

Toward a TMDL for the Lower Fox River Basin:  
Findings from Facilitated Stakeholder Meetings and Interview Research

Report to the DNR  
March 2008

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## **Abstract**

During October, November and December 2007, a series of facilitated stakeholder meetings and phone interviews were conducted with individuals from several key groups, including farmers, crop consultants and state, county and local agency staff. The purpose of these contacts was to better understand factors that would facilitate the implementation of a Total Maximum Daily Load (TMDL) plan for the Lower Fox River basin. Among other findings, data from these meetings suggest that a one-size-fits-all approach toward reducing nonpoint source phosphorous and sediment is less likely to be successful than approaches that target best management practices and tailor solutions to individual farms. Additionally, public education and outreach is viewed by stakeholders to be a basic foundation in the progress and success of the TMDL. Furthermore, stakeholders want the process to be fair and open, and the solutions to be distributed proportionally among point and nonpoint sources. This report provides an overview of the TMDL process, findings and recommendations for implementing the TMDL.

## **Introduction**

The goal of developing a Total Maximum Daily Load (TMDL) for a water body is to attain designated uses and maintain water quality standards (Houck, 2002). The Wisconsin Department of Natural Resources (WDNR) is responsible for determining which surface waters fail to meet water quality standards, based upon the designated use of the water and the current level of technology-based effluent and other controls. Section 303(d) of the federal Clean Water Act directs each state, territory, and authorized Indian Tribe to submit a list of waters within their jurisdiction considered impaired to the U.S. Environmental Protection Agency (EPA). Once a list of impaired waters is approved by the EPA, states are required to submit TMDLs for pollutants causing the impairment.

A TMDL determines the maximum amount of pollutants that can enter a water body and still meet water quality standards. For many impaired waters across the country, TMDLs require reductions in pollutants from point sources (waste load allocations) and nonpoint sources (load allocations). The state submits its TMDL plan to the EPA, and the agency reviews and approves the TMDL.

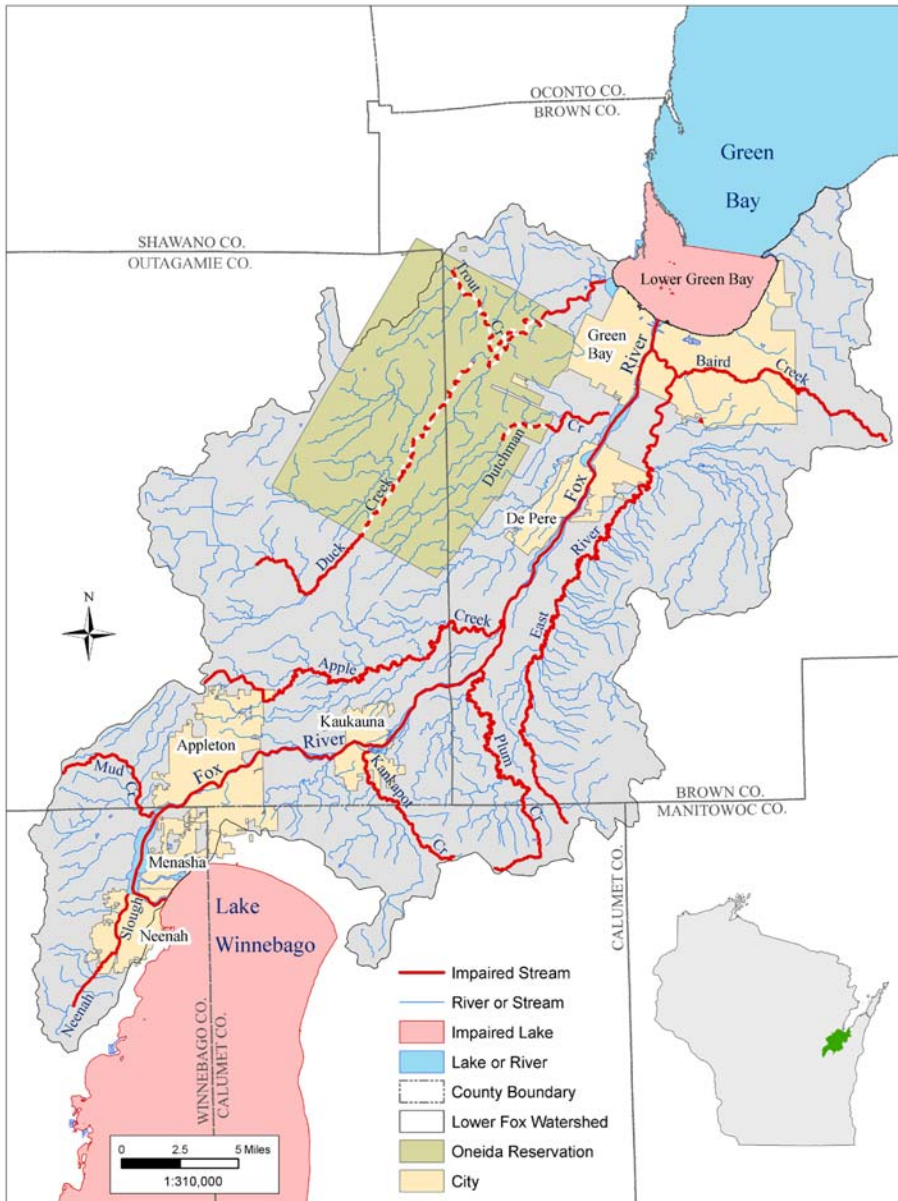
In 2002, the WDNR listed the lower Green Bay and lower Fox River on Wisconsin's 303(d) impaired waters list for phosphorus (P) and polychlorinated biphenyl (PCBs) (Helmuth, 2003; WDNR, 2005). In addition to the Fox River itself, creeks and tributaries that have been identified as impaired for phosphorous and total suspended solids (TSS) include: Apple Creek, Baird Creek, Duck Creek, Dutchman Creek, East River, Kankapot Creek, Mud Creek, Neenah Slough, Plum Creek, Trout Creek and lower Green Bay. In addition, Ashwaubenon Creek, Garners Creek, and Bower Creek have been proposed for the 2008 Impaired Waters List.

Loading from P and TSS (such as soil, algae, and industrial waste) have long been recognized as having a significant impact on water quality in these waters (Harris et. al,

1993). Large amounts of phosphorous create algae blooms, which deplete the supply of oxygen in the water endangering fish and other aquatic life. Algae, as well as sediments and other suspended solids, reduce water clarity. Low water clarity, in turn, reduces underwater light, subsequently limiting the growth of submerged aquatic vegetation that provides habitat, food and oxygen for aquatic life and also helps reduce erosion.

As shown in Figure 1, the Lower Fox River basin occupies a 638 square-mile area in northeastern Wisconsin. The basin extends through four counties (Brown, Calumet, Outagamie and Winnebago) and most of the Oneida Nation Reservation. The lower Fox River remains the primary tributary to Green Bay, draining approximately 16,700km<sup>2</sup> (41 percent of the total basin area) (Millard & Sager, 1994). This system is a part of the much larger Fox-Wolf basin, which consists of the Wolf, Upper Fox, and Lower Fox River basins.

**Figure 1. Map of the Lower Fox River Basin and Green Bay.** The impaired segments (colored in red on the map) include: Apple Creek, Baird Creek, Duck Creek, Dutchman Creek, East River, Fox River, Kankapot Creek, Mud Creek, Neenah Slough, Plum Creek, Trout Creek, and Lower Green Bay. (WDNR, 2007)



The tributaries to the Fox River, the river itself, and the bay of Green Bay are important economic and environmental resources for communities within the basin as well as the state. Wetlands provide critical spawning habitat for perch, walleye, northern and spotted musky. Green Bay, as an inflow to Lake Michigan, is the largest freshwater estuary in the world. The Fox River and Green Bay support a wide range of recreational activities, including fishing, boating and hiking. The Fox River Trail is part of the State Recreational Trail system, and one of the most heavily used trails in the state. Large amounts of phosphorous (P) and Total Suspended Solids (TSS) have negatively affected

the river and bay for decades (Harris, 1993; Harris et. al, 2005). Thus, restoring the health of the river benefits multiple stakeholders and communities.

### **The timeline and approach**

Water quality concerns about the Lower Fox River and bay of Green Bay have existed for many years. In 1988, the WDNR first developed a Remedial Action Plan under the Great Lakes Water Quality Agreement for an area of concern (AOC) that included 21 square miles of the southern portion of Green Bay (running to Sable Point and Long Tail Point) and the Fox River upstream to the De Pere Dam. The plan was revised in 1993 (WDNR, 1993: xiii). Monitoring along the Fox River and AOC suggest that the amount of phosphorous and sediment entering the water continued to impair the health of the ecosystem despite controls on industrial waste water sources. Data show that phosphorous and TSS in the basin continue to exceed acceptable levels despite a long history of attempts to reduce loads. Further study on the sources of phosphorous and sediment into the Fox suggested that additional strategies would be needed that involved both point and nonpoint sources of phosphorous and sediment (Baumgart, 2005).

In 2005, the WDNR and EPA began discussions for establishing a TMDL for the Lower Fox River basin, using research previously done by the University of Wisconsin (UW)-Green Bay scientists and monitoring data provided by various sources, including the Green Bay Metropolitan Sewage District and the Lower Fox River Watershed Monitoring Program. Partners currently working on the TMDL plan include the WDNR, EPA, U.S. Geological Survey, UW-Green Bay, UW-Extension offices in Brown and Outagamie Counties, UW-Sea Grant, Green Bay Metropolitan Sewerage District, Brown County Land and Water Conservation Department and the Oneida Tribe (WDNR, 2007).

The TMDL process has four phases. Phase I of the TMDL was a preliminary exploration of the cost-effectiveness of agricultural management practices intended to reduce phosphorus in the basin. The Cadmus Group, an independent consultant, was retained under contract with EPA to conduct the Phase I study. Cadmus completed its report in August 2007 (Blake, 2007). This report was shared with all stakeholders participating in the facilitated meetings. Cadmus will next explore cost-effective strategies for industrial and stormwater sources.

Phase II includes several public information sessions to discuss key aspects of the TMDL. Separate stakeholder meetings are planned for individuals who may have an interest in the TMDL process, or who may be affected by the waste load or load allocations. These include individuals from municipal and industrial dischargers, stormwater officials, local communities, environmental groups, elected officials, and farmers.

Phase III is the development of the TMDL. In consultation with the EPA and WDNR, a consulting group (not yet determined at the time of this report) will prepare a draft report in late spring 2009 that includes target reduction amounts for phosphorous

and sediment. This report will be open for public comment for at least 30 days. After that time, planning for the implementation phase will begin.

Phase IV will be the implementation of the TMDL. Public involvement is central to identifying successful implementation strategies and in getting stakeholders to adopt these strategies.

Because active public involvement is considered essential to successful implementation of the TMDL, the Lower Fox River TMDL Outreach and Public Involvement Committee was formed from the partners. The outreach committee, in turn, decided to enlist the help of other interested individuals throughout the basin, and to better understand the concerns and recommendations of representatives from key nonpoint and point source stakeholders.

## **Methods**

The TMDL outreach committee ultimately identified four stakeholder groups for facilitated conversations during the first part of Phase II of the TMDL process: government agency staff (including federal, state, county, and local), operators of Concentrated Animal Feeding Operations (CAFOs) including near-permit farms (large farms that were close to permit requirement due to the number of their animal units), farmers with smaller operations, and crop consultants who assist farms of all sizes. Facilitated meetings with stormwater officials and local officials were deferred until later; a public meeting with point source dischargers was held in August 2007 with the release of the Phase I report.

Lists of potential participants were developed by the outreach committee, except for the list of farmers, which was obtained from the Wisconsin Department of Agriculture, Trade and Consumer Protection. Further additions and deletions were made to the lists after meeting with land conservation departments and other government and administrative staff. 185 introductory invitational letters were mailed to potential participants, with 221 follow-up phone calls conducted. Between October and November 2007, 46 people were interviewed for this study through facilitated meetings, telephone interviews, and questionnaires. Within this grouping of 46 people, 15 were agency staff, 15 were small farmers, 6 were from CAFO's or large farms, and 10 were crop consultants.

Nine stakeholder meetings were conducted; two meetings were scheduled for each stakeholder group, a third meeting offered to local producers due to their time constraints. Seven meetings were held in Green Bay, two meetings in Freedom (Appendix A). At each stakeholder meeting verbal comments were collected through written notes and then transcribed to computer. Questionnaires were handed out during the meetings and collected. A "homework" questionnaire was also distributed during stakeholder meetings and these were completed and returned by mail. Follow up emails were sent out shortly after each meeting with a reminder and request for additional feedback; for convenience sake, questionnaires were attached.

In October, letters of invitation to stakeholder meetings were mailed to 84 local producers. Two weeks after the letters were mailed follow up phone calls were made. Most local producers were difficult to reach. October and November was harvesting time; many farmers were too busy to attend the meetings. Of the three meetings that were conducted specifically for small farm owners, two farmers attended one of the meetings.

