

Golf Course Advisory Board

Agenda

June 17, 2013

6:30PM

*Louisville Public Library
1st Floor Meeting Room*

1. Call to order
2. Approval of agenda
3. Approval of minutes – Item 1 thru 3 - 10 minutes
4. Bunker renovation plan and schedule – Rick Phelps -20 minutes
 - Brief overview of the construction drawings at the 90% completion level
 - Review typical bid documents and discuss coordination with the City “boilerplate” documents
 - Discuss the “sod liner” option, including cost, to determine whether to include in the base bid, or perhaps as an alternate bid item
 - Review project timing—outline dates for the bid process (documents available, pre-bid meeting, advertising requirements, bid due date, etc.)
5. Public comments (please limit to 3 minutes each)
6. GCAB discussion of Golf Course conditions and golfer concerns–30 minutes.
7. City Staff Update with WGP – Recovery Plan
 - a) Presentation by City staff with WGP - Golf Course conditions and funded action plans and schedules to quickly correct and resolve issues identified in GCAB review provided to Staff on 6/5/2013 and subsequent golfer complaints. – 60 minutes
 - b) Action item follow up – 5 minutes

Action Items from April 15 Meeting

- a) Do we need a Building Code Safety Audit of the Maintenance Shed?
Action: Joe **Outstanding from April Meeting**
- b) Organize the comparative inspection of other courses as soon as snow melts. Action: Joe **Outstanding from April Meeting**
Review survey sheets prepared by Sandy for golf course inspections

Board requests that Indian Peaks be included in the comparative inspection

Action Items from May 20, 2013 Meeting

- a) Resolve delay between Phelps and City GIS on the mapping issue – Joe
 - b) Provide bunker presentation to Joe and the “turf liner” contact list to WGP – Rick Phelps
 - c) Provide picture of the desk for the handicapping computer to WGP - Lisa
8. WGP update – 10 minutes
- a) Club house furnishing and cart GPS current plans and schedule.
9. Summary of new Action Items -5 minutes
10. Potential agenda items for July 15, 2013 next Board meeting in Louisville Library first floor meeting room - 10 minutes.
- a) Golf course turf condition issues with tees, fairways, rough, approaches, greens and bunkers.
 - b) Update on bunker renovation plans and funding
 - c) GCAB City Council presentation plans for August 27th Study Session.
11. Adjourn

Golf Course Advisory Board

Meeting Minutes

May 20 2013

Coal Creek Golf Course Clubhouse

Dillon Road

6:30 PM

Item I. Call to Order. Chairperson Ken Gambon called the meeting to order at 6:30 PM.

Roll Call was taken and the following members were present:

Board Members Present: Ken Gambon, Dennis Maloney, Tom Deany, Lisa Norgard, Perry Nelson & Sandy Stewart,

Board Members Absent: None

Staff Members Present: Joe Stevens, Allan Gill

Western Golf Staff Present: Bobby Heath

Council Members Present: None

Public: Debby Fahey

Item II. Approval of Agenda. The agenda was unanimously approved. Sandy Stewart proposed. Dennis Maloney seconded.

Item III. Approval of Meeting Minutes. The minutes from the 4/15/2013 meeting were unanimously approved. Dennis Maloney proposed. Tom Deany seconded.

Item IV. Staff Update.

- a. Rick Phelps updated the Board with progress on the bunker renovation plan. He is slightly behind schedule due to delays in coordinating with the City GIS Staff to overlay aerial photographs on the mapping database. Joe Stevens will work this issue. With this resolved, Phelps will have plans 90+% complete and ready for Board review by the next meeting. The plans will include details for holes 2, 3, 4 and 5 with concepts for hole 6 should the budget permit. The concept is to optimize the design for low

City of Louisville

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- maintenance with turf rolled down into the bunkers and minimal vertical sand flashing. The bunkers will be contoured to allow easy access on the side away from the hole and a steeper face towards the hole. Western Golf reminded the Board that the work planned for September/October will coincide with a busy playing schedule if weather permits and revenue may be affected due to the use of temporary greens and extensive ground under repair. WGP accepts that budget constraints force the project to proceed in annual stages but asked that work in 2014 be expedited as much as possible to minimize future disruption of play. Joe Stevens will work with WGP on the revenue problem. Phelps will provide Joe with the presentation on the bunker project for display at the June 7 Open House. The Board approved in principle the use of sod as an alternative base liner. Phelps will provide WGP with contacts on courses in the Pacific Northwest so WGP can confirm bunker maintainability with this technique.
- b. Work on the Clubhouse was completed on schedule despite the multiple change orders. With the additional work, costs went over budget and will be presented to council for approval of the over-run. The Board commended Allan Gill and the Clubhouse Staff for making this happen and working through the disruption. The Punch List is now complete including fixing the cart path drain. The Men's Club will provide a new desk for the handicapping computer and will provide a picture to WGP so that its location can be finalized. The Ladies League requests that the League Corkboard be re-hung in the Ladies Restroom. The booster pump by the 18th green has been tested satisfactorily with some minor issues to be resolved by Rainbird: a software upgrade is needed to coordinate the operation of the booster pump with the main pump and cooling of the electronics in the pump house will be improved.
 - c. The Open House is confirmed for 6:00 to 7:30pm on June 7. This will include course tours on the new golf carts.
 - d. So far, 10 of the 80 new trees have died and will be removed and replaced by Chris Lichty. This is a typical failure rate for Colorado. More trees may be found to be dying once the deciduous trees start to leaf. Tom Deany suggested that a tree be planted to obscure the 5th green from the 4th fairway to avoid confusing 1st time golfers.
 - e. Action Items from April 15 Meeting: all closed except for two:
 - Do we need a Building Code Safety Audit of the Maintenance Shed?
Action: Joe **Outstanding from April Meeting**
 - Organize the comparative inspection of other courses as soon as snow melts. Action: Joe **Outstanding from April Meeting**

