



COURSE CONSULTING SERVICE

Onsite Visit Report

Hérons Glen Golf and Country Club North Fort Myers, Florida

Visit Date: January 23, 2020

Present:

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The USGA Green Section develops and disseminates sustainable management practices that produce better playing conditions for better golf.

Background

The last USGA Course Consulting Service (CCS) visit to Herons Glen was in 2018 by Mr. Todd Lowe who left the USGA that same year. I received a club overview summary drafted by Mr. Kortanek that I also consulted in preparation for this visit. We rode and scouted the golf course, in front of the golfers, along with Mr. Belknap. Many questions, observations and dialogue ensued during this half-day visit. I have tried to capture the main areas of concern and interest within the body of this report. I am also submitting additional, more detailed information around agronomics and recommendations directly to Mr. Kortanek outside of this course assessment report.

This report contains a lot of information and details which will hopefully serve as a template of observations going forward. Golf course facilities that I visit twice a year gain the benefit of two assessment periods at different times of the year where conditions can be very different. With 12 months of growing conditions and golf rounds, this is justifiable. Additionally, the results or progression of quality and playing conditions can be noted and, if needed, modified to address any deficiencies or additional needs going into peak winter play. I strongly encourage Herons Glen to consider two USGA half-day CCS visits this year and going forward.

Executive Summary

- Herons Glen Golf and Country Club incurs 55,000 rounds of golf each year. This is an incredible number which far exceeds most other golf courses I visit each year. Lacking any course closure during the week or month while trying to schedule and perform maintenance between three days of shotgun starts and the other four days with crossovers will and is impacting playing quality.
- The putting greens are 14 years old and in good shape overall. Excepting some sod plugging, the turfgrass surface is contiguous, dense and smooth.
- The putting greens root system is suffering from persistent water retention following heavy rainfall events in areas where the elevation outside the greens perimeter goes beyond the adjacent collar. There are nematode, parasitic worms that feed on roots, that are not responding to typical nematicide applications, resulting in shallow rooting and predisposing the grass to thinning and possible opportunistic diseases.
- Cyanobacteria, a type of bacterial black algae, that have colonized thin areas of some putting greens are aggravating turfgrass recovery. Weekly to twice monthly applications of hydrogen peroxide alone or with mancozeb or chlorothalonil will control preexisting areas and enable turfgrass recovery.
- With the fairways and roughs, the bermudagrass variety Tifway was established in 1991. Although the grass is showing its age, turf quality is exceptional, especially considering the heavy number of rounds, the cart traffic and foot traffic stress associated with 55,000 rounds per year, and the limitations with irrigation coverage due to an old irrigation system.

- The tees are in overall good shape excepting thinning and some mounding due to limited space. The teeing area is below that which is needed to accommodate the number of rounds played.
- Planning for a 2021 renovation has started. Two of the major items that need to be very high in priority are irrigation replacement and addressing areas with drainage issues.



Representative putting green at Herons Glen Golf and Country Club, No. 3, exhibiting complete coverage, good color, healthy perimeters (left) and good density and surface smoothness (right).

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Maintenance Implementation and Golfer Interference

Observations

1. The maintenance team struggles to perform necessary maintenance prior to play.

- With 55,000 rounds per year, and the majority of those rounds concentrated during the winter months when grass growth and recuperative potential are most handicapped, the golf course is expressing signs of wear.
- Shotgun starts at 8:00 a.m. three days a week and double tee starts off of Nos. 1 and 10 tees starting at 7:30 a.m. the other four days of the week severely limit maintenance that can be conducted, especially on putting greens and tees, without interfering with golf.

2. Important maintenance is prevented from being completed.

- Shotgun starts are the most challenging format because all work must be completed prior to the start of these events.
- The maintenance team needs more time and employees to complete important maintenance.
- When more than 100 players are on the course at one time, it is difficult to perform maintenance without disrupting play.
- The impact of this limitation in maintenance time is beginning to be seen on the greens and is partially a function of the age of the 14-year-old greens as well.

3. Beginning early, at 5:00 a.m., helps to complete tasks prior to play, but working in the dark presents challenges such as performing detail work.

