



COURSE CONSULTING SERVICE

Onsite Visit Report

Westbrook Village Golf Club Peoria, Arizona

Visit Date: May 18, 2021

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

Executive Summary

Thank you for your kind hospitality and the invitation to return to the golf courses at Westbrook Village to conduct a Course Consulting Service (CCS) visit on behalf of the USGA Green Section. My previous visits have been in February, and it was good to see the golf course a bit later in the year in May to see how the transition process from overseeded bermudagrass to the understory bermudagrass is coming along. This is always a difficult time for golf courses in Southern Arizona, but it was good to see a strong base of emerging bermudagrass across both golf courses. It was also good to see several strategic trees were removed since last year's visit and to hear of much-improved performance of the back of No. 2 Lakes green that now receives more sun exposure. It was also good to hear of a new well drilled on the Lakes Course which yields 1,900 gallons per minute compared to the old well that yielded only 900 gallons per minute. Finally, it was great to see improvement projects ongoing and to hear of next year's projects planned for the Vistas Course. A brief summary of the topics discussed during this course tour is offered below:

- **Putting greens.** The Vistas putting greens will be resurfaced next year with Tifdwarf bermudagrass, and we discussed a simple process for conversion. The Lakes greens were in good condition with healthy emerging Tifdwarf bermudagrass; however, the new putting green exhibited some turf thinning and this green will take some time to mature.
- **Bunkers.** Bunkers will be renovated along with the Vistas greens next year, and we also discussed future renovations on the Lakes Course involving bunker reduction and reshaping.
- **Fairways.** The main topic on fairways is the transition process, which is never seamless, and there is always an awkward phase when the overseeded turf dies out and the emerging bermudagrass is slow to recover. This is also a time when the fairways are wetter than ideal, but which is necessary to encourage strong bermudagrass recovery.
- **Trees.** We discussed a few additional strategic tree removals as well as removing some of the extensive palms on the Lakes Course. We also discussed utilizing desert-adapted trees in the turf reduction areas.
- **Turf reduction.** With the Fourth and Fifth Management Plans imposed by the Arizona Department of Water Resources looming on the horizon, it is critical now more than ever to move forward with turf reduction.
- **Tees.** It was excellent to see the leveling and expansion on the par-3 tees which will provide a much better playing experience.

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Putting Greens

Observations – Vistas

1. Regrassing

The Vistas greens will be regrassed next year. The greens will be chemically treated this fall and overseeded to provide a good playing surface during the winter and spring months. Beginning in May, the greens will be sprayed again to try and kill as much of the existing bermudagrass as possible. Approximately 1 inch of material will be removed from greens to mechanically remove as much of the remnant bermudagrass stolons and rhizomes as possible. About 1 inch of sand will be placed to fill the void, followed by sodding with Tifdwarf bermudagrass.

2. Vertical Mowing

The Vistas greens were recently vertically mowed at a light-intensity level. This is a great example of what routine vertical mowing should look like and is a great practice to help encourage upright growth and to deliver a smoother putting surface.

3. Soil Profile

Soil profile samples collected on the Vistas greens confirmed what we have seen in the past, with a solid 6 to 7 inches of sand rootzone over what appears to be a slightly coarser-textured sand. There is no significant layering in the top 6 inches of greens, and roots were found to extend to a depth of 5 to 6 inches.

4. Irrigation

It was great to see that Mr. Escobedo and his team are currently changing the 360° sprinklers around greens to part-circle sprinklers to independently irrigate the greens and green surrounds. These two different areas have vastly different water requirements and infiltration rates and therefore separating the irrigation will deliver a better playing surface and turf health in both greens and green surrounds.



The rootzone is in good condition on the Vistas course with about 6 inches of sand material and a slightly coarser mix beyond the 7-inch depth. Deep tine aeration will be helpful to punch through the layer at the 6- to 7-inch depth.

