

The Wilderness at Fortune Bay's Environmental Commitment Recognized by Minnesota GCSA

By VINCENT DODGE

Superintendent, The Wilderness at Fortune Bay

TOWER, MN - Our entire facility was honored to receive an award from the MGCSA on December 8, 2010 for our commitment to environmental stewardship over the past eight years at the Wilderness at Fortune Bay. These efforts were not just the work of a few people but rather our entire staff and it means a great deal to all of us to receive this kind of recognition. I offer a sincere thank you to everyone that made this possible and as a follow up would like to go into more detail as to what our environmental efforts have been and continue to be.

Before going any further, a description of the site on which the golf course is situated is necessary. The golf course winds through forested land adjacent to Lake Vermilion, often regarded as one of the most beautiful and unspoiled lakes in the state. In such a sensitive area, one can understand the need to make extra efforts to ensure that the protection of such a valuable resource takes the highest priority.

This fact was made very clear to everyone from the very beginning and environmental protection was of the highest importance to the Bois Forte Band of Chippewa (the owners), Wadsworth Golf Course Construction (the builder), Jeffrey Brauer (the architect), and KemperSports Management (the golf course management company). Having everyone on board with this was a very important first step toward success. Best Management Practices were developed specifically for the property and were very important for establishing this commitment.

A WRITTEN PLAN - INCLUDING A BEST MANAGEMENT PRACTICES - IS A GREAT PLACE TO START

The practices described in this article will seem very familiar to many of you-I would bet that most people in the industry are following procedures that are similar. I think that superintendents and their staffs are some of the most environmentally conscious people around but that their efforts are often overlooked. Indeed, golf courses are often demonized by those that are not aware of our sincere efforts to not just protect the environment but also



The Wilderness at Fortune Bay's 'Environmental Award Winning' Crew of 2010.

enhance it. I hope that this document helps to paint a better picture of just how responsible and committed golf courses really are. The categories discussed include chemical use reduction and safety, water usage, water quality, wildlife habitat enhancement, and education & outreach.

CHEMICAL USE REDUCTION AND SAFETY

The Wilderness Golf Course at Fortune Bay Resort from the very beginning has been very serious about considering the environment and taking every possible measure to ensure that chemical applications are done safely and only when necessary. To illustrate this, I have organized this part of the presentation into four different sections:

- IPM/Cultural Practices
- Chemical Application Practices
- Staff Training
- Chemical Storage and Handling

IPM / CULTURAL PRACTICES

The best defense against chemical usage is a strong stand of turf that is less vulnerable to disease, insects, and weeds. The steps we took to ensure this at The Wilderness are listed below:

- We selected the turf varieties that in my opinion are well adapted to this site as

well as this part of the country. Keep in mind that grass selections are a very subjective thing and that many of you may not agree with the selections but they have worked well with us. We chose PennLinks creeping bentgrass for putting greens because of its ability to perform in colder climates, disease resistance, and ability to achieve acceptable playability at a relatively high height of cut. Keep in mind that this was in 2002 and before the availability of T-1 creeping bentgrass which may have been a better choice if it were available at that time.

On fairways we used a blend of both PennLinks and PennEagle creeping bentgrass. PennEagle is not as much of a thatch producer which is a desirable trait for fairway turf.

For tees we used a blend of both PennCross and PennLinks creeping bentgrass. PennCross is a very aggressive growing plant, which makes it a good choice for use on tees where wear is always a problem.

For our rough areas in play we planted a mixture of kentucky bluegrass, perennial ryegrass, and fine leaf fescues. From this mixture the best-adapted plant will emerge to create the strongest stand possible. In out of play areas, adjacent to woods, and in a band around all lakes we

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Hole #6 - Note fescue no mow area adjacent to wood line.

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planted a blend of fine leaf fescues that are allowed to grow long with minimal maintenance inputs. This poses less of a threat for environmental contamination.

- Growing a strong stand of turf requires the use of proper maintenance practices that are continually employed and refined at The Wilderness at Fortune Bay. Mowing heights on areas requiring mowing are kept as high as possible to increase pest

and wear resistance while maintaining playability. Turf is topdressed, aerified, and verticut as needed to keep thatch accumulation and soil compaction under control.