- It is easier to complete morning maintenance with two-tee starts because work can still be performed after tee times have begun.

Recommendations

1. Limit shotgun starts to no more than once per week at 8:00 a.m. and move others to 12:00 p.m. starts.

- Shotgun events that are not full should be consolidated to as few holes as possible to create a gap in play so the maintenance team can work.

2. Small changes in the golf calendar can provide significant help to the maintenance team.

- As little as a 30-minute adjustment in shotgun start times can allow, or prevent, a sand topdressing application prior to a shotgun start.
- Communication between the golf professional and golf course superintendent is imperative when working with a busy golfing schedule.

3. **Schedule a maintenance gap one day per week if no changes to the golf calendar are made.**

- Maintenance gaps are temporary gaps in play where no golfer is allowed to tee off for at least 45 minutes. This creates a gap in play, usually on the slowest golf day of the week, where maintenance can be performed at peak efficiency.
- It is important to schedule the maintenance gap on the same day of the week, at the same time each day.
- Also, alternating which nine holes the gap begins on may be needed so the entire course receives equal maintenance. The article [Improving Efficiency with Maintenance Gaps](#) offers more information on maintenance gaps.

4. **Hiring additional employees and purchasing more equipment will improve maintenance productivity.**

- More employees obviously give the maintenance team more labor hours to complete tasks. However, recruiting and retaining qualified employees is the greatest challenge facing superintendents across the country. The most successful recruiting and retention technique is offering a competitive wage for your area.

Putting Greens

Observations

1. **Putting green playability and quality are good depending on the green in question.**

- Surface smoothness and density of the grass are good overall except for some areas such as green Nos. 1, 4 and 8 where cyanobacteria have established in thin areas following turfgrass loss. These areas have been spot-sodded to assist in recovery time.
- Speeds and consistency are meeting most golfer expectations.
- Off-types and consistency. Off-types can develop as putting greens age.
 - ◆ Off-types do not respond similarly to mowing, aeration and rolling practices which can result in scalping and other negative responses.
 - ◆ Anuew™ growth regulator is being applied weekly with Primo® growth regulator at 12 ounces + 2 ounces per 3 acres. This combination is very effective at helping manage off-types and also potentially preventing expansion. It has also been observed to prolong consistency of greens speeds, smoothness and clipping reduction when utilized on a seven-day interval as compared to Primo alone.

2. **Surface management is meeting and exceeding minimal requirements.**

- Core aeration coupled with aggressive vertical mowing has effectively diluted approximately 4 inches of accumulated organic matter.
- Organic matter. Ultradwarf bermudagrass greens such as 'TifEagle' accumulate an average of 0.5 inches of organic matter each year in a Florida environment. Without aeration, vertical

mowing and sand topdressing, water percolation, pore space for air and water, and excessive soil moisture antagonistic to root growth and survival will occur.

3. Roots, nematodes and turfgrass health. Nematodes, parasitic worms in the soil, continue to be problematic in South Florida given the long growing season and subtropical environment.

- Damage from nematodes is often a precursor to other problems such as:
 - ◆ Stunted, short, compromised root system;
 - ◆ Increased ball marks and slower recovery;
 - ◆ Root diseases such as Pythium or take-all root rot;
 - ◆ Increased water demand to avoid drying out, leading to additional root decline;
 - ◆ Reduced responsiveness to fertilization;
 - ◆ Reduced uptake of root mobile chemicals necessary to control root rot diseases;
 - ◆ Increased likelihood of phytotoxicity expression to salt, herbicides and other soil-active chemicals such as DMI or triazole fungicides;
 - ◆ Increased potential for black algae or cyanobacteria establishment.
- The roots, as confirmed from a recent nematode assay indicating 140 sting nematodes per 100 cc of soil, are being damaged by nematodes and likely also secondary opportunistic root diseases.
 - ◆ This was following an Indemnify[®] application three months earlier and applications before that.
 - ◆ The lack of root depth and density and weak appearance were notable to varying degrees on three different putting greens, including No. 17 green where three 0.625-inch turf core plugs were taken for incubation and microscopic evaluation.

