

THE GREENERSIDE

Official Publication of the Golf Course Superintendents Association of New Jersey

Three-peat

The Denver Broncos finally won, but only one time. Neither San Francisco nor Dallas could do it, but—*The Greenside* was able to do it. That's right, we were able to three-peat, just like the Chicago Bulls. GCSAA has just informed us that we were able to take first place in the Chapter Newsletter Editors Contest. This is the third time in a row for *The Greenside*, which allows us to three-peat, an honor that has to be shared by everyone who has contributed an article or suggestion to this newsletter.

The Greenside has always had the support of everyone who is associated with it. The Board of GCSANJ has always shown full support. The staff, Dale Nieves, Judy Policastro and Tony Rosa, are always available to me when I need them (and able to read my handwriting when my computer is down). Our advertisers know a good publication when they see one, and they support us so that we can continue to produce the newsletter that we expect.

All of the regular contributors are the ones who really make it happen, if we had no GCSANJ NEWS, PRESIDENT'S MESSAGE or X-MARKS THE SPOT, we would just be another piece of junk mail. Where would we be without Shaun Barry, Steve Chirip, Doug Vogel, Ed Walsh, Joseph deKovacs and Steve Malikowski (who seems to be missing in action)? There are so many people who contribute to *The Greenside* I am sure that I am missing a few, and to those people I apologize, although I know you contribute just to help and I appreciate it.

As you probably know I work at a municipal golf course, and they do not take kindly to paying for airfare to California as well as lodging expenses in Anaheim. I was not able to absorb those expenses into my family budget so I had to do the next best thing, ask Brian Remo, the writer of *Cadence*, the forum for assistant superintendents, to accept the award on behalf of GCSANJ and *The Greenside*. Thank you, Brian, for your contributions to *The Greenside* and for representing GCSANJ at the Editors Forum.

THANKS TO EVERYONE WHO HELPED MAKE THE GREENERSIDE THE SUCCESS THAT IT IS TODAY AND HAS BEEN FOR MANY YEARS.



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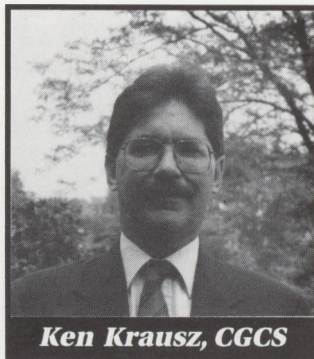
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EDITORIAL



Ken Krausz, CGCS

Life + Attitude = Learning

by Ken Krausz, CGCS

The date is February 5, 1998; many superintendents have left for the GCSAA conference and show in California. I am not able to make the trip this year and this is OK, I am going to the left coast in 8 days for a family vacation. The winter has always been a time for education (not that there has been an actual winter yet), so I have been reflecting on what I have learned since I came into this business.

At my first golf course position, in 1978, I did not know the difference between the rough and a fairway. Twenty years later I have run golf courses for what seems like a lifetime but is actually only 10 years. During the time I have been a superintendent I have seen rounds at the Paramus Golf Course raise from 47,000 to 67,000 rounds per year. I have overseen \$1,500,000 in grounds renovations, besides my operating budget. This winter a new irrigation system is being installed (soup to nuts), bringing the renovation total to over \$2,000,000, and, in my spare time, I, with the help of some friends, have added a garage and mudroom to my house. Not bad for a person who never thought he was mechanically inclined.

I have learned how to edit a newsletter and become vice president of GCSANJ. I am now the past president of my Volunteer Fire Company (the business end) and captain of the actual fire fighting troops (the real business end).

I have learned that when the manager or the greens chairman asks if my crew can perform a task, I need to take the time that is necessary to answer with a correct reply, something that I can back up with understandable fact.

Most of all I have learned that without a level head I would not be in the position that I am in today. I have a job that provides me with what I need to provide for my family (as I say, it could always be better, but it could always be worse), and I am able to pay my bills. I do not see me as being financially rich, but I know that I am comfortable and that I am rich in many other ways. I can look anyone straight in the eye and be confident of my opinion.

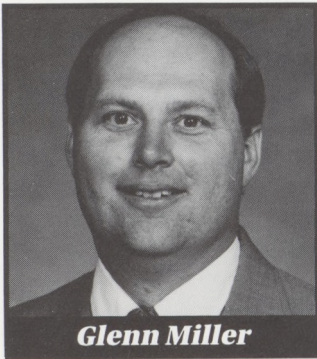
I can understand why I am not at the national conference this year, everything happens for a reason. I have learned a lot in the past 20 years (more than double that if you count my entire life). Look around, be grateful for what you have and embrace it with all your might. If I had attended the national conference this year, I would have had no time to edit this newsletter, and, more importantly, no time to share with my family the excitement of getting ready for a Southern California vacation—ten days of sun and fun, as long as El Nino stays away!

Always try and learn what you can, but sometimes you have to look back and see how much you have already learned. In my case I learned that you cannot make the weather and that El Nino has certainly helped my irrigation and garage projects (although purchasing a snow blower may have had something to do with the mild weather). If El Nino affects my family when we get to the Pacific Ocean I have reserved lodging with a heated indoor pool. If there is one thing that I have learned, it is to always have a back up plan

SEE YOU ALL IN THE SPRING,

KEN

PRESIDENT'S MESSAGE



Glenn Miller

Starting the year on the right foot

By the time you read this, the year will be well underway. The National convention will have already taken place, and we will all be well into our preparations for the next golf

season.

I am happy to acknowledge the election of John O'Keefe as District I director. John took over when Mike Mongon moved up to the treasurer's position. Many people already know John. He was a long-time Board member and is current past president of the MET. He brings a lot of expertise and experience to GCSANJ. I have appointed John to serve as our Membership Committee chairman.

The Greenside won first place in its category in a recent national contest, again. The newsletter consistently garners awards on a national level, an accomplishment of which we should all be proud as members, but Ken Krausz should get the lion's share of credit this year and our hearty thanks.

We have many things to look forward to this year as an association. We will need help to finish some projects, and we will need help getting a few new initiatives off the ground. If any member wishes to volunteer for a committee, please give me a call. Several of our members have come forward with some great ideas that we hope to implement this year, such as a committee that will focus on preserving our history (you'll be hearing more about this in the near future from Doug Vogel) to getting our assistant superintendents more involved in the GCSANJ.

Calendar

- March 3 - 4** **Introduction to Golf Course Turfgrass Management**, Rutgers University. Contact Office of Continuing Education, 732-932-9271.
- April 21** **April Monthly Meeting**, Harbor Pines C.C., Host: Rich Broome, CGCS. Contact Judy Policastro, 973-379-1100.
- May 14** **May Monthly Meeting**, Spring Lake G.C., Host: Bruce Peebles. Contact Judy Policastro, 973-379-1100.
- July 13** **July Monthly Meeting**, Montammy G.C., Host: Mike Miner. Contact Judy Policastro, 973-379-1100.
- Sept. 28** **Invitational**, Manasquan River G.C., Host: Glenn Miller. Contact Shaun Barry, chair, 732-846-8173.



