

From: [Wendy Honold](#)
To: [DNR Kohler Proposal](#)
Cc: [DNR SECRETARY](#)
Subject: additional comments, concerns and questions
Date: Thursday, July 28, 2016 4:48:42 PM
Attachments: [2016 July 28-Letter to DNR-Jay Schiefelbein.docx](#)
[Drinking Water and Turf Pesticide Runoff.pdf](#)
[Kohler-hardly a good environmental citizen.docx](#)
[Pesticide Health Risks.pdf](#)
[Roger Miller Presentation-Black River Area.ppt](#)

Please see and review all attached. Thank you

Wendy J. Honold
5146 Evergreen Drive
Sheboygan, WI 53081

July 28, 2016

Jay Schiefelbein
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727

Mr. Jay Schiefelbein:

Most people view 'pests' as insects, but I'm not sure what types of species Kohler feels are 'pests.' Not all insects are troublesome, venomous, or biting foes to humanity - many are actually very helpful to our very existence, as well as the earth's ecosystem.

When nature is in balance, it has its own organic non-toxic pest control. The decline of basically all 'natural' pest control species below, I believe is why even just the mosquito population in the Black River area is completely out of whack.

There are NO poisonous pesticides on the planet that do not cause harm, even though the government has 'control limits' for use. When pesticides are no longer potent to kill an insect/pest, the chemical residues remain and do cause harm and damage to the health of all species. To the human body, the toxic residues accumulate and build up over time in our tissues and organs, which wreaks havoc on our health. All of this information is available by researching the subject of toxic pesticide residues and how they affect human health. This is why many 'health nuts,' as I have also become, do periodic detox cleanses, that rid the body of heavy metals and toxins. See attached file Pesticide Health Risks.

My memories of growing up in the Black River area.

When I was a little girl, from birth to age eight, my home was on South 13th Street, in the Town of Wilson, just a few houses north of the Riverdale Golf Course. From age two, I was already walking unattended through the fields both behind and in front of my home. When I could ride a bike, I rode all over the wild and natural Black River area, and sometimes parked my bike to walk through various forest areas, and also the beach entries all the way down to where Kohler-Andrae State Park is now. I was very adventurous and enjoyed observing and identifying all lifeforms. I especially enjoyed (and

still enjoy) the graceful fireflies (aka lightning bugs). Their larvae mostly eat the larvae of snails and slugs. Unfortunately the firefly populations are blinking out. See:

<http://www.takepart.com/article/2016/07/07/firefly-populations-are-blinking-out?cmpid=tp-fb>

In the 50's, when I was growing up in the beautiful Black River area, during all summer weather I was never swarmed by mosquitos, as I am now. **One of the reasons for the excessive mosquito population is due to the ongoing decline of the water quality of all of Black River that once supported many aquatic species that eat mosquito larvae.**

When I would ride my bike past the Black River bridges on both Weeden Creek and Indian Mound Roads, I loved to stop and look at all of the water lilies covering nearly all of the surface of the river. Now there are next to none of the beautiful water lilies. I also loved observing lots of singing frogs, and turtles sitting on or near the water lilies. There were many toads and harmless garter snakes (that eat mice) near the river banks. I loved nature, both then and now, but the beauty of Black River has already been decimated to the point that children now are deprived of experiencing the total beauty of what was once much more flourishing. I have been told, that the pollution to date through all of Black River, is due to the over pollution of phosphorous (which is from area farm fertilizers) and manure runoff. Even though enhancing the environment and restoring CLEAN WATER is part of your mission, there have been no remedial steps taken and Black River is still being ignored by the DNR. It is because of this excessive pollution, that there has been an ongoing decline in all species that once flourished in their Black River ecosystem, including species that feed on mosquito larvae: **Fish** (Goldfish, guppies, bass, bluegill and catfish prey on mosquito larvae. But the most important fish predator, by far, is the *Gambusia affinis*, commonly known as the mosquito fish. This is probably the most effective predator of mosquito larvae and is used by many mosquito control agencies to augment their control efforts); **Birds** (Many birds will eat mosquitoes. The more important among these are purple martins, swallows, waterfowl (geese, terns, ducks) and migratory songbirds. Bird predators usually eat both the adult and aquatic stages of mosquitoes); **Frogs and Tadpoles** (Mosquito larvae predation is known for three species of North American tadpoles – the spade foot toad, green tree frog and giant tree frog); **Turtles** (Aquatic turtle hatchlings, no matter what species, start with very small live insects, larvae, and worms. Painted turtles, a fresh water turtle that used to bless Black River, eat all types of leafy vegetation, bugs, such as worms and crickets, small fresh water shellfish, and other fish. Snapping turtles are a turtle that prefers a mostly live food diet. Small fish like minnows and gold fish are a favorite with snapping turtles. They also like crayfish and crickets).

Other mosquito predators include: **Bats** (While bats eat mosquitoes, they are far more effective at locating, catching and eating insects.); **Dragonflies** (Dragonflies are often referred to as “mosquito hawks.” Though they do eat mosquitoes, one feature that favors

dragonflies as mosquito predators is that in the dragonflies' aquatic stage, most of its food consists of mosquito larvae.); **Damselflies** (While damselflies are not as effective in controlling mosquitoes as dragonflies, their aquatic stage also consumes many mosquito larvae.); **Predacious mosquitoes** (Some mosquitoes prey on other mosquitoes. The most notable being the predatory mosquitoes in the genus Toxorhynchites. These mosquitoes provide a double benefit since the larvae are predacious on other mosquito larvae and the adults are not known to transmit disease.); **Aquatic Beetles** (Both adult and larvae species of aquatic beetles will consume mosquito larvae and pupae. Two beetles that readily eat the aquatic stages of mosquitoes are the predaceous diving beetle and the water scavenger beetles. However, they will consume many types of aquatic insects other than mosquitoes.); and **Spiders** (Spiders become mosquito predators when a mosquito inadvertently flies into a spider's web where it is encased and eaten.). See a list of helpful insects at: <http://www.insectidentification.org/helpful-insects.asp> and <http://www.orkin.com/other/mosquitoes/mosquito-predators/>

While Kohler may have many species in mind that he thinks are pests, I have just noticed more mosquitos.

There are other ways to control the adult mosquito population. One way is to buy plants that attract mosquitos and lightly dust the flowers, stems, and leaves with diatomaceous earth powder, that will not harm the plants. The mosquitos are still attracted to landing on the plants, but the sharp invisible edges of diatomaceous earth pierce the insects' soft bodies. They lose all of their body fluid and die. You will then see a circular ring of dead mosquitos on the cement surface (more noticeable than on dirt) under the pot base.

I wish Kohler would consider organic or alternative 'natural' methods for 'pest control,' like Integrated Pest Management (IPM): Beneficial insects are used to control pest insects in an IPM program. Beneficial insects do not harm people, plants, or pets, and they can be purchased (with instructions) to help rebalance the populations of harmful insects. For maximum effectiveness, they should be released when pest densities are low to medium. Keep in mind that beneficials are not pesticides. It takes a long time for pest problems to evolve, it also takes time before beneficials can resolve them. A little patience pays off and is safe. They can be purchased at: <http://www.arbico-organics.com/category/beneficial-insects-predators-parasites>

Does Kohler really care about the environment, our quality of life, and the natural balance needed for ecosystems to be enhanced and thrive?

I DON'T THINK SO. Kohler seems to do what he wants, when he wants, and how he wants. It's his way or the highway, so to speak.

1. If he cared about following regulations and plans, why did he bury a portion of the Sheboygan River during a project, which violated the submitted plan and code requirements? Subsequent to that, he only was penalized 'pennies' in fines.
2. The Kohler Company has thrived as a business, while at the same time being recognized as one of the major companies polluting the environment, and the ecosystem of the Sheboygan River. See attached file: Kohler-hardly a good environmental citizen
3. Why did Kohler have drain piping installed at Whistling Straits, which route the flow of all herbicide, pesticide, and fertilizer contaminated groundwater runoff, to go directly into Lake Michigan? He wasn't caught or fined for that YET, but employees know this and have come forward with the information. They wish to remain anonymous, because they know they would be fired.

I wish the DNR would go to Whistling Straits and investigate #3 above.

Kohler says that he has a governmentally approved plan that won't pollute Black River or Lake Michigan, **I DON'T BELIEVE A WORD OF IT.** Kohler has not submitted the detailed plan, nor the complete list of chemicals he intends to use. Please see attached Pesticide Health Risks, that lists just a few of the specific chemicals that are recognized for health risks.

The location, for the proposed Kohler golf course's entire west property line, is completely bordered by the Black River water flow. I believe that Kohler's entire golf course is closer to the river than most all of the farms that are said to have caused the ongoing and current problems with the 'nearly destroyed' Black River ecosystem. **I DON'T BELIEVE that there is any way that any of contaminated runoff from Kohler's 'governmentally approved plan' will NOT pollute Lake Michigan, Black River, as well as the aquifers from which our well water is drawn.**

The DNR to date has done nothing whatsoever to remediate the constantly degrading condition of Black River, yet the DNR is considering a project that will not only possibly 'steal' the public's State Park land, but also continue to burden our lake, river, and aquifers, with more contamination in every way. The 'public' as a whole, will not have access into this land which should be registered and preserved as a historical site. Only the 'rich and famous' will have access. There is no 'benefit' that will be worth the trade-off of all of the damage and destruction. I think it is interesting how people view net worth by money, assets, and 'buy/sell/trade' (whether it is for investing, or much

worse....favoritism)!!!! Peoples' net worth should really be measured by honesty, ethics, and their contributions to the whole (things that make a saintly difference). The latter are usually the 'unsung heroes.'

I respectfully request that the DNR, instead of wasting Wisconsin taxpayers' money on a non-applicant (who submits unsubstantiated 'claims' which will truly be more destructive than beneficial in all areas), to please spend the taxpayers' money on restoring CLEAN WATER to every lake, river, stream, and aquifer. Restore the entire ecosystem to its originally balanced perfection, and then purchase water lilies (and other plants) to replace those which have been decimated. Please purchase, for relocation, all wildlife species that have vanished or nearly vanished, like the abundance of lake and river fish of all types, aquatic turtles, toads, frogs, tree frogs, crawfish, salamanders, etc. Please relocate more bald eagles and other rare birds to the area, instead of destroying their habitats.

All that we 'the common and ordinary citizens' ask of you, is to fulfil your mission:

"To protect and enhance" (AND RESTORE) "our natural resources: our air, land and water; our wildlife, fish and forests and the ecosystems that sustain all life.

To provide a healthy, sustainable environment and a full range of outdoor opportunities.

To ensure the right of all people to use and enjoy these resources in their work and leisure.

To work with people to understand each other's views and to carry out the public will.

And in this partnership consider the future and generations to follow."

<http://dnr.wi.gov/about/mission.html>

THE ONLY NOXIOUS AND INVASIVE SPECIES ON THE PLANET ARE HUMANS, NOT PLANTS OR ANIMALS. WE ARE SUPPOSED TO BE THE GUARDIANS OF 'EDEN,' NOT THE DESTROYERS. YET FROM THE BEGINNING OF TIME, ALL WE'VE DONE IS DAMAGE, DISRUPT, AND DESTROY EVERYTHING IN OUR PATHS.

THIS HAS GOT TO STOP !!!!!!!

Unless the DNR promptly fixes the environmental problems all over Wisconsin, instead of choosing to favor environmentally destructive businesses, I am disheartened, that my descendants (now and in the future) will never see and experience the beauty that I was able to explore and experience as a child.

PLEASE DO NOT SIDE WITH POWER AND MONEY. PLEASE FIX THE CURRENT PROBLEMS, INSTEAD OF APPROVING MORE AND MORE DESTRUCTION.

I hope you will thoroughly read this letter, and review all attachments.

Sincerely,

Wendy J. Honold

Wendy J. Honold

P.S. Most all governmentally approved fertilizers contain poor quality and/or toxic chemicals, and do not enhance the environment like products that actually replenish nutrient-depleted soils organically and naturally, whether for use on agricultural crops, gardens, landscapes, or other. Kohler is not interested in the quality of earth, or how/why we as a human race either contribute or decimate the planet. I am freely sharing this information with you, so you can use it for yourself, affiliates, family, friends, and anyone you/they know.

PLEASE HEAL THE EARTH, ONE PARCEL AT A TIME. I will not use the crappy, over-priced 'fertilizers' that are popular on the market. After years of research, prior to being a participant at a local 'farmers' market, I found what I believe is the absolutely BEST (hard to find) all natural/organic product out there for replenishing nutrient depleted soil. It is also cost effective and a tiny bit goes a long, long way.

I am not affiliated with the company below, or any of its partners, or suppliers. I receive no personal benefits from recommending them. I have a 20 pound bag that is still 3/4's full, since 2008. Its potency and effectiveness will not expire, as the ancient deposits were placed naturally formed in New Mexico long before any of us were born. You never need to use more than recommended by manager Robby, who can give you complete instructions for use.

Fruitland –organic soil activator is all natural, decreases water need, and improves turf and plant resistance to stress. This product is collected from ancient pollution-free, high concentration natural nutrient deposits in New Mexico. It replenishes the soil with the nutrients, which have been depleted from nearly all soil over time. Anyone can buy direct from the manufacturer, whether it's one bag or bulk pallets, by contacting manager. There are no direct links from their website, so please directly contact manager Robby Wharton: robby@msminerals.com

Please go beyond your mission for your job with the DNR, and please extend the mission directives to your everyday personal life. The more people, like myself, who try to restore and enhance the planet, the more quickly the entire planet can be improved. Thank you.

Assessment of Risk to Drinking Water from Turf Pesticide Runoff

Masters of Engineering Project

By

Julia Leung

Biological and Environmental Engineering

Cornell University

May 2011

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Executive Summary

A human health risk assessment was performed on pesticide runoff from lawns and golf courses for 9 U.S. locations using a fate and transport modeling program. Pesticide concentrations for 37 turf pesticides registered for application on golf courses were compared to drinking water standards. A maximum 24 hour lake pesticide concentration was used for an acute risk assessment and a mean daily lake concentration was used for a chronic risk assessment. Our results show that a number of the pesticides posed a potential risk as evidenced by a risk quotient (RQ; concentration divided by standard) over 0.01. For fairways, both iprodione and 24-D produced acute and chronic risk at more than 3 locations. Potential risk was only found for myclobutanil applications to greens and tees. MCPA, oxadiazon and 24-D applied to lawns posed both acute and chronic risks. The highest concentrations were seen with acephate applied to fairways with acute $RQ \geq 0.01$ in 4 locations and in oxadiazon applied to lawns in Houston with chronic $RQ \geq 0.01$. The assessment was based on simulations using TPQPond, a model developed for predicting pesticide runoff and resulting concentrations in a receiving pond, lake, or reservoir. The risk assessment followed general protocols used by USEPA in their pesticide concentration model, FIRST, but with more realistic methods of determining reservoir flow characteristics, pesticide mass balances and region specific weather data. Risk levels were found to vary with location and turf type. Pesticide concentrations were highest for fairways and lowest for greens. Greatest impacts were observed in areas of high annual precipitation rates and long growing seasons whereas lowest impacts were observed in areas of low precipitation rates. These results suggest that persons living in heavy rainfall areas may have higher exposures of turf pesticide in their drinking water than would be predicted by EPA risk assessments.

Introduction

Drinking water quality in reservoirs receiving runoff from lawns and golf courses may receive pesticide contamination. Health effects of pesticide exposure can range from dizziness and nausea to long term damage such as cancer and organ damage. A number of the pesticides used on turf grasses have been shown by the EPA to be possible carcinogens, irritants and linked to reproductive and neurological disorders (1).

There are over 15,000 golf courses in the US. An average golf course uses over 1,500 pounds of pesticides per year. Typical agricultural applications average less than a pound per acre per year. In some areas, pesticide applications on golf courses are more intense than on agricultural fields. In a survey of golf courses in Long Island, New York, pesticide applications averaged up to seven pounds per acre per year (2). Pesticides are sprayed on golf courses to maintain the greens and fairways. In addition, over 67 million pounds of pesticides are applied to lawns each year (3). Although golf courses often implement best management practices and integrated pest management strategies and also use specialized equipment to limit pesticide contamination, the effectiveness of these approaches is not well documented. During times of heavy precipitation, these pesticides are washed off into drinking water reservoirs.

A study on surface water quality effects from a Pacific Northwest golf course concluded that no significant impacts were found after pesticide applications (4). However, this study was limited to one location and a small number of pesticides. Research on the human health risk from turf grass pesticide applications is relatively limited. Haith (5) performed an ecological risk study using the same pesticides and weather data as this study. Of the 37 pesticides modeled, 4 posed potential risk to invertebrates or fish while 2 posed risk to plants. His study, however, was limited to acute ecological risk. This paper will explore both acute and chronic human health risk.

There is a need for a drinking water risk assessment of pesticides applied to lawns and golf courses due to the vast quantities applied to these grasses annually and the potential health hazards exposure will pose. The USEPA considers all dietary exposures when determining levels of concern for pesticide in food. Due to traces of pesticides found in ground and surface waters that are used for drinking, EPA considers drinking water a dietary pathway for exposure to pesticides. This study will take into account a full range of turf grass pesticides and weather data from different climate regions in the US. It will compare concentrations predicted by the TPQPond simulation model to individual drinking water standards to determine whether or not

recommended pesticide application rates on container labels result in harmful impact on human health.

Background

The purpose of this study is to perform a human health risk assessment of pesticides applied to lawns and golf courses using the general procedures outlined by USEPA. The study is a nationwide evaluation of acute and chronic water supply health risk. Results are provided for 37 pesticides in 9 US locations on 3 different grass surfaces.

The EPA's Office of Pesticide Programs (OPP) uses a tiered approach to evaluating the human health risks of pesticides in drinking water. Pesticides that pass the first tier in EPA drinking water assessment have a low risk of adversely impacting human health. Pesticides that do not pass the first tier move on to the next tier. Each successive tier is designed to screen out pesticides by requiring more complex levels of investigation. OPP uses a 2-tiered system for evaluating human health risk. This study will focus on EPA's first tier for risk assessment.

Currently, EPA uses FQPA Index Reservoir Screening Tool (FIRST) (6) as their Tier 1 screening model for assessing drinking water risk. FIRST is a simulation model that calculates pesticide concentrations in drinking water based on pesticide application rates and pesticide properties. It provides conservative exposure values for acute and chronic risk assessment. FIRST takes into account adsorption of the pesticide to sediment, deposition of the pesticide due to spray drift and degradation in the field and in the reservoir. It is based on the methods used in EPA's screening model for ecological risk assessment, GENECC2, which assumes a single, large rain event. It is linked to EPA's PRZM and EXAMS surface water models.

To ensure that the pesticides that pass these screening tiers are unlikely to pose a human health risk, EPA uses conservative measures when estimating pesticide concentrations. FIRST assumes that each surface receives the maximum number of applications at maximum application rates with minimum time between applications as indicated on the pesticide label; that there is no buffer between the reservoir and application area; that the cropped area is highly vulnerable to runoff and easily influenced by rainfall events.

FIRST uses the characteristics of an index drinking water reservoir located in Shipman City, Illinois in its simulations. The vulnerability of the reservoir in Shipman City to contamination is representative of many small, shallow reservoirs in the Midwest that are faced with pesticide

contamination problems. Insufficient data for areas outside of the Midwest has prevented the EPA from developing region specific models in their risk assessment.

Model predictions of reservoir pesticide concentrations are compared to human drinking water levels of concern (DWLOC). The DWLOC is the maximum concentration of pesticide that a human can ingest before adverse health effects are observed. If the pesticide concentrations predicted by FIRST exceeds the DWLOC, the pesticide fails the first tier and moves on for further evaluation under EPA's Tier 2 screening model. If the pesticide passes the test, no further assessment is conducted and it is concluded that the pesticide poses little risk to human health. This study reports concentrations with $RQ \geq 0.01$, since in some ecological risk assessments, pesticides with these low risk levels are of some concern.

In order to incorporate a more realistic watershed in EPA's risk analysis, pesticide concentrations are adjusted by multiplying by a percent crop area (PCA) factor. Since pesticides are usually applied only to cropped areas and not the entire area of the watershed, the PCA factor represents the maximum fraction of the watershed that the pesticide is applied to. PCA factors also vary for different types of crop since it is also unlikely that the watershed is covered with only one type of crop. For non-agricultural areas such as lawns, EPA recommends using a PCA factor of 1 (7).

When simulating pesticide runoff from golf courses, EPA recommends using a Golf Course Adjustment Factor (GCAF) (8). Golf courses consist of several different grass surfaces classified as tees, greens, fairways and roughs. For golf course simulations, EPA assumes that the entire watershed is a golf course. The GCAF represents the decimal fraction of the watershed that is covered by a specific grass surface. This distinction is made because pesticides are not applied to entire golf courses but rather to certain playing areas. Pesticides are most intensely applied on tees and greens (5). EPA recommends a GCAF of 0.29 for fairways and a GCAF of 0.05 for greens and tees (8). Tees were not modeled separately because of their similarities to greens.

The risk analysis used in this study follows the general protocols of USEPA standards for drinking water assessment but uses the TPQPond simulation model rather than FIRST. The TPQPond model was developed by Haith (9, 10) to estimate daily pesticide concentrations in a receiving pond, lake or reservoir due to runoff from grass surfaces. Unlike FIRST, the model includes the daily water and chemical mass balances on land and in the receiving water. As a result, it is suitable for long-term simulations.

Methods and Data

This study uses the same reservoir characteristics of an index reservoir in Shipman City, Illinois as used in FIRST. Shipman City Lake is 144,000 cubic meters in capacity, 2.74 meters deep and receives runoff from a 172.8 hectare watershed (6). This study used the same pesticides that

Table 1: Pesticide properties and applications (5)

Pesticide	Pesticide properties			Fairways		Greens		Lawns	
	Koc	Soil half life	Water half life	Rate	Frequency	Rate	Frequency	Rate	Frequency
	(cm ³ /g)	(days)	(days)	(kg/ha)	(#/yr)	(kg/ha)	(#/yr)	(kg/ha)	(#/yr)
24-D	56	10	29	1.65	2	1.65	2	1.65	2
Benefin	10777	40	1	1.2	1			1.26	1
Bispyribac-sodium	302	13	35	0.11	3				
Carfentrazone-ethyl	866	0.5	0.4	0.06	3	0.06	3	0.06	3
Clopyralid	5	34	0	0.14	2				
Dithiopyr	801	39	0	0.43	1			0.43	1
Fluroxypyr	66	3	25	0.26	2	0.26	2	0.26	2
Isoxaben	601	105	17	0.84	1			0.84	1
MCPA	74	15	17	0.8	2			0.8	2
Mecoprop-p	31	8	50	0.23	2			0.23	2
Oryzalin	949	20	33	1.4	1	1.4	1	1.4	1
Oxadiazon	1294	135	113	3.36	1			3.36	1
Pendimethalin	15744	90	16	2.25	1	2.25	1	2.25	1
Penoxsulam	94	32		0.04	2			0.04	2
Prodiamine	12710	120		1.21	1			1.21	1
Rimsulfuron	47	24.3	6	0.03	3	0.03	3		
Sulfentrazone	43	541		0.28	3			0.28	3
Sulfosulfuron	33	24	26	0.07	2			0.07	2
Triclopyr	48	39	29	0.84	3			0.84	3
Trifluralin	8765	181	6	1.26	1			1.26	1
Chlorothalonil	850	22	0.1	11.2	3	11.2	9		
Cyazofamid	1780	10	14	0.86	4	0.86	4	0.86	2
Fluopicolide	321	271	777	0.24	2	0.24	2	0.24	2
Iprodione	373	84	30	2.17	5	2.17	5		
Mancozeb	998	0.1	76	18.3	13	18.3	13	18.3	2
Metconazole	1116	84	465	0.48	5	0.48	5	0.48	2
Myclobutanil	517	306	626	1.08	7	1.08	7	0.77	2
Propamocarb-hydCl	535	39.3	17	2.37	2	2.37	2	2.37	2
Thiophanatemethyl	207	0.6	2	1.45	4	2.9	10	2.9	2
Acephate	2	3		3.03	6	3.03	6		
Bifenthrin	236610	26	251	0.14	2	0.14	2	0.14	1
Chlorantranili-prole	328	210		0.19	3	0.19	3	0.19	1
Clothianidin	160	545	56	0.22	2	0.22	2	0.22	1
Halofenozide	250	219		1.13	2	1.13	2	1.13	1
Imidacloprid	225	191	129	0.45	1	0.45	1	0.45	1
Indoxacarb	6450	17	6	0.15	6	0.15	6	0.15	1
Permethrin	100000	13	40	0.73	3	0.73	3	0.73	1

were evaluated in Haith’s ecological risk assessment (5). Chemical properties and application information are given in Table 1.

An advantage that TPQPond has over FIRST is that the former uses daily weather data to calculate runoff and flow rate through the reservoir. This enables us to run region specific simulations. FIRST uses an annual flow through the reservoir that is assumed to be enough for two turnovers or twice the reservoir volume of 144,000 cubic meters. This is equivalent to a constant flow or 33 cubic meters per hour. TPQPond uses a mass balance approach that takes into account precipitation, evapotranspiration and snow melt. This provides a more realistic model of runoff and reservoir volumes compared with FIRST, which assumes constant volume.

