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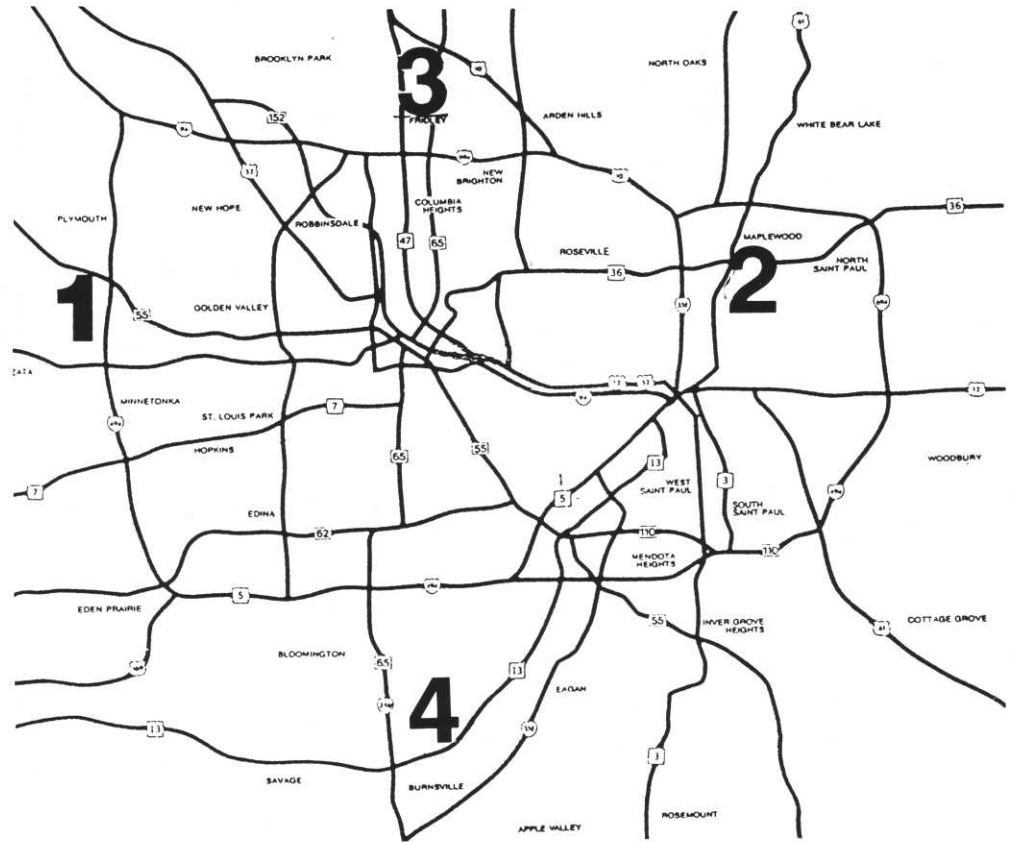
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by KEITH SCOTT, CGCS
 MGCSA PRESIDENT

TAKE TIME TO STUDY

Pebble Creek Golf Course was the site of our July meeting. Well over 100 people were treated to a fine lunch and a good golf course. Thanks to Superintendent Cary Femrite, to all the people at the club for hosting this event, and to the Minnesota Toro Company for the equipment display.

Our educational program at Pebble Creek was presented by Harold Batzer, retired entomologist. Too often we focus too much time on the condition of our turf and not enough time on the trees and shrubs. Set aside a certain amount of time each week to only look at one of the most intricate components of golf course design--trees and shrubs.

As you read through this edition of Hole Notes you will find extensive information concerning the Water Usage/Impact Study. Thanks to Chairman Scott Hoffmann, CGCS, to the committee, and a special thanks to Dr. Jim Watson and Dr. Don White for their involvement. This study will definitely be an asset in working out proper water allocations for our courses.



"How much longer are you head of the Green Committee?"

MGCSA GOLF COURSE ECONOMIC & WATER USE COMMITTEE UPDATE

by **Scott Hoffmann, Chairman**

The MGCSA GOLF COURSE ECONOMIC & WATER USE COMMITTEE has recently met with the Minnesota Department of Natural Resources, Division of Waters. The purpose of the meeting was to share MGCSA concerns over water appropriation standards and priority rating as they relate to golf courses, and to determine what we can and should be doing as an Association and concerned user to help ensure a fair and adequate allocation of water to Minnesota golf courses.

