soil, tiny organisms, debris, minerals and even soap!

CHLORINE

Chemical



Chlorine
keeps pool
water clean!



Chlorine is a chemical that people add to drinking water to kill germs and bacteria.

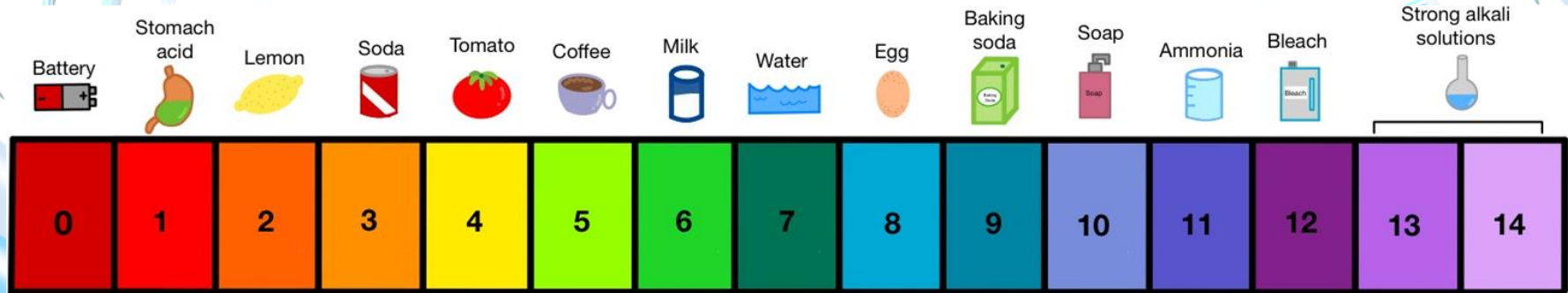
It helps make water safer by disinfecting it — just like how bleach cleans surfaces.

However, too much chlorine can give water a strong smell or taste, kind of like a swimming pool.

pH



pH stands for "**p**otential of **H**ydrogen". It tells us how acidic or basic (aka alkaline) a water sample is. The pH scale goes from 0 to 14,



where
lower numbers are acidic,

7 is neutral,

and
higher numbers are basic

NITRATES & NITRITES

Biological



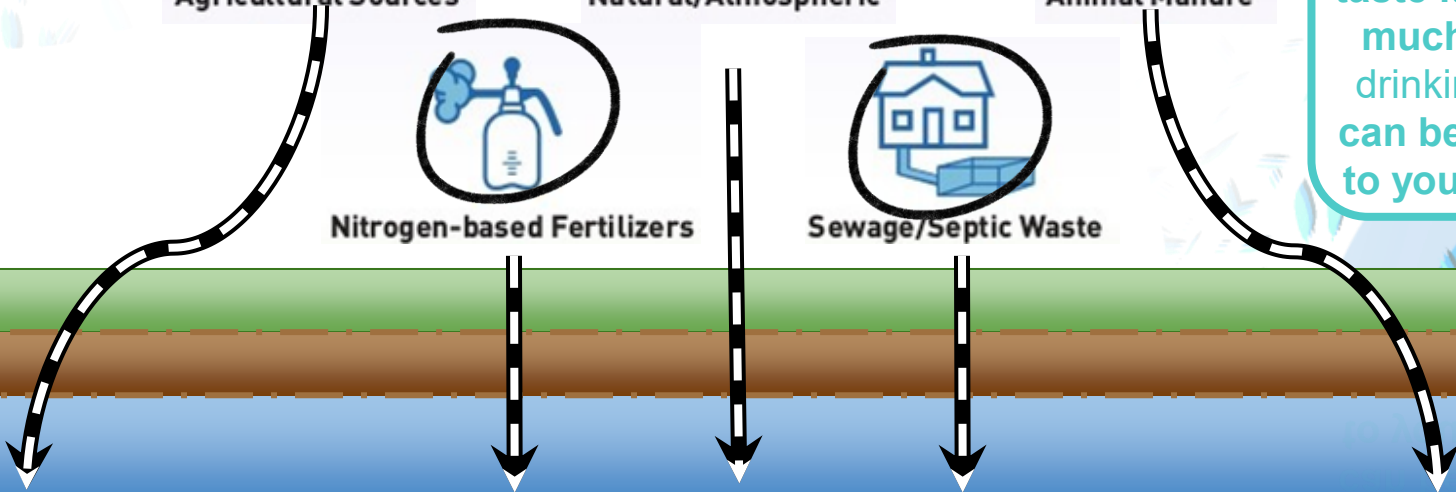
Chemical



Nitrates & Nitrites are naturally occurring and found from man-made sources.



You can't see it, smell it, or taste it, and too much in your drinking water can be **harmful** to your health.



MAKE YOUR PREDICTION!!

Color? Smell? Cloudy
or Clear?