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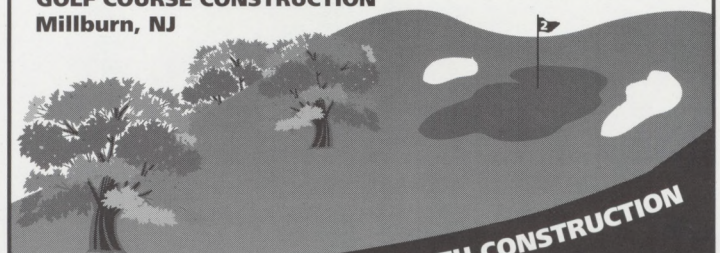
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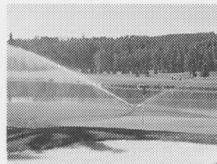
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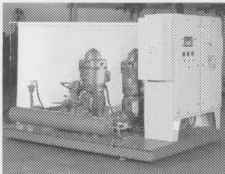
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GCSANJ NEWS

MEETING HIGHLIGHTS

Editors Note: The Executive Board of GCSANJ meets monthly. This new column will give the membership the highlights of those meetings. Due to lead time for The Greenside, you will be reading minutes from meetings that happened approximately three months ago. The following minutes are from the Board meeting of this past December.

Board Meeting

Manasquan River Golf Club

December 17, 1997

The meeting was called to order by President Glenn Miller at 4:25 p.m.

Present: Glenn Miller, Ken Krausz, Joe Kennedy, Mike Mongon, Gary Arlio, John O'Keefe, Pat Campbell, Ron Luepke, Ed Mellor, Doug Larson, Shaun Barry, Jim McNally, guest: Ted Vitale, GCSANJ accountant.

Announcements: Glenn welcomed John O'Keefe as the new District I director. John will be handling the Membership Committee. John is on the GCSAA Capital Foundation Committee. He explained that they are setting up a fund similar to the Robert Trent Jones Foundation, in which the (GCSAA) wants to raise \$3.5 million for research and education. They would like to raise \$350,000 from each of the chapters, payable in 1-5 years. Currently they have \$550,000 committed.

Treasurer's Report: Mike Mongon gave the report and stated AMC fee for December. Ted Vitale and Mike gave us a financial spreadsheet for the years 1992-1997. The report was accepted on a motion from Ken Krausz, seconded by Doug Larson.

Newsletter: January/February edition is being typed now. Ken spent time at Expo trying to get ads.

Government Relations: Dan Quayle is the speaker for the general session, he has been schooled as to his speech. February 6 from 2-5, this will be a Q&A on the American Disabilities Act, whereas golf courses are being asked to be more friendly.

Golf: Shaun gave the schedule for 1998 (which is in the calendar).

National Delegate: Jim told us we now have 165 votes. There are 16 who don't vote with New Jersey. Also Jim went over the list of who isn't registered to vote. The Board approved Jim's recommendation to vote for Scott Woodhead for vice president, Ken Mangum and Wayne Remo for delegate.

Membership and Roster:

Patty Shelter - Unimen Corp.	AF
Manny Riddel - Stanton Ridge CC	B
Tim Marimer	C to B
Damian Berrado - Woodlake CC	C

Survey: Ron stated that he has received a number of requests to resend the survey out. After discussion that idea was tabled. A greens chairman wants to receive a disc; this was voted down unanimously.

Scholarship & Research: Gary received 10 applications, three of these were incomplete and were eliminated; of the remaining 7, five are receiving scholarships. One stood out above all—Christine Kubick received \$1,000, while the others received \$500.

Public Relations Merchandise: Ed reported that Expo went well, almost everything is sold except 94 ties. With our new catalog, we will be receiving 20% of sales and carrying no inventory.

Awards: Ken reported that Dr. Reed Funk won the Distinguished Service Award, and Steve Chirip received the Member-of-the-Year Award, which were presented at the Presidents Ball.

District Reports:

District I: Mike had a budget summit at Arcola, where he handed out a survey from an accounting firm in regard to cost per hole.

District III: Twenty people attended the Christmas party.

Old Business: None

New Business: Brian Remo sent Glenn a letter in regards to getting the assistants more involved in the association. We will look into this.

The next meeting will be 1/20/98 at AMC, 12:00 noon.

On a motion by Mike Mongon and seconded by Pat Campbell, the meeting was adjourned at 6:15.

Respectfully submitted,

Joseph A. Kennedy
Secretary

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GCSANJ NEWS

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EXPO '97 HIGHLIGHTS

Reported by Shaun Barry and Ken Krausz

The results are in and the crew pictured along with this article had the best putting green at the New Jersey Turfgrass Expo. A special thanks go out to Owen Regan and Tee and Green Sod, Inc. for their donation of sod (no hair dryers were necessary to thaw out the sod this year).

Bruce Peeples of Spring Lake Golf Club won a weekend for two with his amazing putting skills.

The real show stopper was Ed Mellor's unveiling of the new GCSANJ golf apparel line. Anytime you order a GCSANJ logo piece of clothing from Southern Corporation Promotions, 20% of all sales are donated to GCSANJ. To place an order or receive a catalog, contact Southern Corporate Promotions at 800-233-3853. Some of the catalogs handed out at Expo did not contain the order forms, so be

sure and ask for one when calling.

Every year it seems that Expo keeps getting better than the previous year. Is this because one of our own, Mr. Bob Dickison, is the general chairman? Of course that is a major part of this show's success, but there are others.

Steve Chirip is now vice president of the Turfgrass Association, and he joins Dave McGhee, Dennis DeSanctis, Armand LeSage and a host of other GCSANJ members who still contribute in a big way. They, along with representatives from all of the allied associations, spend countless hours preparing this show so it will be responsive to the needs of our industry. When you see that 1,840 people attended

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Thanks to those who manned the GCSANJ booth at Expo. They are (from left): Owen Regan, Doug Vogel, Chip Presendofer, Pat Campbell, John Fitzgerald, Carmen Tino and Ed Mellor.


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Bruce Peeples (left) receiving congratulations on his winning a free weekend for two in Atlantic City. Glenn Miller presented the award.



GCSANJ NEWS

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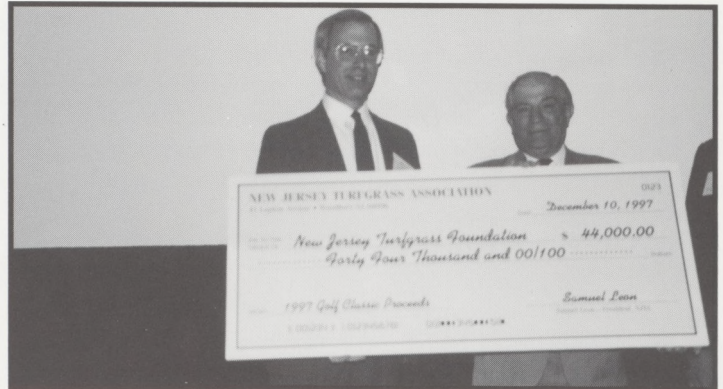
the seminars and the general session, you know that they got it right.

If you were lucky, you got to attend the "free" grand reception (maybe I can have them do my daughter's wedding reception). It really was impressive and seemed to be much better received than the traditional banquet. Dick Caton and Sky Bergen took turns joining the band, and they really showed their musical talents. Everybody really enjoyed themselves with the possible exception of those lucky few who were chosen to dance with Cher's backup singers. At least my partner did not have a mustache, and if there are any pictures, it really was my brother Seamus.

The 1998 dates for Expo are December 8, 9 and 10, so plan on being there. Your attendance will help you and your industry.

