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# Composting at Gorge Vale Golf Club

2018 FALL DIRECTORY  
STARTING ON PAGE 34

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Part 5: Pioneers of the Golf Industry: Babe Didrikson Zaharias

The Algae Triangle: Managing Nuisance Aquatic Plants Without Pesticides

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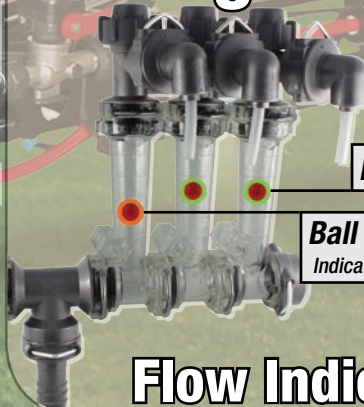
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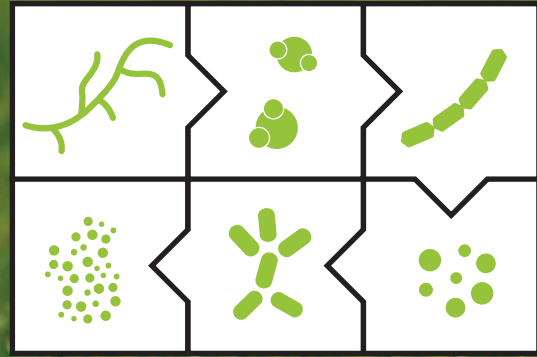
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## Hello Spring. Nice of You to Show Up...FINALLY

After a winter that seemed that it would never end, the sun is finally out and shining, and the course is coming back into shape, albeit about a month later than we are used to. The extended cold temperatures and excessive rainfall that we experienced in the months of March and April delayed the green up of the bermudagrass and have caused the delay in some of our maintenance practices that we would normally have performed by now.



The delay in the normal springtime temperatures has caused delays in the green up of a few areas on the course and we have been asked about these, why they occurred, what we could do about them, and how long will they be this way. Dr. Jim Brosnan, Associate Professor University of Tennessee, recently wrote an article about the delayed greenup that we are experiencing in the transition zone and I thought I would pass along his excellent explanation.



A Sluggish Start for Bermudagrass in 2018 To be honest a few weeks ago, as I examined the golf course, I was fearful we would have to sod several areas on the course. Since the weather has taken a turn for the better in the past week, with full days of warm sun and little to no rain, the turfgrass has also taken a turn, and one for the better. We are seeing substantial growth and recovery in these areas and will be doing a few cultural practices over the next few weeks to help the turf along. The first practice, which started this morning will be to vertical mow the weak areas to remove any crusting of thatch and algae and expose the underlying turfgrass to the warmth and benefit of the sun.



The next practice will be to use our Aerway shattertine slicer to solid tine aerify the weak areas to allow a void for any water that falls or is applied to be removed from the surface as to not drown the new plants as they grow or allow any algae to reform and to allow oxygen into the soil to promote root growth and recovery. We will follow the solid tine venting with mowing of the fairways to smooth out the surface. Following this we will apply some extra fertility to these areas to give them a little boost.



Your agronomy staff has worked very hard over the years to provide the high-quality conditions that you have come to expect. We understand questions arise when things look out of place and we will do everything we can to answer those questions and concerns. The golf course is quickly coming back to form, now that Spring has finally decided to show up, and we are confident these weak areas will be filled in shortly. As always if you have any questions, concerns, or comments about the course or any practices we perform on the course please don't hesitate to let us know. We will do our best to answer them.

From the blog of Paul L. Carter, CGCS at The Bear Trace at Harrison Bay <http://bthb-gcm.blogspot.com/>

## Venting Greens

The staff spent the last 2 days venting greens. This is a process where we open the greens surfaces with a tine 5/16" thick. We use our tractor powered Verti-drain machine to perform this operation. There are several benefits that are created by this process.

Open surface to encourage oxygen to enter root zone and built up carbon dioxide to escape

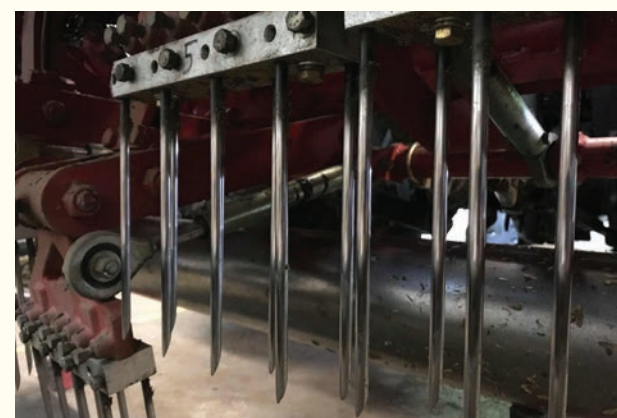


Allows water to penetrate green surface and excessive water to evacuate through evaporation

Even though the channels are narrow, roots can grow in the channel due to a positive growing environment

During cooler times, green profile opened up can warm and during hot weather it can assist in cooling by allowing trapped heat to escape

We usually do this procedure every 3-4 weeks during the late spring and summer, 3-5 times per season is the norm based on weather and



turf conditions. The holes usually disappear on the surface in a couple of days and create very little disruption in ball roll out. The holes in the profile can last a couple of weeks or more, 48 tines with spacing about 1" apart. Tines are about 7" long.

Sometimes called pencil tines the hole is about the size of a pencil. We roll the greens after the process to smooth out the hole. We will roll them the next day to reduce the chances of scalping and then mow the third day.

From the blog of Joe Wachter Superintendent/ General Manager at Glen Echo Country Club <http://geccgcm.blogspot.com/>



# Finished Deck Pictures

We completed the deck three weeks ago just in time to be enjoyed in the nicer weather after our unusually cold early spring. Many people have had the chance to enjoy it since it was opened.



After completing the deck, we also rebuilt the retaining wall between the deck and the entrance. The old wall was built in 1992 and was failing. We made the bed slightly smaller



and channeled the downspout through the wall to prevent it from washing out. I did not take a "before" picture, but it was not straight, level, or attractive. We moved the wall in 36 inches to allow for slightly more room to park golf carts.

Finished wall with top cap and downspout installed:



From the blog of Kevin Goss Superintendent at Sugar Creek Golf Course <http://sugarcreekgolfcourse.blogspot.com/>

# Challenges



The last month or so has been a bit of a whirlwind. Spring aeration is behind us completed in and around significant late season rains. Playing catch up with mowing and course detail (YES we are cutting the natural grasses and hillsides). Ticking the last of our seasonal projects off the list. Bringing on new seasonal staff and prepping for the first of many Member events. There is always so much to do this time of year that we simply cannot get to it all at once.

While we've had a productive start to 2018, not all things go as planned. The course came out of aeration shining thanks to some heavy rains and the staff pushing hard for the Challenge Cup with Bel-Air Country Club last week. All things were looking great coming off the weekend as we start prep for the MacKenzie in two weeks and then... Murphy's law rears its ugly head.



While topdressing greens this Monday our sand spreader blew a hydraulic hose leaking oil on the 12th green. The good: The oil spilled was not hot and did not burn the turf. The Bad: Grass does not like oil as it can smother the leaf blade resulting in death of turf. The area affected will be evaluated over the coming days with hopes that the grass will grow out. If needed we will re-sod next week. Unfortunately, these things happen.