To increase participation, phone interviews were conducted with local producers. Phone interviews were done using the same list of farmers as the mailing. Names were eliminated due to phone disconnections, unknown phone numbers, farmers who were deceased, or people who did not want to participate in the phone interviews. After deletions, 67 local producers were contacted in over 120 phone call attempts. Thirteen complete phone interviews were conducted successfully. Phone interviews ranged from 20 to 30 minutes.

Facilitated stakeholder meetings lasted between 90 to 120 minutes. During the course of each meeting the facilitator introduced the TMDL process, which included an overview and description of the TMDL as well as websites that could be accessed for more complete and detailed report information (Appendix B). During roundtable discussion, participants were encouraged to respond to a series of questions. Detailed notes were taken by a researcher during the course of the meeting. Dedicated time was allotted during the meeting so that each participant would also have the opportunity to contribute written comments on the distributed questionnaires. This provided the added benefit of incorporating not only oral comments but also individual written comments and allowed for further diversity in individual perspective and understanding as well as laying down a deeper foundation of qualitative data.

A second survey was also distributed during the meeting and the participants were encouraged to answer the questions at their convenience and return their comments in the addressed-stamped envelope provided. Most survey questions were open-ended and allowed respondents the freedom to give detailed comments.

Additionally, once all comments were collected, a draft and second draft of the findings were sent to participants asking for their feedback. Nine comments were received, and those comments were incorporated into the final report.

In order to gain a better understanding of how often issues/concerns were raised, and if these concerns varied by stakeholder type (crop consultants, agency staff, large or small operators), a content analysis was performed on the transcribed notes from the meetings (Appendix C), the written responses to the hand-outs (Appendix D), and telephone interviews (Appendix E). The next section reports the findings from these data.

## **Findings**

It is important to note here that these comments and views are from a limited sample of watershed stakeholders. It is not our objective, nor our intent to portray the following findings as indicative of the comprehensive and complex concerns, issues and opinions that may be found within the greater population of the Lower Fox River basin. It is our objective, however, to put forth some of the greater themes and dominant ideas that are to be found within stakeholder groups. These themes and ideas may in turn lead to a better understanding of some of the issues that would constrain the success of the Lower Fox River Watershed TMDL.

### **Concerns and Issues**

Participating stakeholders represent differing viewpoints, backgrounds, and experiences. While not all stakeholders consider the same issues significant, or with the same level of intensity, several themes emerged when participants were asked about concerns they had regarding the TMDL process.

Table 1 lists the key concerns, issues, and obstacles voiced by respondents. The first column lists common issues or concerns identified by participants. Subsequent columns record the number of times the concern was voiced by participants in each category, as well as the percentage of respondents from the category who identified the issue.

<b>Table 1. Concerns/Issues/Obstacles</b>	<b>Agency<sup>1</sup></b>	<b>(%)<sup>2</sup></b>	<b>Farm</b>	<b>(%)</b>	<b>CAFO</b>	<b>(%)</b>	<b>CC</b>	<b>(%)</b>
The process will be unfair; requirements will be made without consulting stakeholders	<b>20</b>	<b>60</b>	<b>6</b>	<b>80</b>	<b>5</b>	<b>70</b>	<b>10</b>	<b>75</b>
Costs will be burdensome	<b>27</b>	<b>80</b>	<b>9</b>	<b>90</b>	<b>9</b>	<b>50</b>	<b>33</b>	<b>90</b>
Strategies will not consider on-the-ground situations of particular farms	<b>19</b>	<b>60</b>	<b>25</b>	<b>90</b>	<b>24</b>	<b>90</b>	<b>51</b>	<b>90</b>
Staffing/funding will be inadequate	<b>18</b>	<b>80</b>	<b>1</b>	<b>-</b>	<b>0</b>	<b>-</b>	<b>1</b>	<b>-</b>
Strategies chosen will fail to use incentives/regulations already in place	<b>18</b>	<b>50</b>	<b>7</b>	<b>40</b>	<b>6</b>	<b>70</b>	<b>8</b>	<b>65</b>
The process will not be practical or cost effective	<b>12</b>	<b>80</b>	<b>31</b>	<b>90</b>	<b>11</b>	<b>90</b>	<b>29</b>	<b>75</b>
Manure is not properly managed now; land application issues will not be resolved	<b>21</b>	<b>80</b>	<b>14</b>	<b>80</b>	<b>20</b>	<b>70</b>	<b>20</b>	<b>70</b>
Over-concentration of cows on available land	<b>8</b>	<b>50</b>	<b>4</b>	<b>25</b>	<b>6</b>	<b>65</b>	<b>21</b>	<b>60</b>
Poor science; inaccurate understanding in measuring/allocating loads	<b>10</b>	<b>20</b>	<b>3</b>	<b>10</b>	<b>4</b>	<b>50</b>	<b>11</b>	<b>25</b>

n=46

<sup>1</sup> Groupings as follows: staff from local, county, and state agencies, Agency; small farmers, Farm; large, permitted farms and near-permit farms, CAFO; crop consultants, CC. Column amounts reflect the number of mentions.

<sup>2</sup> Percentages represent the number of respondents within the category who mentioned the concern, rounded up.

## Fairness and equitable treatment of all stakeholders

As shown in Table 1, a common concern among stakeholders from all groups is that the process of allocating loads and making decisions about implementation strategies be fair. Nearly three-fourths of participants mentioned this as a concern, and it came up often during conversations with all stakeholder groups. This concern over fairness, however, was expressed within a complex range of related issues.

First, fairness had to do with perceptions about unjustly focusing on agriculture for land management changes. Some participants commented strongly that finger pointing at the farming community does not eliminate other contributing factors for phosphorous and sediment loading such as unregulated urban fertilization of lawns and urban construction sites. The perceived inequity between highly regulated farmers and unrestricted land owners in urban settings was an oft-repeated concern among participants connected to agriculture, and elicited many comments about the perceived injustice of the situation. As noted by one farmer, “It’s frustrating [for me] having a crop consultant [monitoring soil phosphorous] and someone else can just put fertilizer all over their lawn without having the soil tested, without paying attention to how much [fertilizer] they should actually use.” Another observed, “We don’t want to single-handedly shoulder the burden; farmers need to feel that they are not the only ones singled out to do more.”

“More government regulations without proper farmer involvement will not only alienate farmers from the process, but will also cause frustration and backlash for the ‘rural’ portion of the TMDL process.”

Conversely, comments from point sources during the August meeting reflected the opposite perceptions. Here, point sources’ comments argued that most of the P and TSS were from nonpoint sources and they feared unfair treatment as a result of their regulatory relationship with the DNR.

Crop consultants also expressed a concern regarding equitable treatment for farmers, as illustrated by this comment: “[Farmers] want to know that they are not being singled out – how come Milwaukee Sewage is allowed to dump into the lake [Michigan] but agriculture is analyzed?” Some participants representing government agencies agreed: “They’re putting 250 pounds of potash ash [on the lawn].... Citizen Q is out putting this stuff on a half-acre of lawn – and it goes right down to the storm sewer [and the] drainage system” and also, “agriculture is minimizing their contribution but residential [use of phosphorous] is increasing...” Although agency participants generally agree with these equity issues, some agency staff felt that farmers could do more to control phosphorous and sediment run-off, and indeed have it in their power to do so, simply by following their nutrient management plans.

Concerns about fair treatment, however, go beyond just an urban-rural dimension. A second dimension focused on farmer-to-farmer comparisons. Farmers who felt that they were already practicing good management strategies did not want to be penalized for their early adoption of stewardship practices. Several farmers noted that they had not received incentive payments or they were denied incentive payments because they were early in adopting best management practices. As one farmer put it, “If I wait until tomorrow, I won’t have to pay for it [best management practice]. If I just wait long enough, I’ll be paid to make changes.” Furthermore, several farmers did not want to be grouped with those farmers that they characterized as bad actors—farmers who did not manage manure properly or who permitted run-off from their land. As characterized in a written comment: “...rewarding those that have been doing best management practices are as important as identifying those that are not.”

There was also some concern about the treatment between permitted and unpermitted operations in the agricultural community. A few large dairy farmers believed that they were subject to considerably more control than their unpermitted counterparts, and expressed concern that their operations would be the focus of any efforts to further control phosphorous or sediment. One farmer noted, “I know what our level of phosphorous is [in the soil] because we test it every year. Are they policing non-permitted farms? My neighbor just dumped his manure on the ground and it ran into our creek.” Another individual running a permitted farm observed, “The DNR visits us, but there’s no regular check-up on small farms.” Permitted producers are also concerned when they see small farmers allowing their cows to graze into tributaries and creeks, a behavior that would not be tolerated by permitted farms.

On the other hand, producers operating smaller farms were more likely to see the size of large dairy farms as problematic, noting issues of carrying capacity for cows, the increasing density of cows on large farms, and the pressure to sell or rent their land to ever-expanding large farms. Brown County has the highest concentration of dairy livestock per acre in the state, with 1.61 acres per cow (compared to Outagamie with 2.47, Calumet with 2.32 or Door with 4.03) (Brown County, 2005).

Constant expansion leads to smaller producers selling or renting their land to large farms, which in turn leads to less area for farmers to land apply their manure. Besides this, equity concerns were raised, too, regarding the ability of smaller farms to absorb costs that may be associated with new management practices. While large and permitted farms are more capable of investing in new equipment, new technologies, and new methods for long-term investment, small farms are less able to do this without financial assistance.

As a final point, agency stakeholders observed that equity issues exist between point and nonpoint sources. Traditionally seen as honorable, and the heart of America, the public’s perception of farming and agriculture is changing as media turns the spotlight on to serious agricultural concerns such as antibiotic use on animals, factory farming, indiscriminate use of pesticides and herbicides, and other environmental problems. Now,

with increasing concern over P and TSS, producers are shouldering even more environmental responsibility.

Indeed, agriculture in Northeast Wisconsin may be gearing up to face dramatic attempts at stabilizing P and TSS loads. According to Blake's pollution reduction report, "applying a 50% reduction to all source categories may not be the most cost-effective strategy, as agricultural BMPs achieve the greatest phosphorus load reductions at the lowest cost" (Blake, 2007). Some would argue that agriculture should be all the more seriously held to accountability. A local business owner put it this way, "it kind of makes me angry when they say to offer farmers money to change their practices. I think that they (the farmers) should come up with cost effective ways to stop their polluting practices. I have been in business for a long time now and would love to have someone pay me to implement all of the regulations that have been placed on me over time!"

### Economic forces

A second concern voiced in stakeholder meetings is the importance of economic forces that affect the actions and behaviors of all farmers. As noted above, farmers running a business take into account the market values of land, crops, fertilizers, fuel, equipment, animal units, as well as many other values and economic forces. Farmers believe it is often in their best economic interest to buy more land and increase their animal units.

Buying available land puts pressure on land values, increases the competition for rental land, and increases issues associated with land application of manure. Small and medium farms, however, may find it more difficult to expand than large operations. One crop consultant felt that with the recent strength of milk prices, larger operators have more borrowing power and may be willing to overpay for land that they think is necessary to expand their operation. When a small farmer decides to retire, the land may be sold or rented to a neighboring CAFO, which has plans for expansion or needs additional land for manure spreading.

As one crop consultant observed, "I can tell you from farm calling that the medium to small farm owners resent the large farms for several reasons. Land purchase prices and land rent prices have seen substantial increases in the last ten years. They [smaller farms] resent pricing structures that favor volume. They also feel regulations are costing them more."

Another crop consultant agreed, but noted that this trend may sometimes work to the benefit of the small farmer:

"I don't believe that the large farms are forcing out the small and medium sized farms in my area. In fact, I believe that in some cases the large farms have helped keep smaller farmers farming. Every time a dairy farm expands there are a few small dairies that decide to sell their animals but most of the sellers had no long term plans to milk cows. They used the expansion as an opportunity to sell their cows at a strong price. They then often continue to farm their land and sell the crops to the dairy. This cash

cropping would not have been profitable if they had to sell their crops as grain....I also see the small farmers copying the CAFOs in some respects. The 75 cow, 300 acre farmer that wants to bring his kids into the farm is no longer planning on expanding to 150 cows and 500 acres. They now build a 300-500 cow barn with a parlor that can be expanded and work with other farmers that will supply them with feed and land for manure spreading.”

Some large operations are actually partnerships of two or more smaller farms that expand as one facility. According to a crop consultant who listed a few in the Lower Fox River Basin, this partnership allows the farmer with “cow skills” to specialize, the farmer with “crop skills” to specialize, so they work together as a team and enjoy the economies of scale.

An agency official, however, was less inclined to see a benefit for small farms: "If you look at the dynamics of the area, you'll see the falling apart of small farms and the swallowing up of those farms into large farms. The price is right for small farms to sell their land."