P.S. For those who missed seeing the 1997 seminars, you missed something special. In the world of golf there are four major tournaments. Two of the superintendents who hosted "majors" in 1997 were on the program. Bob Alonzi (Winged Foot C.G. - PGA) and Paul

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Dr. Bruce Clarke and Sam Leon (president of the N.J. Turfgrass Foundation) receive this \$44,000 check. These monies were generated from the 1997 NJTA Golf Classic. The 1998 event will be held May 11 at Fiddler's Elbow C.C.



Doug Spencer (assistant to John Wantz, Due Process) was the Grand Prize winner. He is receiving his 19" TV from Dick Caton.



NJTGA Vice President Steve Chirip (left) and President John Buechner were hosts for the 1997 Expo.



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GCSANJ NEWS

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Latshaw (Congressional C.C. - U.S. Open) helped make the educational program a success.

Knowing how hard the Educational Committee is working, I'm sure you should plan on attending to see what information you can take with you.

APPLICATION PROCEDURE DEFINED

I am writing to outline the current procedures for applying for membership with the GCSANJ. We currently receive many applications which are incomplete, causing delays in the process. By outlining the proper procedures we hope to eliminate any confusion, allowing us to act on applications in a more efficient manner.

- A. To obtain a membership application, contact Judy Policastro at GCSANJ Headquarters (973-379-1100) or one of your District directors. A GCSAA Membership Application will be provided with each request.
- B. The prospective member must complete the entire application, sign and date the application.
- C. Once the application is completed, the applicant must obtain three signatures, two from Class A members from their District and one from either one of the District directors. Most incomplete applications are missing the District director's signature.
- D. The completed application and a check for the proper amount should be returned to Judy Policastro at GCSANJ Headquarters.
- E. If the prospective member is applying for Class A or B membership, they must provide their GCSAA membership number or proof that they are currently applying for GCSAA membership. All Class A or B members must also belong to GCSAA.
- F. If a current member needs to change their current membership

class, they must simply request the change in writing to the Membership chairman and send to GCSANJ Headquarters for presentation at the next Board meeting.

If these procedures are followed, the application can be presented to the Board of Directors at its next meeting. If you should have any questions, please feel free to contact me at (973) 694-0260.

Sincerely,

John O'Keefe, CGCS
Membership Chairman

Editor's Note: This letter was sent to all GCSANJ members. John O'Keefe and I thought it would be a good idea to put it in The Greenside, as this procedure must be followed to allow a smooth application process.

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GCSAA NEWS

GCSAA BOARD APPROVES CERTIFICATION PROGRAM CHANGES

The Fall 1997 meeting of the Golf Course Superintendents Association of America's (GCSAA) Board of Directors has resulted in changes to the association's certification program.

GCSAA's certification program, implemented in 1971, is designed to elevate professional standards, enhance individual performance and distinguish those who have demonstrated knowledge essential to the practice of golf course management. Certified Golf Course Superintendent (CGCS) designation indicates the highest standards of professional excellence and must be retained through continual training and education.

The following recommendations were made by the certification committee and approved by the Board:

Effective immediately:

Eligibility. Criteria must be met as it relates to the November 1996 change in GCSAA's Standing Rules for Membership for the director of golf, director of golf course maintenance operations and construction superintendent. Individuals holding these positions at the time of application must have three years of experience as a golf course superintendent prior to assuming their current position. The construction superintendent also must have primary responsibility for the grow-in of the constructed golf course.

Exam improprieties. If a candidate engages in any form of impropriety during the certification process, the documents in question cannot be scored and the results cannot be accepted. Furthermore, the candidate must appeal to the certification committee for re-entry to the GCSAA certification program.

Effective July 1, 1998:

CEUs and PDUs. Change the terminology of *tested CEUs* and *untested CEUs* to Continuing Education Units (CEUs) and Professional Development Units (PDUs), respectively. This was done to simplify and clarify to members what is required for certification application or renewal of certification and to better reflect the description of the categories being awarded credit toward renewal.

Audubon participation. Certified Golf Course Superintendents (CGCSs) will be awarded .5 PDUs for participation in the Audubon Cooperative Sanctuary Program for Schools upon completion of an established checklist of activities that have been agreed to with the sponsoring school.

Attestor visitation and procedures. To continue to strengthen the GCSAA certification attesting process by ensuring a valid, equitable attesting evaluation for every certification applicant, the current scoring of "pass," "pass with recommendation" or "fail" by each certification attestor will now be combined and tallied by GCSAA to determine a final score. An 85 percent cumulative score will be required for passing.

The committee also made plans for development of an attestor training video scheduled for production this spring. Plans are for the video to be distributed through GCSAA's more than 100 affiliated chapters with some form of documented training required to be an eligible attestor.

The GCSAA certification committee focuses its efforts on reviewing and upgrading the certification program in order to further the professionalism and education of the golf course superintendent.

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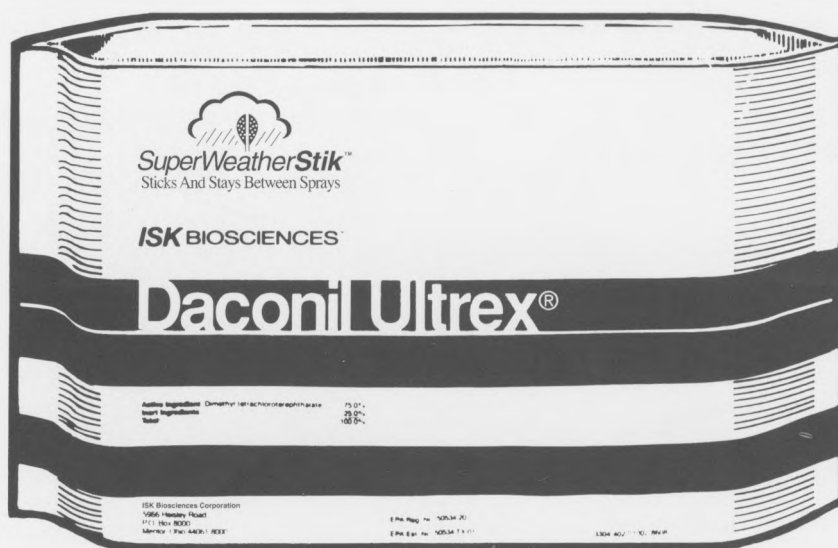
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GPS and GIS ... The new buzzwords

by Peter L. McCormick

Editor's Note: There are a couple of guidelines I try and follow while editing The Greenside. Here are two of them: 1. Try and make all articles original, and 2. Keep the articles short.

The following article throws both those guidelines out the window. To anyone who is a Turfnet member and has read this before, I apologize. To anyone who is not a Turfnet member, this is a small example of how Peter L. McCormick has taken a concept and created a great service to our industry.

Taking advantage of new technologies as they arise will be the hallmark of the successful golf course superintendent of the next few years and into the next century. As the task of managing a top quality golf course continues to become increasingly complex, one must look to new methods of resource management to stay on top of your game.

During this winter seminar season, you might hear the terms *Global Positioning Systems* (GPS) and *Geographic Information Systems* (GIS) bantered about — with images of satellites, “space cadet” suits and robots dancing in your head. Rarely has new technology spawned as much applications research and develop-

ment activity throughout the industry as had GPS/GIS of late. Although easy to ignore as “something that won’t affect me in the foreseeable future,” that mindset could be dangerously naive. Progressive superintendents are already weaving GPS/GIS technology into their management strategies, as are the major industry manufacturers into their products.