Controlling thatch and compaction allows us to irrigate more effectively- water is able to penetrate into the soil profile and thus not run off the surface and into water bodies. We employ a weather station on the site that gives us evapotranspiration (ET) data which influences our irrigation decisions. Our computerized irrigation system allows us to fine-tune the system so that we water all areas the proper amount.

Our goal is to water deeply with less frequency while avoiding over-watering. Surface drainage on the site is very good

but still we are always adding more to correct

wet areas that inevitably appear. One drawback of this site is that its soil texture and surrounding topography make it stay wet during wet weather periods. An independent laboratory performs tests bi-annually that give us information on soil pH and fertility levels and this information is used to determine our fertilization and soil amendment requirements.

- We use a spoon-feeding regimen on greens that allows us to feed the plant on an as needed basis that avoids fertilizer leaching through the soil profile. Wear and tear on the golf course is easily controlled on this site due to a continuous cart path and a golf course design that distributes wear effectively. Shade from trees is a non-factor on the golf course since most of the shady areas of the golf course are seeded to fescue, which is a shade tolerant plant. All of these factors contribute to us being able to grow a thriving and pest resistant turf that requires minimal chemical input.

In addition to the factors listed above, Integrated Pest Management (IPM) is a practice that involves the following four factors, all of which are employed by The Wilderness at Fortune Bay:

1) Scouting, Monitoring, and Identification. We employ at our facility two university-trained and experienced professionals proficient at pest identification and control. These individuals are inspecting the golf course on a daily basis and in the event that a pest problem is detected, the next step is identification. In most cases this is easily done with experience or referring to publications but in some instances some assistance is required. An example of this is our diagnosis of Take-All Patch on some tees and fairways. In this instance we had a diseased sample sent to the University of Minnesota for positive identification. Being a relatively new golf course, we are in the process of establishing a history of pest development in different areas of the golf course that will assist us in detecting problems in the future.

2) Establishing Threshold Levels. Not every pest detected is life threatening and just because a pest is detected does not mean that one immediately resorts to chemical control. A little Dollar Spot discovered in the rough does not warrant an application nor does a few white grubs in an out of play area. A Pythium Blight epidemic on a putting green, however, is a different story. Control measures must be taken or severe turf and economic loss will result. The judgment in regards to control or not rests with the superintendent who determines whether an application is necessary for playability and/or economic reasons.

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3) Taking Appropriate Control

Measures. If after pest detection it is determined that a control measure is needed, then the next step is to select an appropriate control measure. This may require the use of a fungicide or it may require the use of a biological control. As an example, in past years we have had an algae problem on a high profile golf course pond. We have been reluctant to use a chemical control on the pond for environmental reasons. We have been using a biological control in this area in the form of barley straw. In other instances, such as with Take-All Patch, we have been using a fungicidal control which, when used according to label directions, has minimal if any impact on the environment. Another control measure may be to correct the underlying cause of the problem, such as poor drainage or insufficient aeration. In all instances, all options are carefully considered with a premium being put on environmental protection.

4) Establishing a Baseline History.

Effective golf course management and state law requires that all applications be recorded. Information including date, time, weather conditions, pest treated, areas treated, control product used, and equipment utilized are all carefully documented. This information is compiled throughout the year and studied so that we can establish trends and better anticipate and prevent the same problems from occurring year after year.

CHEMICAL APPLICATION PRACTICES

The Wilderness Golf Course at Fortune Bay Resort is committed to the safe and responsible use of control products. To this end, we adhere to the following procedures:

- The proper pesticides are applied only at the proper place and time. Experience and study determine what pesticides will have the least impact upon the environment. Spot treatments will be made whenever possible and only when treatment is absolutely necessary.

- Pesticides are only applied when conditions are favorable. This means that applications will only be made when winds, temperatures, soil moisture levels, and rainfall either real or anticipated allow it. An application made in poor conditions not only is a hazard to the environment but also a danger to the applicator and those around him/her.

- All equipment is calibrated for proper application pattern and rate. The Wilderness at Fortune Bay has two computerized sprayers that make precise applications possible. Even with the computer, however, the sprayer is calibrated manually to confirm its accuracy.

- Label directions must be followed at all times. A label must be displayed on all pesticide containers.

- Care must be taken to avoid applying materials to all sensitive environmental sites, such as lakes and wetlands. Buffer zones of no mow grasses, which are prevalent at the Wilderness at Fortune Bay, help immensely with this.