As a result of a sharing of ideas and information with the DNR and because of information gained through the MGCSA Economic & Water Use Survey, the committee will be directing its energies toward the following goals:

1. Through the use of case studies of individual golf courses, work with the DNR to re-define water appropriation standards. We are looking for golf courses of all types that have water metering devices and that can accurately determine percentage of water allocated to greens, tees, fairways, and roughs.
2. Through the legislative process, attempt to raise the priority rating for golf course greens and tees from Minnesota's lowest priority of "five" to a rating of "three" which places us on a par with agriculture and sod-growers.
3. Encourage the use of water meters on all Minnesota golf courses.
4. Encourage the installation of water efficient, state of the art irrigation systems.
5. Encourage the use of drought resistant grass varieties.
6. Encourage ground water sources for golf course irrigation over surface water sources, or at the very least have a contingency plan for greens and tees.
7. Provide the DNR with observation wells to monitor ground water levels throughout the state. These could be existing golf course wells and would be of great help in aiding the development of a statewide hydrologic map.

Among the information learned were some startling facts about Minnesota's water resources. In the last 30 years our water use has quadrupled and is expected to do the same in the next 30 years. Some experts say that in 50

years, Minnesota's water resources will be more valuable than Texas oil ever was. What this should be telling us is that we must act now to define how our water is being used currently to help ensure a fair and adequate future allocation.

The committee would like to thank all of you that participated in our survey. Although this is just a beginning, we now have a basis for future work and have gained some very pertinent information about water usage and the golf industry in Minnesota.

If you are willing to participate in a case study of water usage on your golf course, and/or monitoring of your ground water levels, please contact Keith Scott, (612-938-6900), or Scott Hoffmann, (218-829-2811).

WATER CONSERVATION . . .

OUR SHARED CONCERN

by **Larry Vetter & Water Use Committee**

The drought of 1988 heightened public awareness of an issue about which the turfgrass industry has been concerned for years. Water is a precious commodity. It is not unlimited and without it life, as we know, cannot exist.

Given this indisputable fact, the Minnesota Golf Course Superintendent's Association (MGCSA) has assumed a proactive stance in identifying water use by its member courses and charting a course of action that will further encourage wise use of this limited resource.

The logical starting point was to identify the industry status quo. A survey of member clubs was conducted and data gathered from this and other sources are presented as the base from which to develop a responsible plan of action. Data from and action by the golf industry in Minnesota pertinent to this process are:

- * Directly generates \$255-300 million revenues annually.
- * Generates in excess of \$18 million in state sales tax revenue annually.
- * Provides over 16,000 jobs.
- * Over 20% of golf rounds impact tourism.
- * 75% of survey respondents host charitable events with 54 specific charities identified. Golf has been documented in one area as second only to United Way in raising funds for charity.

- * Hosts numerous recreation and/or competition events for juniors, junior and senior high school boys and girls, senior citizens, college, university and corporate participation.
- * Hosts statewide tournaments along with a variety of fund-raising events.
- * Outspends all other segments of the turfgrass industry in spending on research and updating of equipment aimed at conservation, including computer-controlled irrigation, drought tolerant grasses, tensiometers, surfactants, cultural practices and others.
- * 80% responded they use some form of water conservation.

Establishment of a full-time Water Resources Committee. The golf course industry in Minnesota has an enormous impact on the quality of life that we are so proud of in our state. In addition to offering the recreational and competitive opportunities previously mentioned, each individual golf course property has an environmental impact as follows:

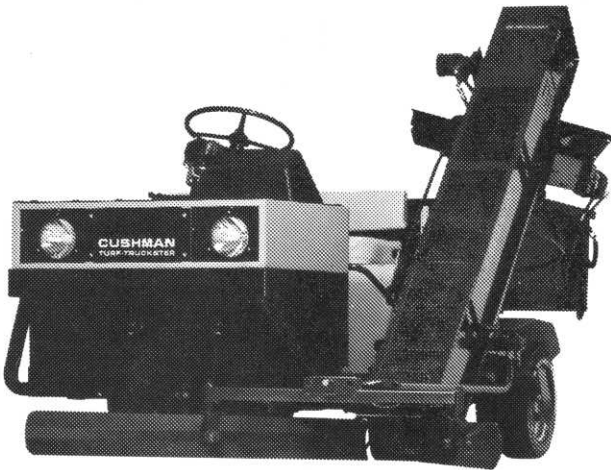
- * 100 acres of actively growing turf produces enough oxygen to support approximately 7,000 adults.
(This process is the greenhouse effect in reverse

as carbon dioxide is used to produce the oxygen.)