Item V. WGP Update

- a. Clubhouse Progress: The new furniture should be delivered and put in place by May 31. All railings will be painted in taupe and the back deck will be epoxy painted.
- b. The board commented that despite the recent rains, last year's maintenance on the drains was proving successful. WGP was

- commended on their work and encouraged to continue efforts at the same level so that major capital projects will be delayed as much as possible.
- c. The new carts will arrive shortly. GPS has been purchased on a 6-month trial basis. The \$35K annual cost will be offset by a \$1 increase in cart fees. This may be a good marketing onus for Coal Creek.
 - d. The Golf course is slow to come out of hibernation due to the weather. Greens are slow and bumpy but Verticutting and top dressing is being done to correct. Aeration was not done this year due to weather but root condition is good.
 - e. Yardage markers are being re-installed on the new sprinkler heads.
 - f. WGP provided a list of ongoing projects: this will be updated at each meeting and included in the Board Package.
 - g. WGP provided a list of capital purchases made by them for the Golf Course in 2012/2013 and this investment totals \$1.05M
 - h. The WGP Y-T-D financial results were included in the Board Package. Revenue is under plan due to the recent snow.

Item VI. Other Issues

- Chairperson Gambon welcomed the presence of Debby Fahey at our meeting.
- The Board congratulated Ken on receiving the President's Volunteer Service Award at the Gold Level for his outstanding 500+ hours of service to the Community. He received a gold badge and a signed letter from President Obama.

Item VII. Potential Items for the June Meeting

- Final review of bunker renovation design.
- Discuss Feedback on Open House
- Update WGP Project List
- Review progress on tree replacement

Item VIII. The next meeting is June 17 at 6:30PM in the Louisville Public Library, 1st Floor Meeting Room

Item IX. Adjourn. The meeting was adjourned at 8:15pm Tom Deany proposed, Lisa Norgard seconded.

Action Items from May 20 Meeting

Action	Assignee	Date Initiated	Date Closed
Do we need a Building Code Safety Audit of the Maintenance Shed	Joe S	4/15/13	
Organize the comparative inspection of other courses as soon as snow melts.	Joe S	4/15/13	
Resolve the delay between Phelps and City GIS on the mapping issue		5/20/13	
Provide bunker presentation to Joe and the "turf liner" contact list to WGP: Rick Phelps	Rick Phelps	5/20/13	
Provide picture of the desk for the handicapping computer to WGP	Lisa N	5/20/13	

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	Mar		April				May				June				July				August				September					October									
TASK	18	25	1	8	15	22	29	6	13	20	27	3	10	17	24	1	8	15	22	29	5	12	19	26	2	9	16	23	30	7	14	21	28				
Preliminary Design, DD	█																																				
Design Review										█																											
Final Design, CD's, Bid Docs										█	█	█	█	█																							
Bidding, Review, Selection, Contract														█	█	█	█	█	█	█																	
Construction																																					
#2 demo, rough shape, #3 demo																										█											
#2 finish, #3 rough shape, #4 demo																																					
#3 finish, #4 rough shape, #5 demo																																					
#4 finish, #5 rough shape																																					
#5 finish, punch list																																					

June 11, 2013

To: Joe Stevens, Director of Parks and Recreation

From: Eric Jensen, PGA General Manager & Chris Bradford, GCSAA Golf Course Superintendent

Re: Course Conditions and winter damage

Joe:

What a difference a year makes is a common theme many Golf Course Superintendents are saying. First off it's true the weather could not be more different this spring from last year. By end of April last year we had mowed greens several times, aerified and we had nearly 8000 rounds of golf. This year we are 0 for three on these items and it was hard to say when things would start acting like spring around here. (Following pictures **ARE NOT** Coal Creek, but rather other area courses as of 6/10/2013).



The weather pattern we are currently experiencing is more normal than not, over the last several seasons we have been treated to extremely warm early spring temperatures. Those temperatures were great to get things going, but then the inevitable hard freeze would hit putting the brakes on active growth. The turf may have been green but it wasn't happy or growing for a while after that. This year ended up to be a slow start of the season with soil temperatures being 5 to 10 degrees cooler in May than this time a year ago. We as Superintendent's routinely try to manipulate Mother Nature, sometimes with a high degree of success and sometimes with a lower degree of success. The key is knowing when to push things and knowing when to back off. It's a fine line that is walked at all golf courses that deal with seasonal turfgrass.

Over the years I have always said that in Colorado I think it is harder to keep the turf alive in the winter versus the summer. Some of the reasons being that during the winter we experience some of our lowest humidity's in addition to high winds. These two factors combined rapidly dry out turfgrass as well as other plant materials found on the golf course.

Another key factor that affects winter turfgrass viability is exposure. Throughout the course there are many different exposures that leave the turf either fully exposed or completely under snow cover for several months.

Throughout the winter we actively scout known problem areas for desiccation. We did have some expected areas that were going to be an issue to be addressed going into the season that struggled with the reclaimed water and did not reestablish as anticipated. One of our favorite techniques in determining the health of the turf is "the foot rub". A simple rubbing of the turf with your foot removes the dead leaf tissue revealing viable green leaf blades below.

Going into April we were in pretty good shape for minimal damage this season until the bottom fell out on the weather. Looking at the weather station data beginning April 1st (see data on pages 8 and 9) you can see some dramatic shifts in the weather and temperatures. The days preceding the largest temperature fluctuation April 10th we were experiencing the same warm weather as last season and the plants were beginning to come out of dormancy. There was a 70° difference in highs and lows from April 5th to April 10th. There were also three additional events that drove temperatures below freezing that caused turfgrass loss in a few different ways. Desiccation, snow mold, crown hydration, freeze-thaw cycles, ice cover, tree root competition and shade coupled with public use of the course has created several visible signs of turf loss at Coal Creek. Some quick information on these types of damage is explained below:

- **Desiccation:** Winter desiccation is the death of leaves or plants by drying during winter when the plant is either dormant or semi-dormant. Desiccation injury is usually greatest on exposed or elevated sites and areas where surface runoff is great. Tree root competition for water also affects the quality of the turfgrass. This type of winter damage can most often be found on greens that are exposed to the cold, dry, winter winds. The extent of damage is dependent upon to location of the green and the length of exposure to the winter air. The most susceptible green to winter desiccation is 15 due to its elevated location. **We experienced this type of damage on fairways, approaches, roughs and some areas of greens.**