- All applications must be recorded and periodically evaluated for effectiveness.

STAFF TRAINING

Currently at The Wilderness at Fortune Bay we have three State of Minnesota licensed applicators. These applicators are both experienced and highly trained and are the only individuals allowed to make chemical applications. The individuals performing chemical applications are required to attend annual seminars and

“Water usage is becoming more and more of a pressing issue.”

workshops to stay up to date with current legislation and technology. The latest workshop for applicators that we attended was in fact held at the Wilderness Golf Course clubhouse—we try to work with the Minnesota Department of Agriculture to make training more accessible for northern Minnesota. This was a tradition began by Justin Gustafson at the Ely Golf Course and hopefully will continue for many years to come.

Seasonal staff are educated with a hazard communications program which includes knowing where the MSDS are located, where chemicals are stored, and the hazards to both the environment and staff that chemicals may pose. In weekly staff meetings all staff are encouraged to contribute ideas as they relate to safety and pest problems on the golf course. We have our own Incident Response Plan posted next to the MSDS station and all

staff are aware of its presence.

CHEMICAL STORAGE AND HANDLING

The Wilderness Golf Course at Fortune Bay Resort has made efforts to make chemical storage as safe as possible. A separate Pro-Tec pesticide storage building is located adjacent to the main facility and has plenty of room for both liquid and solid chemicals. The storage building has built in spill containment and is well ventilated. The building is made of coated steel, as are the shelves within the unit. The building is locked and accessible only by applicators. Though not always possible, we try to go into winter with as little chemical inventory as possible so that we can avoid storing too much material over the winter.

Mixing and loading is performed on a containment pad. A spill kit is located nearby to catch any spills that may occur. All plastic, glass, and metal containers are triple-rinsed before disposal. The sprayer tank has an anti-siphon apparatus for filling. All rinsate left in the tank after cleaning is sprayed in the field. All necessary PPE is located in the maintenance building.

WATER USAGE MANAGEMENT

Water usage is becoming more and more of a pressing issue with not only golf courses but also any industry that uses large quantities of water. An ever-growing population has increased the demand for water everywhere. The Water Quality Branch of the Bois Forte Band of Chippewa carefully estimated water usage before and during construction of the golf course. The determination was that the golf course, if managed properly, would have a negligible impact on the numerous natural bodies of water present and the wells used for potable water in the area.

In order to better describe our efforts to conserve water, I will be dividing this explanation into three parts: property description, irrigation equipment, and watering programs.

PROPERTY DESCRIPTION

The water source for The Wilderness Golf Course at Fortune Bay Resort is surface water pumped from Lake Vermilion into a storage pond for golf course use. The water source for the resort and surrounding areas is from a well located on the property.

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IRRIGATION EQUIPMENT

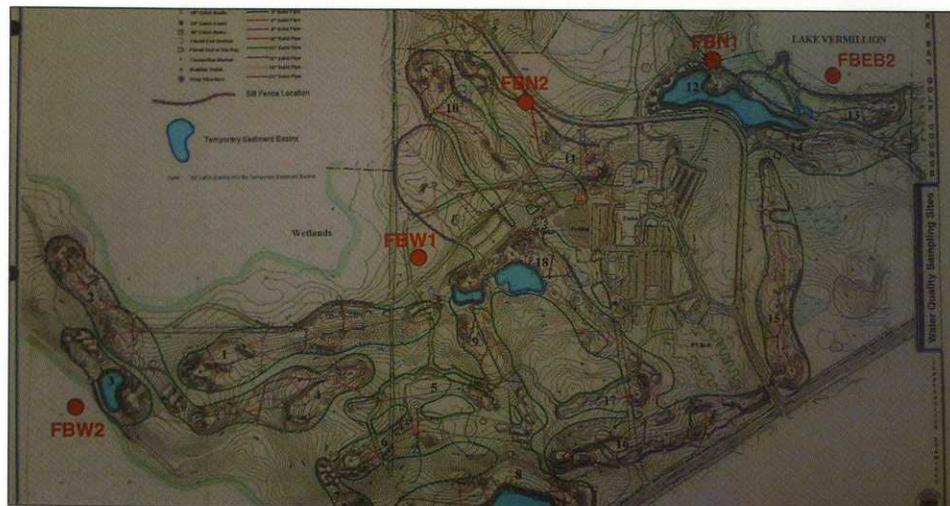
The irrigation system at The Wilderness golf course was state-of-the-art in 2002 but likely will require some future control upgrades to stay that way. Toro 800 series heads are utilized. On the 13th hole by Lake Vermilion half-circle heads are used extensively to keep from watering the lake. On the tee on 13 we use only smaller landscape sprinklers to keep water on the turf only and away from Lake Vermilion. In addition, we have switched out full-circle sprinklers to half-circle sprinklers to minimize irrigation on out of play no mow fescue areas. The Toro OSMAC Site Pro 2.2 Central Computer is also an integral part of allowing us to save water on the golf course. With this program we are able to adjust the system head by head to maximize irrigation efficiency while minimizing waste. Incorporated with this control system is a weather station capable of monitoring ET that allows us to adjust times accordingly. We have an irrigation technician on staff who repairs leaks the day they are detected and monitors the system for proper nozzles, O-rings, and other parts to keep efficiency maximized. The pump station is a variable-speed drive unit that keeps