- * Grasses modify temperature. This same 100 acres has the cooling capacity of more than 7,000 tons of air conditioning.
- * Grasses reduce undesirable noise 20-30%.
- * Grasses absorb and reduce glare.
- * Grasses absorb pollutants and trap particulate matter from the atmosphere.
- * Grasses are the most effective form of plant life for the prevention of soil erosion.
- * Wildlife is attracted to grassy and treed areas.
- * A typical golf course will recharge the water table with approximately 10 times the amount it uses.
- * Dense turf has over 3 times the water infiltration rate of thinly covered areas.

Numerous other environmental, economic, mental and physical health statements can be made. However, the above is meant to be indicative of the contributions the

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game of golf makes to the State of Minnesota and the respective communities located within the state.

The MGCSA study found that an average of nearly 300,000 gallons of water per acre were used in 1988 on the courses whose superintendents responded to the questionnaire. One disturbing thing that became obvious was that some do not know how much water they use on their property.

As a result of the study and the MGCSA's ongoing concern for its industry and the environment, the MGCSA is committed to:

- * Encourage the installation of effective metering devices on all golf course irrigation systems in the state of Minnesota.
- * Permanently install a functioning committee for the increased conservation of water and other resources.
- * Intensify the educational opportunities available to our membership specifically addressing water conservation.
- * Continue contributions, and expand as resources permit research dedicated to water conservation in areas such as irrigation equipment, plant breeding and selection for better drought tolerance as well as lower water usage, and cultural practices that will reduce the use of water and runoff, improve water retention and facilitate the expanded use of effluent water.



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GOLF COURSE IMPACT ON WATER QUALITY

(Credit— THE MOUNTAIN STATE GREENLETTER—JULY 1989)

FINDING: Golf courses do not pose a significant pollution threat to the nation's water supplies. This conclusion is based on a review of the scientific evidence that is currently available. Neither groundwater nor surface water is threatened by golf course runoff. Further, studies show that stormwater runoff is near zero from golf courses.

GROUNDWATER: About half of all people in the United States depend on groundwater for their drinking water, and the figure is 90% in rural areas. Results from ongoing scientific studies show that the use of pesticides on golf courses does not threaten public drinking water. Because of the low mobility and quick biodegradation of most golf course pesticides, they simply do not reach groundwater in significant quantities.

One Environmental Protection Agency-funded study being undertaken on Cape Cod in Massachusetts provides for a "worst-case" estimate of groundwater contamination. To date, test results have been encouraging, demonstrating that golf courses and clean groundwater do co-exist.

Some experts argue that golf turf offers uniquely favorable control mechanisms to prevent groundwater contamination. Dr. Stuart Z. Cohen, a former Ground Water Team Leader for the EPA in Washington, notes that "the use of pesticides on golf courses poses less of a threat to the nation's groundwater than does the agricultural use of pesticides.

Additionally, turfgrass provides a "thatch layer" not found in row crop situations. Thatch binds up pesticide residues and increases degradation of some chemicals. Dr. Harry D. Niemczyk of Ohio State University has found that as much as 99% of recovered pesticides are found in turfgrass thatch.

In some areas, golf courses are also helping to mitigate the groundwater pollution effects of hazardous waste sites. Many of the nation's golf courses fertilize soil using sludge compost mixes prepared by urban waste recycling programs. These sludges might otherwise be disposed of in municipal landfills. Thus, potential groundwater leaching from dump sites is averted by careful community planning and recycling.

STORMWATER RUNOFF: Stormwater runoff from golf courses is not a significant environmental hazard. Research conducted by Dr. Thomas Watschke, a turfgrass specialist at the Pennsylvania State University,

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indicates that thick, healthy turf reduces runoff "to next to nothing."

An average golf course of 150 acres effortlessly absorbs 12 million gallons of water during a three-inch rainfall. Dr. Watschke finds that thick, carefully managed turfgrass has 15 times less runoff than does a lower quality lawn. As a result, almost all of the pesticides applied to the grass remain in place after peak rainfall.

Dr. Richard J. Cooper of the University of Massachusetts argues that turfgrass cover "reduces soil erosion and prevents soil and chemical runoff into water sources."