- The team plan to complete one hole per day installing the new sprinklers, with one hole already completed. This project has been completed with in-house labor, thereby saving a great deal of money. However, it is important to note that the majority of Mr. Escobedo's labor is being expelld in these putting green areas and therefore other areas of the golf course, especially irrigation management in fairways and roughs, are not being managed to the level they normally receive.

New part-circle sprinklers were being installed on No. 1 green during our course tour using in-house labor.



Recommendations – Vistas

1. Aeration

It was great to hear you have planned an upcoming small-diameter aeration and will follow with a large-diameter aeration in July.

- It is also recommended to move forward with your plans to purchase a deep-tine machine for greens and utilize this machine twice annually if possible. The deep-tine aeration can be done in conjunction with the summer aeration.
- After spraying the greens next May prior to renovation, it is recommended to conduct multiple aeration events on greens including large-diameter, hollow tines and keep working several passes over the greens. This will be a great method to encourage the new sod to root down into the existing rootzone.

2. Very Light or No Overseeding

The first year after sodding in 2021, it is recommended to employ very light or no overseeding on greens. If you decide to overseed, use only 5 to 6 pounds of *Poa trivialis* per 1,000 square feet, and you may also mix with perennial ryegrass at 10 to 15 pounds per acre. Plan on proactively removing the overseeded grass beginning in early March the following year through a combination of mechanical practices such as brushing and grooming, vertical mowing, and using Revolver® at the lowest rates.

Observations – Lakes

1. Main Putting Green

The main putting green on the Lakes Course was redesigned and rebuilt last year. This green is bigger and offers significantly more hole locations to spread out golfer traffic and is a job well done. Unfortunately, we did observe some turf thinning on this green given the immaturity of the bermudagrass. We also observed some surface algae. However, it is good to report that soil profile samples did not reveal any signs of layering.



Left: The profile on the new Lakes putting green is in good condition and there is no indication of water-restricting layers.

Right: The overseeded turf has died on the new Lakes putting green, but it is good to see bermudagrass ready to grow once warmer temperatures

2. Number 2 Green

It was great to see the back portion of No. 2 green has improved substantially following removal of the ash tree immediately southeast of this green. This is a great example where strategic tree removal can have a significant impact on turf quality on the most important area of the golf course, the putting greens.



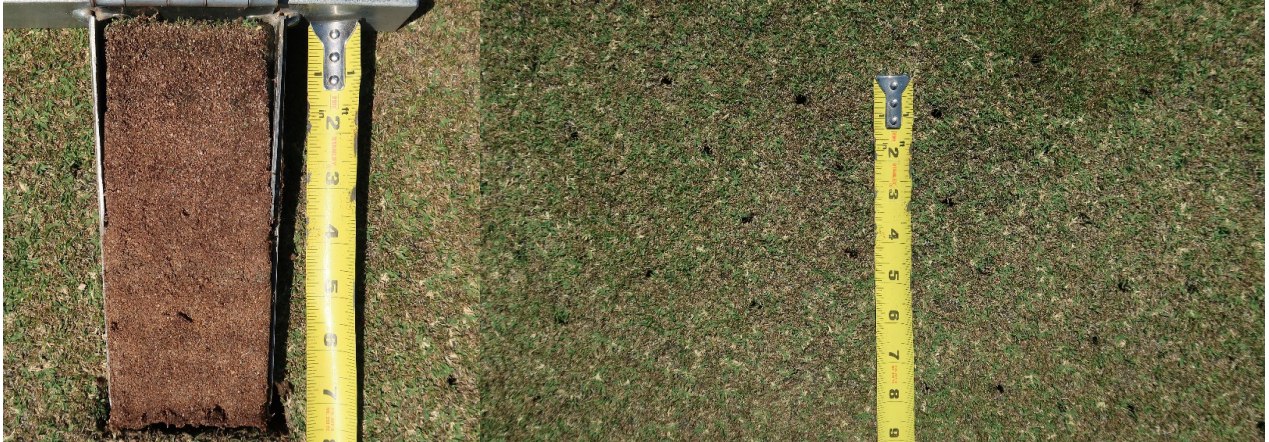
Removing the tree southeast of No. 2 green Lakes has made a big improvement on the back portion of this green.