- **Snow Mold Fungi** There are two types of snow mold fungi which can present problems in Colorado. "Pink Snow mold" prefers no snow cover and is active when the temperature is just above freezing. "Gray Snow mold" presents itself under a prolonged, dense snow cover. CCGC staff preventatively applies plant protectants each fall to discourage both types of fungi and the damage they are capable of inflicting. **We did not experience any damage from snow mold.**
- **Crown Hydration:** Occurs when large amounts of surface water from snow melt turns into ice crystals outside the plant cell (extracellular) of the turfgrass crown tissue. As these ice crystals form and enlarge, they pull water out of the cell, which will result in dehydration. At some point a dehydrated cell and cell membrane stop functioning and the result is cell death. Many times superficial damage occurs but if enough of the cells in the crown of the plant die, the entire turfgrass plant will die as a result. **We experienced a lot of damage of this type from ancillary usage of the golf course for winter activities as seen in the photos below.**



- **Freeze-thaw Cycles:** These cycles are most damaging when they occur in the late winter months. Once the turfgrass plants begin to break dormancy, the tender new plants are highly susceptible to freezing. A sudden drop in temperatures following dormancy can actually rupture the plant's cell walls causing death. While we can't control the weather, the best we can do is manipulate the plant's nutrition. By timing fall fertilizer applications in a manner that allow the plants to harden off in fall, and by slowly bringing the plants out of dormancy in the spring, we can minimize the potential for damage. Since our recent thaw cycle has occurred in early spring, the turfgrass plants did not have enough carbohydrate reserves remaining to remain viable. **We experienced a lot of damage of this type from ancillary usage of the golf course for winter activities as seen in the photos below.**



- **Ice Cover:** Since even dormant turfgrass plants require both oxygen and the ability to release carbon dioxide, a prolonged, thick ice cover poses the greatest risk for winter turfgrass damage. The two predominate turfgrass species found on CCGC's greens, tees, and fairways, creeping bentgrass and annual bluegrass, are quite different in their ability to tolerate ice cover. Bentgrass can survive over 80 days of ice cover while Annual Bluegrass can be completely killed after only 40 days. It is important to note that not all ice is the same. For example if we received a couple of inches of rain on warm day, then the night time temperature dipped into the single digits, a hard, impermeable layer of ice would be formed. This type of ice presents the largest potential for turfgrass suffocation. **Severe Ice Cover damage can be seen on greens 3, 5, and 6**



- **Tree Root Competition:** Several greens are susceptible to tree root competition for water especially from trees such as cottonwoods, white poplar and willow. Water loving species like these will have surface roots that have a vascular capacity to draw water from the soil at a more rapid rate than turfgrass. When roots are severed they respond by producing approximately 1 – 6 new roots that run parallel to the severed stem. The new roots will grow about 18” per year. Tree roots are very opportunistic and find the best possible rooting medium in the area and colonize it. Roots have been found 25 feet below the surface and will grow around barriers. When they find a way around the barrier to an attractive area they aggressively colonize the area. Tree roots can extend three times past the drip line of a tree. Prolonged competition will cause turf loss in these areas and also create avenues for pests such as ants to move in and colonize these areas. **Tree root competition can be seen on holes 5 and 18.**



- **Shade:** Another factor that can lead to some of the previous issues and year round is shade. Shade affects several properties of the turfgrass plant morphology including leaf thickness, plant height, density, tillering, growth habit and root: shoot ratio. The plants in these areas will have lower carbohydrate reserves, reduced transpiration, lower respiration, increased succulence and reduced cuticle thickness. These plants have a tendency to be weaker and do not receive to most efficient light in the morning to enhance growth. Early morning light is best between the “blue and red” spectrum for optimal photosynthetic activity. The tree population at Coal Creek is thick and creates its own problems. **Shade issues can be seen on holes 3, 5, and 18.**



- **Public usage:** As a centerpiece to the neighborhood Coal Creek is an attractive place to spend time. During periods of frost and snow we receive our most damaging activities of cross country skiing, sledding and walking. Even the geese have created damaging footprints to go along with their other favorite past time. We have asked individuals in the past to refrain from using the turf areas and use the concrete paths but the message never sinks in.



The plan moving forward to enhance recovery and establish outstanding playing conditions is as follows: Priority will be given to greens, tees and approaches. Fairways and roughs will be addressed after the initial rounds of practices are completed.

Greens:

- Verticut/Topdress/Seed weekly for one month to increase seed bed and enhance recovery. Dates in June: 3 & 4, 10 & 11, 17 & 18, 24 & 25
 - Fertilize weekly with 0.10#N/1000 to promote top growth.
 - Overseed at a rate of ½ lb. bentgrass seed per 1,000 sq.ft.
- Needle tine desiccation areas June 14 & 17

Tees & Approaches:

- Aerification to begin week of June 10. Removal of cores with ½” tines.
 - Overseed with Kentucky Bluegrass/Perennial Rye mix at a rate of 2#/1000.
 - Slit Seed with Kentucky Bluegrass/Perennial Rye mix at a rate of 2#/1000 in severe areas.
 - Topdress and level as possible.
 - Sod cutting to lower crowned tees can be done when seed has established.

Fairways:

- Aerify and slit seed necessary areas. Work to begin week of June 17.
- Soil drench Fairy Rings with fungicide, aerify, overseed and topdress.

Rough

- Aerify and/or slit seed necessary areas. Estimated begin date week of June 12.

Course fertilization for tees, fairways and rough has been scheduled for the week of June 10th. Fertilization has been delayed several times this year due to weather.

Root pruning for the putting green, #5 green and #18 green will be given priority and arranged with the city forester. Root pruning can be accomplished with a trencher, vibratory plow or a stump grinder to sever roots preferably 4.5 feet from the green. This process should be repeated every 3 years. Creating a better rooting zone for the trees rather than the green by watering, mulching and fertilizing in an area away from the green is another technique to be tried.