By comparison, parking lots, streets and even residential areas load nearby waters with hazardous pollutants carried in runoff from road surfaces, gutters, and catch basins.

SURFACE WATER: Golf courses help decrease sedimentation pollution of rivers, streams and lakes by preventing topsoil erosion. The major polluter of U. S. surface water is sedimentation from soil erosion. However, turfgrass reduces erosion, as compared to alternative land uses.

For instance, studies show that grassland experiences 84 to 668 times less erosion than areas planted with wheat or corn. Construction has an even more devastating impact on topsoil, so golf courses can greatly reduce erosion effects as compared to other land users, like shopping malls or housing developments.

Sedimentation Pollution from Soil erosion costs society billions of dollars in increased transportation, shipping, and cleaning costs. Thus, by preventing soil erosion, golf courses serve a very beneficial societal purpose.

CONCLUSION: Golf courses do not threaten the nation's water supplies. Scientific studies show that pesticides used on golf courses do not seep into neighboring groundwater sources. Other studies demonstrate that stormwater runoff is greatly reduced by turfgrass. Finally, still more studies show that grassy areas reduce soil erosion, which is a major cause of sedimentation pollution in the nation's rivers, lakes and streams.

On the whole, a golf course makes an environmentally sound contribution to any community.



STRESS MANAGEMENT TOOLS



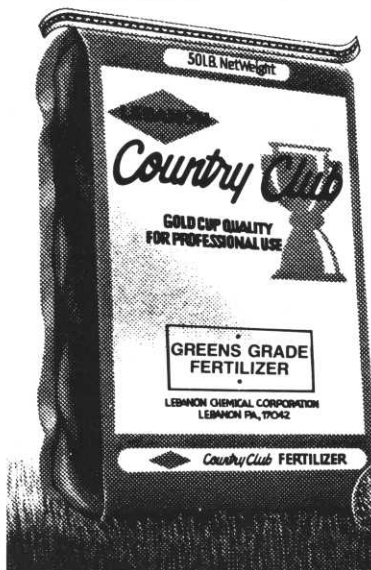
A truly stressful situation.

As a follow up to last month's stress article by Dr. John P. McNamara, we present this list of Stress Management Tools.

1. Examine yourself
2. Reduce Xanthine intake (coffee, tea, cola)
3. Avoid vitamin depletion
4. Monitor salt intake
5. Avoid hypoglycemia
6. Delegate work
7. Maximize information input
8. Release anger appropriately
9. Choose realistic options
10. Develop a plan with goals
11. Practice progressive muscle relaxation
12. Maintain a sense of humor
13. Be Polite
14. Know your standards and values
15. Employ biofeedback
16. Face reality
17. Normalize difficult situations
18. Meditate
19. Be assertive-not aggressive
20. Make decisions
21. Do it now, Don't procrastinate
22. Know your strengths and weaknesses
23. Organize
24. Seek opportunity from crisis
25. Create environments that reduce stress
26. Ventilate
27. Practice imaging
28. Join a support group
29. Exercise regularly
30. Improve interpersonal skills
31. Recognize early signs of stress illness - get treatment
32. Use psychoactive drugs appropriately
33. Practice self-hypnosis, yoga, zen
34. Take control of your life
35. Get adequate rest
36. Leave time for the unexpected
37. Get massaged
38. Create buffer zones around stress
39. Curry stress reducers
40. Treat people like human beings
41. Forget the past
42. Prepare
43. Seek spiritual nourishment
44. Dress up, not down
45. Build in relaxation time
46. Be flexible
47. Abdicate parts of your life
48. Learn to say NO - and when to say it
49. Don't gossip
50. Slow down - smell the roses
51. Reduce noise and people pollution
52. Establish routines
53. Communicate to those around you
54. Minimize surprise
55. Structure environment to work for you
56. Use modern technology
57. Choose friends carefully
58. Do your share to keep good friends

Taken from "Teaching Healthy Managers To Control Their Economy-prone [Type A] Behavior", SELF MODIFICATION OF EMOTIONAL BEHAVIOR, Edited by K. Blakenstine and J. Polivus. Plenum Press, New York City, New York. 1982

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LYME DISEASE -

BE WARY, NOT WORRIED, WHEN ENJOYING THE OUTDOORS!