This study uses 100-yr generated daily weather data for 9 locations in the US with varying climate and precipitation patterns: Albany, Atlanta, Bismarck, Columbus, Fresno, Houston, Madison, Olympia, and Roswell. These are the same locations as used ecological risk assessment studies by Haith (5). Each location is in one of the nine climatic regions as noted by the National Climatic Data Center. Other factors in determining these locations include plant hardiness zones, annual temperature, precipitation and growing seasons. Table 2 shows the weather characteristics for these 9 locations.

Location	Mean annual temperature	Mean growing season precipitation	Growing season
	(°C)	(mm)	
Albany, NY	9	441	May-Sept
Atlanta, GA	16	696	Apr-Oct
Bismarck, ND	5	273	May-Oct
Columbus, OH	11	554	May-Oct
Fresno, CA	17	135	Mar-Nov
Houston, TX	20	917	Mar-Nov
Madison, WI	7	443	May-Sept
Olympia, WA	10	344	May-Oct
Roswell, NM	16	264	May-Oct

A mass balance performed on the reservoir dictates daily reservoir volume. Water enters the reservoir through precipitation, snow melt and runoff. Additional water is pumped into the reservoir to maintain a minimum volume. Conversely, overflow occurs when volume levels exceed reservoir capacity. If an ice layer forms over the reservoir, snow can accumulate

on top. Runoff volume is calculated using TurfPQ. Water leaves the reservoir through evaporation and overflow.

Pesticide enters the reservoir solely through runoff. TPQPond simulates daily pesticide runoff from turf grass surfaces. Four required inputs for determining runoff are biodegradation half life, organic carbon partition coefficient (Koc), runoff curve number and organic carbon content of the turf. Pesticide in both dissolved and adsorbed forms are degraded in TPQPond, whereas FIRST degrades only the dissolved component. FIRST uses results from PRZM/EXAMS simulation models to partition the pesticide into adsorbed and dissolved forms. Pesticide is partitioned into adsorbed and dissolved forms using linear partitioning in TPQPond.

Both FIRST and TPQPond assume first order biodegradation in the grass, sediment and reservoir. These degradation rates are based on water and soil half lives. FIRST also considers degradation of pesticides in the reservoir by photolysis. It assumes that photolysis rate constants are 124 times slower in the reservoir than it is in clear water. Using 1/124 the photolysis rate in our calculations offers a very minute disparity in overall pesticide degradation calculations. This study does not consider degradation by photolysis.

A pesticide mass balance on the reservoir takes into account pesticide that is already in the reservoir, pesticide entering through runoff and pesticide leaving through overflow. The reservoir is assumed to be well mixed. USEPA's FIRST takes into account direct deposition of pesticide in the reservoir through spray drift. Spray drift occurs when spraying equipment discharge stray particles of pesticide that are carried by the wind and directly deposited into the reservoir. Application efficiency for most nozzles used in pesticide application is 99% and deposition from spray drift is minimal. This study does not consider pesticide additions from spray drift in its mass balance.

Final pesticide concentrations are adjusted by PCA factor for lawns and GCAF factor for golf courses. FIRST outputs two values: the maximum value for a single large rainstorm, used for acute risk assessment and the annual average of the peak values for 364 days, used for chronic risk assessment. For this study, TPQPond calculated 1-in-10 yr maximum daily lake concentration, used for acute risk assessment, and mean daily concentration, used for chronic risk assessment.

EPA uses Drinking Water Levels of Concern (DWLOC) values as the measure for exposure and risk. In order to determine the threat of each pesticide, this study compares the model estimates of lake concentrations multiplied by PCA or GCAF with the chemical's DWLOC value.

For an acute risk assessment, acute DWLOC values are compared to the 1-in-10 yr maximum daily lake concentrations. Chronic DWLOC values are compared to mean daily lake concentrations. Some DWLOC values can be found in individual pesticide reregistration reports (12). In cases where DWLOC values were unavailable, this study estimated values using chronic and acute reference dose (aRfD, cRfD, respectively) or acceptable daily intake, ADI. The reference dose is the maximum acceptable oral dose of a substance considering intake from both food and drinking water. Reference dose values can be found in USEPA pesticide registration reports, rule and registration reports or risk assessment reports. The acceptable daily intake value is used as the chronic dose when neither chronic DWLOC nor cRfD value is available. THE ADI is maximum dose of a substance that can be orally ingested over a lifetime without any health risk. Table 3 shows the list of DWLOC, RfD and ADI values used in this assessment. RfD and ADI values are converted to estimated DWLOC by assuming a 70kg male consumes 2L of water per day:

$$DWLOC = \frac{70 \text{ (RfD or ADI)}}{2} \quad (1)$$

Risk quotients (RQ) are used as simple assessments that identify high or low risk situations. It is calculated by dividing exposure estimates by the drinking water standard:

$$RQ = \frac{\text{exposure}}{\text{standard}} \quad (2)$$

In human health risk assessments, pesticides resulting in $RQ \geq 1$ are generally considered safe. However, in this study, we report RQ values as small as 0.01, reasoning that even these low risk levels are of some concern (13).

Table 3: List of DWLOC, RfD or ADI values used in risk assessment

Pesticide	DWLOC		RfD		ADI	Source ⁱ
	Acute	Chronic	Acute	Chronic	Chronic	
	(mg/L)		(mg/kg/d)		(mg/kg/d)	
24-D	1.932	1.68				RED
Benefin				0.005		RED
Bispyribac-sodium				0.1		RULE
Carfentrazone-ethyl			5	0.03		RULE
Clopyralid			0.75	0.15		RA
Dithiopyr					0.0036	PPDB
Fluroxypyr				1		RA
Isoxaben				0.05		RULE
MCPA	1.455	0.111				RED
Mecoprop-p			1.75	0.04		RED
Oryzalin			0.25*	0.14		TRED
Oxadiazon	4.2	0.126				RED
Pendimethalin				0.1		RED
Penoxsulam				0.147		RULE
Prodiamine					0.05	APVMA
Rimsulfuron				0.818		RA
Sulfentrazone			2.5	0.14		RULE
Sulfosulfuron				0.24		RULE
Triclopyr			0.3	0.05		aRfD from PPDB, cRfD from RED
Trifluralin			1*	0.024		TRED
Chlorothalonil			0.6	0.02		aRfD from PPDB, cRfD from RED
Cyazofamid			1*	0.948		RULE
Fluopicolide			0.18	0.2		aRfD from PPDB, cRfD from RA
Iprodione	0.693	.324*				RED
Mancozeb	0.123			0.05		RED
Metconazole			0.12*	0.04		RULE
Myclobutanil			0.6	0.025		RULE
Propamocarb			2	0.12		RULE
Thiophanate-methyl	5.7	0.86				RED
Acephate	0.136	0.038				RED
Bifenthrin			0.33	0.013		RA
Chlorantranilprole				1.58		RA
Clothianidin			0.25	0.098		RA
Halofenozide				0.038		NOEL
Imidacloprid			0.14	0.057		RA
Indoxacarb			0.09	0.015		RULE
Permethrin			0.25	0.25		RED

DWLOC = Drinking Water Level of Concern; RfD = Reference Dose; ADI = Acceptable Daily Intake
 *Value calculated for female population, none calculated for general population

ⁱ RED: USEPA Reregistration Eligibility Decision Report
RULE: USEPA Rule and Registration Report
PPDB: Pesticide Property Database
RA: USEPA Risk Assessment Report
NOEL: Calculated from dog NOEL (3.8 mg/kg/d), assuming uncertainty factor = 1000
APVMA: Australia Pesticide and Vet Medicine Authority
TRED: USEPA Tolerance Reassessment Progress and Risk Management Decision Report

Simulation Results

Lake pesticide concentrations are compared with DWLOC in Tables 4-9. Results are only given for pesticide concentrations that exceeded 0.001 mg/L. A potential risk was seen on fairway, lawn and green and tee applications in Houston. A comparison of these results also shows that Houston has the highest pesticide concentrations among the other 8 locations. This is due to the long growing season and the high precipitation rate in the area. On the other hand, Fresno, with an equivalently long growing season as Houston but the lowest precipitation rate resulted in the lowest pesticide concentrations. Only myclobutanil applied on fairways posed any risk in Fresno. This demonstrates that rainfall has the highest influence on pesticide concentration.

Applications on greens and tees yielded the lowest pesticide concentrations. Nearly none of the pesticides in the chronic risk assessment had concentrations above 0.001 mg/L. The acute risk assessment produced higher concentrations than the chronic assessment, but of the 23 pesticides applied on greens, only 1 posed a potential risk.

The pesticide with the highest acute risk was mancozeb, which also had the highest application rate among the 37 pesticides tested. Mancozeb posed acute risk on applications to fairways at 7 locations and lawns at 5 locations. Myclobutanil had the highest chronic risk with potential risk indicated at all three turf types in at least 1 location.

Although, none of the reservoir pesticide concentrations calculated by TPQPond exceeded the drinking water level of concern for humans ($RQ \geq 1$), there is still risk in a number of pesticides that exceeded RQ values of 0.01. Tables 10 -13 summarizes these results.

The pesticides with the highest risk on fairway applications were iprodione and 24-D. Both indicated potential acute and chronic risk at more than 3 locations. Acephate at Columbus, Houston, Madison, Albany and Atlanta posed the highest acute risk with a $RQ \geq 0.1$. In addition, myclobutanil posed a chronic risk at all 9 locations.

Only 1 of the 37 pesticides simulated produced any type of risk when applied to greens and tees. Myclobutanil applied in Houston produced a chronic RQ equal to 0.01.

The pesticides with the highest risk on lawn applications were 24-D and MCPA. Potential acute risk was indicated in over 4 locations and potential chronic risk was indicated in over 6 locations. Oxadiazon applied in Houston had the highest chronic risk with an RQ over 0.1.

Table 4: Comparison of 1-in-10 yr maximum daily lake concentration times GCAF with acute DWLOC for fairways ^b										
Pesticide	Acute DWLOC ^a	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
24-D	1.932	0.007	0.025	0.007	0.019		0.038	0.018		0.003
Bispyribac-sodium			0.001		0.001		0.002	0.001		
Clopyralid	26.250		0.002		0.001		0.002	0.001		
Dithiopyr		0.001	0.002		0.001		0.002	0.001		
Fluroxypyr			0.003		0.002		0.004	0.002		
Isoxaben		0.002	0.005	0.002	0.004		0.005	0.003	0.001	0.002
MCPA	1.455	0.004	0.011	0.004	0.010		0.020	0.009	0.000	0.002
Mecoprop-p	61.250	0.001	0.004	0.001	0.003		0.005	0.003		
Oryzalin	8.750	0.001	0.003		0.002		0.002	0.002		
Oxadiazon	4.200	0.008	0.014	0.006	0.014	0.001	0.018	0.012	0.007	0.006
Pendimethalin			0.001		0.001		0.001	0.001		
Penoxsulam			0.001		0.001		0.001	0.001		
Prodiamine			0.001		0.001		0.001	0.001		
Rimsulfuron			0.001				0.001			
Sulfentrazone	87.500	0.005	0.008	0.005	0.008	0.001	0.012	0.008	0.001	0.005
Sulfosulfuron			0.001		0.001		0.002	0.001		
Triclopyr	10.500	0.007	0.017	0.005	0.013		0.025	0.012	0.003	0.004
Trifluralin	35.000	0.001	0.001		0.001		0.001	0.001	0.001	
Chlorothalonil	21.000	0.031	0.051	0.022	0.051		0.081	0.050	0.002	0.031
Cyazofamid	35.000	0.001	0.002		0.001		0.004	0.001		0.001
Fluopicolide	6.300	0.004	0.005	0.004	0.006		0.009	0.007	0.002	0.004
Iprodione	0.693	0.035	0.068	0.020	0.047	0.001	0.108	0.062	0.025	0.031
Mancozeb	0.123	0.011	0.027	0.001	0.022		0.084	0.009		0.012
Metconazole	4.200	0.008	0.012	0.004	0.009		0.018	0.011	0.007	0.007
Myclobutanil	21.000	0.027	0.050	0.026	0.037	0.014	0.075	0.034	0.037	0.029
Propamocarb-hydCl	70.000	0.009	0.019	0.006	0.016		0.030	0.018	0.003	0.009
Thiophanate-methyl	5.700	0.001	0.005	0.001	0.006		0.006	0.003		0.001
Acephate	0.136	0.020	0.034	0.001	0.025		0.037	0.023		0.013
Bifenthrin	11.550									
Chlorantranilprole		0.003	0.004	0.002	0.004		0.007	0.004	0.003	0.002
Clothianidin	8.750	0.002	0.004	0.002	0.004		0.007	0.004	0.001	0.002
Halofenozide		0.013	0.023	0.013	0.022	0.001	0.042	0.026	0.007	0.013
Imidacloprid	4.900	0.002	0.005	0.002	0.005		0.008	0.005	0.001	0.002

^aConcentrations based on acute values in Table 4, RfD and ADI values based on 70 kg male consuming 2L of water per day
^bMaximum 24 hr concentrations calculated using TPQWS, adjusted using GCAF factor of 0.29, only values ≥ 0.001 are displayed

Table 5: Comparison of mean daily lake concentration times GCAF with chronic DWLOC for fairways ^b

Pesticide	Chronic DWLOC ^a	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
24-D	0.168		0.001		0.001		0.001	0.001		
MCPA	0.111						0.001			
Oxadiazon	0.126	0.002	0.004	0.001	0.003		0.006	0.003	0.002	0.001
Sulfentrazone	4.900	0.002	0.002	0.002	0.002		0.003	0.003		0.001
Triclopyr	1.750		0.001		0.001		0.001	0.001		
Fluopicolide	7.000	0.002	0.002	0.002	0.003		0.004	0.003	0.001	0.002
Iprodione	0.324	0.003	0.006	0.001	0.004		0.011	0.005	0.003	0.002
Mancozeb	1.750	0.001	0.002		0.002		0.005	0.001		0.001
Metconazole	1.400	0.004	0.005	0.002	0.004		0.009	0.005	0.004	0.003
Myclobutanil	0.875	0.017	0.030	0.014	0.022	0.004	0.055	0.020	0.021	0.014
Propamocarb-hydCl	4.200		0.001		0.001		0.002	0.001		
Chlorantranilprole	55.300	0.001	0.002	0.001	0.002		0.003	0.002	0.001	0.001
Clothianidin	3.430		0.001				0.001	0.001		
Halofenozide	1.330	0.004	0.007	0.003	0.007		0.012	0.008	0.002	0.003
Imidacloprid	1.995		0.001		0.001		0.001	0.001		

^aConcentrations based on chronic values in Table 4, RfD and ADI values based on 70kg male consuming 2L of water per day
^bMean lake concentrations calculated using TPQWS, adjusted using GCAF factor of 0.29, only values ≥ 0.001 are displayed

Table 6 : Comparison of 1-in-10 yr maximum daily lake concentration times GCAF with acute DWLOC for greens and tees ^b

Pesticide	Acute DWLOC ^a	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Chlorothalonil	21.000		0.002				0.014	0.001		
Iprodione	0.693		0.001				0.005	0.001		
Mancozeb	0.123						0.001			
Metconazole	4.200						0.001			
Myclobutanil	21.000		0.001				0.003		0.001	
Propamocarb-hydCl	70.000						0.001			
Thiophanate-methyl	5.700						0.001			
Halofenozide							0.002			

^aConcentrations based on acute values in Table 4, RfD and ADI values based on 70 kg male consuming 2L of water per day
^bMaximum 24hr concentrations calculated using TPQWS, adjusted using GCAF factor of 0.05, only values ≥ 0.001 are displayed

Table 7: Comparison of mean daily lake concentration times GCAF with chronic DWLOC for greens and tees ^b

Pesticide	Chronic DWLOC ^a	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
Myclobutanil	0.875						0.001			

^aConcentrations based on chronic values in Table 4, RfD and ADI values based on 70 kg male consuming 2L of water per day

^bMean lake concentrations calculated using TPQWS, adjusted using GCAF factor of 0.05, only values ≥ 0.001 are displayed

Table 8: Comparison of 1-in-10 yr maximum daily lake concentration times PCA with acute DWLOC for lawns ^b

Pesticide	Acute DWLOC ^a	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
24-D	1.932	0.016	0.054	0.014	0.051		0.115	0.043		0.009
Benefin			0.001		0.001		0.001			
Dithiopyr		0.001	0.003	0.001	0.003		0.004	0.002		0.001
Fluroxypyr		0.001	0.005	0.001	0.004		0.011	0.004		
Isoxaben		0.005	0.011	0.004	0.009		0.014	0.008	0.003	0.003
MCPA	1.455	0.010	0.027	0.007	0.027		0.056	0.022		0.007
Mecoprop-p	61.250	0.002	0.009	0.002	0.007		0.015	0.006		0.001
Oryzalin	8.750	0.002	0.007	0.001	0.004		0.005	0.003		0.001
Oxadiazon	4.200	0.017	0.035	0.012	0.030	0.002	0.047	0.028	0.018	0.012
Pendimethalin		0.001	0.002	0.001	0.001		0.002	0.001	0.001	
Penoxsulam		0.001	0.002	0.001	0.002		0.003	0.001	0.000	0.001
Prodiamine		0.001	0.002		0.001		0.002	0.001	0.001	0.001
Sulfentrazone	87.500	0.017	0.023	0.015	0.021	0.003	0.039	0.023	0.005	0.013
Sulfosulfuron		0.001	0.003	0.001	0.003		0.006	0.002		0.001
Triclopyr	10.500	0.022	0.046	0.013	0.036	0.001	0.077	0.033	0.008	0.012
Trifluralin	35.000	0.001	0.002	0.001	0.002		0.003	0.002	0.001	0.001
Cyazofamid	35.000	0.001	0.002	0.001	0.002		0.005	0.002		0.001
Fluopicolide	6.300	0.011	0.016	0.010	0.016	0.001	0.027	0.019	0.009	0.011
Mancozeb	0.123	0.001	0.009		0.005		0.008	0.001		
Metconazole	4.200	0.006	0.011	0.005	0.009		0.019	0.011	0.006	0.006
Myclobutanil	21.000	0.033	0.043	0.026	0.041	0.004	0.070	0.051	0.034	0.028
Propamocarb-hydCl	70.000	0.019	0.044	0.013	0.036		0.073	0.041	0.007	0.018
Thiophanate-methyl	5.700		0.011		0.004		0.009	0.004		
Chlorantranilpro		0.002	0.004		0.010	0.006	0.003	0.002		
Clothianidin	8.750	0.002	0.005		0.014	0.008	0.003	0.003		
Halofenozide		0.015	0.027	0.001	0.065	0.039	0.017	0.017		
Imidacloprid	4.900	0.005	0.010		0.025	0.015	0.005	0.006		

^aConcentrations based on acute values in Table 4, RfD and ADI values based on 70 kg male consuming 2L of water per day

^bMaximum 24 hr concentrations calculated using TPQWS, adjusted using PCA factor of 1, only values ≥ 0.001 are displayed

Table 9: Comparison of mean daily lake concentration times PCA with chronic DWLOC for lawns ^b

Pesticide	Chronic DWLOC ^a	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)	(mg/L)
24-D	0.168	0.001	0.003	0.001	0.002		0.004	0.002		0.001
Isoxaben	1.750		0.001				0.001			
MCPA	0.111		0.001		0.001		0.002	0.001		
Mecoprop-p	1.400		0.001		0.001		0.001			
Oxadiazon	0.126	0.005	0.010	0.002	0.007		0.014	0.007	0.006	0.002
Prodiamine	1.750		0.001				0.001			
Sulfentrazone	4.900	0.006	0.008	0.007	0.008	0.001	0.012	0.010	0.001	0.004
Triclopyr	1.750	0.001	0.003	0.001	0.002		0.005	0.002		0.001
Fluopicolide	7.000	0.007	0.008	0.004	0.008		0.012	0.009	0.005	0.005
Mancozeb	1.750		0.001		0.001		0.002			
Metconazole	1.400	0.003	0.005	0.001	0.004		0.008	0.004	0.003	0.002
Myclobutanil	0.875	0.021	0.023	0.011	0.021	0.001	0.035	0.025	0.019	0.011
Propamocarb-hydCl	4.200	0.001	0.002		0.001		0.004	0.002		
Chlorantranilpro	55.300	0.001	0.002	0.001	0.001		0.003	0.002	0.001	0.001
Clothianidin	3.430	0.001	0.001		0.001		0.001	0.001		
Halofenozide	1.330	0.008	0.011	0.004	0.007		0.018	0.010	0.006	0.004
Imidacloprid	1.995	0.002	0.003	0.001	0.002		0.005	0.003	0.002	0.001

^aConcentrations based on chronic values in Table 4, RfD and ADI values based on 70 kg male consuming 2L of water per day

^bMean lake concentrations calculated using TPQWS, adjusted using PCA factor of 1, only values ≥ 0.001 are displayed

Table 10: Pesticides with acute RQ ≥ 0.01 for fairways

Pesticide	Risk quotient								
	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
24-D		0.01		0.01		0.02			
MCPA						0.01			
Iprodione	0.05	0.10	0.03	0.07		0.16	0.09	0.04	0.04
Mancozeb	0.09	0.22	0.01	0.18		0.69	0.07		0.10
Acephate	0.15	0.25	0.01	0.19		0.27	0.17		0.09

Table 11: Pesticides with chronic RQ ≥ 0.01 for fairways

Pesticide	Risk quotient								
	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
24-D		0.01		0.01		0.01	0.01		
Oxadiazon	0.02	0.03	0.01	0.03		0.04	0.02	0.02	0.01
Iprodione	0.01	0.02		0.01		0.03	0.01	0.01	0.01
Myclobutanil	0.02	0.03	0.02	0.03	0.01	0.06	0.02	0.02	0.02

Table 12: Pesticides with chronic RQ \geq 0.01 for lawns									
	Risk quotient								
Pesticide	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
24-D		0.02		0.01		0.03	0.01		
MCPA		0.01		0.01		0.01	0.01		
Oxadiazon	0.04	0.08	0.01	0.05		0.11	0.05	0.04	0.01
Myclobutanil	0.02	0.03	0.01	0.02		0.04	0.03	0.02	0.01
Halofenozide	0.01	0.01		0.01		0.01	0.01		

Table 13: Pesticides with acute RQ \geq 0.01 for lawns									
	Risk quotient								
Pesticide	Albany	Atlanta	Bismarck	Columbus	Fresno	Houston	Madison	Olympia	Roswell
24-D	0.01	0.03	0.01	0.03		0.06	0.02		
MCPA	0.01	0.02	0.01	0.02		0.04	0.02		
Oxadiazon						0.01			
Mancozeb	0.01	0.08		0.04		0.07	0.01		

Conclusions

The assessment presented here shows that pesticide concentrations vary with location and turf type. Applications on fairways and high precipitation areas like Houston produced the highest pesticide concentrations. Dry areas such as Fresno and greens and tees turf types yielded the lowest model estimates. Risk quotients exceeded 0.01 for only 1 pesticide in Fresno and only 1 pesticide applied on greens and tees had RQ \geq 0.01 at any location. Only 8 of the 37 pesticides indicated potential acute or chronic risk with RQ \geq 0.01. Five of these 8 pesticides had greater chance of risk with RQ \geq 0.1 in at least one location.

Mancozeb posed highest acute risk, RQ \geq 0.01, on applications to lawns and fairways. This is probably due to the large applications - 18.3 kg/ha up to 13 times a year. The average application rate for turf pesticides is 1.6 kg/ha, applied 3 times a year. Myclobutanil posed the highest chronic risk, RQ \geq 0.01, on applications to all three turf types. Myclobutanil was the only pesticide to indicate chronic risk in Fresno and the only pesticide to indicate chronic risk on green and tee turf types.

Acephate, 24-D, iprodione and mancozeb are all pesticides eligible for reregistration by the EPA. However, according to this study, these same pesticides posed some potential acute

and chronic risk. 24-D had a $RQ \geq 0.01$ on fairways and lawns in over 3 locations, including Houston. These results suggest that persons living in heavy rainfall areas may have higher exposures of turf pesticide in their drinking water than would be predicted by EPA risk assessments. Discrepancies between the two models may be due to differences in model calculations and procedures. TPQPond takes into account regional weather data that may account for these variations. Consequently, evaluations as crucial as drinking water risk assessments should be conducted using several approaches to determine the most conclusive results.

References

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Letter: Kohler Co. hardly a good environmental 'citizen'

<http://www.sheboyganpress.com/story/opinion/2014/10/01/letter-kohler-co-hardly-good-environmental-citizen/16563685/>

Wisconsin 7:47 p.m. CDT October 1, 2014



14 CONNECT [TWEETLINKEDIN](#) 4 COMMENTEMAILMORE

A Sheboygan Press letter dated Sept. 17 called Kohler Co. a good corporate "citizen." Kohler's desire to replace a forested wildlife refuge with another golf course is ecologically detrimental. The information below is based upon research done by my daughter (Alizee) reporting Kohler's environmental record. No one should be granted the right to destroy our natural resources like this project will do.