In closing, there is no guaranteed way to prevent winter injury and damage or to produce an instant recovery. This winter certainly caused havoc for many of the area facilities and Coal Creek is no exception. Some of the local facilities were in fact able to avoid some of the winter issues. While we cannot pin point specific reasons for less winter kill in one area over another some deciding factors can include things like frost free irrigation systems, varying soil compositions and makeup (quality of soil), amount of traffic during the winter months, less Poa Annu, shade and exposure conditions, and even protection from wind. You will find many pictures attached that show other area courses and the damage they received. While I have chosen not to name these facilities, be assured that they are in our competitive set and include some of the facilities that have been discussed recently by the Louisville GCAB. Knowing that the Masters was a few weeks ago, and while all that comes with the visibly appealing green at that venue is good for business, it might tempt many to make a poor agronomic decisions based on color alone. Don't do it; exercise patience within reason and remember this is a marathon not a sprint.

Daily Climatic Data

Coal Creek Golf Course

Date	Min Temp (F)	Max Temp (F)	Relative Humidity (%)	Solar Radiation (langley)	Wind Run (mi./d)	Rainfall (inches)	ETo (in./d)
4/1/2013	26.24	65.59	85.20	335.846	71.04	0.00	0.11
4/2/2013	33.34	47.16	84.00	95.566	57.12	0.20	0.04
4/3/2013	34.05	60.51	96.50	522.763	12.48	0.23	0.12
4/4/2013	33.56	66.77	81.10	535.329	35.52	0.00	0.14
4/5/2013	48.56	72.09	31.87	379.696	47.76	0.00	0.15
4/6/2013	40.32	69.13	35.60	371.817	102.72	0.00	0.17
4/7/2013	36.17	63.59	78.20	551.593	80.16	0.00	0.14
4/8/2013	34.52	61.47	69.33	337.411	82.80	0.00	0.11
4/9/2013	15.35	43.62	91.10	271.215	34.08	0.02	0.06
4/10/2013	1.98	27.54	89.60	389.364	0.24	0.12	0.05
4/11/2013	18.09	53.89	89.20	384.109	36.00	0.04	0.09
4/12/2013	28.13	59.34	92.40	450.823	45.84	0.00	0.11
4/13/2013	27.90	67.01	93.30	386.474	53.52	0.00	0.11
4/14/2013	36.17	66.16	46.55	602.903	167.76	0.17	0.23
4/15/2013	23.99	44.33	94.00	56.195	64.56	0.00	0.02
4/16/2013	21.04	32.04	95.00	178.406	24.72	0.00	0.03
4/17/2013	21.51	33.69	96.60	182.266	121.20	0.01	0.03
4/18/2013	8.26	35.58	90.00	614.315	35.04	0.43	0.09
4/19/2013	20.21	51.42	39.51	542.688	93.84	0.01	0.14
4/20/2013	29.78	56.97	84.00	523.335	58.32	0.00	0.12
4/21/2013	30.38	61.11	85.90	460.448	57.60	0.00	0.12
4/22/2013	25.65	57.69	71.00	180.970	39.36	0.01	0.07
4/23/2013	19.38	30.61	94.50	419.144	19.44	0.47	0.06
4/24/2013	20.33	54.25	78.70	621.575	35.52	0.03	0.13
4/25/2013	27.07	65.82	63.32	605.338	25.20	0.00	0.16
4/26/2013	38.54	66.06	53.66	624.374	66.00	0.00	0.18
4/27/2013	36.77	73.02	34.55	626.522	57.60	0.00	0.21
4/28/2013	45.27	76.78	23.06	839.015	74.40	0.00	0.23
4/29/2013	46.69	77.61	56.13	537.972	79.68	0.00	0.19
4/30/2013	40.42	75.29	52.36	365.198	79.20	0.00	0.16
5/1/2013	26.83	54.84	97.30	227.556	38.16	0.24	0.06
5/2/2013	18.66	42.91	74.20	646.383	16.56	0.36	0.11
5/3/2013	24.47	58.86	84.60	603.257	28.56	0.00	0.14
5/4/2013	32.04	57.79	83.00	530.738	42.00	0.00	0.13
5/5/2013	35.12	55.20	63.58	350.760	45.84	0.00	0.10
5/6/2013	34.88	63.57	76.10	512.827	54.96	0.00	0.14

Daily Climatic Data

Coal Creek Golf Course

5/7/2013	41.84	68.90	74.20	491.750	32.16	0.00	0.15
5/8/2013	42.08	60.04	71.10	212.402	73.68	0.29	0.08
5/9/2013	44.92	57.69	81.60	347.207	80.88	0.29	0.11
5/10/2013	37.36	64.76	78.10	538.901	36.00	0.00	0.15
5/11/2013	40.19	66.54	81.00	503.947	59.76	0.00	0.15
5/12/2013	47.64	78.08	56.38	671.902	47.52	0.00	0.22
5/13/2013	53.06	84.47	28.86	801.852	44.40	0.00	0.23
5/14/2013	60.87	88.36	28.47	426.267	73.20	0.00	0.22
5/15/2013	50.00	79.74	63.49	463.519	73.92	0.07	0.18
5/16/2013	50.23	79.27	72.50	486.098	32.16	0.00	0.17
5/17/2013	47.75	88.36	68.48	623.852	33.36	0.00	0.22
5/18/2013	52.47	82.71	22.32	480.316	61.68	0.00	0.21
5/19/2013	47.17	70.54	39.64	474.334	84.48	0.00	0.19
5/20/2013	45.99	64.99	79.90	388.721	47.52	0.06	0.12
5/21/2013	39.61	69.01	82.20	542.964	34.80	0.01	0.15
5/22/2013	40.19	75.85	71.80	596.345	15.12	0.00	0.18
5/23/2013	47.05	75.60	90.30	565.295	36.72	0.02	0.17
5/24/2013	41.37	81.75	92.50	829.312	47.76	0.00	0.20
5/25/2013	49.06	88.36	80.50	541.341	28.08	0.00	0.19
5/26/2013	51.19	88.13	43.64	449.634	26.16	0.00	0.18
5/27/2013	46.81	82.47	38.77	431.047	45.36	0.00	0.18
5/28/2013	44.57	79.86	64.68	481.908	37.92	0.00	0.17
5/29/2013	45.52	75.87	76.50	485.815	57.84	0.56	0.17
5/30/2013	43.62	67.95	43.46	693.776	92.64	0.00	0.22
5/31/2013	46.09	70.79	29.55	714.171	100.80	0.00	0.25
6/1/2013	41.84	69.96	67.94	605.661	23.28	0.00	0.17
6/2/2013	38.42	83.30	80.30	845.770	18.00	0.00	0.25
6/3/2013	49.41	89.19	43.55	827.291	55.44	0.00	0.24
6/4/2013	46.22	85.42	71.90	465.736	26.16	0.00	0.17
6/5/2013	45.52	68.67	85.80	213.143	33.84	0.11	0.08
Total	2,419.77	4,329.96	4,564.45	31,266.47	3,445.44	3.75	9.62
Minimum	1.98	27.54	22.32	58.20	0.24	0.00	0.02
Maximum	60.87	89.19	97.30	845.77	167.76	0.56	0.25
Average	36.66	65.61	69.16	473.73	52.20	0.06	0.15

