

POLK COUNTY



WATER QUALITY
MONITORING PROGRAM





WHAT MAKES WATER QUALITY BAD? |

WATER QUALITY STANDARDS DEPENDS ON WHAT YOU USE THE WATER FOR...

Drinking water has much more stringent requirements than water you use to recreate.



WATER QUALITY STANDARDS DEPENDS ON WHAT YOU USE THE WATER FOR...

Beaches have different standards than water used for kayaking because the chances of ingesting water is different.



WATER QUALITY STANDARDS DEPENDS ON WHAT YOU USE THE WATER FOR...

How we view the quality of the water depends on what we are doing in and with it... but...

...all roadways, parking lots, creeks, ditches, streams, rivers flow somewhere...



**DO YOU KNOW WHERE THE RAIN THAT FALLS ON
YOUR SIDEWALK GOES?**

**DO YOU KNOW WHERE YOUR DRINKING WATER
COMES FROM?**

POLK COUNTY CONSERVATION WATER QUALITY MONITORING PROGRAM

In operation since 2015

70 sites throughout Polk County

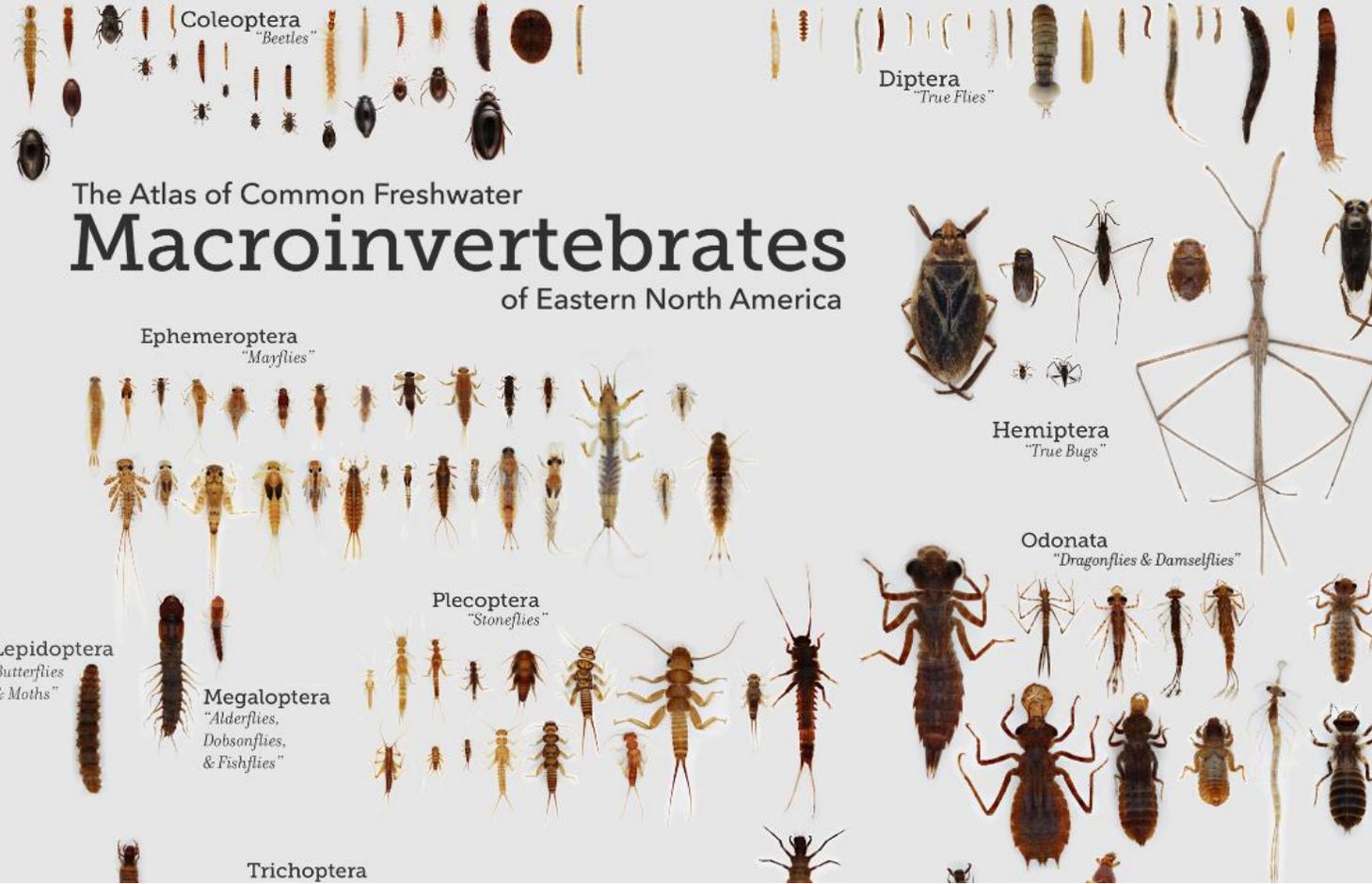
Twice a month all year long

Results can be found on the EPA website <https://www.epa.gov/waterdata/water-quality-data-wqx>