We are always challenged when trees are close to areas of turf. This is especially true when close to greens. Roots from trees spread throughout the soil competing with turf for water and nutrients. When just a few feet off a green the challenge can be significant resulting in turf loss. As part of our spring/fall maintenance we send out the root pruner to address these areas but with a working depth of 6 to 8" sometimes that's just not enough. This week we used our trencher to root prune two of our most problematic areas. Left of 1 green



(pictured here) and left of 15 green.

These pictures tell the story well. Lots of trees roots large and small severed with hopes of giving the turf a fighting chance. Side note: pretty cool to see the column of sand from the Drill & Fill just to the right of the radio. Three years later and the channels are still there doing their thing!

We are challenged with maintaining turf and managing wear and tear on a small property. The average urban golf course is 120 acres. Claremont, at just 84 golf course acres is small and compact. Golf carts were not in the picture when the course was laid out in the early 1900's. The new cart fleet was outfitted with a GPS system for the safety of members, guests and the golf course.



This picture above is a screenshot of just one day worth of cart traffic (in yellow). The areas in red are zoned off as carts are not allowed on greens or surrounds, on tees, in natural grass areas or in the creek. Yes, we've had to pull carts out of the creek. Combine this much cart traffic with course maintenance traffic and we can and will see significant wear and tear in our highly travelled areas. When using carts this summer, please keep this in mind by avoiding dry areas and areas of worn or stressed turf. Do your best to keep carts in the fairways. Drive on green grass. I encourage members to take a caddy and enjoy a fine walk around an amazing property. We are lucky to have a caddy program and should do all we can to support it.



From the blog of Josh Clevenger Superintendent at Claremont Country Club <http://claremontturf.blogspot.com/>



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## Part 5: Pioneers of the Golf Industry – Babe Didrikson Zaharias

by Jeff Shelley



*Babe Didrikson in action during U.S. Women's Open Championship of 1954, which she would win. Photo: AP/Sports Illustrated.*

**Editor's Note:** This is the fifth in a series of articles about the people who helped pioneer, promulgate and popularize the game of golf.

While the first four installments of this series focused on the pioneering golf-industry work of notable men, attention should be placed on a

woman who took the game by storm during her relatively brief life. But golf wasn't Babe Didrikson's primary sport during the early days of her remarkable athletic career.

Born in Port Arthur, Texas, in June 1911, Mildred Ella was the sixth of seven siblings parented by Norwegian immigrants, Ole and Hanna Didriksen (she later changed her surname). The family moved to Beaumont four years after the birth of Mildred, whose mother

called her "Bebe." The "Babe" moniker – after the New York Yankees' great Babe Ruth - came when the young girl swatted five home runs in a baseball game against boys.

Didrikson had an early sense that her future was in sports. "Before I was ever in my teens, I knew exactly what I wanted to be when I grew up," she said. "My goal was to be the greatest athlete that ever lived."

Babe began fulfilling that prophesy at age 15 as a high-scoring forward on the Beaumont Senior High School basketball team. Her court skills drew the eye of Melvin J. McCombs, the coach of one of the nation's best women's basketball teams. In February 1930, McCombs hired her as a secretary for the Employers Casualty Company in Dallas; Didrikson quickly became a star for the "Golden Cyclones." She returned to Beaumont in June to graduate from high school and then led her team to three straight national championships, becoming an All-American two of those years.

In 1932, Babe represented Employers' Casualty at the AAU Track & Field Championships, which doubled as that year's Olympic Games qualifier. As the "team's" sole athlete, she competed in eight of the 10 events, winning five and tying for first

in a sixth. The 30 points she accrued were enough for her to singlehandedly win the team title. The University of Illinois, which sent a 22-woman contingent to the meet, had 22 points and finished a distant second behind Didrikson.

At the 1932 Olympics in Los Angeles, Didrikson zoomed deeper into American sports ether, winning two gold medals – in the 80-yard hurdles and javelin - and a silver (high jump).

After the Olympics she traveled the U.S. with Babe Didrikson's All-American basketball team and the all-male (and, save for her, bearded) House of David touring baseball team. In addition to round-ball, track and baseball, she proved adept at diving, roller skating and bowling, and was adroit at pocket billiards and something called competitive sewing (she claimed to have won sewing championship at two Texas state fairs).

In 1935, Didrikson brought her now-mythical athleticism to golf, professing the game a natural transition. "Golf is a game of coordination, rhythm and grace; women have these to a high degree," she said. But Babe worked hard at a game that she deemed "the toughest sport I ever tackled," later noting, "Practice,





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which some regard as a chore, should be approached as just about the most pleasant recreation ever devised."

Because of her days as a barnstorming, paid basketball and baseball player, Didrikson was denied amateur status and was disallowed from entering the big national women's tournaments of the day, which were run by the USGA. The LPGA Tour didn't arrive until 1950, so her first tournament of note was when she Monday-qualified for the 1938 Los Angeles Open, a PGA Tour event. Though missing the cut, all wasn't lost in L.A. as Babe met George Zaharias, a pro wrestler, sports promoter and occasional actor. The two married later that year.

Zaharias, a native of Pueblo, Colo., and born Theodore Vetoyanis, was derogatorily known on the wrestling circuit as "The Crying Greek from Cripple Creek" or the "Greek Hyena." He quit wrestling after marrying Babe to promote and manage his wife's career. Following a three-year break from pro-sports events, Didrikson Zaharias regained her amateur status in 1942 and, in 1946, won the U.S. Women's Amateur. The following year she was the champion at the British Ladies Amateur and suddenly became golf's first female star, showing the world that women could be just as entertaining and skilled as men at one of America's favorite sports.

Babe was known for her sublime power and coordination. She was also good at self-promoting and burnishing her image. After watching her play, fellow Texan Byron Nelson commented that he knew of only eight men who could outdrive Didrikson Zaharias. Replied the



*Babe Zaharias Park, adjacent to The Babe Didrikson Zaharias Museum, in Beaumont, Texas, United States.*

ever-folksy Babe, "It's not enough just to swing at the ball. You've got to loosen your girdle and really let the ball have it!"

After turning pro in 1947, Didrikson Zaharias dominated the nascent Women's Professional Golf Association, which later became the LPGA Tour. She also never missed the cut in another men's event, playing in three PGA tournaments in 1945 via Monday qualifying and making it through at least three rounds in each of them. Suzy Whaley (in the 2003 Greater Hartford Open) is the only other female to have qualified for a PGA Tour event. (Annika Sorenstam and Michelle Wie also played in PGA tournaments but on sponsor invites.)

In 1948, Didrikson Zaharias became the first woman who sought to qualify for the U.S. Open. But the USGA turned her down, claiming the event was for men only. Undaunted by the snub, she soared into the record books in 1950, becoming the first to win that era's Grand Slam of women's golf – the U.S. Women's Open, Titleholders Championship and Women's Western Open.

Her cockiness was legendary. "The Babe is here," she once announced before a women's tournament. "Who's coming in second?"

Didrikson Zaharias reached 10 wins in 1950 faster than any other LPGA golfer, doing so in

*Continued on page 14*



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Continued from page 13

## Part 5: Pioneers of the Golf Industry – Babe Didrikson Zaharias



a year and 20 days, a record that still stands. She led the tour in money earnings again in 1951 thanks to nine more victories. In 1952, she became the quickest player to ever reach 20 wins (two years and four months).

But in 1953, the health of this superb 5'7", 126-pound athlete took a fateful turn when she was diagnosed with colon cancer. Yet the indomitable Babe returned to the LPGA Tour in 1954, winning the Vare Trophy for low-scoring average. While wearing a colostomy bag just a month after cancer surgery, Didrikson Zaharias won her 10th and final major, the U.S. Women's Open.