"A strong stand of turfgrass is the best way to keep water use to a minimum and at The Wilderness Golf Course at Fortune Bay we do everything possible to grow strong turf."

electricity usage to a minimum and reduces stress on irrigation components. The Flowtronix pump station also has an on-board computer that we use to track water usage and establish trends in water usage. All of these features help us to keep both our water and electricity usage as efficient as possible.

CULTURAL/WATERING PROGRAMS FOR STRESS REDUCTION

A strong stand of turfgrass is the best way to keep water use to a minimum and at The Wilderness Golf Course at Fortune Bay we do everything possible to grow strong turf. We water deeply with the use of wetting agents to get water to penetrate



Water Quality Monitoring sites adjacent to golf course.

into the soil profile and reduce runoff and encourage the growth of deep roots. This is particularly important in the spring and fall to allow the growth of an extensive root system that will allow the turf to perform during the hot and dry periods in the summer. Having well-designed fertilization and aeration programs helps us to achieve this goal of a strong root system.

During the hot summer months we also make extensive use a soil probe and ET to determine when certain areas, particularly greens, need hand watering. This allows us to avoid over-watering a

large area in order to get enough water on the areas that need the water. With the exception of hand watering, all watering by the irrigation system is done overnight. As was alluded to in our IPM description, we also try to keep turf healthy through sound cultural practices such as managing thatch, using as high a cutting height as possible,

controlling wear caused by traffic, and drainage. On non-turf areas such as perennial/annual beds we use a wood mulch to retain moisture. All of these factors contribute to growing plants on which water usage is kept to a minimum.

WATER QUALITY MANAGEMENT

Water quality is taken very seriously not just by the Bois Forte Band of Chippewa but also by the Department of Natural Resources here in Northeastern Minnesota. From the very beginning Best Management Practices were utilized and continue to be utilized today. Since the watershed of the property ultimately ends up in Hudson Bay, what we do here

impacts more than just the golf course and surrounding area.

During construction the number one concern was erosion. For construction a great deal of silt fence was utilized-virtually the entire perimeter of the property was protected. In addition, we used mass quantities of both futerra erosion control blanket and sod to stabilize areas-particularly slopes-as soon as possible. Now that the golf course turf is established, the threat of erosion is virtually non-existent. Grasses are some of the best erosion control there is.

Chemicals are used on an as needed basis only but when they are we try to deliver them in a manner as safe as possible to the environment. All wood lines and water bodies have buffer zones that help to stop run-off. These fescue no mow buffer zones vary from 6 feet wide to hundreds of feet wide. Chemical applications on these areas are very rare. In addition, at The Wilderness at Fortune Bay we have both a spoon feeding program and a fertilization system. Both of these systems help to apply only what is needed by the plant and help to eliminate nutrients from both running off the surface and leaching through the soil profile. Also utilized are the newest slow-release fertilizer technologies, namely stabilized urea and nitroform, both of which help to eliminate nitrogen wastage.