2013 Irrigation Issues Log

<u>Date</u>	<u>Description</u>
5/1/2013	Freeze break #3 Green - Repair 19' pipe + head
5/1/2013	Freeze break #4 Bunker/ restroom - replaced head + 23' pipe
5/1/2013	Freeze break in swingjoint #11 tee - replaced pipe
5/2/2013	Pinhole leak 8" mainline #13 tee
5/2/2013	Head + swing joint #9 fairway (Brickman install)
5/2/2013	Lateral leak @ toe #4 fairway - repaired slipfix
5/2/2013	Flush head - stuck on (Brickman install) #1
5/2/2013	Flush head - stuck on (Brickman install) #3
5/2/2013	Flush head - stuck on (Brickman install) #4
5/2/2013	Flush head - stuck on (Brickman install) #4 perimeter
5/3/2013	Isolated mainline leak #4 (4") - repaired w/ slipfix
5/3/2013	Stuck head #16 tee (Brickman install) - replace valve
5/3/2013	Flush head - stuck on #4 perimeter/green (Brickman)
5/3/2013	Flush head - stuck on #9 Tee (Brickman install)
5/3/2013	Flush head- stuck on #13 fairway x2 (Brickman)
5/4/2013	Stuck head #14 fairway (Brickman install)
5/7/2013	Flush head #2 tee (Brickman install)
5/7/2013	Flush head #10 tee (Gate valve leaking)
5/7/2013	Repair lateral + swing joint #12
5/8/2013	Flush head @ putting green (Brickman install) club landscape contractor
5/8/2013	Repair break @ chipping green 2" lateral -> 1 1/4"
5/8/2013	Repair and flush head #10 approach
5/8/2013	Flush head stuck on (Brickman install) #1 tee
5/9/2013	Repair broken head + line @ clubhouse
5/9/2013	Isolate/ Repair head on #10 tee
5/10/2013	Replace missing head driving range berm
5/10/2013	Repair surging joint behind #7 green
5/10/2013	Stuck head @ back of range - flushed
5/11/2013	Stuck head #2 - flushed
5/11/2013	Stuck head #6 - flushed (Brickman install)
5/11/2013	Stuck head #17 tee - flushed
5/11/2013	Stuck head #17 fairway - flushed
5/13/2013	Replace broken head near ball machine
5/13/2013	Repair broken elbow @ swing joint #4 fairway
5/13/2013	Head stuck on #14 fairway (Brickman install)
5/14/2013	Perimeter head not turning #14 - replaced w/ new head
5/14/2013	missing hammer on rotor - replace arm + body (brass)
5/15/2013	Flush head #16 fairway (Brickman install)
5/15/2013	Flush head #9 fairway (Brickman install)

5/15/2013	Lateral leak #5 tee -repaired w/ slipfix
5/16/2013	New head + swing joint #3 (replace bad head)
5/16/2013	Flush head #15 green (Brickman install)
5/16/2013	Flush head #3
5/16/2013	Readjust all perimeter heads holes 1-4
5/17/2013	Replace blow off head #10 tee - swing joint
5/17/2013	Electrical problem sta*1 @ #13 green
5/17/2013	Flush head #16 approach
5/17/2013	Readjust heads along #14
5/18/2013	Stuck head #1 approach - flushed
5/18/2013	Stuck head #9 fairway (Brickman install)
5/18/2013	Stuck head #7 approach (Brickman)
5/18/2013	Stuck head #14 fairway (Brickman install)
5/19/2013	Stuck valve @ clubhouse - replace bonnet
5/19/2013	Stuck head #15 tee - flushed
5/20/2013	Lateral leak #2 tee @ tee
5/20/2013	Flush heads #9 fairway 150 to green
5/20/2013	Replace broken head #1 tee
5/20/2013	Valve leak #4 - checked and tightened packing
5/20/2013	Raise level heads installed by Brickman 11/2012
5/21/2013	Flush heads on #14 fairway (Brickman installed)
5/21/2013	Flush heads on #15 tee (Brickman installed)
5/21/2013	Flush heads on #16 fairway (Brickman installed)
5/21/2013	Leak @ #16 red tee - replaced swing joint
5/22/2013	Repair quick coupler @ #18 tee - leaking in use
5/22/2013	Mainline leak #4 - pinhole leak steel fitting (Hand water #4 green)
5/22/2013	Repair lateral #4 - damaged by mainline
5/22/2013	Flushed stuck head #12 tee (blue)
5/22/2013	Repaired broken swing joint #12 tee (white)
5/23/2013	Tripped breaker #13/ PG Controller - electrical
5/23/2013	Flushed heads #1 tee - valve turned off (Brickman)
5/24/2013	Repaired broken head #18 fairway (Used recycled parts)
5/24/2013	Electrical problem @ head by controller #18
5/24/2013	Flushed head by #14 bunker
5/25/2013	No water to club turf - broken isolation valve
5/25/2013	Head + swing joint blow out #9 fairway
5/26/2013	Ponds too low - irrigation stopped
5/27/2013	Lateral leak off #2 tee
5/28/2013	Mainline leak #1 (6")
5/29/2013	Replace Broken isolation valve DR
5/29/2013	Replace broken isolation valve #2 Tee
5/29/2013	Swing joint leak #4 perimeter

