



Tips from the USGA:

Vegetation Buffer Area Biofilters And Improving Golf Course Water Quality

by David Wienecke, USGA Green Section Agronomist

Water quality has been in the news and, based on questions I am being asked, also on many people's minds in the Southwest Region. The first point to be made about water quality deals with research facts. Almost every study dealing with pesticide environmental fate, fertilizer nutrient environmental fate, and water quality on golf courses over the past 15 years has shown water quality is improved after flowing through golf courses compared to water entering the property. Due to space constraints, I would like to focus discussion of water quality in this article on what you can do to develop your stream and lake side water quality program.

Let's begin by defining water quality. Water quality is a complex topic defined by the U.S. Environmental Protection Agency (EPA) using biological, chemical, and physical criteria. Drinking water standards deal with taste palatability and health issues while other water standards look at water quality from an environmental standpoint of healthy aquatic ecosystems. A partial list of water quality criteria is listed below.

- * Biological regulatory standards focus on disease causing organisms or biological indicators of animal water contamination. Total Fecal Coliform Bacteria (bacteria found in the animal gut) and/or *Escherichia coli* (a bacteria found in the human gut) are used as indicators of water contamination from animals to water supplies. Other biological tests may be done for bacteria found in the feces of water fowl that contaminate water and can cause diseases or other pathogenic organisms once contamination is suspected. Another biological test is the Biological Oxygen Demand (BOD) and Dissolved Oxygen (DO) that show the water's ability to sustain life or tendency to become anaerobic.

- * Chemical regulatory standards include a wide variety of factors including: pH (acidity or alkalinity), Hardness (degree of minerals in the water), amount of sodium, amount of salts, amount of nitrate nitrogen, total nitrogen, and amount of phos-

phates. There are also chemical tests for organic chemicals including gasoline and pesticides and inorganic chemicals such as arsenic and heavy metals.

- * Physical regulatory standards include items that interfere with water clarity. Turbidity is a measure of biological or soil particles that make the water look cloudy. Temperature is also a physical water quality measure since many animals and plants have narrow temperature limits that sustain aquatic life.

Of course on golf courses we are primarily looking at environmental ecosystem health standards. The bottom line is that water quality is a complex topic that goes beyond what most golf course managers are willing to dive into (pun intended).

Let's distill all this down to the basics. Here's what you can do:

- * Decide on water quality criteria and testing tailored to your golf course environmental concerns and conditions. The SCGA and NCGA are collaborating with the USGA and the San Diego Golf Course Superintendent's Association, the Central California Golf Course Superintendent's Association, and the Sierra Nevada Golf Course Superintendent's Association to

offer two workshops on Environmental Stewardship designed to give you the opportunity of doing this for your golf course. Brochures to sign up for these workshops are being mailed out soon. Workshops are being offered April 15, 2002 at Barona Creek Golf Club in Lakeside, CA and May 6, 2002 at Stevinson Ranch Golf Club near Merced, CA.

- * Establish buffer strips around all your waterways including lakes and streams even if the streambeds are seasonal in nature. EPA research has shown water quality contaminants of pesticides, silt particulates, and fertilizer nutrients are reduced 90-99% by vegetation buffer strips acting as biofilters for the water. The buffer strip reducing water contamination 99% was 30 feet wide while the buffer strip reducing water contamination 90% was 15 feet wide. Buffer strip width recommended at most golf courses is 25 feet wide.
- * The more you know the better you will feel about your golf course being a community resource for helping make your local environment.

For more information on this topic join us at one of these workshops. Have a great spring!



Attendees warmed up on a beautiful day at Castlewood