Despite the cancer, Didrikson Zaharias still won two of the eight tournaments she entered in 1955. During her meteoric golf career, she racked up 82 amateur and professional victories, winning every worthy title available to

women. But there were no more miracles for the Texan. The cancer returned with a vengeance and, on September 27, 1956, Didrikson Zaharias died at age 45 in Galveston. At the time of her passing, she was the top-ranked female golfer in the world.

Unfortunately, a promise she had made earlier never came close to fruition. "I expect to play golf until I am 90 - even longer if anybody figures out a way to swing a club from a rocking chair."

In addition to her amazing athletic career, Didrikson Zaharias co-founded – with 12 others - the LPGA Tour. Toward the end of her life she went public about the need for cancer awareness. Babe became a spokesperson for the American Cancer Society and was honored by President Dwight Eisenhower in a White House ceremony.

Four months after her death, Didrikson Zaharias received the USGA's highest honor, the Bob Jones Award. George accepted the award on her behalf. In 1949, she and her husband bought a golf facility in Tampa, Fla. Babe Zaharias Golf Course later received landmark status. There are also golf courses named after her in Port Arthur and City of Industry, Calif., along with an eponymous museum in Beaumont.

In 1999, Didrikson Zaharias was named by The Associated Press as the top woman

athlete of the 20th Century. She was "grandfathered" with other LPGA greats into the World Golf Hall of Fame in 1998.

No less a literary personage than the Grantland Rice wrote of Didrikson Zaharias: "She is beyond all belief. (When) you see her perform you finally understand that you are looking at the most flawless section of muscle harmony, of complete mental and physical coordination, the world of sport has ever seen."

Babe clearly favored golf more than any of the other athletic pursuits in which she excelled during her fleeting time on the planet. "I played many sports, but when that golf bug hit me, it was permanent."



Jeff Shelley has written and published nine books as well as numerous articles for print and online media over the past 30 years. The Seattle resident is the co-founder of the Northwest Golf Media Association and board president of First Green, an international, nonprofit program that provides environmental and STEM education outreach using golf courses as environmental learning labs. jeff@fairgreenspublishing.com



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# Composting at Gorge Vale Golf Club

by Scott Wheeler, CGCS

With every passing year golf course maintenance becomes increasingly more challenging to meet expectations as resources continue to shrink. Undoubtedly in this era you have to remain open minded, but most importantly, be willing to accept constant change if you're going to survive in today's golf industry. It's in times like this that you draw on all those years of taking advantage of those educational opportunities, building up that arsenal of knowledge, that pays dividends when faced with many of today's golf course maintenance obstacles.

Living on an island in the Pacific Northwest surrounded by some of the most beautiful scenery in the world may seem like the idyllic setting, but all that water presents a significant issue. Almost everything required to maintain a golf course is located on the mainland, and it must be shipped in by air or sea, at considerable expense. In addition, high property prices on the island place a premium on soil and topdressing materials, so golf courses are sometimes forced to devise

creative ways to recycle golf course waste, in an effort to become somewhat self-sufficient.

Gorge Vale Golf Club located on Vancouver Island in the capital city of Victoria, British Columbia was designed and built in 1927 by legendary golf course architect A. Veron Macan. Situated on 143 acres that rises from almost sea level to 145 feet in elevation never delivers a flat lie, as it uniquely rolls and pitches in every imaginable direction. One of the most defining elements of the course is its variety of mature coniferous and deciduous trees as well as native and exotics, that are both part of the original forest from which the course was created and plantings that have been added over the decades. With all that vegetation and with our ongoing maintenance practices we generate enormous amounts of material that would otherwise be hauled away as waste, at considerable expense, unless we could come up with a viable composting program.

When I arrived at Gorge Vale in 2007 all organic materials were simply being dumped in a series of piles in wooded areas throughout the property with no real plan to deal with the ongoing accumulation. Not only was the material an eyesore, it was detrimental to the health of the surrounding vegetation as buried tree root systems were being compromised. We began by loading and hauling all the material spread throughout the property into our main yard and organizing it into a series of piles. Much of this material had been sitting dormant for such a long period of time that we really only needed to devise a method of screening it so it could immediately be put to use. We struggled for a couple years with homemade screening systems and realized we simply

couldn't process the volumes we were dealing with unless we came up with a better option. After some research we decided on purchasing a screener manufactured in Pontiac, Michigan by EZ-Screen and it's been worth every penny. Since its arrival we've screened enough material to meet all our soil requirements and to date have not purchased any materials offsite except sand needed to sustain our topdressing programs and for our divot repair mix.

It's really quite an eye opener how much material can be identified and diverted into a composting program. We only collect clippings from putting surfaces and those are easily dispersed into the surrounding rough, but waste material from cart path edging, bunker edging and renovation, waste from our equipment wash pad system, aeration cleanup, leaf cleanup, as well as all organic waste from clubhouse food and beverage operations is introduced into our compost program. In addition, any material that can be handled by our Vermeer wood chipper from tree pruning or haz-



Compost used bunker renovation



Compost used in landscape projects





ardous tree removal is either added directly to our composting stream or used in the landscape for mulching.

We usually have three composting piles on the go, incorporating all fresh material into the youngest pile turning them all on a regular basis to encourage the proper environment for microbial decomposition. Although we're located in a residential area our composting operation is situated in the center of the property and far enough away from houses or the clubhouse that odor has never been a problem. I can attest that for someone who spent his youth growing up in rural Ontario any odor that has occasionally occurred only brings back fond memories, as I've shovelled it all.

One of the most beneficial results of our efforts has been the response we've achieved through topdressing areas on the golf course with our compost mixture where turf has continually performed poorly due to soil conditions. Most

of our green site surround mounding was constructed during a course renovation in 2003 and we would always struggle to maintain satisfactory turf density during the summer months. Even though we have only managed to topdress most of these troublesome mounds on an irregular basis the results have been really quite encouraging. Turf density has improved notably and its performance during our very dry summers has greatly reduced our hand watering requirements of green surrounds.

Additionally, we began construction of forward tees on many holes at Gorge Vale after implementing a recent USGA Turf Advisory recommendation. We've utilized our home-made material to construct these small tees after stripping the existing sod and shaping the material to the desired square footage and then returning the sod in place to finish the surface. These forward tees are located at the beginning of fairways and are gently shaped

*Continued on page 21*



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ted, but its currently placed in a dumpster and hauled away. We've experimented in the past with running cardboard through our woodchipper with encouraging results, but it's a manpower/cost issue as it always requires two individuals to safely operate a woodchipper. Sourcing a cardboard shredder that's durable and economically priced has proved to be formidable, but I'm optimistic we'll eventually get there.

Its certainly rewarding to initiate a program that pays dividends and I'm excited to think of the possibilities going forward. Our ultimate goal is to become a zero waste facility for the sole purpose of taking the responsibility of reducing our environmental footprint.



to allow mowing with a fairway mower for efficiency. I was somewhat skeptical at first that our resources would be better allocated elsewhere, but I'll have to admit the feedback regarding our efforts has been very positive.

At Gorge Vale Golf Club many members are very passionate about filling fairway divots and our composting initiative really came about as a result of their demand for divot mix. We've gone from a divot mix container on a couple holes to one on every single hole, and its not unusual for them all to be exhausted by days end. In the past we would purchase an organic

material from the mainland that was ferried across at considerable cost, but we've now completely eliminated that need. Sand is now mixed with our own material to meet all our divot mix requirements with outstanding results. I've always been amazed at what goes unnoticed by golfers, but empty divot boxes quickly become a major issue with our membership.