3. Soil Profile

Soil profiles collected on the Lakes greens revealed a homogenous rootzone with no indication of excess thatch/organic matter. Furthermore, roots were found to a depth of 6 to 7 inches, which is excellent.

4. Recent Aeration

The recent 1/4-inch hollow-tine aeration was completed on the Lakes greens to relieve compaction, encourage water infiltration, and improve gas exchange with the atmosphere. Apparently, there have been some comments from golfers about the inability to fill these holes with sand, but with such small-diameter holes, it is impossible to fill these voids with sand.



Left: Soil profiles in the Lakes greens show no restricting layers and healthy roots.

Right: A recent small diameter aeration on the lakes greens has helped to improve water infiltration and to create small voids for the bermudagrass to capture sunlight and oxygen.

Recommendations – Lakes

1. Surface Management

It is recommended to continue with light-intensity vertical mowing as often as once weekly throughout the bermudagrass growing season. You may consider slightly more aggressive vertical mowing immediately prior to the summer aeration event and immediately prior to overseeding. These should be the only two more aggressive events for the entire year.

2. Sand Topdressing

Topdress the greens lightly as often as two to four times per month during the bermudagrass growing season. It is recommended to use either the West Coast 30/70 sand or the Premier sand from West Coast or The Source. These materials contain fewer coarse sand particles and therefore cause less disruption to bedknives, reels and the playing surface.

3. Deep Aeration

It is recommended to utilize the deep tine machine on the Lakes greens once or twice annually.

4. Practice Green

The practice putting green bermudagrass will need more time to mature. Mr. Murillo is doing an excellent job of allowing the putting green surface to dry between irrigation cycles and addressing localized dry areas with a hose.

- It is recommended to spray two or three applications of a rotation of mancozeb and Daconil® Action to this green to reduce algae.

- It is also recommended to use the better-quality sand to topdress this green. Given the low amount of growth right now, it is important to only lightly topdress at probably only 40 to 50 pounds per 1,000 square feet. Once growth increases, you can increase the rate up to 100, even 150, pounds per 1,000 square feet.
- Continue with frequent nitrogen applications and plan to apply between 5 and 6 pounds of nitrogen per 1,000 square feet to this green in 2021.

Bunkers

Observations – Vistas

1. Renovating Greenside Bunkers

It was good to hear that there are plans to renovate the greenside bunkers on the Vistas Course along with regrassing putting greens next year. The [Flexscape™](#) liner will be used in bunkers including new drainage and new sand.

Recommendations – Vistas

1. Bunker Reduction

Given the ever-increasing sand costs and maintenance costs associated with bunker maintenance, it is recommended to generally reduce the size of the greenside bunkers on the Vistas Course next year. A few specific holes discussed included the following:

- We discussed removing the large bunker fairway on No. 9 to improve playability and replace with a grassy swale. See the image below.



Remove this large fairway bunker left of No. 9 fairway and replace with a grassy swale.

- We discussed removing a portion of the large greenside bunker on No. 9 to improve playability and replacing with a grassy swale. See the image below.



Remove a large portion of the greenside bunker on No. 9 Vistas.

- We discussed removing the right fairway bunker on No. 18.

Remove this fairway bunker right of No. 18 fairway



- We discussed significantly reducing the size of the greenside bunker on No. 15 and removing the first fairway bunker. Please see the images below.



Reduce the size of the large greenside bunker on No. 15.

Remove this fairway bunker on No. 15 and regrade with a grassy swale.



2. Reshaping for Maintenance Efficiency

In addition to reducing bunker size, it is strongly recommended to reshape the bunkers such that the entire grass perimeter can be mowed with a riding mower. This means ensuring the grass slopes are less than about 22 to 23°.

