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USGA GREEN SECTION TURF ADVISORY SERVICE REPORT

**DEDHAM COUNTRY & POLO CLUB
DEDHAM, MASSACHUSETTE**

September 14, 2009

Present: Mr. Michael W. Stachowicz, Superintendent
Mr. Barry Cullen, Green and Grounds Chairman
Mr. Ben Procter, President
Mr. John Briggs, Treasurer
Ms. Jeanne Waldinger, Secretary
Mr. Steve Murphy, Golf Chairman
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Mr. Mark DeBlois, Green Committee
Mr. Paul Marandett, Green Committee
Mr. Tim Cutter, Member
Mr. John DeBlois, Member
Mr. James E. Skorulski, Senior Agronomist, USGA

INTRODUCTION

This report is provided for the Turf Advisory Service (TAS) visit conducted at Dedham Country & Polo Club on September 10, 2009.

I enjoyed the opportunity to return to the golf course to conduct this visit. The last time I visited the club was in early August while the fairways were being cultivated and topdressed. Since that time, the region has experienced some difficult growing weather with a combination of rain, high temperatures and high humidity. The weather conditions have been a challenge not only in August but also in June and July when record precipitation impacted golf courses across the region. In my opinion, the golf course held up very well through the wet weather conditions with the primary concern being the decline of the practice green. Green expansion areas that were brought back down to putting green height last fall also were thinned from the mowing and other traffic during the wet weather period. The tees and fairways seemed to have performed well judging by the conditions observed in August and at this visit.

We used our time together to examine the practice green and green expansion areas. Recommendations to improve those areas are provided in this report. We also discussed the reasoning behind fairway topdressing, ways in which the topdressing can be implemented and the progress that has been made since the program was implemented in 2004. Recommendations regarding the fairway topdressing program and the other observations and discussions that occurred during our visit are presented in this report.

FAIRWAYS

Topdressing Program

Fairway topdressing was recommended and implemented for the wettest fairway areas five years ago (2004) to try to dry and firm the surfaces to make them more playable over a wider range of weather conditions. The sand topdressing was also implemented to make it possible to mow the fairways and to use carts on a more frequent basis through the season. The depth of sand varies from .25" up to 3.5" depending on when the program was implemented. The picture was taken in the center portion of #10 fairway on the day of this visit. It illustrates a sand layer of approximately 2"-2.5" above a thin layer of loam topsoil and the native black organic muck soils below.



Fairway topdressing programs have become more popular on golf courses in the Northeast region but these programs are not new and have been implemented at clubs for a number of years in other parts of the country. The primary objectives of the topdressing are:

- To create a well drained sand layer above poorly drained native soils.
- To produce firmer surfaces over a wider range of weather conditions.
- To promote faster surface drying that will reduce disease pressure and promote earlier growth in spring.
- To reduce the surface activity of earthworms.
- To dilute thatch (the organic material produced by the plant).
- To produce a more effective growing medium that will support a more deeply rooted plant that will be less susceptible to drought and environmental stresses (i.e. lower water use).

The objective is to produce a 3"-3.5" layer of sand over all of the fairway surfaces. Again, this will produce more consistent playing conditions over the entire fairway acreage. The topdressing program is by no means complete and should be continued until the deeper layer of sand is developed. Once the layer of sand is in place then the topdressing applications will be reduced back to a more maintenance level to control thatch. I encourage you to continue with the topdressing program and try to apply a minimum of 1/2" of sand and preferably 3/4" of sand on an annual basis. I realize the higher rates of sand might be more disruptive to the surfaces and not popular with the entire membership. However, this is the general goal of many golf courses that have implemented such programs so that the objectives and benefits can be obtained more quickly. The benefits from topdressing the wet fairways areas should be noticeable to most of the membership and those same conditions will become more prevalent in other fairway areas as the topdressing program proceeds. Applying 1/2" of sand annually will require approximately 65-70 cu. yd. of sand per acre. Applying more than 1/4" of sand at any one time is a large undertaking so it will probably be necessary to apply the sand in multiple applications at lighter volumes on a monthly schedule or at heavier applications in the spring, late summer and fall seasons. The sand topdressing should be completed in conjunction with the solid tine cultivation, vertical mowing/dethatching or some form of cultivation to help incorporate the sand through the dense turf canopy. There will be some initial pain with the topdressing program but the long-term benefits that are provided from this program are in my opinion well worth the sacrifices considering your site conditions.

