To:Jay Schiefelbein, WDNR 24 July 2015
2984 Shawano Avenue
Green Bay, WI

Introduction

I have been asked by the Friends of the Black River Forest to comment on the Stantec Environmental Impact Review for the proposed Kohler Golf Course in the Town of Wilson, Sheboygan County, Wisconsin, and describe the information the DNR should focus on obtaining to develop a complete Environmental Impact Statement for this project. They asked that I particularly focus on the likely fate of the wetlands therein.

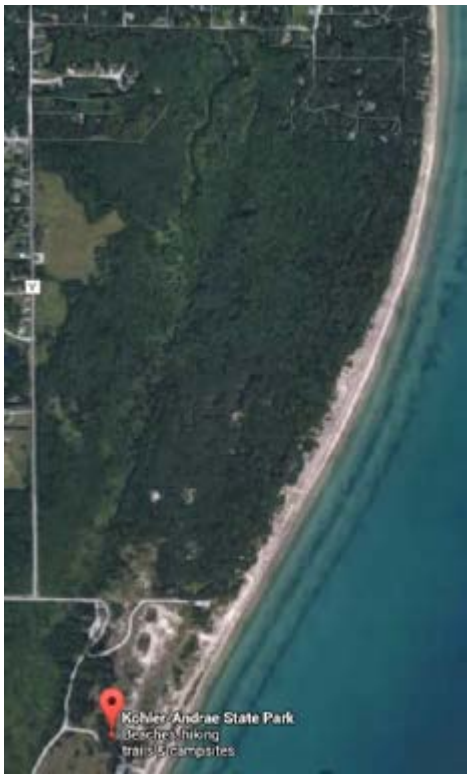
My qualifications to do so include a Ph.D. in Land Resources from the UW-Madison, numerous visits to the adjacent Kohler-Andrae State Park and other shoreline natural areas over several decades, leading a Water Resources Management Practicum (Nelson Institute, UW Madison, 1998) which surveyed all the coastal wetlands in Manitowoc County, and teaching the Wetland Ecology course at UW-Madison since 1995. A copy of my CV is attached. To better understand the process by which data were collected and conclusions reached, I reviewed all the documents available to me in chronological order.

My conclusion is that, with respect to the wetlands, sufficient information has been collected to show that there are many wetlands of significance on the site and that the proposed development will have a serious negative effect on almost all of them, either directly or indirectly. The results presented in the WRAM assessment (Appendices E and F) of the Stantec report reached this same conclusion.

In the body of the report, however, the authors report only that "The project will result in less than 5 acres of wetland impacts…" and "Wetland mitigation is planned to offset all wetland impacts, resulting in a net increase in wetlands." They speculate that the wetlands lost here may be replaced by purchasing mitigation bank credits," if available" at another site that has been "proposed."

In contrast to the solid information found largely in the appendices, the report reads less as compilation of that information meant to inform the public and regulators but rather as a public relations piece which touts the putative economic benefits of the project and downplays or ignores the known and/or likely environmental impacts.

For a dose of reality on the magnitude of this project, readers who have never been to the area should go to *Google Earth* and see what the area looks like today, then look at the proposed finished project on page *vi* of the report; or, scroll up the coast to two miles north of Mosel to see the Whistling Straits Golf Course to which the text often refers:



Site in current condition Site with proposed golf course Whistling Straits golf course

The reality is that the proposed project will drastically and permanently alter the landscape and ecology of this large remnant of minimally-disturbed lakeshore habitat, and no feasible amount of avoiding, minimizing, IPMing or BMP's will change that fact. It is simply not possible to rearrange the landscape, add vast quantities of imported soil and water and the other infrastructure needed to grow and maintain the many acres of exotic grasses, added roads, hospitality structures, hundreds of clients per day along with those who tend to their needs, and expect to preserve much of the original landscape, rare habitat and its denizens. DNR needs to look at all the individual risk factors associated with this project individually but also consider their additive and cumulative consequences because that is what the habitat and landscape receive.