—

In a comparison with Rock, Milwaukee, Manitowoc and Dane counties, Sheboygan County has the greatest overall amount of recognized toxins released to the environment. Sheboygan County releases 546,259 pounds of pollutants. Of these, Kohler Company generates roughly 51,421 pounds of pollutants annually. Thus, Kohler ranks third in Sheboygan County as the most polluting industry. The factories of Kohler Company release benzene, lead, chromium and nickel. Other chemicals include manganese, antimony, copper, zinc, barium and triethylamine.

Of the two Environmental Protection Agency recognized superfund sites in Sheboygan County, the Kohler Company landfill is located in Kohler, only 300 feet from the Sheboygan River. The site has been used to dispose of industrial wastes, municipal wastes and foundry sludge. The groundwater beneath is contaminated with cadmium, chromium and phenols and, according to the EPA, has contaminated drinking water sources.

This groundwater feeds directly into an aquifer that is used for drinking. This Sheboygan harbor and river landfill site extends eight miles through the towns of Kohler, Sheboygan and Sheboygan Falls, all within Sheboygan County. This landfill has been leaching heavy metals and PCBs into the Sheboygan River and its two tributaries: the Mullet and Onion Rivers. These contaminants are at such high levels as to initiate a ban on ingesting fish from the Sheboygan River and its tributaries.

This is according to the Environmental Protection Agency Scorecard report: <http://scorecard.goodguide.com>

Debbie and Alizee Desmoulin

Sheboygan

Health Effects of 30 Commonly Used Pesticides

	Health Effects						
	Cancer	Endocrine Disruption	Reproductive Effects	Neurotoxicity	Kidney/Liver Damage	Sensitizer/Irritant	Birth Defects
Herbicides							
2,4-D*	X ⁴	X ¹⁰	X ⁷	X ⁸	X ⁸	X ¹	X ¹¹
Benfluralin					X ¹	X ¹	
Bensulide				X ²	X ¹	X ²	
Clopyralid			X ⁷			X ²	X ⁷
Dicamba*			X ¹	X ²	X ²	X ¹	X ¹
Diquat Dibromide			X ¹²		X ¹¹	X ¹	
Dithiopyr					X ¹	X ¹	
Fluazipop-p-butyl			X ¹		X ¹		X ¹
Glyphosate*	X ¹²	X ⁸	X ¹		X ⁸	X ¹	
Imazapyr					X ⁷	X ²	
Isoxaben	X ³				X ²		
MCPA		X ⁶	X ²	X ²	X ¹¹	X ¹	
Mecroporp (MCP)P*	Possible ³	X ⁶	X ²	X ¹	X ⁹	X ¹	X ¹
Pelargonic Acid*						X ¹	
Pendimethalin*	Possible ³	X ⁶	X ¹			X ²	
Triclopyr			X ⁷		X ⁹	X ¹	X ⁷
Trifluralin*	Possible ³	X ⁶	X ¹		X ²	X ¹	
Insecticides							
Acephate	Possible ³	X ⁶	X ¹¹	X ⁹		X ²	
Bifenthrin*†	Possible ³	Suspected ^{6,10}		X ⁸		X ¹	X ⁹
Carbaryl	X ³	X ¹⁰	X ⁸	X ¹	X ¹¹	X ¹¹	X ⁷
Fipronil	Possible ³	X ⁶	X ⁸	X ⁸	X ⁸	X ⁸	
Imidacloprid ‡			X ⁷		X ²		X ⁷
Malathion*	Possible ³	X ¹⁰	X ¹¹	X ⁹	X ²	X ²	X ²
Permethrin*†	X ³	Suspected ^{6,10}	X ^{1,7}	X ^{9,7}	X ⁹	X ¹	
Trichlorfon	X ³	X ⁶	X ¹¹	X ²	X ²		X ²
Fungicides							
Azoxystrobin					X ²	X ²	
Myclobutanil		Probable ⁶	X ²		X ²		
Propiconazole	Possible ³	X ⁶	X ²		X ¹	X ¹	
Sulfur						X ¹	
Thiophanate methyl	X ³	X ¹	X ¹	Suspected ¹	X ¹	X ²	X ¹
Ziram	Suggestive ³	Suspected ⁶		X ²	X ²	X ²	
Totals:	16	17	21	14	25	26	12

*These pesticides are among the top 10 most heavily used pesticides in the home and garden sector from 2006-2007, according to the latest sales and usage data available from EPA (2011), available at http://www.epa.gov/opp00001/pestsales/07pestsales/market_estimates2007.pdf.

† EPA lists all synthetic pyrethroids under the same category. While all synthetic pyrethroids have similar toxicological profiles, some may be more or less toxic in certain categories than others. See Beyond Pesticides' synthetic pyrethroid fact sheet at bit.ly/TLBuP8 for additional information.

‡ Imidacloprid is a systemic insecticide in the neonicotinoid chemical class, which is linked to bee decline.

Description

Most toxicity determinations based on interpretations and conclusions of studies by university, government, or organization databases. Empty cells may refer to either insufficient data or if the chemical is considered relatively non-toxic based on currently available data.

The list of 30 commonly used lawn chemicals is based on information provided by the General Accounting Office 1990 Report, "Lawn Care Pesticides: Risks Remain Uncertain While Prohibited Safety Claims Continue," U.S. Environmental Protection Agency (EPA) National Pesticide Survey (1990), Farm Chemicals Handbook (1989), The National Home and Garden Pesticide Use Survey by Research Triangle Institute, NC (1992), multiple state reports, current EPA Environmental Impact Statements, and Risk Assessments, EPA national sales and usage data, best-selling products at Lowe's and Home Depot, and Beyond Pesticides' information requests.

For more information on hazards associated with pesticides, please see Beyond Pesticides' *Gateway on Pesticide Hazards and Safe Pest Management* at www.beyondpesticides.org/gateway. For questions and other inquiries, please contact our office at 202-543-5450, email info@beyondpesticides.org or visit us on the web at www.beyondpesticides.org.

Citations

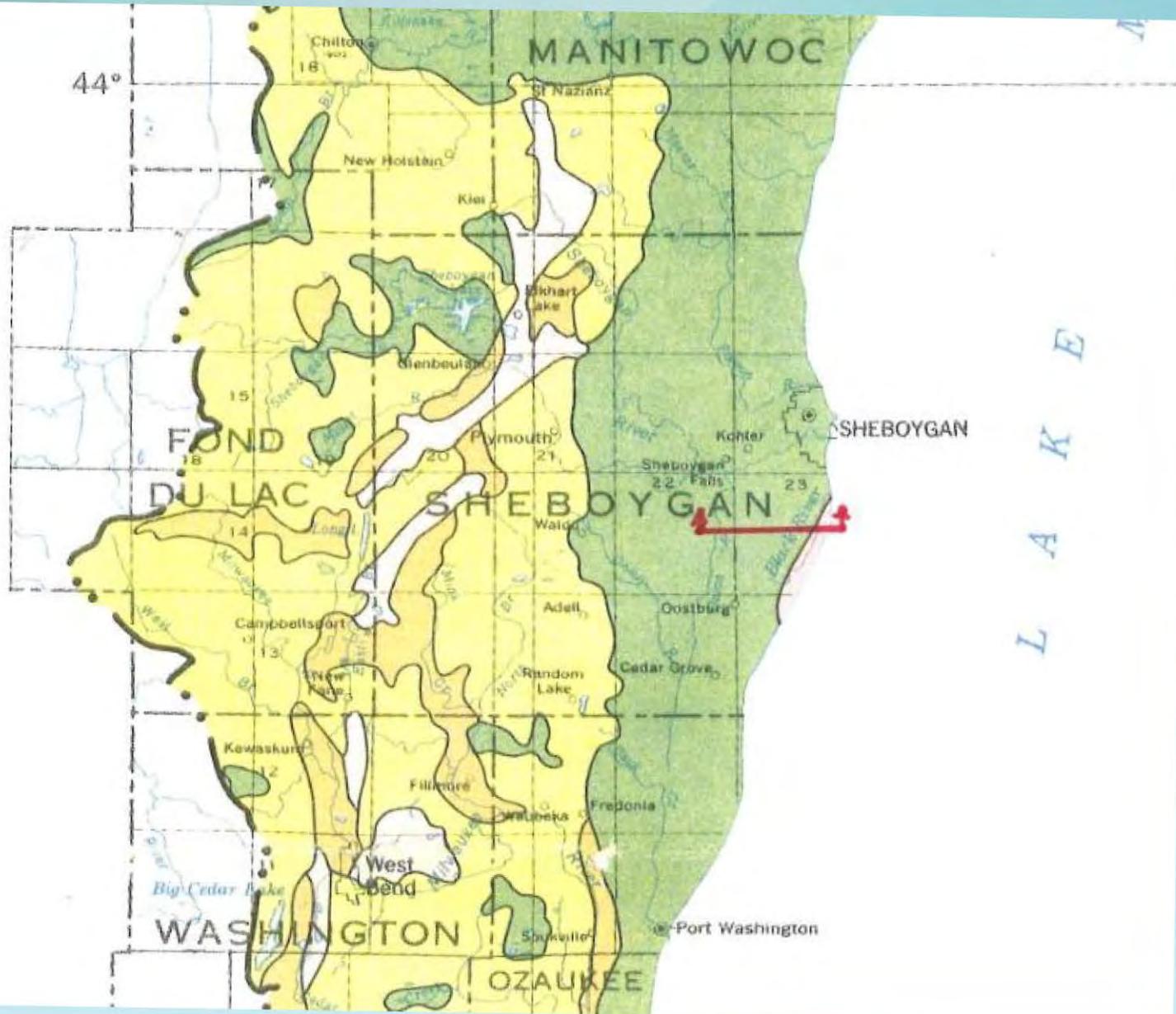
1. U.S. EPA. Office of Pesticide Program *Reregistration Eligibility Decisions (REDs), Interim REDs (iREDs), and RED factsheets*. <http://www.epa.gov/pesticides/reregistration/>.
2. National Library of Medicine, TOXNET, *Hazardous Substances Database*, <http://toxnet.nlm.nih.gov/>.
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Black River Area Surface and Groundwater

Roger G. Miller, PE
MILLER ENGINEERS & SCIENTISTS

Soil Infiltration Rates

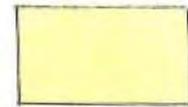


EXPLANATION

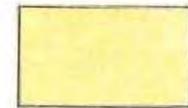
Infiltration rate, in inches per hour



0.05-0.2



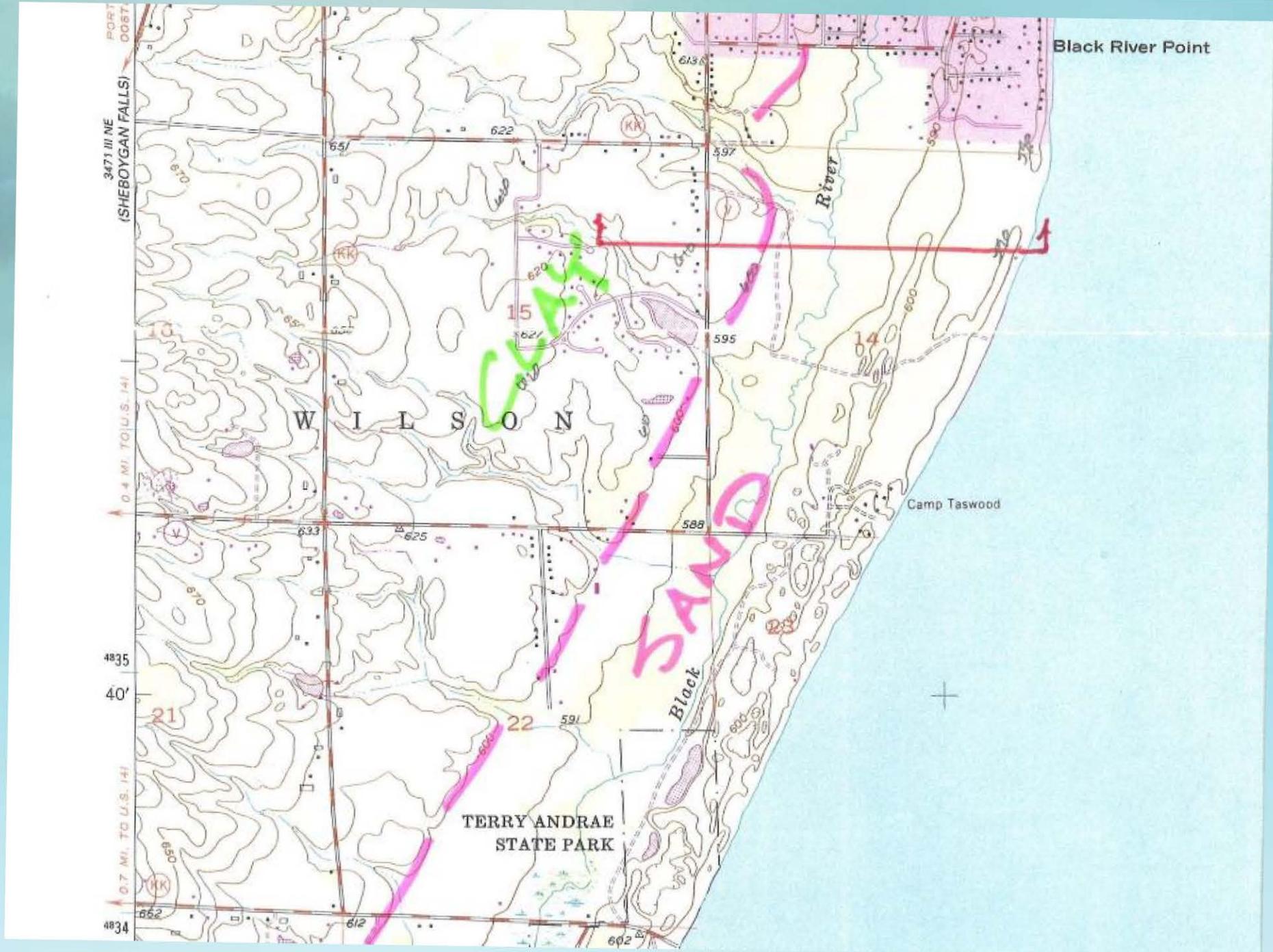
0.2-0.8



0.8-2.5



2.5-5

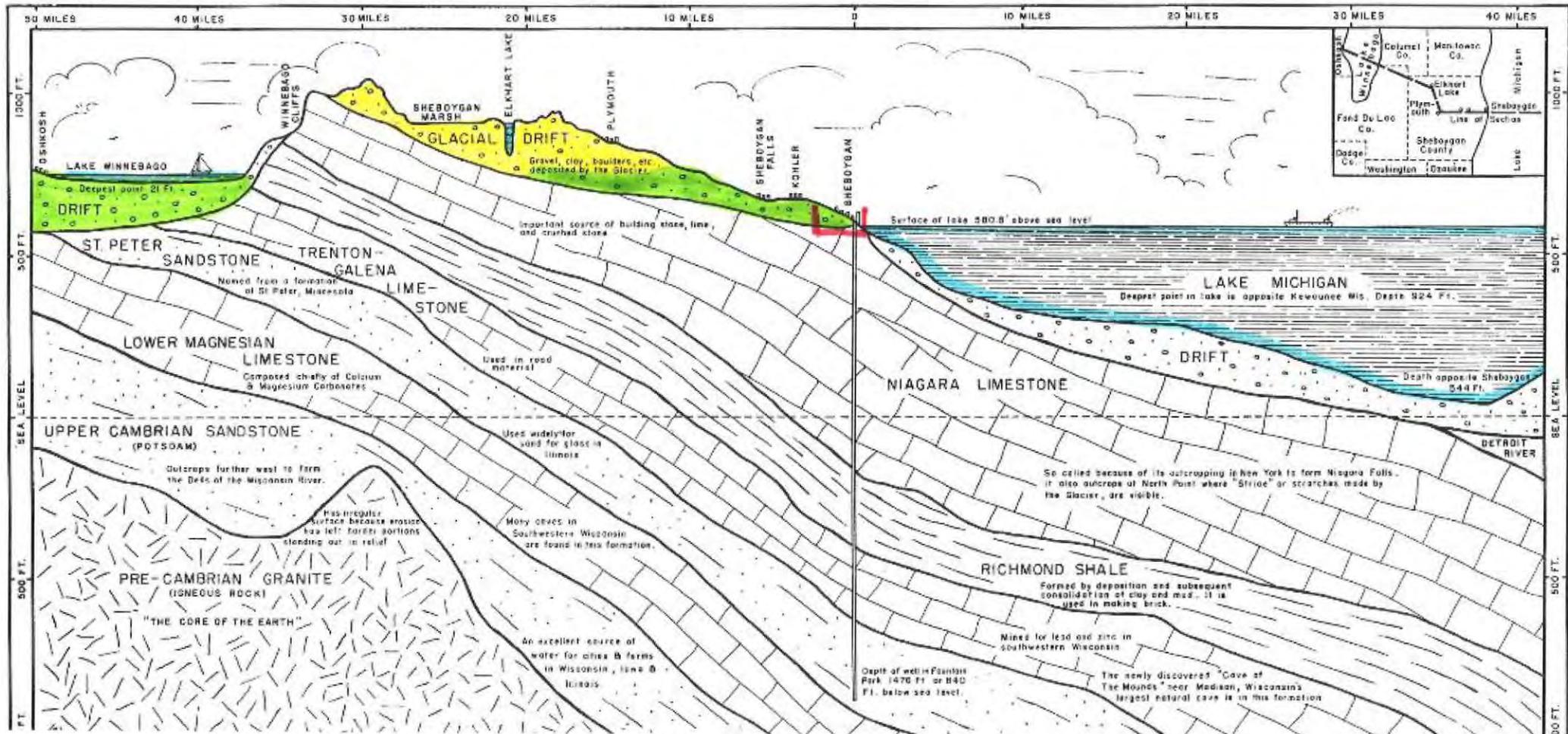


The Geology of Sheboygan County

Soil Infiltration Rates

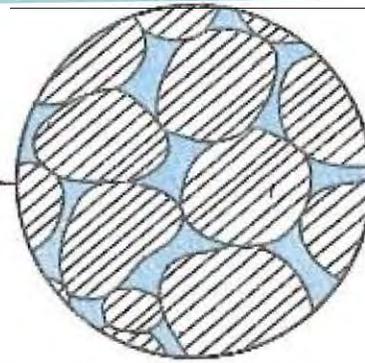
By E. F. Bean

Ernest F. Bean, State Geologist for the State of Wisconsin, has made many valuable contributions to the State in line with his profession. He graduated from the University of Wisconsin in 1909, receiving his Master's Degree two years later. Since that time he has devoted his life to the study, teaching and practical application of his geological information. He is Professor of Geology at the University of Wisconsin and has been State Geologist since 1926. He was a member of the Alaska Glacial Expedition, chief of field parties of the Wisconsin Geological Survey, and a former member of the Wisconsin State Highway Commission. He is a member of numerous geological societies and the author of several articles and books on this subject. The article on Sheboygan County is a fine contribution to the records of the county.



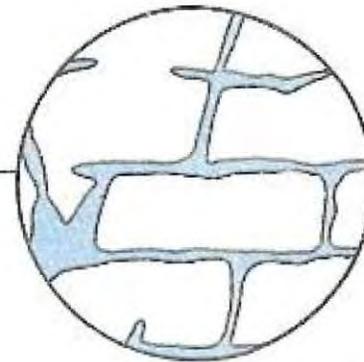


Enlargement



Sand and gravel yields water from interconnected pore spaces between the grains

Enlargement



In* dolomite and limestone water occurs in fractures that may be enlarged by solution

First Water Quality Test For WISCONSIN UNIQUE WELL NUMBER AY 137

Property Owner: Bruce S. Jupp
 Mailing Address: 1631 Terry Andre Ave
 City: Sheboygan, WI 53081
 County: Sheboygan

State of Wisconsin
 Department of Natural Resources
 Private Water Supply - WSP
 Box 7921
 Madison, WI 53707

AUG 4 1989

1. Location (Please type or print using a block pen)
 Town City Village Fire # if available
 of Wilson
 Grid or Street Address of Road Name and Number if available
 1631 Terry Andre Ave
 Subdivision Name: Lake Park Lot # Block #

Well Constructor/Business Name: Erwin W. Fitzsch 377
 Address: R.F.3 KK
 City: Sheboygan, WI 53081

2. Mark well location in correct square parcel of section.
 Section 16-14 NE 23 E W
 3. Well Type: New Replacement Reconstruction/Rehabilitation
 Reason for new, reconstructed, replaced, or rehabilitated well: New home

4. Well uses: 1. of home and/or (ex: barn, restaurant, church school, industry, etc.)
 5. Well Located on Highest Point of Property, Consistent with the General Layout and Surroundings? Yes No
 Well Located in Floodplain? Yes No
 Distance in Feet From Well To Nearest:
 1. Landfill: 19
 2. Building Overhang: 88
 3. Septic or Holding Tank: 35
 4. Sewage Absorption Unit: 110
 5. Nonsewering Pit: 53
 6. Buried Home Heating Oil Tank: 53
 7. Dated Petroleum Tank: 53
 8. Shoreline/Retaining Pool: 53

9. Downspout/Yard Hydrant: Yes No
 10. Privy: Yes No
 11. Foundation Drain to Clearwater: Yes No
 12. Foundation Drain to Sewer: Yes No
 13. Holding Tank: Yes No
 14. Building Sewer: Cast Iron or Plastic Other
 15. Collector Sewer: Cast Iron or Plastic Other
 16. Clearwater Sump: Yes No
 17. Wastewater Sump: Yes No
 18. Fenced Animal Barn Pits: Yes No
 19. Animal Yard or Shelter: Yes No
 20. Silo - Type: Yes No
 21. Barn Outlet: Yes No
 22. Manure Pipe: Gravity Pressure
 23. Other Manure Storage: Cast Iron or Plastic Other
 24. Other NR 113 Waste Source: Yes No

6. Drillsite Disturbance

Dist. (ft.)	From (ft.)	To (ft.)
10	surface	10
6	10	183

Method of constructing upper enlarged drillsite, (if applicable - more than one):
 1. Rotary - Mud Circulation
 2. Rotary - Air
 3. Rotary - Foam
 4. Reverse Rotary
 5. Cable-tool Bit 10 in. dia.
 6. Trip. Outer (Cast) in. dia. Removed? Yes No
 7. Other

8. Geology

Type, Caving/Noncaving, Color, Hardness, Etc.	From (ft.)	To (ft.)
S Sand	surface	30
C Clay	30	96
P Hard Pan	96	117
L Limestone Rock	117	183

7. Casing, Liner, Screen
 Material, Weight, Specifications, From To
 Dia. (in.) Mfg. & Method of Assembly (ft.) (ft.)
 6 New black steel pipe surface 117
 T+C 19.45
 ASTM-A53 NKK

8. Screen type and material From To
 Dia. (in.) (ft.) (ft.)

10. Static Water Level
 2. above ground level
 11 ft. below ground surface
 12. Well Is: Above Below Grade
 Developed? Yes No
 Disinfected? Yes No
 Capped? Yes No