Some participants see state laws and regulations as reinforcing the move to larger operations. As one governmental official noted, "We've allowed dairies to get large without a realistic picture of how it [the expansion] will impact the area. Somehow we have to change this - it makes too much economic sense to get big - government makes it in their [farmers'] interest to keep expanding."

### Cost effectiveness

Economic forces described above point to a related concern voiced by more than three-fourths of participants representing the agricultural community. Simply stated, their concern is that attempts to reduce phosphorous and sediment loading into the Fox River will not be cost-effective or practical for them to implement. Any recommended process or change in practice should make economic sense in order for farmers to willingly put the new practice/strategy to use. Time and again, participants emphasized that farmers are not likely to use methods that are not practical for their individual operation. Comments included:

"In implementing conservation programs, you have to look at how cost effective it is--you have to consider the fuel costs, the fertilizer costs--why wouldn't you want to be more cost efficient?"

"If you can show them [farmers] that it's worth their while in fuel prices and cost effectiveness...these incentives work better. If there is no carrot at the end of the stick then one needs to be provided. If it's beneficial (for a multitude of stakeholders, such as the public) then there should be some payment [to farmers]..."

"Smaller farms are struggling economically....saving them money is an instant buy. If it's cost effective or makes money, they'll do it."

"It is economics, they save money by reducing the phosphorus in fertilizer."

"[We're] never going to attain clean water for environmental purposes, [we] need to clean water by economics to be the driver."

### Manure management

Concerns often voiced during meetings and interviews included comments about proper manure management, land application methods, manure storage, and the ability of applicators to effectively and efficiently manage manure.

Sometimes, this concern was expressed as an issue for smaller farms. As one participant noted: "This [phosphorus and sediment load reduction] is affecting the small to medium farms, not the large ones. You don't see cows by the stream on the large farms. Larger farms have the incentive to be cost effective and they have to spread the manure using a professional applicator."

More often, the issue associated with land application of manure was one of transportation logistics. Producers see advantages in applying manure to local land rather than transporting it to fields that lie farther away. Some farmers voiced concern that this created the problem of over-application of manure to the same fields. Observed one participant: "Step on those farms that don't have enough land to spread the manure on. The DNR will not touch [regulate] over-application of manure. Farmers don't have enough usable land so they have to spend money on hauling it—but they won't. They'll over apply it to the land that is closer so they don't have to haul it."

Several famers described current regulations regarding the land application of manure as difficult. One complained that "We're busy adding more storage space because we can't haul on frozen ground. But if the ground is saturated already and we get a wet fall, we can't spread it - you've got that 72 hours or less rule. And what about slope - the erosion - we're on flat ground so we're not as affected as some other farms that lie on a slope." One noted, "My cows are healthy and they have thick manure - it won't run - the liquid stuff is always running off the land."

Another crop consultant stated, "We have been telling the CAFOs to increase their land base to deal with soil P (phosphorous) levels for about seven years. Now that the regulations have caught up, I have four CAFOs that will be cutting manure rates by 50 percent or more on 400-450 acres each where the soil test is above 50 parts per million (ppm). Most of them won't rent land without a soil test, and won't rent it if the soil P is too high."

Surface application of manure is also a concern. Crop consultants and producers felt that some professional applicators have an economic incentive to apply manure as

cheaply as possible (surface spreading) rather than using incorporation or injection. Injection and incorporation are preferred for reducing phosphorus and sediment loads, since they may lead to less run-off than simple manure spreading. Surface application without incorporation allows the ammonia forms of nitrogen to volatilize, meaning that higher manure rates (lower spreading costs) are possible. Surface application also means that manure is more exposed to runoff-causing conditions, with the likely result of more sediment and phosphorous loading.

According to comments made by farmers, professional applicators vary in the way they do their job. "Some spreaders are sloppy; somehow we have to make sure the applicators are doing a better job." "I'm ashamed of some of the practices of some manure spreaders." Reputable applicators are conscientious and sensitive to environmental issues. But, there are applicators that may have a spill and not report it; and there are applicators that are irresponsible in their hauling and spreading practices. Some farmers are concerned because they've witnessed all three types.

"We take pride in our community. We have a neighbor who applies his manure on top of the field right before a rain. We don't want to be the bad guy and report him, but it would have gone through our farm's ditch, so we had to talk to the DNR....there are different types of conscientiousness among farmers."

Seldom, however, are farmers willing to report poor practices of applicators. While they don't want to be blamed for others' mistakes and behavior, neither do farmers want to report the applicator because generally they all live in the same community.

Hand in hand with concern over manure management is the concern over the diminishing ability to manage an increasing number of cows, especially in Northeast Wisconsin. Current economic pressures, as previously mentioned, may encourage farms to increase their land size and herd size. Limited space and increasing herds are a concern to all stakeholders and they are aware of impending problems, "The big one that concerns me is what are we going to do when we get too much rain? We follow all of these procedures and what if it's September and my pit is full? I have no more space, I can't spread for six months, and you can't clothespin a cow - where are you going to go? To the city and pay for storage?" One participant stated, "The real problem in this area is not urban sprawl - it's the land concentration. They're cut-throating to get land to get the manure out cheaper." Another noted, "The fields are taken away for buffer strips, but we need more ground to put manure on."

#### Communication, collaboration, cooperation

A major issue voiced in all meetings and by nearly every participant and interviewee was the need for maintaining open communication with members of the agricultural community and involving them in decisions about implementing new policies or regulations. Agency stakeholders expressed concern that agencies not just regulate, but listen as well. "We need an ear to hear, develop our listening skills to bring them into the involvement process. They're not sure we listen to their comments. If we continue to act in an agency process we won't get the participation."

Collaboration and consultation with the producer before and during the implementation process was stressed by all groups. As one participant observed, "Inform us of the intent of the rule instead of cramming it down the farmer's throat." A written response put it this way: "More government regulations without proper farmer involvement will not only alienate farmers from the process, but will also cause frustration and backlash for the 'rural' portion of the TMDL process."

"We have to stop spending money on a practice that doesn't have great impact for particular farms. We need 'farm impact plans.' Maybe one farm needs stream buffers - another one needs nutrient management - another one just needs cover crops."

Individual contact with farmers or within farming communities was encouraged. Nearly every stakeholder noted that it is important to develop collaboration and cooperation using a strategy that works from the bottom up. There are two important reasons for this bottom-up approach. One reason is that it will be the farmer who must actually implement the changes and methods. Participants noted that buy-in from the farmer will occur if strategies first make good business sense and second involve the farmer in decisions about implementing the strategy. Another reason is that it will also be the farmer who can make sure the new policies will actually work. As wryly observed by one participant, "...do not waste your time developing plans for implementation which will later be put into rules [by agencies] - that will never be followed by any producers because they're not practical."

When asked how important is it for key stakeholders to be represented and involved during the TMDL process, a crop consultant responded: "Very! They will give you an indication whether one of your practices are practical enough to implement before you waste your time implementing something that will never get done."

As an agency official observed:

"If farmers, as well as other stakeholders, such as those in the cheese industry, are not included in the process they will not be vested in the outcome. However, if meetings are available and convenient in the TMDL process, and they [stakeholders] feel as though they have had ample input, they will be more willing to participate in any decision that is made. If efforts are made to include these opinions, but few farmers are actually reached, efforts should be expanded and reevaluated. Maybe town information meetings could be held that are more accessible for farm participants. Private agronomy and crop consultants should also be contacted about any suggested changes in nutrient management plans, since that group is generally a trusted advisor to agriculture."

### Individually-tailored solutions

Closely related to concerns about involving nonpoint source stakeholders in the development and implementation of new management techniques were concerns about the “fit” of the strategy for individual farms. Sometimes this was referred to as a form of “prescription farming,” or the knowledge of what will work best with individual farms. Here, instead of requiring one approach for all farms, tailor the approach to the land conditions of each operation. (Agronomists and crop consultants were highlighted as being very beneficial to this process.)

Participants felt that individual analysis on a farm-by-farm basis, instead of using blanket policies, would be most effective in implementing successful management practices. As shown in Table 1, 90 percent of participants from large and small farms as well as crop consultants identified this as a key concern. Stated one participant, "We have to stop spending money on a practice that doesn't have great impact for particular farms. We need 'farm impact plans.' Maybe one farm needs stream buffers - another one needs nutrient management - another one just needs cover crops."

### Administrative and implementation concerns

Though most agency officials agreed with the need for cost-effective strategies for farmers, as well as the need to work closely with individuals, they also identified some administrative issues. One major concern can be summarized very succinctly through a stakeholder meeting comment "It's a tiny little budget [for the county] – and way too many goals to accomplish."

Local and state agencies do not have the budgets or the staff available to do a decent job in regulating established policies, nor the ability to adopt more responsibilities in future TMDL plans, according to most agency stakeholders. In recent years, reduced budgets and staff cuts have made it more difficult for agency personnel to be effective, much less progressive, in conservation and pollution reduction.

Frustrations over lack of funding for programs and lack of staffing to implement new initiatives came through repeatedly during stakeholder meetings, and were mentioned by over three-fourths of the agency participants, as noted by the following comments: “All of these programs are implemented by county staff – land conservation staff needs money to implement the plans. County budgets are tightened with levy freezes and forced to reduce staff.” “We’re losing staff – how can we work toward implementation?”

Though less frequently mentioned than concerns about adequate staffing and resources, another concern that echoed throughout all groups was effectively using existing programs. For instance, one agency stakeholder stated "Cost sharing doesn't work when we don't have enough funds to cost share all the projects in a timely fashion" and another commented "[We need] money to implement the regulations we already have - and [we need to] reduce duplicative efforts." Enforcing regulations that are already on

the books, streamlining regulatory policies that are confusing, eliminating duplicative efforts between agencies, examining and reworking established, yet ineffective programs, and increasing collaborative effort between agencies were also mentioned as additional concerns.

As one agency official reflected, "...you have different agencies - state and federal, NRCS, the DNR - they're not always on the same page. The county tries to do good things....one county will try to enact added legislature due to local situations...it's not so easy....My concern is that maybe we should use what we have."

An emerging issue identified by two agency officials is the land application of waste by industrial operations in the basin. Companies that land applied waste in Brown County have grown, and include meat packing operations, cheese production facilities, wastewater treatment facilities, sanitation and septic services. The Natural Resources Conservation Service (NRCS) Code 590 states that "industrial wastes, byproducts, and municipal sludge must be spread according to the Wisconsin Pollution Discharge Elimination System (WPDES)" (NRCS, 2005). Yet these increasing sources of sludge and biosolids represent additional land applied wastes that should be closely monitored and regulated to ensure that agencies and departments maintain effective control and regulatory oversight, thus helping to minimize contributory impact to P and TSS loads.

For agriculture, Code 590 manages the amount, source, placement, form, and timing of the application of nutrients and soil. Also known as the DATCP rule, Code 590 lays out specific application and budgeting of nutrients for plants and requires consideration of all sources of nutrients (soil, chemical fertilizers, manure, crop residues, etc.). Some agency stakeholders have expressed concern over current standards that allow for manure application on soils according to nitrogen needs of a crop instead of controlling for P values. This management practice can elevate soil test P values and exacerbate P and TSS loads. Furthermore, the Lower Fox River basin contains higher percentages of clay soils, a characteristic which increases soil runoff. Agency stakeholders commented that reducing the soil phosphorus levels to 25 ppm should be considered. One agency official wrote "One suggestion mentioned at the meeting was to examine the current Nutrient Management standards/recommendations regarding "allowing" manure applications on fields where soil test P levels already exceed 50 ppm. If 25 ppm is optimum, why not use that value as the threshold?"

### Understanding the science

In all stakeholder groups there is an understanding and agreement that water quality is worth protecting. Often during meetings, participants would talk about the state of the water and express interest in improving it. About 20 percent of participants expressed some type of concern regarding the science of the TMDL. Some participants expressed confusion and doubt about how phosphorus and sediment loads are measured. Others wanted further explanation of modeling techniques presented in the Cadmus report; yet others disagreed that phosphorous and sediment reductions were possible. A few voiced concerns about the establishment of the TMDL, understanding relative loads between

nonpoint and point sources, the ability to deal with this long-standing problem, and the utility of various strategies identified in the Cadmus report. Many crop consultants and farmers were skeptical of the best management techniques in the stepped implementation framework produced by the Cadmus Group, which will be discussed in the next section.

These comments are illustrative:

“We’ve been talking about water quality issues for over twenty years. What makes this approach any different?”

"You need to identify vulnerabilities. What is realistic? Even wooded areas contribute phosphorus -- what is a realistic goal? There's been phosphorus in the bay for years, are we banging our heads for an unrealistic goal? Green Bay was Green Bay before farmers."

"What was the original baseline? It’s hard to know where we need to be...."

“How can we account for the upstream impact of Lake Winnebago?”

“Why doesn’t the model address storm water?”