4. Cyanobacteria. The areas of various greens that were likely initially thinned out by nematodes and subsequent opportunistic root diseases were weak but in a state of recovery following sod plug repair.

- Cyanobacteria are sometimes mistakenly referred to as a black algae but are more closely related to blue-green algae and bacteria such as the red tide. While not pathogenic, establishment of cyanobacteria is faster growing than bermudagrass under the suboptimal winter environment, thriving in areas of thin turfgrass, high water (moisture), and high fertility.
- During the winter months when sunlight intensity and duration are reduced, cyanobacteria can grow at a much faster rate than bermudagrass, making competition and turfgrass recovery slower as compared to the summer months.
- When well established, cyanobacteria seal off the upper soil layer, creating a hydrophobic dry zone underneath, adverse to rooting and turfgrass recovery. Cyanobacteria can also produce toxins that further hinder turfgrass recovery.

Picture 1 – Putting green No. 8 where thin, worn area was subsequently colonized by cyanobacteria.



5. **Disease concerns. Bermudagrass is most susceptible to infection and subsequent disease symptoms during the cooler, late-fall, winter and early spring months when the environment is least conducive to growth.**
 - Primary diseases of concern during this period are Bipolaris leaf spot and Pythium root rot. Take-all root rot, known earlier as bermudagrass decline or ETRI (ectotrophic root-infecting fungi), can also sometimes be problematic, especially in association with chronic nematode damage.
 - These diseases usually initiate in the weakest parts of a putting green, such as adjacent to trees where sunlight coverage is reduced in comparison to other areas. Another area where these diseases can be especially problematic is in depressed areas where water is slow to drain, especially common around perimeters of the greens.

Recommendations

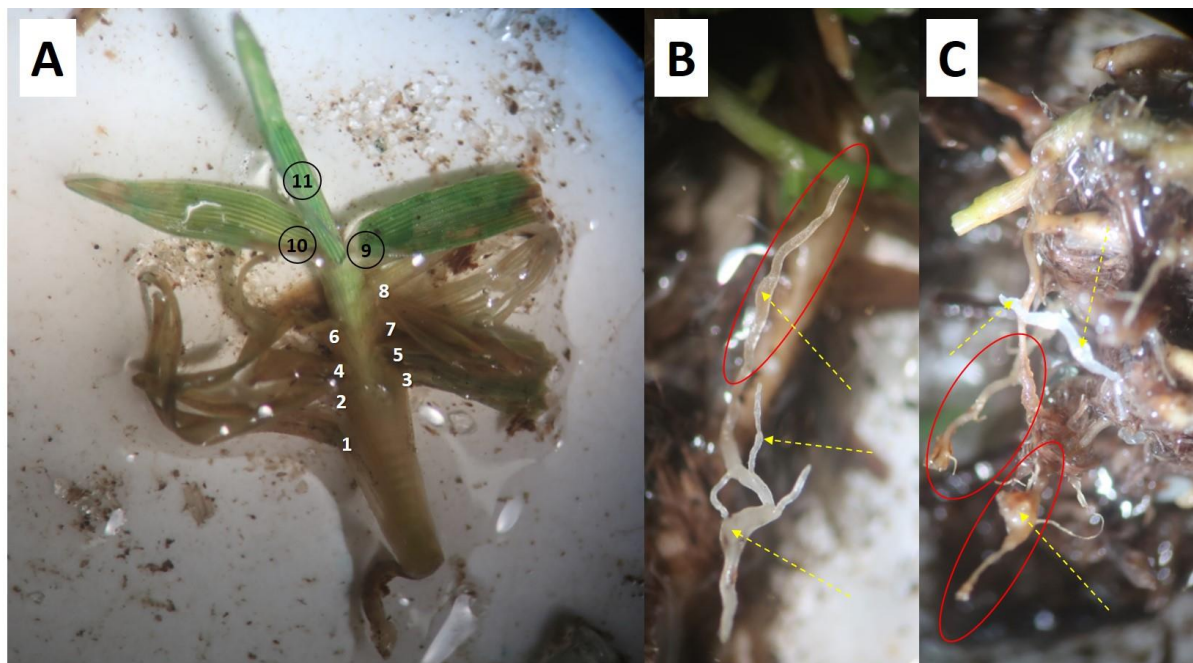
1. **Aeration and soil cultivation. Vertically mowing greens grass with carbon-tipped blades can remove great amounts of topical organic matter, but can set back turfgrass health and summer recovery when turfgrass rooting is compromised.**
 - When vertical mowing is performed using skinny blades (replacing the dynaBLADE tips) in a minimally disruptive manner, small open spaces are created for topdressing sand to settle and for small, new leaves to fill in.
 - Light vertical mowing helps encourage tighter turfgrass growth through cutting of the stolons, while improving sand penetration into the canopy. The depth should be 0.00 to 0.050 inch below the bottom of the roller.
 - When performed on a weekly basis, the USGA has observed greater speed consistency at higher heights of cut with this approach as compared to lower heights of cut without. This gives the greens turfgrass more valuable photosynthetic tissue to assimilate critical carbohydrates in addition to encouraging more upright leafing. We have a large number of golf courses using a USGA tool tracking data and inputs to arrive at this conclusion.

