



Water Quality Protocol

Check your supplies!

- | | | |
|----------------------------------------------------|------------------------------------------------|------------------------------------------|
| <input type="checkbox"/> data sheet | <input type="checkbox"/> pH meter | <input type="checkbox"/> turbidity tube |
| <input type="checkbox"/> bucket & line | <input type="checkbox"/> ammonia test strips | <input type="checkbox"/> waste container |
| <input type="checkbox"/> thermometer | <input type="checkbox"/> nitrate test strips | <input type="checkbox"/> wash bottle |
| <input type="checkbox"/> dissolved oxygen test kit | <input type="checkbox"/> phosphate test strips | <input type="checkbox"/> calculator |
| <input type="checkbox"/> hydrometer | | |

Preparation

- 1) Using a bucket on a rope, collect a sample of water as close as possible to where your ORS hangs.
- 2) The same water sample should be used for all of the tests below.
- 3) As soon as you pull up the water sample, place the bucket in the shade.
- 4) Complete the temperature and dissolved oxygen tests first, as the results can change quickly once the water sample is taken from the Harbor.
- 5) Each test must be completed three times in order to calculate an average and improve accuracy.
- 6) You may do a second set of water quality tests with an additional water sample. If you have a Van Dorn bottle or other deep water sampling device, consider taking the second sample at the depth your ORS hangs or from even deeper water.

Water Temperature

Standard method: Thermometer

- 1) Place the thermometer directly in the bucket.
- 2) Wait two minutes.
- 3) To read the thermometer pull it out of the water, but **leave the bulb of the thermometer in the water**. (If you take the bulb out of the water the thermometer will start to read the air temperature instead).
- 4) Read and record the water temperature result in degrees Celsius.
- 5) **Rinse the thermometer with fresh water.**

Dissolved Oxygen (DO)

Standard method: Chemetrics Colormetric Test Kit

- 1) Fill the sample cup with 25 mL of sample water.
- 2) Place one ampoule in the cup with the tip of the ampoule at the bottom corner of the cup.
- 3) Pull the top of the ampoule slowly but firmly towards the side of the cup until the tip breaks off.

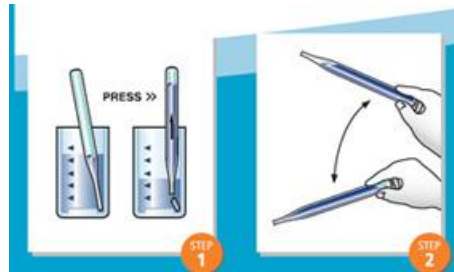


Image Source: [http://www.chemetrics.com/Oxygen+\(dissolved\)/Visual+Kits/K-7512](http://www.chemetrics.com/Oxygen+(dissolved)/Visual+Kits/K-7512)

- 4) Allow the ampoule to fill with sample water.
- 5) Take the ampoule out of the cup and dispose of the water left in the sample cup into the waste container.
- 6) Invert the ampoule 20 times, allowing the bubble to travel from one end of the ampoule to the other each time.
- 7) Compare the ampoule to the comparator by putting the ampoule in-between the comparator colors.
- 8) Dispose of the ampoule in the waste container.
- 9) Record your result in ppm (parts per million).
- 10) Rinse out the cup with fresh water.

Salinity

Standard method: Hydrometer

- 1) Carefully fill the hydrometer with sample water (up to the skinny part of the neck)



Image Source: <https://www.youtube.com/watch?v=nUvcEEAyrw>

- 2) Tap hydrometer down gently to release any air bubbles.
- 3) Put hydrometer on a flat surface. The palm of your hand is not a flat surface!
- 4) Bring your eyes down to the level of the hydrometer.
- 5) Look at the level of the plastic pointer and read the corresponding numbers that are measured in "ppt" (parts per thousand).



Image Source: <http://www.advancedaquarist.com/2002/1/chemistry>

- 6) Record your result in ppt (parts per thousand).
- 7) **Rinse out hydrometer with fresh water.**

pH

Standard method: Precision pH kit

- 1) Fill the test tube to the line with sample water.
- 2) Add ten drops of wide range indicator.
- 3) Cap and mix, but not shake.
- 4) Turn on pH meter.
- 5) Insert test tube into viewer.
- 6) Note: The viewer should be held so non-direct light enters through the back of the viewer.
- 7) Match sample color to the color standards on the viewer.
- 8) Record the result (remember pH has no units).
- 9) **Rinse the test tube and cap with fresh water.**

Nitrates / Phosphates / Ammonia

Standard method: Test Strips

- 1) READ INSTRUCTIONS ON INDIVIDUAL TEST STRIP CONTAINERS AS EACH TEST STRIP IS DIFFERENT
- 2) Estimate results if the color on the test strip falls between two color blocks.

- 3) Record your result in ppm (parts per million).
- 4) Dispose of the test strip in the waste container.

Turbidity

Standard method: Turbidity Tube

- 1) Fill up the turbidity tube with water all the way to the top.
- 2) Designate one person to look down into the tube and make sure this person uses his/her body to shade the tube from the sun. You will only get an accurate reading if the turbidity tube is in the shade.
- 3) Depending on the type of turbidity tube you have, this test may require two people. If so:
 - a) Make sure the nozzle at the bottom of the turbidity tube is locked.
 - b) A second person controls the nozzle lock and begins to slowly let out water.
- 4) The person looking into the tube says "stop" as soon as he/she sees the secchi disk symbol at the bottom of the tube.
- 5) Measure the depth of the water in cm using the ruler on the side of the tube.
- 6) **Rinse turbidity tube with fresh water.**

Wrap up

- ☐ Check that all data is complete and accurate.
- ☐ **Rinse all supplies with FRESH water.**
- ☐ Put away all supplies.