5/30/2013	Flush heads#16 fairway - (12)
5/30/2013	Service tee leak #4 perimeter - replace elbow
5/30/2013	Broken elbow #6 fairway - head blow out
5/30/2013	Replace incorrect head #14 green front left
5/31/2013	Head leak #5 approach
5/31/2013	Disconnected solenoid #4 green right side
6/1/2013	Replace solenoid #13 green station 1
6/1/2013	Closed isolation valve #18 - opened up - no problems
6/1/2013	Head #1 approach blow out (Brickman)
6/2/2013	Leaking quickcoupler #15 green - replace cogs
6/2/2013	Selector valve @ putting green broken. Replace
6/3/2013	Leaking swing joint #3 tee perimeter (Brickman)
6/3/2013	Incorrect head installed by Brickman - 4 tee (312 diamond cir)
6/3/2013	Incorrect deep runs on heads - water inspection
6/4/2013	Leaking head on #5 approach
6/4/2013	Broken head - rough on #8 back tee (Brass)



Area Golf Course (not to be named)



Area Golf Course (not to be named)



Area Golf Course (not to be named)



April 22, 2013 (Area Course)



May 20, 2013 (one month later)



Area Golf Course (not to be named)



Area Golf Course (not to be named)



Area Golf Course (not to be named)



Area Golf Course (not to be named)



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Area Golf Course (not to be named)



Area Golf Course (not to be named)



Coal Creek #1 Green 5/30/2013



Coal Creek #1 Green 6/11/2013



Coal Creek #2 Green Collar 5/30/2013 Coal Creek #2 Green Collar 6/11/2013



Coal Creek #3 Green Repair 5/30/2013



Coal Creek #3 Green Repair 6/11/2013



Coal Creek #5 Shade and Root issues



Coal Creek #5 Shade and Root issues 5/30/2013



Coal Creek #5 Shade and Root issues 6/11/2013



Coal Creek #6 Green Ice Damage 5/30/2013



Coal Creek Green Ice Damage 6/11/2013



Coal Creek #6 Ice Damage 5/30/2013



Coal Creek #6 Ice Damage 6/11/2013



Coal Creek #8



Coal Creek #9 Public Damage 5/30/2013



Coal Creek #9 Public Damage 6/11/2013



Coal Creek #10 Public Damage 5/30/2013



Coal Creek #10 Public Damage 6/11/2013



Coal Creek #13 Public Damage (Ski tracks) 5/30/2013



Coal Creek #13 Public Damage (Ski tracks) 6/11/2013



Coal Creek #15 Green 5/30/2013 weak area due to lack of irrigation pressure 5/30/2013



Coal Creek #15 Green weak area 6/11/2013



Coal Creek #18 Green Complex Tree Roots



Coal Creek #18 Green...turf competing for water with tree roots 5/30/2013



Coal Creek #18 Green...turf competing for water with tree roots 6/11/2013

Ah, Patience Golfhopper!

Winter damage is frustrating to golfers and superintendents, and recovery depends largely on spring weather.

Matt Nelson, USGA Green Section

Winter injury on golf greens throughout the Rocky Mountain region of the United States and Canada is unpredictable at best. Weather extremes during the winter months pose the potential for turf damage from freeze injury, disease, direct low temperature kill and desiccation. Conditions during the fall and winter directly affect a turfgrass plant's ability to achieve and maintain maximum winter hardiness through various physiological processes. Differences in turfgrass species composition, drainage, shade, exposure, construction type and other microclimate factors account for often wide ranges of turf damage at golf courses located in close proximity with each other.

Some of the most severe winter injury on golf greens observed this spring is along the Rocky Mountain Front of Colorado, portions of Wyoming and eastern Utah. Symptoms of damage appear consistent with direct low temperature kill and/or desiccation. Both bentgrass and annual bluegrass greens have suffered damage, and higher, exposed surfaces exhibit injury as opposed to only in surface drainage patterns, which is consistent with freeze/thaw damage. Warm weather in mid-winter can cause turf to lose a considerable amount of winter hardiness in a short time, and when extreme cold weather follows the potential for injury increases.

Many golf courses across the region remain open for play during winter in the absence of snow. While this can help maintain a revenue stream at the golf course, remaining open makes it practically impossible to implement preventative practices such as covering, heavy topdressing and watering when necessary during daylight hours. Unless winter injury is chronic, most operations will forego preventative maintenance that involves course closure in favor of allowing winter play.

Recovery from winter injury is largely dependent on favorable spring weather than enables soil temperatures to warm enough for germination of new seed and vegetative recovery of surviving plants. Covers can be used effectively to artificially stimulate warmer soils and plant growth, however, using temporary greens or closing the golf course is necessary to implement this practice. Traffic on winter injured greens will almost always delay recovery significantly, and optimal playing conditions may not be achieved until early summer. Patience is usually the toughest thing to find when it comes to promoting recovery on winter injured greens.