Often confused and used interchangeably, GPS and GIS are two distinctly different technologies that may be used on a standalone basis — or very powerfully in tandem with one another.

A little background on GPS...

Global Positioning Systems (GPS) is a method for accurately determining locations and elevations almost anywhere on earth. It is a worldwide four-dimensional (X, Y, Z and time) radio-navigation system based on a \$12 billion constellation of 27 military satellites (and their ground stations) operated by the U.S. Department of Defense. GPS uses the position of the satellites as reference points to calculate specific locations on earth accurate to a matter of meters or even centimeters—almost like giving every square meter of the earth a unique address. It has been used by the military, scientific and surveying communities since the 1980s for precise mapping and navi-

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GPS and GIS ... The new buzzwords

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gation, and in recent years has been integrated into diverse industrial and consumer applications like precision agriculture, marine "fish-finders," delivery fleet management, golf cart tracking and "talking" navigational aids for automobiles. The value of GPS technology can take on very human terms in situations like when Captain Scott O'Grady was shot down over Bosnia in 1995. Equipped with a hand-held GPS receiver and a survival radio, O'Grady was able to calculate his position via GPS and communicate it to his rescuers.

In order to fix a position using GPS, a special receiver and data processing software are required. The GPS receiver compares the time it takes to receive radio signals from at least four of the 27 satellites, and then uses triangulation to assign latitudinal, longitudinal and elevation coordinates to specific landmarks or topographic features. Depending on the type of data-gathering equipment used—basic GPS, differential GPS or carrier-phase GPS—accuracy of sub-meter or even sub-centimeter precision is obtainable — a far cry from the measuring wheel and compass. The improved accuracy of GPS in recent years has allowed it to become a universal measurement system capable of positioning things on a very precise scale.

So while this is all well and good, what value is GPS to a golf course superintendent? At the very least, GPS can be used to create highly

accurate maps of existing course features and topography — greens, tees, fairways, bunkers, ponds, streams, wetland delineations, drainage inlets and outlets, cart paths, buildings, trees and the myriad components of the irrigation system. Beyond the creation of paper maps, GPS data takes on a new life when integrated with computer-aided design (CAD) and GIS software and used as the basis for master planning, construction and day-to-day course management.

...and a bit on GIS

A Geographic Information System (GIS) is a computer program which integrates spatial data (as collected by a GPS mapping technician) and related tabular data from course management records (soil test results, maintenance histories, pesticide application records) as a collection of layers in a graphical, map-based format. Why maps? Maps are very efficient at storing and communicating geographic information visually. While cartographers have created maps for thousands of years, GIS extends the art and science of cartography to include reports, three-dimensional views, photographic images and multimedia.

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GPS and GIS

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All features of the golf course can be reduced to one of three spatial data categories: points, lines or polygons. Soil types, fairways or greens, wooded areas, ponds and buildings are all represented as *polygons* (areas) in a GIS database. Curbs, cartpaths and irrigation pipes are all *lines*, and features such as irrigation heads, soil test locations or insect traps are *points*.

The labels used to define what a feature represents are called *attributes*, and geographic features can have an unlimited number and variety of them. Examples of attributes include the soil type, geology, elevation, slope, vegetative cover, etc. for any particular point, line or area on the surface of the earth.

While many common spreadsheet and database programs can store and retrieve data, the power of a GIS is in the ability to *analyze* data representing the points, lines or areas generated from GPS data, allowing you to look for patterns and trends, and to undertake "what if" scenarios. This concept is used in a wide range of real-world scenarios. Walmart uses it to track traffic flow to distribution centers. Casinos in Las Vegas and Atlantic City use GIS to analyze activity of slot machines by location on the casino floor. GIS is used to merchandise products in grocery and department stores and to model global atmospheric circulation.

Once you have a functioning GIS containing your geographic information and course management records, you can begin to ask simple questions such as "Which fairways indicate a pH of over 6.5?", or more analytical ones like "Which fairways indicate a pH greater than 6.5 and show a history of summer patch incidence during the month of August?" A GIS is not an automated decision-making system—but rather a tool to query, analyze and map data to assist decision-making processes.

Perhaps the first application of GIS technology to the golf course industry was the **Golf Course Information System (GCIS)** from Forester Associates of Portland, Maine. Profiled in *TurfNet Monthly* back in February 1996, GCIS was developed by Peter Forester, a former assistant superintendent at The Gleneagles Golf Club in Manchester, Vermont. As a forestry major at the University of Maine, Forester recognized the capabilities of GIS programs used for forest management and their potential application to the golf course industry.

"The ability to attach data tables or photographs to features on a map is incredibly powerful," said Forester. "It allows you to very easily visualize how everything on your golf course interacts with other features and components."

Forester spent three years developing and refining the GCIS service, which is currently available and on the market.

Rooted in precision agriculture

The legwork for much of the integration of GPS and GIS technology into golf course maintenance is being done today in precision agriculture, which is already in use by a small percentage of large-scale farmers. John Deere's Golf and Turf Division is currently leveraging the R&D already done by Deere's Precision Farming Group, which was formed in 1993 to hone the evolving technologies of GPS and GIS and make them available on a practical basis to the agricultural community.

Precision agriculture utilizes **GPS** to precisely locate field positions of soil samples, insect monitoring stations, even moving tractors and combines; **GIS** to display and manipulate the geographic information; **yield monitors**, which actively measure quantity and quality of the harvest as it varies from location to location *as it is being harvested*; and **variable rate applicators**, which can apply fertilizer, limestone and chemicals at variable rates based on specific needs of field locations. The trick will be to modify the existing agricultural technology to work effectively on golf courses, which are typically smaller in size, often hilly and of irregular dimensions.

Measuring yield is obviously of more critical importance to farmers than to golf course superintendents, who most often want to minimize clipping yield rather than maximize it (beyond that consistent with healthy growth). If we remove yield monitoring from the precision agriculture scheme, we're left with the components of GPS, GIS and variable rate applicators. By using GPS to precisely locate where soil samples, for example, are taken on a golf course, entering the results of soil tests or scouting data into a GIS, then displaying that data on color-coded, computer-generated maps, superintendents can see exactly how fertility, pH, disease incidence or insect populations vary across their courses. With variable rate application equip-

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GPS and GIS ... The new buzzwords

Continued from page 13

ment, you can apply nutrients and other inputs *as needed* rather than averaged for the entire course.

We know GPS and GIS are readily available now—leaving only the variable rate applicators in question. But they are literally right around the corner in the R&D facilities of the major turf equipment manufacturers. John Deere has been refining their GPS-controlled Model 1800 sprayer for several years now and displayed it at the 1997 GCSAA show in Las Vegas. Using modified GPS-based golf cart tracking technology, the sprayer control system is able to turn on and off when crossing GPS-defined fairway or green boundaries, increase or decrease application rates or add secondary chemicals in areas defined by the superintendent. We're certain to see more of this technology this year in Anaheim, from Deere and others.

According to an article in *GPS World*, only a small fraction of the 411 million acres of major crops being grown in the United States and Canada are now being cultivated with precision farming techniques, but that is changing rapidly. Terry Pickett, manager of engineering for Deere's Precision Farming Group, predicted that the market will "explode" once a "single-button" system is developed. "The

typical farmer is not a very highly technical, computer-science-type person," Pickett said. "He is like your typical American consumer who doesn't want to fool with a number of knobs to make something happen. He wants it to work as simply as possible." It could be argued that the typical golf course superintendent would share that sentiment as well.

