Dissolved Oxygen

Test Procedure

1. Fill the sample cup to the 25 mL mark with the sample to be tested (fig. 1).
2. Place the ampoule, tip first, into the sample cup. Snap the tip. The ampoule will fill, leaving a bubble for mixing (fig. 2).
3. To mix the ampoule, invert it several times, allowing the bubble to travel from end to end.
4. Dry the ampoule. Obtain a test result **2 minutes** after snapping the tip.
5. Obtain a test result by placing the ampoule between the color standards until the best color match is found (fig. 3).
6. Dispose of ampule and water in the water bottle.

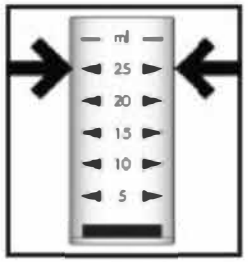


Figure 1


Figure 2

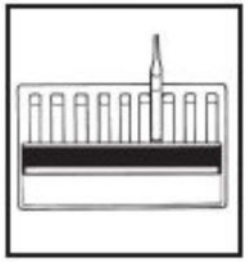


Figure 3

Oxygen CHEMets® Kit

K-7512/ R-7512: 1 - 12 ppm

Sampling

The most critical part of any dissolved oxygen test is sampling. It is difficult to obtain an aliquot which accurately reflects the oxygen content of a sample.

Exposure to the high oxygen content of "air" will cause a\ sample to approach saturation. Biological activity may cause rapid oxygen depletion. Dipping and pouring operations should be performed with as little agitation as possible.

Test Method

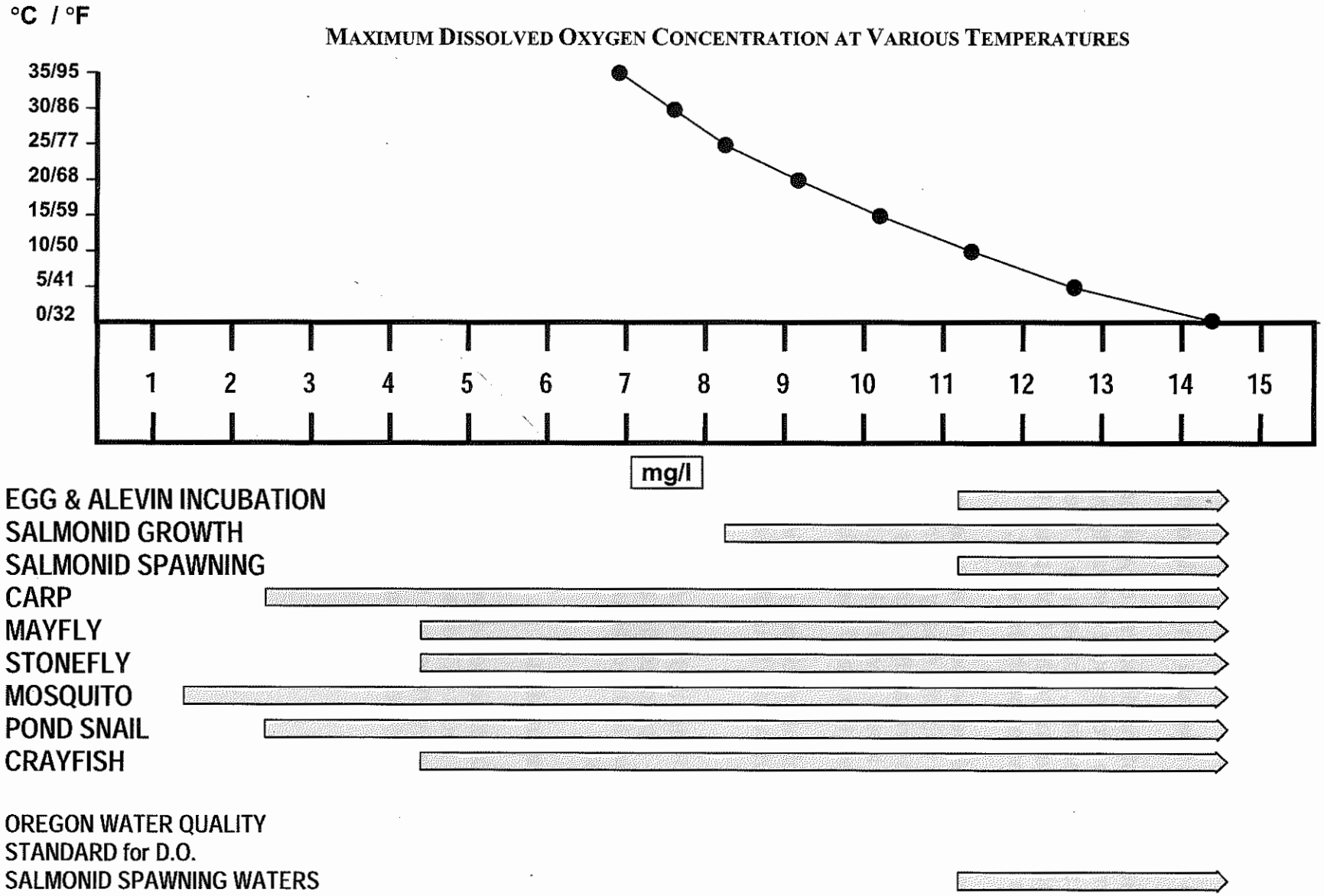
The Oxygen CHEMets®[1] test kit employs the indigo carmine method[2,3]. In an acidic solution, oxygen oxidizes the yellowgreen colored leuco form of indigo carmine to form a highly colored blue dye. The resulting blue color is proportional to the dissolved oxygen concentration in the sample.