2. Prior to your planned renovation, as well as approximately one year after any renovation, conducting an ISTRC soil core analysis is advisable.

- An [ISTRC test](#) on at least two putting greens is extremely helpful in determination of soil properties. Results from this test will indicate percolation rate, capillary porosity for water and air, amounts of organic matter, water-holding capacity and sand size distribution throughout the profile. These results before and after your renovation serve as comparisons to use for any future assays that help guide aeration practices and their effectiveness.

3. Nematodes.

- The roots are my chief area of concern due to their lack of depth, density and strength. Upon taking several profiles, the root depth averaged around 1 inch in depth. Ideally, I like to see at least 2 inches of dense roots in a typical putting green profile. The roots in the profiles were discolored and thin, characteristics of nematode damage.
- Nematodes are parasitic worms that feed on turfgrass roots. Their damage affects root density, depth and efficiency of the turfgrass plant at taking up water and nutrients. Nematode-damaged roots are also much more susceptible to diseases such as Pythium root rot and take-all root rot.
- Looking at the three turfgrass plugs I took from one of the better putting greens and washing the organic matter and sand off, there were very few viable roots below 0.5 inch. The turfgrass shoots, though dense, had very little green leaf tissue. This can be a symptom of reduced capability to recover or grow following so few roots and loss of carbohydrates due to nematode feeding. Most roots in the 0.5-inch zone were either discolored or severely scarred and swollen, indicative of severe nematode pressure and active feeding (see Picture 2).



Picture 2 – Putting green No. 17 pictures and representative observations from three 0.625-inch plugs taken arbitrarily. Plugs were incubated in moisture chamber for 24 hours and observed under stereo dissecting scope. (A) TifEagle shoot under duress exhibiting three green leaves out of 11; (B) displaying discoloration indicative of nematode injury (circled in red), some with nodules as in (C) and scarring. Healthiest white roots observed in top 0.25 to 0.5-inch plug and exhibiting swollen features also representative of active nematode feeding.