"With stream bank erosion, how do we know it's not a good thing? Without stream bank erosion you wouldn't have the Grand Canyon. We don't actually know what should be happening versus what would be normal. With sediment load, how do we know that it's not something else that we are doing that is causing sediment load? If we reduce the salt content, does that affect the phosphorus? What is the interaction between all of these? Maybe it enhances the phosphorus load - we don't really know."

### Summary

Stakeholders expressed many different, complex concerns. Issues such as fair treatment among point and nonpoint sources as well as within nonpoint source groups; cost-effective strategies that make sense for individual farms; sufficient resources to implement programs; and careful review of professional applicators/haulers were commonly identified in stakeholder meetings and interviews. Key among agency officials was the provision of adequate resources to take on new tasks. Key among all groups was the concern that they be informed about the process, and be consulted in the development and implementation of the TMDL. The next section presents ideas for facilitating the TMDL as suggested by stakeholders.

## Reactions to the Optimal Scenario of Agricultural BMPs

Farmers and crop consultants were asked for their reactions to the section of the Integrated Watershed Report produced by Cadmus Group, Inc. that discussed agricultural best management practices (BMPs) and presented those BMPs in a stepped implementation process looking at the cost-effectiveness of each practice. The analysis used the Soil & Water Assessment Tool (SWAT) in conjunction with an Optimization Model (OptiMod) to compare 416 agricultural best management practice (BMP) scenarios, along with implementation costs, and identify the Optimal Scenario (i.e., cost-effective scenario) of BMPs that achieved the greatest phosphorus load reduction. (Urban and construction stormwater BMPs were not included in the Cadmus analysis.) In order to do this, participants were given copies of the full report as well as a separate hand-out that reproduced Table 6 of the report (shown here as Table 2).

<b>Table 2. Simulated Phosphorus Load Reductions and Estimated Costs Associated with Implementation of the Optimal Scenario of Agricultural BMPs</b> Optimal scenario presented as a step-wise implementation
1. Nutrient Management: Dairy P Feed Ration: Reduced by 25%; Implement 90%
2. plus: Increase manure incorporation from 50% to 85%
3. plus: Stabilize Soil P (90% implement)
4. plus: Conservation Tillage - CT40%, MT45%, NT15%
5. plus: Cover Crops on corn silage and some soybean fields
6. plus: Buffer Strips installed on 100% of 1:24k hydrology streams
7. plus: Reduce Soil P to 25 ppm; Implementation = 35%
8. plus: Biofuel Switch grass crop; 7% of all total crop acres

When asked to comment on the scenarios shown in Table 2, reactions were mixed. Participants agreed that if it hadn't already been accomplished by most farms and CAFOs, Step 1 was the easiest to accomplish. Nutrient Management Plans (NMPs), which deal with manure and fertilizer applications to farm fields, have had a positive impact on phosphorus reduction in feed (Program on Agricultural Technology Studies, 2005). And although NMPs do not directly deal with feed rations (dairy cow feed is specifically addressed by Feed Management Plans) they have increased awareness of phosphorous in feed, often leading farmers to make the necessary reductions. According to *Manure Management on Wisconsin Dairy Farms*, approximately 50 percent of farmers in Wisconsin use NMPs (2005). Most agency and crop consultant participants agreed that increasing NMP implementation, or getting individual farmers to use the plans they already have, would help in achieving Step 1 and would reduce phosphorus run-off.

The success of the other steps in the scenario depended on the applicability to each individual farm or field. This individual and unique approach introduced by stakeholders echoes the comments and statements given when discussing collaboration, communication, and cooperation. The term "prescription farming" was initially used by a participant to describe the evaluation of each farm and individualizing the scenarios to fit the needs of each farm (NMPs already reflect this approach). Similar comments were heard in each of the meetings as well as being repeated in the comments on

questionnaires. Participants feel that blanket step-wise scenarios are not practical for most farms nor serve to meet the variations found within the Lower Fox River watershed since distinctions such as soil type, slope, production process, crop type, herd size, and other diverse characteristics are generally not factored into blanket methods.

Crop consultants and most producers especially felt that a more practical and ultimately less expensive method is to devise scenario prescriptions for individual farms or local areas. Overall, opinions on the methods used in achieving load reductions were varied and largely negative. In changing the behavior of farmers, the use of BMPs is encouraged, yet producers and crop consultants look at the scenarios and they are not optimistic. For instance, collectively, switchgrass was not deemed practical or implementable for most farms in the northeast region due to the high concentration of dairy land use. Further comments run from one end of the BMP spectrum to the other.

"All the practices in the world cannot be achieved unless they are practical enough to implement. And unfortunately, as of today I cannot say there is any that are effective for the dairy farmer. The grain farmer 'yes' - no till, minimum till is probably, but not for the farmer that has to haul manure."

"Conservation tillage will not work with animal waste. The manure must be incorporated, in doing so we destroy the residue. Cover crops won't work because of the spring delay in planting. We have to keep the sediment out of the streams by reducing the amount of time high risk fields are in corn silage or tilled, and have them in hay production longer in the rotation."

"Cover crops on corn silage and soybean land [is most promising]. It is easy to do and gives a lot of phosphate runoff control."

"Keep your land covered. Grazing is the answer...the land is healthy, the cows are healthy – it's profitable...."

"Vegetated buffers are quite effective in reducing phosphorus and sediment from reaching surface water."

"Buffer strips [don't work], it makes more sense to grass ditches with narrow strips in fields than the 100 feet along the edge of streams, brooks, and larger ditches/creeks to see results in sediment and phosphorus reduction."

"If 25 ppm (scenario 7) is optimum, why not use that value as the threshold? That may be an easy change to make programmatically, but not as easy to sell politically."

"Initial spring tillage [will not work] due to the amount of clay that is present in soils in the area (unlike other parts of the state)."

### Suggestions for facilitating implementation

Table 3 presents factors identified by participants that may benefit the TMDL process. These factors were frequently mentioned in group meetings, questionnaires, and interviews. They represent the factors that most respondents gave as common sense solutions or strategies that would help implement the TMDL.

<b>Table 3. Facilitating Factors</b>	<b>Agency<sup>1</sup></b>	<b>(%)<sup>2</sup></b>	<b>Farm</b>	<b>(%)</b>	<b>CAFO</b>	<b>(%)</b>	<b>CC</b>	<b>(%)</b>
Improve or increase cost sharing	10	75	16	75	8	60	24	90
NMP's role and importance in process	20	80	0	-	10	45	11	70
BMP's role and importance in process	14	60	2	10	9	60	13	70
Engage and educate the public	16	80	2	10	2	15	0	-
Employ new strategies	23	60	0	-	2	15	5	15
Reputation in community	7	15	5	50	3	30	3	25
Open communication, trust, empowerment	10	60	12	50	9	45	17	40

n=46

<sup>1</sup> Groupings were made as follows: staff from local, county, and state agencies, Agency; small farmers, Farm; large, permitted farms and near-permit farms, CAFO; crop consultants, CC. Numbers represent a count of each time idea was mentioned.

<sup>2</sup> Percentages determined by the number of respondents in the group who identified the idea.

Cost sharing was a major concern, but also a factor that is seen as critically important to successful implementation of the TMDL, especially by crop consultants and farmers. The subject of cost sharing is complex. Cost sharing is stressed in all groups as an incentive tool, as needed financial assistance, and as a public acknowledgement of environmental initiative. We heard from key stakeholders that cost sharing is critical to motivating change, "Offer money to get farmers involved - at the end of the day that's going to be the motivation." And while some stakeholders see cost sharing as an undeserved entitlement, most stakeholders see it as an important funding source, much like the ripple effect of a stone tossed into water. It benefits a small group in the beginning but its ripple effect has far reaching results that indeed benefit the entire community in the long run.

Cost sharing is also seen as financial assistance to the business manager (the farmer) who feels he/she cannot afford to implement regulatory mandates without some kind of help. "There are groups of farmers who are more interested in being environmentally responsible, but cost is a concern. They have economic as well as environmental interests," one participant observed. While many producers are concerned

with water quality and protecting the environment, business decisions must be made, and generally the money is not available to finance new methods or technologies.

Conversely, there are incentive structures that work to the disadvantage of early-adopters of sound management practices, according to some participants. Entrepreneurial farmers may have already implemented best practices by the time agencies have cost-sharing funds available for the new practice. Rules for granting cost-sharing support may prevent farmers from being paid for what they are already doing or what they have previously implemented. According to ATCP 50.40 (3) (b), a cost-share grant may not be used to pay for the installation of a conservation practice if that installation occurred before the landowner entered into the cost-share contract. In frustration, they see cost sharing funding going to the neighbor who refuses to change until regulations are in place, thus encouraging poor management practice to remain in place in the hope that cost-sharing will eventually become available. This can clearly be seen in the writing of subchapter ATCP 50.06 (2), "A county may not seek enforcement action until it complies with applicable cost-sharing requirements under s. ATCP 50.08." And according to subchapter 50.08 (1), "A landowner is not required to do any of the following, under s. ATCP 50.04, unless the landowner receives a bona fide offer of cost-sharing: (a) Discontinue or modify cropping practices on existing cropland. (b) Discontinue or modify an existing livestock facility or operation." (Wisconsin Administrative Code, 2007).

Another facilitating factor, Nutrient Management Plans (NMPs), was seen as very important to the reduction of phosphorus and sediment loads. NMPs, depending on the individual farmer, may be followed to the letter, partially followed, or allowed to "sit on the shelf." However, producers listed NMPs as one of their best common sense solutions in reducing agricultural sources of phosphorus and sediment loads. NMPs are used on a field-by-field basis and are one of the tools already in the TMDL toolbox (NRCS Code 590, 2005). Producers see them as cost-effective, practical, and they generally benefit the user almost immediately. Although noted by some agency officials as being followed by only 50 percent of producers in the northeast region, individual contact with a crop consultant or other land conservation agent is seen as useful in getting farmers to follow NMPs more carefully.

Best Management Practices (BMPs) were also seen as important to the reduction of phosphorus and sediment loads. Even though opinions and practices varied by field and farm, collectively BMPs were seen as necessary tools for implementing a TMDL. As one farmer stated, "We are already doing most of the BMPs in the scenario that are feasible for our operation. We incorporate 98 percent of our manure and we don't get the run-off you are talking about."

Engaging and educating the public was also seen as a strong facilitating factor that would help to implement TMDL efforts, especially by agency officials. Agency staff noted that some agricultural stakeholders are resistant to change, and need to learn about new practices. "If the farmers are the ones who primarily need to change their practices for the TMDL to be successful, you need their buy-in. If they do not understand the

problem or the process, they will not have buy-in and won't make the necessary changes." Farmers, too, expressed a desire to be informed and to remain involved in the process. A few wished that other farmers could be part of the stakeholder meetings.

Other comments reflected the importance of educating the general public, so that citizens could understand that they, too, would need to change their behavior. One participant noted that it was "hard to make people aware of 1) where phosphorus and sediment is coming from; 2) where it goes; and 3) what problems it causes. Does the public understand the correlation between lawn fertilizing and water quality in the river?" Another noted that education should occur at all levels, including children so they can be aware of the problems associated with poor water quality.

Others noted that people needed to reconnect to the water, that citizens had no sense of what clearer water might do to the aesthetic, recreational, ecological and economic value of the Lower Fox River and bay of Green Bay. As one participant reflected, "what we are talking about is a change of mind-set. That will take some explaining."

Some participants spoke about community pride in the area, and the importance of an individual's reputation in the community. One farmer reflected on his desire to keep the respect of his neighbors, and of his satisfaction of knowing that his was an operation in compliance with all regulations and even exceeding regulatory requirements. "We know the contents of our manure every time it's pumped. We get the best applicator. We're willing to pay more to know that things are done right."

A theme that emerged less often, but still in most conversations was the need to find creative solutions for implementing the TMDL. Participants noted the need to "think outside the box" and not to limit solutions to existing strategies. Rather, TMDL stakeholders should seek new technologies, new approaches in working with point and nonpoint sources, and develop policy for the gaps in existing regulatory structures. One example offered was a statewide or multiple county phosphorous bans. Another example was greater use of pilot projects on farms for energy development. Yet another example frequently mentioned was the use of effluent trading systems to maximize the cost-effectiveness of TMDL implementation.

At the same time, the TMDL must have clearly stated goals for implementation with benefits identified. Agency officials noted the lack of consensus among stakeholders and governments regarding timelines, interim objectives, reporting requirements and communication with various publics would hamper or derail the implementation process.

### **Literature on collaborative partnerships**

Previous sections have outlined concerns that various stakeholders have about the TMDL process, and identified factors that may facilitate implementation from the perspective of these stakeholders. This section presents a brief overview of some of the literature on

collaborative environmental partnerships in order to identify factors that compliment or reinforce the findings of this study.

The EPA has long recognized the challenges associated with getting diverse sets of stakeholders to work collaboratively to solve environmental problems at the watershed level. In 1997, the agency studied a number of water-related, community projects and developed a list of ten top “lessons” for future efforts. (See box.) Key to these lessons is the need to agree upon a clear vision for the outcome, measure progress, involve stakeholders in making decisions, and have a contact person who coordinates implementation.