Surface Quality

Creeping bentgrass, velvet bentgrass and colonial bentgrass dominate the playing surfaces. The bentgrass populations are some of the highest that I see on the older golf courses that I visit in the New England region. At this point, there is no need for any overseeding work. The bentgrasses in place will continue to spread and dominate the surfaces with the strong cultural practices and topdressing work in place. The density of

the turf was very good. The surfaces also appeared uniform for the most part. It is impossible to provide completely uniform and consistent surfaces across fairways especially on your site where the underlying soils and grades are not uniform. The small mounds and underlying rock and varying soil types have a wide range of water requirements and consistency over the entire playing surface is just not possible. Extending the sand topdressing across the entire fairway acreage will help to make the surface soils more consistent which will help to improve the uniformity of the playing conditions.

The large populations of creeping bentgrass have a more prostrate or lateral growth form. The lateral growth form is what allows bentgrass plants to spread vegetatively and move across the fairways. A more upright growth form can be encouraged with continued brushing, light vertical mowing or even grooming. Those practices will produce a tighter surface that will allow the ball to lie even more upright, which may be more appealing to higher handicapped golfers. I do not recommend raising the height of cut in the fairways at this time as this could actually have the opposite effect and allow the ball to nestle more deeply in the grass. The impacts of thatch in the fairways are being reduced from the sand topdressing practices in place. Excessive thatch leaves the surfaces spongy and will lead to large divots and inconsistent playing conditions. Divots will be less conspicuous as the topdressing program moves forward. Again, this is a fairly good indication that thatch levels are being reduced to more optimal levels.

Roughs

Turf conditions in the roughs vary widely across the golf course. The poorer quality rough areas tend to be those areas where the soils do not drain well or are shallow with underlying rock. Water collects in the lower lying pockets in these areas in the summer, leading to the death of the turf. The large quantity of rock near the surface of many roughs limits the cultivation that can be completed in these areas. The inability to cultivate or aerify these soils on a normal basis worsens the drainage situation and leads to a more shallow rooted turf plant that will be susceptible to heat stress and disease. The grasses in the rough areas are also inconsistent. Many of the wet areas are dominated by a blend of creeping bentgrass and annual bluegrass, which do not perform well at the higher heights of cut. There are some rough areas that are also being hurt by a lack of irrigation. The inability to irrigate the roughs separately from the fairways leaves the shallow rooted turf more susceptible to drought and heat injury and also impacts the staff's ability to renovate the damaged areas.

I do recommend that you continue to install drainage in the wet rough areas and where water collects. In some cases it might be easier to simply re-grade the low pocketed surfaces to move surface water away from those areas. Some form of cultivation should be completed annually on all of the primary rough areas and green surround rough areas. The high quantity of rocks limits the equipment that can be used for the cultivation. Machines such as the AERA-vator, AerWay and Verti-Quake might be

considered. Those machines would first be demonstrated to see if they can tolerate the rocky soil conditions. The various machines provide a shatter core effect. They do not pull an aerification core but should help alleviate surface compaction. An older style drum aerifier might be considered for hollow tine core cultivation in the roughs and green surrounds. These are basic machines that tend to work well on rockier sites. The coring frequency is very limited so the operation would have to be completed in multiple directions to obtain sufficient coring frequency to remove thatch and surface soil that will serve as a topdressing.

I also recommend having a soil test completed in these areas. It is likely that the soil pH is low considering the muck type soils and the wet conditions in many of the areas. An application of calcitic or dolomitic limestone can be made to adjust the pH if necessary.

