

## **Appendix J-2 Review of ITHMP**

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**Re:** Report on my review and opinion of the Integrated Turf Health Management Plan for the  
Hills of Southampton, East Quogue, NY

Within the description detailed in the Integrated Turf Health Management Plan, I have concluded that the turfgrass management plan and practices for this proposed golf course is acceptable, thorough, and has an emphasis on human and environmental safety. Golf courses represent green space, represent many benefits in terms of recreation, aesthetics, plant and animal habitats, and are a great example of environmental stewardship. Ideally, and if possible, following the construction and establishment of the golf course, it would be of value to convert the Integrated Turf Health Management Plan into a “Golf Course Turf Management Standard Operation Procedure Manual”. This would basically represent a documented list of turf maintenance standards that outline the goals/objectives and procedures for the day-to-day turf management operations. The USGA (United States Golf Association) states that turf maintenance standards are guidelines that detail the manner in which a gold course is maintained on a daily basis, and is respresented as a formal document that outlines golf course maintenance objectives and the necessary practices for meeting them. A ‘Standard Operating Procedure’ can them be used to assist with budget issues and golfer concerns and expectations, as well as support the golf course turf maintenance personnel with maintaining the golf course as outlined in the Integrated Turf Health Management Plan.

## **Assessment of the Integrated Turf Health Management Plan for the Hills of Southampton, East Quogue, NY**

I have reviewed the “Integrated Turf Health Management Plan for the Hills of Southampton, East Quogue, NY” (ITHMP), and have provided an assessment and summary comments below for each section.

### **New York State Best Management Plan for Golf Courses**

Best Management Practices for New York State Golf Courses (published in 2014 from Cornell University; website: [nysgolfbmp.cals.cornell.edu](http://nysgolfbmp.cals.cornell.edu)) is an excellent source of information for managing golf course turf facilities is a sustainable approach with an emphasis on environmental, social, and economic stewardship. The GCSAA (Golf Course Superintendents Association of America) has been a strong advocate for each State developing their own BMP document for golf course turf, and the BMP for NY Golf Courses serves as a “model” for other States to follow. There are many benefits to following the BMP for NY Golf Courses as listed in the ITHMP. In addition, the ITMMP’s objective to retain the majority of natural vegetation around the proposed clubhouse area is supportive of environmental stewardship.

### **Stormwater Management System**

This section is acceptable and appears to conform to standard practices for managing stormwater run-off and soil erosion control. The ‘buffer zone’ concept as highlighted in the ITHMP also is a supportive practice of environmental stewardship. I do not have extensive work or research experience with liners for golf course greens. The liner concept is sound in theory, and nearby Sebonack Golf Club has experience with liners. The proposed groundwater monitoring will help confirm the benefit of using liners to prevent any adverse impacts to the groundwater.

### **Soil Mixing and Erosion Control**

This section is acceptable and appears to conform to standard practices for soil mixing and erosion control. Green construction using USGA specifications is an excellent practice of course, and quality control/quality assurance is often recommended to ensure the correct sand particle sizes are used during construction. Of note, burying land clearing/organic debris within golf course playing areas often results in chronic fairy ring (Fidanza, M. 2009. Fairy ring 101: The curious, elusive, but troublesome fairy ring. USGA Green Section Record, March-April issue, pages 8-10.), and other turf management problems. Therefore, it is a good idea – as noted in the ITHMP – to avoid that practice.

## **Habitat Restoration/Invasive Species Control**

This section is acceptable and appears to conform to standard practices for habitat restoration. Cornell Cooperative Extension in Suffolk County may be able to provide further suggestions on native plants to incorporate at this site.

## **Cultivation Practices**

This section is acceptable and appears to conform to standard practices for turf cultivation practices. In addition to standard cultivation or aerification equipment, recent technological advances have resulted in the Air2G2, which injects air into the turf/rootzone profile with no surface disruption. Again, this and other technologies may become addition turf cultivation tools for turf managers in the near future. Dollar spot is the common name of a major foliar disease of golf course turf, caused by the fungus *Sclerotinia homoeocarpa*. Managing leaf wetness is an important and effective cultural practice to help manage this disease and can reduce disease severity when it occurs. Another tool to manage leaf wetness would be the use of wetting agents (also referred to as soil surfactants).

## **Turf Management Facility**

A turf management/maintenance facility is one of the most important components of a golf course. The ITHMP emphasizes the installation of a wash-down area to capture wash water and using EDS equipment, which again is an excellent example of environmental stewardship. On a separate topic, I always like to see the addition of student housing to support summer interns. I realize this is not always an option a golf courses, but our turf science students benefit from living at the golf course and gaining work experience, and getting mentored into the turf industry by our golf course turf management professionals.

