

COURSE CONSULTING SERVICE

Onsite Visit Report

Recreation Centers at Sun City West Sun City West, Arizona

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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 Recreation Centers at Sun City West (RCSCW) to conduct a Course Consulting Service visit on behalf of the USGA Green Section. It had been three years since the last USGA Course Consulting Service visit, and it was excellent to see the agronomic team has continued to make improvements to the golf courses. The primary focus of this course tour was to discuss both short-term and long-range golf course improvement projects. A brief summary of the topics discussed during this course tour is offered below:

- **Irrigation system replacement.** All golf courses that rely on an irrigation system to meet the turf water demand will face the time when the irrigation system is failing and will require replacement. Irrigation systems in the Desert Southwest typically last 20 to 25 years, and the system at the Grandview Golf Course is well past its useful life. This report will discuss options to replace this antiquated system.
- **Turf reduction.** With new water regulations that will soon be imposed on Phoenix area golf courses and the high probability of more reductions within the next three to five years, the golf courses at RCSCW need to take a close look at turf reduction.
- **Turf conversion.** Within the next decade, there is a high probability that there will be a commercially available bermudagrass or zoysiagrass that will remain green and recover from traffic during the winter months. Such a grass would allow golf courses in Southern Arizona to eliminate overseeding and save a significant amount of water.
- **Bermudagrass transition.** With mild May and June temperatures and significantly reduced rainfall during the monsoon season, golf courses this year struggled with bermudagrass recovery from overseeding. The four golf courses at RCSCW with common bermudagrass experienced some thin and bare areas following the demise of the ryegrass in late June and July. This report will discuss the difference between common bermudagrass and 328 bermudagrass, as well as some strategies to improve bermudagrass transition.
- **Weed control.** Weed pressure across the southwest portion of the U.S. including the Las Vegas area, Southern Arizona and the Coachella Valley in Southern California has increased over the past three to four years. Specifically, crabgrass, goosegrass and purple nutsedge have been especially problematic. This report will offer several recommendations to reduce weeds.
- **Bunkers.** The agronomic team has done a phenomenal job of renovating bunkers over the past few years and saved the facilities hundreds of thousands of dollars. It was great to see the bunkers on the Echo Mesa Golf Course were renovated this year, and there remains only one golf course left to complete, the Desert Trails Golf Course.
- **Staffing.** Golf courses all over the entire United States are finding increasing difficulty attracting and retaining qualified employees. With enrollment in turf schools significantly reduced over the past few years, the ability to attract golf course maintenance staff will be a significant challenge moving forward.

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Irrigation System Replacement

Observations

1. Why replace the irrigation system?

What would be the worst case scenario if the irrigation system completely failed? Please consider the following possibilities:

- The irrigation system is most vulnerable and undependable during overseeding. Extended breakdown or failure at that time would result in poor overseeding establishment and unacceptable playing quality. Money spent on seed, fertilizer, and preparations would be lost, and materials would have to be repurchased once the system is repaired or replaced.
- Extended breakdowns during overseeding would push seeding and establishment into the colder months of November, December and January, with very limited chances of good perennial ryegrass germination until February or March.
- Poor overseeding establishment would diminish the quality of the course for the membership.
- Extended malfunction of the irrigation system would result in turf loss and the need to sod or seed large portions of the course, causing extended inconvenience and expense to the membership. The current system already affects early summer bermudagrass regrowth and contributes to poor transition.
- A decline in turf quality and course conditioning will make it difficult to attract new members given the competition with newer clubs in the area.

2. Old Mainline

The mainline that serves as the primary artery to distribute water throughout the golf course is 35 years old on the Grandview Golf Course. Most mainline pipe in southern Arizona typically lasts 25 to 30 years, and in this agronomist's experience, there are none that are performing well at over 40 years of age.

3. Multiple Heads Per Station

A new irrigation system will provide the ability to control individual sprinklers independently of one another. The system at Grandview has four to seven sprinklers per valve and therefore flexibility is severely limited. These four to seven stations will be spaced over areas with different soil types, different terrain including mounds, low areas, and north- and south-facing slopes, which would ideally be watered independently.



There are five sprinklers running in this fairway, all controlled by one valve. These sprinklers cover north- and south-facing slopes and high and low areas. Due to the system, all areas must receive the same amount of water. Ideally, they should be controlled independently.