Specific Comments on the Stantec Environmental Impact Report

Page vi – This graphic should be paired with a "before" image to show the magnitude of change proposed. The later Figure 9E (p. 80) is of such poor resolution that it obscures most of the topography and locations of smaller wetlands that will be impacted. A very sharp plotting of the wetlands on a high-resolution topographic map was included in the Excel report of 9/11/2014 on page 11. I found no comparable map in the 2015 report.

2.2.2 – Here the report reveals that shallow groundwater may occur within three feet of the surface but promises to construct a private septic system that will prevent "adequate separation" from groundwater. In the sandy soils present here and with the large numbers of customers and staff using the facilities, is this really feasible? How long will such a system function, what will be the consequences for the "seepage wetlands" described in the report? The DNR should evaluate where this "seepage" comes from now and how it may be affected by water quality changes likely from a "domestic sewage system." Since the clubhouse area will likely generate the most septic water, how does that interact with the inter-dunal and ridge and swale wetlands found in that area? These are low-nutrient wetlands, and a small change in that status could result in a complete change of vegetation type or a shift toward more exotic vegetation.

2.2.4 - This section consists of just four sentences, which tell us that "only" five acres of wetlands will be lost, they are not quite sure where yet, and that they will be replaced by more than that number somewhere else. No mention is made of any secondary or indirect effects such as altering infiltration rates, leaching of nutrients, herbicides and pesticides, runoff into sensitive wetlands etc. There are many acres of wetlands on this property, most of them associated with the Black River, and very little development is proposed to affect those. I must presume then that the major impacts on wetlands will be to the rarest types, the seepage swamps, ridge and swale and interdunal wetlands of which there are not many acres and which are small or thin and thus have high edge values, which increases susceptibility to disturbances and alterations. These are likely the same wetland types which are most susceptible alteration of groundwater quantity or quality changes. The DNR should examine these likely impacts in the EIS.

2.3.6 - BMP's and IPM are meant to reduce damage, and they certainly should be followed; nonetheless, they do not eliminate the side-effects of toxic chemicals or the ecosystem-altering effects of adding nutrients to an oligotrophic plant community. Sometimes they are very successful, and sometime not. They are particularly difficult in sandy soils, as admitted later in the Stantec report. There are often conflicts: the Best Management Practice which quickly takes care of runoff by infiltrating it may be the worst BMP for groundwater. That Kohler uses X percentage of the maximum allowable amount of Y nutrient or pesticide at another golf course provides me no information as to what is likely happen to the rare communities present here. The DNR should study the proposed BMPs and IPM to determine their effectiveness at this site.

2.3.7 - The irrigation issue highlights the unnaturalness of the proposed development within the natural landscape setting. The native plants are quite able to tolerate extended drought but the mostly exotic grasses of the fairways and greens will need frequent watering through much of the summer. Despite the claims that precision watering systems will prevent leaching through the imported soils into the sandy native soils and on down to the wetlands, I am skeptical that this is quite so easy.

Creating an isotropic unit with a bulldozer is very difficult, and aspect (receiving more or less solar energy because of differing slopes) matters for ET (evapotranspiration). If all the nutrients stay in the root-zone reservoir, soon there would be no need to add fertilizer each year, as nutrients would just be recycled. That does not seem to happen at any golf course with which I am familiar.

2.3.8 - This section on Storm Water Management is quite puzzling and should be quite a challenge given the claims put forward in section 2.3.6. Currently, there is very little runoff from the site during the thawed season because the soils are thin and sandy in most places. The requirement that section 2.3.8 claims will be met is to infiltrate 90 per cent of the pre-development rainfall from runoff with no less than 80 per cent of the Total Suspended Solids removed. If 20 per cent of the suspended solids are allowed to be infiltrated, we can assume that likely nearly 100 per cent of the dissolved nutrients and many of the other chemicals will be infiltrated. This is in direct conflict with the claims of 2.3.6 above. The EIS must examine these contradictory statements and the actual environmental impact of stormwater, infiltration, and chemical use.