The damaged rough areas have been slice-seeded and hopefully the seed will begin to germinate and establish more readily with the rain that is predicted for the area following this visit. Areas that are predominately creeping bentgrass are difficult to overseed as these grasses are very dense and competitive with any seedlings plants. The creeping bentgrass rough areas adjacent to the fairways and greens are probably best regrassed using a commercial Kentucky bluegrass/fine fescue sod like the work that was done near #1 fairway. The sod regrassing option would be done with drainage and grading work where necessary. The creeping bentgrass areas can be scalped down preferably in late August or early September and then overseeded with your blend of Kentucky bluegrass/fine fescue and perennial ryegrass. Perennial ryegrass probably offers the best chance of establishing in these difficult conditions.

Weed Management

Crabgrass and goosegrass have been problematic due to the heavy rains that made spring herbicide applications less effective. The weed management practices in place have been effective judging by the limited populations of crabgrass that were observed in the roughs, fairways and bunker banks. The split application of pendimethalin seems to have been an effective strategy. The crabgrass that is in place can be controlled with Drive but will soon disappear with the colder temperatures.

GREENS

Practice Green

It was disappointing to see the condition of the practice green in August. The turf weakened and thinned from heavier than normal traffic and the record wet weather that occurred in July and early August. The areas were recovering at the time of this visit, but signs of traffic remained evident on velvet bentgrass in areas around older hole locations. The green is still relatively young being three years old. On the positive side there is somewhat of a thatch layer developing in the green. A small quantity of thatch intermixed with sand is necessary to protect the turf from traffic. The new green was

built to a larger size which is good. But the surface drainage in the lower contour near the center of the green remains a concern. Traffic across the green is also heavy from play and also from walking traffic as people move to and from the practice range area. I am confident at this point that the green's surface will recover by fall. We discussed spike-seeding the green in the days following this visit using one of the improved high density creeping bentgrass varieties now available. Overseed with A-1, Declaration, Tyee or any of the newer improved varieties following the spike-seeding. Repeat the spike-seeding again in October or later in fall as a dormant seeding. The green should be covered for the winter.

The following recommendations were provided during the visit to improve the green's condition for the future:

- Bentgrass requires at least eight full hours of sun daily. It appears that the green is receiving good sunlight. I would be interested to see the impacts of the building on sun to the green in the fall and winter seasons. Similarly, the maple trees on the right side of the green may be impacting afternoon sun and those should be monitored closely especially in the fall, winter and spring seasons. Tree work can be initiated if shade hits the green in the early afternoon hours.
- We discussed overseeding with creeping bentgrass varieties to improve the green's wear tolerance. I would utilize creeping bentgrass alone for all overseeding in the future. It is likely annual bluegrass will also become established in the high traffic areas. This cannot be avoided and probably will not be that bad of a thing as the green evolves.
- It is important to continue to topdress the green as the organic matter is produced by the plant. This produces a more homogeneous mix of organic material and sand that will continue to allow water to infiltrate through the green's surface. Keeping the surface dry will improve the turf's wear tolerance. Topdress the green every two weeks through the season at approximate rates of 1-1.5 cu. ft. per 1,000 sq. ft. until the weather becomes too stressful to do so.
- Close the green following a very wet weather period or should the grass begin to show signs of weakness. Closing the green for even several days is sometimes adequate to allow the weakened turf to recover.
- It will be a good idea to build a fence or barrier along the right side of the green that will deter people from walking across the green to reach the range. A picket fence or some similar barrier might fit the appearance of the area and meet that objective.
- It is important to maintain the green as dry as possible. It was good to see that a moisture meter is now available and can be used to determine exactly when and where water applications are required. The design of the green is such that the

higher contours will likely require more water than the center portion of the green. This can be accomplished most effectively by hand watering.

- The roots are beginning to redevelop in the green. The hollow tine core cultivation completed in August is effective for that purpose. Use solid tines to cultivate and seed the green again later this month or in early October. Use the 1/4" spiking tines to cultivate the sand green every 3-4 weeks next season to keep water moving freely through the root zone.
- It is important to brush the green and complete light vertical mowing during cooler weather periods to try to reduce some of the lateral growth that is evident with the varieties of creeping bentgrass intermixed in the green and on the collars. Producing a tighter and more upright plant growth should encourage more density and better wear tolerance. We also discussed lowering the height of cut slightly in the collar to remove some of the lateral growth and obtain a tighter surface that will be more wear tolerant.