- Monitoring and Methodology. Take at least three sets of samples three to four times, at the same time each and every year.
 - ◆ Sample at least one of the worst putting greens, one of the best putting greens, and one of your average greens, with additional samples if desired and submit to the University of Florida for analysis.
 - ◆ Sample a minimum of three greens every time, with the same parameters indicated above, worst to best.
 - ◆ During the time of the sampling, rate and record each green for overall turf quality (density and color) and root depth.
 - ◆ [I strongly advise going to the University of Florida for all nematode assays](#) as they are the only lab in the country that conducts a mist extraction assay for root-knot and lance nematodes which gives a much better indication of pressure from these nematodes.
 - ◆ [Request a root-knot nematode mist extraction assay](#) as well as general nematode assay for every other sampling event. See [Sampling Instructions for Nematode Assays](#) for more information.
 - ◆ The USGA has developed an easy-to-use, [USGA CCS client web-based nematode management survey engine](#) that will capture your results, aligning the specific location with an overall assessment of quality of the turf and the roots. This information can then be imported into a data analysis program to track and communicate findings. Over two plus years, this information will be very useful. I can help you as more results are received.
 - Nematode management. Despite the use of Indemnify throughout the year, the appearance of the roots is indicative of severe nematode damage. I have seen a disturbing number of golf courses with similar problems where nematodes are unresponsive to continuing Indemnify applications. See [Nematodes – How Do I Know if I have a Problem](#) for more information. With a lack of nematicides that can give effective control, attention to modes of activity and rotation to different products other than Indemnify coupled with assay results can improve control and improve rooting.
 - Going back three years, I have observed a general decline in root health, density and depth. There are several factors that I believe are involved that go beyond the scope of a half-day visit. One of the initiatives I have started with other courses with similar issues to what I am seeing at Herons Glen, is focusing on root health, fungicide and nematode prevention and management with added attention on plant physiology. These are courses I have worked with in the scope of two visits each year for the past three years. A renovation will immediately solve a number of these issues, but longer-term modifications in products and applications coupled with monitoring will help reduce the likelihood of problems reoccurring.
- 4. Cyanobacteria can be especially problematic following any type of turfgrass thinning, especially in Florida from fall to early spring, when traffic and play are heaviest and growing conditions for the bermudagrass are slowest. Effluent water high in phosphorous is also especially conducive to the development and growth of cyanobacteria.**
- As cyanobacteria are more closely related to a bacterium than a fungus, most fungicides have little to no effect on this opportunistic occupier.

- Utilization of products that contain hydrogen peroxide, applied once or sequentially, have provided the most consistent control of cyanobacteria, but these products are little known and not actively promoted by distribution.

5. **Disease prevention. As discussed with Mr. Kortanek, he is on a fungicide prevention program.**

- Following incubation of the three turfgrass plugs from putting green No. 17 in a high-moisture environment, I observed them microscopically for any disease symptoms or fungal growth. I saw no obvious diseases or fungi.

Fairways and Roughs

Observations

1. **The Tifway bermudagrass fairways and roughs and their age, 29 years old, are some of the best that I have seen.**

- Tifway in Florida is difficult to maintain for a long period without significant areas of turfgrass loss to contamination from common bermudagrass. Most of the areas at Herons Glen had good coverage and density as a result of summer conditioning with fertilizer, aeration and Primo growth regulator use.
- The soil texture is variable between a sandy silt and a silty clay. This presents variable effects on soil moisture and fertility retention, visibly expressed by differences in texture, canopy density and color.



Picture 3 – Fairway profile from No. 16 with silty clay soil (left), and No. 8 with 29-year-old Tifway (center) compared to TifTuf sodded in July (right).

2. **Aeration.**

- Wall-to-wall aeration is performed in two directions during a two-week summer closure period with a Toro® Turf Aerator 686 pulled behind a tractor.
- Fairways also receive an aeration with the Toro ProCore 1298.

3. The irrigation system, though converted from hydraulic to electric, is old and limits the efficiency of irrigation coverage across the fairways and roughs.

- Mr. Kortanek and his crew allocate precious hours of maintenance labor hours to repairs to the existing system.
- Areas on the outside of an irrigation row or on the edges of a sprinkler throw require that excessive irrigation be applied to inside areas to address dry areas. This can impact playability consistency, nematode pressure and damage, and winter diseases like Bipolaris leaf spot that can lead to thinning.
- Effluent water is bought from the city and is the primary source of water for all turfgrass areas. There is the capability of utilizing water in the retention ponds, but this water is also needed and used by the homeowners so it is only used during periods of the year when the ponds are high from heavy rainfall events.

4. Cart traffic and foot traffic concentration in areas such as off No. 16 putting green are causing compaction, thinning and wig-like turf growth that is adversely affecting playability.

- Test areas repaired with TifTuf™ have been performing well thus far following June sodding (see Picture 4).



5. Bimini™ bermudagrass is another bermudagrass variety that has performed well on the driving range where it was recently installed.