### **Top Ten Watershed Lessons Learned**

1. The Best Plans Have Clear Visions, Goals, and Action Items
2. Good Leaders are Committed and Empower Others
3. Having a Coordinator at the Watershed Level is Desirable
4. Environmental, Economic, and Social Values are Compatible
5. Plans Only Succeed if Implemented
6. Partnerships Equal Power
7. Good Tools Are Available
8. Measure, Communicate, and Account for Progress
9. Education and Involvement Drive Action
10. Build on Small Successes (EPA, 1997)

Clear vision, goals and objectives help stakeholders understand and ultimately support protection and restoration efforts within their communities. When framed well, this vision can also help the public, elected officials, business, the press, and community leaders understand the need for change.

Collaborative projects need leaders. Watershed leaders reflect the values of the community and know what works there. They have the ability to set plans in motion, and are committed to making the plan a reality. They also tend to engage, respect, and empower others and are able to find new or leverage existing resources. A watershed approach involves many stakeholders and, as a result, requires a lot of coordination. A local coordinator maintains contact with members of the group; serves as a liaison; celebrates success; facilitates meetings; helps to secure funding and training; and ensures that plans are implemented.

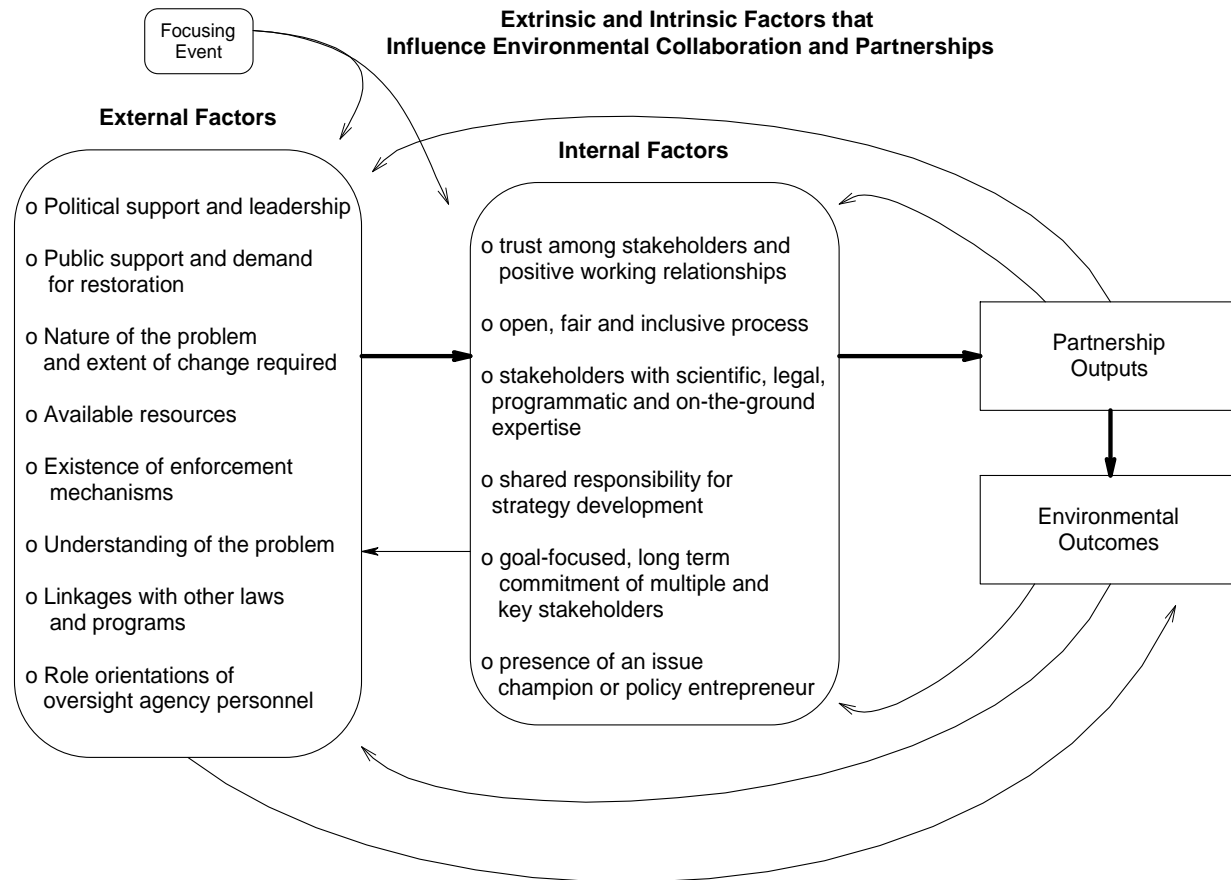
Equally important is the need to recognize the different perspectives of stakeholders who will partner in the effort. According to the EPA study, essential ingredients for effective partnerships include: focusing on common interests, respecting each participant’s view point, being willing to learn about others’ needs and positions, and building trust. Successful efforts pull together a partnership that is of manageable size, creates synergy, and represents the key interests in the watershed.

Social science research also suggests that successful collaboration is facilitated by factors external and internal to the process (see Figure 2). External factors include

sufficient resources, political support, public and community cooperation and support, and the existence of enforcement mechanisms. If political support for change is absent; if no funds are available for implementation; if the public neither desires nor understands the need for change, the likelihood of successful collaborative work is diminished. On the other hand, if the problem is well understood, with adequate scientific data available to make predictions about the success of any chosen strategy, and political and public support exists, the chance of success is increased.

Internal factors that facilitate collaborative partnerships include the level of mutual trust among stakeholders; the sense of empowerment and shared decision-making; long-term commitment to policy goals; and the presence of one or more individuals who serve as champions of the process. Empowerment means that stakeholders have a voice in the development of policy and also participate in the implementation of innovative approaches. Community-based arrangements should remain in an open, inclusive arrangement until environmental issues are resolved to the satisfaction of stakeholders (Finnegan & Sexton, 1999; John and Mlay, 1999; Long & Arnold, 1995; Rich, et al., 1995; Speer & Hughey, 1995).

Previous studies illustrate the factors that facilitate successful collaborative watershed projects. It seems that successfully implemented TMDLs rely on the same factors. Collaboration is central to any effort to make the TMDL more than just a plan. Implementing the strategies in a TMDL requires the involvement and commitment of multiple stakeholders in the basin, and is an example of collaborative watershed based partnerships (EPA, 2005). As TMDL consultant Ed Wagner noted: "There are plenty of bumps on the road to an objective as complex ... as a TMDL. But the critical component in the process – as critical as data and valid models – is taking the time to build cooperation among stakeholders."



**Figure 2**

## **Recommendations**

The TMDL Facilitated Stakeholder meetings included four different groups integrating a broad spectrum of backgrounds, experiences, and education. Participants expressed various viewpoints, concerns, and opinions, yet there was consensus in several areas. After carefully listening, evaluating, and re-evaluating all of our stakeholder comments, we offer the following eight suggestions.

### **1. Strategies that are cost-effective and make business sense will most likely be adopted and will facilitate successful TMDL plans.**

Overwhelmingly throughout all stakeholder meetings, the idea that local producers must maintain a profitable business was a major theme. Maintaining a business means that basic economic factors come into play when farmers consider implementing pollution reduction practices. Concepts such as cost-benefit analysis, cost effectiveness, and cost-sharing allowances are all considered and evaluated by local farmers. Conservation practices that have the highest cost-benefit analysis and cost effectiveness should be promoted.

Heavily (though not universally) supported by participants, strengthening and/or expanding cost-sharing programs represents a relatively quick way to increase the use of best management practices. The re-evaluation and restructuring of cost-share programs may be necessary. For instance, early adopters should be rewarded so as to minimize perverse incentives that penalize innovation while rewarding the “foot dragger.” Cost-sharing was the major factor influencing a farmer’s decision to implement pollution control strategies, and this was also named as the best way to get farmers involved in the TMDL process. Cost sharing is a tool that assists farmers in improving the quality of a commodity that in turn benefits a much larger population.

Although there are economic incentives acting against the progress of a TMDL, there are economic incentives that can work toward its progress as well. Cost saving methods (i.e. Nutrient Management Plans and Best Management Practices), manure management technologies (see Wisconsin Focus on Energy, 2002), and overall public demand for water quality (using education as a method of showing the connection between human behavior to water quality) may act as economic incentives that work toward an effective TMDL.

### **2. Strategies that avoid “one-size-fits-all” requirements will likely be more effective.**

Instead of blanket policies that are universally applied to all farms, a “prescription” plan for each farm should be used whenever possible. This “prescription” can be seen in part in carefully crafted Nutrient Management Plans that are currently implemented. Individual load reduction plans could be developed with an agronomist or a crop consultant and the farmer after careful analysis of such things as slope of the land, type of soil, location to waterways, etc. This type of plan would be more effective in

controlling phosphorous and sediment and take into account the field conditions of each farm.

Prescription farming would also require more involvement between producers and crop consultants or agronomists, one of the methods listed by stakeholders to educate farmers and motivate them into action. Furthermore, several long-standing complaints by producers would be heeded. First, with more intense interaction, farmers would have the sense that they are heard. Second, farmers would have the sense that they are not just regulated, but that they are part of a team working toward a common goal. Finally, farmers themselves may feel empowered, and that their actions have an effect on a greater public good.

### **3. Consider involving stakeholders in watershed teams for implementation.**

Studies of watershed partnerships suggest the need for ownership by stakeholders, as well as the development of mutual trust and shared responsibility. Studies also reflect the importance of local values and visions being incorporated in implementation. Local impacts are easier to measure, to understand and to celebrate. It may be that local high school groups monitoring changes in a community creek, providing input to local watershed teams, may do more to encourage behavior of local stakeholders than solely relying on a basin-wide effort.

An example of the success of watershed partnerships can be seen in the results of Innovative Farmers of Michigan that reduced soil erosion by “70 percent less from water and 60 percent less from wind” as well as in the results of the Little Rabbit River Watershed Project which reduced 19,582 tons of sediment, 19,706 pounds of phosphorus, and 39,321 pounds of nitrogen (EPA, 2002). Part of the success of the Little Rabbit River watershed partnership can be attributed to a local newsletter that raised awareness of water quality issues and a watershed logo that was developed and used on t-shirts, hats, and signage.

### **4. Engage and educate the public to obtain their support.**

Farmers are well aware of water quality issues and most of them are conscientious in their approach to conservation and protecting natural resources. However, they also know that education plays an important, supportive role to the success of this TMDL. Changing public perception, increasing the public's value of water quality, helping individuals make connections in understanding water quality and their actions, and changing public behavior toward water quality are all critical to the success of a TMDL. Engaging them through public education may increase individual and community involvement of the TMDL and help to create a "team approach." Involving other key actors from fishing and boating interest groups would also improve connections to our water heritage.

Education also will play a major role in assisting farmers with several key points in the TMDL process. First, education can help the farmer understand the science behind

TMDLs. Farmers, as well as the general public, may need to know the scientific research, modeling and monitoring that has taken place and been collected for this TMDL. Second, through education farmers can have additional opportunities to learn new strategies and technologies. Stakeholders list education very high in assisting producers to make changes in traditional farming methods such as implementing NMPs and BMPs. While a farmer may have knowledge of a new method, further education may offer the impetus to actually use a new method. Third, individual farm analysis and/or “prescription” plans could be offered to those who request them. Finally, education can be that informal connecting point between the producer and regulator which encourages collaboration, understanding, and communication.

#### **5. Keep the process open, inclusive and fair.**

This is perhaps the central recommendation offered by participants in the study, and one that is reflected in many studies of efforts in other parts of the country. Participants remain concerned that the process includes them, and that everyone be involved as part of the solution. Positive and open working relationships between administrators and producers will increase the effectiveness of policy change and go a long way toward the success of the TMDL. In addition, administrative flexibility and creativity in program implementation will help to encourage trust and improve communication. Furthermore, equitable behavior toward point and nonpoint source stakeholders alike will facilitate inclusiveness and fairness.

#### **6. Communicate with all stakeholders and provide opportunities for input into the process, as well as for leadership.**

Stakeholders participating in the study indicated a desire to remain involved as the TMDL enters Phase II and III, and then shifts to implementation strategies. Multiple methods of communication will be important, as will the recognition that communication should happen before decisions are made.

Opportunities for input into the process will facilitate the TMDL and achieve a number of objectives. First, communication will keep stakeholders updated on current planning processes. It will also emphasize the important role they play in the TMDL development as well as maintaining their input into identifying factors that they consider important to adaptive strategies. Moreover, continued communication will improve stakeholders' willingness to participate and be involved on some level as planning and implementation continues.