A new industry spawned

Paul Granger, president of Aqua Agronomic Solutions, Inc. of Lebanon, New Jersey, is one of a burgeoning new industry of GPS mapping contractors, many of whom have added GPS mapping to their core businesses of environmental management, pesticide or fertilizer application, or irrigation design. With a background as golf irrigation manager for a Toro distributor, Granger saw an opportunity to grasp the new technologies of GPS and GIS and weave them with his irrigation expertise into a new business offering irrigation analysis, mapping and design.

"Superintendents have always had difficulty obtaining accurate 'as built' maps from the irrigation contractor once a new installation or renovation was completed," said Granger. "We actually use the term 'record drawings' or 'drawings of record' now instead of the term 'as built', because the latter implies a degree of exactness never realistically obtainable. A 'drawing of record' suggests it is the *closest possible approximation* of the location of the components installed in the ground."

Granger researched GPS technology and equipment for a year before purchasing his Trimble GPS receiving equipment, which allows him sub-meter—down to about 6"—accuracy. "Part of the problem with traditional maps was the scale involved, usually 1":100," said Granger. "The symbol on the map indicating a valve box or drainage outlet location might translate to an area 30' in diameter in the field. With geodetic references from GPS, we can pinpoint the location of that valve box to within several inches."

The technique Granger uses to gather mapping data from a golf course starts with the creation of a custom "data dictionary" for his hand-held data logger, specific for that course. The tables of attributes he defines in the data dictionary become the pull-down menus for the data logger. A "sprinkler" menu might list a selection of makes, models, and nozzle types. When he is standing over a sprinkler head on a fairway, the data logger records the GPS location data while he clicks on the sprinkler menu to specify "Toro 754 with 56 nozzle," for example. This additional data will eventually enable the powerful, interactive management capability of a GIS.

A GPS mapping technician then walks every feature of the golf course, stopping over specific points like sprinkler heads or walking in a loop formation around fairways, greens, tees, bunkers, buildings or water features. The roving receiver records all of the measured positions and the exact time it made each measurement. The technician manually adds the attributes of each point to the data logger. Once the data is collected from all 18 holes—a process that takes 4-5 days for one person to complete for a course with 1,000 sprinkler heads, including all pipe, valves, heads and splices—it is downloaded into a computer. Correction factors must then be obtained via modem "for the GPS data to make sense," according to Granger.

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GPS and GIS ... The new buzzwords

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"Because the satellite signals are encrypted due to its military uses, we must run the data through software to descramble it. The correction factors also compensate for any delays the signals experience as they travel through the atmosphere." Once the data is cleaned up, the GPS software is capable of drawing maps of the points, lines and areas measured on the course. But this is usually just the start of the process.

"While the GPS-generated drawings are functional, they are ugly—not what most people want or expect from this type of expenditure," said Granger, who refines the GPS data by exporting it into an AutoCAD program, where everything is redrawn and color-coded for aesthetics and functionality. "AutoCAD will automatically generate 30-40 layers of data by function on the drawing, like sheets of clear acetate over a blueprint," Granger advised. "We will have a sprinkler layer, a mainline layer, a lateral layer, a drainage layer and a bunker layer, for example—any or all of which can be hidden or viewed at any time to work with specific features of the course layout or infrastructure. Most often, the superintendent will interface with this AutoCAD view of the data on an ongoing basis. He can print out a map of the drainage on a particular hole for his crew to use, or use maps of greens or fairways as training tools to teach mowing patterns to new

employees."

Taking the data manipulation to the next level involves exporting the AutoCAD views into a GIS program like ArcView® GIS by ESRI. This is where the spatial data of the map is linked to a database of information specific to each map component—sprinklers, valves, greens, bunkers, etc. All of the attributes entered by the GPS technician into his data logger can be retrieved by simply clicking on any feature on the map. Click on a sprinkler head and up pops a table of attributes for that specific sprinkler—make, model, nozzle type, condition, age, maintenance history, etc. "A layer of irrigation programming can also be included," advised Granger, "so a superintendent can tell by clicking on it that a specific sprinkler head may be a Toro 754 with a 56 nozzle, but is also Station #23 on Satellite #5, and was last serviced on 7/23/95."

"We're trying to give people access to all their information in one central place," said Granger. "Many superintendents have plenty of course data, but it's spread all over in different files and applications. Often they don't know how to access it or what to do with it, so it's really of limited value. A GIS program allows it all to be in one place—budgets, chemical application histories, equipment maintenance or employment files—and easily managed in a graphical, map-based

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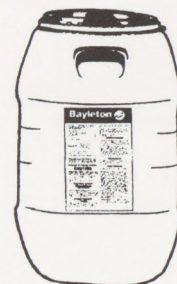
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GPS and GIS ... The new buzzwords

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environment.”

Larry Rodgers of Larry Rodgers Design Group in Lakewood, Colorado, added GPS mapping to his irrigation design/consulting business last year, and finds it a tremendous benefit to the golf course construction process.

“Historically, running design changes during construction were often never recorded. When used as a dynamic, flexible working tool, GPS maps literally recreate real-time ‘as builts’ during the construction process to the benefit of both architects and contractors. Design changes are recorded as they impact not only the irrigation system, but other factors such as course length, etc.”

GPS technology can go beyond merely recording design changes, however; it can be used to prevent many of them. “If we go out and do a proper GPS survey of the property, there is no reason the project should not be built precisely according to plan, even eliminating many change orders,” said Rodgers.

“We are almost moving to a ‘paperless society’ regarding course construction and renovation,” Rodgers continued. “We can collect the GPS data, export it to AutoCAD and send the files out to bid. We can then bring the data back into a GPS program, load it into a pentop computer, go back into the field and stake the system precisely,

without drawings. With the proper equipment, you can see yourself walking through the course in real-time 3-D. This is very, very exciting technology that will do nothing but build and get better.”

On to precision material application...

IPM Systems, Inc. of Moncure, North Carolina, is a company which identified an opportunity to integrate GPS mapping as a complement to its precision application services. According to Devlin Reynolds, president of IPM Systems, “one crucial piece of data about their golf course most superintendents lack is accurate measurements of their fairways, greens, bunkers, tees and lakes. The architectural plans or construction drawings of most courses are rarely updated to include running changes during construction or renovations undertaken since original construction—so the superintendent is left either guessing or relying on walkoffs or aerial photography, both of which can be subject to inaccuracies.

“Since integrating GPS mapping into our service,” Reynolds continued, “we have found course acreages to be typically 15-17% less than the superintendent thought they were—and was applying fertilizers and pesticides to. Significant cost savings can result from basing ‘input management’ decisions upon highly accurate course measurements. Anything used in an operational budget—fertilizer, pesticides, seed, sand, topdressing, even personnel—can be optimized by using an accurate, GPS-based management system, not to mention the environmental benefits.

“Our ultimate goal is precision application of materials on the golf course,” said Reynolds. “One of the first steps is being able to spot-treat rather than blanket-apply chemicals or fertilizers. By labeling scouting and soil sampling data with GPS coordinates, the superintendent will be able to take advantage of precision application equipment as it becomes available in the near future. Integrating all of this information with weather data and pest prediction models can be the cornerstone of a highly effective integrated pest management program, really helping to take the guesswork out of turf management.”

