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USGA GREEN SECTION TURF ADVISORY SERVICE REPORT

**RIVERMEAD GOLF CLUB
GATINEAU, QUEBEC, CANADA**

August 16, 2007

Present: Mr. Derrick Powers, Superintendent
Mr. Gerald Cousineau, Green Chairman
Mr. Roger Pruneau, Finance Committee
Mr. Gilles Cote, Green Committee
Mr. Marc Turcotte, General Manager
Mr. James E. Skorulski, Senior Agronomist, USGA

INTRODUCTION

This report is provided for the Turf Advisory Service (TAS) visit conducted on August 14, 2007.

I always enjoy the opportunity to visit Rivermead Golf Club and the Ottawa area. We were fortunate to have a very good day to conduct this TAS visit. The cooler and drier air provided conditions similar to what we would expect in September. I found the golf course to be in good overall agronomic condition. The changes made to the 18th hole and the tree work completed since our last TAS visit are improvements to the golf course. We used our time together to review the work that was completed and to revisit the objectives behind the ongoing tree management program. Specific tree removal recommendations were provided during our visit as were the reasons for developing a more comprehensive tree management program. We also discussed core cultivation and thatch management programs, drainage needs, fairway topdressing programs, the practice areas, sand bunker renovation, equipment and a number of other subjects that will be covered in this report.

GREENS

Soil Management

We examined the fertility programs used to manage the greens. The soil nutrient tests were satisfactory and no changes were made in regards to the fertilizer practices for the greens.

I examined the soil profiles in several of the greens as well. The more aggressive core cultivation and sand topdressing has made the root zone homogeneous and reduced organic matter to more optimal levels. I recommend continuing with the quadra tine core cultivation with 3/8" hollow tines in late summer and utilizing 1/2" hollow tines at least in spring. The 1/2" hollow tines will impact more of the surface area and help keep the organic matter at optimal levels. Monitor the profiles and the progress of the cultivation and topdressing practices closely. A move to larger tines should be considered if organic matter levels in the greens start to become excessive.

No. 8 Green

The 8th green is located in a difficult growing environment. Some very good tree work has been completed to improve that environment to some degree. We discussed the need to continue to remove underbrush along the right, back and especially left back side of the green to increase natural air flow over the green complex. The green's location in the hollow will always impact air circulation. The surface of the green was showing no weakness. However, root development was not strong. Complete the tree work to the greatest extent possible. Maintain this green as dry as possible without stressing the turf. The water requirements for the green will be lower due to the

reduced air circulation. A consideration can be given to installing fans at this site should the quality of the green worsen over time. This will be a relatively expensive option and hopefully not necessary once additional trees are removed.

No. 13 Green

We examined #13 green. One of the main problems with this green is the limited entry/exit point on the green's right side. The configuration of mounding funnels traffic through a smaller area, which has proven more difficult to maintain. The mounding along the right side of the green should be removed or softened to create a wider entry/exit point to this green. Remove two of the paper birch growing on the right hillside to allow more morning sun to reach the turf in this high traffic area.

Moss

We observed some moss on the practice green. The moss was isolated and located in an area that is remaining wet. The moss thrives in more wet environments or where the turf canopy has been thinned from mowing or cultivation. Drying this portion of the green through modifying the irrigation and instituting a more aggressive core cultivation program will make conditions less favorable for the moss growth. The moss control agent should continue to be utilized to remove the moss that is now active. Multiple applications will be required to control the moss as it regenerates. Use iron sulfate at 4-6 oz/M to burn the moss later in the fall. The turf will show some temporary symptoms of the burn but will quickly recover while the moss should be controlled more effectively. Verticut or spike the moss areas prior to applying the iron sulfate or any control agent. Maximizing contact between the control agent and the moss will improve control.

Annual Bluegrass Seedheads

Annual bluegrass populations on the greens have grown. The annual bluegrass is probably in a 40%-60% range in the population of the putting surfaces. The annual bluegrass develops seedheads on an annual basis that can leave the surfaces bumpy, weaken the annual bluegrass plants and help spread the population of the annual bluegrass. A growth regulator chemical was used in a trial application this spring to suppress the seedheads. The application involved the use of Proxy in combination with Primo. This combination has been relatively effective for suppressing seedheads in the United States. The success of the application depends upon the timing. Work at Michigan State and Cornell University have shown that most effective suppression occurs when the Primo/Proxy combination is applied in a split application when 300 growing degree days (GDD) have accumulated at your site. The first application is made at that point at a rate of 5 oz. of Proxy and 1 oz. of Primo/A. A second application is made 2-3 weeks later at similar rates.