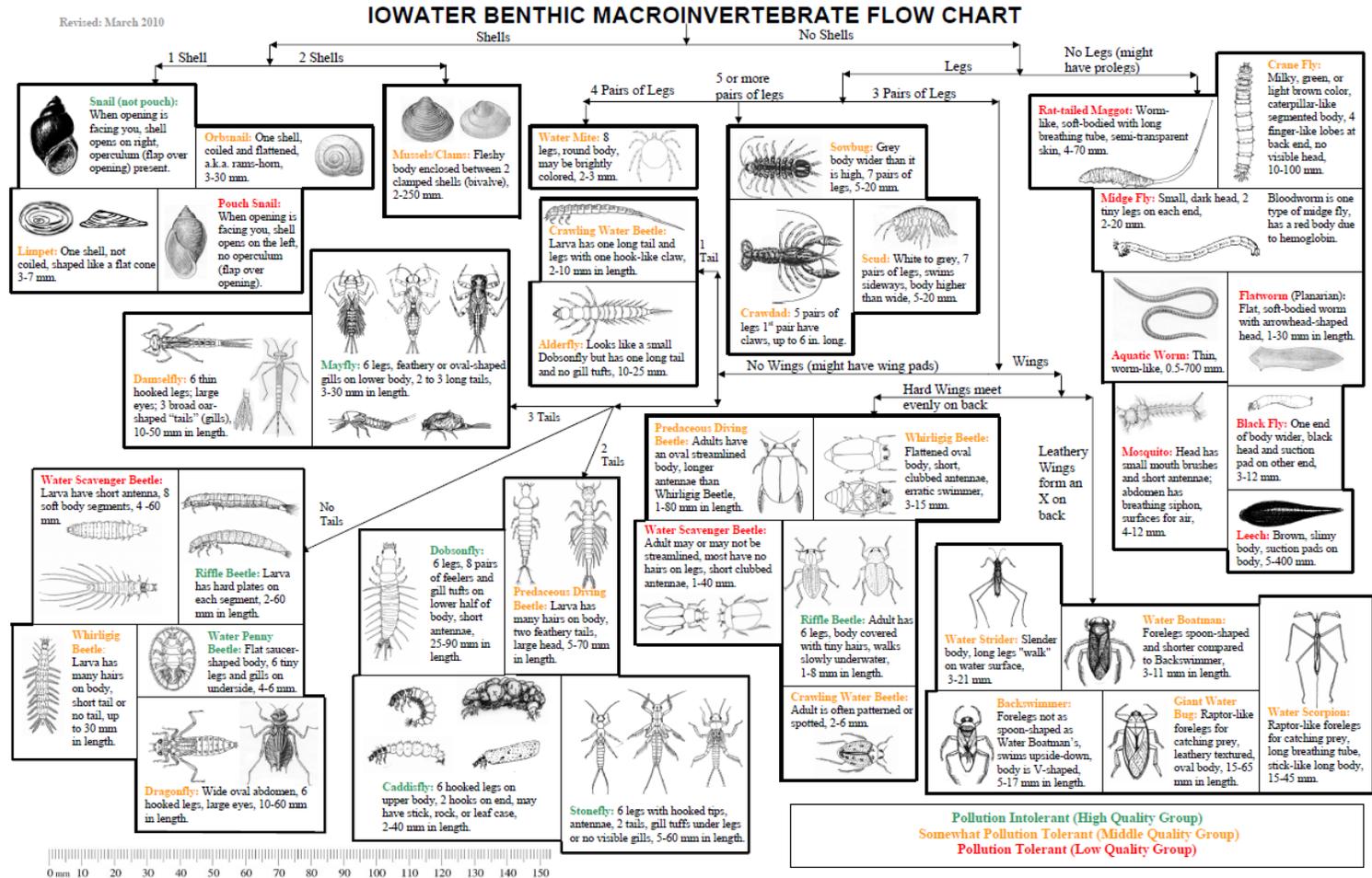
Habitat Assessment

Biological Assessment

Chemical Assessment

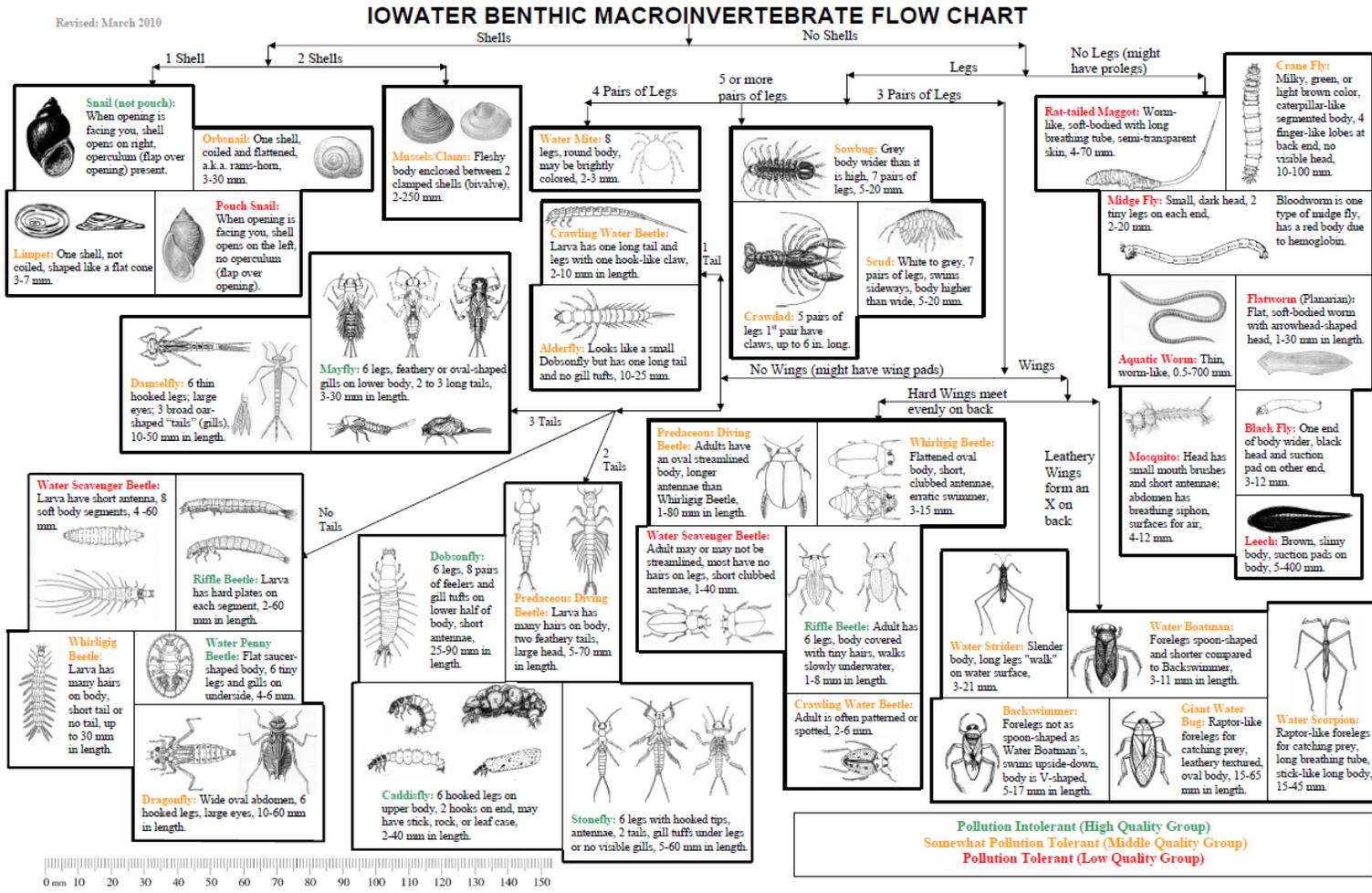


BENTHIC MACROINVERTEBRATES



IDENTIFY THIS MACROINVERTEBRATE

Identify this macroinvertebrate
 We will walk through the first one together.