3.2.3 - This section does a good job generally describing the wetlands found on the site and reveals that 6 of the wetland types have high functional values and three are degraded. Unfortunately, Figure 7 (p. 73), which shows the placement of the plant communities is completely redacted even to the labels. Nonetheless, this information is available in Appendices E and F. With much effort one can find that the high quality plant communities include those classified as inter-dunal, ridge and swale and seepage swamp. Further digging into the WRAM data reveals that these communities are rated as highly likely to be impacted by the project. Here a map which would overlay these communities with the project alterations would be useful; but, lacking that convenience, it can be deduced from comparing Figure 6 (p. 72) and Figure 9E (p. 80) that the major impacts on wetlands will be mostly on the rarest types, which are generally still high quality.

4.5 - While the report continually refers to mitigating, reducing and minimizing impacts, this section only mentions the direct conversion of wetlands and makes no mention of potential secondary and indirect impacts to wetlands except “decreased floral diversity”. The DNR must consider all impacts as to their likelihood, magnitude and to what extent it is feasible to avoid or significantly mitigate their impacts. Mitigation is sometimes helpful but not when its only effect is that the habitat and species degrade a bit more slowly. In this section, the report acknowledges that negative effects will include “Decreased wetland function (wildlife habitat, floristic integrity and groundwater).” These generic negatives need to be spelled out in detail and investigated thoroughly.

This section (Environmental Effects and their Significance) makes no mention of the primary negative effect – alteration of the major landscape, soil and habitat type of much of the property. Essentially this project is an attempt to transform much of a long-established xeric landscape, plant and animal community into a cool-season grassland growing on a veneer of imported soil. The inputs required to create and maintain this unnatural pairing will certainly favor the new community and disfavor the remnant community. An example is the irrigation pond, which is touted as a positive impact. It is hard to believe that there is no mention of secondary effect of green grass and the secondary effect of a pond on attracting nuisance geese. These geese, in turn, spread nutrients wherever they roam and feed not just on lawn grass but also adjacent green vegetation. Anyone familiar with xeric habitat knows that they generally “green-up” early and spend much of their summer dormant. These could be attractive targets for a goose population.

This section makes no mention of the precedent that allowing a landscape transformation in an environmentally rare and sensitive area will provide. Whistling Straits set a partial precedent when they cut down the bluff to create the course; however, in that instance, there was not an extensive rare habitat, a State Park and a State Natural Area involved. If this project is approved, it will certainly send the message that any well-funded project that promises economic benefits need not worry about it effects on the environment, however severe.

5.1 to 5.3 - The most disturbing part of the report I encountered was section 5.1 to 5.3 which purports to evaluate the significance of short- and long-term primary, secondary and cumulative environmental effects. There are a few phrases that admit some negative effects; however, the bulk of the text touts non-environmental items, takes credit for not coming up with a worse plan and takes credit for the efforts of others. One example is claiming as a positive benefit of this project "protecting rare species –redacted—" (p. 58). Since much of the footprint of the golf course is in the zone identified as "rare species habitat,"clearly this project will negatively affect some rare species and their preferred habitats; the information presented indicates so, but in a classic example of "double-speak" it is turned around here to make it sound as though putting in a golf course will benefit rare species. An example of taking credit for the efforts of others is, "…given that the State Park is protected land. This will allow for continued protection of habitat and endangered resources in the area, reducing the cumulative effects to regional populations of flora and fauna." A truthful statement would be, "this project significantly and permanently adds to the cumulative impacts on certain rare species in the area by reducing the size of an existing contiguous block of rare species habitat.

An EIS is supposed to contain an assessment of the degree of risk and the amount of uncertainty in their assessments. I see no such text in the document. There is only a brief statement that risks will be "minimized."