Trees

Some tree removal recommendations were already provided for the 8th and 13th greens. We discussed during the TAS visit the eventual need to remove an oak tree located on the back right side of #7 green. The oak tree at this time is not a problem but if allowed to mature will block the all important morning sun to the putting surface. The stand of oak trees immediately behind the green should also be thinned to allow the trees to grow with less competition. The trees located on the southeast side of the 15th green are also causing shade over the green and green surround areas. More specifically, a silver maple tree located along the back left side of #15 green should be removed to improve the growing environment there.

The tree work completed adjacent to the 9th green has allowed more morning sun to reach the turf there. Continue to thin spruce trees from that stand to maintain the gap that permits the sun to reach the green. A number of Norway spruce trees should be removed from the 14th green complex to allow more sun to reach that green. Recommendations were also provided to clear underbrush from the back of #17 green to improve air circulation there.

It is critical that putting green turf receive at least eight full hours of sun daily through the entire season. That quantity of sun is required for the turf to maintain vigorous growth and allow creeping bentgrass to remain competitive with annual bluegrass. Morning sun continues to be the most important for turf growth. Mr. Powers has monitored all of the greens closely and is well aware of the shade patterns and problems with air circulation. It is important to address those tree problems so that the greens can be maintained in quality condition through the entire season.



Remove the juniper planting from the perimeter of the practice green. The junipers are unsightly and impacts irrigation and traffic flow to the green. The junipers can be replaced with grass around the entire perimeter of the green to improve the appearance of that area.

TEES

Trees

We examined a number of the tee boxes and found them to be in good overall condition. Trees are however impacting a number of tees in several ways. Shade and tree root competition has impacted the 3rd tee. The dense shade from the white pine has been reduced since a major scaffold branch failed in the days following this TAS visit. Remove a row of unsightly Eastern red cedar trees (right side) that are impacting the growing environment on the tee. Tree roots have also encroached into the tee where they are competing with the turf for water and nutrients. Root pruning work can be completed along the back perimeter of the tee to reduce tree root competition. Ideally, the now damaged white pine tree should be completely removed as it is located much too close to the tee's perimeter. Increase irrigation to the back half of this tee to compensate for the tree root competition at that location.

Trees are also interfering with play on a number of tee boxes. This was apparent on a number of holes including the 1st, 3rd, 12th, 15th and 18th tees. This is a common occurrence at older golf courses where fairway tree plantings begin to encroach into primary rough and fairway areas. Many golf courses will work with a golf course architect to help evaluate the tree encroachment ("creep") and to make recommendations to cutback wood lines to restore site lines on the holes and regain complete use of the tee boxes. Fortunately, most of the tee boxes are relatively large so the play interference has not had a significant impact on the surface quality of those tees. However, over time the interference will become more severe and you will find that many of the tees will suffer wear injury due to the concentrated traffic. Remove trees from the left side of the 1st hole to reduce play interference. The tee can be reestablished along the back right corner to regain valuable teeing space. Trees that interfere with the use of the 3rd tee also provide an important screen to the nearby road. Some pruning work might be completed to reduce the interference. However, it might be best to simply shift the tee to the left in the future should the interference create problems with the tee's surface. Extensive tree removal work is required along the right side of #12 tee (several silver maple trees and cedars) and an oak tree should be pruned back from the left side of the fairway to encourage wider use of this tee. Three ash trees located on the right side of the hole block the view of green complex from the tee box and more importantly impact play from the right center of the fairway. In my opinion, they should be removed.

The 15th tee was in dense shade even in the early afternoon hours of this TAS visit. Selectively remove trees from the left and back left side of this tee to create gaps that will allow some light penetration to the tee's surface. We also discussed removing and pruning back some smaller ash and spruce trees along the right side of the hole so that the right portion of the tee will be more fully utilized. Trees are also impacting the use and play from the 18th tee. We discussed some selective tree removal work along the right side of the hole to reduce that interference with play. Eventually, consideration

might be given to sliding the tee over further left. This appears to provide a good angle to the fairway and will reduce some of the tree competition that now exists. Discuss this design option with your golf course architect.

FAIRWAYS

Drainage

Drainage continues to be an important part of the golf course's infrastructure. Surface drainage provides the primary movement of water off of most of the fairway and rough areas. The drainage weaknesses we observed during our tour of the golf course involved the landing zone on the 13th fairway and a ditch that bisects the 17th and 18th fairways. There are also some lower isolated pockets that need to be addressed. We also observed seepage water emanating from hillsides adjacent to a number of greens. It was recommended to try to find the exit pipes from the greens' drainage and to make sure that those areas are open and the water is flowing freely. This alone might eliminate much of the seepage problems we observed.

Hopefully, money can be invested annually in the needed drainage work that is already planned and designed. The plan utilizes the existing surface drainage to move water off into catch basins and underlying pipe that will take the water from the site. The drainage installations should be completed annually on a priority basis until all of the drainage issues on the property have been addressed. I am confident with the engineering plan provided by the company. Utilizing an outside contractor to install the drainage will correct the problem areas and help keep the golf course in better playing condition even during wet weather periods.