As was explained in our previous description of IPM, our ESD equipment wash system is a state of the art machine which utilizes microbes to break down pollutants and allow the same water to be used over and over again to wash equipment-polluted water is not discharged to storm drains, retention areas, etc. We have a chemical spill containment plan and

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both a mobile spill kit and a chemical storage facility complete with a containment sump. The maintenance facility has been designed from the beginning to be as clean as possible. Algae had been a problem in a few ponds. This problem improved as we switched over to fertilizers with less phosphorus (during grow-in some phosphorus is necessary for juvenile grass plants). In addition, we have been using a biological control program on the historically problematic ponds. This combined with some manual removal should suffice for us to control the problem with little if any use of chemicals. Other than algae and a little duckweed on a few of the more shallow ponds, there have been no problems with all lakes.

WILDLIFE AND HABITAT PRESERVATION

The site at The Wilderness at Fortune Bay-being adjacent to Lake Vermilion-has some of the most unspoiled habitat for wildlife in the country. Every hole is separated by large tracts of woodland and wetlands and basically the entire site is a core habitat. The key to keeping it this way is by being as unobtrusive as possible to

what is already there.

To protect this environment, we have been diligent in protecting it from any inputs that could be damaging. We have created fescue no spray buffer zones not only around lakes but adjacent to woodland areas as well. Fertilizer applications adjacent to lakes are done by hand. Perhaps one of the best ways to preserve habitat is to leave the woodland areas alone as much as possible. Leaving dead trees and thick brush is probably the best thing that we can do for habitat preservation. In addition, we have added some indigenous plants that provide food and habitat for birds and butterflies.

We have nest boxes for bluebirds, owls, and wood ducks throughout the property. What we are finding is that wildlife, if given the choice between a natural woodland environment (which is readily available everywhere) and a man-made birdhouse, will almost always go with the natural environment. This is what makes this site so easy to manage as a wildlife sanctuary-all the site requires is to be undisturbed.

Coming from an urban area originally, at first sightings of wildlife were somewhat rare and different. Living up here the past few years, we begin to take these sightings for granted. During the past seven years, it is not uncommon for the

crew to see black bear, deer, golden and bald eagles, coyote, wolf, osprey, moose or other animals common to this area.

EDUCATION AND OUTREACH

Making the public aware of our actions to preserve the environment is a vital part of our efforts and at The Wilderness at Fortune Bay we have done much to make the public aware of our efforts. We have a brochure available to all of our patrons about our participation in the Audubon Cooperative Sanctuary Program for Golf Courses. We have involved local colleges (Vermillion Community College) in the water testing of our golf course lakes for impurities such as phosphorus. We have worked closely with the Environmental Services for the Bois Forte Band of Chippewa in the monitoring of water quality. On more than one occasion we have funded the building of bluebird and owl houses by a local scout troop. These houses were then installed on the golf course. We are an Audubon Cooperative Sanctuary and so have benefitted from the associated press releases. In addition, we have signage on the golf course that illustrates the most environmentally

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sensitive areas and how we are taking measures to protect these areas.

Most recently we invited an official from the Minnesota Department of Natural Resources to evaluate our habitat enhancement activities. Not only did this visit give us some insight as to where we could do a better job with wildlife habitat enhancement but it involved other environmental entities in our efforts here and helps to spread the word about the many positive things we do to help the environment.

Making the public aware of our efforts as superintendents is perhaps one of the most important parts of environmental stewardship but is often one of the most difficult for many to perform. The one thing that I have learned is that public outreach, once you get started, actually becomes one of the easiest tasks to perform. The public wants to hear about the many good things that we are doing and are receptive to good news.

I would like to conclude with a final thought in regards to environmental stewardship and its relationship with the golf course industry. My belief is that most golf courses are doing the "right" things in regards to being a positive force for the environment-I think that many of the practices described above are followed by many of us in the profession.

In fact, I am sure there are those that do even more. What I think is most important is that we as superintendents make

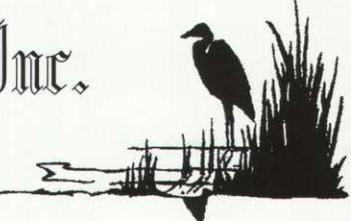


Eagle Scout Project at the Wilderness at Fortune Bay.

efforts to actually make people aware of the positive things that we are doing. Doing so will help us to overcome some of the false presumptions concerning golf courses that some in the public still prescribe to and help to ensure the vitality of the profession in the future. Staying silent is not the solution to trying to change public perception-becoming proactive with the public is.



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