Safety Information

Read SDS before performing this test procedure. Wear safety glasses and protective gloves.

CHEMetrics®
By AquaPhoenix Scientific

Feb. 24, Rev. 18



OPTIMUM DISSOLVED OXYGEN LIMITS FOR AQUATIC ORGANISMS

Compiled from Streamkeepers Field Guide, DEQ Adminstrative Rules, Aquatic Project WILD, Stream Scene, Investigating Our Ecosystem.

pH (acidic or basic)

STEP 1: Wear gloves.

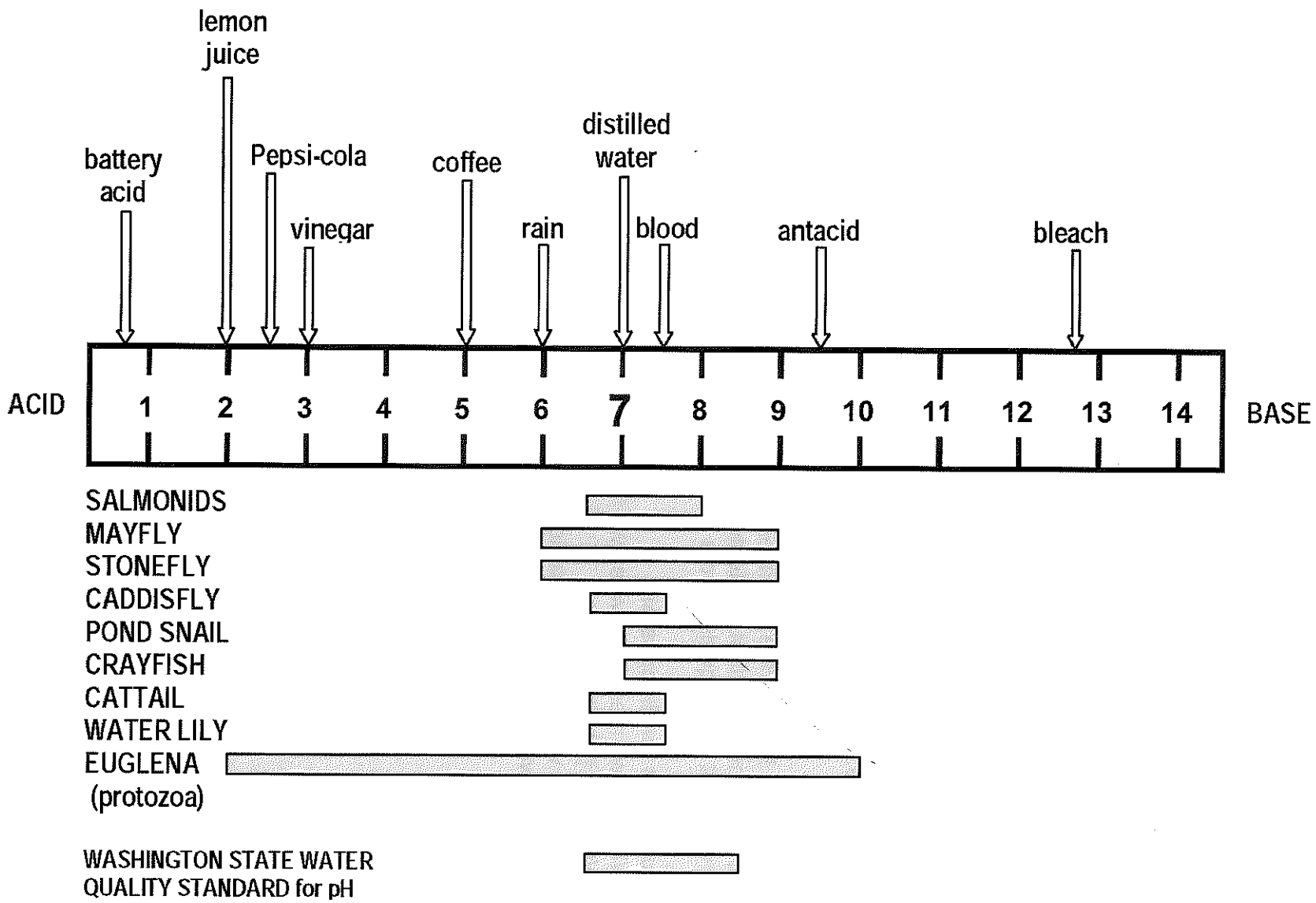
STEP 2: Fill the test tube with river water up to the 10 mL line.

STEP 3: Add 8 drops of the pH indicator solution.

STEP 4: Put the cap on the test tube. Gently turn the tube upside down repeatedly for *2 minutes* to mix. After *2 minutes*, look at the color of the water in the test tube. Compare it to the pH color chart. Hold the test tube and chart up to the light.

STEP 5: Write your result on the data sheet.

STEP 6: Pour the used test tube water into the wastewater bottle. (Never dump it back into the river!)



LETHAL pH LIMITS FOR AQUATIC ORGANISMS

Compiled from Stream scene, Investigating Our Ecosystem, Aquatic Project Wild, Streamkeeper's Field Guide

WATER TEMPERATURE

STEP 1: Place the thermometer in the river about 4 inches below the surface and hold it there for *1 minute.*