#### **7. Consider innovative strategies.**

Numerous comments by participants pointed to the need to develop fresh approaches in addition to the regulatory and non-regulatory strategies that were part of the initial report. For example, effluent trading programs may be considered in certain parts of the basin; so, too, might innovative farming practices. Creative and innovative ideas will be needed to solve the complexity of urban and agricultural issues this TMDL

addresses. As one agency stakeholder stated, “Don’t limit ourselves. We need to step out of the box. Other solutions may work. We need to be creative, focus on pollution prevention, set limits, and develop policies where there are gaps.”

Multiplicity in approaches using the latest technologies, new ideas, and original, alternative methods will ensure thoroughness while also giving the broad spectrum of public the opportunity and flexibility to define their own approach in participation. TMDL stakeholders should consider non-traditional concepts such as statewide or multiple county phosphorous bans, greater use of pilot projects for alternative energy, and the use of effluent trading systems.

#### **8. Consider the quality of manure applicators.**

Professional applicators, individuals hired by farmers to properly transport and apply manure, vary in their level of professionalism and concern for environmental protection. Interviewees noted that some applicators would cut corners in exchange for lower costs to farmers. In some cases, serious concerns were voiced regarding the methods and means of some applicators in their handling of manure. While outside the scope of this study, it may be helpful to investigate the practices of companies in the Lower Fox River Basin.

#### **Conclusion**

Stakeholders participating in these meetings seem cautiously hopeful for the success of the Lower Fox River Basin TMDL. They are cautious because they see the difficulty of achieving this complex and difficult equation which includes beneficial tools already in place on one side and on the other significant, multiple challenges in the form of established economic and historical influences. They are cautious as well because they understand the many complicated and strategic steps that must be taken for this TMDL equation to be solved. Yet, they are hopeful because these stakeholders, no matter which group they are from, are concerned about Wisconsin's future water resources. They are hopeful as well because they know that the TMDL addresses critical issues that must be faced by all of Wisconsin's citizens if the future of Wisconsin's water quality and water resources is to be guaranteed for the next generation. As one elderly respondent commented “We have to do something, we can’t just keep polluting our waters and not do anything about it. I want my grandchildren to grow up with clean water like I did.”

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## Appendix A: Facilitated Stakeholder Meetings

Composition of each stakeholder meeting:

Date & Time	# of Participants	Target Group/Affiliation
<b>October 15, 2007 – 1:30 p.m.</b>		<b>Agency Group</b>
	1	Green Bay City
	1	Brown County
	1	Extension
	1	DNR
	1	USDA
	<u>1</u>	Outagamie
County		
Total Participants	<b>6</b>	
<b>October 26, 2007 – 10:30 a.m.</b>		<b>Crop Consultants</b>
Total Participants	<b>4</b>	
<b>October 31, 2007 – 9:30 a.m.</b>		<b>Crop Consultants</b>
Total Participants	<b>6</b>	
<b>November 7, 2007 – 1:30 p.m.</b>		<b>Local Producers</b>
Total Participants	<b>2</b>	
<b>November 9, 2007 – 10:30 a.m.</b>		<b>CAFO/Near-Permit</b>
Total Participants	<b>3</b>	
<b>November 12, 2007 – 1:30 p.m.</b>		<b>CAFO/Near-Permit</b>
Total Participants	<b>3</b>	
<b>November 14, 2007 – 10:30 a.m.</b>		<b>Agency Group</b>
	1	Brown County
	1	Oneida Nation
	1	Calumet County
	1	Planning
	2	USDA
	2	DATCP
	<u>1</u>	Extension
Total Participants	<b>9</b>	

## **Appendix B: Introduction of the TMDL Process and Explanation of Facilitated Stakeholder Meetings (Handout)**

**Why am I here?** Thank you for coming. You are here because you represent a voice that is important to the ongoing process of developing and implementing a Total Maximum Daily Load (TMDL). Several streams and rivers in the Lower Fox River Basin and Green Bay are impaired due to excess amounts of phosphorus and sediments. The sources of these pollutants include runoff from agricultural and urban areas and construction sites, municipal and industrial wastewater discharges. In short—this is a multi-faceted problem that requires collaborative, innovative solutions.

**What is a TMDL?** The Clean Water Act requires states and authorized tribes to identify and restore impaired waters. A water body is “impaired” or polluted if it fails to meet applicable water quality standards. Standards are established by the Wisconsin Department of Natural Resources (DNR) and authorized tribes to protect and maintain the designated uses for the water, uses such as drinking water, fishing, aquatic habitat and swimming. A TMDL is the total amount of a pollutant (in our case, phosphorous and sediment) that a given water body can receive without violating water quality standards.

**What’s been done so far?** This TMDL will be conducted in three phases. Phase I, completed in August 2007, was a preliminary exercise to explore the cost-effectiveness of best management practices intended to reduce phosphorus in the basin. Phase II is just beginning, and will include public information sessions for interested parties to discuss the TMDL. Information from these sessions will be used to provide input regarding which strategies make the most sense on-the-ground. Phase III will be the actual development of the TMDL. It is anticipated that a final report will be submitted in late spring 2009 and will include an implementation plan that provides details on how and where phosphorus and sediment reductions should occur. As with Phase I and II, this phase will also include several opportunities for public involvement as well as a formal comment period upon receipt of a draft report.

**For more information:** <http://dnr.wi.gov/org/water/wm/wqs/303d/FoxRiverTMDL/> . Here you will find more information, plus links to the Integrated Watershed Approach Demonstration Project report, the TMDL Fact Sheet, and a power point presentation. To learn more about the public outreach for this TMDL, you can call Trisha Cooper (920-465- 2404) or me (Denise Scheberle) at 465-2198. You can also call Nicole Richmond, TMDL Development Coordinator, (608)-266-0152 or Northeast Region TMDL Coordinator Rob McLennan (920)-424-7894 at the DNR for more information about the process.

To learn more about phosphorous and sediment data and modeling for the Lower Fox, visit <http://www.uwgb.edu/watershed/index.htm>. This site contains university and agency research on phosphorous and sediment done between 2003 and 2007, as well presentations and maps.

**How can I help?** TMDLs are best created with the practical advice of key stakeholders who care about their communities and who work collaboratively to restore the quality of the water. You can help by providing input, suggestions and comments today in this facilitated meeting, and by staying involved as the process moves forward. Please be honest and candid in your comments—they are essential to understanding how to effectively implement various strategies for a TMDL. Reducing the amount of phosphorous and sediment going into the Fox River will take all of us working together, using cost-effective and creative strategies. We need your advice.

**Why has this meeting been organized?** In thinking about the TMDL for the Lower Fox River last year, a Brown County official commented that: “The biggest failure [of this TMDL process] would be neglecting the public part of the equation. The community needs to be educated, to understand that cleaner water is possible, and has great value.” Or, as Ed Wagner, a national consultant for TMDL development and implementation has said, "There are plenty of bumps on the road to an objective as complex and politically charged as a TMDL. But the critical component in the process – as critical as data and valid models – is taking the time to build cooperation among the stakeholders. You can do the numbers and crunch through them, but it is more than science to do a TMDL. It’s more of a policy question of who gets the allocation, how much each stakeholder will be allowed to discharge. To do that in a way that people will accept generally takes their participation. It takes time to do that.”

In short, research and experience has shown that to arrive at workable solutions and implement them in a watershed requires: stakeholder involvement that is open, inclusive, fair; participation of stakeholders who have programmatic, operational, scientific and legal expertise; sufficient exchange among stakeholders to develop strategies that integrate environmental, economic and social objectives of the community; goals-focused, long-term commitment of multiple and key stakeholders; sustained political support within the community.

This meeting is a first step in the process.

**Who are you and why are you running this meeting?** Maybe the best place to start is who I am not. I am not an expert on water quality, TMDLs or best management practices; I am not a staff member of the DNR, Brown or Outagamie Counties or other agency; I have no capacity to require anyone to do anything. I am here to serve as a facilitator, to ensure that everyone gets an opportunity to provide input, and to listen carefully to what you have to say. I’ll collect and synthesize your ideas and suggestions, send the draft to you by email and then (with Trisha’s help) prepare a report for the DNR, U. S. EPA and others who will ultimately create and approve the TMDL.

**Other questions?**

## Stakeholder Meeting Questionnaires

### To answer today:

1. On a continuum from “not at all important” (represented by a 1) to “very important” (represented by a 10), how important is it to reduce phosphorous going into the Lower Fox River Basin? How about sediment, using the same scale?
2. On a continuum from “not at all” (represented by a 1) to “outstanding” (represented by a 10), how well do current efforts to control phosphorous work? How about sediment?
3. What do you think are trouble spots with current efforts to reduce phosphorous and/or sediment loads? Here, we are thinking about regulations, cost-sharing programs, best management practices, permits, or other state or local government-led efforts.
4. Are there any quick fixes that could help reduce phosphorous and/or sediment loads?
5. What strategies/suggestions represent the best common-sense solutions to you?
6. Of all the things we’ve considered today, what is the most important for me to remember and take back to the DNR as the TMDL process moves forward?

**To respond to later (yes, homework!):**

Please consider responding to any or all of the questions posed below. Please return your responses to me in the postage-paid envelope provided by November 21, so that I may incorporate them in the report. If you would be willing to talk about your responses, or would simply prefer a phone call, please put your name, phone number and best time to call on the back of this sheet.

1. Considering the current approaches to reduce phosphorous and sediment loadings into the Fox River and its tributaries, what is one thing that works well?
  
2. What doesn't work at all?
  
3. Regarding the proposals and suggestions made during the meeting, which idea/suggestion seems the most promising to you? Why?
  
4. Of all the things we considered today, what is the most important for me to emphasize in the report?
  
5. How important is it for key stakeholders to be represented and involved during the TMDL process? How should this representation/involvement occur?
  
6. Do you like the phrase "Restoring our Water Heritage" to use in public information about the TMDL? Why or why not?
  
7. Other comments?

## **Appendix C: Facilitated Stakeholder Transcripts**

### **TMDL Stakeholder Meeting 10/15/07 - Agency Group**

I've been in the area for 18 years – I've seen both of the Bush administration's, been through all kinds of water quality issues, - the East River, and attempts at cleaning it up – 18 years ago it was all the same subject – Where are we at besides the talking phase? There have been seven mill projects with UW, UW Extension, DNR – have things changed or are we going in a circle? Where are we going from here?

It's frustrating and it seems we are just spinning our wheels. Do we have programs in place that are actually working?

If we were able to implement all of the regulations that are already on the books, we wouldn't be sitting here – if we had the staff to actually do the job....

If we had sufficient staff in Green Bay, from the county level, if the money was out there - \$12 million each year left to counties to improve but we don't have enough staff. The totals are there, livestock waste is being done by the county, and the DNR is being gutted – the county is picking up the slack – Rule 50 is county level – and language is put in that cost share money is available – owners can't fix problems unless they're offered cost share money, the county can't make the owner fix it – we need cost sharing but the farm bureau will never let it happen at the state level.

They're doing stuff with runoff (Discovery Farms) and the viewpoint from both sides is that at the meeting attended DNA testing done was animal-source phosphorus – 2 tests – people in the production end are trying to make changes to the 590 plans and what I am seeing is that people have a misguided sense that it all comes from production – good science would have everyone shoulder the responsibility – urban growth is contributing to it, fertilizer application....

They're putting down 250 pounds of potash ash ... citizen Q is out putting this stuff on a ½ acre of lawn – and it goes right down to the storm sewer, drainage system...

Agriculture is minimizing their contribution but residential is contributing...

For the scale, agriculture is contributing more but no doubt urban is adding....

Grand Chute is banned from the sale of phosphorus but not the application, so they go to the next town and buy the stuff and then apply it.

A lot of science has been done – agriculture is the dominant source for phosphorus loading into the area –

Where are the TMDL's now? Are they done anywhere else?

(Comments from facilitator.....discussion of graphs and tables.)

The message is that most of the phosphorus and TSS is agricultural –

Industry – isn't that a significant contribution of phosphorus?

What strategies?

Money....funding...the current milk prices are certainly helping – the production prices....

Funding... funding spurs them to do something...cost sharing is very important. Regulatory and permitting processes also are very important...Public relations also help because they don't want their name in the paper – even when it's a positive.

MVP (milk volume production) loans – Country Aire got a big MVP loan – and the 590 plan is supporting increasing the number of animals – 200,000 is going to the project in the paper and it leaves a bad perception with the public.

Economics – It's not necessarily funding – for those of you who work in this field, as an ecologist, most of my knowledge is because of windshield surveys and I'm concerned with the sediment load, to a lesser degree the phosphorus, and minimizing the amount of open scarred land. Why do they fall plow? Six months of open, heavily disturbed soil – why not leave in the stubble?

Isn't it because of heavy clay soils, the frost breaks up clods, but its also time management – they can't hit all of their acres – Are there any economic disincentives?

Strip tillage is increasing. Less fertilizer is applied plus the soil disturbed is limited. The next 20 years more will be happening, less diesel fuel will be used, less fertilizer, they'll leave the stubble.