3. Golfer-Friendly Bunkers

With this mature population, it is recommended to avoid steep slopes in bunkers. Generally, the maximum slope should be from 20 to 22°. Furthermore, a large area of the bunker should have a low grass lip for easy access for golfers to walk into and out of the bunkers and easy access for the mechanical bunker rake.

4. Sand Depth

There have been a few reports of bunker rakes catching and tearing the Sand Trapper® liner. While I still feel this is a good choice, I would plan on a 6- to 7-inch sand depth in the bunker floors.

Observations – Lakes

1. Greenside and Fairway Bunkers

The greenside and fairway bunkers on the Lakes Course are oversized, difficult to maintain, and in need of renovation.

Recommendations – Lakes

1. Bunker Reduction

The recommendations provided above with regard to bunker size reduction, reshaping bunkers to provide more maintenance-friendly areas to mow, and making the bunkers more playable and accessible for golfers will be the key theme for bunker renovation on the Lakes bunkers when the time is appropriate. We discussed two bunkers specifically on the Lakes Course to remove or reduce the size including the left greenside bunker on No. 3 and the bunker left of the cart path on No. 18.

Fairways

Observations – Vistas and Lakes

1. Emerging Bermudagrass

It was good to see healthy emerging bermudagrass on both the Vistas and Lakes fairways. Due to the earlier overseed on the Lakes Course and the bermudagrass resurgence during the extended hot weather in the fall of last year, there was more bermudagrass observed. However, it is great to report that I'm very optimistic about the fairway bermudagrass recovery on both golf courses.

2. Shallow Soil Moisture

Fairway soil profiles collected on both golf courses revealed soil moisture levels were dry beneath about the 2- to 3-inch layer. It is clear that the water is not penetrating deep in the soil. Soil profiles also revealed that fairway soils are extremely compacted, even in areas with visibly saturated surface conditions.

3. Concentrated Cart Traffic

We did observe areas on both golf courses where turf is visibly damaged due to elevated cart traffic, specifically where carts leave the path to enter the hole and where they leave the fairway to reenter the cart path.



In many areas, soil moisture was restricted to the upper 2 inches of thatch and organic matter at the surface of the fairways.

Recommendations – Vistas and Lakes

1. Continuous Aeration

In these compacted soils, it is critical to conduct a continuous aeration program all 12 months of the year. These aeration events can consist of slicing, spiking, solid tines and hollow tines. Conduct some form of aeration as often as possible, which ideally would be eight to ten times per year. There is no bad time to conduct these nondisruptive aeration events.

2. Deep Irrigation

We discussed a strategy to employ deep irrigation on fairways.

- Given the extremely low infiltration rates and highly compacted soils, it is likely that on the Vistas Course, you may only be able to schedule run times for a maximum of 10 minutes with 15-minute soak times.
- On the Lakes Course, Mr. Murillo has noted that he can likely utilize 15-minute run times with 10-minute soak times.
- Ultimately, the goal is to apply from 1/2 inch and up to 1½ inches of water during an evening irrigation event. It is recommended to begin with trialing this strategy on one hole and initially begin with the goal to apply 1/2 inch of irrigation water during an evening irrigation event.
- Over time, you will become more comfortable with this strategy and will be able to increase the depth of water applied. This strategy has been successful for many clubs in the southwestern U.S. and ultimately helps to decrease the localized dry areas on fairways and water more deeply into the soil profile.

3. Transition

It was great to see you have sprayed Manuscript® at 9 ounces per acre recently to discourage the perennial ryegrass and encourage the understory bermudagrass. This will definitely help to grow a healthier bermudagrass stand. Next year, it is recommended to employ a bit more proactive strategy that has proven to be successful for numerous clubs in Southern Arizona, Southern Nevada, and in the Coachella Valley.