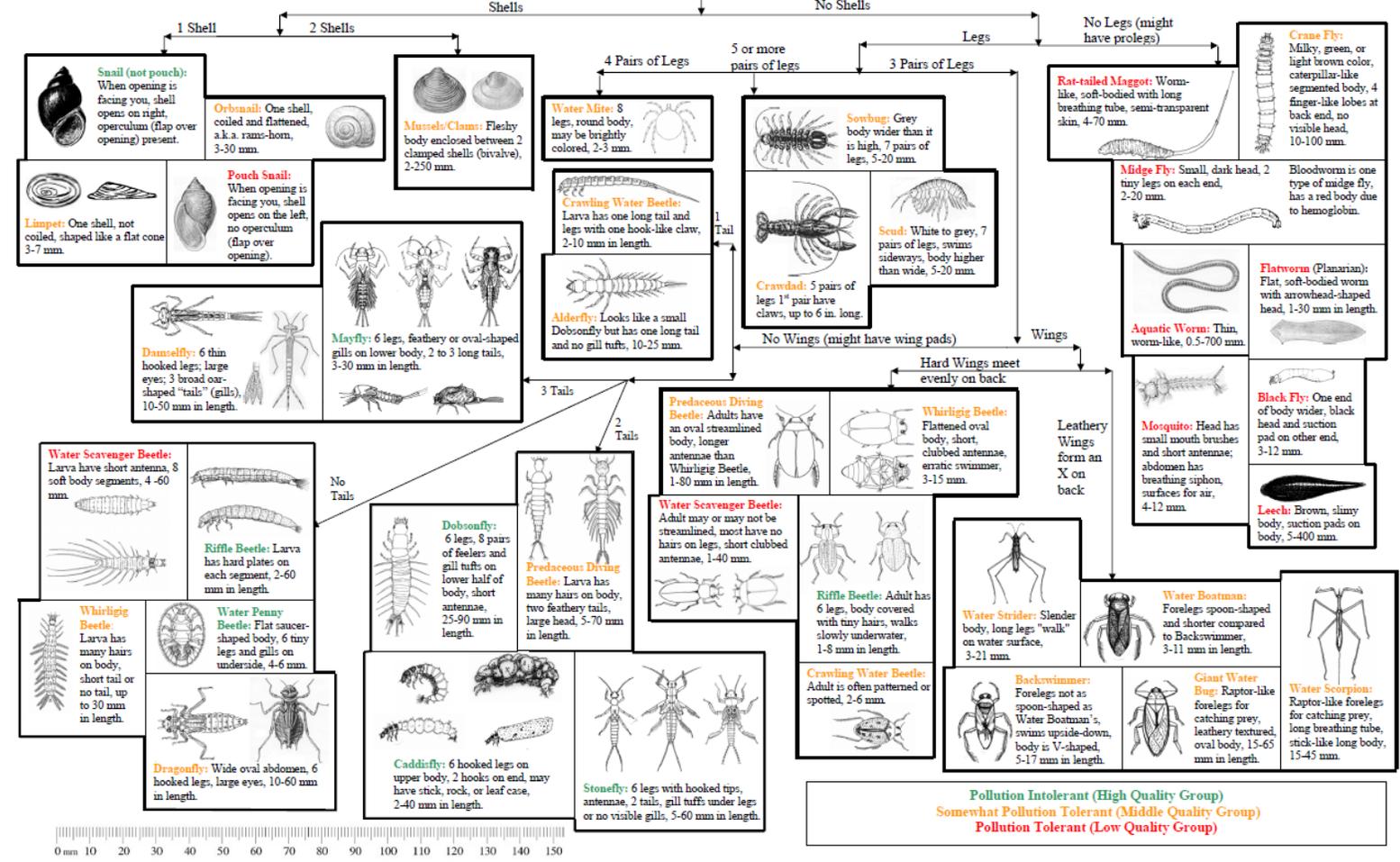
IDENTIFY THESE MACROINVERTEBRATES

What did you key it out to be?
 Bonus point for knowing the one on the right as well. Use the chat box to provide your answers.



Revised: March 2010

IOWATER BENTHIC MACROINVERTEBRATE FLOW CHART



IDENTIFY THIS MACROINVERTEBRATE

Use the chat box to provide your guess. This is a tough one.



Aqua Bugs



iNaturalist



Seek

RESOURCES

www.macroinvertebrates.org

Seek

iNaturalist

Aqua Bugs

IOWATER Benthic Macroinvertebrate Key

Weather (Circle ALL that apply):

Sunny Partly Sunny Cloudy Rain Snow Windy Calm

Water color (Circle ALL that apply):

Clear Brown Green Foamy Milky Scum
Oily Reddish Blackish Gray

Water odor (Circle ALL that apply):

None Chemical Fishy Petroleum Sewage Other: _____

Stream flow (along your transect): (Circle ONE)