4. Inadequate Pressure

Mr. Ahee reported there is inadequate pressure during the evening hours when the system is running at full capacity to properly operate the sprinklers to perform at full efficiency.

5. Inconsistent Spacing

One of the primary characteristics to ensure efficient delivery of water through an irrigation system is very consistent and accurate spacing between sprinklers. Unfortunately, the spacing between sprinklers is inconsistent and results in wet and dry areas significantly more so than a well-designed and installed system.

6. Isolation Valves

There is a lack of lateral line isolation valves, which significantly increases the time to fix and repair sprinklers or broken pipe.

7. Irrigated Turf Acreage

There are 165 acres of irrigated turf and with water regulations forthcoming, it would be ideal to reduce turf in conjunction with irrigation replacement.

Recommendations

1. Irrigation Replacement in Phases

Due to the large costs of installation of a new irrigation system, you may consider installing in two or three phases. For example, you may consider installing the road crossings and mainline in year one, followed by the lateral lines and new sprinklers on nine holes in year two, and complete the remainder of the golf course in year three. However, installing the system in phases over two or three years will increase the time in which the golfers are disrupted and potentially will increase the cost due to increased material and mobilization costs.

2. Two-wire System

It is recommended to consider a two-wire system which would eliminate the need for in-field satellite controllers. This type of system will also offer a significant increase in the flexibility with modifications to the system, such as eliminating irrigation in turf reduction areas.

3. Turf Reduction

Ideally, you would coincide the irrigation replacement with turf reduction. Depending on the amount of turf reduction, this would reduce the irrigation system costs by as much as 10 to 30%. The other option is to design the system such that you would have the ability to isolate areas for turf reduction in the future and be prepared with the infrastructure in place to reduce turf and replace sprinklers with drip irrigation or bubblers. **With the new system ranging from \$30,000 to \$35,000 per acre and turf reduction costing \$15,000 to 20,000 per acre, there is potentially a \$10,000 to \$20,000 cost per acre savings with turf reduction over irrigation system replacement costs.**

Water Restrictions

Observations

1. Arizona Department of Water Resources Fourth Management Plan

The Arizona Department of Water Resources recently announced that the fourth management plan will soon go into effect and will require golf courses in the five active management areas to reduce water use. The Phoenix AMA will be required to reduce water use from 4.9 acre-feet per acre to 4.6 acre-feet per acre on an annual basis.

2. Arizona Department of Water Resources Fifth Management Plan

Comments from Arizona Department of Water Resources representatives indicate that further water restrictions will be imposed in the fifth management plan, which may go into effect within the next five years. There is potential in this plan for significant water use reductions and a requirement for golf courses to only irrigate a maximum acreage such as 80 or 90 acres of turf, or they may decide to limit the total water allotment per golf course. Although it is not clear what the water restrictions will be at the moment, it is clear that the Department is mandated to reduce groundwater usage and will require the golf industry to play a role in helping to achieve this mandated goal.

Recommendations

1. Turf Reduction

It is recommended to work with a qualified golf course architect to incorporate turf reduction for the Grandview Golf Course. Although this will be a contentious topic among golfers and homeowners, the concept of continuing to irrigate such large acreage is not realistic for the future of the golf course.

Bermudagrass Transition

Observations

1. Cool and Dry Weather in 2019

May and June of 2019 brought cooler than normal temperatures which favored the perennial ryegrass overseed. Once the ryegrass finally died in mid- to late June where bermudagrass was thin or bare, recovery was extended due to lack of humidity and rainfall. This weather pattern was observed throughout Southern Arizona, the Coachella Valley and in Southern Nevada. While the golf courses at RCSCW have generally fared very well with regard to bermudagrass transition, this year was more challenging.

2. Proactive Transition Program

This year, the golf courses with a proactive transition management program enjoyed far better bermudagrass recovery compared to those courses that rely on Mother Nature.