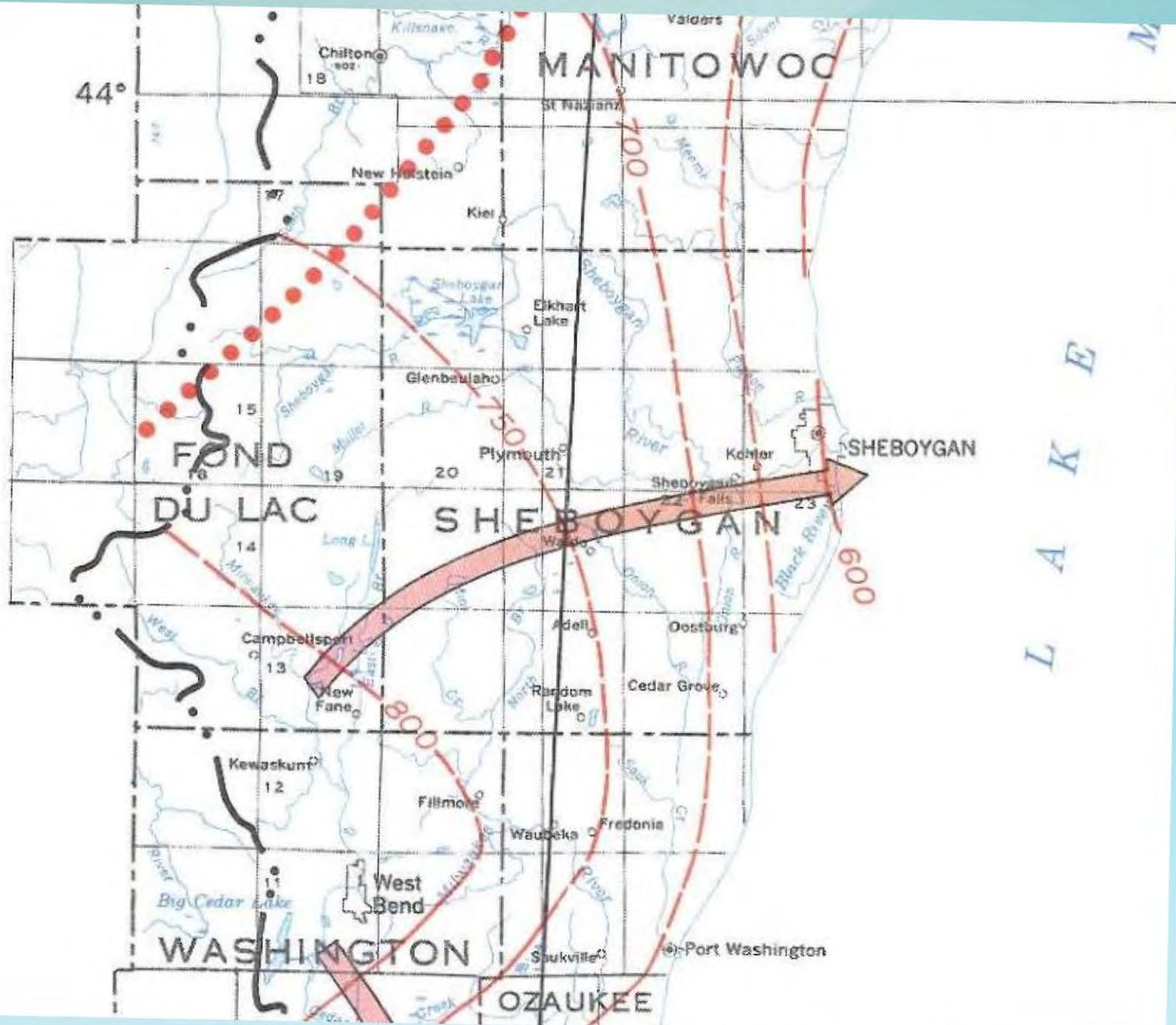
9. Grout or Other Sealing Material
 Method: Kind of Sealing Material From To Sacks Cement
 Clay slurry surface 10

11. Pump Test
 Pumping Level: 32 ft. below surface
 Pumping at: 16 GPM for 7 hours
 13. Were all unused, nonoccupying, or unused wells properly filled with sealant?
 Yes No If no, explain

14. Signature of Well Constructor: Erwin W. Fitzsch EWF Date Signed: 8-1-89
 Signature of Drill Rig Operator: Erwin W. Fitzsch EWF Date Signed: 8-1-89

9. Geology

Type, Caving/Noncaving, Color, Hardness, Etc.	From (ft.)	To (ft.)
S Sand	surface	30
C Clay	30	96
P Hard Pan	96	117
L Limestone Rock	117	183



EXPLANATION ARTESIAN SYSTEM

●
Active observation well

○
Discontinued observation well

— 500 —
Potentiometric contour

Direction of ground-water movement

Showing altitude to which water will rise in wells in the sandstone aquifer as of 1968. Dashed where control is scarce. Contour interval 50 feet. Datum is mean sea level



Direction of ground-water movement

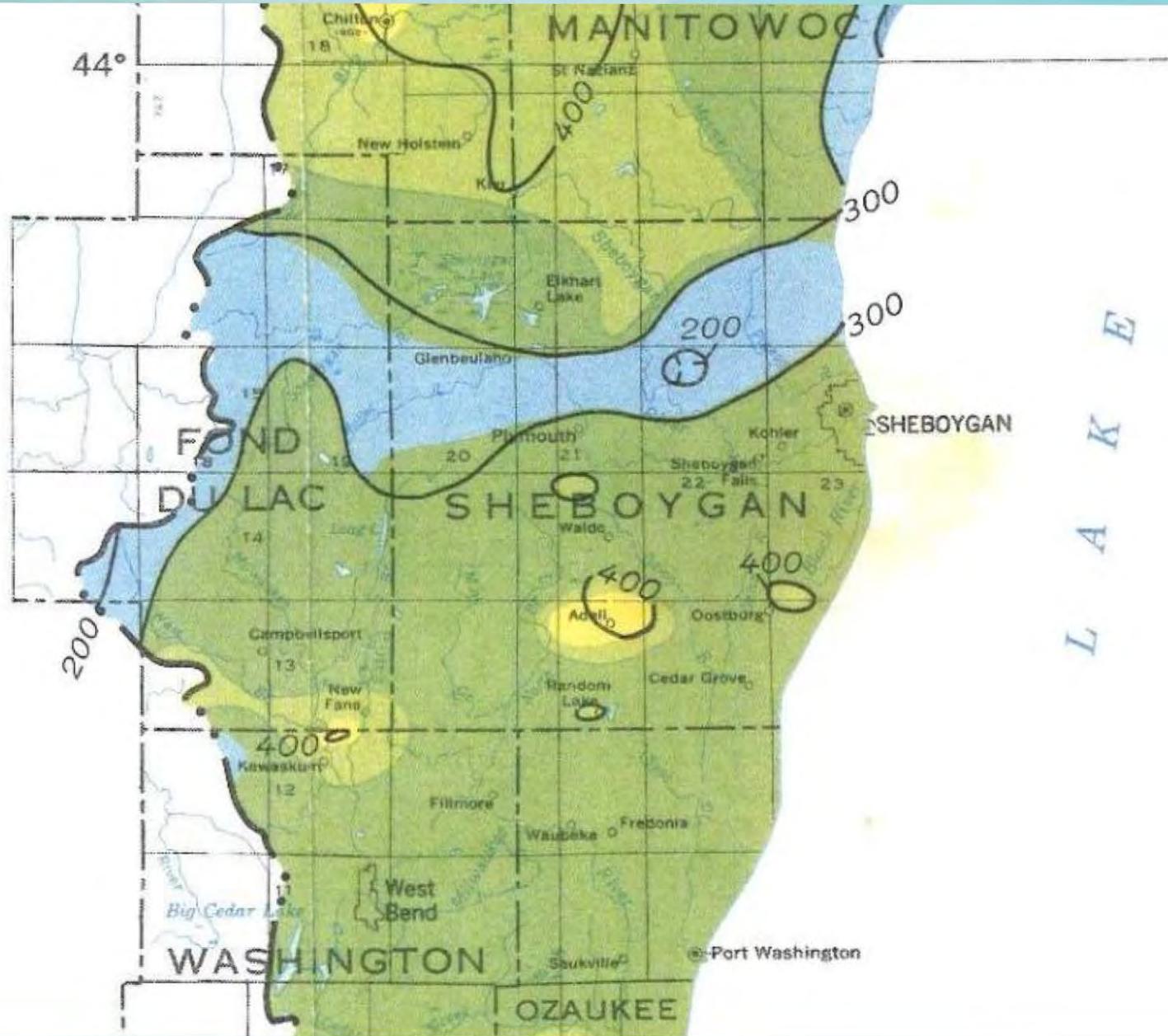
●●●●●●●●●●
Ground-water divide



Surface-water divide

Compiled from well records and reports of Newport (1962), Green and Hutchinson (1965), and Hutchinson (1970)

Bedrock Aquifer Water Quality



EXPLANATION

Dissolved solids,
in milligrams per liter



Less than 200



200-300



300-400



400-500



Greater than 500

— 200 —

Line of equal hardness
concentration

*Interval 100 milligrams per liter.
Hachures indicate lower concentrations*

— · · —
Surface-water divide

43°

Center for Watershed Science and Education

College of Natural Resources and University of Wisconsin-Extension

Home

Water & Environmental Analysis Lab

Groundwater Center

Activities

Reports

WI Well Water Quality Viewer

Student Involvement

Staff/Contact Us

Well Water Quality Viewer: Private Well Data for Wisconsin

WI Well Water Quality Interactive Viewer



[Use the Interactive Well Water Quality Viewer](#)

Homeowners and local units of government can use this tool to:

- See what we know about general well water quality in Wisconsin.
- Compare water quality in your area to nearby towns or counties.
- Raise awareness of local groundwater quality issues.
- Promote testing and outreach efforts.
- Encourage well testing in areas where little data exists.
- Highlight the importance of testing well water on a regular basis.

Introduction

Nearly 900,000 households rely on private wells as their primary water supply. Homeowners with private wells are encouraged to have their well tested on a regular basis to determine the safety of the water supply for purposes such as drinking and cooking. While testing is the only way to determine the types and amount of contaminants in a well water system, homeowners and local officials often want to know more about water quality issues in their community.

The WI Well Water Quality Interactive Viewer was created as an educational tool to help people better understand Wisconsin's groundwater resources that many of us rely on for our drinking water.

How does the viewer work?

The viewer relies mostly on voluntarily submitted well water samples from homeowners and other well water data collected by state agencies over the past 25 years. It would not have been made possible without the many well owners who took the initiative to have their wells tested.

Because groundwater quality can often be very site specific for certain contaminants, many water samples are required to get a sense of groundwater quality at a county or watershed scale. By combining all of this data together we are able to look at averages or the number of samples that exceed drinking water standards to get a sense of private well water quality across the state.

- Select a county, township or section to view water quality summaries at different scales.
- Select from one of 14 different water quality parameters.
- Areas that are blank show areas where insufficient well water data exists to summarize well water quality for that area. But

Total Number Samples: 127

Sample Dates: 10/20/2013 to 10/21/2013

Reason for Test	Last Test (yr)	Problems	Treatment Sys	Depth (ft) Well	Casing	Water	Well Diam (in)						
Curious	89%	Never	11%	Color	19%	Softener	88%	... 25	0%	0%	4%	... 3	<1%
Problems	5%	< 1	2%	Taste	22%	R/O	6%	26-50	0%	0%	5%	4 - 9	46%
Regular	3%	1 - 2	6%	Odor	31%	Carb Filt	17%	51-100	2%	0%	2%	10 - 18	2%
Required	2%	2 - 5	14%	Corr	4%	Neutral	0%	101-150	2%	22%	<1%	18 +	0%
Bac Retest	<1%	5 - 10	20%	Health	0%	Part Filt	12%	151-200	22%	7%	0%		
Disinfect	2%	10 +	27%	Other	8%	Iron Filt	14%	201 ...	16%	<1%	<1%		
Infant...	0%	Unk	18%	None	35%	Other	3%						
Other	6%												

pH

... 5.00	0	0%
5.01 - 6.00	0	0%
6.01 - 7.00	0	0%
7.01 - 8.00	1	<1%
8.01 - 9.00	126	99%
9.01 ...	0	0%
Avg: 8.26	for	127 Samples

Conductivity (umhos/cm)

... 100	1	<1%
101 - 250	2	2%
251 - 500	112	88%
501 - 750	11	9%
751 - 1000	0	0%
1001 ...	1	<1%
Avg: 433	for	127 Samples

Alkalinity (mg/L CaCO3)

... 50	1	<1%
51 - 100	5	4%
101 - 200	91	72%
201 - 300	29	23%
301 - 400	0	0%
401 ...	1	<1%
Avg: 171	for	127 Samples

Total Hardness (mg/L CaCO3)

... 50	19	15%
51 - 100	6	5%
101 - 200	87	69%
201 - 300	13	10%
301 - 400	2	2%
401 ...	0	0%
Avg: 155	for	127 Samples

Nitrate (mg/L as N)

None Detected	127	100%
... 2.0	0	0%
2.1 - 5.0	0	0%
5.1 - 10.0	0	0%
10.1 - 20.0	0	0%
20.1 ...	0	0%
Avg: <0.1	for	127 Samples

Chloride (mg/L)

None Detected	1	<1%
... 10	115	91%
11 - 50	10	8%
51 - 100	0	0%
101 - 200	1	<1%
201 ...	0	0%
Avg: 7	for	127 Samples

Saturation Index

... -3.0	1	<1%
-2.9 - -2.0	0	0%
-1.9 - -1.0	9	7%
-0.9 - 0.0	10	8%
0.1 - 1.0	106	83%
1.1 ...	1	<1%
Avg: 0.2	for	127 Samples

Coliform Bacteria

Bact Samples	127	
Pos Bacteria	14	11%

E. coli Bacteria

E. coli Samples	14	
Pos E. coli	0	0%

Atrazine Screen* (ppb)

None Detected	31	100%
... 0.3	0	0%
0.4 - 1.0	0	0%
1.1 - 2.0	0	0%
2.1 - 3.0	0	0%
3.1 ...	0	0%
Avg: <0.1	for	31 Samples

*Triazine screen before June 2008, then Diminonchlorotriazine (DACL).

Total Number Samples: 127

Sample Dates: 10/20/2013 to 10/21/2013

Arsenic (mg/L)

None Detected	19	24%
... 0.010	57	71%
0.011 - 0.050	4	5%
0.051 - 0.100	0	0%
0.101 - 0.150	0	0%
0.151 ...	0	0%
Avg: 0.005	for	80 Samples

Calcium (mg/L)

None Detected	15	19%
... 25	26	32%
26 - 50	39	49%
51 - 75	0	0%
76 - 100	0	0%
101 ...	0	0%
Avg: 19.3	for	80 Samples

Copper (mg/L)

None Detected	11	14%
... 0.130	62	78%
0.131 - 0.500	6	8%
0.501 - 0.900	0	0%
0.901 - 1.300	1	1%
1.301 ...	0	0%
Avg: 0.051	for	80 Samples

Iron (mg/L)

None Detected	0	0%
... 0.300	62	78%
0.301 - 1.000	16	20%
1.001 - 2.000	2	2%
2.001 - 5.000	0	0%
5.001 ...	0	0%
Avg: 0.211	for	80 Samples

Potassium (mg/L)

None Detected	3	4%
... 20	77	96%
21 - 40	0	0%
41 - 60	0	0%
61 - 80	0	0%
81 ...	0	0%
Avg: 1.6	for	80 Samples

Magnesium (mg/L)

None Detected	14	18%
... 20	47	59%
21 - 40	19	24%
41 - 60	0	0%
61 - 80	0	0%
81 ...	0	0%
Avg: 11.2	for	80 Samples

Manganese (mg/L)

None Detected	19	24%
... 0.050	60	75%
0.051 - 0.300	1	1%
0.301 - 0.500	0	0%
0.501 - 1.000	0	0%
1.001 ...	0	0%
Avg: 0.009	for	80 Samples

Sodium (mg/L)

None Detected	0	0%
... 25	10	12%
26 - 50	30	38%
51 - 75	1	1%
76 - 100	6	8%
101 ...	33	41%
Avg: 71.7	for	80 Samples

Lead (mg/L)

None Detected	67	84%
... 0.015	13	16%
0.016 - 0.025	0	0%
0.026 - 0.050	0	0%
0.051 - 0.100	0	0%
0.101 ...	0	0%
Avg: <0.002	for	80 Samples

Sulfate (mg/L)

None Detected	0	0%
... 25	9	11%
26 - 50	16	20%
51 - 75	24	30%
76 - 100	16	20%
101 ...	15	19%
Avg: 70.4	for	80 Samples

Zinc (mg/L)

None Detected	6	8%
... 0.100	59	74%
0.101 - 0.500	13	16%
0.501 - 1.000	2	2%
1.001 - 5.000	0	0%
5.001 ...	0	0%
Avg: 0.073	for	80 Samples

Figure 9.9 is a vertical section of a well pumping from a *confined* aquifer. The equation for a well operating under confined conditions is:

English Engineering Units*

$$Q = \frac{K b (H - h)}{528 \log R/r} \left(C_a / 100 \right)$$

where

Q = well yield or pumping rate, in gpm

K = hydraulic conductivity of the water-bearing formation, in gpd/ft²

H = static head measured from bottom of aquifer, in ft

h = depth of water in the well while pumping, in ft

R = radius of the cone of depression, in ft

r = radius of the well, in ft

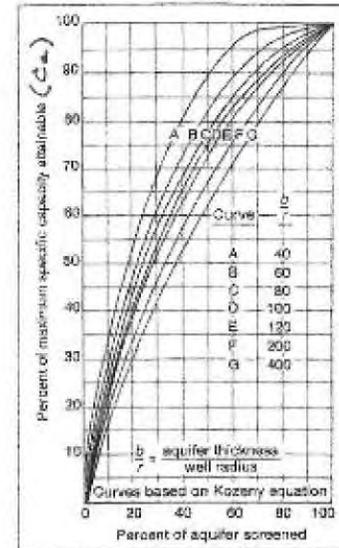


Figure 9.35. Relationship of partial penetration and attainable specific capacity for wells in homogeneous confined aquifers.

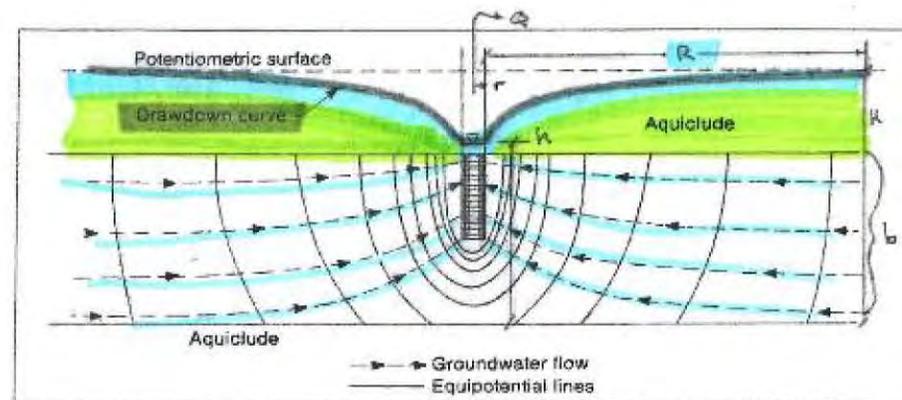


Figure 9.34. When the intake section of a well partially penetrates a confined aquifer, flow lines deviate somewhat from the radial flow pattern associated with a fully penetrating well. (*Water and Power Resources Service, 1981*).

Black River Watershed
Town of Wilson
Park and Forestry Commission
Sheboygan County, Wisconsin

Job No. 10531C2

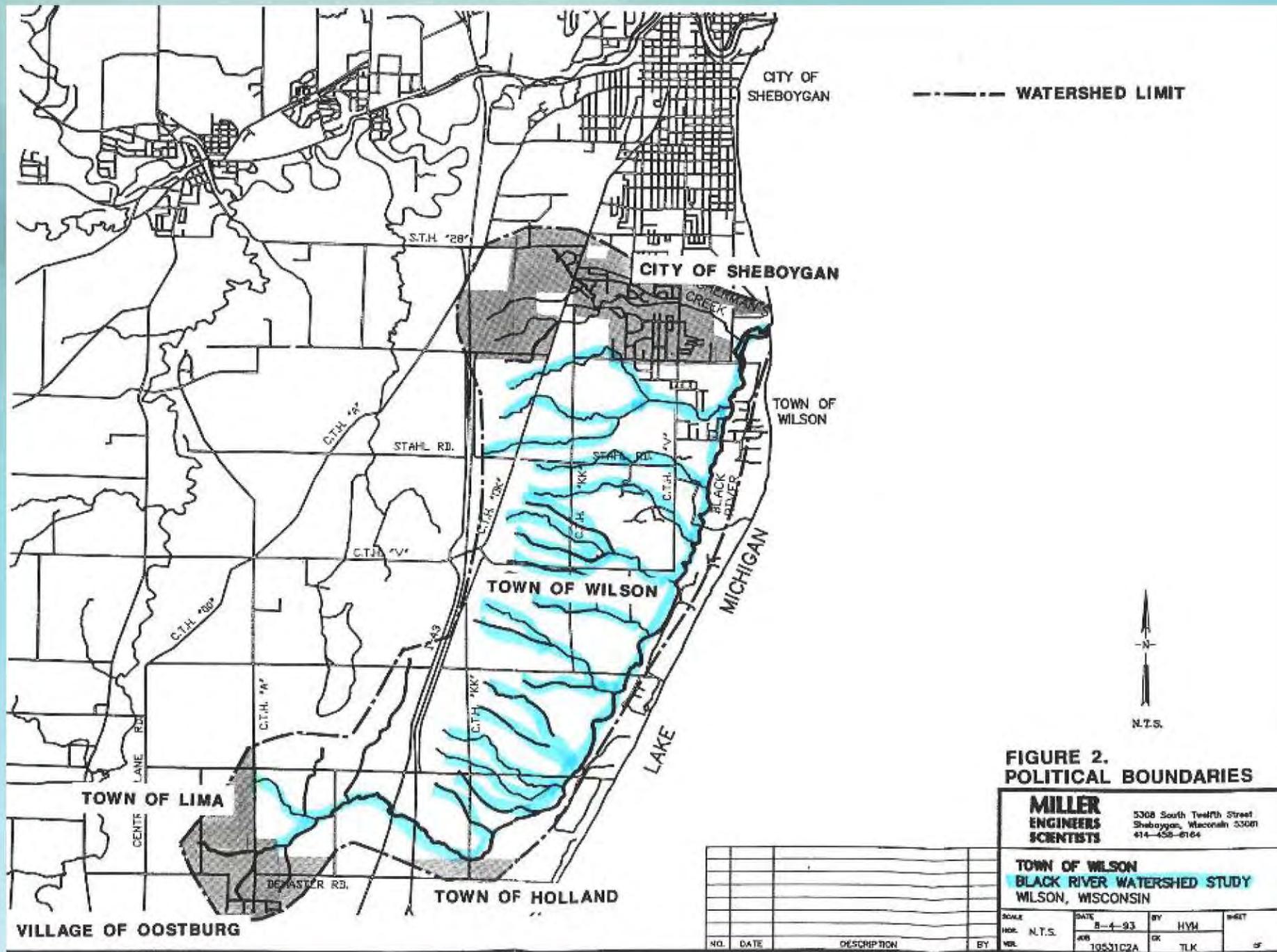
PREPARED FOR:

Town of Wilson
Park and Forestry Commission
4809 Moenning Road
Sheboygan, WI 53081
(414) 458-2000

PREPARED BY:

Miller Engineers & Scientists
5308 South Twelfth Street
Sheboygan, WI 53081
Telephone: 458-6164
FAX: (414) 458-0369

September 20, 1993



**FIGURE 2.
POLITICAL BOUNDARIES**

MILLER ENGINEERS SCIENTISTS		5308 South Tenth Street Sheboygan, Wisconsin 53081 414-458-6164	
TOWN OF WILSON BLACK RIVER WATERSHED STUDY WILSON, WISCONSIN			
SCALE	DATE	BY	HEET
N.T.S.	8-4-93	HVM	
NO.	408	OK	of
	10531C2A	TLK	

NO.	DATE	DESCRIPTION	BY

4.1.3 Critical Areas

Critical areas have been identified throughout the watershed and are shown on Figure 4: *Critical Watershed Areas*. These areas generally include:

- Shoreland Districts
- Floodplain Districts
- Shoreland/Wetland Districts
- WDNR Wetland Designations (areas less than 2 acres are not shown for clarity)
- Areas with elevations less than 600 feet
- 75 foot wide vegetative corridors along tributaries
- Southern most tributary of the Black River

6. CONCLUSIONS/RECOMMENDATIONS

The Black River Watershed is undergoing increasing urbanization. Some of the natural characteristics of the watershed are highly vulnerable to degradation which can have temporary or permanent effects on the ability of the watershed to control flooding and minimize sedimentation. It is in the Town's interest to preserve and improve these characteristics in the course of future changes in land use. If properly managed, future land use changes can occur with minimal impairment, and in some cases improvement, to the quality of the watershed. Toward an appropriate balance of short-term cost and long-term land and community quality, MILLER recommends that the Town consider the following actions:

- Land acquisitions or long-term leases wherever practical to preserve the following "critical areas":
 - Approximately 75 feet on each side of designated streams and drainage ways
 - An area of approximately 300 feet either side of the southern most branch of the Black River between Minderhaud Road and C.T.H. KK (north-south)
 - Land with elevations less than 600 feet U.S.G.S. paralleling the main channel of the Black River
- When "critical area" lands are developed, action should be taken to restore the land's ability to reduce runoff and sedimentation over both short-term and long-term use of that land.
- Provide educational materials on Best Management Practices (BMPs) that are readily available to landowners/users and provide instruction on the significance of BMPs
- Coordinate with the Sheboygan County LCD office and WDNR to lobby for "priority watershed" status for the Black River

- Cooperate with other governmental agencies to enforce those regulations which are intended to protect water quality
- Initiate local regulatory and non-regulatory methods to preserve and improve the quality of the watershed
- Develop water quality monitoring plan to measure the results of land use practices

7. CLOSURE

MILLER has appreciated the opportunity to provide the Town of Wilson with an assessment of the Black River Watershed. Being located within the watershed, MILLER has a strong interest in preserving and improving the quality of the Black River. We commend the Town's



Questions?

From: [Wendy Honold](#)
To: [DNR Kohler Proposal](#)
Cc: [DNR SECRETARY](#)
Subject: Additional concerns
Date: Monday, July 25, 2016 7:48:20 AM
Attachments: [2016 July 25-Letter to DNR-Jay Schiefelbein.docx](#)
[Bird List.pdf](#)
[Land Deed.pdf](#)

Please see attached.