Our intention is to continue to look into additional options to utilize waste generated from all departments at the club. At times considerable volumes of cardboard arrive as a result of goods shipped to the golf club that could be compos-





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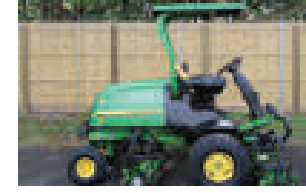
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# NEWS

From Around the Industry

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## BioSafe Systems Introduces PVent Biofungicide for Control of Soil and Foliar Pathogens



PVent® Biofungicide is an upgrade in microbial fungicide technology, providing growers with an easy-to-use, versatile IPM tool. This innovative development was spearheaded through a strategic partnership between two family-owned businesses: BioSafe Systems and Lallemand Plant Care.

PVent's active ingredient (Gliocladium catenulatum Strain J1446) was originally isolated from natural Finnish soils providing unique adaptation traits like an enhanced ability to thrive and reproduce across broad temperature and humidity ranges. Making up 93% of PVent's listed active ingredients, G. catenulatum Strain J1446 has a natural symbiotic relationship with the plant rhizosphere including stem and foliar surfaces making it incredibly versatile in IPM programs.

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PVent® controls soil-borne plant pathogens, foliar pathogens, and

is labelled for use on greenhouse/nursery crops and agricultural crops grown indoors. PVent® can be applied by soil substrate or hydroponic solution incorporation, drench or foliar spray. PVent® when partnered with BioSafe Systems' PAA+™ line of products will provide broad-spectrum control of economically destructive plant diseases.

PVent® has a 4-hour REI, zero-day Pre-Harvest Interval and a caution label making it an integral tool for producers.

PVent® is a WG formula that will be available in 0.5 lb., 1 lb. and 2 lb. packaging.

For more information contact BioSafe Systems toll-free at 888-273-3088 or visit [www.biosafesystems.com](http://www.biosafesystems.com).

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# BioBoost: Aeration Reinvented



Blue Planet's BioBoost is among the finest environmental pond and lake management tools available. It is available in three sizes for any application and can be installed easily by pond service companies or golf course personnel. Contact your local pond maintenance distributor with inquiries and see [www.bioboost.ca](http://www.bioboost.ca) for further information.

BioBoost is assembled in the USA using a majority of USA produced parts. BioBoost is constructed of the highest quality EPDM membrane diffusers and recycled PVC media that is produced by a low waste facility. The BioBoost is a standalone aeration system or can be used as a retrofit when airline and compressors are already available. This means better technology with lower capital costs.

The BioBoost is assembled by Vector Industries, a not for profit company located in Virginia. Blue Planet Environmental is very pleased to be working with a company that employs and trains persons with diverse disabilities. Please see Vector Industries website at [www.vectorindustries.org](http://www.vectorindustries.org).

BioBoost is actively searching for reps and distributors. Our unique patented system and ease of install coupled with testimonials from top PGA courses will make BioBoost a very profitable addition to your product line up. Please contact us to discuss how BioBoost will improve your bottom line.



## Metedeconk National Golf Club

Metedeconk National Golf Club had a persistent problem in one of our ponds, having a high iron concentration, which caused the water to have orange color throughout, with poor clarity and quality. Traditional rubber membrane diffusers had been deployed for years, but never successfully attacked the problem.

Upon learning about Blue Planet's BioBoost Air Diffuser Enhancement System, I decided to bring the technology in and see what impact, if any, it could make on cleaning up this pond. Within a few weeks, I saw positive change, and within a few months, the results were dramatic, and noticed by many people who had commented for years about the pond's nasty appearance. The rust has been

almost entirely eradicated and the water has unbelievable clarity.

The support from Blue Planet has been available at all times and I intend to increase my use of BioBoost throughout other ponds at Metedeconk, having recently installed the system in a second pond, which replicates some of the same issues as the first trial pond.

I am very pleased with the results we have achieved and recommend BioBoost for those interested in the next generation of subsurface aeration.

*Arron McCurdy  
Superintendent*



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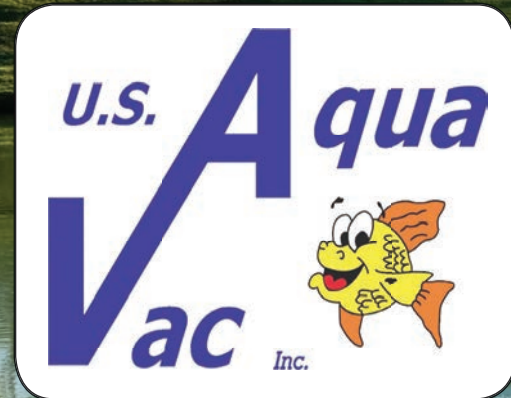
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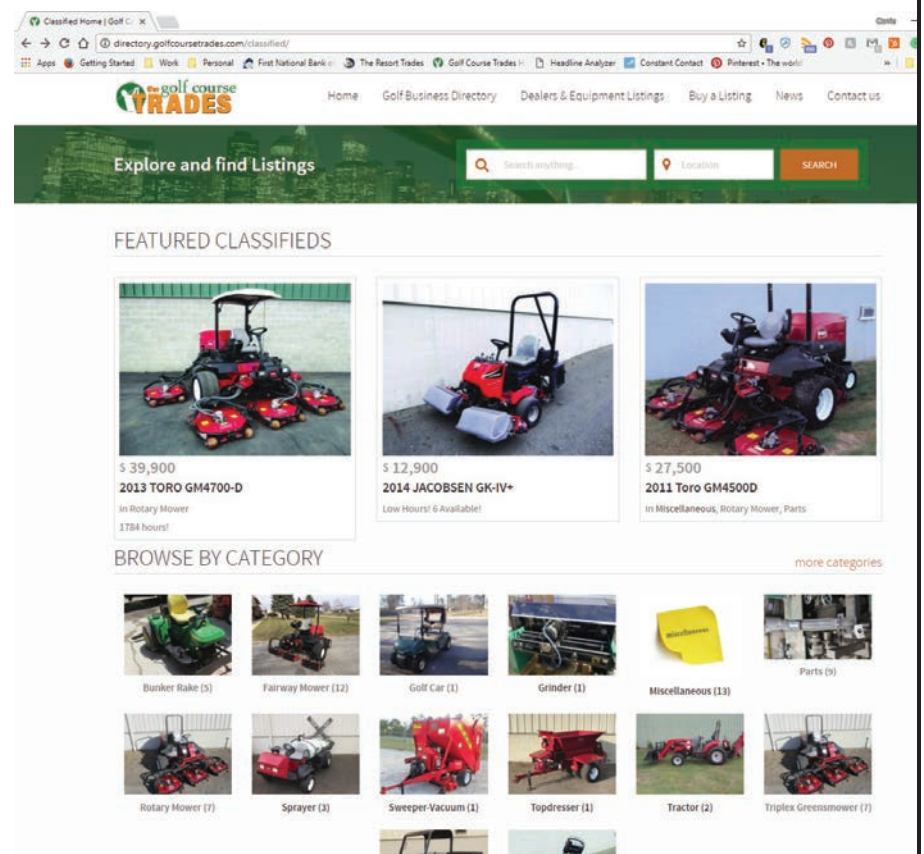
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# The Algae Triangle: Managing Nuisance Aquatic Plants Without Pesticides

by Gavin Ferris



**Nuisance algae: Pesticide applications can be a safe and effective strategy to reduce nuisance aquatic weeds and algae, but the most sustainable alternative is proactive management.**

I frequently use herbicides and algaecides in my line of work. Having attended college and graduate school to be an Ecologist, it isn't something I thought I would do very often, but with the frequency of environmental problems that involve invasive flora, nuisance aquatic weeds and potentially-toxic algae, EPA-approved pesticides are an invaluable tool. There are, however, times when pesticide use is impractical, imprudent, illegal or impossible. Maybe the golf course superintendent or property manager prefers that pesticides not be applied to near ornamental plants or irrigation waters. Perhaps the regulatory bodies in a

**28 - GolfCourseTrades July 2018**

given area aren't permitting the use of certain products. Whatever the reason, sometimes this option just isn't on the table. But how do we effectively manage algae and weeds without pesticides?

