

# How does Aquatic Plant life affect water quality?



Robert Brown II

Biology Teacher at Jefferson High School

2021 extern at Johnson County

Conservation

# Overview of Workplace

## F.W. Kent Park

- F.W. Kent park is located three miles west of Tiffin on Highway 6.
- This park is the home of the Johnson County Conservation Board Headquarters and the Conservation Education Center.
- The 1,052 acres provide numerous recreational opportunities and is a premier place to view native Iowa tallgrass prairie.



# Overview of Workplace

## Features



- A bird blind (constructed in 2014) is open year round.
- More than nine miles of hiking trails wind through F.W. Kent Park's many native communities.
- The crushed rock trail around the lake provides anglers with access to the entire shoreline.
- In the winter cross-country skiing is a popular activity.

# Overview of Workplace

## Features

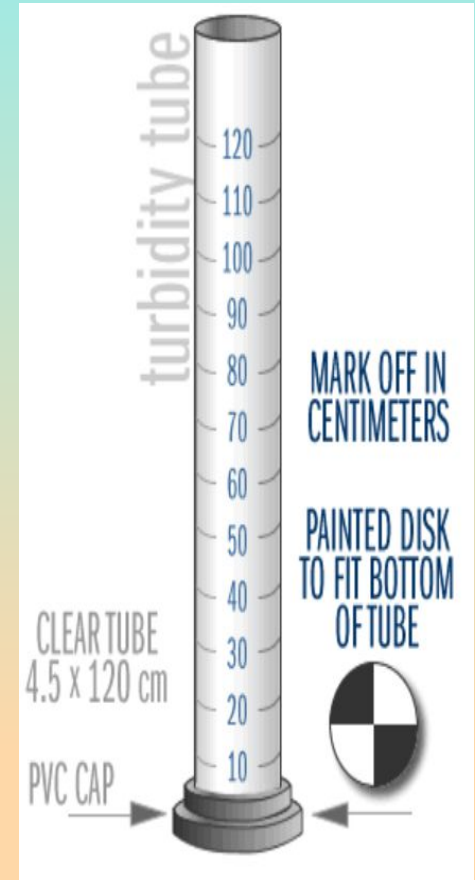
- Seven historic county road bridges have been relocated to F.W. Kent Park
- The campground has 86 sites with electrical service, modern restrooms, shower facilities and a playground.
- Kent Park Beach (Open Memorial Day - Labor Day).
- The Knight Prairie Pavilion overlooks 100 acres of prairie and wetlands.



# Workplace Focus

## Conservation Team

- Water Testing at 31 Sites within the Park
  - 8 Lake Testing Sites
  - 2 Tributary Testing Sites
  - 18 Catch Basin Testing Sites
  - 2 Campground Red Haw Valley Sites
  - 1 Newly Obtained Land Site
- Tests Include:
  - Dissolved Oxygen (D.O), Clarity (Secchi/Turbidity Tube), pH, Nitrates, Nitrites, Phosphate, and Ammonia



# The Problem



- Lake Cassiopeia is listed on the Iowa Waterways endangered list. The commissioners of the lake have dredged the lake and have built catch basins to help with the high fertilizer content in the lake (Nitrates, Nitrites and Phosphates).
- The commissioners are now looking for recommendations on what type of aquatic vegetation that should be planted to help with the elimination of the excess fertilizer.
- You will need to create a presentation showing which aquatic plants that you believe will be the most beneficial to help with eliminating the excess fertilizer.

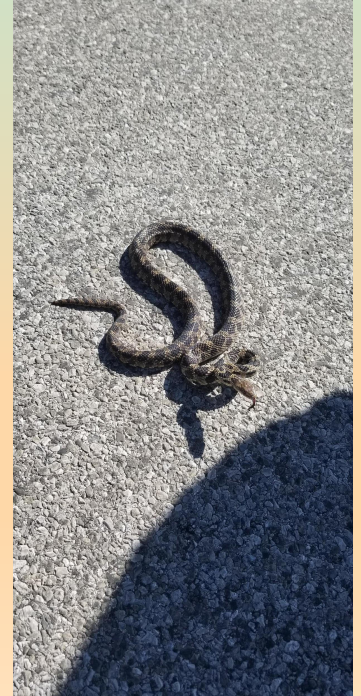
# Standards

Main standard that this unit covers:

- HS-LS2 Ecosystems: Interactions, Energy, and Dynamics

Learning targets that this unit covers:

- Science and Engineering Practices 1: Asking Questions and Defining Problems
- SEP3: Planning and Carrying Out Investigations
- SEP4: Analyzing and Interpreting Data
- SEP5: Constructing Explanations and Designing Solutions
- SEP6: Engaging in Argument from Evidence
- SEP7: Obtaining, Evaluating, and Communicating Information



# Standards, Driving and Essential Questions

The main driving questions:

- Can I improve the quality of the water?
- Are the plants I chose the right plants?
- Will I be able to analyze the data correctly to determine if my plants are working?
- Is there some other variable besides the type of plant that is affecting my results? (Sunlight, Water Depth, etc)





# Extern Host Role

- The role of the extern host in the learning unit could be utilized in many ways.
  - They can be used as a resource, as the knowledge they have could be helpful in designing and picking plants
  - They can serve as judges to evaluate the projects

- Who to Contact?

- Johnson County Conservation
  - Dave Wehde - Natural Resource Manager
  - Mike Alexander - Natural Resource Management Specialist
  - Jeremy Rieck - Natural Resource Management Specialist



# Student Learnings

- Students will be able to choose the plants that feel are best for the project
- Students throughout the process will be testing the water for: Phosphates, Nitrates and Nitrites, which will allow for tracking the effectiveness of their choices, possible changes and reflection.