Wendy J. Honold
5146 Evergreen Drive
Sheboygan, WI 53081

July 25, 2016

Jay Schiefelbein
Wisconsin Department of Natural Resources
2984 Shawano Avenue
Green Bay, WI 54313-6727

Mr. Jay Schiefelbein:

I have become aware of important issues where complete information has not been accurately provided to you. Perhaps this was probably deliberately misleading to 'stack the deck' in the 'non-applicant's favor.'

We the people need to trust that our government representatives serve us (the republic) in the highest and most ethical ways. The government officials also need to 'trust' that citizens provide completely honest, accurate, and thorough information that is backed by science. Our DNR decision makers need to have 'the truth, the whole truth, and nothing but the truth.'

Below you will find two important map images. Please compare both, and please verify my statements with your own research.

Kohler's EIR has many theoretical 'maybe' statements. Yet with some 'strategies,' that I feel have been deceptive, Kohler has been made very precise statements, such as wanting only '4 acres' of State Park land for entrance to the proposed golf course. This however is not at all accurate, as the DNR can easily verify. I feel that this tactic is one more way that Kohler is probably covering up the whole truth, so that no one is fully aware that his 'land grab' is also a deceptive minimalist 'sell-job.'

Anyone can use the free mapping software that was used for the image on page 4 of this letter, to calculate: elevation; longitude/latitude; acreage; and other measurements such as walking miles at: <http://www.mapdevelopers.com/>

On Kohler's EIR –from Page 72, Stantec image of 8.4 Figure 4 (see page 5 of this letter), the orange area defined as 'Approximate Project Boundary State Park Property,' is not 4 acres, but is between 20-25 acres. If you calculate the land space/acreage with the free mapping software referenced above, or other software to which you may have access,

you will see that Kohler’s statement about 4 acres is not anywhere near any level of accuracy.

Please see the image on page 4 that was calculated by that program available at mapdevelopers.com. The blue area with the red border, marks the same area that is marked on Stantec’s map as ‘Approximate Project Boundary State Park Property.’ Please compare both maps on pages 4 & 5 of this letter: (pg 4- online image [blue area with red border] from mapdevelopers.com) and (pg 5- Kohler’s EIR –from Page 72, Stantec image of 8.4 Figure 4).

On July 21, 2016, subsequent to the Public Hearing, The Sheboygan Press released a follow up article.

For the purposes of this letter, I have added comments about this article, which are in bold type below.

- - -

Sheboygan Press Source:

<http://www.sheboyganpress.com/story/news/2016/07/21/water-public-land-issue-during-golf-course-hearing/87381234/>

“A map in the draft EIS had opponents questioning the 4 acre figure. Mike Smyth, who's family used to own the land that has now park land, said he was puzzled by the 4 acre claim. "Kohler wants to take roughly half of the land that was taken from us. That was 52 acres," Smyth said. "Kohler wants something along the line of 20 to 30 acres." A Kohler Co. represented clarified that the four acre easement is correct, and that the 20 acres referenced in the EIS is an area that was used for testing to understand where the four acre easement would be.”

“Some opponents said even four acres was too much.” I agree! I don’t care if it’s one inch or one mile.....**DON’T GIVE AWAY ANY PUBLIC LAND FOR THIS PROJECT.**

"Save our land. We will not be under less pressure from developers in future years," Angela Holland said. "We need to protect the people's lands now so we can keep protecting our children's land in the future."

If Kohler can’t or won’t present an accurate map for the planned entry, what is actually accurate?

"Town of Wilson resident Lynne Bevins urged the DNR to go "back to the drawing board." **I agree with that too.**

"Where's the rest of the report? Where's the site plan that shows the exact placement of greens, fairways, buildings and infrastructure?" Bevins asked. "Where are the scientific studies that show this project will not do harm? I need, and you should need, more details to make an informed assessment of the risks and dangers."

Faydash also criticized the report as "incomplete" and said it does not adequately address concerns over ground water contamination.

"Ground water pollution and well contamination have reached crisis levels in parts of the state and it started with one permit and then multiplied without enforcement. Where will you be when Kohler-Andrae beaches are unusable? When permits are violated?" Faydash asked DNR officials. "You are asking us to trade ours' and our children's health and resources, and the resting place of thousands of early people, for 227 jobs and the profit of the Kohler Company." **I believe that most all of these jobs will be low pay tip dependent jobs.**

"Hoekstra said the draft EIS shows that the proposed golf course can "meet applicable standards" and that responsible pesticide and herbicide use and will prevent runoff to the Black River and Lake Michigan. "Our Sheboygan County golf courses have been in full compliance with permits for 30 years and none have ever had an environmental citation. That commitment extends to this progress."

I do not believe a word of that. Look into Kohler's history and do onsite visits at Whistling Straits at the beachfront where the ground water is draining directly into Lake Michigan through installed pipes. Be careful as you investigate, so that you do not injure yourselves on the huge piles of boulders that block most everything from both view and access. Even on the golf courses that he has already built, his contracted artist, Peter, has changed things.

"Dane Checolinski, director of the Sheboygan County Economic Development Corp, spoke in support of the project and said the water figures cited in the EIS do not seem excessive. "Checolinski said, If this golf course was on the City of Sheboygan system, it would be less than a half of a percent increase in water usage, so although it sounds big on paper, the reality is the amount of water we use as Americans is significant." **The City of Sheboygan draws its water directly from Lake Michigan, so that municipal water supply would never run dry.**

To make the wording more clear on the online image immediately below, it says:



“Area 90853 meters², 977936 feet² **22.45 acres** 0.035 miles² 0.091 km² “

“Perimeter 1355 meters, 4447 feet 0.842 miles 1.355 km “



Address:

Go! **Zoom to Fit** **Clear Last Point** **Clear Route** **Enlarge Map**

Area 90853 meters², 977936 feet² 22.45 acres 0.035 miles² 0.091 km²
Perimeter 1355 meters, 4447 feet 0.842 miles 1.355 km

Map Satellite

Schwarz Ln S 12th St Beach Park Ln Beach Park Ln Beach Park Ln

Google

Map data ©2016 Google Imagery ©2016 DigitalGlobe, USDA Farm Service Agency Terms of Use Report a map error

You can share this map or return to it by using the link below

This is the a portion of Kohler's EIR map submitted by Stantec. Please see the portion bordered in orange that is defined as, 'Approximate Project Boundary State Park Property.'



Figure No. **4**

Plat Map

Client/Project
Kohler Company
Proposed Golf Course - Town of Wilson

Project Location
11.11
11.01 Wilson, Sheboygan Co., WI

193703076
(Revised by MCO on 10/20/17)
Technical Review by MBE on 2/15/2017
Independent Review by JB on 2/15/2017

0 300 600 Feet

1:7,200 (At Original document size of 11x17)

- Legend**
- Approximate Project Boundary DNR 24k Hydrography
 - Kohler Co. Property
 - Approximate Project Boundary
 - State Park Property
 - Additional Study Area
 - Perennial Stream
 - Intermittent Stream
 - Waterbody



Notes

1. Coordinate System: NAD 1983 StatePlane Wisconsin South FIPS 4803 Feet
2. Data Sources Include: Stantec, Kohler, WDNR, WDOT, Sheboygan County
3. Orthophotography: 2010 WRCC

Archeological Map – Zoom-In

Images of original map for

Town of Wilson Lakefront.

Sections 11 and 14 are the

proposed location for the

Kohler Championship Golf Course.

All areas marked with the symbols   and/or  are the locations of very large Native American Mounds, which by law cannot be disturbed. These mounds are difficult to see from horizontal land survey views. They are best identified from aerial views.

↙ Town of Wilson - Section 11: [Small southern area of Section 11 for proposed Kohler Championship Golf Course.](#)

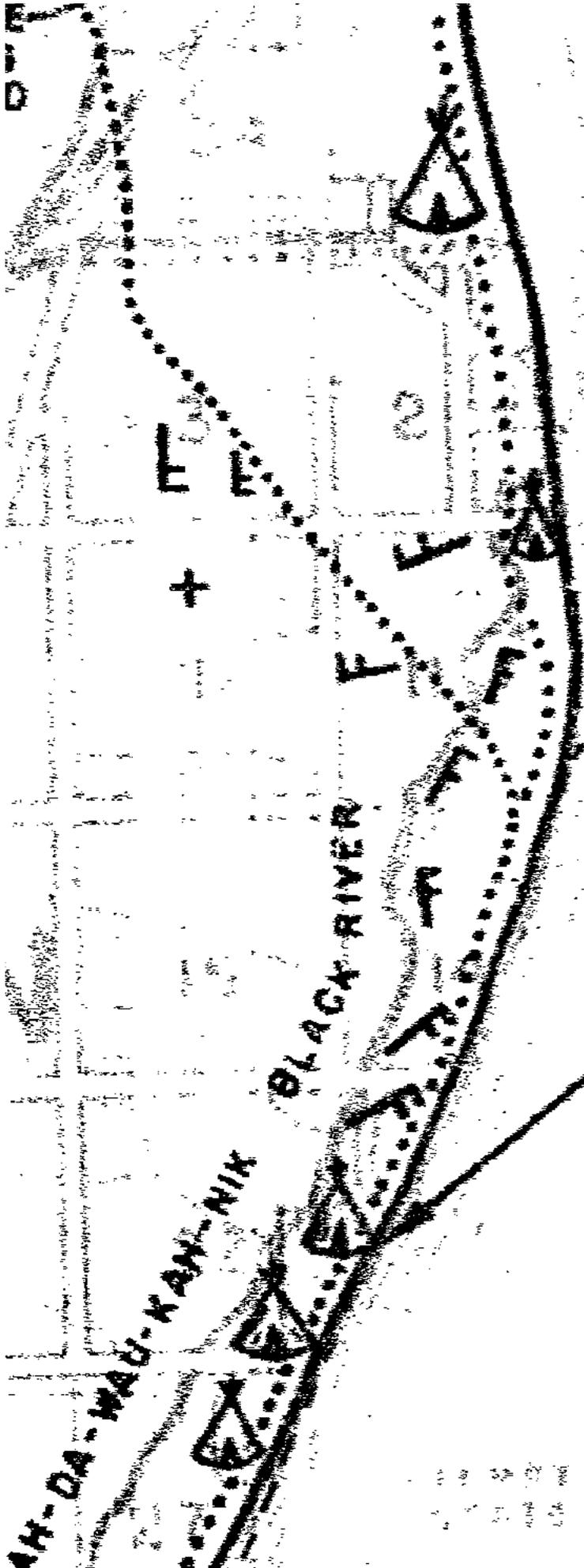
“These mounds have never been under cultivation and therefore are quite well preserved, there being about fifty large mounds in the group or groups arranged in an irregular line.” (pg. 160)

“[The Black river group is situated mostly in the southern half of Section 11 and the northern half of Section 14 and follows quite closely the course of the Black river.](#)

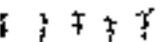
Some of the mounds are one-fourth mile or more from it.” (pg. 161)

*Wisconsin Archeologist (Aug. 1920)
Vol.19, No.3, Pgs. 160 & 161, published
by Wisconsin Archeological Society*

←↖ Town of Wilson - Section 14: [Entire area for proposed Kohler Championship Golf Course.](#)

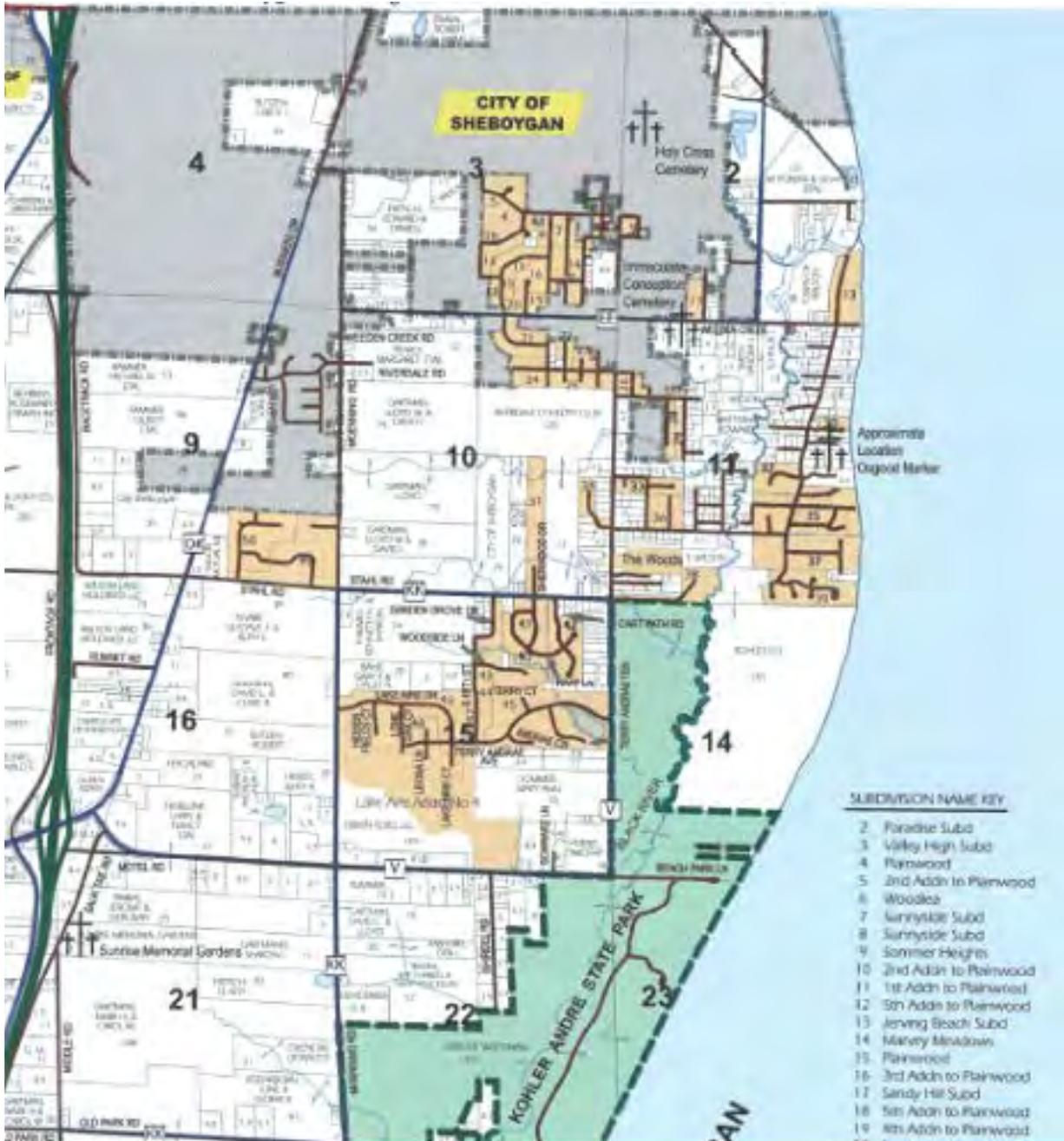


~ LEGEND ~

TRAILS	
MOUNDS	
VILLAGE	
CORN FIELD	
BURIALS	

All of the **F** **F** and/or •• in the page 6 map of 1920 are east of Black River and are located across and through much of Kohler's land. **The second to the lowest F on the map extends from Black River clear across to the marked trails near the Lake Michigan shoreline, and this is at the proposed 20-25 acres entry area. I'll bet the heavy equipment from well tests has already destroyed many burial mounds and artifacts.**

Current Town of Wilson Plat Map (below) -Forrest Green colored area is Kohler Andrea State Park land. Kohler currently wants an easement across State Land for access to his proposed golf course. See Kohler's land which is the southern 'white' part of Section 11 and 'white' portion of Section 14.



ALTERNATIVE D-3 OF THE EIS SHOULD BE THE ONLY OPTION TO BE SELECTED FOR THE DNR's EIS. If Kohler were to present an EIS that shows total accuracy, I really think that the best entry access route would be for Kohler to make use of their own land for access. The Alternative D-3 description (on EIS page 14) allows Kohler to make use of their own existing entrance off of Cty. Hwy. V (S. 12th Street) that intersects at Stahl Road. This is north of the State Park with direct eastern access to their property. While this would require the construction of an expensive bridge over the Black River, and additional road construction on the Kohler property, this IS the Kohler Company's responsibility and should not be a concern for the DNR. There is no logical reason why the golf course shop building and parking lots could not be built on Kohler's own property, adjacent to the existing State Park shop building, as was originally planned. Since Kohler has 247 acres of their own property to work with, there is no reason to take away public State Park land and destroy rare sand dune formations and habitat for Kohler's shop building and parking area development. Kohler is certainly not short of cash, but I think Kohler only wants to take Park Land is because that route will be cheaper than the alternative D-3 route. If this destructive project is actually approved, the Alternative D-3 of the EIS is the best route for the DNR to consider.

With either of the entry locations, please review and protect the mapped groups of burial mounds, which extend parallel to Black River in this proposed project area. Please see the zoom-in image map on page 6 of this letter. Source: Wisconsin Archeologist (Aug. 1920) Vol.19, No.3, Pgs. 160 & 161, published by Wisconsin Archeological Society.

With the proposed entry over State Park land, currently there is no detailed blueprint plan of the development mentioned in the EIR, as to the size of the maintenance building, and the size of the paved parking lot needed for the proposed maintenance building. These areas will be on State Park land and are referred to in the EIR as "lightly used." **When the State Park was created by park management, this area was left undeveloped for park visitors to keep it in its natural sand dune state and to protect this rare ecosystem, as mandated by the Kohler-Andrae State Park Master Plan. And now the DNR's EIS states, that permitting the transfer of public land for Kohler's own private use and the development of roads, shop buildings and parking areas on these fragile and rare sand dune lands, would not set a precedent. This wording translates to me as if giving away Park Land, which was previously protected in the Kohler-Andrae State Park Master Plan, doesn't matter anymore. How could this now be completely unimportant? Even things as minimal as State Park hiking trails were not placed on this area, in order to protect the sand dunes and the ecosystem.**

State Park land should not be considered at all by the DNR for Kohler's plan. IF Kohler receives a positive DNR EIS report, it should only be approved without the loss of publicly owned State Park land for 'their' entrance road, roundabout, shop building and parking lots. There is no convincing need for Kohler to use State Park lands to accomplish their golf course project, except that it is the "cheapest" way to go for the Kohler Company.

**IT IS UNACCEPTABLE TO ME
for the DNR to give away State Park land,
since Kohler can use his own land.**

I hope this is a 'head's up for you with all of the misinformation on Kohler's proposed map for acreage of entry, among other things! Perhaps, with every applicant or non-applicant, the DNR needs to verify each and every single tidbit of 'marketing claims,' requests, and collected data submissions, to ALL BE factual, verifiable, and science-based facts (ie: 'the truth, the whole truth, and nothing but the truth'). THIS IS THE ONLY WAY THAT YOU CAN TRULY DO YOUR JOBS, AND MAKE THE BEST DECISIONS THAT ADHERE TO YOUR MISSION.

Please also see attached bird list, some of which are endangered. Yet there is so much more that will negatively impacted or completely decimated.

Please also see attached Land Deed, and please adhere to the stipulations, as set forth therein, especially on page 4. By accepting the Land Deed, you accepted a contractual agreement.

Sincerely,

Wendy J. Honold

Wendy J. Honold

KEYMigrating birds are in *italic*.

(E) Wisconsin Endangered

(T) Wisconsin Threatened

SP Spring, March-May

S Summer, June-August

F Fall, September-November

W Winter, December-February

A Abundant (common and numerous)

C Common (certain to be seen in suitable habitat, not in large numbers)

O Occasional (present but not always seen)

R Rare (seen at irregular intervals)

SP	S	F	W	☑
----	---	---	---	---

WATERFOWL

Cackling Goose	O	O	O	O	___
Canada Goose	A	C	A	C	___
Wood Duck	O	C	C	___	___
Gadwall	C	O	C	___	___
American Wigeon	C	O	C	___	___
American Black Duck	A	O	A	A	___
Mallard	A	A	A	O	___
Blue-winged Teal	C	C	O	___	___
Northern Shoveler	C	O	C	___	___
Northern Pintail	O	O	O	___	___
Green-winged Teal	C	O	C	___	___
Canvasback	O	R	O	R	___
Redhead	C	O	C	O	___
Ring-necked Duck	C	O	C	O	___
Greater Scaup	A	O	A	A	___
Lesser Scaup	O	O	O	O	___
Surf Scoter	R	___	R	R	___
Black Scoter	R	___	R	R	___
White-winged Scoter	R	___	R	R	___
Long-tailed Duck	C	___	O	C	___
Bufflehead	C	___	A	A	___
Common Goldeneye	C	___	A	A	___
Hooded Merganser	O	O	O	O	___
Common Merganser	O	___	C	C	___
Red-breasted Merganser	C	___	C	C	___
Ruddy Duck	O	O	O	O	___
GAME BIRDS					
Ring-necked Pheasant	C	C	C	C	___
Wild Turkey	C	C	C	C	___
LOONS					
Red-throated Loon	O	___	O	O	___

	SP	S	F	W	☑
Common Loon	O	O	O	___	___
GREBES					
<i>Pied-billed Grebe</i>	O	___	O	___	___
Horned Grebe	O	___	O	___	___
CORMORANTS					
<i>Double-crested Cormorant</i>	C	C	C	___	___
WADING BIRDS					
<i>American Bittern</i>	O	O	O	___	___
<i>Least Bittern</i>	R	R	___	___	___
<i>Great Blue Heron</i>	C	C	C	___	___
<i>Great Egret</i> (T)	C	C	C	___	___
<i>Green Heron</i>	C	C	C	___	___
VULTURES, EAGLES, HAWKS, FALCONS					
<i>Turkey Vulture</i>	O	O	O	___	___
<i>Osprey</i> (T)	O	O	O	___	___
Bald Eagle	O	O	O	R	___
<i>Northern Harrier</i>	O	___	O	___	___
<i>Sharp-shinned Hawk</i>	O	___	O	R	___
<i>Cooper's Hawk</i>	O	O	O	O	___
Red-shouldered Hawk (T)	O	O	O	___	___
<i>Red-tailed Hawk</i>	C	C	C	C	___
Rough-legged Hawk	O	___	___	O	___
<i>American Kestrel</i>	C	C	C	O	___
<i>Merlin</i>	R	___	R	___	___
<i>Peregrine Falcon</i> (T)	R	___	R	R	___
RAILS, CRANES					
<i>King Rail</i>	R	___	___	___	___
<i>Virginia Rail</i>	O	O	R	___	___
<i>Sora</i>	O	O	O	___	___
<i>American Coot</i>	C	C	C	___	___
<i>Sandhill Crane</i>	C	C	C	___	___
SHOREBIRDS					
<i>Black-bellied Plover</i>	O	O	O	___	___
<i>American Golden Plover</i>	O	O	O	___	___
<i>Semipalmated Plover</i>	C	O	C	___	___
<i>Piping Plover</i> (E)	___	___	R	___	___
<i>Killdeer</i>	C	C	C	___	___
<i>American Avocet</i>	___	___	R	___	___
<i>Greater Yellowlegs</i>	C	O	C	___	___
<i>Lesser Yellowlegs</i>	C	O	C	___	___
<i>Solitary Sandpiper</i>	O	O	O	___	___
<i>Willet</i>	R	R	R	___	___
<i>Spotted Sandpiper</i>	C	C	C	___	___

	SP	S	F	W	☑
<i>Upland Sandpiper</i>	R	___	R	___	___
<i>Whimbrel</i>	R	R	R	___	___
<i>Ruddy Turnstone</i>	O	O	O	R	___
<i>Red Knot</i>	R	R	R	___	___
<i>Sanderling</i>	C	C	C	___	___
<i>Semipalmated Sandpiper</i>	C	O	C	___	___
<i>Least Sandpiper</i>	C	O	C	___	___
<i>White-rumped Sandpiper</i>	O	R	O	___	___
<i>Baird's Sandpiper</i>	O	R	O	___	___
Dunlin	C	R	C	___	___
<i>Short-billed Dowitcher</i>	O	O	O	___	___
<i>Long-billed Dowitcher</i>	O	R	O	___	___
<i>Wilson's Snipe</i>	O	O	O	___	___
American Woodcock	O	O	O	___	___
GULLS, TERNS					
<i>Franklin's Gull</i>	R	R	___	___	___
<i>Bonaparte's Gull</i>	C	R	C	___	___
<i>Ring-billed Gull</i>	A	A	A	A	___
<i>Herring Gull</i>	A	A	A	A	___
Glaucous Gull	C	___	___	C	___
Great Black-backed Gull	C	C	C	C	___
<i>Caspian Tern</i> (E)	C	C	C	___	___
<i>Common Tern</i> (E)	C	C	___	___	___
<i>Forster's Tern</i> (E)	O	R	O	___	___
PIGEONS, DOVES					
Rock Pigeon	C	C	C	C	___
<i>Mourning Dove</i>	C	C	C	C	___
CUCKOOS					
<i>Yellow-billed Cuckoo</i>	O	O	___	___	___
<i>Black-billed Cuckoo</i>	O	O	___	___	___
OWLS, NIGHTJARS					
<i>Eastern Screech-Owl</i>	O	O	O	O	___
<i>Great Horned Owl</i>	O	O	O	O	___
<i>Snowy Owl</i>	___	___	___	R	___
<i>Barred Owl</i>	O	O	O	O	___
Northern Saw-whet Owl	R	___	R	___	___
<i>Common Nighthawk</i>	O	O	O	___	___
<i>Whip-poor-will</i>	O	O	R	___	___
SWIFTS, HUMMINGBIRDS					
<i>Chimney Swift</i>	C	C	C	___	___
<i>Ruby-throated Hummingbird</i>	C	C	C	___	___