I employ a simple concept that I call the algae triangle, though it works for all forms of vegetation. If you had the same fire safety lessons in elementary school, you may remember the Fire Triangle, which is based on the idea that three elements are necessary for fire: fuel, oxygen and heat. If you have enough of all three, you'll ignite a fire. Eliminate

any corner of the triangle, and the fire goes out. Similarly, if you have water, sunlight and nutrients, you'll likely develop some form of algae or vegetation. If the triangle becomes too imbalanced, the resulting plant species can become a nuisance.

Obviously, in the golf and turf industries, we aren't removing water from the equation, so establishing balance between each factor is the focus. Putting this concept into practice means understanding how sunlight and nutrients affect the ecology of the waterbody in question. Communities have several natural options to help mitigate against algae and aquatic weed growth, including limiting sunlight, improving water circulation and reducing excess nutrients.

If a stormwater or irrigation pond receives full sunlight during the growing season, this directly impacts plants and algae by increasing water temperatures and providing the light necessary for photosynthesis. To prevent sunlight from penetrating the water column and stimulating the growth of deep submersed plants and benthic algae, water levels can be increased. Dredging is an effective strategy to increase the depth of a lake or pond, however, it is



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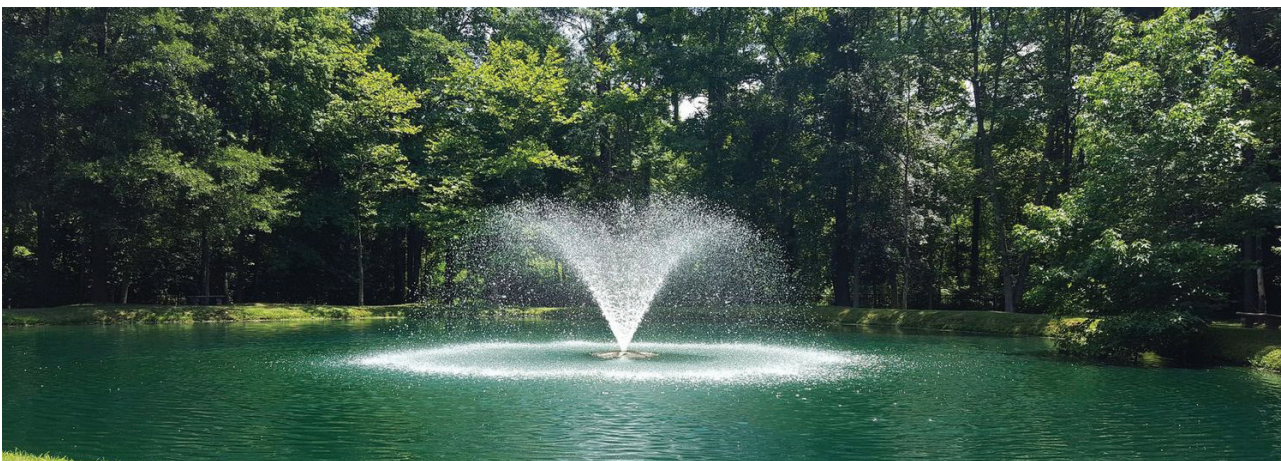


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**Aeration: Floating fountain aerators provide effective oxygenation in lakes and ponds, which can help reduce undesirable algae by facilitating the conversion of phosphorus to forms that do not sustain algae growth.**

costly. Instead, proactive hydro-raking can help maintain existing water depths and prolong the need for dredging by removing unconsolidated muck and organic debris from the bottom of a lake or stormwater pond. Likewise, blue or black pond dye can be applied to reflect sunlight. Pond dye can enhance the aesthetics of a lake or pond while simultaneously absorbing sunlight before it can penetrate the waterbody and fuel excessive plant growth.

In addition to thriving in water that receives lots of sunlight, algae and nuisance weeds also flourish in stratified waterbodies. A stagnant, sun-warmed layer floating on top of colder, deeper water can serve as a perfect habitat for undesirable species. Circulation with a diffused aeration system breaks this stratification and allows the water to mix more evenly, resulting in more consistent temperatures and less warming in the sunlit portions of the water.

Aeration is also effective at improving the health of an aquatic ecosystem in a number of other ways, such as preventing oxygen depletion and fish kills, improving beneficial bacteria levels, and preventing the release of excess nutrients from the sediment. This brings us to the real meat and potatoes of preventative maintenance: nutrient management.

Phosphorous is the most important nutrient contributing to excess vegetation in lakes, irrigation ponds and stormwater management facilities, and it can enter the water column in runoff containing lawn fertilizers, grass clippings and other organic materials. A number of nutrient reduction strategies should be considered if water quality tests reveal nutrient levels are too high. A professional lake manager can apply beneficial bacteria to the waterbody to utilize nutrients that would otherwise be available for plant and algae

growth. Water quality can also be amended by using products that bind with phosphorous to keep it from becoming fuel for nuisance plants. Additionally, strategically planting desirable buffer vegetation around the shore of the waterbody can help to intercept phosphorus before it enters the water and is absorbed by unwanted vegetation. Your lake manager can help identify buffer plants that are native to your region.

When it comes to quickly and effectively managing nuisance aquatic weeds and algae, EPA-approved pesticides can be very useful, and in many instances, they are the safest and most practical option available. Nonetheless, natural and proactive management techniques can be tremendously effective at improving the health and appearance of almost any community lake or pond before a problem occurs, which is why it's important for golf courses, property managers and landscape professionals to consider sustainable and holistic plant management methods whenever possible.

*Gavin Ferris is an Ecologist with SOLitude Lake Management, an environmental firm providing sustainable lake, pond, wetland and fisheries management solutions. Learn more about this topic at [www.solitudelakemanagement.com/knowledge](http://www.solitudelakemanagement.com/knowledge).*