Topdressing Program

The sand topdressing program for the fairways is also an important and effective practice to firm the surfaces. The sand topdressing together with the drainage installations will allow water to move through the surfaces more quickly and into the drainage lines that will be in place. The surface soils will also warm more readily in the spring season to bring about earlier growth and more effective playing conditions. The sand topdressing program is a fairly labor intensive one. We recommend trying to apply up to 60 tons of sand per acre per season to develop a layer of sand that will meet the objectives of the program. The heaviest sand applications are usually applied in the spring (after the surfaces are firm enough to operate equipment), early fall and again in later fall. The heaviest sand applications should be completed in conjunction with the solid tine core cultivation work. Lighter applications can be made without the cultivation.

The sand topdressing is also an effective practice to keep organic matter diluted and at optimal levels. A more aggressive sand topdressing program should provide firmer surfaces that will provide more consistent ball roll even during wet weather conditions.

Weed Management

Crabgrass has become more widely established over some tee boxes and rough areas. Map the crabgrass plants that are now in place and target those areas next spring with the Dimension preemergent herbicide. A split half rate application of Dimension (.25 lb/A) generally provides the greatest season-long control of the crabgrass. The first half rate application is made in late May. The second half rate application (if necessary) would be applied four weeks later. A well timed single half rate application (3rd week in May) alone may be suitable to control the majority of crabgrass at your location.

ADDITIONAL COMMENTS

Sand Bunkers

The sand bunkers were built in 1989. The bunkers have been plagued by poor drainage and washout that has left the sands contaminated with soils. The contaminated sands create wide inconsistencies between the bunkers. The location and size of a number of sand bunkers is also questionable. Renovating the sand bunkers is the most effective means to correct the design and playability issues that now exist. The renovation program would be developed and implemented with the help of a golf course architect who will address the location and bunker design issues. The new bunkers should be built so that surface waters do not enter the bunkers. They should also be equipped with internal drainage that will keep the bunkers playable and the sands in much better condition. We also discussed the use of lining materials that



have become more popular in recent years. The liners are used where sand is flashed up on the banks and is more prone to washout. The bunker liners reduce the washout concern and also prevent rocks from underlying soils migrating upward into the sands. The picture illustrates the use of an interceptor drain installed

together with the bunker liner to prevent washout. A sand bunker design that uses grass faces will be less prone to washout and probably will not require the installation of liners.

The sand bunker adjacent to the 13th green is an example of the need for the bunker renovation work. The retaining wall that supports the bunker is breaking down. The floor of the bunker is very severe and the sands are firm creating very difficult playing conditions. The bunker renovation work should be considered a higher priority for capital improvement programs on the golf course.

The Practice Facility

The existing practice green is too small for the play that occurs. The severity of the green also limits available cupping areas to further concentrate traffic. The entry and exit point to this green is also quite small leading to heavier traffic that is beginning to thin the surface in that area. The existing green can be rebuilt to a larger size and with more practical contouring that will increase the cupping areas. Otherwise, a new practice green can be built in the open area adjacent to the 1st tee box. Having two greens available for play provides an opportunity to close one of the greens to allow recovering from heavy traffic. Adding the new green will eliminate the need to rebuild the current green.

We also discussed potential locations for a new short-game practice area. The site adjacent to the 18th green and practice facility will be conspicuous from both the clubhouse and 18th green. A large net will also have to be installed along the right side of the range to protect golfers should that site be selected. An open area adjacent to the 1st hole is another option. It appears that enough room is available there to install a chipping green and short-game area. However, this area will be fairly conspicuous to the road and may also receive shots from the 3rd hole. The site adjacent to the 4th hole is the final option. This site is less conspicuous and appears to offer adequate room to design a one or two green practice area that will provide for both long and short approach shots and sand bunker practice. Discuss the various sites with a golf course architect to determine which offers the most room and is set up best for such a facility. The area adjacent to the 4th hole would be the least conspicuous of the sites and still offer easy access from the parking lot.

Cart Paths

Portions of the cart path system also require work. It was evident that the older paths are in some cases too narrow for traffic or contain sharp curves that are resulting in wear injury adjacent to the paths (13th cart path). It is important to maintain the cart path system on the golf course. The paths are relied upon heavily by much of the membership. Monies should be set aside in the operating budget so that existing paths can be improve or replaced if necessary to keep the system in good appearance and condition.

Irrigation System

The original irrigation system was installed in 1989. The system has been upgraded more recently to provide better programming capabilities and supplemental irrigation around the green complexes. An automatic irrigation system usually provides 20 years of effective use. After that point, the system is much less dependable and usually lacks some of the technologies that have become available since its installation. Fortunately, the system has been upgraded to provide some of those basic technologies. The irrigation system will have to be monitored closely over the next 5-6 years. It should be included on the long-range capital priority list for the future. Irrigation and drainage are both primary parts of any golf course infrastructure. Both are required if quality turf and playing conditions are to be maintained on a consistent basis.