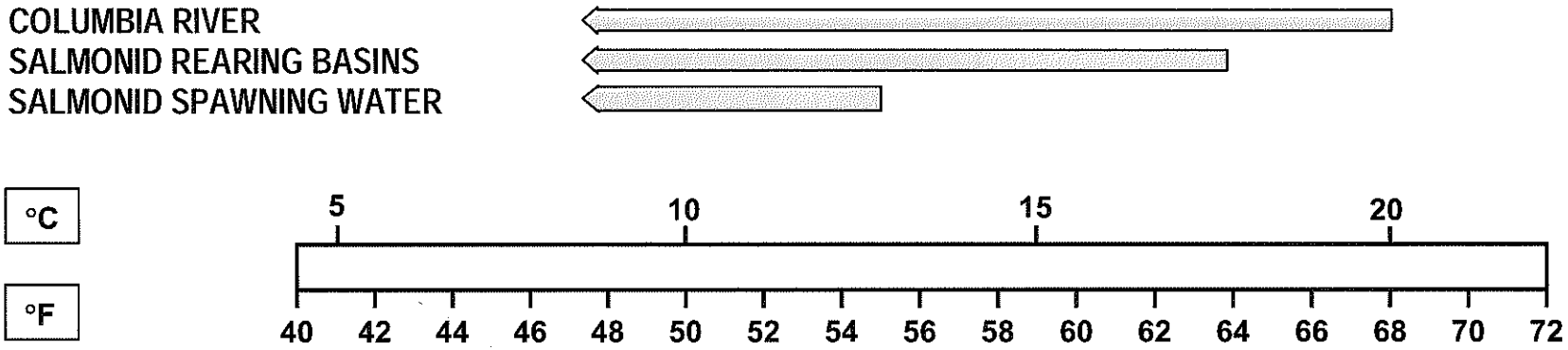
STEP 2: Take the thermometer out of the water and read the temperature in degrees Fahrenheit or Celsius.

STEP 3: Write your results on your data sheet.

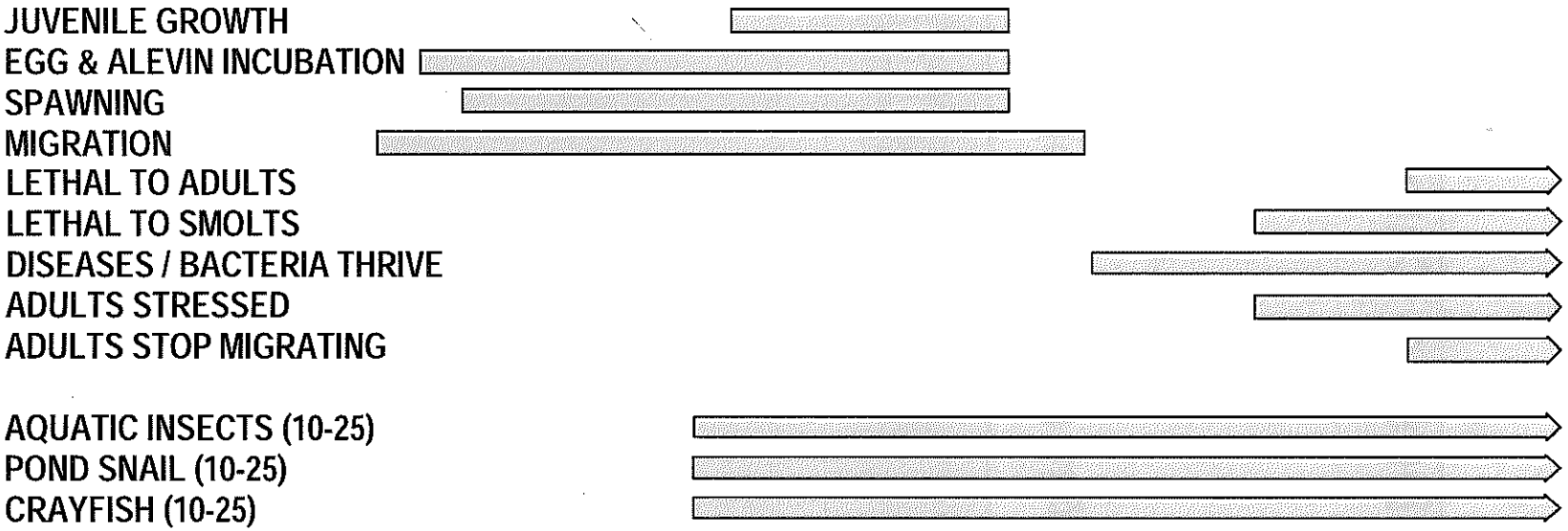
STEP 3: Look at the temperature chart.