Why don't they do that now?

It's habit, what they're told is what they do.

There are grazing workshops – on organic farming. Statistics show that grazing and organic farming is increasing. Northeast Wisconsin is transitioning to grass as part of the whole production process. If everyone grazed their stock we wouldn't have this problem.

With the increase of biofuel, there is increasing production of cash crops – there's more money in planting more acres of row planting – I hope its short lasting.

Row crops are harder on the land – so many lobbies – perennial grasses instead of switchgrass...

What are concerns?

Farmers recognize the issues, but they want to know that the regulation is happening in golf course and urban areas and they want to know that they aren't the only ones getting regulated...that it's not just them....

That everyone owns the problem....

Farmers are interested in doing good things but they don't want to be forced to do them.

There's more interest in doing it instead of having it crammed down their throats.

But haven't we given them opportunity and time?

Twenty years ago – they're better stewards – it always comes back to the nasty dollar. It's playing heavy in Brown county...take a look at animal units – it keeps going up – its good but its bad...

If dairy disappears can you imagine the state we would be in? They're in middle ground – the economy pressures and being heavily regulated...

If they are in compliance, is there some protection from regulators? If there are some minimum standards met? Are they getting fingers pointed at them – are they being good neighbors? Avoiding parties at manure spreading time?

There's voluntary and regulatory – a lot of them have them but don't use them. Nutrient Management Plans – they have them but they don't use them – poop control – regulations – it takes one bad apple to get everyone worked up – one incident leads to super critical comments – other ill-conceived perceptions such as its important to spread manure and have the smell go away....

If they are good stewards why aren't they following nutrient management plans?

Most people do....

I doubt that most people use NMP's.... they sit on the shelf....

People put more credence on spreading nutrients using basic practices and avoiding hazardous areas. Nutrient management is important but spreading practices are most important – avoids soils in the stream.

The average construction site is losing 30% of soil – agriculture loses 5% - it's an easy fix for them to follow NMP.

Most farmers don't want to be irresponsible - but economics would lead them to follow the NMP.

It's a place to begin – most farmers have them and use them.

...there are spreading restrictions....

One event that causes all of the problems

....2% of a 5" rain where everything moves and that one event that causes all of the damage that we are looking at...

Let's hope the next 25 years we don't have that problem...

Even in February where topsoil moves and the rain events....

What's the best way to deal with it?

Keep your land covered. Grazing is the answer...the land is healthy, the cows are healthy – it's profitable....

Use vegetative cover.

It's more than that...soil is less eroded if it has residual cover – it's less subject to erosion. Take a 40 degree day in March, CAFO's are restricted to manure spread in March but they should be. Six months of no manure spreading – what is the fix – I don't know – the Wiese Brothers still operate burning manure –

They're working out the bugs....

Technology is the answer. Innovative farming techniques....the Wiese Brothers – aren't they hosting farm technology days?

Shift to process and public involvement – What should the DNR keep in the forefront?

...A usable process. Keep studies/inventories to a minimum and put the bulk of effort on implementation. We've got enough studies of where the issues are – the focus should be on stopping it.

We need staffing dollars – it's taken a huge hit at the minimum – we need to maintain staff for implementing NR151.

We need staff and practical money.

There are market opportunities for water quality. Show the correlation between lawn fertilizing and water quality – do they understand the importance?

The correlation between water quality and health – education – do a better job for their kids.

Do a better job in showing that out of sight is not out of mind.

There's an element of never having to worry about it – they don't correlate it.

What is the relationship between EPA and DNR?

...Information and education. ...Meeting the goals of MS 4.

What ongoing programs are working?

There are very good ideas that are not implemented

Tailor the method to the recipient – try to talk people into accountability – money is the hammer.

It's been 18 years – where are we? Déjà vu.

TMDL are the teeth in lawn fertilizing – you have a tool but its been ignored – really implement it this time –

Money – all these programs are implemented by county staff – landowners, farmers, land conservation staff need the money to implement the plans. The county budgets are tightened with levy freezes and forced to reduce staff. They're losing staff to work toward implementation.

It's a tiny little budget – and way too many goals to accomplish.

It needs to be practical and implementable....practicality – be sure you can use it (winter of 1977?) – here we are 30 years later and we're starting to see bans.

Money to implement the regulations we already have – reduce duplicative efforts (NEWSC).

Our legislators need to be fully informed – budgets get smaller – and grant money is restrictive.

## **TMDL Stakeholder Meeting 10/26/07 - Crop Consultants**

### Introduction

- Discussion of last TMDL overview – Phase I
- Computer modeling and computer programming for qualitative data
- Discussion of who is implementing; what it will do
- % Reduction for industry versus agriculture

### Cost effective methods

- Discussion of how it is cheaper for agriculture to reduce than industry
- Different tillage methods

Carbon trading – the thing is, farmers have always had carbon – industry has always shifted the blame to agriculture, and their pollution doesn't stop.

It's a multi-dimensional problem – with all parties necessary for success.

Up in Egg Harbor when I was a teenager – we didn't have the zebra mussels – zebra mussels have had an effect on the water up there....

It's always difficult to keep on top of regulating water quality –

We do everything we're supposed to do and then when we get reviewed we get yelled at for every little detail. I don't care how many numbers you write down-

There are trouble spots and challenges...

What concerns are there?

Why have CAFO operating under these permit rules in NR 243 - now they recommend rewriting it. I've got 243 memorized and now I have to rememorize it.

And there's another 590 state standard...

But you have different agencies – state and federal NRCS – the DNR – they're not always on the same page. The county tries to do good things... One county will try to enact added legislature due to local situations – (such as the Karst) and so it's not easy. There are only three counties for this TMDL but most of us are in multiple counties. My concern is that maybe we should use what we have.

If the common goal is the sediment, why do I have to send my soil samples to three companies? It just won't be done - like the CNMP is so strict that I talk people out of it.

CNMP is just red tape – it's not worth the money.

What I see happening - the idea that we reduce sediment, you know - reduce the sediment or reduce the content of sediment

Filter strips - what I was told when you have to put in 70' of water strips - 7 acres of vegetative buffer - 28000 on that 80 just to let it sit there - sounds good but it isn't going to happen. He might have a 10' strip but not 35'!

How are you going to keep sediment from running - CAFO's inject their manure into the soil.

35% cover on residue - that's very hard to do without some cover crop in there before it freezes.

Do you want to have to go out there in the spring and rework it? No.

Sediment and reducing sediment, we've done it in the past....

The money is going to the wrong guy - if you no till there's only 50 acres - there's limited funding, if you wait to go into it they only offer 50 if you won't - 700 - Retarded.

Look at the percentages - managing sediment is the start if there is a gap - you have a crop line, a deslope plowed right along the water way, that's where it pays to have them, you need to prioritize the buffers.

You need to identify vulnerabilities. What is realistic? Even wooded areas contribute phosphorus - even in CNMP - what is a realistic goal? There's been phosphorus in the bay for years, are we banging our heads for an unrealistic goal? Green Bay was Green Bay before farmers.

They have computer generated models - SWAT, SNAP - The accuracy is here, they've been collecting data for 15 years.

Out of 100% give me a number (page 21). Discussion of agricultural contribution; discussion of Lake Winnebago and it's contribution, technical discussion of P index -

10 years ago when CAFOs started they didn't have the foresight on the costs of moving manure. Outlying farms get farther and farther so moving is too costly - moving them would disperse it more.

By spreading the manure to different locations, you would get 10/70 or 55/50

The only tool we have is PI to give us a benchmark -

What is the difference in hauling?

-If you can actually benefit.

-If its the same amount of erosion then its the concentration.  
-How far you go for corn silage - 5 miles

-Once these guys are CAFO it doesn't seem like DNR puts caps on them- once they meet CAFO numbers.

I think we need to find ways to farm....we are always spending this money on water when land is more economical to farm.

I would like more education - we are up against the wall with this phosphorus thing.

Its the number of cows - the carrying capacity of the county.

This part of the state, we are extremely high compared to even other parts of the country - right in the armpit between Lake Michigan and the Bay - we have the Karst top and thousands of homes within inches of wells and its not going to stop.

We're talking about our livelihood.

What about the county digester/ separator - that will have erosion impact, and we can make power out of it.

- But the phosphorus is not eliminated, it doesn't just evaporate.

And the cost to haul the manure is high - I don't think it's cost effective.

The problem is that there are no caps on animal units and the animal concentration is high...

Discussion of scenarios - Cost effectiveness - page 17, breakdown

After 10 years of manure sampling the numbers are shocking...

#1 is done already.

Its a good start....

Its easy to achieve.

SMP's give false indicators - the rest run very low phosphorus

Go no till - and dig - yeah you got phosphorus but its 500 a ton. - No till would meet the goals.

Not on dairy - but cash crops can do no till.

To have it really catch on - they have to see the neighbors are doing it.

- Fuel is high...
- Commercial fertilizers are high....

But the technology is there...

Hybrids can handle it.

So what if dairy is no till - the phosphorus is still there... its not accomplishing the main goal of reducing phosphorus - you have to go back to corn silage.... Low PI and runoff residue, you are not going to get that from cow manure.

- Farmers resist excess 50 ppm
- Farmers want to build soil...

\$40 for manure - at 250,000 gallons it's expensive.

I can haul manure 8 miles one way and still be in the black...a tank I can't but a semi I can and still 8 cents (?) in the black and dump it - not inject it.

Strategies

1 is achievable. 2 is also relatively achievable. 48-72 hours for incorporation you still need manure storage. Small operations are daily haul....

There is a regional differential - some basin areas like Plum Creek are different.

You don't see the young kids getting into this...(discussion of financial breakdown with cows - 1200, land 800, tractor 20000 - )

Larger farms are increasing - and they're storing 40% of their manure - and there's not the percentage of land that they need.

If cost sharing dollars are involved for manure storage - every farmer doesn't want to daily haul.

\$50,000 spent on a manure pit but it closes down after 2 or 3 years.

3 - not even close to achievable - 2 is possible.

It's a 1000 pound gorilla - you've got too many cows

Phosphorus goes down the drain, if you're feeding P and if you have more cows every year P is going up.

Phosphorus levels in the soil should not be such a concern as the number of cows.

It is possible to achieve 3 - as long as the cow numbers remain a constant. 1 is achieved - we've removed a lot of phosphorus from the feed of the cows.

75-80 pounds of P every year is eliminated - P levels come up during corn but lower during alfalfa.

We need to maintain or limit the cow numbers.

You might have a few exceptions but it hinges on cow numbers.

Trading manure and corn silage - fertilizer tariffs - these work well - you have a hot spot here and there or a medium spot.

It takes work to educate growers that different fields have different rates....

If you look at a 7 year rotation, there's 80,000 tons of manure for 7 years, especially if you've had bad years.

Conservation tillage -

I like the 2T - 2T is doable. We have heavy clay soils so you have to take that into consideration - but you cannot have a blanket policy -

When farms get large they start early - the soil dries out quicker with chisel plow...

Last week I drove by a winter wheat field and the soil was chocolate - maybe there would be less if it hadn't been conventionally worked.

5 - Cover crops - there's runoff, sediment problems in February/March/April/May

Phosphorus now is not going to be at the same rate as it is in the spring.

Its erodable - big guys rip it up - when we create a hover craft we can keep these cover crops.

With conservation tillage - there's winter kill - hay is ripped up - possibly 4 on a green farm but not dairy.

It's 90 K for equipment for 2T - use a PC equipment every other year - adapting equipment is expensive - mulch spreading in cash crops... where do you go with the manure? Discovery farms uses no till - its not liquid form, its more solid form - once it dries it becomes more of a mulch unless it rains.

Farming with adapting to conservation tillage - with dairy how do you do that?  
Corn silage acres - from chopping over 1/2 dairy - you won't see a difference any time soon.

What about on hay and corn fields?

Chisel plows technically catch up - but corn silage is a no

It's not possible unless there's technology...

2T is high - CT is not going to happen...

2/3 of 2T. What percentage is corn silage?

All wheat is no till - if we switch to system if we use winter wheat that would cut back spring till. If you do manual and still do cover crops you can still do CT

Wheat and hay - not open in spring so one is taken out of the rotation....

If you have a land base to do it, you will lose one year when you start...you can cut out one year of sediment...

With corn silage - when you take the winter wheat out you seed with alfalfa - winter wheat one year - you can summer seed alfalfa.

Winter wheat is risky because of the dry climate.

It's too big a gamble - 2 weeks of wind, if its dry and you catch the rain later - spring seeding will work but it dries out the soil.

5 & 6 - cover crops are a great idea on paper however there's a manure issue - how are you going to get cover crop seeded - you got the cost in seed - you got the cost in destroying it - you got the cost in planting - its a good idea but with a big asterisk.

If you had a perfect fall every year you could do it. 45-50-55 per acre for one acre...

There's no sense in mentioning it -- if you can't do it don't offer it as an idea - why dwell on it.