The following practices have demonstrated the best results for generating rapid recovery of putting green turf following winter kill:

- Verticut to a depth of ¼ inch below the bed knife in two directions and use small diameter aeration tines to create as many shallow holes as possible. This creates the best seed bed for newly introduced seed.
- Overseed at a rate of ½ lb. bentgrass seed per 1,000 sq.ft.
- Apply homogenous starter fertilizer at a rate of ½ lb. N and P per 1,000 sq.ft. Following germination, apply light rates of soluble nitrogen weekly until recovery is complete. Foliar applications will provide good results once new turf can tolerate traffic.
- Light topdressing will provide better seed to soil contact and protect seed and newly emerging turf.
- Consider the use of covers to accelerate germination and establishment as soil temperatures remain cool. Some golf course superintendents have had good success using clear plastic for a few days until seed germinates, and then switch to permeable covers during establishment.
- Irrigate lightly during the day to prevent seedling desiccation. Spring wind common to the region will stress establishing grass plants.
- Raise mowing heights to around 3/16 inch and use walk behind mowers equipped with smooth rollers to ease stress on the sensitive, juvenile turf.
- Close the greens to traffic if possible until new seedlings have been mowed a few times.

- The use of commercial or nursery grown sod (if survived) may be the most rapid method of restoring the putting greens, but cost can be a limiting factor. Newly installed sod requires *at least* 3 weeks to establish before it will be ready to tolerate traffic. This process may require more time if weather remains cool and/or overcast.

While winter injury on putting greens is frustrating to golfers, golf course superintendents, and golf course operators, Rocky Mountain winters will cause damage at all golf courses sooner or later. Factors beyond anybody's control can overcome even the best management efforts. If winter kill occurs on greens with regularity, a change in programs may be prudent including renovation to provide positive surface drainage to reduce ice formation and freeze injury. Removal of trees that shade greens during fall and winter will enhance turfgrass hardening and reduce the duration of snow and ice on greens. Utilizing protective turf covers and/or heavy topdressing, applying anti-transpirants and regular winter watering will lessen the chance for desiccation, but will require closing the greens to play to implement these procedures. Using the best available disease control products is a good policy where snow cover persists for several months. And, in some cases, renovation to a more hardy turfgrass species will be economically viable.

Unfortunately, there is no silver bullet for preventing winter injury or magically producing an instant recovery. While the previously listed techniques will usually provide the best results for turf recovery, and the factors to consider for preventing winter injury enhance odds of survival, it is Mother Nature that holds the trump card. Vigorous recovery will resume once soil temperatures rise, nighttime freezing subsides, and longer, sunny days enhance grass cover. Until then, patience is indeed a virtue.

Frost delays



How can a footprint be a killer?

When it's a footprint made on a putting surface that's covered with frost. It's hard to believe that simply walking across a golf green covered with frost can cause so much damage, but the proof will be there in a few days as the turfgrass dies and leaves a trail of brown footprints. That's why most courses will delay starting times until the frost has melted. And it's also why golfers who appreciate a quality putting surface will be patient during frost delays.

Why does frost cause problems?

Greens are fragile. The putting surface, or green, is an extremely fragile environment that must be managed carefully and professionally. Remember that every green is a collection of millions of individual grass plants, each of which is a delicate living thing. Obviously, Mother Nature never meant for these plants to be maintained at 3/16 or even 1/8 of an inch for prolonged periods. This stress makes greens constantly vulnerable to attacks from insects, disease, heat, drought, cold -- and frost.

Frost is essentially frozen dew. It can form when the temperature (or wind chill) is near or below the freezing point. The ice crystals that form on the outside of the plant can also harden or even freeze the cell structure of the plant. When frosted, the normally resilient plant cells become brittle and are easily crushed. When the cell membranes are damaged, the plant loses its ability to function normally. It's not much different than cracking an egg. Once the shell is broken, you can't put it back together.

The proof is in the prints

Although you won't see any immediate damage if you walk on frosted turf, the proof will emerge within 48 to 72 hours as the leaves die and turn brown. And, since just one foursome can leave several hundred footprints on each green, the damage can be very extensive.

Thanks for understanding

The damage isn't just unsightly -- putting quality will also be reduced until repairs are made. Those repairs are expensive and, in some cases, the green may have to be kept out of play for days or weeks until the new turfgrass is established. A short delay while the frost melts can preserve the quality of the greens, prevent needless repairs and may even save you a few strokes the next time you play.

Key points:

Simply walking across a golf green covered with frost can cause damage.

One foursome can leave several hundred footprints on each green, the damage can be very extensive.

Greens are fragile, so they vulnerable to attacks from insects, disease, heat, drought, cold -- and frost.

When frosted, the normally resilient plant cells become brittle and are easily crushed.

A short delay while the frost melts can preserve the quality of the greens and prevent needless repairs.

Stanley J. Zontek, Director
USGA Green Section, Mid-Atlantic Region

WINTERKILL

PREVENTING WINTER INJURY AND SPEEDING RECOVERY WHEN DAMAGE OCCURS

In 2010, and for the first time in years, golf courses in the British Isles experienced the effects of winterkill on putting greens. This phenomenon is a common and well-understood turf management problem in the northern regions of the United States. This article will provide a quick review on ways to prevent winter damage and speed recovery of damaged turf when winter injury does occur.

Space does not allow for a complete discussion of all the possible mechanisms and types of winter injury that can occur, but the most common winterkill problem centres around ice accumulation on the turf. Ice damage is the one form of winter injury most dreaded by our turf managers.

Winterkill is a devastating problem on turfgrass. Unfortunately, winterkill is also one of the more difficult problems to manage because so much depends

upon the weather and the amount of ice and snow experienced. Indeed, winter injury is invariably determined by the type of ice that develops and the length of time it stays on the grass.

ICE TYPES

There are different types of ice. The less damaging form is granular ice, which is ice that is not frozen to the crown of the grass plant or onto the soil/thatch line, rather it exists on top of the grass, leaving air separation between the ice

and the grass plant. The most damaging form of ice is the type that freezes solid to the grass plant, the thatch and soil. Over time, the grass plant is damaged as a result of anoxia, i.e. the lack of oxygen. If ice of this type persists for too long, a certain amount of turf loss is likely to occur.

TYPE OF GRASS

There is a significant difference between grasses regarding ice damage. As a species, annual meadow-grass (*Poa*



Image 1

annua) is likely to be damaged, whereas creeping bentgrass (*Agrostis stolonifera*) is much more tolerant with respect to the effects of ice damage in the winter.

