

ON COURSE WITH NATURE

Concern for Surface Runoff — More on Water Quality

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IT IS NO SECRET that the public and the golf industry are aware of and concerned about what is contained in the surface water runoff and leachate that leaves golf courses and enters streams, ponds, and lakes. The concerns that have received the most press and indeed the majority of research funding involve pesticide and nutrient contamination. Other concerns about pollution of waterways involve the effects of sediments, pathogens, oxygen depletion, acidity, and physical habitat alteration.

This look at water quality focuses on runoff from the golf course and the less talked about pollution potential of sediments. Included are suggestions on how to begin to reduce or eliminate these problem areas.

To begin, take a good look at the golf course property and analyze its surface water drainage characteristics. Winter presents a perfect time for this analysis. Drainage patterns are more evident in the winter months when vegetation has died back and the topography of wooded areas of the golf course is visible. To help identify areas of potential runoff pollution, answer the following questions. If you answer yes to one or more of these questions, read on and learn about what you can do to protect your water resources.

Where Are the Potential Pollution Sources on Your Golf Course?

- Are streams or ponds receiving runoff from fairways, greens, tees, and parking lots?
- Are stream banks unstable?
- Are there septic systems which might be failing and polluting the adjacent water bodies?
- Is there buildup of silt in streams and ponds?
- Are the channels of an adjacent stream becoming wider and deeper?

- Are there fallen trees in the streams?
- Does the storm water collection system (catch basins, road gutters, storm drains) discharge directly into streams or ponds?
 - Are wash basins for equipment, which collect oil, grass clippings, chemical residue, and other debris, allowed to discharge into adjacent streams?
 - Does a large area of the course property discharge excess runoff from rainwater directly into streams and ponds?
 - Are there large areas of impervious surfaces, such as parking lots, clubhouse roofs, concrete walks, paved roads, and driveways that drain without filtration to water bodies?
 - Are there areas of the golf course without established turf, trees, or shrubs where excessive erosion occurs?

Pollution Prevention Strategies — What You Can Do

Protecting Shorelines

- Remove fallen branches and trash from creeks, marshes, or streams.
- Keep golfer traffic away from edges of streams.
- Avoid placing heavy equipment and stockpiles on top of stream banks or shorelines.
- Plant and protect vegetation on slopes of stream banks and on areas adjacent to slopes.
- Where necessary, consult a trained professional about structural solutions for severe erosion problem areas and consider bio-engineering solutions which create wildlife habitat as well.

Managing Storm Water

- Install gravel trenches along driveways or paths to collect water and allow it to filter into soil.



Sediment control fencing helps protect a stream's water quality by blocking excess sediments from entering the stream. Stream banks should also be stabilized with native vegetation to control soil erosion.

- Use fabric filter fences to protect streams from soil sediment.
- Use grass swales (biofilters) to move water from one area to another, or to intercept runoff prior to entering water bodies.
- Use gentle grades (1 to 2%) where possible, allowing for maximum filtration.
- Restore exposed soil areas with sod or reseeded to prevent erosion.
- Plant shrubs and trees to promote filtration.
- Wash off equipment in turf areas where soil and turf can absorb remnant pollutants, or collect runoff from existing wash basin areas in an underground storage tank where pollutants can be contained and then recycled on the rough areas of the course.

Reducing Permeable Surfaces

- Use wood decking, bricks, or interlocking stones which allow for some filtration on walkways and patios.
- Divert rain from paved surfaces onto turf areas to permit gradual absorption.
- Eliminate any situations where grass clippings, motor oil, pesticides, or fertilizers drain directly to catch basins or storm drains which release pollutants directly into adjacent streams or other water bodies.

Landscaping Strategies

- Landscape out-of-play areas of the golf course to minimize rainwater runoff.
- Choose plants appropriate for local soil conditions.

The above suggestions may seem commonplace, but there is reason for concern when you add up the total sediments collected in runoff from unstabilized areas. Suspended solids are a real concern for aquatic life and the health of water sources on the golf course, in addition to the problems created when using such a source in the irrigation system.