	SP	S	F	W	☑
KINGFISHERS					
<i>Belted Kingfisher</i>	C	C	C	___	___
WOODPECKERS					
Red-headed Woodpecker	O	O	O	O	___
Red-bellied Woodpecker	O	O	O	O	___
<i>Yellow-bellied Sapsucker</i>	O	___	O	___	___
Downy Woodpecker	C	C	C	C	___
Hairy Woodpecker	C	C	C	C	___
Northern Flicker	C	C	C	___	___
Pileated Woodpecker	O	O	___	___	___
FLYCATCHERS					
<i>Eastern Wood-Pewee</i>	C	C	C	___	___
<i>Yellow-bellied Flycatcher</i>	R	___	R	___	___
<i>Alder Flycatcher</i>	C	C	___	___	___
<i>Willow Flycatcher</i>	C	C	___	___	___
<i>Least Flycatcher</i>	C	___	___	___	___
<i>Eastern Phoebe</i>	C	C	O	___	___
<i>Great Crested Flycatcher</i>	C	C	O	___	___
<i>Eastern Kingbird</i>	C	C	O	___	___
SHRIKES, VIREOS					
Northern Shrike	O	___	___	O	___
<i>White-eyed Vireo</i>	R	___	___	___	___
<i>Yellow-throated Vireo</i>	O	O	O	___	___
<i>Blue-headed Vireo</i>	O	___	O	___	___
<i>Warbling Vireo</i>	C	C	C	___	___
<i>Philadelphia Vireo</i>	O	R	O	___	___
<i>Red-eyed Vireo</i>	C	C	O	___	___
JAYS, CROWS					
Blue Jay	C	C	C	C	___
American Crow	C	C	C	C	___
LARKS					
Horned Lark	C	O	C	C	___
SWALLOWS					
<i>Purple Martin</i>	O	O	O	___	___
<i>Tree Swallow</i>	A	A	A	___	___
<i>Northern Rough-winged Swallow</i>	C	C	O	___	___
<i>Bank Swallow</i>	C	C	O	___	___
<i>Cliff Swallow</i>	O	O	O	___	___
<i>Barn Swallow</i>	C	C	C	___	___
CHICKADEES, TITMICE					
Black-capped Chickadee	C	C	C	C	___
Tufted Titmouse	R	R	59R	R	___

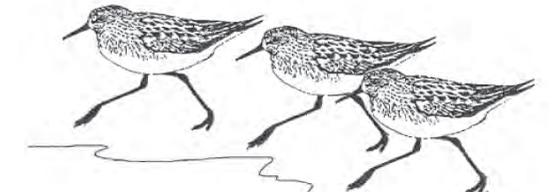
	SP	S	F	W	☑
NUTHATCHES, CREEPERS					
Red-breasted Nuthatch	C	C	C	C	___
White-breasted Nuthatch	C	C	C	C	___
Brown Creeper	O		O		___
WRENS					
House Wren	C	C	C		___
Winter Wren	O	R	O		___
Sedge Wren		R			___
Marsh Wren	C	A			___
KINGLETS, GNATCATCHERS					
Golden-crowned Kinglet	C		C	R	___
Ruby-crowned Kinglet	C		C		___
Blue-gray Gnatcatcher	O	O	O		___
THRUSHES					
Eastern Bluebird	C	C	C		___
Townsend's Solitaire				R	___
Veery	O	O	O		___
Gray-cheeked Thrush	O		O		___
Swainson's Thrush	O		O		___
Hermit Thrush	O		O		___
Wood Thrush	O	O	O		___
American Robin	C	C	C	R	___
Varied Thrush				R	___
MIMIC THRUSHES					
Gray Catbird	C	C	C		___
Northern Mockingbird	R				___
Brown Thrasher	O	O	O		___
STARLINGS, WAXWINGS					
European Starling	C	C	C	C	___
Cedar Waxwing	O	C	C	R	___
WARBLERS					
Blue-winged Warbler	O	R			___
Golden-winged Warbler	O	R			___
Tennessee Warbler	C		C		___
Orange-crowned Warbler	O		R		___
Nashville Warbler	C		C		___
Northern Parula	O		R		___
Yellow Warbler	A	A	O		___
Chestnut-sided Warbler	C	O	C		___
Magnolia Warbler	C		C		___
Cape May Warbler	O		O		___
Black-throated Blue Warbler	R				___
Yellow-rumped Warbler	A	R	A		___

	SP	S	F	W	☑
Black-throated Green Warbler	C	C	O		___
Blackburnian Warbler	O		O		___
Yellow-throated Warbler (E)	R	R			___
Pine Warbler	C	C	C		___
Prairie Warbler	R	R			___
Palm Warbler	C		C		___
Bay-breasted Warbler	O		O		___
Blackpoll Warbler	O		O		___
Black-and-white Warbler	C	O	C		___
American Redstart	C	C	C		___
Ovenbird	C	C	O		___
Northern Waterthrush	C	R	O		___
Mourning Warbler	O	O	O		___
Common Yellowthroat	C	C	C		___
Hooded Warbler (T)	O	O	O		___
Wilson's Warbler	O		O		___
Canada Warbler	O	R	O		___
TANAGERS					
Scarlet Tanager	O	O	O		___
SPARROWS					
Eastern Towhee	C	C	O		___
American Tree Sparrow	O		O	O	___
Chipping Sparrow	C	C	O		___
Clay-colored Sparrow	C	C	C		___
Field Sparrow	C	C	C		___
Vesper Sparrow	O	O	O		___
Savannah Sparrow	C	C	C		___
Fox Sparrow	O		O		___
Song Sparrow	A	C	C	O	___
Lincoln's Sparrow	O		O		___
Swamp Sparrow	C	C	C		___
White-throated Sparrow	C		C	R	___
Harris's Sparrow	R				___
White-crowned Sparrow	O		O		___
Dark-eyed Junco	C		O	C	___
Snow Bunting	O		O		___
CARDINALS, GROSBEAKS, BUNTINGS					
Northern Cardinal	C	C	C	C	___
Rose-breasted Grosbeak	C	C			___
Indigo Bunting	O	O			___
Dickcissel			O		___
BLACKBIRDS					
Bobolink	O	O			___

	SP	S	F	W	☑
Red-winged Blackbird	A	A	A	C	___
Eastern Meadowlark	C	C	C		___
Yellow-headed Blackbird	R				___
Common Grackle	C	C	C	O	___
Brown-headed Cowbird	C	C	C		___
Orchard Oriole	R				___
Baltimore Oriole	O	O			___
FINCHES					
Purple Finch	O		O	R	___
House Finch	C	C	C	C	___
Red Crossbill	R			R	___
White-winged Crossbill	R			R	___
Common Redpoll	R			R	___
Pine Siskin	R			R	___
American Goldfinch	C	C	C	C	___
Evening Grosbeak				R	___
OLD WORLD SPARROWS					
House Sparrow	C	C	C	C	___

NOTES

Birds of Kohler-Andrae State Park



Sanderlings

These shorebirds, for which the park's nature center has been named, are seen along our beach in the spring as they migrate to their breeding grounds in the north. Non-breeding sanderlings can be seen along Lake Michigan all summer. In early fall they return to their wintering grounds that extend deep into South America.

Watch as they probe in the wet sand of the lakeshore for sand fleas, or nimbly follow receding waves to snatch other morsels of food.

Kohler-Andrae State Park
Wisconsin Department of Natural Resources
 1020 Beach Park Lane
 Sheboygan WI 53081
 (920) 451-4080
 www.wiparks.net

Brochure developed by Wisconsin Department of Natural Resources through funding from the Friends of Kohler-Andrae State Park.

This publication is available upon request in alternate formats for visually impaired persons. Please contact (608) 266-0866 to request an alternate format.

The Wisconsin Department of Natural Resources provides equal opportunity in its employment, programs, services and functions under an Affirmative Action Plan. If you have any questions, please write to Equal Opportunity Office, U.S. Department of Interior, Washington, D.C. 20240.



877247

WARRANTY DEED

THIS INDENTURE, Effective the 30th day of December A.D., 1965, between KOHLER CO., a corporation duly organized and existing under and by virtue of the laws of the State of Wisconsin, located at Kohler, Wisconsin, party of the first part and the STATE OF WISCONSIN (CONSERVATION COMMISSION) party of the second part,

WITNESSETH, That the said party of the first part, for and in consideration of its desire to promote the public welfare has given, granted, bargained, remised, released, aliened, conveyed and confirmed and by these presents does give, grant, bargain, remise, release, alien, convey and confirm unto said party of the second part, its successors and assigns forever, the following described real estate situated in the County of Sheboygan and State of Wisconsin, to-wit:

The South Half ($S\frac{1}{2}$) of the Southeast Quarter ($SE\frac{1}{4}$) of the Northeast Quarter ($NE\frac{1}{4}$) of Section 22, Town 14 North, Range 23 East.

Also, Government Lot One (1), in Section 23, Town 14 North, Range 23 East.

Also, a portion of Government Lot Two (2), in Section 23, Town 14 North, Range 23 East; described as follows:

Commencing at the Northwest corner of said Government Lot Two (2); thence East and parallel with the north line of said Section, one hundred eighty-one and five-tenths feet (181.5'); Thence South Ten Degrees forty-seven minutes West ($S10^{\circ}47'W$) seven hundred five and four-tenths feet (705.4'); Thence West and parallel with the north line of said Section 23, forty-nine and five-tenths feet (49.5') to the west line of said section; Thence North along said west line six hundred ninety-three feet (693.0') to the place of beginning.

Also, a parcel of land in Section 14, Town 14 North, Range 23 East, more particularly described as follows:

Commencing at the northwest corner of said Section 14; thence East along the north line of said Section a distance of nineteen hundred feet (1900') more or less, to a point where said north line intersects the center of the Black River; thence southerly, upstream along the centerline of said river to a point where said centerline intersects the south line of the North Half ($N\frac{1}{2}$) of the Southwest Quarter ($SW\frac{1}{4}$) of said Section 14; thence West along said south line a distance of eight hundred fifty feet (850'), more or less, to the west line of said Section 14; Thence North along said west line to the place of beginning.

All the above parcels contain 221 acres, more or less.

The Northwest Quarter ($NW\frac{1}{4}$) of the Southwest Quarter ($SW\frac{1}{4}$), Section 14, Town 14 North, Range 23 East is subject to an easement granted to Wisconsin Power and Light Co., executed April 2, 1935 and recorded in the Office of the Register of Deeds for Sheboygan County on January 18, 1936 in Volume P of Contracts Pages 200 to 201 for installing and maintaining utility poles along the east side of County Trunk Highway KK.

The Northwest Quarter ($NW\frac{1}{4}$) of Section 14, Town 14 North, Range 23 East is subject to an easement granted to Wisconsin Power and Light Co., executed March 29, 1935 and recorded in the Office of Register of Deeds for Sheboygan County on January 18, 1936 in Volume P of Contracts, Page 201 for installing and maintaining utility poles along the east side of County Trunk Highway KK.

This conveyance is by deed of gift and no revenue stamps are required.

PROTECTIVE CLAUSES

The covenants hereafter stated have been created and agreed upon to protect the following mutual interests of the parties hereto;

- To preserve the natural beauty of an unique area along the westerly shore of Lake Michigan.
- To provide the people of the State of Wisconsin with an interesting and naturally beautiful recreational area.

-- To recognize the contributions to the conservation of Wisconsin's natural resources made by John Michael Kohler and his family.

By accepting this deed of gift the State of Wisconsin (Conservation Commission) its successors, representatives, or assigns agree to be bound by the following covenants running with the land:

1. The property herein conveyed and the area of which it becomes a part shall be used for state park and public recreational purposes.
2. The property herein conveyed and the area of which it becomes a part shall be officially designated as and henceforth be known as the "JOHN MICHAEL KOHLER STATE PARK".

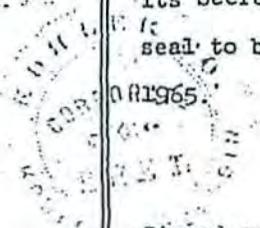
The foregoing covenants shall be binding upon the parties hereto, their successors, representatives or assigns and any breach or threatened breach of these covenants may be enjoined upon the application of the party of the first part, its successors or assigns or any citizen of the State of Wisconsin who would be affected thereby.

In addition, this conveyance is made and accepted on the express conditions running with the land that in the event said property should cease to be used for state park and public recreational purposes or shall not within one year be officially designated and thereafter bear the name, "JOHN MICHAEL KOHLER STATE PARK", this conveyance to the State of Wisconsin (Conservation Commission) shall be void and title to the property shall thereupon be vested by gift over in the KOHLER FOUNDATION, INC., a charitable corporation organized and existing as such under the laws of the State of Wisconsin to be used for the benefit of the public or to be conveyed to some appropriate public agency for such use.

TOGETHER with all and singular the hereditaments and appurtenances thereunto belonging or in any wise appertaining; and all the estate right, title, interest, claim or demand whatsoever, of the said party of the first part, either in law or equity, either in possession or expectancy of, in and to the above bargained premises, and their hereditaments and appurtenances.

TO HAVE AND TO HOLD the said premises as above described with the hereditaments and appurtenances, unto the said party of the second part, and to its successors and assigns, that at the time of the ensembling and delivery of these presents it is well seized of the premises above described, as of a good, sure, perfect, absolute and undefeasible estate of inheritance in the law, in fee simple, and that the same are free and clear from all incumbrances whatever and that the above bargained premises in the quiet and peaceable possession of the said party of the second part, its successors and assigns, against all and every person or persons lawfully claiming the whole or any part thereof, it will forever WARRANT AND DEFEND.

IN WITNESS WHEREOF, the said KOHLER CO., party of the first part, has caused these presents to be signed by J. L. Kuplic its President and countersigned by G. A. Desmond its Secretary at Kohler, Wisconsin, and its corporate seal to be hereunto affixed, this 23rd day of December A.D.,



Signed and Sealed in Presence of

Lucius P. Chase
Lucius P. Chase

Gelane Granger
Gelane Granger

K O H L E R C O .

By *J. L. Kuplic*
J. L. Kuplic, President.

Countersigned:
G. A. Desmond
G. A. Desmond Secretary

(4)

STATE OF WISCONSIN }
SHEBOYGAN COUNTY } ss.

Personally came before me, this 23rd day of December A.D. 1965, J. L. Kuplic, President and G. A. Desmond Secretary of the above named Corporation, to me known to be the persons who executed the foregoing instrument, and to me known to be such President and Secretary of said Corporation, and acknowledged that they executed the foregoing instrument as such officers as the deed of said Corporation, by its authority.



John W. Lillesand
John W. Lillesand, Notary Public
Sheboygan County, Wisconsin
Permanent Commission

This deed of gift together with the covenants and conditions contained herein is accepted and agreed to on behalf of the State of Wisconsin (Conservation Commission) this 22nd day of December 1965 by:

L. P. Voigt
L. P. Voigt, Conservation Director

Witnesses: *E. Kaminski*
E. Kaminski
James F. Bakken
James F. Bakken

STATE OF WISCONSIN }
DANE COUNTY } ss.

On this 22nd day of December 1965, before me personally appeared the above named L. P. Voigt, to me known to be the Conservation Director of the State Conservation Commission of Wisconsin, and to me known to be the persons who, as such Conservation Director, acknowledged and accepted the foregoing instrument in behalf and by authority of the State Conservation

Commission of Wisconsin and that he did so as his free act and deed in the capacity and for the purposes stated.



James F. Bekka
Notary Public

Dane County, Wisconsin

My Commission Expires in permanent

This instrument drafted by
John W. Lillesand,
Attorney - Kohler, Wisconsin

8772A7

REGISTERS OFFICE
SHEBOYGAN COUNTY, WISCONSIN
Received for Record the 22nd day of
December, 1965 at 8:34
o'clock A.M., and Recorded in Vol. 469
of Becker on page 669 24
By Raymond DeLoach Registrar
By _____ Deputy

Call 457-4441
Att. 522
p. 500

(6) END

From: [Cynthia Burnson](#)
To: [DNR Kohler Proposal](#)
Subject: Against purchase of state land
Date: Friday, July 29, 2016 9:31:00 PM

To Whom it May Concern,

I am writing to express my opposition to allowing Kohler to purchase part of Kohler-Andrae State Park. I love Wisconsin's parks and they are a big reason I remain in the state. Please protect our parks, not just for me and my generation but my 2-year-old son so he can know and love the Wisconsin I was so lucky to grow up in!

Sincerely,

Cynthia Burnson
3313 Thorp St.
Madison, WI 53714

From: [Gary Ehlers](#)
To: [DNR Kohler Proposal](#)
Subject: AGAINST the 5th Kohler golf course in Sheboygan County
Date: Monday, August 01, 2016 11:11:42 AM

My husband and I are dead set against Scott Walker and Herb Kohler's plan to ruin our beautiful lakeshore and Black River forest. We moved to Sheboygan last July as we always vacationed at Terry Andrae State Park for years . It has always been a beautiful healing experience for us to spend time on Lake Michigan. We especially appreciate it now as we lost our dear son Cody last summer. He was only 24 years old. Spending a lot of time on the beaches of Terry Andrae State Park helped to pull us through!! And it helps and soothes so many people,young and old!!!

Please stop these horrible people!!!

Sincerely, Gary and Marne Ehlers

From: [Jenn Hansmann](#)
To: [DNR Kohler Proposal](#)
Subject: Against your proposal
Date: Tuesday, August 16, 2016 3:31:13 PM

Just want to express my opinion that there will be EXTREME impact if this golf course goes in kohler Andrea state park! We have enough golf courses but not enough migratory stop over spots and wetlands along Lake Michigan!

All the best,
Jenn Hansmann
Community Relations Coordinator
Lakeshore Natural Resource Partnership
920-627-1799

From: [Dan Drella](#)
To: [DNR Kohler Proposal](#)
Subject: Andre Kohler Park destruction
Date: Monday, July 18, 2016 11:11:12 PM

The Andre Kohler Park area is a gem of a natural area and the DNR is entrusted in preserving those for the good of all, not giving them away for the benefit of the wealthy few. I absolutely oppose this as a tax payer, a visitor to the park and a state park sticker holder. This is not in the best interest of the public, just a private party and that is counter to your charge.

Sent from my iPhone

From: djkujawski@aol.com
To: [DNR Kohler Proposal](#)
Subject: attn Jay Schiefelbein
Date: Wednesday, July 20, 2016 3:02:00 PM

NO ! No destruction of an ecosystem!

NO ! to depletion of wells!

NO ! to pollution of groundwater with fertilizer & herbicide run off from the gulf course which will harm Lake Michigan and the Black River.

NO LAND GIVEAWAYS OR SALES TO SCOTT WALKERS CAMPAIGN DONORS.

That land belongs to the Citizens of WISCONSIN. It was set aside to be a state park for future generations to enjoy. NOT to be a billionaires play toy.

Bad enough the park now bears Kohlers name.

Please keep the Kohler-Andre park INTACT and deny the land grab!

Future generations will thank you.

Sincerely
Debbie & Jeff Kujawski
Menomonee Falls WI

From: [Jon Becker](#)
To: [DNR Kohler Proposal](#)
Subject: ATTN: Jay Schiefelbein : re Kohler golf course & Kohler-Andrae State Park
Date: Thursday, July 14, 2016 2:53:11 PM

Hello Mr. Schiefelbein:

I oppose conversion of land purchased with federal funds, to benefit Kohler-Andrae State Park and the public, to a golf course that profits the Kohler company.

The resulting loss of forest and wetland resources, as well as the operation of a golf course at this location, will diminish the local ecosystem, as well as the prior investments by generations of Wisconsin and USA taxpayers in this state park.

Jon Becker
POB 3292
Madison, WI 53704

From: [Bernard Rucinski](#)
To: [DNR Kohler Proposal](#)
Subject: Black River Forest
Date: Thursday, July 14, 2016 10:42:11 AM

Do not allow any further development of the Black River Forest. Special interest groups (Kohler), developers and commercial interests should need approval from the people of Wisconsin and local residents. The needs and desires of the masses should trump special interests. It is abhorrent to me how the governor is selling off publicly owned land through political influence.

Bernard Rucinski

Sent from [Mail](#) for Windows 10

From: [Diane Kitelinger](#)
To: [Schiefelbein, Jeremiah J - DNR](#)
Subject: Black River Forest
Date: Friday, July 29, 2016 12:21:50 PM

Dear Mr. Schiefelbein, please, with all of your knowledge and expertise about the available resources in the state of Wisconsin, help Mr. Kohler find a better place to put his new golf course, and save the Black River Forest from ruin. Thank you, Diane Kitelinger

Sent from my iPhone

From: [darlene.jakusz](#)
To: [DNR Kohler Proposal](#)
Subject: Black River Forest Sellout to Kohler
Date: Wednesday, July 13, 2016 9:03:21 AM

**DNR NO MORE FAVORITISM.
DO YOUR JOB, PROTECT OUR RESOURCES.**

You are destroying rare and endangered species. The presence of birds and other wildlife will be severely diminished because of loss of habitat. This area is a tier 4 important Migratory Bird Route.

We are completely disgusted with the DNR being controlled by a developer selling our public lands to the highest bidder (cronies of the walker administration). This has got to stop! Do your job!!!!

**James & Darlene Jakusz
Amherst Jct., WI 54407**

From: [Bill Sell](#)
To: [DNR Kohler Proposal](#)
Subject: Comment on the Kohler DEIS
Date: Friday, August 26, 2016 11:32:22 PM
Attachments: [Comments on the Draft Environmental Impact Statement.doc](#)

TO
Jay Schiefelbein, Wisconsin DNR, 2984 Shawano Avenue, Green Bay, WI 54313-6727

Mr. Schiefelbein, kindly confirm receipt of my attached Comments.

Thank you.