3. Common Bermudagrass vs. Hybrid 328 Bermudagrass

The common bermudagrass courses endured the worst bermudagrass recovery this year when compared to golf courses with hybrid bermudagrass varieties such as 328 and 419. The common bermudagrass enters dormancy several weeks earlier than hybrid bermudagrass and resumes growth and recovery in the late spring or early summer three to four weeks after hybrid bermudagrass. This was evident among the seven courses at RCSCW, with four common bermudagrass golf courses and three golf courses with Tifgreen™ 328 bermudagrass. The golf courses with 328 bermudagrass clearly enjoyed much-improved bermudagrass recovery this summer compared to the four golf courses with common bermudagrass. There is no error in management. The bermudagrass genetics are simply far superior with the hybrid bermudagrasses.

4. Water Delivery

Consistent soil moisture is of vital importance to improve bermudagrass recovery from overseeding. With golf courses such as Grandview with antiquated irrigation systems, there is a distinct disadvantage with common bermudagrass and poor irrigation distribution uniformity.

Recommendations

1. Chemical Transition

The methods for chemically removing ryegrass to encourage the understory bermudagrass have significantly improved over the past few years. You may consider following the program that has been very successful for courses to slowly remove the overseeded ryegrass without disrupting playability or aesthetics:

- Spray Sapphire® at 8 ounces per acre the first week of April.
- Spray a second application of Sapphire at 8 ounces per acre the last week of April or first week of May.
- Spray a “cleanup” product such as Kerb® the last week of May or first week of June to entirely remove the ryegrass and *Poa annua*.

2. Mechanical Transition

In addition to the chemical strategy above, it is vital to utilize mechanical practices to encourage sunlight penetration to the understory bermudagrass.

- For example, it is critical to lower mowing heights to a range between 0.325 to 0.425 inch by early to mid-March.
- Courses have also found success using small diameter solid tines or slicing tines to open up channels to encourage the bermudagrass to capture water and sunlight.
- You may also consider light vertical mowing practices with the blades set above zero, approximately half of the mowing height. The vertical mowing can begin as early as February and can continue throughout the summer months.

3. Fertility Inputs

Begin increasing nitrogen fertilizer inputs approximately two weeks after you have applied Sapphire to the ryegrass. Should you not use a chemical to slow the ryegrass, then begin nitrogen inputs later, in the second or third week of May when temperatures are much higher. Soluble nitrogen inputs in mid- to late May when temperatures are typically over 100° will stress the perennial ryegrass and encourage the understory bermudagrass.

4. Soil Moisture

Adequate soil moisture is critical to help bermudagrass recover from transition. From mid-April through mid-June, it is critical to apply water at 110% of ET to expedite bermudagrass recovery.

- Golf courses with antiquated irrigation systems have found that they can try to overcome poor water delivery by applying approximately 3/4 inch of water over an evening irrigation cycle to wet the chronically dry areas. This strategy can be utilized approximately twice per month to improve soil moisture consistency.
- Courses have also found that using small portable sprinklers such as roller basins or small pop-up sprinklers has been extremely beneficial to address chronically dry areas.

Turf Conversion

Observations

1. Common Bermudagrass vs. Hybrid Bermudagrass

The 328 hybrid bermudagrass is clearly a better surface when compared to common bermudagrass. However, the 328 bermudagrass is a variety that was released in the mid-1950s, and there are currently grasses with far superior genetics. The question is, should the four common bermudagrass golf courses replace their turf with hybrid bermudagrass?

Recommendations

1. Turf Conversion

While there are grasses that are superior to 328 bermudagrass currently on the market, the potential for much-improved genetics is on the horizon. As such, in this agronomist's opinion, it would be wise to manage what you have for the next decade and wait for the new bermudagrass or zoysiagrass cultivar that will allow golf courses to eliminate overseeding. The USGA has committed nearly a million dollars over the next five years to funding such research, and universities across the southern portion of the United States are working collectively to improve bermudagrass and zoysiagrass genetics.

2. Regrassing is not easy.

Upgrading to a new grass is not as easy as replacing carpet. Such a project typically will require 120 days for course closure to effectively remove and dispose of the existing turf and establish a new variety.

Weed Control

Observations

1. Increased Weed Pressure

The increase in weed pressure has been significant over the past three to four years at all golf courses in Southern Arizona.

2. Crabgrass, Goosegrass and Purple Nutsedge

The weeds of most concern during the summer months are crabgrass, goosegrass and purple nutsedge. While two of these weeds are fairly easy to control, purple nutsedge is extremely difficult. In the winter months, wild carrot, wild celery and *Poa annua* have been the most problematic.