Equipment

Annual investments of 10%-15% of the operating budget are required to keep the equipment fleet modern and in good working order. This will improve the efficiency of the operations and allow the staff to continue to provide quality playing surfaces now expected.

We discussed the benefits of adding a table lift to the maintenance facility. Mr. Powers is in search of the floor lift that will improve the working conditions for the mechanic. We also discussed the need to upgrade the reel grinding equipment. Spin grinding equipment allows for the mowing units to be sharpened more quickly helping provide a better quality cut.

Maintenance Facility

The maintenance facility has been improved with the addition of the equipment wash-pad area. The rinse water recycling station is excellent technology that will help protect the ground water from any contaminants from the maintenance facility. Well done!

The current maintenance facility provides a fairly good working area for the mechanic. A separate well ventilated room should be developed in the facility for the grinding operations to reduce concerns with dust particles around the employees.

Equipment storage is also limited. The building is now packed with the equipment inventory. Additional storage space is very limited. The employee facilities are also minimal. A more effective break room with lockers and new restroom facilities should be developed to house the staff.

Tree Management

A good deal of time was spent during our tour of the golf course discussing some of the problems with the current tree plantings. The concerns involve the species of trees that

make-up many of the plantings, the location of trees (in regards to play and growing environments), and the density of the plantings (impacts on growing environment, maintenance programs and other trees). Many of the trees are weaker, fast growing species that have planted with little thought to their effects once they mature. A thorough review of all of the trees on the golf course is therefore suggested. This is something to be performed by professionals from several disciplines including Mr. Powers, a golf course architect, arborist and agronomist. Since the property is large, it may take a couple of years to perform the review, but I suggest marking each tree in one of four ways:

- Prune
- Remove
- Relocate
- Do not touch

This will force conscious decisions to be made regarding the fate of each tree on the property, and I suggest using the following criteria as the decisions are made:

- The desirability of the tree based on its species.
- The general health of the tree including its form and structure.
- The expected life span.
- The impact on playability.
- The impact on aesthetics.
- The impact on the agronomics of growing turfgrass.
- The impact on surrounding trees.

While it is entirely appropriate to mass trees in some areas, stand alone specimen trees are also desirable and can have a dramatic visual impact. It is unnecessary to make every tree a specimen tree, but highlighting and exposing some of the better ones is certainly worthwhile. At the same time, reducing competition and choosing specimen trees for future generations also is worthwhile. Finally, it must be noted that a comprehensive tree program must also include planting trees, and all potential plantings should be reviewed in the same manner as it is suggested to review the existing trees

We already discussed several tree removal needs in regards to agronomics and play impacts. Several fairway tree plantings are creating double hazards with sand bunkers. This is the case on the right side of the 1st hole, left side of the 12th hole, left side of the 15th hole and right side of the 17th hole. The trees should be removed to eliminate the double hazards at those locations.

Labor

The golf course is being maintained with approximately 620 man-hours per week during the peak season. Unfortunately, approximately 50% of the staff is summer seasonal

employees who will soon be returning to school. This will reduce the man-hours down to approximately 370 for the remainder of the season. This is low for any 18-hole private golf course. The majority of private 18-hole golf courses I am visiting are utilizing in a range of 550-800 man-hours per week during the season. A number of the upper echelon facilities will utilize between 800 and 1,000 man-hours per week. It is always difficult comparing man-hours between different operations. The number of man-hours required depends upon the site itself as well as the membership's expectations. Maintaining a larger staff longer into fall will allow for the intensive maintenance programs to be continued without disruption. Providing an additional full-time employee who would serve as a second assistant/spray technician would be helpful to carry-out more technical tasks as well as help supervise the crew. Adding an additional full time seasonal employee would also be beneficial for the day-to-day operations.

CONCLUSION

The Green Section appreciates your support of TAS and we encourage you to call the office if we can answer any questions or be of help in the future. We also encourage visiting the website http://www.usga.org/turf/regionalupdates/regional_updates.html to access regional updates that detail our observations across the region and provide a snapshot of the types of problems and conditions we are seeing in our travels. Best of luck for the remaining season.

Sincerely,



James E. Skorulski, Senior Agronomist
Northeast Region Green Section

JES/jc

cc: Mr. Derrick Powers, Superintendent
Mr. Pierre Paquette, President
Mr. Gerald Cousineau, Green Chairman

Reprints: Turf Care Centers: The Heartbeat of Golf Turf Conditioning!
<http://turf.lib.msu.edu/2000s/2001/010701.pdf>