Sincerely
Bill Sell

--

~~~~~

**Bill Sell**  
[sunrise@biketehoan.com](mailto:sunrise@biketehoan.com)

2827 S. Lenox St.  
Milwaukee, WI 53207

414 744 3970 home  
414 795 0006 mobile  
414 272 3787 office  
414 272 3795 fax

**/Facebook.com/Bill.Sell**  
**/Twitter.com/WillSell**  
<http://billsell.net/>  
**Sponsor: [iTranscribe.NET](#)**

*Be kind; for everyone you meet is fighting a great battle. --Philo of Alexandria*

To: Wisconsin Department of Natural Resources  
Comments on the Draft Environmental Impact Statement  
Re: Black River Woods.  
Date: August 26, 2016

From  
William Sell  
2827 S. Lenox St.  
Milwaukee, WI 53207  
414-744-3970

Your correspondent is a resident and business owner in Milwaukee Wisconsin. I've lived in the state since birth. I am a life-long supporter of parks, woodlands, flora and water. I have camped, walked, biked and swam in Wisconsin.

I weigh into the discussion of the Kohler company's Draft EIS knowing that I am not an expert each of its technical issues. My business, however, has given me the time and resources to pursue a life-long interest in vegetation and water.

As a citizen of this environmentally conscious state, I rise to the defense of the Black River Woods. I have read the DEIS and here submit my comments.

I am both saddened and outraged by the cavalier attitude that spoils the DEIS. We citizens grant each other, including officials of the Kohler Company that freedom to advocate for what they believe in. But this is a blinkered pursuit of a sport in a space that is hostile to golf. The DEIS and its author assumes it can abandon nature, twist an ecology to suit their purpose, and dig up thousands of years of heritage.

#### Personal

I grew acquainted with prairie and woodland flora over the past two decades with personal study and practice. My entire city yard (almost 4000 square feet) is dedicated to mostly native flowers and grasses – "native" meaning (like myself) Wisconsin-grown, those plants are now recognized as having been "discovered" by immigrants over the last 600 years. This passion brought to my attention the work of Wisconsin's brilliant horticulturalists who have been my teachers, some of whom have served with the Department.

I am acquainted with water issues as they pertain to transportation infrastructure – the low quality of water as an effect of pouring concrete on permeable soil, and the creation of wide roads and parking lots and their effects on the beaches of Milwaukee. I have advocated on behalf of children's health regarding air quality generated by the proliferation of roadway instead of transit.

I read the Kohler DEIS. I was surprised by the statement's confident attitude toward its plan to make a wholesale restructuring of a natural woodland, of the riparian and

shoreline sanctuaries. But then I discovered the gap. They are confident because failure will be someone else's problem. Some may call it arrogance.

Specifically, I note the cosmetic intentions of your DEIS upon being confronted with this glorious description of Lake Michigan.<sup>1</sup> Upon reading this passage I felt as if I were being introduced to an effort to preserve an ancient heritage.

### **5.1.3 Surface Waters**

This encomium for nature and our precious lake prepares (or tries to prepare) the reader to think kindly about golf. To soften the shock that half the trees are slated for the saw. That vegetation natural to this space is an obstacle to golf.

What kind of sport is this style of golf that a carpet of green must be laid down to accommodate the soft feet of its players?

Stated Clearly

Instead of a due reverence for the thousands of years that created our great lakes, and our magnificent shoreline, the DEIS continues on the same page getting down to business, the point being made; that a property right is absolute over all considerations; never mind the responsibility when the day comes that the park can no longer be maintained.<sup>2</sup>

Our nation is beginning to experience the crisis of water, long after the world has been alerted. A good DEIS will be based in science if it at least reverences how the water crisis of our times is addressed, not how it is ignored or aggravated. We are offered a tear-down, an old house that needs bend to my will because it is \*mine\* and \*I\* can do what \*I\* want here.

Replacing fragile turf - that pristine environment is not clever; in fact it will be long-run expensive. Golf will fade as other sports have. The money will run out; the DEIS must describe the natural consequences of an unmaintained, once "pristine" golf course.<sup>3</sup> If not maintained the intruder environment will be weathered by the winds, waves and sand, beaten down and become just another sad patch of land over which America made its grand march.

Nature's Apparent Entropy

There is a reason why a pristine area has few invasive plants. It might be described as the apparent natural entropy - the twist and flow of the elements struggling with each other to make an area its own, each succeeding to some degree, each relenting to some degree to the others.

The lack of disturbed soil makes this ecology possible.

But now these elements are confronted with the thoughtless human, single-minded in purpose. Shake it all up; tear the stuff out that makes your sport a physical challenge; cosmeticize the woods. Disturb this soil, OK! Now that you have invited invasives, you will get invasives, you will lose to nature, and nature will lose to you. The invasives will

not be the relatively tame invasives that the DEIS throws out to fool the reader. Here<sup>4</sup> the DEIS speaks truth.

### Maintenance

This morning as I wrote this comment, I came to my front porch to witness what happens to trees that have served the city, and then fail; the city addresses the problem because we cannot have branches falling on people. Two trucks appeared, and four men. One truck had a cherry picker holding a man with a chainsaw who brought the branches down. In minutes a mature ash tree was denuded, naked as a corpse. In a city, essential work. In a make-believe environment, an expensive budget item that will one day see the money run out.

I submit that once the tear down is started the maintenance game must be close behind. Disturb the entropy, try to make an easy-walking "wild" woods and you deliver trims on double trucks. A woods without the fallen log is no longer a woods that is a refuge for plants and animals. The charm of the woods will leave twice: first with the antiseptic space portrayed in the DEIS; second with neglect in a future generation which cannot afford the maintenance for the foreign landscape. All the natural support systems will be gone and the space will be ignored like the abandoned mines or post-rust-belt factories scattered around Wisconsin.

### Ozone<sup>5</sup>

Other than the chlorofluorocarbons have we ever managed ozone? This problem comes with abuses of fuel, use of unsustainable fuels, and our devotion to building a world that requires everyone to have access to a car. Even before the Black River Woods are touched it is already infected as a "nonattainment" area for ground-level ozone. We will add to that. According to the DEIS it is "not expected to significantly contribute to long-term increases in air emissions" – exaggerated un-enumerated claims, no numbers, no statistics, no projected populations of carts, cars, trucks or people. The DEIS suggests we do not have to look closely at these consequences. Let's call it a day. "There is not expected a concentration of vehicles ..." An honest DEIS would have us read numbers so at least we are speaking a common language.

Was no planning given to future costs? Maintenance? Failure of the golf course to earn enough money to maintain itself. Where is that in the DEIS?

### Herbicides

Introducing the Japanese Barberry (*Berberis thunbergii*)<sup>6</sup> shows how desperate the writer is to slip in the right to spray herbicides. Sure, this plant is a nuisance when allowed to spread. One bible of invasives in Wisconsin tags this plant as "a lesser invader of natural areas."<sup>7</sup> It could be ignored, except that the DEIS describes it as an "impenetrable thorny tangle." No golfer would like to walk through this, no hiker, no one. *Berberis*, however, is not a good example of "invasive" that suggests aggressive means to control. It can be controlled without spraying herbicides.

The point is the game plan, without asking for the option to spray herbicides the DEIS is leaving the door open for the managers to do so. If the DEIS writers will avoid herbicides they should declare that invasives will never be used. But their fantasy environment requires control, or it slips away.

Not all invasives are created equal. Not all are the knotweed for which Monsanto is infamous. Not all are buckthorn, which I have handled and suppressed with basic garden tools. Japanese barberry is a lesser invasive. But the DEIS exaggerates its inconvenience calling it "impenetrable" to the tired feet of a golfer. The DEIS is only making space for sprayed herbicides, which dusts everything, desirable and undesirable.

### **5.1.1 Geology and Soils**

This section of the DEIS is a lament how imperfect the Black River Woods for golfing, and the many considerations that must be made to remake a turf that is today the work of thousands of years, a kind of harmony among the elements: vegetation, water, turf - each of which in some way is stated in the DEIS as the foe of golf. On the one hand the soil has the unfortunate proclivity to be unable to support golf-required turf, and so the beautiful dunes and their wild dispositions will need to be tamed by excavation, by laying garden variety topsoil and imported grasses, and lining paths with "a curb and gutter system"<sup>8</sup> to finesse the run-off. Modestly understating problems, the DEIS contributes: "Fair performance and moderate maintenance can be expected."<sup>9</sup>

To highlight the challenge of placing golf on this turf, the DEIS states the abundance of plant life and the permeability of the soil might not be enough.<sup>10</sup>

Pages 17 and 18 of the DEIS are peppered with expressions such as: very limited, somewhat limited. The culprits are the Adrian muck and the Granby soils that "... affect the ease of excavation and grading and the traffic-supporting capacity. Excavation of these soil types, if present, is likely to be needed."<sup>11</sup>

"The [NRCS] ratings are based on the soil properties that affect the capacity of the soil to support a load without movement and on the properties that affect excavation and construction costs."<sup>12</sup>

My reading of the DEIS leaves many questions unanswered. The citizens of Wisconsin deserve an honest appraisal of all the costs of the plan to make a golf course in this space. All the costs including future maintenance, the "intangibles" – what we will lose if we do major surgery on this venerable example of nature now taking care of itself. And, of course, what we will gain. What will it cost to play golf on this property? Will there be a gas station? Perhaps a resident caretaker? Will local police patrol this development? Will the owners have security service? A proper DEIS must lay out the costs because eventually the public will have to cover the bill.

<sup>1</sup> "... According to the Great Lakes Information Network (GLIN,) Lake Michigan is the second largest Great Lake by volume with just under 1,180 cubic miles of water, and is the only Great Lake located entirely within the United States. Lake Michigan is approximately 118 miles wide and 307 miles long, has

more than 1,600 miles of shoreline, averages 279 feet in depth, and has a maximum depth of 925 feet. The drainage basin is approximately 45,600 square miles with approximately 14,200 square miles located within Wisconsin.

"Lake Michigan is a cold water, oligotrophic lake with summer maximum water temperatures below 72 degrees. Native fish species include lake trout, whitefish, largemouth bass, bullheads, northern pike, lake sturgeon, yellow perch and sculpins. Numerous invasive aquatic species are also present throughout Lake Michigan. There are more than 15 million fish stocked annually in Lake Michigan.

"The eastern edge of the area's ecological landscape is heavily influenced by the cool waters of Lake Michigan, which has created a cool, moist climate and distinct landforms affected by phenomena such as water level fluctuations, fogs, wave spray, storm wave impacts, ice push, and deposition and erosion of sediments. This physical setting has promoted a unique set of biotic communities, species assemblages, and natural community mosaics of unusual composition, limited geographic distribution, and high ecological value. Species endemic to Great Lakes shoreline habitats occur here. Undeveloped shoreline habitats and the relatively clean, open waters of Lake Michigan in this ecological landscape are highly significant to migratory birds (Steele 2007). Lake Michigan is a Conservation Opportunity Area of global significance (WDNR 2008c). The Wisconsin shore of Lake Michigan within this ecological landscape has shoreline features shaped by wave and river dynamics that made the mouths of rivers along the lake suitable sites for small harbors. These are the present-day locations of the cities of Algoma, Kewaunee, Manitowoc, Two Rivers, Sheboygan and Port Washington. DEIS, p20-21

<sup>2</sup> Work in and adjacent to waterways often requires determination of the ordinary high water mark (OHWM). The OHWM, is the point on the bank or shore up to which the presence and action of the water is so continuous as to leave a distinct mark either by erosion, destruction of terrestrial vegetation or other easily recognized characteristic. The OHWM establishes the boundary between public lakebed and private land. When water levels drop below the OHWM, **the riparian property owner has exclusive use of the exposed lake or river bed.** [emphasis added] DEIS, p21

<sup>3</sup> The Kohler Property and the Kohler-Andrae Property contain several upland plant communities. Vegetation would be removed from the footprint of the golf course fairways, greens, and tees and would be replaced with turfgrass. Vegetation would also be removed from the access road and utility right-of-way, building footprints, septic fields, irrigation system, driving range and cart paths. Mature trees and other native vegetation would be retained between the golf holes where possible. It is anticipated that approximately 50 percent of the existing trees would remain following construction. The remaining 50 percent of the existing upland would be preserved and remain located predominantly between golf course features. DEIS, p30

<sup>4</sup> This plant community supports mostly native species with few non-native or invasive plants. The plants are highly specialized and conservative. Conservatism is based upon a species fidelity to specific habitat integrity and to varying degrees of disturbance. The most conservative species require a narrow range of ecological conditions, are intolerant of disturbance, and are unlikely to be found outside undegraded remnant natural areas. While conservatism and rarity are not always equated, many conservative species tend to be rare. DEIS, p31

<sup>5</sup> According to the U.S. Environmental Protection Agency (EPA), Sheboygan County is identified as a "nonattainment" area for ground-level ozone. This area does not meet the EPA's 2008 8-hour ozone national air quality standard (75 parts per billion; EPA 2014). The Property and operation of the golf course is not expected to significantly contribute to long-term increases in air emissions. There is not expected to be a concentration of vehicles associated with daily golf course operations and few vehicles are likely to use the Property during winter months when the golf course is closed. DEIS, p20

<sup>6</sup> Invasive Plants of the Upper Midwest, Elizabeth J. Czarapata. UW Press. 2005. 5 printings.

<sup>7</sup> Invasive Plants of the Upper Midwest, Elizabeth J. Czarapata. UW Press. 2005. 5 printings.

<sup>8</sup> DEIS, p25

<sup>9</sup> DEIS, p18

<sup>10</sup> To construct the biofiltration areas to hold water long enough and support plant growth, it's anticipated that less porous soil and topsoil would need to be brought into the site. DEIS, p17

The soils present on site may present challenges for the construction and long term maintenance of the proposed golf course. p18

The "soils are somewhat limited in suitability for lawns, landscaping and golf fairways because the soils have a low exchange capacity, are droughty and can have significant slopes. The dune soil areas are unrated but have these same deficiencies. The Granby soils are very limited due to ponding, saturation, low exchange capacity, and flooding. When water levels drop the Granby soils can also be droughty." p18

<sup>11</sup> DEIS, pp 17-18

<sup>12</sup> DEIS, p 19

**From:** [Sue and Dean Louden](#)  
**To:** [DNR Kohler Proposal](#)  
**Subject:** Comments - New Golf Course in Terry Andrae Park Area  
**Date:** Monday, July 18, 2016 10:59:30 AM

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I would like to voice my opinion about the 5th Championship golf course Herbert Kohler, Jr. wants to build in Terry Andrae State Park in the Black River area of Sheboygan, Wisconsin. I can't understand how Mr. Kohler can have his way with this project just because he is a friend of Governor Walker and is one of the richest people in our area.

We have several other golf courses that Mr. Kohler has built in Sheboygan which the average person living here cannot afford to use. Houses were bought and moved from the lake and new roads were built just to accommodate Whistling Straits Golf Course. I can't understand why the Indian remains in Black River will not be honored but will be bulldozed and covered over and no one seems to care about them. Terry Andrae State Park is an important bird migratory route that will be destroyed in this very significant coastal bird area. Local residents ride horses in this park, camp with their families and even have a Sunday morning church service here in the summer time.

Governor Walker has worked with the DNR Secretary, Cathy Stepp, to smooth out the necessary permits and processes for this proposed course. Governor Walker has done nothing to protect our forests, state parks, our fishing industry and our beautiful Lake Michigan but taken conservation scientists working for the State of Wisconsin who were put in place to watch over these entities out of their positions and replaced them with people of his choosing that are not qualified to do so. It stops here with him giving deals to his donors!

Sue Louden  
2209 Arizona Avenue  
Sheboygan, WI 53081

**From:** [Schroeder and Bunzel family](#)  
**To:** [DNR Kohler Proposal](#)  
**Subject:** comments for EIS  
**Date:** Monday, August 01, 2016 4:52:58 PM  
**Attachments:** [Comments for the DNR Kohler Proposal EIS.docx](#)  
[ATT00001.txt](#)

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Jay Schiefelbein,

Attached you will find my comments for the EIS for the proposed Kohler Company golf course project. Ugh! I am NOT in favor of granting them any permission to build on their "owned" land, let alone any part of our state's land that belongs to a public access park. You may be getting direction, even pressure, to allow state land to be sold, especially to donors toward certain candidates' campaign funds. Consider the real mission of our DNR and the responsibility to our state's humans, wildlife and lands for our common good. Please, let me know that my comments file has been safely transmitted by e-mail.

## Comments for the DNR Kohler Proposal EIS

**Immoral, greedy and grandiose** is what the plan is for the Kohler Company to build another “world class” golf course on the frontage of Lake Michigan, especially when the corporation already owns four other golf courses and how many hotels that are only affordable for wealthy guests. What, are they trying to compete with the Pebble Beach Golf Course that is on the edge of the Pacific Ocean, where it costs \$500 to play an 18 hole game?

We know how important it is for a river’s health to have at least a 50 foot “buffer” of natural, untouched habitat on both banks. How wide is the unbroken buffer for this project? We have seen how our Great Lakes have shorelines erode in places. Wherever stabilization structures are built on a shore to prevent the loss of land or “investments” by one owner, there can be a potential problem for adjacent land and developments. Can you guarantee that stabilization structures will not be needed in this case? I ask the Wisconsin Department of Natural Resources to be true to your purpose and inform the public and the Kohler Company about how important it is to save land from development on our Lake Michigan shore.

I had always been proud to live in Wisconsin, where there was way less development of Lake Michigan’s shore than in Illinois. Until recent years, we spent more tax dollars to save land with stewardship funds.

It is not right for humans to own land in the first place. Our present crisis of climate change began when we started using land for agriculture instead of continuing with hunting and gathering only what a sustainable population needed. We accelerated global warming with the increased burning of fossil fuels for industrialization. A destination golf course would not only rape the land of one of our remaining pristine forests, dunes and pieces of lakeshore, threatening untold species of flora and fauna, but would also increase the financial imbalance that threatens more humans’ happiness and quality of life, if not survival. What is the percentage of the population of Wisconsin, the United States or the world that would be able to use a destination golf course for their own enjoyment of the views, exercise and seasonal pleasures?

I favor the Alternatives 4.1, No Build, or 4.2. I am hoping that the Kohler Company will reconsider the plan of what to do with their part of the land and instead donate it to the state or Federal government with the purpose of expanding Kohler-Andrae State Park. Our state and country would benefit more from having a National Lakeshore designation and leave the land as habitat preservation. It is becoming more and more important and admirable to save land for the many species we share space with on the planet.

And wouldn’t it be more beneficial to more people and still profitable for the Kohler Company to build a factory that makes solar panels or wind generators, on a piece of land that does not have such environmental sensitivity? The Kohler Company has contributed to the arts and could add dedication to the cause of environmental preservation and climate change mitigation.

The draft Environmental Impact Statement for the proposed Kohler additional golf course shows a long and impressive list of surely and potentially impacted areas. While I will comment on some of the impacts, it still gives me the creeps that not all affected species are described and archeological impacts are not yet reported or must be looked up somewhere else.

I picture the land being sculpted for a golf course, new soils brought in to support the stability of a road bed and the turf grass, which would be fertilized and treated with chemical pesticides, made from natural substances and synthesized from petroleum. This reflects drastic changes in topography by extreme landscaping.

In our neighborhood, we have a high, seasonal water table and wetlands nearby. We live a half mile north of the West Bend Airport and a portion of the Milwaukee River that flows east. Close to Windgate Creek and the north bank of the river, a farmer, who is trying to afford retirement, sold parts of his land for residential development and large dump trucks of sandy soil from a field for fill. It makes me wonder, now, how much less soaking in of flood waters from the river there will be than when that hill provided natural protection. Filling of wetlands for runways and paving and filling for residential and commercial development cannot be helpful as we have more extreme weather events. When are the Department of Natural Resources and insurance companies going to demand more conservative development, land form changes and restrict building to prevent the effects of more natural disasters on the environment?

Surely, the Kohler golf course project, as described incompletely in the EIS, would remove sand dunes and fill in wetlands, perhaps more than are estimated. It took Mother Nature/God thousands or millions of years to form the habitat, during which time flora and fauna evolved to survive there. Where sand dunes are removed, much would have to be set down to make sure the substrate is stable enough to support traffic. For golf courses, earth's topography is engineered to make smooth fairways, sand traps (probably filled with a different type of sand) and man-made ponds. Removing HALF the trees of an old growth forest, alone, is criminal in my mind. Our family goes through very difficult discussions when we decide to remove branches to provide more sun for our garden or even cut down dying ash trees. We are so outraged at the clear cutting of rain forests in Central and South America for development of grazing and agricultural lands for beef. And what about removal of carbon holding trees in our own area? You cannot convince me that mitigating wetland loss really makes up for the LOSS, certainly not to that area. Landscaping is contrary to natural evolution.

When foreign top soils and substrates are used to establish turf grass, and then we add chemicals, there is no longer a natural deep ecology. Organic soils are teeming with microorganisms in delicate balance that supports the rest of our flora, fauna, wildlife and food chain. When chemicals are applied to one area, they are going to drift in the air, drain with runoff and seep into the groundwater to some degree, no matter what kind of care is taken with integrated pest management and best practices.

I believe it is important to be good stewards of our land nearby and be aware that what we do affects the environment that communicates with the world's resources. Our runoff and groundwater eventually enter rivers, the Great Lakes and are connected to the oceans. What plastic, sewage and chemicals go into any air and water as solids, in the air and water, accumulates and the effects travel to other parts of the world. We have all heard that it would be good to spend more effort on reducing, reusing and recycling than to spend more time, money and efforts on consuming and polluting.

I question the morality of using water, measured in millions of gallons per year, to support lush and chemically treated grass for a golf course. I would hate to be a neighbor required to monitor the quality and quantity change in my groundwater supply.

There are adequate reasons already listed in the draft, incomplete and biased EIS, to deny the requested granting of land to an already wealthy corporation. Department of Natural Resources, it is your charge to inform more of the public about this outrageous proposal and the potential damages. Please, pressure our state and Federal governments to provide the funding to argue against the proposed project with yet more data from independent sources. Make easily available information accessible and understandable for lay people to see what a travesty it would be to lose Black River Forest another piece of Lake Michigan frontage that could be saved for posterity.

If this was going to be an area for middle class folks and people living in poverty to be able to exercise, like in a public park, or able to enjoy the awesome features and education of Nature, it might be moral to give away land. At a time when more wealth keeps migrating to the top 1% and even golf is losing players, it just doesn't seem to be justifiable to allow more lovely shore land to be given the go ahead to be developed for wealthy people's recreation. The number and quality of jobs promised do not justify the degradation to the environment.

To the Kohler Company, which some Supreme Court judges may call a person, I implore you to reconsider what good purpose you could have for the precious land you "own" and the adjacent state land, which is a favorite place to visit for many more than would be able to come to your golf courses, sports centers, hotels and restaurants. We hear that your company is trying to do good things for water quality with products. Here you could do something for the common good by preserving the land, instead of developing it.

Respectfully submitted by,  
Joy Schroeder  
6725 North Trenton Road  
West Bend, Wisconsin 53090-8993

**From:** [Quentin Carpenter](#)  
**To:** [DNR Kohler Proposal](#)  
**Subject:** Comments of Quentin Carpenter RE Kohler DEIS  
**Date:** Thursday, July 28, 2016 6:31:08 PM  
**Attachments:** [Kohler Comments OJC July 2016.docx](#)

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Please find my comments attached.

Jay Schiefelbein  
Environmental Analysis and Review Specialist  
Wisconsin Department of Natural Resources

## General Comments

I have reviewed the Draft EIS for the proposed Kohler Golf Course in Sheboygan County at the request of the Friends of the Black River. In general, I find little new information in the DEIS compared to the scoping documents initially supplied by Kohler, and I see few questions that were raised by the public either answered or at times even acknowledged. Like the initial document, this DEIS focusses on minutia and largely ignores the larger issue that this proposal will completely transform the existing, largely intact and functional, dune, swale and forest ecosystem that developed here over millennia into a human-dominated, northern European analog. There is no reason to expect that the leftover fragments of the prior system are likely to survive the new and altered hydrologic, trophic and disturbance regimes. There is every reason to expect that the fragments will turn into weed patches dominated by exotic and/or invasive species.

I began my academic career in 1987 studying the restoration effort associated with the South Beltline in Madison. Looking back at that effort nearly thirty years later, the best I can say is that some areas where fill was removed are now low-quality wetlands. The hope, however, that seeding and using salvaged marsh surface would turn those areas into high-quality wetlands such as are found in the nearby undisturbed areas has faded. In the beltline case, which started with highly degraded areas, there was at least a chance of improvement; in the Kohler case, since we are starting with little-disturbed, largely intact, “high to exceptionally high” quality systems (see p. 30-33 of DEIS) composed of mainly conservative species, the only point of discussion is how much degradation will result if the project is permitted and how quickly it will happen.

## Specific Comments

3.1 - Utilities – “Testing has been completed that confirms conventional septic field systems could be used to treat domestic wastewater.” Is DNR accepting this report at face value? Does this report address the specific context here, i.e., rare oligotrophic species down flow? Given the sandy soils, I find this statement hard to believe, especially since later leaching into the rare, oligotrophic wetlands has been identified as a likely problem. If you wish to see just how well these systems work in sandy soils, take a boat ride up the coast to a small housing development overlooking the lake off of Highway L a bit north of the Sheboygan County line. Look west 10 to 20 feet below the top of the bluffs and you will see a thin green line running parallel to the top. There are seeps where the sandy till intersects a lacustrine silt/clay layer associated with one of the retreats of the recent glaciation. The thin green line is populated by a variety of interesting native plants, especially sedges, common to soft-water seeps. As the tops of a houses come into view you will notice larger and much darker green patches of vegetation, often spilling down the bluff face. These patches are populated by large cattails, reed canary grass and phragmites, all invasive species which are feeding off the sewage leachate of the fairly new and properly

