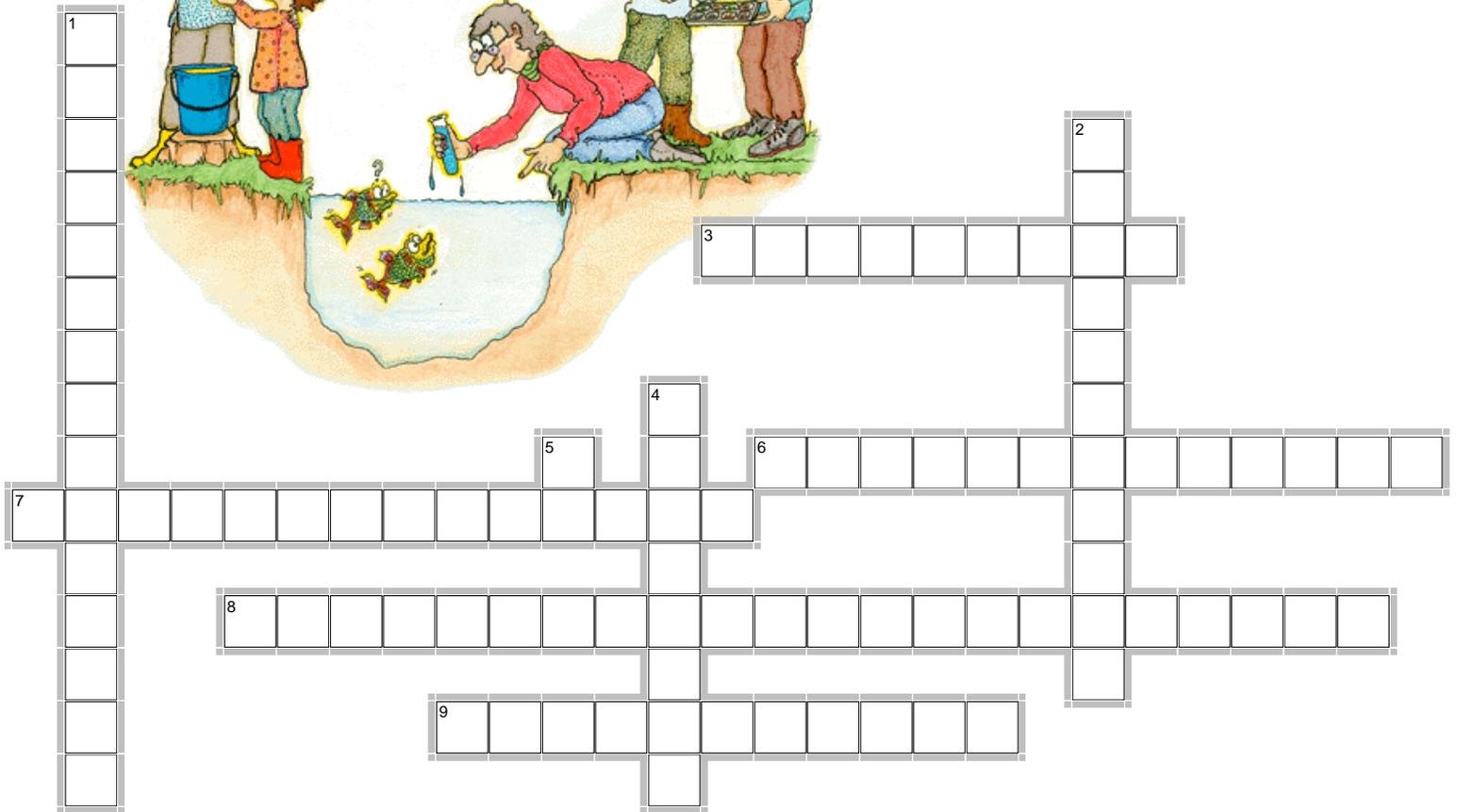


Testing the Waters

Complete the puzzle using the information on the back.

Name _____

Hour _____



EclipseCrossword.com

Across

3. The amount of suspended solids in a river.
6. High levels can cause disease and illness if swallowed while swimming.
7. Levels should not exceed .1mg/L.
8. The amount of oxygen in the water that is used up by aerobic bacteria.
9. Affects the amount of dissolved oxygen the water can hold.

Down

1. A healthy river should have about 90% saturation.
2. A measure of the inorganic material in the water.
4. Very high levels can promote overgrowth of plants.
5. The range should be between 6.5 to 7.5.

Background Information

Dissolved Oxygen:

Most aquatic plants and animals need oxygen dissolved in the water. Some organisms require more dissolved oxygen than others. Fish such as trout and pike require high levels whereas carp and catfish can survive on lower levels of dissolved oxygen. The temperature of the water affects how much oxygen it can hold so we use a measurement called percent saturation to determine if the water has enough dissolved oxygen at its current temperature. A healthy river should have above 90% saturation of dissolved oxygen.

Biological Oxygen Demand:

When rivers have too many organic wastes such as dead plants and animals, sewage, urban and agricultural runoff and other sources, there is a lot of aerobic bacteria in the water to break these organic wastes down. This decay process uses up oxygen leaving less for the fish and other critters. A healthy river has a low biological oxygen demand.

Fecal Coliform:

Fecal coliform is a type of bacteria that enters streams through the feces of humans and other warm-blooded animals. This waste can enter the stream by direct discharge from mammals and birds, from agricultural and storm runoff, and from sewage discharged in the water. The fecal coliform bacteria are not harmful by themselves but if levels are higher than 200 colonies / 100ml there are probably harmful organisms in the water.

These harmful or pathogenic organisms can cause disease and illness if swallowed while swimming or if they enter the body through the eyes, ears, or open cuts. Fun diseases such as typhoid fever, hepatitis, gastroenteritis, dysentery, and ear infections can result.

pH:

The pH of the water is a measure of how acidic or basic the water is or if it is neutral. Some aquatic plants and animals can tolerate a wider range of pH than others. To support the largest variety of life the pH range should fall within 6.5 to 7.5.

Temperature:

The temperature of the water affects many physical, biological and chemical characteristics of the river. Colder water can hold more dissolved oxygen than warm water can. Plants grow faster in warm water including algae. Organisms require more oxygen in warm water because their metabolism increases. Some fish such as trout require cooler water.

Total Phosphate:

Phosphorus is an essential element for life but too much will cause algae blooms which is not healthy. Levels of phosphates should not exceed .1mg/L.

Nitrates:

Nitrogen is required by all plants and animals for building proteins. Because very high levels of nitrogen can also promote overgrowth of plants (eutrophication), levels of nitrates should not exceed 30mg/L.

Turbidity:

Turbidity is the amount of suspended solids in the river. High levels of turbidity reduce the amount of life a river can support.

Total Solids:

Total solids are a measure of inorganic material in the water such as calcium, bicarbonate, nitrogen, phosphorus, iron, sulfur, and other ions. High levels of total solids cause lower water quality.