## **Pesticide Applications**

This section is acceptable and appears to conform to standard practices for turf pesticide applications. Pesticide product label recommendations – particularly for New York State and Long Island – should be followed to the law of course. Of note, fungicide products that contain the active ingredient chlorothalonil are recommended as prohibited use. I respect Dr. A. Martin Petrovic's opinion to prohibit the use of chlorothalonil as noted in the ITHMP. However, would strict adherence to the product label – in terms of amount applied per year, use in an integrated disease management program of fungicide tank-mixing and rotation programs, and proper application to avoid close proximity to water bodies – provide supportive evidence to allow chlorothalonil to be used? Chlorothalonil is often a standard active ingredient in fungicides used to target turf diseases in preventive programs. The use of chlorothalonil in fungicide programs could result in a reduction in other fungicide products used.

## **Irrigation**

This section is acceptable and appears to conform to standard practices for irrigating golf course turf. The turf irrigation systems and environmental/weather monitoring systems available today are supportive of water conservation practices. A water storage pond fed by well water and stormwater runoff also is a good example of environmental stewardship. Of note, wetting agents (i.e., wetting agent programs) can be very effective at improving turf irrigation practices.

## **Nutrients**

This section is acceptable and contains information on nutrients, in particular nitrogen, and concerns with golf courses and the environment. This section provides justification for developing the “East End Nitrogen Reduction Program for Golf Courses” on Long Island. Of note, it is important to understand that golf course turf is evaluated based on “healthy turf” or what a person’s definition is for turf quality and playability and surface performance, and not on yield (i.e., bushels per acre as measured by agricultural crops).

## **Groundwater Description**

This section is acceptable and contains a detailed description of the groundwater hydrology and geology on Long Island. Of note, the overall pH of the groundwater is in the range of 4.1 to 6.1, which is considered acceptable for use on golf course turf.

## **General Nitrogen Source Contaminant Factors**

This section is acceptable and contains a concern with agricultural generated pollutants to groundwater on Long Island.

## **Golf Course and Turfgrass Nitrogen Source Contaminant Factors**

This section is acceptable and contains a detailed description of the macronutrients and micronutrients utilized in turfgrass management, the nitrogen cycle in the environment, and in particular the key factors determining leaching potential of fertilizers applied to turf: application rate, N source (including N solubility or availability), time of year the N is applied, irrigation/rain, and soil type. Overall, as described in the ITHMP, N leaching potential can effectively managed and maintained at near zero or acceptable levels through proper turf management practices.

## **East End Nitrogen Reduction Program for Golf Courses**

This section is acceptable and contains a description of the voluntary East End Nitrogen Reduction Program for Golf Courses as administered by Cornell Cooperative Extension.

## **Turf Management to Avoid or Minimize Potential N-Loading**

This section is acceptable and contains a description and helpful background information about nitrogen fertilization practices within a turfgrass management program. The maximum allowable amount of applied nitrogen to The Hills at Southampton appears reasonable at 0.248 pounds of nitrogen per month per 1000 square feet, which is based on the proposed annual maximum amount of 2.5 pounds of nitrogen per 1000 square feet per year. Regarding turf tissue testing and soil testing, it is a standard best practice to use the same laboratory year after year in order to more effectively compare results from year to year. Of note, two soil moisture meters used today are the Field Scout TDR ([www.specmeters.com](http://www.specmeters.com)) and Pogo ([www.pogoturfpro.com](http://www.pogoturfpro.com)).

## **Integrated Pest Management Program and Protocols**

This section is acceptable and contains a description and helpful background information on the concept of an integrated turf health management plan as well as the plant disease triangle, which is an excellent guide for turf managers and supports the incorporation of cultural practices and environmental stewardship. Information and monitoring are key components to an integrated pest management program. Of note, biostimulant products are becoming more accepted and useful as turf managers are finding ways to best use those products within their particular turf management program.

## **Integrated Pest Management Plant: Hills at Southampton**

This section is acceptable and contains an excellent and detailed description and overall plan for an integrated pest management plant for The Hills and Southampton.

## **Groundwater and Surface Water Monitoring Protocols**

This section is acceptable and contains information on establishing groundwater and surface water monitoring protocols. Of note, it would be a benefit perhaps to include nearby high school or community college students to be involved in the data collection to promote STEM (science, technology, engineering, and math).