permitted conventional septic field systems. This observation was documented and published in the 1998 UW-Madison Water Resources Management Report prepared for Manitowoc County and sponsored by a Coastal Zone Management Grant. A copy of this report was also provided to Sheboygan County Planning and Zoning and all other coastal counties.

3.3.2 Large Events – My brother-in-law is an avid golfer and has worked at several PGA tournaments. My sister and he attended the PGA at Whistling Straits last summer. They had full passes but only stayed one day because they felt so crowded and could see very little of the play. Whistling Straits does not have rare wetlands right next to visitors. How will Kohler handle large events and issues such as trampling, sewage and traffic with greens closely parallel to the rare wetlands that are supposed to be preserved.

3.3.3 - Land Management - Kohler proposes to minimize the risk of pesticides and fertilizers leaching to the aquifer through IPM and BMPs. The work “minimize” is misleading here. Using IMP and BMPs diminishes the amount of damage from pesticides and fertilizer leaching compared to wanton use. The magnitude of that diminishment depends on many factors. A major factor is soil type, and sandy soils with low organic matter like those found at the proposed site are the worst possible. Thus, the estimate in Barton 2006 that with best practices on average only about 5 per cent of chemicals may leach through is likely low for this site. In addition to the Kovach 1992 reference, regulators should read the critique thereof found at:

Jonathan Dushoff, Brian Caldwell, Charles L. Mohler

DOI: <http://dx.doi.org/10.1093/ae/40.3.180> 180-184 First published online: 1 July 1994

Regulators should also note that the optimistic findings in the Swancar citation apply to a comparison of using wastewater vs. groundwater for irrigation. In addition, given the very different climate and soils found in Florida, the relevance of this article is questionable here.

4.3 - “The views of the dunes, grasses, forest and Lake Michigan which contribute to the proposed golf course’s unique design, worldwide interest, and economic development potential would be difficult to replicate at another location. There may be siting and environmental issues at any site.”

The above statement is classic “double-speak” unworthy of inclusion in a DNR document unless in quotes and attributed to Kohler’s publicity agent. A truthful description would include the fact that many of the former dunes will be altered and covered with imported soil upon which non-native European grasses will be planted and that half the forest will be cleared and the rest left as fragments with occasional view corridors of Lake Michigan. The statement that, “there may be siting and environmental issues at any site” is both true and misleading. A truthful statement is that this site has extraordinary siting and environmental issues, and both the applicant and DNR are well aware of the unusual situation here.

The rest of the alternatives analysis seems also be wasted paper featuring much worse proposals that are supposed to make the desired proposal look better.

5.1 Soils – In paragraph 3, Kohler proposes to use biofiltration to treat runoff water. This will require importing more topsoil, which itself will be a source of nutrients in this situation. Given that the subsoils are basically sand and that only a few feet separate the “bioremediation basins” and groundwater, the probability of contaminants reaching the groundwater at 585’ is certainly very high (see Toxin Fairways excerpt below), and the elevation of some of the rarest wetlands is at this same 585’. This seems to be another example of wishful thinking on the part of the applicant. Has DNR actually investigated the efficacy of the proposed biofiltration basins in a context similar to the proposed site?

P.22, last paragraph

“The OHWM within and adjacent to the Project boundary could be flagged by the department at the request of the Kohler to ensure that applicable setbacks, wave run-up floodplain, and clear cutting provisions are met.”

I am puzzled why DNR is doing a DEIS but waiting for a “request” from Kohler to delineate the property boundary. Surely that would be in the interest of both parties. I am also surprised that there appears to be no acknowledgement of the issues raised by my “additional comments” of 19 Oct 15 and likely others on this matter. I will append them in case they were inadvertently missed.

P. 23

Under the Stormwater Management heading, we learn that infiltration rates were measured on-site as from 26 to 52 inches per hour. In other words, a full year’s worth of rainfall at the site could infiltrate in one hour. On Figure 7 we see the locations of the wetlands on the property, and on Figure 10 we see the layout of the golf course. Putting these all together it is easy to see that the remaining wetlands will be squeezed between the altered portions of the parcel and any leakage of contaminants (including fertilizer or sewage) with either travel down the steep slopes into the rare wetlands (e.g., when the surface is frozen) or infiltrate immediately and quickly end up the same place. These rare wetlands are described as oligotrophic (accustomed to receiving few nutrient inputs). They are there because other, more aggressive species need more nutrients to win the competition for space and light. Even small additions of nutrients can easily shift the balance toward the competitors and these will quickly alter the whole community type wiping out the rare species. I see nothing but platitudes and acronyms provided to address this obvious problem. I presume that DNR will take a closer look.

5.1.7 - Wetlands

The DEIS provides an excellent description of the wetlands on the property including the ones considered rare and of exceptional quality. There is much information in Table 10 but the text is so vague and misleading that the reader would think there were only minor problems likely. It is as though the writer has not even looked at the Table 10 or the detailed analysis thereof I provided in my comments a year ago.

“Several globally rare wetlands within the Project Area on Kohler Property are proposed to be directly impacted by filling for the construction of various holes and the associated grading and

construction of tee boxes, greens, fairways, and tree clearing.” “Several” should read, “Most of the many.”

“Secondary impacts from things such as changes in hydrology, irrigation, and application of fertilizer may impact rare wetland communities.” “May” should read “will,” since only the magnitude of impacts is in question here. If there were no impacts expected, there would not be pages of discussions about IPM, BMPs etc. included in the DEIS. I see no mention of the many other factors that will affect the wetlands. The rare wetlands are currently surrounded by compatible neighboring vegetation types. After the locale is drastically altered and much of the neighboring vegetation changed, how will the rare wetlands fare. Where is the discussion of this issue?

The DEIS simply repeats the misleading statement from the scoping document that Kohler proposes to take only a tiny percentage of the wetlands on the property but neglects to point out that about 116 out of the 124 total acres of wetland (94%) are in the Black River Riparian zone, which is certainly not suitable for development. Here, indeed, only a tiny bit on the eastern edge will be affected; but, even here, the best of these wetlands (floodplain fringe seeps) are expected to be strongly affected by tees and greens (see p.34 DEIS). As pointed out in my previous remarks, the proposed alterations disproportionately affect the higher quality wetlands (swales and seeps) filling most and leaving the rest subject to secondary threats.

#### 5.1.8 – Compensatory Wetland Mitigation

Again, it appears that the writers of the DEIS have not read my previous comments nor have they done any serious investigation of the potential to replace the wetlands here. They state that the property is within the service area of a mitigation bank, but that bank, to my knowledge, has no comparable wetlands.

#### 6.4 - Significance of Precedent

“Department decisions on this proposal would not set precedent.” This appears to be another “head in the sand” statement ignoring reality – if this project, which has just about every negative issue you could imagine against it can be permitted, there remains little left of Wisconsin’s long heritage of protecting rare natural resources. A further insult is that this proposal is likely only feasible if the State grants an access easement over LAWCOM lands in a State Park. While there is precedent to alter such lands, I suspect there are few to no previous examples where such lands were turned over to a private party when doing so made possible the destruction of rare habitat for that this conservation program prides itself on protecting.

References and supplemental materials:

Jonathan Dushoff, Brian Caldwell, Charles L. Mohler

DOI: <http://dx.doi.org/10.1093/ae/40.3.180> 180-184 First published online: 1 July 1994

## Abstract

The environmental impact quotient (EIQ) developed by Kovach et al. (1. Kovach, C. Petzoldt, J. Degni & J. Tette. 1992. A method to measure the environmental effect of pesticides. N.Y. Food Life Sci. Bull. No. 139.) is an effort to fill an important gap: the need to provide growers and others with easy-to-use information about the adverse effects of pesticides. However, flaws in both the formula and its conceptual underpinnings serve to make the information provided misleading. Although Kovach et al. provides a great deal of information and many interesting ideas, we recommend that EIQ presented there not be used as a tool to evaluate field applications of pesticides. Further, current understanding of pesticides and their effects is not sufficient to allow the environmental effects of a pesticide to be captured by a single number. We discuss alternate ways to provide growers and policymakers with usable information about pesticides.

- © 1994 Entomological Society of America

From Toxic Fairways article:

The Attorney General's office decided to examine pesticide use on Long Island golf courses because pesticides pose special risks on the Island. Long Island's nearly three million people depend on groundwater as their only source of drinking water. This irreplaceable resource is vulnerable to contamination by surface-applied pesticides. Large areas of the island's groundwater lie beneath a sandy, porous surface soil layer with little organic matter to adsorb pesticides. This type of soil provides little if any barrier against contaminants reaching the groundwater.

Comments of 19 Oct 15 on EIR

In the Waterways section comments 1 and 2, Stantec says that the OHWM at the site is 582.7 ft. per Sheboygan Co Zoning Dept. Interesting, but the OHWM in my understanding is a field-based value at any particular site because it depends on a number of factors that vary per site. That is why the guidance from Sheboygan Co. is qualified with "for zoning purposes only." I also note that in response to comment #8 in the next section, Stantec responds that the wave run up is 588.1 ft. per FEMA guidance. From the topo map provided in the EIR, that looks very close to the tops of some of the dunes, and there is a 588 ft. benchmark just south of the property that is well inland. As we are informed in the runoff section, this area is rather flat. This is another "two-edged sword" concerning which Stantec uses one side but neglects to acknowledge the other when it does not help their effort. If the beach gradient is low, the wave run up is long.

Another danger that I see here that if a golf course is allowed this close to the lake, very quickly DNR will receive a request to armor the lakeside to protect it. These are active dunes in a dynamic area of the lakeshore. The detrimental effects of armoring on adjacent shorelines are well-documented. The neighbors of this shoreline are the residents to the north and the State Natural Area and Park to the south.

**From:** [Christa Westerberg](#)  
**To:** [DNR Kohler Proposal](#); [Schiefelbein, Jeremiah J - DNR](#)  
**Subject:** Comments on Kohler Golf Course DEIS  
**Date:** Friday, August 26, 2016 4:22:52 PM  
**Attachments:** [Comments on DEIS, 8.26.16.pdf](#)

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Dear Mr. Schiefelbein:

Please see the attached. Please note we reserve the right to supplement these comments when we receive records we requested from the DNR about this project in late June, and request an extension on the public comment period for the DEIS as necessary.

Thank you.

Christa Westerberg  
**Bender Westerberg LLC**  
10 East Doty Street, Suite 800  
Madison, WI 53703  
office ph 608/310-3564  
cell ph 608/438-6666  
fax 608/441-5707  
westerberg@benderwesterberg.com  
www.benderwesterberg.com

August 26, 2016

*Via Email*

Jay Schiefelbein  
Wisconsin Department of Natural Resources  
2984 Shawano Ave  
Green Bay, WI 54313-6726  
[DNRKohlerProposal@wisconsin.gov](mailto:DNRKohlerProposal@wisconsin.gov)  
[Jeremiah.Schiefelbein@wisconsin.gov](mailto:Jeremiah.Schiefelbein@wisconsin.gov)

*Re: Comments on the Kohler Golf Course Project Draft Environmental  
Impact Statement*

Dear Mr. Schiefelbein:

On behalf of members and supporters of Friends of the Black River Forest (“FBRF”), this firm submits the following comments on the draft environmental impact statement (“DEIS”) for Kohler’s proposed golf course project in the Town of Wilson, Sheboygan County. These comments are supplementary to comments delivered at the hearing on July 20, 2016, and others provided to the DNR in prior phases of this proposal.<sup>1</sup>

As we have stated before, we agreed with using the environmental impact statement process for this large, disruptive project in an extremely environmentally sensitive area. However, that process has not been correctly executed, due to the sparse information Kohler has provided, the DNR’s decision to nonetheless proceed with the DEIS, the inadequate DEIS that has resulted, and the deprivation of the public’s right to understand and meaningfully comment on the environmental impacts of the golf course project. Thus, we disagree with the DEIS from its very first sentence, i.e. that it “fulfills” the DNR’s legal duties for a DEIS under Wis. Stat. § 1.11 and Wis. Admin. Code ch. NR 150.

If and when it receives sufficient information from Kohler, the DNR must redraft the DEIS and renote the draft for public hearing, before finalizing the EIS. Otherwise, the DNR will have allowed Kohler to complete a significant regulatory hurdle, in a premature fashion that is virtually without precedent, in a way that defies the purpose and requirements of the Wisconsin Environmental Policy Act (“WEPA”).

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<sup>1</sup> If not already considered part of the record, these comments incorporate by reference the scoping comments provided by this firm on July 24, 2015, other correspondence dated December 10, 2015, and comments provided to the DNR by Dr. Quentin Carpenter on July 24, 2015, October 23, 2015, and July 28, 2016. These documents have already been provided to the DNR but can be resubmitted upon request.

## 1. The DNR Lacked Sufficient Information to Draft the EIS

The DNR drafted the DEIS based on an incomplete collection of documents that does not sufficiently describe the project or allow an understanding of its environmental impacts.

Under the applicable rules at Wis. Stat. § 1.11 and Wis. Admin. Code ch. NR 150, an EIS may be required for an “action” or “project.” *E.g.*, NR §§ 150.20(4), .30(b).

- An “action” is defined as “any final decision by the department to exercise the department’s statutory or administrative rule authority that affects the quality of the human environment,” such as issuing a permit. NR 150.30(1).
- A “project” is defined as “one or more actions and other activities related to a single undertaking by the department or an applicant,” i.e. “a person who applies for a permit, license or approval granted or issued by the department.” NR 150.30(3), (22).

The purpose of an EIS is to “inform decisionmakers and the public of the anticipated effects on the quality of the human environment of a proposed **action** or **project** and alternatives to the proposed action or project.” NR 150.30(1)(b) (emphasis added). The intent of an EIS is to “address the **entire proposed project** including all related department actions.” *Id.* § NR 150.30(1)(c) (emphasis added). The content of an EIS must “emphasize environmental issues relevant to the evaluation of the **action** and provide a level of detail commensurate with the complexity of the **action**.” *Id.* § NR 150.30(2) (emphasis added).

Here, there is neither an “action” nor “project.” No permits or other DNR decisions have been drafted or finalized for the golf course proposal—hence, no “action.” No undertaking has been proposed by the department or an “applicant” because there have been no applications for any permits, license, or approvals—hence, no “project.” Without an “action” or “project” to describe, the DEIS fails in the very first instance based on DNR’s own rules.

This is apparent in the text of the DEIS itself. At most, it lists “anticipated” permitting requirements for the golf course proposal—a far cry from identifying actual permits or their language. Even some of the “anticipated” permits are identified as merely “possible” (such as a Wis. Stat. ch. 30 permit, DEIS page 2) or “potential” (such as a LAWCON conversion and Natural Resources Board approval). *See* DEIS page 2-3. Theoretical applications and permits are not the “actions” or “projects” that must be described in an EIS.

Courts have invalidated WEPA documents for less. In *Family Farm Defenders et al. v. DNR*, Dane County Circuit Court No. 11-CV-3375, applications had been filed for a high capacity well approval and other permits. Still, the court found DNR had not complied with WEPA where it approved a high-capacity well permit for 131.5 million gallons per

year—a limit different from that analyzed in the DNR’s environmental assessment. (Decision & Order, July 20, 2012.) Said the court:

There is no analysis of any possible effects on the environment of a pumping rate of 131.2 million gpy. The analysis done by the DNR at the maximum rate (1000 gpy) is partially instructive because, as Pleasant Lake Management asserts without dispute, the DNR can modify or increase the allowable pumping rate without conducting another Environmental Assessment. However, the lack of individualization of the Environmental Assessment based upon the pumping scheme permitted by the DNR means that the DNR is assuming that the effect at 131.2 million gpy with seasonal fluctuations is the same as the effect at a greater rate constantly drawn over the course of a year. Furthermore, by granting permits at a level previously unknown to the public, the DNR precluded additional information from being submitted by the public to assist the DNR in its evaluation. The lack of public comment or additional sources of material argues against the conclusion that a hard look was taken. I am not persuaded that these assumptions, taken together with the lack of opportunity for public comment, can constitute the hard look required by law: the record lacks a factual investigation of sufficient depth to allow a reasonably informed preliminary judgment about the environmental effects of the high capacity wells operating at 131.2 million gpy, the rate actually approved by the agency.

Decision and Order at 22. In other words, the agency’s environmental document must evaluate what has actually been proposed or permitted. Here, we have neither.

The lack of information is not a mere technical deficiency. As described in the next section, it has resulted in a DEIS that does not correctly or fully describe the golf course’s environmental impacts—the very purpose of an EIS. The DEIS was instead drafted based on Kohler’s description of its proposal in its own, self-serving Environmental Impact Report and supplemental materials, which we have previously explained are inadequate. *See* documents cited in footnote 1. The DNR apparently agreed, requesting further documentation from Kohler (see May 22, 2015 letter from DNR), which it only provided in

part (see Kohler response to DNR, 7/29/15).<sup>2</sup> Notably, the federal government has recognized that it cannot start its own environmental review process without “an application in hand.”<sup>3</sup>

The DNR’s decision to prepare the DEIS without permit applications or draft permits shows the DNR has not met its burden of WEPA compliance, based on the information it has determined is necessary to complete such a document through rulemaking and its own correspondence with Kohler. See *Wisconsin’s Env’tl. Decade, Inc. v. PSC*, 79 Wis. 2d 409, 430, 256 N.W.2d 149 (1977).

## **2. The DEIS Does Not Sufficiently Describe the Project’s Environmental Impacts.**

The DEIS does a reasonable job of describing the current environmental setting of the proposed golf course, due in part to the DNR’s own analysis and site visits.<sup>4</sup> However, the DEIS fails to correctly or adequately describe the proposal, its environmental effects, and reasonable alternatives, as required in NR 150.30(2).<sup>5</sup> This is not surprising, since the DNR lacks key information about important project details. The DNR has not taken the necessary “hard look” at the environmental consequences of the proposal. *Clean Wis. v. PSC*, 2005 WI 93, ¶ 189.

First, the DEIS only describes and considers impacts for part of the project. Kohler has not provided information about several significant site features, such as utilities, septic systems, cart paths, stormwater controls, roadways, and the Lake Michigan observation tower. The DEIS does not describe impacts of these features, instead deferring consideration until later applications are received. *E.g.*, DEIS at 63. This affects the accuracy of all other sections—for example, one cannot say only 5.01 acres of rare wetlands will be directly impacted (DEIS at 61), when that number may well rise when other site features are considered. This has the effect of impermissibly understating or segmenting the golf course’s full environmental impacts. See *Del. Riverkeeper Network v. FERC*, 753 F.3d 1304, 1313 (D.C. Cir. 2014).

Second, the DEIS lacks basic information that affects not just the DNR’s analysis, but the project’s very feasibility. Kohler says it will install stormwater controls 5 feet above

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<sup>2</sup> For example, Kohler declined to provide floodplain information and a septic study it prepared. The DNR nevertheless referenced these reports in the DEIS as a basis for its analysis (*e.g.*, DEIS at 5, 30), even though it has never seen the reports—a fact confirmed through Open Records requests.

<sup>3</sup> See <http://www.jsonline.com/story/news/politics/2016/06/29/dnrs-report-on-kohler-golf-course-spurs-concerns/86543736/>

<sup>4</sup> There are some exceptions to this statement, like the DEIS’s failure to discuss existing surface water quality and fisheries in water bodies other than the Black River.

<sup>5</sup> The listing of deficiencies provided here does not waive FBRF’s right to identify other deficiencies in separate documents or at a later date.

the anticipated high groundwater elevation, but depth to groundwater has not been verified across the site. (DEIS at 24.) (Note that prior reports indicated groundwater was as close as 3 feet from the ground surface.) Site features and permits will be dependent on the ordinary high water mark location, but this measurement has evidently not been verified or agreed upon. (DEIS at 22.) It is not even clear if adequate emergency vehicle access to the site would be possible, since this information has not been provided. (DEIS at 46.) Some of these issues were raised during the scoping phase, such as the environmental impacts of large tournaments Kohler has said it would like to host. Yet DNR says these issues have “not been discussed to date.” (DEIS at 6.) The DNR has not developed a reviewable record nor applied its expertise on critical aspects of this project, including those identified in scoping. *WED III*, 79 Wis. 2d 409, 425.

Third, the limited discussion of impacts that is available in the DEIS is too general and hypothetical to be useful or necessarily accurate. For example, the discussion of nutrient management and pesticides includes potential mitigation measures to prevent groundwater contamination, but there is no analysis or indication of whether these measures would actually work on this site or what the impacts would be if they don't. (*E.g.*, DEIS at 6-8 (“Precision irrigation management could minimize leaching by scheduling irrigation so that water does not move beyond the active rooting zone.”). Courts have panned similar statements in the past:

The department's treatment of this consideration consists of a statement of the potential environmental danger, followed by an observation that technological ability exists to address it. This approach “leap frogs” over any analysis of the potential problem or the solution.

*Town of Centerville v. DNR*, 142 Wis. 2d 240, 251, 417 N.W.2d 901 (Ct. App. 1987) (concluding the DNR had not applied its expertise or created a reviewable record in preparing environmental assessment). Much of the DEIS contains similar language, as in discussion of impacts to other groundwater users, the availability and comparability of wetland mitigation banks, and impacts to wildlife due to the loss of forest cover.

Fourth, WEPA requires discussion of secondary and cumulative impacts, NR 150.30(2)(g), but these are only mentioned in passing, if at all. For example, in discussion of rare wetlands, the DEIS states, “Secondary impacts from things such as changes in hydrology, irrigation, and application of fertilizer may impact rare wetland communities.” (DEIS at 33.) And in discussion of rare plants, the DEIS claims no direct impacts will occur and that other impacts will be avoided “if possible.” (DEIS at 43.) Yet there is no further discussion that illustrates whether these impacts will occur, to what extent, and whether the effects can be effectively mitigated. The term “cumulative effects” only appears in a heading, and is not otherwise mentioned. (DEIS at 59.) The discussion of the secondary and cumulative impacts is cursory at best and insufficient for WEPA purposes.

Fifth, while the DEIS lists alternatives to Kohler's preferred alternative (Alternative E), it does not discuss or compare the environmental impacts of these alternatives. It

summarizes Kohler's listing of the benefits of Alternative E and continues almost exclusively with the discussion of that alternative. (DEIS at 16.) The DEIS is also too deferential to Kohler in its analysis of entrance road locations. (*Id.* at 11.) The DEIS thus does not fully develop alternatives nor "study, develop, and describe appropriate alternatives to recommended courses of action" as required under Wis. Stat. § 1.11(2)(c), (e).

Sixth, the DNR appears not to have consulted with other agencies with jurisdiction, such as the U.S. Fish & Wildlife Service as to rare species, or Sheboygan County and the Town of Wilson as to highways, queuing, traffic, and emergency vehicle access. *See* Wis. Stat. § 1.11(2)(d). Not only is this step required by statute, but it would have made the DEIS a more complete and correct document.

For these reasons and others, the DEIS does not provide a sufficient "hard look" at a project of this magnitude, in a location of significant environmental sensitivity.

**3. The DNR Must Respect the Public's Right to Understand and Meaningfully Comment on the DEIS and Issue a Revised DEIS for Public Comment If and When Additional Information Is Received.**

An EIS is supposed to inform decisionmakers **and** the public about a project's environmental impacts. Accordingly, WEPA grants the public the right to review and comment on a DEIS, Wis. Stat. § 1.11(2)(d), NR 150.30(3). However, the DNR's procedure so far has deprived the public of that right, providing only partial information at best. This information is of critical importance to the public and the state, including neighbors, users of Kohler-Andrae State Park, Lake Michigan recreational users, and others. It affects not only the environment, but basic public health issues, like groundwater quality and quantity and emergency vehicle access.<sup>6</sup>

These are fundamental due process and fairness concerns. Again, from the *Richfield Dairy* case,

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<sup>6</sup> We remain mystified as to why the DNR has proceeded without more complete information. Should Kohler wish to move forward on this project, it is a certainty that additional information will become available, such as permit applications. The DNR could have saved resources in redrafting the DEIS by waiting until this information was available. We are also unclear why the DNR has issued the DEIS without information it previously requested from Kohler, like septic and floodplain studies. Kohler's refusal to provide the information disrespects the agency's authority and the public's right to understand and comment on the golf course's full impacts. *See* NR 150.30(3).

Moreover, the policy of seeking public comment assumes that the public knows what the scope of the project will be. § NR 150.21 (1) (a) (2-3); § NR 150.22 (3). Public commentary on a pumping rate different from the one eventually permitted does not advance the policy of public participation. Both the legal requirements and policy purposes behind the Environmental Assessment are frustrated where the pumping rate actually permitted by DNR was not specifically evaluated in the Environmental Assessment nor known to the public prior to receiving public comments. For these reasons, I conclude that the Environmental Assessment does not satisfy the DNR's obligations under Wis. Admin. Code § NR 150.22.

Decision and Order, page 22. These principles remain true under the current version of NR 150.

Since the DNR has already issued the DEIS, the only remedy at this point is for the DNR to re-issue and re-notice the DEIS for public hearing once more information has become available. The Council on Environmental Quality, whose regulations are persuasive in interpreting WEPA, *see* Wis. Stat. § 1.11(2)(c), recognizes this process when the “agency makes substantial changes in the proposed action that are relevant to environmental concerns,” when “there are significant new circumstances or information relevant to environmental concerns and bearing on the proposed action or its impacts,” or “when the purposes of the Act will be furthered” by supplementing a prior DEIS. 40 C.F.R. § 1502.9(c).

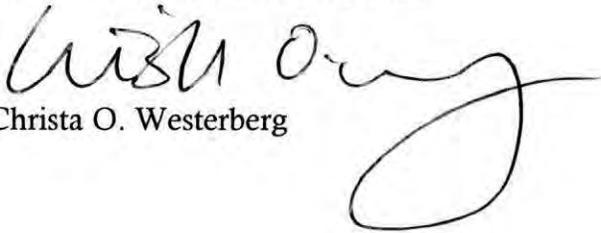
If Kohler proceeds with its golf course, it is a certainty that these criteria will be met here. Reviewing agencies at all levels are likely to make changes to Kohler's proposal as discussed in the DEIS, there will undoubtedly be significant new information generated, and the purposes of WEPA—to consider environmental impacts and inform the public and decisionmakers about the same—will be served by a renewed and revised process.

For these reasons and due to the inadequacy of the DEIS as drafted, the DNR should issued a revised or supplemental DEIS that analyzes an actual “action” or “project” once it has the information to do so, then submit the draft for notice and comment once again.

Thank you for the opportunity to provide these comments. Please let me know if you have any questions or need any further information.

Sincerely,

BENDER WESTERBERG LLC

A handwritten signature in black ink, appearing to read "Christa O. Westerberg". The signature is fluid and cursive, with a large loop at the end of the last name.

Christa O. Westerberg

cc: FBRF