Dry Stagnant Slow Normal Fast Torrent

Air temperature: _____ °F

Precipitation over the last 24 hours: _____ inches

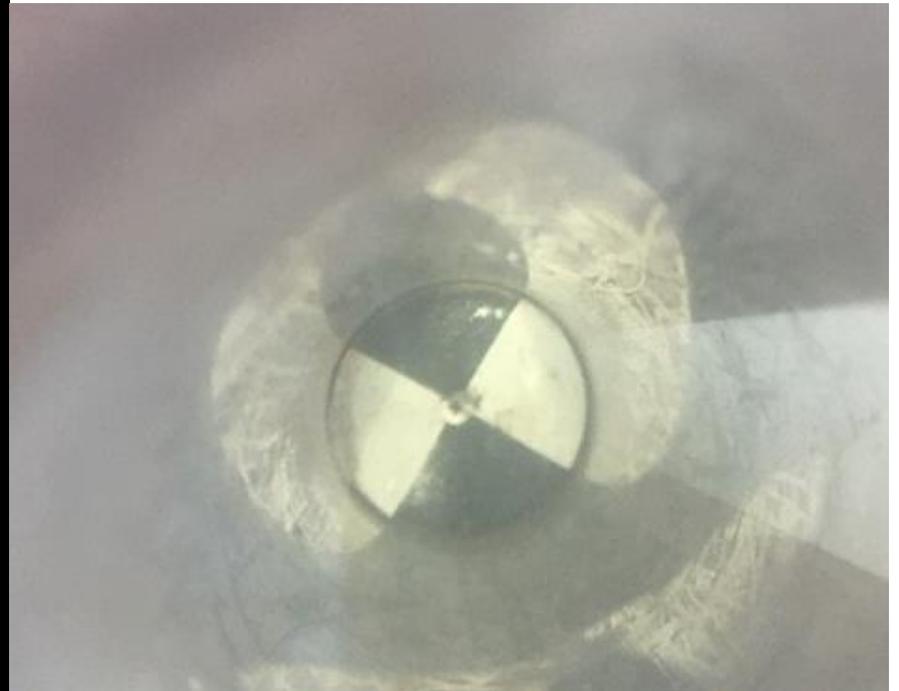
CHEMICAL/PHYSICAL ASSESSMENTS

Weather
Physical assessment - visual