Draw on the cup in
your activity sheet!



TESTING ROUND 1

1. One student per table will bring their **first empty cup** to the front of the class.
 1. Fill it with the **contaminated water** from the container.
 1. Return to their desk and begin **testing the sample**
1. Dip and gently swirl each strip in the sample water for 10 seconds.
 - a. **DO NOT** shake off the excess water.
 - b. Lay the strip flat on a paper towel.
 - c. Read and record results.
1. Record findings on the **Activity Sheet**.

TESTING ROUND 1

This table!

PRIMARY WATER STANDARDS: THINGS WE CHECK TO MAKE SURE THE WATER IS SAFE TO DRINK!

Substance	Units	Sample A		Typical Source
		Detected	Range	
Chlorine	(mg/L)		???	Disinfectant added for treatment
Nitrate (as N)	(mg/L)		???	Run off from fertilizer/sewage, erosion of deposits

SECONDARY WATER STANDARDS: THE LOOK, SMELL, AND TASTE TEST

Substance	Units	Sample A		Typical Source
		Detected	Range	
Water Hardness	(mg/L)		???	Groundwater that has passed through mineral-rich rocks
Color	Visually		???	Naturally occurring organic materials
pH	0-14		???	Aesthetic (taste/feel/corrosiveness)
Total Dissolved Solids	ppm		???	Runoff/leaching from natural deposits

It depends on what we are testing for!
Chlorine, pH, TDS, etc.

LIVE Demo: WATER PURIFIER IN ACTION!

- The instructor will add a **water purifier solvent** into the contaminated water container.
- Students will observe **coagulation** and **flocculation** in real time
 - Coagulation = particles clump
 - Flocculation = clumps settle

TESTING ROUND 2

1. One student per table will bring their **second empty cup** to the front of the class.

1. Fill it with the **treated water** from the container.

a. Return to their desk and begin **testing the sample**

1. Dip and gently swirl each strip in the sample water for 10 seconds.

a. **DO NOT** shake off the excess water.

b. Lay the strip flat on a paper towel.

c. Read and record results.

1. Record findings on the **Activity Sheet** and compare results.

TESTING ROUND 2

IV. Round 2 – Test Treated Water

Repeat your tests on the treated water. Record your results below. *Remember~ Check out the last page for help!*

PRIMARY WATER STANDARDS: THINGS WE CHECK TO MAKE SURE THE WATER IS SAFE TO DRINK!

Substance	Units	Sample B Detected	Range	Typical Source
Chlorine	(mg/L)		0.25 – 0.37	Disinfectant added for treatment
Nitrate (as N)	(mg/L)		1.3 – 5.8	Runoff from fertilizer/sewage, erosion of deposits

SECONDARY WATER STANDARDS: THE LOOK, SMELL, AND TASTE TEST!

Substance	Units	Sample B Detected	Range	Typical Source
Water Hardness	(mg/L)		4.0 – 15	Groundwater that has passed through mineral-rich rocks
Color	Visually		5 – 10	Naturally occurring organic materials
pH	0-14		7.8 – 8.2	Aesthetic (taste/feel/corrosiveness)
Total Dissolved Solids	ppm		170 – 400	Runoff/leaching from natural deposits

It depends on what we are testing for!
Chlorine, pH, TDS, etc.

WHAT CHANGED?

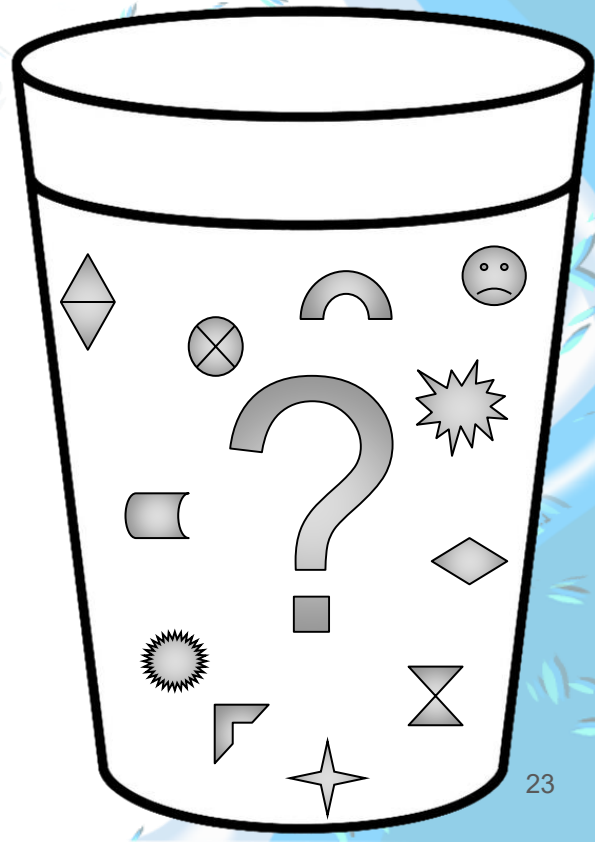


Is your water sample clearer?