- While the strategy varies from course to course, the general recommendation is to use a low rate of Manuscript from 0.5 to 2 ounces per acre beginning in late February or early March. Continue with multiple applications spaced approximately three weeks apart. Ultimately, you will make four and possibly five applications.
- This strategy has numerous advantages in that it slows ryegrass growth during the time when ryegrass growth is aggressive, thereby helping to lower mowing requirements. Furthermore, this strategy slowly shifts the competitive advantage of the ryegrass to the understory bermudagrass without any noticeable impact on the quality of the playing surfaces.
- Public golf courses that yield a premium price point such as TPC Scottsdale, Shadow Creek in Las Vegas, Desert Willow Golf Course in Coachella Valley, Marriott Golf Course at Camelback, not to mention numerous private courses, have used this strategy with good success for the past two to three years.

4. Overseed Rates

Seed prices have increased substantially this year due to market demands. Seed prices have increased from about \$1.10 per pound up to a range between \$1.60 and \$1.70 per pound. Golf courses throughout Southern Arizona have had success overseeding at rates ranging from 450 to 650 pounds per acre. These include higher-end private golf courses. As such, it is recommended to lower the seed rate to a range between 500 and 550 pounds per acre on both golf courses.

5. Minimizing Cart Traffic

Many clubs I have visited over the past few months are slowly transitioning back to a recommendation for golfers to share carts and utilize two carts per foursome. The concept of sharing a golf cart has been accepted for decades until the COVID-19 pandemic. Utilizing four carts per foursome has clearly had a negative impact on turf quality and soil compaction and, as such, it is recommended to work towards moving back to two carts per foursome.

Trees

Observations – Vistas and Lakes

1. Tree Removal

It was great to see the trees we discussed in last year's CCS report were removed in the summer of last year, and this has already made a positive impact on turf health and density.



Three pines were causing poor turf conditions on the back of No. 3 green on the Vistas course in addition to bare ground under the trees.

With only one tree remaining, turf quality has improved significantly on the back of the green and in the green surround.



2. Hundreds of Palm Trees

There are hundreds of palm trees on the Lakes Course. These palm trees are expensive to trim annually, costing approximately \$25,000 per year. The debris from these trees can be extensive following windy periods, and the palm trees increase labor spent on mowing and trimming given the difficulty in which to trim the turf around the base of the palm trees in the green surround areas. The palm trees also negatively impact irrigation uniformity.

Recommendations – Vistas and Lakes

1. Lakes Palm Reduction

It is recommended to phase in palm tree reduction on the Lakes Course. A goal to remove 30 to 50% of the palm trees would be a nice compromise to reduce the maintenance requirements, reduce annual trimming costs, and yet still deliver the aesthetic that golfers enjoy.

2. Lakes No. 5

We discussed removing a pine tree on the right side of the par 5 on the Lakes Course. It is difficult to grow healthy turf underneath this tree and it was reported that this tree slows play.

3. Desert Trees

It was great to hear from Mr. Escobedo that the strategy moving forward for the desert areas is to only plant desert-adapted trees that, once established, will require no supplemental irrigation. Great examples are mesquite trees, palo verde trees, and desert willows.



Remove this pine tree right of Lakes No. 5. Surface roots are extensive (right image) and the tree is a playability issue.

Turf Reduction

Observations – Vistas and Lakes

1. Vistas Course

There are 110 irrigated acres on the Vistas Course, and it will be necessary over the next few years to reduce this acreage to about 85 to 90 acres.

- The Arizona Department of Water Resources has made it very clear that the Fifth Management Plan, which will be implemented January 1, 2025, will include enough water to overseed about 70 to maybe 75 acres, enough water to irrigate nonoverseeded bermudagrass for only 15 to 20 acres, and only about 3/4 of an acre-foot of water for 18 acres of desert landscaping. There will not be enough water to irrigate turf for desert vegetation in excess of the 90 acres.
- It was great to hear that there are already plans in place to remove about 6 acres of turf on the Vistas Course and replace with desert landscaping requiring very low or no irrigation.