CHEMICAL/PHYSICAL ASSESSMENTS

Transparency

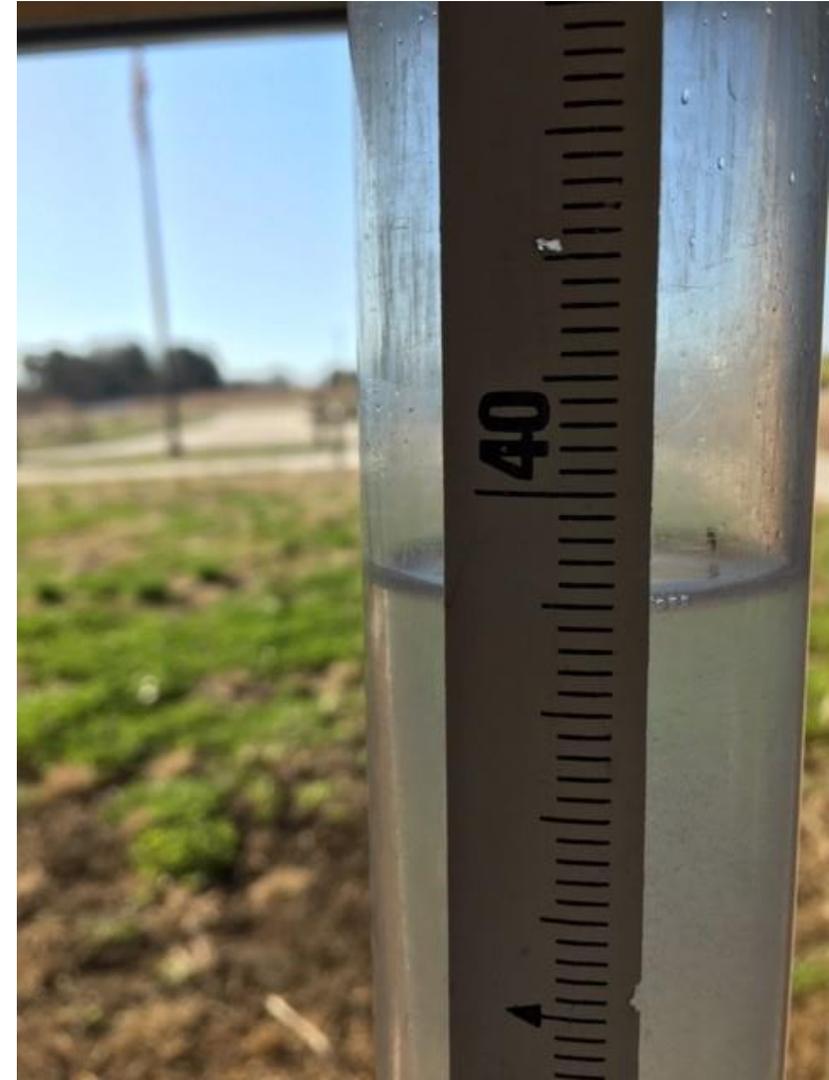
Transparency is a measure of how *clear* the water is.



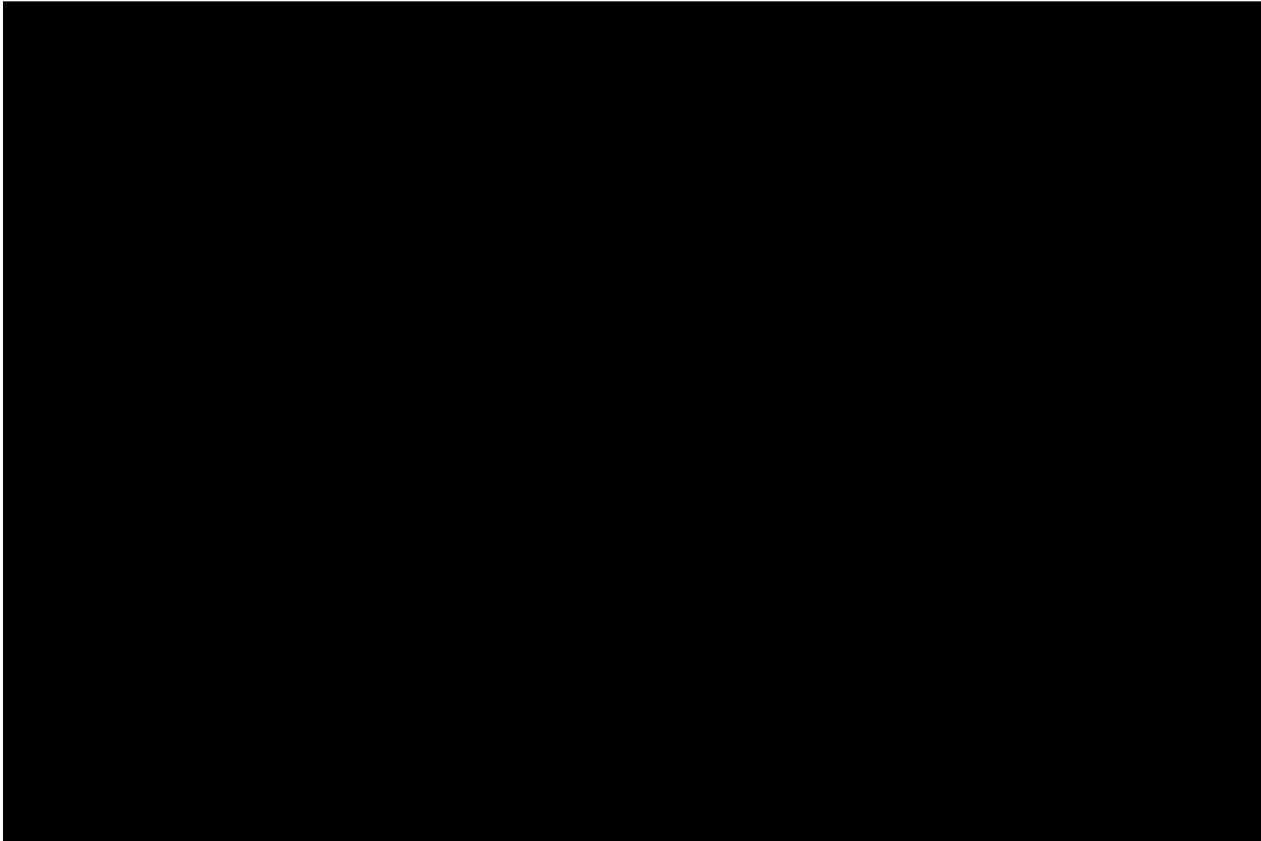
CHEMICAL/PHYSICAL ASSESSMENTS-TRANSPARENCY