After comparing the values,
did they improve?

Are your results within the
range provided?

What about your predictions?



WHY DOES THIS MATTER?

Discussion Prompts:

What surprised you?

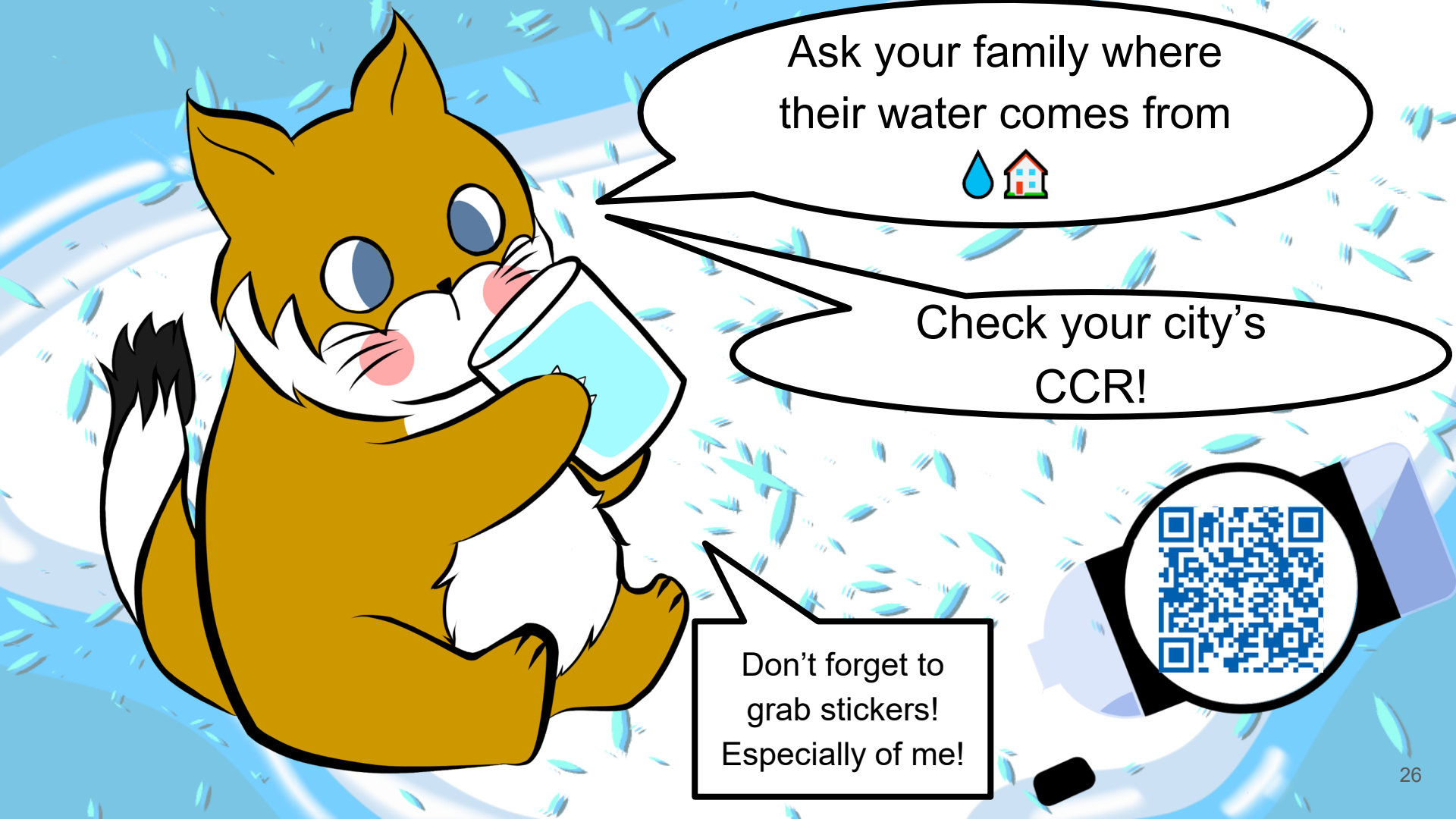
Why do we test our drinking water?

What would you tell your families or other friends?

This is how real scientist track this!

THANK YOU,
YOUNG SCIENTIST!





Ask your family where
their water comes from



Check your city's
CCR!

Don't forget to
grab stickers!
Especially of me!



AGAIN, SPECIAL THANKS

ENGINEERING
WITH



UNIVER

ALIFORNIA

**GRIZZLY
CORPS**



and YOU!!!



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2024-2025
Based at UC Merced*