Lyme disease is becoming increasingly common in Minnesota and numerous other states. Since Lyme disease is spread by the bite of certain ticks, it is important for people who work or recreate outdoors to learn the facts about the disease and how to prevent it. By taking some simple precautions, we can all continue to safely enjoy the pleasures and benefits of outdoor activity.

WHAT IS LYME DISEASE?

The symptoms of Lyme disease can vary a great deal from one case to the next.

In general, early signs and symptoms appear 3 to 32 days after a tick bite and include fever, fatigue, headache, aching joints, nausea, and often a characteristic skin rash. This rash, which occurs in about 70% of people with Lyme disease, tends to be roughly circular in shape, and is usually found at the site of the tick bite, although multiple rashes may often occur at other sites. In time, as the rash lesion gets larger, the center become clear (not reddened). The early symptoms may disappear on their

own over a period of several weeks.

If Lyme disease is not treated when the early symptoms are present, many persons will develop late symptoms of the disease. These may occur weeks to even years after the initial exposure and can involve the joints, nervous system, and heart.

Severe headache, stiff neck, weakness and/or pain in extremities, and facial paralysis (Bell's palsy) can result if the nervous system is affected.

If Lyme disease affects the heart, conduction disturbances in the heart can result, which may produce fainting spells or an abnormally slow heart rate.

Arthritis of the large joints is a common problem in the later stage of Lyme disease. The arthritis may be intermittent and in some persons may move from joint to joint.

Remember that an individual with Lyme disease will likely have only a few of the above symptoms, and that the early and later stages of the illness may overlap.

HOW DOES A PERSON GET LYME DISEASE?

The disease is acquired by a tick bite. The ticks that transmit the Lyme disease bacterium (Borrelia burgdor-

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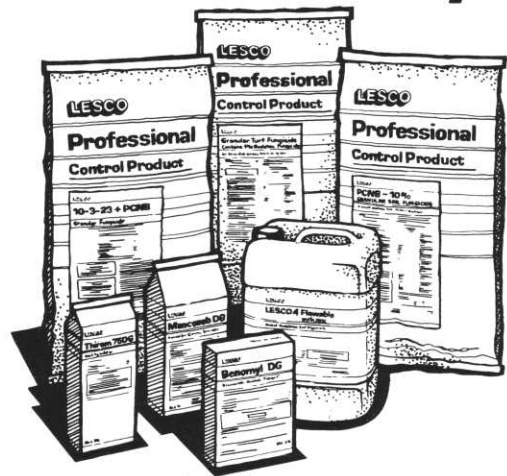
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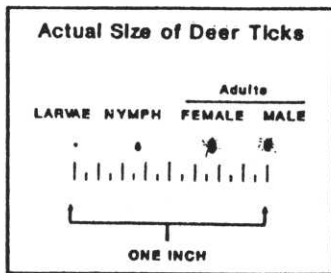
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feri) typically become infected when the larval stage of the tick feeds on infected field mice. When subsequent stages of that tick (the nymph and adult stage) feed again, the infection can be transmitted to the tick's new host. The tick must actually be attached to a person's skin before it can transmit the Lyme disease bacterium.

DO ALL TICKS CARRY LYME DISEASE?

No. The principle carrier of Lyme disease is a tick named Ixodes dammini, commonly known as the deer tick or the bear tick. The nymphal stage of the deer tick, which is responsible for most human Lyme disease, is very small. Because of the small size of the nymphs and the fact that tick bites are frequently painless, many people who develop Lyme disease are not aware of ever having been bitten by a tick. Not all deer ticks are infected with the Lyme bacteria.



WHAT TIME OF THE YEAR ARE THE DEER TICKS ACTIVE?

Deer ticks can survive through winter and may become active any time of year if the temperatures are warm enough, even during a January thaw. However, the majority of human Lyme disease cases occur from tick bites received in May through August, which correlates with the feeding activity of nymphs.

CAN LYME DISEASE BE TREATED?

Yes. If a person is diagnosed as having Lyme disease, his or her physician will prescribe a course of antibiotics. Prompt treatment can cure the infection and usually prevents later complications. In general, the longer the disease has been present, the longer it takes for the signs and symptoms to subside.

HOW CAN LYME DISEASE BE PREVENTED?

The following precautions can significantly reduce the risk of acquiring Lyme disease:

1. If you are in areas where ticks may be present, wear a long-sleeved shirt, long pants, and high socks (with pant cuffs tucked into the socks). Light colored clothing will make ticks easier to find and remove.



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