

# Retain



# ing water

Reid Golf Course constructed a giant wetland to manage a water-retention problem. In doing so, it created a giant filtration system that cleans up the stormwater before heading downstream.

**T**he stormwater-retention capability of golf courses is something that golfers, the larger community and even course managers themselves often fail to appreciate. It's not the most sexy, captivating notion in golf, but a project now racing toward conclusion in Appleton, Wis., may just change all that, and the details should be required reading for anyone who maintains or manages a golf course, public or private.

Sound like an outrageous claim? Well, read on and let me know if you disagree. Something tells me you won't.

Reid Golf Course is a municipal facility in Appleton, lying entirely within the Lower Fox River Watershed. Surrounded by urban development, Reid GC for many years had already served a practical water management purpose in town: a concrete channel cut directly through a four-hole section of the course, gathering overflow from the course and also from the paved streets all around it, and ultimately delivering that water into the Lower Fox River, which flows into the Wisconsin River.

Two problems: First, not enough water was actually making it downstream efficiently, resulting in all sorts of localized flooding on course but mainly off course. Second, the water that did reach the Wisconsin River did not meet new state standards for water quality.

It took two years, but engineering giants

AECOM and my firm, Lohmann Golf Designs, solved this issue and upgrade the four affected holes — at basically no cost to the Appleton Parks and Recreation Department, which manages the golf course.

“Two things drove this project,” says Kelly Mattfield, who works with AECOM from the firm's Madison office. “One component was putting in ponds at the golf course and naturalizing the channel within the golf course. The other was removal of total suspended solids and phosphorus from the stormwater, for compliance with the MS4 permit, and also for compliance with TMDLs at the new state and federal levels.”

Allow me to translate: MS4 is a clever acronym for Municipal Separate Storm Sewer System. TMDL stands for “total maximum daily loads” of anything that “impairs” water quality, be they suspended solids, bacteria, phosphorus, or nitrogen.

Long story short, AECOM was hired by the city's stormwater division to sort this problem, and these engineers brought in Lohmann Golf Designs as consultants, because a) the golf course would clearly play a crucial role in this effort and would require significant renovation as part of the project, and b) we've handled a half dozen different stormwater retention projects on golf courses and thus have experience with the process.

Together, in work that finished this sum-



ALL IMAGES: LOHMANN GOLF DESIGN

## WATER MANAGEMENT

Top left: Green erosion at Reid GC before the covers were used. Bottom left: Greens covers protecting against erosion from 3 inches of rain. Right: The south pond at Reid GC.



mer, we naturalized the channel passing through the course and hugely expanded Reid's retention capacity by creating four acres of new ponds – or for you engineering types, nearly 50 acre-feet of new storage, enough to handle a 100-year storm. The key word here is “naturalized.” By creating what is essentially a giant wetland, we also created a giant filtration system that cleans up that stormwater as it passes through the on-course system before heading downstream.

As indicated above, LGD has done a ton of large-scale, stormwater retention projects: at The Bridges at Poplar Creek in Hoffman Estates, Ill.; at Deer Path GC in Lake Forest, Ill.; at The Traditions at Chevy Chase GC in nearby Wheeling. In each case, we increased retention capability and improved water quality through introduction of

natural, wetlands-reliant filtration techniques. We also took the opportunity to greatly enhance course design as part of the process.

However, in each of the above instances, it was the course management entity that instigated and ultimately paid for the project.

At Reid GC in Appleton, the city's stormwater division was acting to comply with state statute, so it footed the bill. The city's Parks and Recreation Department operates on a completely separate budget. In essence, the golf course played a crucial role in enabling this communitarian effort – AND received significant design/aesthetic upgrades in the process, with no budgetary impact, save a few thousand for some grow-in materials. The stormwater division even factored in compensa-

tion for lost rounds and other pro shop revenues!

“Given the history of the course,” explained Pete Neuberger, project manager for the City of Appleton's Engineering Department, “it's unlikely that these types of monies would have been available for course enhancement if there weren't this stormwater project as a source of funding.”

Is there any reason this sort of situation could not take place on any course where the surrounding community is battling stormwater-retention and water-quality issues? Does it even matter whether that course is public or private? Not in my view, and Mattfield agrees.

“This is the first golf project I've personally done, and it was great working with Lohmann because they've got so much experience doing this sort of thing,”

she says. “Wisconsin is kind of ahead of surrounding states in terms of water quality aspects. But the EPA is pushing TMDLs across the country. Some states have more TMDLs than others, but these and other new EPA directives will definitely result in this sort of situation [in other communities].”

“If golf courses have the room, and they are in the right spot in the watershed, this makes sense. It's a win-win for everyone,” Mattfield adds

What did we actually do to the golf course, aside from creating water capacity? Quite a lot, actually. You can't drop four new acres of water hazard in a 4- or 5-hole stretch of golf course and not impact the layout significantly, visually and strategically.

“We couldn't simply treat this as a typical pond project,” says Neuberger. “We knew we had to

respect the golf course by doing a good job of fully integrating these stormwater ponds as golf course features. It was Lohmann's job to find a way to enhance the course, and they did that."