Record transparency reading in cm.

What affects transparency?



CHEMICAL/PHYSICAL ASSESSMENTS -PH



- A measure of acid/base content
- Low pH can cause ammonia & heavy metals to be more soluble
- Low pH can be harmful to aquatic life
- Acceptable levels 6.5 - 9.0

CHEMICAL/PHYSICAL ASSESSMENTS

Record pH concentration.



CHEMICAL/PHYSICAL ASSESSMENTS

Challenge question:

Why do Iowa streams typically have a neutral pH of around 7?

CHEMICAL/PHYSICAL ASSESSMENTS –NITRITE/NITRATE

Sources include:

- Soil organic matter
- Decomposing plants
- Animal wastes, sewage
- Fertilizers

Nitrate, more common, very water soluble

Nitrite, less stable, converts quickly

Abnormal levels:

Nitrate > 10 mg/L

Nitrite > 0.3 mg/L

CHEMICAL/PHYSICAL ASSESSMENTS

Record nitrite concentration.
Record nitrate concentration.



CHEMICAL/PHYSICAL ASSESSMENTS

Challenge question.

What time of year will we likely see a rise in nitrate levels and why?

CHEMICAL/PHYSICAL ASSESSMENTS — DISSOLVED OXYGEN

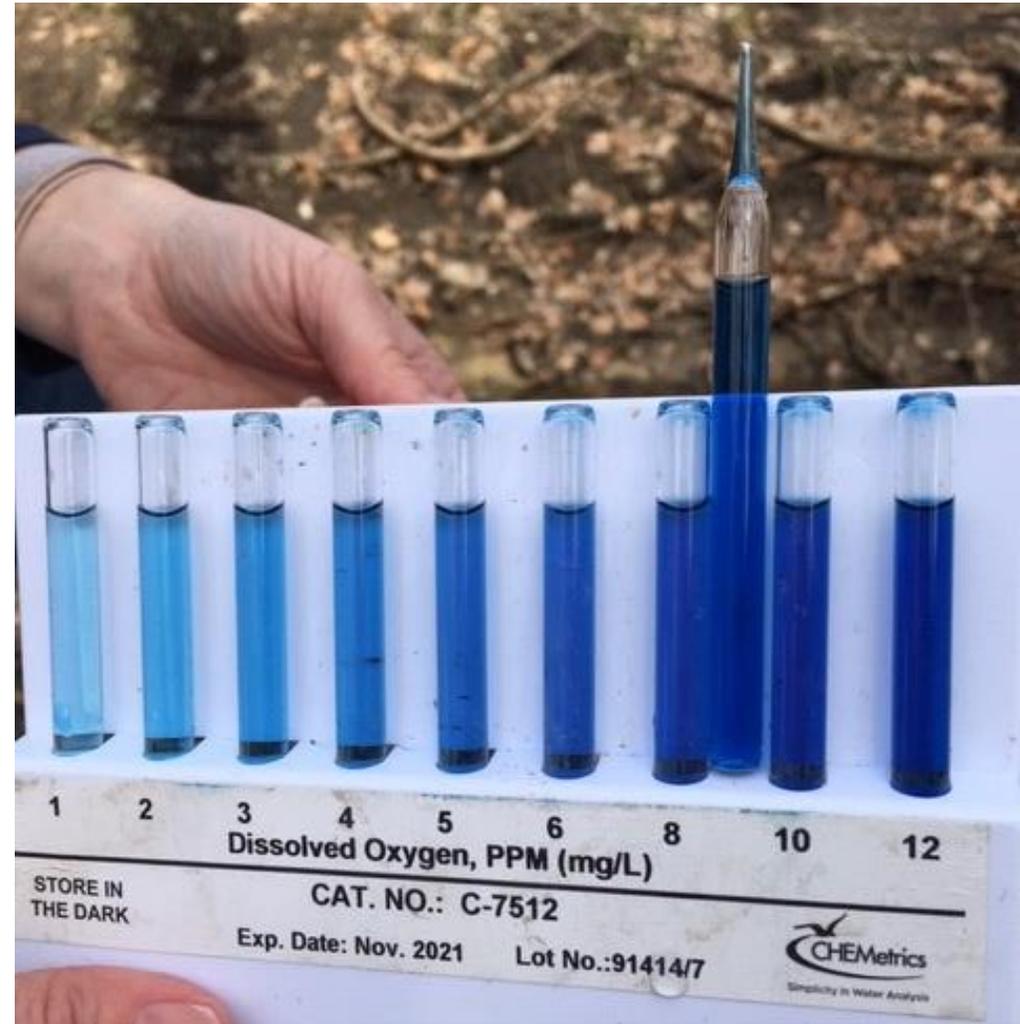
Affected by:

- Water temperature
- Season and time of day
- Stream flow
- Aquatic plants
- Dissolved or suspended solids
- Human impacts

Acceptable level for warm water streams
is >6 mg/L

CHEMICAL/PHYSICAL ASSESSMENTS

Record dissolved oxygen concentration.



CHEMICAL/PHYSICAL ASSESSMENTS

Challenge question.

What effect could low dissolved oxygen concentration have on an ecosystem?

CHEMICAL/PHYSICAL ASSESSMENTS —PHOSPHATE

Sources include:

- Human, animal, or industrial wastes
- Certain soils and rocks

Excess phosphorus can cause excess plant growth which can cause algal blooms followed by lower dissolved oxygen levels. Acceptable levels <0.6 mg/L

CHEMICAL/PHYSICAL ASSESSMENTS

Record phosphate concentration.



CHEMICAL/PHYSICAL ASSESSMENTS —CHLORIDE

Found in salts (Na, Ca, etc.)
Easily dissolves in water

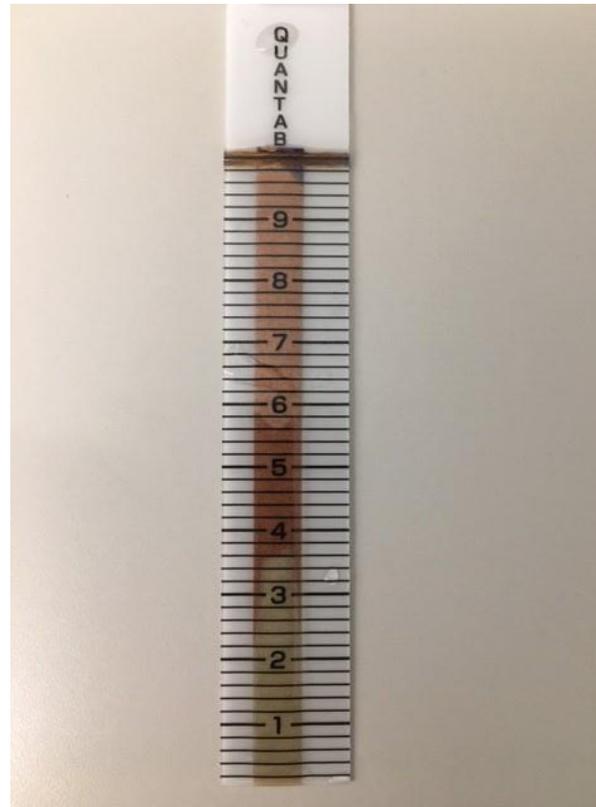
Sources include:

- Human or animal wastes
- Inputs from fertilizers
- Road salt runoff

Acceptable levels: <100 mg/L

CHEMICAL/PHYSICAL ASSESSMENTS

Record Quantab units.
Record concentration.



NOTE: Filtration of the water prevent obstruction

Quantab Units	%NaCl	ppm(mg/L) Cl ⁻
1.4	0.005	31
1.6	0.006	37
1.8	0.007	43
2.0	0.008	49
2.2	0.009	56
2.4	0.010	63
2.6	0.012	71
2.8	0.013	79
3.0	0.015	88
3.2	0.016	98
3.4	0.018	108
3.6	0.020	119
3.8	0.022	131
4.0	0.024	143
4.2	0.026	157
4.4	0.028	171
4.6	0.031	186

USE BY: 10/2021 Lot A9319

CHEMICAL/PHYSICAL ASSESSMENTS

Challenge Question:

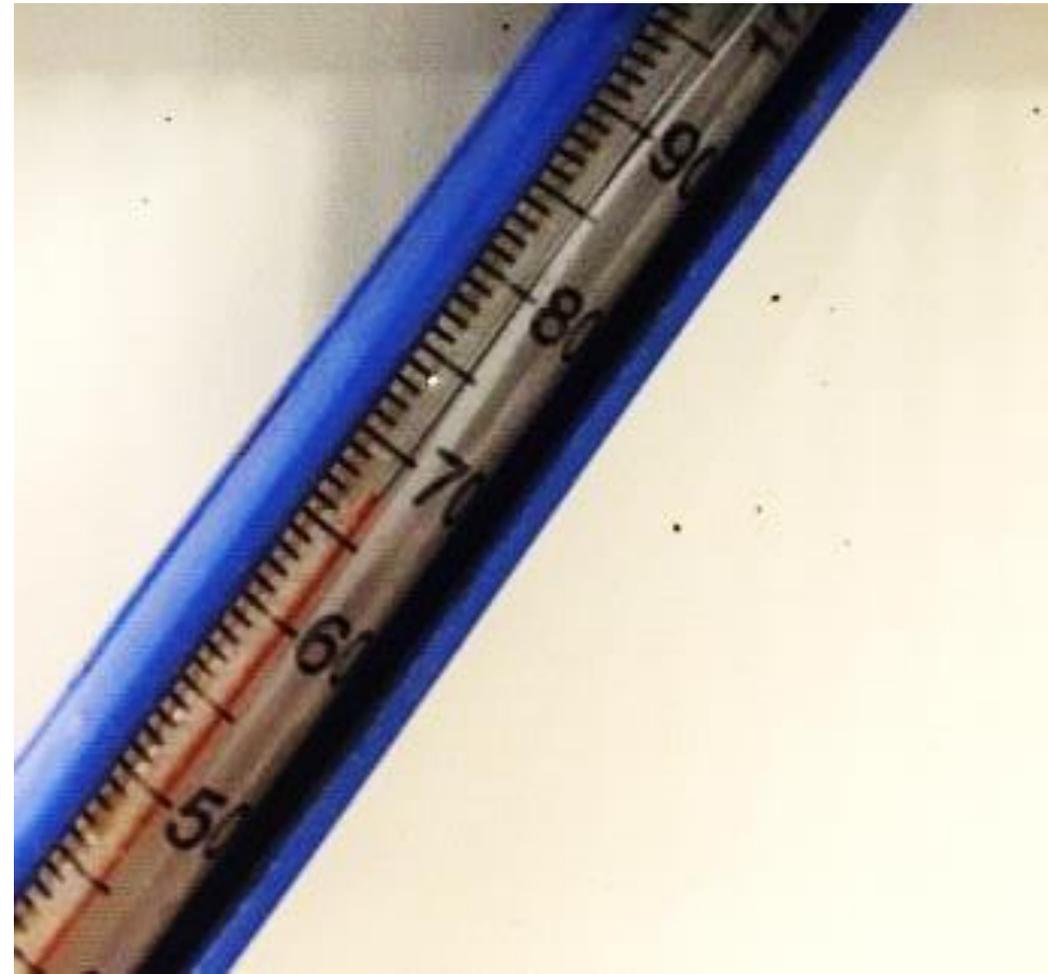
What time of year would you expect to see high chloride concentration?

CHEMICAL/PHYSICAL ASSESSMENTS-WATER TEMP

Record water temperature.

Warm water encourages algal growth which effects transparency.

Cold winter water will have higher dissolved oxygen concentration and is typically clear.



WHAT DOES ALL OF THIS MEAN?

In this example was the water high, medium, or low quality?

WHAT ACTION WILL YOU TAKE?

Pick up after your pet.



Install a rain garden.



WHAT ACTION WILL YOU TAKE?

Install a rain barrel



Fertilize the lawn and not the river



WHAT ACTION WILL YOU TAKE?

Fix leaking vehicles.



Wash your car on the lawn.



WHAT ACTION WILL YOU TAKE?

Become a water quality field monitor.

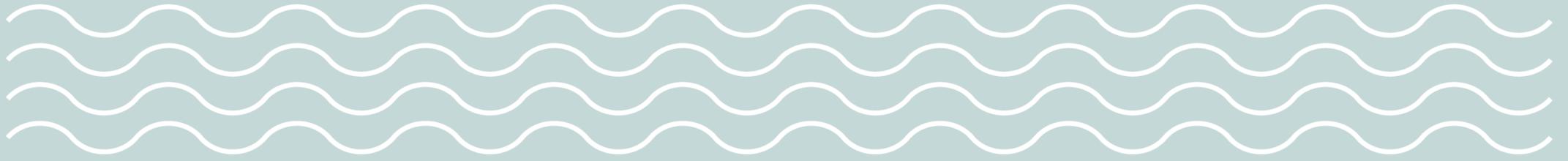


Talk with your friends, family and community.



WHAT ACTION WILL YOU TAKE?

POLK COUNTY



WATER QUALITY MONITORING PROGRAM

QUESTIONS?

515-323-5300

www.LeadingYouOutdoors.org