2. Lakes Course

The Lakes Course has already undergone turf reduction and reportedly has 92 irrigated turf acres. After touring the golf course, it is clear there is still room in which additional irrigated turfgrass acres can be removed.

Recommendations – Vistas and Lakes

1. Vistas Turf Reduction Plan

Mr. Escobedo has laid out a very pragmatic plan to remove six acres of irrigated turf on the Vistas Course this summer, and it is recommended to continue with this plan. The new turf line has been moved in about 60 feet from the original turf perimeter to coincide where the next set of sprinklers is in place. This strategy is efficient because it does not require any irrigation redesign.



The new turf line will be moved in toward the fairway by 30 to 60 feet from the current perimeter. The new line will coincide with the sprinklers to avoid costly irrigation redesign.

2. Decomposed Granite and Desert-Adapted Trees

In turf reduction areas, we discussed installing desert-adapted trees that although initially would require water, once established, should be able to survive with no supplemental irrigation. We also discussed covering the soil with small decomposed granite. This material facilitates easy golf ball location and golfers can hit recovery shots from the decomposed granite areas. In areas where there is water flow, we discussed the need to use larger rock to mitigate erosion.

3. Continued Turf Reduction on Lakes

It will be necessary to continue with turf reduction on the Lakes Course, ultimately with the goal to irrigate from 85 to 90 turf acres. While there are only 92 irrigated acres, it was clear from our discussions that there is potential to further reduce irrigated turf. Again, a goal to remove from five to ten additional turf acres would put the club in a more sustainable position moving forward as we move towards the Fifth Management Plan imposed by the Arizona Department of Water Resources.

Tees

Observations and Recommendations – Vistas and Lakes

1. Tee Leveling

It was great to see numerous tees have been leveled and expanded. Great examples include No. 3 Lakes tees, No. 4 Vistas tees, and the teaching practice facility tee on the Vistas Course. These changes have significantly increased the available teeing area and will provide a much more enjoyable golf experience given the level and firm surfaces.

- We discussed continuing with expanding tees and leveling on No. 2 Vistas and No. 6 Lakes next year.



What a significant improvement this tee enlargement and leveling will provide for this par-3 tee on the Vistas course.

Miscellaneous Topic

1. Spraying Equipment Upgrade

Application accuracy is critical, and it is strongly recommended to consider upgrading your sprayer or sprayers to GPS technology. Equipment manufacturers such as Toro® and John Deere offer GPS guided sprayers and it is recommended to consider one of these units when purchasing your next sprayer. As an alternative, the GPS sprayer kit offered through [Smart Guided® Systems](#) in Indianapolis, Indiana, retails at about \$13,000 to upgrade a sprayer with GPS precision spraying technology.

Conclusion

Thank you for the opportunity to return to Westbrook Village Golf Club. It was a pleasure to visit with Mr. Escobedo, the agronomic team, and golf course leadership to discuss both short-term agronomic strategies and near-term course improvement projects. The biggest takeaways from this visit are the upcoming improvements on the Vistas greens including regrassing greens, renovating greenside bunkers, and upgrading greens irrigation to include part-circle sprinklers. Another key takeaway is the need to renovate bunkers on both golf courses, reduce bunker size, and reshape bunkers to improve maintenance efficiency and ensure that golfers are able to easily walk into and out of the bunkers. Finally, another primary topic was the need to employ turf reduction on both golf courses, with the ultimate goal of a range from 80 to 90 irrigated turf acres. This is an important change that will put the golf courses in a sustainable position for the next few decades. Thank you for your continued support of the USGA Green Section. Please do not hesitate to reach out if you have questions or concerns or to discuss the upcoming greens renovation project prior to our next course visit.

Respectfully submitted,



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Additional Considerations

The USGA appreciates your support of the Course Consulting Service. Please visit the [Green Section Record](#) to access regional updates that detail agronomist observations across the region. Also, please visit the [Water Resource Center](#) to learn about golf's use of water and how your facility can help conserve and protect our most important natural resource.

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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.