Another use of GPS-based maps can be for quality control auditing of construction projects—measuring actual square footages “as built” compared to what they should have been per the architectural drawings. “Construction costs are normally based upon moving, removing or supplying x-amount of soil, fill, greens mix or sand,” said Reynolds. “GPS measurements allow you to easily verify that you got what you paid for.”

On the university front

Research into the application of GPS and GIS technology for golf course use hasn’t escaped the universities. Dr. Tom Fermanian at the University of Illinois campus at Urbana is working on a program called **Golf Course Management System (GCMS)**, the first version of which has been licensed to IPM Systems, Inc. for distribution to the industry. GCMS is a shell program that layers on ArcView® GIS.

“Our original goal was to build a site-specific pest management system for golf courses, but has been expanded to become an over-all system for data management and recordkeeping,” said Fermanian. “We can draw any shape polygon within a fairway and the system

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GPS and GIS ... The new buzzwords

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will calculate the area, application rates of specific chemicals, the amount of material and volume of carrier needed. We can also print out the label and MSDS for the products used.

"From a pest management standpoint, the questions to be answered about this technology are many," said Fermanian. "We're not sure yet whether a spot-application pest management system would be economical or practical on a golf course. Can satisfactory control be achieved? Is the cost savings of spot-application worth the investment? We also need to evaluate the true environmental benefit of spot applications. We really don't know where this is going, but the government may at any time step in and require it—particularly in states like California or New York."

An environmental outlook

Chesapeake Environmental Management, Inc. of Bel Air, Maryland, is a full-service environmental consulting firm providing a complete range of environmental protection, auditing and regulatory services related to golf course development and renovation. According to Stephanie Hau, president of CEM, they quickly realized the lack of accurate property maps hampered her firm's efforts to perform their environmental work properly. To fill the need, CEM began to offer

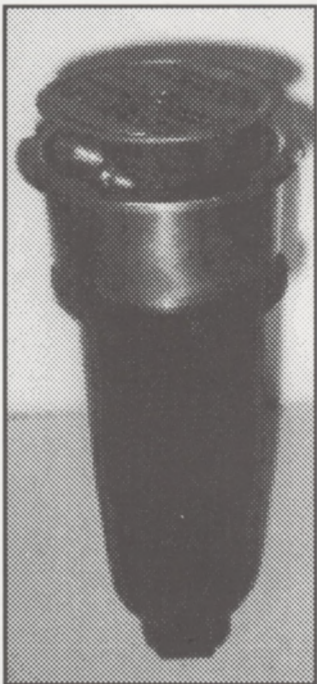
mapping and GIS services two years ago. "We encourage anyone embarking on a master planning process or considering a large scale renovation or restoration project to start with an accurate map of the entire property," commented Hau.

Chesapeake Environmental utilizes several technologies for their mapping services, including GPS, aerial photography and photogrammetry. "Each technology has its strengths and weaknesses, but any of them can be used as a background for GIS layers or adding topographic lines," said Hau. "We try to tailor our products to how our client intends to use it today, and into the future. We try not to oversell the technology."

CEM also offers ongoing data entry and management on a contract basis as part of their GREENDATA™ GIS service, which can reduce the need for course staff to perform data entry functions—a concern of many superintendents considering this type of management system. "We custom configure the GREENDATA system to parameters defined by the course superintendent, so they are not burdened or constrained by extraneous data requirements that don't contribute to solving their problems. Our goal is not to just *keep track* of a superintendent's environmental or course management data, but help them *make sense* of it," said Hau.

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Irrigation control packages

The major irrigation manufacturers are working to integrate components of GPS and GIS into their new graphical irrigation control packages, like *Cirrus* from Rain Bird and Toro's *Site Pro*, both of which are currently in field testing stages.

Rather than requiring true GPS maps, *Cirrus* and *Site Pro* use background images of the golf course which can be GPS-based, but might also be aerial photographs, CAD files or scorecard images. According to Alan Clark, regional manager for Rain Bird Golf, "*Cirrus* will layer a graphical representation of the irrigation system on top of an aerial photo, AutoCAD drawing or GPS map of the golf course (which has been converted into a *Cirrus* information file), and then draw on the existing irrigation control software to operate the system. While the graphics are nice, it's the flexibility and capabilities of the irrigation engine behind the scenes that really do the job. From a system operational standpoint, GPS isn't able to turn on sprinklers or manage flow any better than currently available technology." Clark continued, "Our goal will be to eventually integrate GIS into *Cirrus* to simplify data collection regarding specifics of the hardware in the ground. We will be also adding more weather station interactivity, phenology models, disease prediction and user-defined

reporting capabilities to *Cirrus*."

According to Steve Snow, national golf sales manager for Toro irrigation, "We're interested in GPS technology because it would give the superintendent the ability to go out with a hand-held receiver and precisely locate a snap valve or a drainage outlet even under two feet of standing water. GPS also provides accuracy to the *Site Pro* background image, which will be supplied by the local distributor working through NSN." GIS capability will be added to *Site Pro* through the "T-Map" component when it becomes available later this year.

What does it cost?

What does a GPS survey of a typical 18-hole course cost? According to Paul Granger, costs can vary from \$1,500 (for a simple mapping of irrigation heads only) to the \$10-\$12,000 range (for a GIS representation of course topography and a complex triple-row irrigation system. "One of the nice things about this technology is that it can be done in phases, if desired," said Granger. "Since geodetic information (X, Y and Z data as determined by GPS) never changes, you can continually update existing data or add new information in the future—if you install a new irrigation system or renovate fairway bunkers, for example."

Reynolds of IPM Systems says data collection for a comprehensive GPS map of an 18-hole course generally runs from \$3,500-\$5,000, with an entire package including a GIS program running about \$10,000 (for approximately 1,000 irrigation heads). "We feel the data collection will pay for itself in input analysis alone," said Reynolds.

Doing it alone

How realistically can a superintendent perform a GPS survey in-house? "While anyone can purchase or rent GPS receivers, the data collection is only the first 1/3 of the process," said Granger. "You have to know and understand GPS, how to clean up the data and apply the proper correction factors, and then be able to export it into AutoCAD or a GIS to really make the information usable. If the primary need is for an irrigation record drawing, it makes sense to have someone who really knows irrigation do the data collection—because often an intuitive sense of what is under the ground is needed to find everything."

Reynolds of IPM Systems agrees. "There is definitely a learning curve involved in collecting GPS data properly," he said. "There is never a single job that goes according to the book. Furthermore, each manufacturer of GPS receivers uses proprietary software to convert the data into something useful, but most of which are not capable of providing a good graphical representation of a golf course. That is why we have to go to the best AutoCAD programs or ArcView to give our customers a product that meets their expectations. Of course," he added, "that is today, as we speak. Anything could change tomorrow."

What's next, robotics?

Quite possibly. Automated control of agricultural equipment based upon GPS data is currently being developed in university and industrial laboratories, building upon previous work in developing

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GPS and GIS ... The new buzzwords

Continued from page 19

GPS-based aircraft autopilots. The implementation of this research into the agricultural market (and perhaps ultimately, the golf course industry as well) will likely take place in three steps: (1) driver-in-the-loop control using a graphical display; (2) driver-assisted automatic control, with an on-board operator making only high-level decisions; and (3) vehicle autonomous guidance and control that will operate for several hours without human intervention. The same challenges exist to modify remote-control technology to work effectively on the smaller scale and irregular terrain of golf courses.