Image 1 illustrates the principal and most devastating form of winterkill – ice damage. Granular ice is displayed in the foreground and hard, clear ice in the background. This low spot holds water and ice, which can contribute to crown hydration. Fortunately, this green is pure bentgrass, which reduces the potential for winterkill. If this green had been *Poa annua*, a certain amount of winter damage would be expected.

CROWN HYDRATION

This damage occurs during freeze and thaw cycles when temperatures become warm during the day, the snow and ice melts, then it freezes again at night. The more frequently the freeze/thaw cycles occur, the more likely there will be winter damage. The most affected areas are shaded turf or low spots that hold water.

Turf managers in the USA and Canada monitor ice accumulations as the winter moves on. If the accumulations exist for too long, usually 30-days or more, superintendents consider ways to break up the ice (nb: be very careful to avoid mechanical damage to the turf). This

usually involves removing the snow on top of the ice, attempting to crack the ice, and spreading a dark-coloured organic fertiliser, black sand or other coloured product. It's amazing how ice can be broken-up by using dark-coloured top dressings, even in sub-freezing temperatures.

If ice damage is suspected, it is important to confirm this point. Remove some plugs of turf, place them in a window or warm location and see if the grass grows. If it does – fine, if not – then you should communicate this fact to whoever needs to know.

RECOVERY

Recovery from winterkill can be agonisingly slow and seed will not germinate until the soil warms. Spot plugging and re-sodding the most damaged areas are always good options. If seed is used, there must be good soil-to-seed contact and extra fertiliser needs to be applied, especially quick-release products like ammonium

sulphate and urea. There are two levels of fertility – the maintenance level of fertility and the establishment level of fertility. With winterkill, you are trying to re-establish grass – a point not to be missed.

PREVENTION

If your winter injury problems are worsened by shade, open up these areas to allow more sunlight. If low spots hold ice and water – improve surface drainage. If your turf is primarily *Poa annua*, try to increase the amount of bentgrass over time.

In summary, of all the forms of winterkill, the most common we see and the most devastating that can occur are associated with ice. A blanket of snow can be good for grass, but ice is never good.

Stanley J. Zontek is the Director of USGA's Mid-Atlantic Region. He has also served as Director of the North-Central and Northeastern Regions during his tenure with the Green Section. Stan joined the USGA Green Section in 1971 and is a graduate of Penn State University.

EVERY BUNKER HAS A GREEN LINING

By Larry Gilhuly, Director
February 15, 2007

During the past two plus decades of golf course visits in the western United States, many interesting methods of bunker construction have been viewed. In some cases, cutting corners to reduce costs have been necessary and the results have been acceptable while others have proven less successful.

While many have successfully addressed the issue of soil and rock contamination with the use of liners or various types of soil stabilizers, the idea of using grass as a filter was first noted at Eastmoreland GC in Portland, OR. Mr. Steve Hoiland seeded under the bunkers, allowed the perennial ryegrass to grow for 8-10 weeks, eliminated it with a non-selective herbicide, and used the organic remains as a way to stabilize the soil. This technique was viewed more than 10 years ago and a turf tip was presented on this unique and effective way to minimize sand contamination (May/June 1999 Green Section Record - Saving Zoller's Dollars <http://turf.lib.msu.edu/1990s/1999/990513.pdf>).

While the use of seed has proven effective, the next step was the use of sod. Mr. Steve Kealy, CGCS, Glendale CC used perennial ryegrass sod eight years ago with quality results still being achieved to date. The same method of sod use was conducted at Rainier CC by Superintendent Sam Sprague approximately four years ago with equal success. With this positive track record, Mr. Scott Young and the Green Committee at Canterwood G&CC have embarked on a similar use of sod for a natural liner to reduce inherent problems with rock and soil contamination. Working with Golf Course Architect John Harbottle and Shaper Kip Kalbrenner, this threesome is taking a worst case of bunker contamination from washouts and turning these hazards into well drained bunkers during the middle of one of the wettest winters seen in the Pacific Northwest.

One of the keys has been the use of sod that stops soil contamination within the bunker cavity while perimeter areas divert water away from the bunkers. The use of ball retrievers has kept golfers off the sod as it has already developed 2-3" of roots with another seven weeks of growth before the sand will be installed. Of course, the moment the first bunker sand is installed, the complaints about these hazards will begin once again.

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Fairways								
Hole Number	Overall Condition	Excessive divots	Dry Spots	Bare Areas	Fungus Rings	Waterlogged Areas	Ground Under Repair	Goose Damage
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Maintenance YTD	Aerated Hollow Tine	
	Aerated Solid Tine	
	Fertilizer Applied	
	Fungicide Applied	
	Other	

v Good
 0 Acceptable
 X Poor

Greens								
Hole Number	Overall Condition	Dry Spots	Bare Areas	Fungus Rings	Evenly Mowed	Surface Roughness	Ground Under Repair	Goose Damage
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								

Maintenance YTD	Aerated Hollow Tine	
	Aerated Solid Tine	
	Fertilizer Applied	
	Fungicide Applied	
	Top Dressed	
	Other	

v Good
 0 Acceptable
 X Poor

Rough							Tees		
Hole Number	Overall Condition	Mowed to good depth	Bare Areas	Hazards Properly Marked	Pond Condition	Tree Condition	Ground Under Repair	Number of Tee Boxes	Condition of Tees
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									

Driving Range	Grass driving condition	
	Driving from mats?	
	Accuracy of Distance Markers	
	Convenience of Ball dispenser	

v Good
 0 Acceptable
 X Poor

Bunkers						
Hole Number	Sand Quality	Well Raked	Margin Condition	Excessive Sand Splash	Liner visible/damaged	Drainage
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						

v Good
 0 Acceptable
 X Poor

Practice Green	Condition of Green		Chipping Area	Condition of Green	
	Matches course greens			Condition of surroundings	
	Dry spots or damage			Condition of bunkers	