Here's what went down, but first: A big shout out to course superintendent Doug DeVries, CGCS, and Ryan Inc. Central, the golf course contractor out of Janesville, Wis., who led the construction process. They did a fantastic job shepherding these changes through a very wet spring and summer in Appleton.

On the five directly affected holes, we rebuilt four greens and the equivalent of four fairways, moving them to maximize spatial relationships and improve risk-reward strategies at the edges of all these new water hazards. We also effectively preserved the original green contours thanks to a thorough mapping exercise prior to construction. We even recreated some coveted pin placements: On the front right portion of the original 11th green, for example, there had been a very steep back-to-front pitch. We duplicated that on the

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– Pete Neuberger, City of Appleton

new 11th, while expanding the overall size of the putting surface. On the 2nd green, we more or less copied the original while again expanding its perimeters and making it tie in properly to the new surrounds.

Reid GC will never be lumped together with the Midwest's collection of Golden Age Designs, but it is an older course with some fun, long-standing grooming traditions. For example, they mow a unique, 10-15 foot collar around their greens. Accordingly, when we rebuilt and reshaped the new green surrounds, we kept the features low profile and expanded the bentgrass collars to enable continuance of this style.

Agronomically, the notable thing about the Appleton project is how we rebuilt the greens. Testing on the original soil profiles revealed a 3-4 inch layer of

top-dressing build-up. Below that were 6-8 inches of native topsoil. In short, we replicated that profile on the new greens, using a 6:3:1 mixture that matched the top-dressing mix – allowing these new greens to behave more or less like the old ones, in terms of required maintenance practices. We also grassed them to Putter bent, an older strain whose name superintendents are probably surprised to hear after all these years. But Putter's color best matched the color of the hold-over greens and is expected to perform well at the higher cuts (.120 to .130), with the conservative top-dressing program that Reid employs. For these reasons, we purposely avoided the newer, more aggressive bents that tend to get puffy when left at elevated heights of cut.

An additional note on the

greens construction: We've done similar soil matching elsewhere, deploying variations on this 6:3:1 theme. When watering in these new greens, however, we've found they are not equipped to absorb water like a USGA green might – after all, these greens are built with a heavier soil profile that retains moisture and has more limited ability to convey it like modern greens can, even with slit drainage installed in the subgrade. So the greens rely heavily on surface drainage, which exposes them to erosion potential while you're waiting for seed to germinate. Bottom line: They are tough to establish.

At Reid, we followed the advice of the USGA's Bob Vavrek, who recommended (several years back in a Green Section

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The third hole at Reid GC. Top left: Grassing. Bottom left: Shaping and earthwork. Right: Grow-in from the tee.



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firing is justified. How do you know your job is in jeopardy? Members (and especially those who sit on committees) stop talking to you. Meetings are held without your knowledge and attendance. Outside consultants unexpectedly show up to evaluate your efforts. Other superintendents unexpectedly show up to “look around,” or play golf with the pro or members. (The professional thing to do is to call the superintendent and let him/her know that you’ve been invited over, even if it’s possibly for his job.) And sometimes it’s just a feeling that things aren’t right.

Can you turn around a bad situation? Probably not. And given the message that the club is sending, do you really want to? Maybe it’s time to take the initiative and go, before you can be pushed out. But if you do leave, and expect to get another job, remember how you felt when in that awkward situation, and don’t put a fellow member of your industry in that same situation. **GCI**

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Above: Two images of the new channel next to the old one at Reid Golf Course.

right – across a valley – to a putting surface on the far hillside. Players used to fly that concrete channel with their approaches. Soon they will crest the hill and see a beautiful, winding, naturalized water feature. Yes, of course, that feature is part of a system that can now handle a 100-year storm, and the water exiting that system is 10 times cleaner. But the 12th hole will also be a more beautiful golf hole, and that should count for something. It’s already counting for something.

“I haven’t golfed for about 15 years,” Neuberger says, “but I’m going to play when the course reopens next spring. I’m excited.” **GCI**

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and satisfying for very little extra cost. While I promised not to focus on value, the old insurance salesman adage of, “Good architecture only cost pennies a day” applies.

Golf can range from deadly dull to inspiring. While everyone prefers the latter, they often preclude even the chance for the best golf possible by treating golf course architecture as less important than it truly is. Poor architecture usually ruins your golf, so when you have a chance, don’t shortchange your course when it comes to architecture. **GCI**

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declined. In those markets, property taxes also should have declined. Check with your local taxing jurisdiction to see if your property value declined and if your tax needs to be adjusted.

The question to ask: “Have I explored the possibility of a decrease in property taxes with my local tax authorities?”

The start of 2014 is still more than three months away. But your planning should be well underway. That process starts with the budget. **GCI**

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playing conditions to bring out the hatchet. In these cases, it’s usually not really about the grass.

Although I simplify the impact of Mother Nature to regional generalizations, I have to add a qualifier. Regional conditions can not only be variable from state to state and course to course, but also from hole to hole. We can’t forget the impact of microclimates that can result in poor growing conditions and continued decline in turf stands year after year. Correcting some of the fundamental agronomic issues – shade, air flow and drainage – is essential to growing healthy grass.

So with all of this in mind, I encourage you to assess where your problems were this year, get things healthy this fall, and fire up the chainsaws this winter. The season’s coming to an end and 2014 will be here before you know it. **GCI**