Concluding Comment

I began my college teaching career nearly three decades ago helping teach a class titled, "Environmental Impact Analysis." In addition to studying methods, we discussed some law, particularly NEPA and WEPA. In my subsequent Wetland Ecology class, we also discuss these two laws. I always emphasize that, in contrast to federal and state statutes and administrative codes, these two laws are not regulatory but rather are intended to reveal as much information as practical concerning an "action" that may result in environmental degradation. The result is supposed to be better decision-making by agencies that enforce laws and regulations and better understanding by the public of what the consequences of certain actions may be. The process works best when there is diligent investigatory work and truthful interpretation of the results of that work.

Were I to grade this EIR, I would give it a B+ for investigation (though much of the source material is not provided) and a D- for communication of the results truthfully. Missing from the investigation was information on the geologic and landscape setting in terms of recent glacial and post-

glacial events which created this unusual area. In addition, some of the hydrogeology information was rather vague (what aquifer will the irrigation water come from?). Missing from the communication aspect of the report was any sense of responsibility to reveal the magnitude and permanence of the alterations proposed, work which the DNR must now perform in its EIS. The reality is that the proposed project will drastically and permanently alter the landscape and ecology of this large remnant of minimally-disturbed lakeshore habitat, and no feasible amount of avoiding, minimizing, IPMing or BMP's will change that.

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24 July 2015

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A. PROFESSIONAL PREPARATION

The Ohio State University	Broadfield Biology Education	B.S.	1969
University of Wisconsin-Madison	Land Resources	M.S.	1989
University of Wisconsin-Madison	Land Resources	Ph.D.	1995

B. APPOINTMENTS

2001- **Senior Lecturer, Nelson Institute,** University of Wisconsin, Madison.
1993-2001 **Lecturer, Institute for Environmental Studies,** University of Wisconsin, Madison.

C. PUBLICATIONS

Bart, David, Matt Simon, Quentin Carpenter and Stephanie Graham. 2011. Historical Land Use and Plant-Community Variability in a Wisconsin Calcareous Fen. Rhodora: vol. 113, no. 954, pp. 160-186.

Kurtz, Abby McDermott, Jean M. Bahr, Quentin J. Carpenter and Randall J. Hunt. 2007. The Importance of Subsurface Geology for Water Source and Vegetation Communities in Cherokee Marsh, Wisconsin. Wetlands: 27:1 pp. 189-202

Kercher, Suzanne M., Quentin J. Carpenter and Joy B. Zedler. 2004. Interrelationships of Hydrologic Disturbance, Reed Canary Grass (Phalaris arundinacea L.) and Native Plants in Wisconsin Wet Meadows. Natural Areas Journal 24 (4)

Amon, J. P., C. A. Thompson, Q. J. Carpenter and J. Miner. 2002. *Temperate Zone Fens of the Glaciated Midwestern USA.* Wetlands. 22:2 pp. 301-31

D. SYNERGISTIC AND EDUCATION ACTIVITIES

Memberships: Ecological Society of America, Society of Wetland Scientists, Natural Areas Association

Reviewer: *Wetlands, Restoration Ecology, Plant Ecology, Applied Vegetation Science, Diversity and Distributions*

Course development: Designed and still teach two field-oriented ecology courses for the Nelson Institute. The first (in 1993) gives primarily undergraduates experience in designing and executing field ecology research for a real "client," and the second (in 1995) provides upperclass and graduate students the basics of wetland ecology with an emphasis on systems and the potential effects of climate change.

E. COLLABORATORS AND OTHER AFFILIATIONS

(i) Collaborators – I have worked most closely with Joy Zedler (Botany), Jean Bahr (Hydrogeology) and David Bart (Landscape Architecture) -- all are at University of Wisconsin, Madison

(ii) Thesis Advisor —I have served on numerous M.S. and Ph. D. committees at the invitation of students conducting research in wetlands. All were at University of Wisconsin, Madison

(iii) Outreach -- I frequently advise and cooperate with individuals at the Wisconsin Dept. of Natural Resources, TNC and other NGOs on wetland research, policy and management.