

Cost Benefit of Groundwater-friendly Practices Montgomery County Revenue Authority Golf Courses, Maryland



Site Background

The Montgomery County Revenue Authority (MCRA) operates nine golf courses in and around the Baltimore and Washington, DC metro areas including Falls Road, Hampshire Greens, Laytonsville, Little Bennett, Needwood, Northwest, Poolesville, and Rattlewood Golf Courses, all of which are designated as Groundwater Guardian Green Sites.

The MCRA is committed to taking steps to reduce our impact on the environment. Its golf courses are managed by superintendents who have completed extensive education and training regarding the use of water, fertilizer, and plant protectants. MCRA implements a variety of groundwater-friendly practices in order to minimize their environmental impact.

Water conservation

Superintendents utilize best management practices to conserve water, including hand-watering of greens, tees, and sometimes fairways, which allows staff to only water where the turf needs it and avoiding putting any water down in areas that doesn't need it. Doing this and customizing computerized irrigation programs to target only the driest areas of the golf courses saved an estimated 30 million gallons of water in 2008 alone. Irrigation computer programs are modified each spring as each course dries down. Areas that are first to exhibit signs of drought stress can be watered by programming only the specific sprinkler heads that cover those areas to run.

Staff continuously evaluates and monitors the courses' irrigation systems, replacing sprinkler head nozzles with newer, more efficient designs that have higher distribution uniformity. Once a year, staff typically performs an irrigation audit of the systems by placing rain gauges across a green, for example, to make sure that when ¼-inch of water is applied that it is truly consistent. This ensures that when water is applied to dry areas of the course that it achieves the goal of using just the right amount of water, and reduces runoff and other potential sources of wasted resources.

Targeted fertilizer applications

By implementing soil testing and monitoring nutritional levels of individual greens, tees, and fairways, applications of fertilizer are targeted to specific sites, instead of making widespread applications on the whole golf course. This reduces potential runoff of excess fertilizer, optimizes turf health, and saves an estimated \$30,000 each year in fertilizer costs alone.

Low-maintenance or "native" areas

Over 10% of the 2500 acres of property maintained by MCRA is designated as a "no mow" area. These grassy areas are allowed to develop naturally, and promote a diverse wildlife habitat and reduce maintenance costs and fuel emissions of equipment.

Use of organic fertilizer

The MCRA has committed to using more eco-friendly organic fertilizers on its courses. Staff treats the courses with an organic pasteurized poultry litter fertilizer as well as other naturally derived products, which improve the playing surfaces in a more natural way. The environmental benefits of these products include slow nutrient release from natural microbial breakdown and the availability of ten of the thirteen nutrients required by turfgrass for improved plant cell structure and vigor.

Continuing education

The MCRA supports the continuing education of its Golf Course Superintendents, who attend local, regional, or national conferences each year to stay abreast of the latest research and trends in turf research. By keeping up with the research, MCRA superintendents stay on the cutting edge of science and are able to do what's best for the turf, the environment, and its customers.

Chemical Reduction Research

MCRA has devoted the Executive 9 golf course at Needwood Golf Course to environmental research. Staff are investigating biological/organic pest control, and evaluating warm-season grasses such as bermudagrass, zoysiagrass, and seashore paspalum, which traditionally require significantly less water, fertilizer, and pesticides to maintain. Studies are underway at Needwood and other golf courses in the system to help develop an understanding of what practices can be implemented in the golf course system that would allow for acceptable playing conditions with fewer chemical inputs to the turf, and reduced maintenance costs.

Studies are underway to help staff identify practices to be implemented at each of the Montgomery Revenue Authority golf courses that would allow for acceptable playing conditions with fewer chemical inputs to the turf and allow for reduced maintenance expenses. While not all of the research will result in operational changes, Falls Road Golf Course Superintendent Jon Lobenstine notes, "It is important for us to stay on the cutting edge and keep thinking outside the box regarding how we can reduce our environmental impact."

Golfers who frequented Needwood's Executive Nine in 2009 were educated about the research through the use of numerous signs posted near each of the research sites.

In 2010 at the Sligo Creek Golf Course in the Montgomery County Revenue Authority system, staff decided to use 50% of the normal high rate of fungicides all year on greens, tees, and fairways. They also implemented biweekly sprays of 3 Tier Technologies' humic acid-based product line, which is designed to improve soil biology and improve turf's ability to be attacked by pathogens. While this trial provided some intriguing results, it's unclear if these practices are a good fit for implementation system wide at this point.

Ultimately, staff didn't report too much in the way of disease outbreaks, but there was some dollar spot on greens that provided an unacceptable playing surface in the summer. One main difference between Sligo Creek Golf Course and the other facilities in the Montgomery County Revenue Authority system is that Sligo Creek's mowing heights were significantly higher than the rest of the courses. A greater cut height allows plants to be healthier and reduces the impact of disease, so it's difficult to determine whether the lack of disease is attributed to greater

mowing heights or the 3 Tier product line. It is worth noting that the higher heights of cut would be unacceptable at the system's other golf courses.

Lobenstine has long-term goals to transfer the successful practices at Needwood's Executive Nine course to the Montgomery County Revenue Authority's other facilities and to partner with schools and other public groups to help build a better understanding as to how golf courses can benefit the world around them.