- **What is the temperature range that is best for salmon and trout?**
- **Is the river temperature in that range?**
- **If not, what might that mean for fish at different life stages?**
- **Do you think this water is healthy for native fish? Why or why not?**

OREGON WATER QUALITY STANDARDS for TEMPERATURE



SPRING CHINOOK



OPTIMUM TEMPERATURE LIMITS FOR AQUATIC ORGANISMS

Compiled from Stream Scene, Streamkeepers Field Guide, DEQ Administrative Rules, Aquatic Project Wild, Investigating our Ecosystem

TURBIDITY

STEP 1: Look at the Secchi disc at the bottom of your turbidity tube. Can you see the black markings?

STEP 2: Collect river water – fill the turbidity tube all the way to the top.

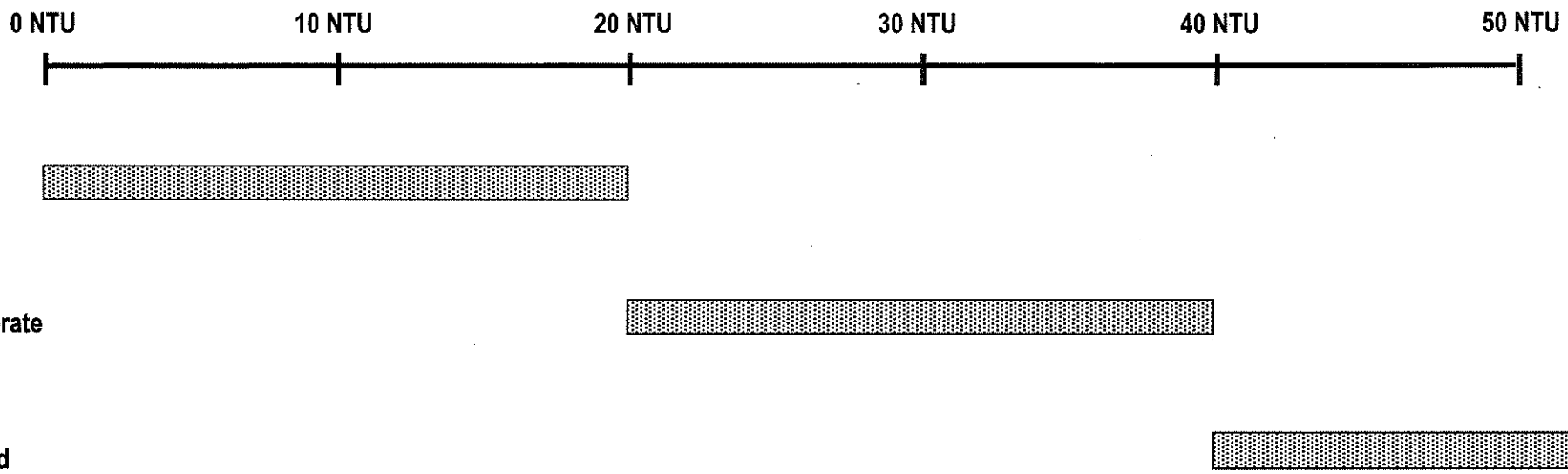
STEP 3: If you cannot see the markings on the Secchi disc, the water is turbid (not clear). Slowly release water from the bottom until the disc is visible.

STEP 4: Look at the numbers on the outside of the tube. Where is the top of the water?

- **The numbers show NTUs (Nephelometric Turbidity Units), which measure turbidity. The number closest to your water level is your turbidity reading.**
- **If the water reaches the very top, your NTU is 0, which means the water is very clear.**
- **Lower NTU numbers = clearer water; higher numbers = murkier water.**

STEP 5: Write your turbidity reading in NTUs on your data sheet.

OPTIMUM TURBIDITY LEVELS FOR AQUATIC ORGANISMS



NTU = nephalometric turbidity unit

10 NTU: Level not to be exceeded for coldwater fisheries per state/federal water quality standards.

50 NTU: Turbidity level which interferes with site feeding; level not to be exceeded in any type of river/stream per State/Federal water quality standards.

Compiled from information regarding water quality from the Oregon Department of Environmental Quality and the U.S. Environmental Protection Agency.