Larry Rodgers predicts, "GPS is becoming the basis for so much golf course maintenance today. Over the next 5 years we will see GPS on all spray equipment, then robotic maintenance equipment over the next 5-10 years."

Just as laser-guided grading equipment is fairly commonplace now, automatic construction equipment using GPS guidance might in the future translate CAD drawings into finished grades on golf courses without manual measurements or staking.

As GPS and GIS become mainstream over the next several years, the only questions likely to remain to be answered will be (to coin some popular phrases), "What do you want to do?" and "Where do you want to go?"

Tree inventory aids replacement program at Apawamis

One of the first mapping projects undertaken by Paul Granger of Aqua Agronomic Solutions was a comprehensive course map and tree inventory for the Apawamis Club in Rye, New York. In addition to the usual course topography and irrigation system, Granger worked with an arborist to catalogue up to 32 attributes for each of 2,200 trees on the course.

"Before actually going out and collecting the data, we set up a data dictionary to include attributes like tree inventory number, species, height and girth," said Granger. "Going from tree to tree with Elliott Templeton, the arborist, my GPS receiver registered the location of each tree while I entered the data he dictated: whether that tree required pruning, cabling or

bracing; whether there was lightning protection installed, or any visible indication of canker, gall, surface or girdling roots. He also estimated the life expectancy of each tree, which has become a key component of the tree maintenance and replacement program at Apawamis."

With the tree information exported to a GIS program, queries can be performed to bring up all trees that match any set of criteria—all trees with a life expectancy of less than five years, or all the white oaks noted as requiring pruning, for example. Bill Perlee, superintendent at Apawamis Club, came on board soon after the mapping and tree inventory project was undertaken, and has found the information valuable in making proactive (rather than *reactive*) decisions about

Continued on page 21

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GPS and GIS ... The new buzzwords

Continued from page 20

tree management on the club grounds. "We're able to remove or prune unhealthy or old trees on our own schedule before Mother Nature forces us to do it," said Perlee. "If we know certain trees—which may be strategic from a playability standpoint or particularly important from an aesthetic viewpoint—are within several years of their expected lifespan, we can go ahead and replant to get a head start on the replacement process. Being able to maintain our trees as our schedule permits really maximizes our productivity," he concluded.

Mapping vs. Surveying

What's the difference between mapping and surveying? According to Devlin Reynolds of IPM Systems, "Mapping is useful to provide an accurate depiction of course topography and infrastructure for management use, typically accurate down to the 6" level. Surveying, on the other hand, is much more expensive to perform, but is accurate down to the sub-centimeter level—making it ideal for generating legal descriptions for the sale of real estate, for example."

Larry Rodgers says the major differences between mapping and surveying are cost, speed, quantity and—to a degree—accuracy. "Both GPS and surveying collect points in X, Y and Z dimensions. GPS can do it much quicker, but surveying is usually better for determining Z elevations. Depending upon the equipment used, GPS elevation deviation is usually about 3 times that of the X or Y deviation, making it less desirable for green complexes or rolling terrain," said Rodgers.

"The various types of GPS equipment each have different levels of accuracy, but accuracy costs money. How accurate we can get depends on how much money you want to spend. With any of the GPS equipment, however, you can gather 7-10,000 GPS points in a day, compared to the \$6.00/point most surveyors charge."

Technology in action: "Virtual Reality" redesign at Greensboro Country Club

Greensboro (NC) Country Club is embarking on a redesign project to take 18 of their 36 holes back toward their original 1909 Donald

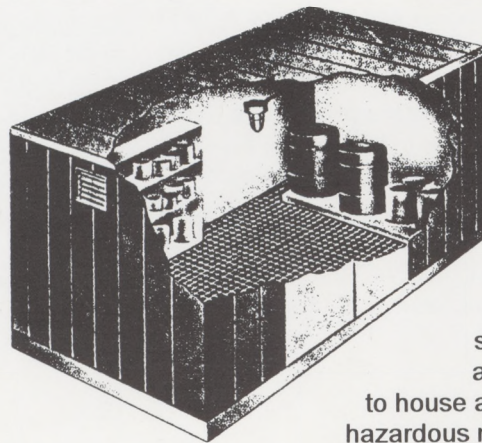
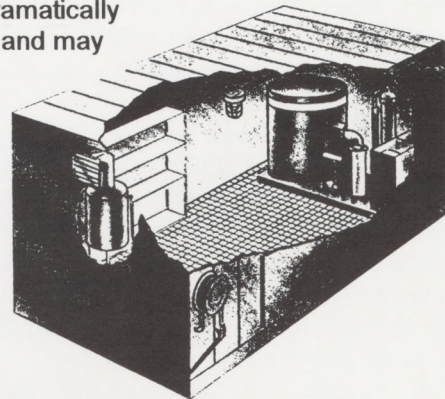
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GPS and GIS ... The new buzzwords

Continued from page 21

Ross design—and using state-of-the-art technology in the process. The club hired Jim Ganley of Integrated Golf Services of Atlanta, Georgia, to consult in the renovation/redesign/master planning process along with their in-house staff.

According to superintendent Kris Spence, “We have the old Donald Ross drawings and aerial photography of the course before it was renovated by George Cobb in 1966. Interestingly, Cobb made topo maps of the existing Ross greens and then layered his alterations over top, so we have a good idea of the sizes and slopes of the original Donald Ross greens.” Spence continued, “We’re taking the course back *toward* the original design, but not doing a total restoration. We feel the old greens would be too severe for today’s putting speeds.”

The club hired IPM Systems, Inc. to gather the GPS data for the course and create digital AutoCAD maps, which were layered on top of the original course topos. These were then sent to Mike Griffith of Naples, Florida, who uses 3-D land-modeling software to create “virtual reality” visualizations of the proposed renovation design. “We were able to show the golf committee the old green and what the new green will look like, from any angle,” said Spence. “We could spin the green complex around to look at it from any viewing angle, or position ourselves standing in a greenside bunker, for example. From that point, you can tell how deep the bunker is, and how much of the putting surface can be seen from there. It’s like the simulated 3-D fly-through views you see on TV for major golf tournaments,” he added.

“In addition to being able to visualize the design and make changes before the construction begins,” commented Spence, “the computer technology generates the grading plan and calculates the cut and fill quantities we will need. A lot of money and time is spent during a renovation process on hauling material. Now we will know ahead of time where we will have excess material and where additional fill will be needed, so we can avoid redundant material hauling. The computer can actually adjust the elevations to balance the fill needs, if we want it to. The big benefit, though, is the ability to fine tune the design prior to construction, thereby saving time and avoiding mistakes,” said Spence.

The renovation project at Greensboro Country Club is scheduled to commence February 1, with a completion date of the end of August, with play resuming mid-September.

