

WATER QUALITY

1. **DESCRIPTION:** This event will focus on evaluating aquatic environments.
A TEAM OF UP TO: 2 **APPROXIMATE TIME:** 50 minutes
2. **EVENT PARAMETERS:** Each team may up to 2 non-programmable, non-graphing calculators. Notes will not be allowed.
3. **THE COMPETITION:** This event will be composed of three sections of approximately equal point value, and may include analysis, interpretation or use of charts, graphs, and sample data. Supervisors are expected to utilize freshwater “lakes, ponds or rivers” scenarios and have students analyze and evaluate comparative macroinvertebrates, and water quality data. Process skills may include equipment use, collecting, and interpreting data, measuring, calculating classifying, and making inferences.
 - a. This section will use multiple choice, matching, fill-in-the-blank and/or short answers in areas such as: aquatic ecology, the water cycle, nutrient cycling, aquatic chemistry (and its implications for life), potable water treatment, waste water treatment, aquatic food chains and webs, community interactions, population dynamics, watershed resource management issues, sedimentation pollution and harmful species.
 - b. **Macro-flora and fauna section** will include identification (common name only) of immature and adult macroinvertebrates & aquatic nuisance organisms, their importance as indicators of water & wetland quality.
 - i. **Class 1 – Pollution Sensitive: Caddisfly, Dobsonfly, Gilled Snails, Mayfly, Riffle Beetle, Stonefly, Water Penny, Water Scorpion**
 - ii. **Class 2 – Moderately Sensitive: Aquatic Sowbug, Crane Fly, Damselfly, Dragonfly, Scuds**
 - iii. **Class 3 – Moderately Tolerant: Blackfly, Flatworm, Leeches, Midge, Water Mite**
 - iv. **Class 4 – Pollution Tolerant: Air Breathing Snail, Midge Fly Bloodworm, Deer/Horse Fly, Tubifex**
 - v. **Class 5 – Air Breathing: Back Swimmer, Giant Water Bug, Mosquito, Predacious Diving Beetle, Water Boatman, Water Strider, Whirligig Beetle**
 - vi. **Aquatic Nuisance Plants: Purple Loosestrife, Eurasian Water Milfoil, and Water Hyacinth**
 - vii. **Aquatic Nuisance Animals: Zebra Mussel, Spiny Water Flea, Asian Tiger Mosquito, & Asian Carp**
 - c. **Water Monitoring and Analysis Section:** Students are expected to understand and interpret data related to testing procedures and purposes for collecting data related to salinity, pH, phosphates, turbidity dissolved oxygen, temperature, nitrates, fecal coliform, alkalinity, total solids and biochemical oxygen demand and their relationship to one another.

SCORING: Questions will be assigned point values. Students will be ranked from highest to lowest score. Ties will be broken by pre-determined tiebreaker questions.