Recommendations

1. To improve playing conditions, understanding there will be a renovation in 2021:

- Following spring green-up, a scalping of the roughs to approximately 0.5 inches with subsequent step-up applications of low rates of Primo growth regulator in combination with fertilization can improve density, color and canopy in preparation for winter play going from October of 2020 through March 2021.
- Gradually increase height of cut until you arrive at your target height in mid- to late August.
- Primo rates should decrease following the end of the summer solstice in June to cessation in early to mid-September.

2. **There are some cost-effective herbicides that when applied at low rates can reduce weed coverage in conjunction with bermudagrass expansion.**
 - One such herbicide gaining attention has been observed to reduce bermudagrass mowing frequency by up to 75%. Applied to low-maintenance or out-of-the-way roughs, it is quite cost effective. This was discussed, with additional information being forwarded to Mr. Kortanek under separate cover.
3. **If fairways and roughs are included in the 2021 renovation, I can help supply names and contact information for visiting some other golf courses with Bimini™ and some with TifTuf bermudagrass.**
 - Outside of Celebration, these are the two varieties that are performing well, though only out for two years or less, and better than Tifway.
 - As with any grass, over time, additional information and experiences that may further elevate or decrease their attractiveness will become known. At this time, these are the two that I would most consider.

Tees

Observations

1. **The tees are 29-year-old Tifway bermudagrass except where some repair work was made with Celebration.**
 - The high frequency of rounds and concentration of golfers on markers 3, 4 and 5 have resulted in turfgrass loss and mounding of some of these tees. They are no longer level.
 - Size. For the 55,000 yearly rounds, a good number of the tee boxes, such as No. 5 tee, marker 5, are too small to accommodate the daily rounds. Mr. Kortanek reported that tee sizes range from 800 to 1,000 square feet.
 - Shade. There are tees where adjacent trees and vegetation are negatively impacting turfgrass coverage and survival coupled with high rounds, such as No. 11 and No. 18 tees.

Recommendations

1. **Tees and some architectural modifications should be considered for the 2021 renovation.**
 - As with fairways and roughs, you may decide to go with the same variety or use one variety for tees such as TifTuf and another such as Bimini for fairways and roughs. For this reason, I suggest looking at TifTuf strips sodded onto some of your most worn tees.
2. **It is important that teeing grounds be adequately sized.**
 - A general rule of thumb is to provide at least 100 square feet of teeing area for every 1,000 rounds played from that particular tee.
 - Assuming 75% of the golfers play tee markers 3, 4 and 5, and averaging equally among these tees, this is 13,750 rounds per tee. Each tee should therefore be a minimum of 1,375 square feet.

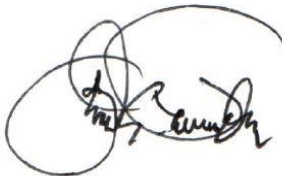
3. There are few solutions to improve turfgrass quality on bermudagrass tees without either switching to another grass variety or removing trees.

- Tree and vegetation removal, where it can be performed, is advised for these tees suffering from shade.

Closing Comments

I really enjoyed my time at Herons Glen in addition to the opportunity to get to know more about the course and Mr. Kortanek and Mr. Belknap, their history and plans for the future. There is a lot of information within the context of this report. I hope to continue working with you in the future. As questions arise within or even outside the realm of this report, please feel free to contact me at any time.

Respectfully submitted,



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Additional Considerations

USGA Green Section Record

If you would like to receive the USGA's electronic publication, the *Green Section Record*, [click here](#). It is free, informative and sent directly to you via email every two weeks.

About the USGA Course Consulting Service

As a not-for-profit agency that is free from commercial connections, the USGA Course Consulting Service is dedicated to providing impartial, expert guidance on decisions that can affect the playing quality, operational efficiency and sustainability of your course.

First started in 1953, the USGA Course Consulting Service permits individual facilities to reap the benefits of on-site visits by highly skilled USGA agronomists located in Green Section offices throughout the country.



For questions regarding this report or any other aspect of the USGA Course Consulting Service, please do not hesitate to contact our office.