Green Expansions

Green expansions were reestablished on the 14th green and others last fall. Some portions of those areas have thinned over the summer season. This is not uncommon when the areas are restored through a mowing conversion program. This season's unusually wet weather worsened that situation. At this point, the thinned areas are showing signs of recovery and I am fairly confident that by fall the majority of those areas will be in good condition. Some isolated sod work may be necessary and that can be determined later in fall. I do not recommend returning the restored areas back to collar height at this point as this would eliminate all of the progress that has been made. We discussed returning some smaller perimeter areas where the grades are crowned and more severe back to collar. I do not anticipate the same decline in the restored areas next season (barring some unforeseen winter damage or very severe heat and wet weather) and that the majority of those surfaces will be able to be used for some very good hole locations. To eliminate those areas at this point would be a waste of the work that has already been completed.

I do recommend maintaining these areas in a conservative fashion next season. You can maintain those at putting green height but skip mowing following extremely heavy rains where the surfaces may still be saturated. The surfaces are likely to be softer because the underlying soils have not been fully modified with sand and there is more of a thatch layer. Therefore, keeping a more conservative approach in regards to mowing (either skip mowing or utilize machines at slightly higher heights of cut) will eliminate that concern.

Continue to cultivate the surfaces of the expansion areas aggressively with hollow tines in both the spring and late summer or early fall seasons. It is important to pull cores to as deep of a depth as possible and to backfill holes with sand. The soil modification will

firm the surfaces and remove thatch so that the areas can be maintained consistently with the other putting surfaces. Use the solid tines on the Toro ProCore machine to cultivate the areas on a 3-4 week schedule through the season to hopefully encourage and maintain a deeper and more vigorous root system. Irrigate these areas very carefully and again try to keep them as dry as possible so that the surfaces remain firm and more resistant to traffic and mowing injury.

Cultivation Programs

The soil modification in the upper root zone is progressing well as was evident on the 2nd green where the upper two inches of the profile has been modified with sand. The objective is similar to the fairways in that we are trying to completely modify the upper 3.5"-4" of the surface with sand. The goal is to create a homogeneous layer free sand mixture in the upper root zone that will support more vigorous root growth and will help to keep the surfaces firm for improved ball roll. I strongly recommend completing the hollow tine core cultivation in the spring and fall seasons at least until the objective has been met. At that point, the hollow tine core aerification can be scaled back to more of a maintenance level in which the greens are cultivated on an annual basis with 1/2" hollow tines and cultivated with smaller tines etc.

Complete the practice in early spring using 1/2" hollow tines. The surfaces will be slower to recover with the cooler temperatures but play at that point is also limited. Repeat the aerification again in mid-late August or early September when weather conditions permit. Completing the practice later in September or in October when soil temperatures are cooler will slow the recovery time required. You will also be more likely to have annual bluegrass encroach into the greens because of the slow recovery at that point.

The other forms of cultivation on the greens are sound and no changes are recommended. The sand topdressing is also an important practice to smooth the surfaces and provide the pace and smooth ball roll that is desired by the membership for everyday play. Additional topdressing is required on the greens in the next several weeks to smooth the surfaces from the aerification practices completed in early August. We discussed verticutting the greens lightly prior to topdressing to help move sand into the older coring holes and to increase the volume of sand to smooth the surfaces. Topdress the greens every 2-3 weeks through the season to match the growth rates of the turf and to dilute organic matter that is produced by the plants.