Recommendations

1. Preemergence Control

The weed control program should focus on preemergence herbicides. Please consider the following options:

- Utilize an application of prodiamine or dithiopyr in February in overseeded and non-overseeded areas. Follow with an application of granular oxadiazon in early April to provide season-long control of crabgrass and goosegrass.
- A pendimethalin application in the fall once the ryegrass has matured will help prevent cool-season weeds such as the wild celery.
- In non-overseeded roughs, continue with your plan to use a combination of Revolver[®], prodiamine and MSM. Follow with an application in the spring with the Pendulum[®] AquaCap containing pendimethalin. When bermudagrass is dormant, consider using glufosinate (Finale[®]) or diquat to clean up weeds that escape the preemergence application. You may also consider an alternative chemistry such as Sureguard[®]. SureGuard applied in late November has proven very successful in non-overseeded roughs.

Bunkers

Observations

1. Bunker Renovation

It was great to see the bunker renovation work completed on all six of the golf courses, with the lone golf course remaining being Desert Trails. Most recently, the Echo Mesa Golf Course was completed with bunker modification, bunker size reduction, new drainage and new sand. The topic of bunker reduction has been extremely popular throughout the entire United States with the increasing cost of sand and decreasing available labor. It was also good to see the bunkers were designed such that maintenance equipment and maturing golfers can easily move in and out of the bunkers.



Bunker size reductions and overall bunker reductions were part of the bunker renovation projects. The end results include more attractive and playable bunkers and reduced sand purchases for the long term.

Recommendations

1. Bunker Renovation

The most recent renovation on the Echo Mesa Golf course was impressive, and it is recommended to continue with your plans to conduct a similar renovation on the Desert Trails Golf Course next year.

2. Bunker Design

It is recommended to continue with your plans to install deep sand with 10 to 12 inches and allow the bermudagrass sod to grow into the sand along the bunker perimeters. The deep sand with no liner has proven successful and significantly reduces the costs associated with bunker renovation.

3. Sand Selection

It is recommended to continue with your plans to use the 50-50 Augusta white to desert tan sand in greenside bunkers and 25% to 75% Augusta white to desert tan sand in the fairway bunkers. The smaller percentage of the Augusta white in the fairway bunkers reduces costs and this mix results in slightly firmer conditions which are more desirable in fairway bunkers.

Labor

Observations

1. Reduced Staffing

Golf courses all over the United States are finding it increasingly difficult to hire and retain golf course maintenance staff. Many golf courses this agronomist has the opportunity to visit are not fully staffed when compared to just three or four years ago. Many golf courses have two to five fewer employees per 18-hole golf course when compared to several years ago. This trend is increasingly concerning and has a significant impact on golf course conditioning and aesthetics as there is less labor to attend to the detail work that often is the first task omitted during a labor crunch.

2. Reduced Turf Student Enrollment

The University of Arizona and ASU no longer have turf programs, and the only undergraduate programs in the West where students can learn about turfgrass management are Utah State University, Colorado State University, Oregon State University and Cal Poly. Turf enrollment across the United States is significantly down even at the major turf schools such as Michigan State, Ohio State, Rutgers and Penn State. As such, there are fewer highly qualified individuals with bachelor's degrees entering the golf course industry and working their way up to the superintendent position.

Recommendations

1. Attracting and Retaining Employees

Golf courses seeking to attract new employees and retain valuable staff members are having to be more creative. For example:

- Golf courses are allowing employees more flexible working hours and more time off. This is especially helpful with younger employees.
- Golf courses are also incentivizing employees to work an entire season such as the summer in Arizona when a higher number of staff is necessary. Golf courses may offer a bonus if an employee will stay for a six-month period or more.
- Golf courses are also investing in the turf care facility to provide a more enjoyable and comfortable working environment.
- Golf courses are upgrading employee lunchroom/break room areas, providing covered parking, upgrading the kitchen area with coffee makers and soda dispensers, and upgrading employee locker room space. Such improvements demonstrate to the maintenance staff that they are valued and are seen as an important part of the success of the golf course.
- Golf courses are also placing an emphasis on upgrading and maintaining new equipment, which has been a strength over the past five to six years or more at RCSCW.
- You may also consider exploring the [H-2B Visa program](#) to attract seasonal workers.