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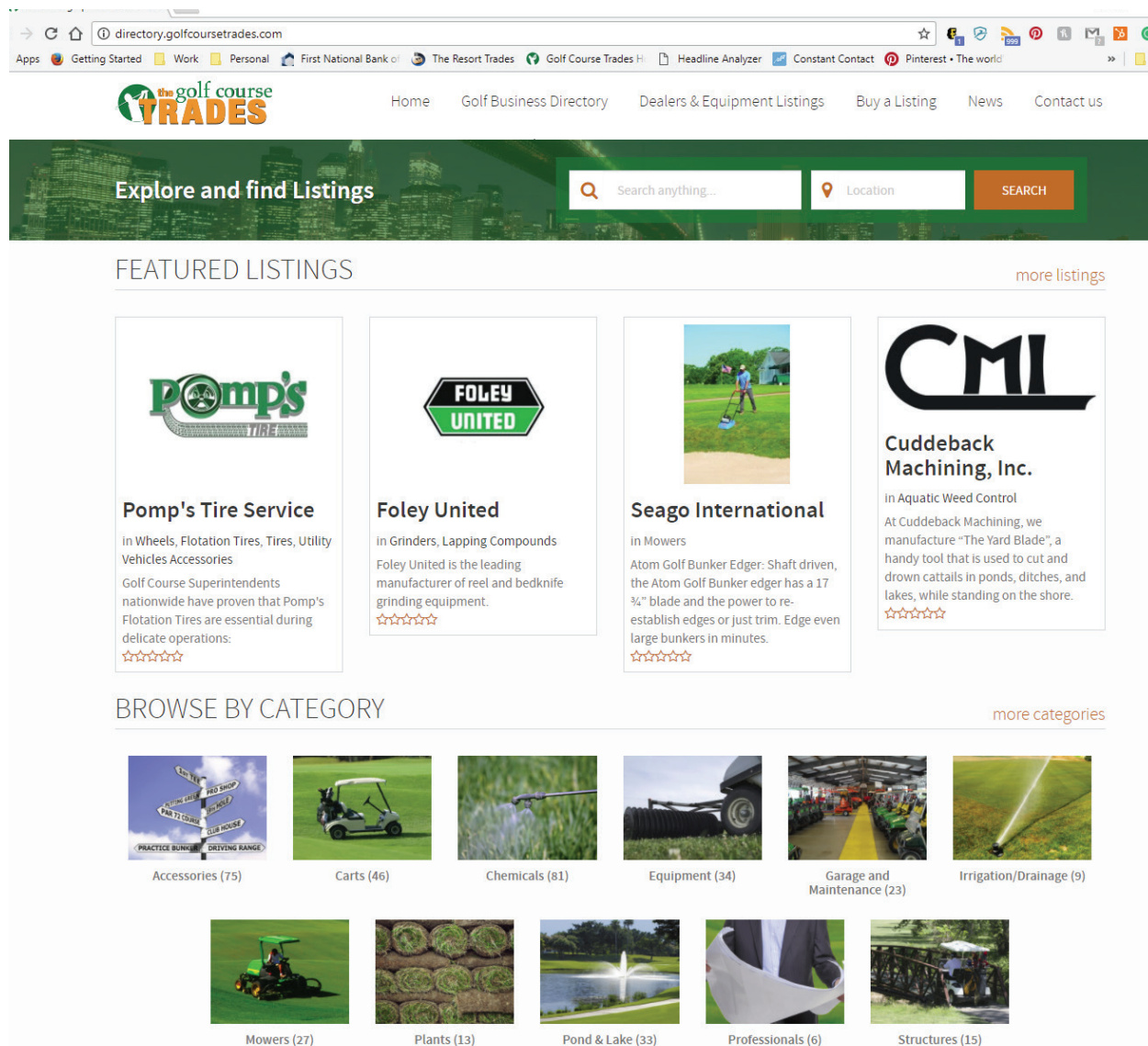
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## Porous Pave: The Proven Pour-in-Place Permeable Paving Material



Dave Ouwinga grew up in the small town of Grant, Michigan in the western part of the state. How small? The population was 894 according to the 2010 census. Traditional, small town, Midwestern values are what Dave is all about.

His dad was a roofer, but his passion was fish farming. He built that hobby into a company, Stoney Creek Fisheries, which he started in 1970.

Growing up, Ouwinga worked after school and on weekends at his dad's fish farm. "That's how I learned the value of honest, hard work," he said.

Dave went to work full-time at Stoney Creek in 1986. Ouwinga said that his experience working in his family's fish farm business taught him a great deal about how to build, maintain and repair ponds and all about pond products, like pumps and rubber liners.

"People would come and would ask me, 'Where did you get that pond liner? Or, 'Who makes that pump and where can I get it?' For a long time I just referred them to our supplier, but then it dawned on me that we ought to sell those products ourselves."

Ouwinga began to sell the components customers had been asking about. A number of manufacturers made him a distributor for their pond products.

In the 1990s, he took note of a new trend. "Landscape architects were designing waterscapes and ponds for both commercial and residential properties," he recalls. "Landscape contractors were asking me about the components. Same things. Pumps and liners."

Onsite working alongside contractors and using the products he was selling to build ponds, Ouwinga started seeing ways in which the products could be improved. "We started EasyPro Pond Products in 2000 to manufacture and market our own brand."



Interestingly, it was through pond products that Ouwinga got introduced to recycled rubber and permeable paving. "Pond liners use recycled rubber, and innovators were working on different uses of rubber recycled from scrap tires, including mixing chips of rubber with stone and a binder to make pavement with void space that lets water drain through."



Ouwinga took note of another trend in the 2000s: increased demand for products like permeable pavement to decrease harmful stormwater runoff in order to comply with requirements of the Clean Water Act.

The proverbial light bulb of inspiration clicked on again. Ouwinga started Porous Pave, Inc. in 2006 to manufacture and market Porous Pave, a highly porous, durable and flexible paving material that incorporates recycled rubber, stone aggregate and liquid binding agents.

"The market has continued to grow," he said. "Every 1,000 square feet of two-inch Porous Pave uses rubber from 300 old tires. With more than two million square feet installed since we started, we have surpassed ten million pounds of recycled rubber used in applications of Porous Pave."

So, how did Porous Pave become used for bunker liners at golf courses? For years, golf courses have used it for paving patios, sidewalks and cart paths. The Keswick Golf Club selected it to build seven miles of cart paths.

"While working on installing Porous Pave at golf courses, superintendents starting explaining their problems with bunker liners and asked us if our product could be a solution," said Ouwinga. "We realized that Porous Pave could line bunkers with one continuous, consistent, and durable rubber-rock permeable surface - sealing bunker floors to keep sand clean, stabilizing the sand, and holding it in place on bunker slopes."

Dave got out there on golf courses himself, not to play, but to get onsite himself to figure out how to best adapt Porous Pave for lining bunkers.

That was how Ouwinga came up with Porous Pave XLB and Sand Guard. "It is much more hardwearing



than fabric liners, and with more than three times the permeability of non-fabric liners, it drains rainwater from bunkers more quickly, keeping them playable."

It all goes to show that working hard and focusing on solving customers' problems is the path to success.

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Web: [www.flexstakegolf.com](http://www.flexstakegolf.com)

eMail: [jim@flexstake.com](mailto:jim@flexstake.com)

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- Markers (fairway)
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eMail: [dknoepp@markersinc.com](mailto:dknoepp@markersinc.com)

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- Distance & Range Markers
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- Flags & Poles
- Hazard/Out of Bounds Markers

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Phone: (716) 592-2700

Web: [www.buffaloturbine.com](http://www.buffaloturbine.com)

eMail: [paul.syracuse@buffaloturbine.com](mailto:paul.syracuse@buffaloturbine.com)

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- Blowers
- Debris Blowers
- Leaf Blowers



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eMail: [sales@cutteronline.com](mailto:sales@cutteronline.com)

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- Mowers (used & remanufactured)
- Non-Rotary Mowers (golf greens)
- Utility Vehicles
- Turf Equipment (used)

## Carts



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- Lifts
- Equipment Lifts
- Turf Lifts
- Turf Equipment



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Web: [www.jerrypate.com](http://www.jerrypate.com)

eMail: [mrobinson@jerrypate.com](mailto:mrobinson@jerrypate.com)

Jerry Pate Turf & Irrigation, Inc. specializes in offering quality, used mowers, golf carts and turf equipment to the commercial, industrial, golf and residential customers around the world.