Mowing Programs

The greens are being maintained with fixed-head mowers at a slightly higher height of cut. The mowers are equipped with smooth rollers to further reduce wear injury and help the mowers float through the greens' contours. You might also consider demonstrating the Jacobsen flex mower. The ability to control reel speed has been popular with the superintendents. Mowing the greens at the fastest reel speed provides

an effect similar to double cutting the greens. Any steps that can be taken to reduce labor and traffic over the greens without losing surface quality are a benefit that should be considered for the future. John Deere is also coming out with a flex machine that should provide some positive qualities of both the Toro and Jacobsen flex machines. It would be interesting to have that machine demonstrated to observe its capabilities on your surfaces.

ADDITIONAL COMMENTS

Practice Tee

The practice tee receives a large amount of play. A fairly intensive maintenance program is in place to recover worn play stations on the tee box. We discussed the need to increase the frequency of divot repair/station renovation to help the surface recover more completely before play is returned. We also discussed the installation of mats across a portion of the back of the tee. The mats would be utilized during extremely wet weather periods, in the early spring and fall seasons when turf growth rates are very slow or the turf is dormant, for outings and for the local high school teams. This would help to preserve the regular tee for the membership.

The tee's surface is also unlevel. The unlevel condition detracts from the tee's playability and also is beginning to limit parts of the tee that are available for regular use. A number of golf courses I visit are renovating their heavily used tees to re-level the surfaces and re-grass the tees with short-cut Kentucky bluegrass sod. The renovation is required as the tee's surface will be impacted from the divot repair work and from heavy play. Renovating the tee's surface also provides an opportunity to install slit drainage in any lower lying wet pockets on the tee. The renovation includes laser grading the tees followed by the installation of the short-cut Kentucky bluegrass commercial sod. The work is usually completed in the fall season and the tee is then cultivated and topdressed and should be ready for play by mid-late spring. The mats could be added to the back of the tee as part of this renovation project.

We also discussed elevating the tee by several feet to improve the visibility off of the tee box but also to provide some positive surface drainage and a better drained root zone. This is a good long-term objective for the tee. However, this will require a considerable amount of fill and topsoil to complete the project. Again, rebuilding the practice range tee would include adding the artificial mats, installing internal drainage and regrassing with the short-cut bluegrass turf discussed earlier. The second option is a more expensive and longer-range consideration that will require some additional planning work and more investment. It is a good option that might be considered in the future.

CONCLUSION

The overall maintenance philosophies that have been developed for the golf course are both sound and practical considering some of the site limitations with the golf course. A

more sustainable management approach is part of that philosophy especially in regards to water management and selecting for perennial grass types that require fewer pesticide inputs and less water. The emphasis remains on playing conditions but providing those while growing better quality grasses. The other part of that philosophy is restoring the golf course closer to its original design intent. That includes removing trees, restoring green and fairway contours and sand bunkers. I believe very good progress has been made to meet those objectives especially in the fairways where the turf and surface quality has vastly improved from the implementation of the topdressing, drainage and other cultural practices. The setback with the practice green and the green expansion areas is a disappointment and those areas need to be improved. I believe the practice green will turn the corner and improve as expected once the turf becomes more mature and more vigorous creeping bentgrass varieties are established in that surface. The green expansion areas will improve significantly this fall and should perform more effectively in the upcoming season using a more conservative management approach until they are fully matured.

Hopefully, the membership will continue to show patience and allow the fairway topdressing programs to proceed and to allow the improvement to the practice green and green expansion areas to move forward. A philosophy that promotes turf quality and surface conditioning over color and aesthetics is a positive one and one that will soon be grasped by more golf courses as concerns over pesticide use and water and operating costs. The statement "*Green is not great...*" is a very accurate one when it comes to golf course management and playing conditions. Maintain that philosophy and course conditions will only continue to improve.

Feel free to contact the office at any time if there are any questions regarding this report or if we can be of any assistance in the future. We appreciate your support of TAS and wish you continued success for the remainder of the season!

Sincerely,



James E. Skorulski, Senior Agronomist
Northeast Region Green Section

JES/jc

cc: Mr. Michael W. Stachowicz, Superintendent
Mr. Barry Cullen, Green and Grounds Chairman
Mr. Ben Procter, President

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Enclosures: Importance of Particle Size Distribution, Application Rate and Sand Depth
in Developing a Fairway Topdressing Program