Miscellaneous Topics

1. Equipment Replacement

The equipment replacement program over the past five to six years or more has been excellent. Mr. Patty reported that approximately \$800,000 in equipment purchase was budgeted for this year, and the upgraded equipment has translated to improved turfgrass conditions and much less time spent on equipment repairs.

2. Goose Control

For goose control, you must employ a variety of tactics to constantly harass the geese. You are already using the powerful green lasers, and you may also consider purchasing the [Goosinator](#) remote-controlled airplane which has been used with good success.

3. Lakes

There are reportedly 42 lakes across the seven golf courses, and it is good to report that ten of these lakes have been upgraded over the past decade with the installation of large rock or split face block to eliminate corrosion, reduce seepage and improve aesthetics. It is recommended to continue with this practice as funds are available. It is also important to recognize the need for vegetative buffer strips around lakes. Such vegetation reduces nutrient and sediment runoff into lakes, thereby improving lake ecology and reducing the need for dredging.

A split face block wall was installed on the lake to improve aesthetics and reduce erosion. Additionally, the vegetative buffer on the opposite side of the lake plays a critical role in maintaining a healthy lake ecosystem.

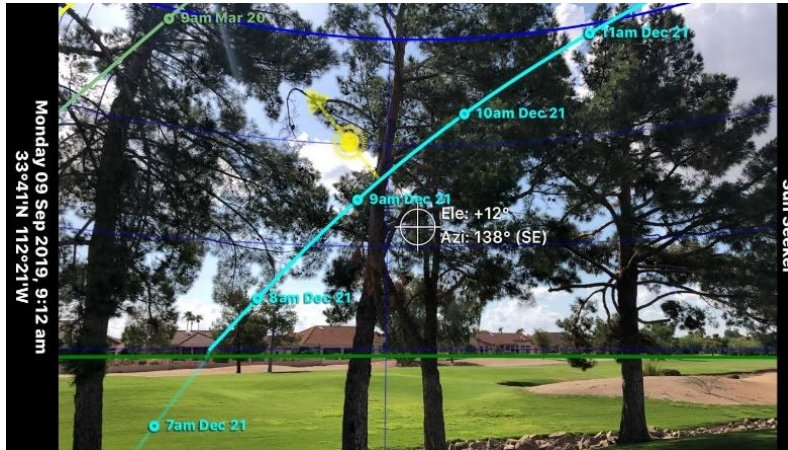


4. Practice Tees

It was great to see the continuation of projects to expand and improve the practice facility tees. Most recently, the Grandview practice tee was renovated to provide one level, which essentially more than doubled the available area for tee space. We did observe several pine trees on the east end of this practice tee that should be removed as well as a mesquite tree immediately north of this practice tee that should be pruned. There is a trend for golfers to spend more time on practice tees, thus the emphasis for these tee expansion projects. You may also consider investigating synthetic mats for use on the back of practice tees during the winter months when there is very little to no turfgrass recovery.



Congratulations on the successfully increasing the available tee space on the Deer Valley practice tee (left). It is recommended to remove four pine trees east/southeast of the practice tee to maximize turf health and recovery.



The SunSeeker application shows the pine trees southeast of the practice tee block morning sunlight in the winter (the blue line is the solar path on December 21st), late fall and spring.

Summary

Thank you for your continued support of the USGA Green Section and the invitation to return to RCSCW to visit with the agronomic team and discuss both short-term and long-range golf course improvement projects. It was impressive to see the work completed since my last visit in 2016 on the bunker renovation, expansion of practice tees and continuing work on the lakes. As these golf courses continue to age, there are large projects looming on the horizon such as irrigation replacement on the Grandview and Echo Mesa courses. More recently, with new developments from the Arizona Department of Water Resources, it is clear that golf courses across the state will need to reduce water use. As such, the idea of turf reduction will be even more at the forefront. The golf courses in the Sun City area are generally the facilities with the largest turf acreage in the state and therefore will be a focus for the Arizona Department of Water Resources. I look forward to working with the Recreation Centers through these important projects in the future. Best wishes for a successful overseeding. Please do not hesitate to contact my office should you have any further questions or concerns.

Respectfully submitted,

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USGA Green Section

Distribution:

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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.