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- Mowers (used & remanufactured)
- Rotary Mowers
- Turf Equipment (used)

## Carts



### Jesco Products/Pinhigh Compound

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- Wheels



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eMail: [rick.huber@repower.com](mailto:rick.huber@repower.com)

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## Chemicals



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- Greensmowers
- Mowers (used & remanufactured)
- Rotary Mowers
- Turf Equipment (used)

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### AgriMetal Inc.

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- Aerators - Soil
- Equipment
- Greensrollers
- Rotary Brushes
- Core Pulverizers

## Equipment



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Phone: (716) 592-2700

Web: [www.buffaloturbine.com](http://www.buffaloturbine.com)

eMail: [brian.singer@buffaloturbine.com](mailto:brian.singer@buffaloturbine.com)

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- Leaf Blowers
- Blowers
- Debris Blowers



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Web: [www.deerequipment.com](http://www.deerequipment.com)

eMail: [BuyckJ@deerequipment.com](mailto:BuyckJ@deerequipment.com)

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- Turf Equipment



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- Sprayers
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Cutter Equipment Company provides quality pre-owned turf to the golf course and sports turf industry. Cutter is managed by a Certified Golf Course Superintendent (CGCA) with 24 years of experience.

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- Turf Equipment (used)
- Utility Vehicles

## Equipment



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eMail: [jimletourneau@foleyunited.com](mailto:jimletourneau@foleyunited.com)

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## Equipment



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Web: [www.globalturfequipment.com](http://www.globalturfequipment.com)

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- Turf Lifts



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Web: [www.turbodrop.com](http://www.turbodrop.com)

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- Sprayers
- Sprayers (accessories)
- Sprayers (parts)
- Spraying Nozzles and Accessories
- Wetting Agent Applicators



# SUPPLIER DIRECTORY

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 eMail: [bfrost@headedger.com](mailto:bfrost@headedger.com)

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- Sprayers
- Sprayers (accessories)
- Sprayers (pumps)



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Phone: (404) 346-5340  
 Web: [www.jerrypate.com](http://www.jerrypate.com)  
 eMail: [mrobinson@jerrypate.com](mailto:mrobinson@jerrypate.com)

Jerry Pate Turf & Irrigation, Inc. specializes in offering quality, used mowers, golf cars and turf equipment to the commercial, industrial, golf and residential customers around the world.

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- Mowers (used & remanufactured)
- Rotary Mowers
- Turf Equipment (used)



### John Deere Golf

Phone: (586) 226-8330  
 Web: [www.johndeereandscapes.com](http://www.johndeereandscapes.com)  
 eMail: [bbirdwell@johndeereandscapes.com](mailto:bbirdwell@johndeereandscapes.com)

- Turf Equipment (used)
- Turf Equipment



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- Rough Mowers
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## Equipment



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 eMail: [sjones@pompstire.com](mailto:sjones@pompstire.com)

Golf Course Superintendents nationwide have proven that Pomp's Flotation Tires are essential during delicate operations: Top Dressing, Spraying, Mowing, Back Filling Traps, Aerating The large contact area of the flotation tire effectively distributes load over a broad area.

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- Tires
- Utility Vehicles Accessories
- Wheels



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 eMail: [rick.huber@repower.com](mailto:rick.huber@repower.com)

Repower Specialists provides new engines and bolt-in engine installation kits. All of our kits come with customer support throughout the installation process. We replace obsolete engines such as Onan, Kohler K-series and Kohler Magnums with a new Kohler, Honda, or Vanguard engines.

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- Engines (new)



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- Turf Equipment



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# The Water Bible

By Paul Myers

Owner/Executive Director of:

ATMOSPHERIC INDUSTRIES

Golf Course Watershed, Water Quality, Water Control

## Basic Watershed and Water Quality

In this article, the goal of Atmospheric Industries Corporation is to provide a basic profile that has not been available before and is universal to all golf course watersheds. Also, to provide a basic flow chart for conditions that you may be having at your course and answers to problems that have high occurrence rates. This article is our contribution to the education of golf course superintendents.

“The more we know, the more we grow.”

The base of Atmospheric Industries Corporation was formed in the wake of Hurricane Hugo in September 1989. At that time, many golf courses in the Low Country of South Carolina were in immediate need of help to their watershed and hydraulic components. However, there was very limited help available to the industry. This is when Atmospheric Industries Corporation stepped up and committed to golf course watershed, water control, water quality, design, products, construction, education, and management. Now 28 years later, many golf course superintendents and the golf industry hold Atmospheric Industries in great respect for our knowledge in understanding conditions and providing proven services and products to golf course superintendents. Atmospheric Industries Corporation also provides, at no charge, education to superintendents, irrigation personnel and students coming into the industry. This allows them to see and understand the conditions they may have or already had.

“The quality of your course is a direct reflection of the quality of water you provide to your course.”

-P.A. Myers

## Hydraulics, Understanding Basic Watershed Components and Topography

All watersheds are made up of three components:

1. Standing
2. Flowing
3. Holding

**Standing:** This is all ground acreage in your watershed that is normally dry. However, your watershed may not be confined to your property. The water that may flow onto your course is tied to the highest geographic point of flow. THIS is your watershed.

**Flowing:** This is all areas that water can collect and create flow. (Note: during heavy rainfall, your normal standing watershed can now become a flowing watershed.) This can be from river, stream, creek, spring and areas that produce flow from rain runoff. Runoff areas from rain are often overlooked. However, they are directly responsible for the start of solids moving through your golf course.

**Holding:** This is anywhere water flow is interrupted by design for regulated release back to flowing. This includes ponds, silt basins, and tiers that are normally used for aesthetic decoration. This may also include beaver ponds. Beavers are in the water control business also, but they never seem to place their structures where you want them.

It starts raining and dislodged material from the standing watershed is moved to the collective area of flowing watershed. Now material is moved by flow to the holding watershed. Ultimately, the bottom of the holding watershed fills of builds up with the material that came from the standing watershed. Now the lake bed

is migrating toward the surface. I have personally seen a lake lose 8' of available volume in a 24 hour period due to heavy rain fall.

“There are two things that make a golf course; grass and water. Without one, you don't need the other.”

## Irrigation Water Supply Hydraulic Components

**Wet Wells:** This type of gravity flow structure is primarily for vertical turbine pump stations. However, primed lift stations can be used. The wet well is a section or sections of pipe buried in the ground vertically with a solid bottom and open top. To transfer water from lake, creek, or river to the wet well, a supply line has been designed to attach to a well stub. The stub goes through the well wall. When the supply line and stub have been matted together, water can flow from holding watersheds through supply line to the wet well.

**Flooded Suction:** This type of structure allows flow of water from a holding watershed that is at a higher geographic elevation than the station. The supply for the irrigation pump comes in under gravity pressure. This is considered a non-lifting station. This is a sealed system.

**Primed Lifting Station:** This type of system pulls water from a lower geographic elevation. The prime for the pump is maintained by a check valve mounted at the end of the supply line and below the surface of the water. This is a sealed system.

**Intake Structures:** There are various types of intake structures. They all should screen for trash, fish, turtles, aquatic weeds, and various other conditions. These structures supply water from all around the intake. However, there is one intake structure that draws water from an exact water layer. This layer will be the cleanest, coolest, water in your lake, river, or creek irrigation supply.

**Pump Station:** Today, irrigation pump stations are very precise and computerized. However, from the least expensive to the most expensive stations, none were designed to pump, silt, sand, mud, or trash. The more of one or a combination of any of those conditions that are present, the less efficient the station will perform. Regardless of how much you paid or what brand it is, silt, sand, mud, or trash will eventually destroy the station.