For further information:

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email pfores5975@aol.com

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Paul Granger tel 908.236.2942
email paulgranger@worldnet.att.net

Larry Rodgers Design Group
Larry Rodgers tel 303.989.6995
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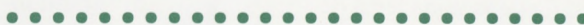
Chesapeake Environmental Management, Inc.
Stephanie Hau tel 410.893.9016

Mike Griffith tel 941.592.5027
email mgriff7072@aol.com

For an overview of GPS and GIS:
Trimble Navigation Limited
<http://www.trimble.com/gps/>

Environmental Systems Research Institute, Inc.
<http://www.esri.com/base/gis/index.html>

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CHANGING THE COURSE
OF DISEASE CONTROL



MARKS THE SPOT

by Ed Walsh, CGCS

Have you ever noticed how chain letters seem to come in spurts? It seems like every few years we'll get two or three within a couple of months, telling us to rewrite the letter and send it to 10 of our friends and send one golf shirt to the person who sent you the letter. I actually participated in this scam a few times, and it really does work because I've received quite a few golf shirts.

I never gave this practice much thought until a few weeks ago when I was visiting my good friend Steve Malikowski. I had never been to Steve's home before, so he went through the regular routine of showing me every nook and cranny of his "ESTATE." It is a really nice house, and I was kind of impressed by Steve and how he cared for his home. Of course, I knew that his wife Chris probably kept the place as neat and orderly as it was, because whenever I call him he's either at work or in his pool or hot tub. Never have I called and found him to be working on the yard, planting a garden or painting a room, so it's a safe bet to say Chris does it all.

Now it was during this tour that I noticed Steve must have had 50 new golf shirts stacked up in one of his bedroom closets. I didn't think about it too much until I mentioned it to Chris while we were relaxing a little later. Steve was out in his hot tub out of hearing range, so Chris told me the story about the shirts.

It seems that Steve would draft one of these letters, using a lot of names we all know, and send them out all around the country. He would have his friends in various parts of the USA mail them from their locations so as not to draw any attention to his plan. The pay back would be a golf shirt from a recognizable club, and after seeing his closet, I was certain he didn't have to do this very often to get a 10-year supply of top quality shirts and pay back his friends.

Steve was still in the hot tub, so I went back to his closet and took a closer look to see how many people I knew who fell for this scam. He had shirts from all over the place: Atlanta Athletic Club, Baltusrol, Pinehurst, Olympic Club, Shinnecock, The Country Club, Congressional, Winged Foot and Burning Tree, just to name a few.

I actually participated in this scam a few times, and it really does work because I've received quite a few golf shirts.

I was disappointed that a person I call a good friend would stoop so low as to do something like this, but after a brief moment, I became envious because Steve thought this up before me. Now I know why he never does well in any of the tournaments we play in. He certainly is a decent player, and again, if you attend enough meetings you have to win something. I guess he feels a bit of remorse for the way he gets his supply of shirts and wants other people to have a chance during the year.

Now that you know the story, I hope none of his friends hold this against him. Remember, he does let all the rest of us win during the year by playing so badly at our monthly meetings. I know one thing, I am going to start giving this guy a lot more credit from now on. He may even pass Pete Pedrazzi, Bob Prickett, Tom Witt and Bill Womac on my list of heroes.

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Cadence

by Brian M. Remo

Well, I must admit that I am guilty . . . guilty of my own accusations . . . guilty as charged. Last issue, I wrote to you concerning the insanity that often occurs during the winter season in regards to the desire to still play golf. Well, friends, I decided to test the waters on December 27 (or should I say, test the snow!!!). Those of us who were home for the holidays will recall that December 25 and 26 felt more like spring than winter, and the golf bug was biting numerous victims across the state. I fell victim as well and decided to get together with Pat Hickey, fellow assistant from Pennsylvania and one of my roommates from college, to play golf on the 27th. Twenty-four hours and 3 inches of snow later, my merry band of hackers and I found ourselves staring out of the shop window praying that the god of convection heaters would come and annihilate the crusty blanket of whit that had formed on the frosty links of Rock Spring Club. Well, no such luck. Wearing disappointment like a ski mask upon their faces, the other three players started to discuss alternate activities for the day, but you could have heard a pin drop when Pat and I started bundling up and painting a dozen golf balls bright orange. The insanity was obviously contagious as the five of us were soon on our way to the 1st tee, with bags on our shoulders and smiles from ear to ear. There were no birdies. There were no dramatic long drains from 50 feet. I could probably count on one hand the amount of horrendous swipes into the snow that could actually be regarded as a golf shot. However, at the 19th hole (after thoroughly thawing out), the opinion of the day was unanimous—that was the most fun any of us had ever had on a golf course and by far the most memorable.

Two weeks later, I found myself out of the frying pan and into the fire. My wife Fran and I took a vacation to Jamaica with two friends of ours. Eight days of 90 degree weather was just what the doctor ordered for shaking the winter blues. My friend Curt and I brought our clubs with us, so we decided to play 18 while we were there. Of course, we picked the hottest January day that Jamaica has ever seen to visit the Sandals championship course (100+ degrees), so my goal was clear . . . *shoot lower than the temperature!* By the end of 18 holes, the backs of our necks felt like someone took a blow torch to them and rubbed Urea in the wound. But, all in all, we both shot exceptional rounds considering the temperature and knowledge of the course. Upon returning home, many people couldn't fathom why on a vacation I would subject myself to the confines of a golf course when I spend every minute of my life working on one. (Now bear with me, kids, I'm about to make my point.)

If there's one thing I've learned from being employed in this industry, it is that we as professionals have a funny relationship with the sport that governs our existence. No one said we have to love the game more than life itself. No one demands that we be scratch golfers. Looking back on my college years, I can't recall a class that taught the correct golf swing and the impact it has on the success of our industry. However, I do recall the words that one of my professors told us on our last day of class:

"Those of you who are leaving here to pursue a career in golf course management, remember this and carry the recollection with you at all times, for it very well may be the most important thing you'll ever learn. To remain successful, you must understand, admire and above all else respect the sport. If you don't,

you're in the wrong business, and you're definitely in the wrong classroom."

Ronald Muse, Delaware Valley College

We all may be able to recite the complete taxonomy of every vascular plant know to man, interpret soils from here to China and

**Well, I must admit that I am guilty . . .
guilty of my own accusations
. . . guilty as charged.**

sound off every Latin name for turfgrasses until we're blue in the face, but without a complete understanding of how a golf course affects us as *golfers*, we are merely a textbook, my friends. According to recent records, over 75% of the assistants in New Jersey have golf privileges. I believe that number should be higher, and I'm sure the other 25% would agree with me. Through the association and tournaments, we have the opportunity to play golf courses that you're friends would sell their souls for a golf shirt from them. Utilize these opportunities as they are offered to you, as they benefit your course as much as it does us. The golf course is our livelihood, it is our responsibility, it is our church. So play golf . . . it's your job.



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The Greenside commends you, Clark and Ed!!

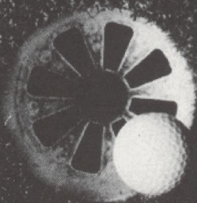
25 years later

As editor of *The Greenside* I receive newsletters from all over the country; when I get the time, I try and read as many as I can. The Golf Course Superintendent's Association of New England has in its publication a column called "Remember When." According to this column, a young student and future golf course superintendent was rewarded for classroom achievement with a Professor Lawrence S. Dickinson Scholarship. Professor Joseph Troll

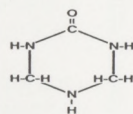
did the honor of presenting the GCSANE scholarship to a person who is now a past president of GCSANJ. **Stephen Finamore, CGCS**, received this award; I guess that the New England chapter knew what they were doing as Steve has always presented his membership with a quality golf course. My only question is, how much did it cost to go to a four-year turf school at the same time I was graduating from grammar school?

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