**Field Irrigation:** The field side of irrigation components has followed the same path as the pump station. More technically advanced systems have made it better for the superintendent to distribute water more evenly and efficiently to the turf and greens. However, as with the pump station, the silt, sand, mud, and trash was not used in the design of the field irrigation components. This means more material, more damage, less efficient and eventual failure.





## Greens and Fairways

Grasses for fairways and greens have also followed a path of better designs and varieties that are diverse to your geographic location and climate conditions. Now knowing that silt, sand, mud, and trash are destructive to the pumps station and field irrigation, let's break down each of the compounds.

**SAND:** Sand being deposited on the green can lead to disease conditions because raw, unclean, and untreated sand is coming from the lake bed. Also, by the time the sand has reached the green, it is almost in a powder form. This could lock up a green and cause absorption and oxygen problems to the roots. This is the single most destructive material to the course's pump system and field irrigation.

**SILT:** Silt being deposited onto the green is like sprinkling fine powder compost to top dress., Unclean and untreated material can be introducing disease or a bed for disease to form. ( It is a fact that silt will form a dark layer above the root system.) Over a period of time, this layer will, with the help of green traffic, begin to lock up the green and cause absorption and oxygen problems to the roots.

**MUD:** The absolute most destructive natural compound you could introduce to the greens, and fairways, is mud. Having this compound in the greens means the clock is ticking away for having to rebuild or at least re-top the greens. Mud will quickly lock up greens and over a period of time will lock up fairways. The traps that have beautiful white sand will begin to turn the color of the mud that has been deposited by irrigation.

**TRASH:** The listing "trash" can be various solids such as leaves, sticks, algae, pinecones, and other natural objects. Also, do not overlook man made products such as chip bags, cracker wrappers, styrofoam, and golf balls.



The organic material is of main concern due to head screens that get clogged with this type of material. Remember that organic material has been underwater and is rotting and breaking down. "Composting" this material is being deposited on the green when it is actively breaking down and producing enzymes.

**AQUATIC GROWTH:** Over the years, there is a fairly new problem to the golf industry that has shown to be a nuisance and detrimental to the field irrigation. Plumatella, which is the largest of the freshwater bryozoans, meaning "moss animal," will cause the shut down of the field irrigation heads. The premium growth cycle for plumatella is in water temperatures of 83 degrees and above; according to 1995 Clemson University studies with samples provided by Atmospheric Industries.  
Flow Chart

Mr. Jones built and grew in a golf course and is using a wet well structure for the pump station. The intake structure was set to 20' off the lake bank and close to the bottom for maximum water volume. Mr. Jones then set the new pump station over the wet well that was installed 30 days prior. 30 days after the pump station was set, grass was added to the lake banks and standing watershed that feeds flowing watershed that empties into the irrigation lake. 9 months later, the packing gland on the pumps began to leak. The heads in the field irrigation started sticking, leaking, clogging, blowing out, and the gear drives were being chewed up. 9 months ago, the lakebed to water surface was 12' with a 24" wet well supply that has 2' clearance off lakebed. Now, lakebed to water surface is 9'. What has happened is the lakebed has built up 3'. The supply line is at the same elevation but is now buried 12" in the lakebed and half full of mud. The material has migrated with water flow through the supply line to the wet well. The pump station is pumping 1,500 g.p.m. (gallons per minute) through a 24" line at 2 knots speed of flow. Now, the line has 12" of mud from end to end. The speed of flow through the line has doubled because the line is now 12" due to mud. The material is now being carried twice as fast to the wet well. "Smaller line, faster flow, more material moved to well."

The pump shafts are 9" off the bottom of the wet well. Material has been picked up by the pump and is now in the pressure system. It is now damaging pump impellers, packing glands, volume tank, clay valve, all 90 degree or 45 degree joints in the field irrigation lines, heads and finally the greens, fairways, and traps.

There are three simple ways to know the condition of the pump station, field irrigation, and greens.

1. **Look:** on the pump, at the shaft packing gland housing area. Look for discoloration

on the pump frame and station pad around the pumps.

2. **Feel:** the area around the shaft at the packing gland will hold material that has been chewing it up. Take this material and rub it between your fingers for 30 seconds with closed eyes for accurate identification. You can feel if there is mud and/or a grit texture. Remember, grit has already been ground to a finger grain by the friction between the packing gland and pump shaft.

3. **Sample:** most pump stations have a fitting to be used for water access. Normally, a hose will be connected to this fitting. Disconnect any hose from the fitting and hold a clean bucket or jar in front of it. Open the valve all the way for 5 seconds. This will give you a sample of what is building up inside the pressure system. This material is also going through field lines and onto greens.

## Final Note

When the time comes to look for help, please be sure you know what you are getting. To do this, we are happy to give you some handy tips...

1. Look for a qualified hydrologist and ask if they are familiar with underwater hydraulic components used in the golf industry. If they cannot tell you what those components are, move to the next on the list.
2. Ask for history of their experience with golf courses. This would be regarding underwater hydraulic components. If they cannot explain what has caused your conditions and why, move to the next on the list.
3. Demand references. You should be provided with at least 10 references of past work that the superintendent/golf course will be responsible for confirming, How long have they been doing this specific field? Ask for commercially licensed personnel only. Anything less than a commercial license is illegal to work for hire. (OSHA does check up on this.)

These tips will help you get the best "bang for your buck." They can also help you from getting ripped off by so-called "professionals."

For more information about what Atmospheric Industries can do for you call Paul Myers at 843-327-2844



# New & Improved Golf Course Trades Directory

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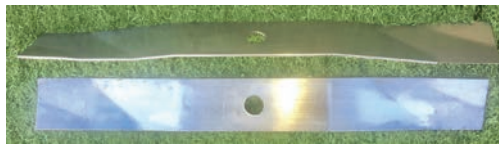




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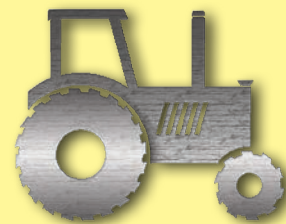
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# Ready... Willing... Abell Turf and Tractor



**Toro 5800 Multipro  
Sprayer with low hours!**



**Club Car Turf 2's, refurb-  
ished... 20 to choose.**



**Kubota L3200HST  
Tractor, 300 hrs!**



**John Deere 2030 Pro Gator,  
2WD, refurbished!**



**Toro 686, demo condition**



**Mint! AR-722 with  
under 1000 hrs!**



**Late Model Toro 1250 Spray-  
ers... fully refurbished**



**Demo condition Turfco  
Sod Cutter**



**Toro 3300 T  
to choose, 2015 models with  
under 1000 hrs!**



**Kubota L3301, turf tires,  
89 hours!**



**Dakota 440, fully loaded, side  
conveyor, blender, spinners,  
and vibrator!**



**Tycrop MH-400 Mint Condition  
with all attachments!**

## PARTS SPECIAL!

John Deere 1200A Carb -- \$155  
Best Starter prices around... Call to check pricing

John Deere Aercore 800 lift actuator direct replacement!!!  
Only \$325 each! Plug and play

Progressive Pro Flex PTO shafts complete!! Replaces #  
521738 ... \$560 plus shipping!

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Pro Gator Radiator Fans!! Replaces# AM129853...  
\$175.00 plus shipping!



**Late model Toro 5510's,  
some with 4WD**

## Abell Turf Rents!

Toro 648's, Toro 1298 w/trac-  
tor, Fairway Verticutters, Mate-  
rial Handlers, Greens  
Rollers...and much much  
more!

Call for details!



**Seats for Sale!**  
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+ shipping

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