It's not practical. DMI the soil - air seed winter wheat - the time frame is three weeks - and the rain slows - you get the injection done - wait again -

We have heavy clay soils and they are difficult to manage.

You have tree buffers every center pivot - some programs helped establish shrubs, there was a tax incentive - it had an impact.

With corn silage - it's not possible - if not pretty limited.

6. Buffer strips do they actually work? 35' on each side for a buffer zone - how much does it slow it down? Slower water carrying sediment - buffer zones are ineffective on clay soils - upland buffers are more effective - grainy soils more effective.

Pay the guy 200 to take it out - it looks real nice - but how effective is it?

(Discussion on buffers - critical sites)

There are critical sites with a lot of erosion - the PI is supposed to capture particulate and soluble - with buffer strips the percentage is very low.

SNAP Plus the soil types - you need to pinpoint the soil types - write a prescription for each farm - maybe its tillage, maybe it's a pipe dream.

Every field is different and every soil is different.

Every farm is different and that's another approach we need to take.

Switchgrass - a permanent perennial – benefits are long term, burning and biofuel and reduces phosphorus load.

## **TMDL Stakeholder Meeting 10/31/2007 - Crop Consultants**

### Incentives for BMP

Money #1 - It's amazing how effective cost sharing really is – people will do anything for cost-sharing dollars. Sometimes they'll get involved with cost sharing before they even know what they have to do. A good example is CNP that we are doing now with farmers – the number of people that don't understand what they've gotten themselves into but they'll get involved because there is money involved. – they'll jump in and learn the details later – cost sharing is the trigger

You've got to remember that their running a business – they're not going to adapt to something unless there is a return on investment – business operation with return.

Save labor or make life easier – practical approaches – set up of barnyard with cement that is practical so they don't have to haul manure – saves labor.

Manure is saved – haul manure to the barnyard with a cement floor makes it easier – labor saving

If you go to the field side of it – you have people talking about no tilling than what we would have had before because of this new situation – climate change - it's a new practice and people are worried about the impact on their operation, how they're going to make changes that they were never shown – fuel prices are down – saving energy if the timing is right.

Fertilizer prices are high right now and it looks like they're going to stay high and farmers are more interested in making better use of manure.

What other things or other factors work?

If they know there is a problem, but they're waiting for a law to be put in...some are just waiting for laws or regulations to be enacted before they will do anything – they're cautionary.

Are farmers aware of impairment?

They're all aware – but the cost – economically – they aren't doing anything until they have to.

Farmers are doing very well with the increase (in milk costs) right now – but discouraged because they've been waiting for this time but all the other costs are increasing and other people, in their eyes, taking advantage and raising the prices and the costs. They're getting a little upset this – they're not enjoying this time as they should be because they've been waiting all these yers for \$20 milk but everything is being raised – there are

surcharges on every bill you get. They're very sensitive to the comment "Now is a good time..."

Timing, seeing is believing. There are guys who jump on board right away no matter what but others who wait to see if it will work until three or four years down the road

Fertility is an issue – they're worried that reduction in phosphorus will reduce their fertility – so they're waiting to see what happens.

Some have the house in order – it would be nice to start at the other end – (the ones who aren't doing anything instead of the ones who are) - if we could do that –

Some are just waiting for someone to knock on their door. – Some are aging – they don't want to invest because of their age.

The media influences some of it – there is lots more in the paper about what could happen and they don't want to because they'll get caught in the urban sprawl – people complain about mud on the road, the smell from manure – urban conflict

- they want to do something but the expense holds them back from doing it.

Even doing the nutrient management plan – some you still have to "twist their arms" they won't do it until they have to – or they're waiting for that law and there are some that are waiting for that dollar.

Percentage of the land (non-CAFO's and not the farmers but the land) – 30% don't – are not participating, 70% are participating.

70% have a plan in place, larger ones wanted into it because of the cost sharing.

In Wausaukee watershed, 80-90% of the watershed – 70% cost share – already tested.

40, 30, 20 that are just dead against it.

Some are in between – dangling – just waiting for cost sharing.

With cost sharing, initially - 2 out of 60 are needed to get things rolling –

There's a perception that some farms will not – won't qualify for cost sharing unless they wait for the government to step in and force them. Those that are doing a good job feel that they're not the ones that get the cost sharing.

Some who did NM idled back and see themselves not qualifying for cost sharing so they sit back and wait - cost sharing money is amazingly successful in rewarding farmers to do things but I think some of those (cost sharing programs) are – targeted toward specific groups.

One mistake that we've made is that we have not funded the good guys who have been doing it to begin with. Most government programs are targeting people that are dragging their feet and waiting. The innovators are penalized because cost sharing is given to the foot-draggers.

I have clients that are going to continue to do what they're doing regardless of cost sharing.

Most clients are not good marketers- they're not good at pricing commodities. They make poor marketing decisions. In this area, older farmers are interested in selling to developers – it goes with age – the older they are, the more they want to sell their land to developers and right now they are just riding the storm out. Older farms are hard to reach.

These are the perimeters around the city – the ones who are caught in urban sprawl.

It isn't just around the larger cities – it's the smaller towns as well – Gillett and Oconto Falls –

It's a whole watershed. The larger cities are growing into the smaller towns.

People drive into Green Bay. It's going to continue - maybe unless gas prices keep going up –

When there are people who live in Gillett and drive to work in Green Bay, the farms will be holding out for developers and will not want to invest in conservation practices.

Large farms are affected through land rents. The Oneida Nation (buys and rents) land at \$8000 an acre – small farms will sell to anyone if the price is right. I used to hear "I will never sell to the Indians" but I don't hear that any more. If the price is right they're going to sell.

We've got Indian buy back, we've got urban sprawl -

This (phosphorus and sediment load reduction) is affecting the small to medium farms not the large ones. You don't see cows by the stream on the large farms. Larger farms have the incentive to be cost effective and they have to spread the manure using a professional applicator. They've got crop rotation -

There is pretty good control on large farms – it's the small farms where you see they have their cows near the stream....

(Discussion of tables and charts led by Paul Baumgart)

Try not to pinpoint producers - they've had the stress - back and forth - they want to know that they are not being singled out. How come Milwaukee Sewage is allowed to dump into the lake and agriculture is analyzed? Every one is getting tired (of targeting agriculture). How come the towns aren't doing it? Every one is getting tired of hearing it.

(Discussion of model - non point numbers, point source numbers, breakdown of phosphorus and cumulative costs of conservation and crops)

If you look at the dynamics of the area – I'm amazed every day the fall apart of cash crop farmers who are being married to the large farms. The price is right for those small farms to walk away from business because of the amount of money they're going to make - the swallowing up of farms into large farms – the price is right for small farms to be absorbed by large farms – the price is right for small farms to sell their land.

We're getting more corn silage grown, and alfalfa crops these will help stabilize the soil – the switch grass will not work for cash crops, the switch grass is taken right off the table because of the large farms. The large farm mentality is driving this whole area.

I think you were discussing that earlier - what the percentage of people were who are doing nutrient management?

Just in Brown County, 50% are doing nutrient management – DATCP says it's the highest in the state. Just looking at that - that leaves 50% more – there's a lot more work to do....

We're seeing a lot more California style dairy - I'm seeing a lot more guys who are asking "Where can I put my next line..?" They want to stay close and it's going to be within this area...

I expect there to be a lot more - there are a lot more cows to be sighted in the area – with milk prices going up, there are going to be more cows. They're spreading out pretty good.

In Kewaunee County, small farms are disappearing and larger farms are expanding.

Why are they concentrated in the northeast area?

Economics - they're doubling their operations – dairy farms are increasing. And because of the different regulations between counties, they're spread over two townships rather than across two counties.

They want to expand and they're thinking - I don't want to drive to Kansas to do it so they will expand their farms and do it in Kewaunee County.

Is it the quality of life issues? Why is it just northeast Wisconsin? It's not even happening in Door County.

From a developer's standpoint - it's not a groundwater issue it's a surface water issue.

...and family history.

The farms are bringing more nutrients to the area, making nutrients importing unnecessary.

(Discussion of BMP's - easiest to implement)

#1 is done quite a bit around here....

Those of us who sample manure, we've seen phosphorus management improve. It's easy to see the impact (on phosphorus and sediment load issues).

What about the wait-and-see small farms? Is it enough to motivate them?

It's economics, they save money by reducing the phosphorus in fertilizer. Most of the small farms are going to want to do it.

Manure incorporation - how many people top dress alfalfa?

#2 (on the tables) with storage versus without storage – 50% of manure is incorporated within three days. 50% of manure is in storage. To achieve #2 we would have to see more storage of manure or you have to come up with temporary stacking system

...and we've got to go to the “wait and see” people, the cost sharing people, people who are going to continue to do it the way they've always done it....

Daily haul is one of the problems because they don't incorporate.

How do you make it practical for some of these farms? They're going to ask how can they improve what they are doing in practical ways. - Reduce tillage -

Solid versus liquid is another issue – you have to improve the operation, and those close to retirement are not going to invest in storage. How do you improve without investing in operations?

Conservation tillage is not feasible – we've got heavy red clays where I'm at... 50% of the soil is heavy red clay. Brent's office is going to have the job of really pushing cover crops – residuals would be a heavy problem – with crop growth, yield, and moisture.

Kewaunee and Brown Counties have done a really good job of getting farmers to use cover crops - and its something that we can really improve upon.

Cover crops over conservation tillage with the technology that we have – it has helped.

With the fuel situation maybe we could do more no till – you would have to spray...

...Versus chisel plow. There's 30, 40, 50% residue and that's a problem. Chisel plowing is feasible – 30% residue on heavy clay. Nothing above 30% on heavy clay.

The future is toward larger farms and corn residue. Everything comes off these crops - it's harvested, there isn't much residue – cover crops would be key.

You plant the cover crop before you inject – you're going to lose some of that nutrient base - there is no residue and it's tough to reach that 30%

They take the corn silage off....

In Outagamie County, they're conserving moisture – if they inject it 8" or less it conserves moisture – you go over it, it starts sucking it out....

If you're planting corn silage continuously, soil is compacted – water just flows off the top.

Concerns about the process?

Do not harm farmers financially...Do not pick out one watershed... keep them competitive....

Get it all done...but where are the people going to come from? (staffing)

Keep it simple – the more work you can put into the process before implementing the program, the better. The easier it is to understand, the better. Give us some confidence about where we are now - delineate where we are...the levels....the goal....make it achievable.

Government agencies need to work together. With more regulations, make a package for everyone. We're trying to solve the whole problem and still be profitable and it's difficult....nutrient management is good but the crops suffer... I think the corn suffers - there's not enough nitrogen out there. The yields are less.

There are unintended consequences that aren't considered. Focus on the whole package, not just on one thing.

How are we going to make that step - how do we move from planning to implementation? How do we put it into practice?

The end result – how are we going to measure that? How do you measure progress? How do you measure success?

Is there going to be a 590 rewrite? It shouldn't just be a blanket covering. There are areas of farmland with little impact and areas that have large impact. Let's get this down to a sub-watershed level. This particular field that doesn't sit next to a ditch or creek versus other fields that are right on the water.

There are certain farms that we need to carefully monitor – we need to examine the fields that really impact the outcomes.

We need to look at economic disadvantage – and implement practices for a specific field – use a farm prescription.... There are farms that need buffers up and down every inch of stream and he has to realize that his field is impacting the loads.

These could be accommodated through cost share – get the greatest impact for every dollar –

We have to stop spending money on a practice that doesn't have great impact. We need farm impact plans – maybe only one farm needs stream buffers – another one needs nutrient management – another one just needs cover crops.

## **TMDL Stakeholder Meeting 11/07/07 – Local Producers**

Discussion of current issues –

It takes a few months of higher prices to catch up to the months of low prices.

Does chisel plow, saves time and fuel and has the residue in spring.

Organic farms can't chisel plow – they have to mouldboard.

Residue in the spring is a hassle – the perception is a messy field (chisel) versus a clean field (mouldboard)

Current programs –

Current programs are not working too well obviously – their working as good as possible under the current situation.

Offer money to get farmers involved – at the end of the day that's going to be the motivation.

If you can show them that it's worth their while in fuel prices and cost effectiveness...these incentives work better. If there is no carrot at the end of the stick then one needs to be provided. If it's beneficial (for a multitude of stakeholders) then there should be some payment – that part – economic gain, some incentive.

Guys who participate, they need to feel that they are doing their part, common-wide – instead of “you're the problem” – it should be a team effort.

Even on the ¼ lot, they're fertilizing and not using a BMP. It's one of these things in society that we need to fix – a lot of little things.

In the Apple Creek watershed – all of these guys who have been doing it for years have been ignored. If they do things poorly long enough the government will do it for me – the good guys are ignored. It's costing them money, manure store in the 50's and 60's – been doing it for years but no appreciation – the other guy gets the money – the whole array – (MS4) – incremental incentives, rewards, \$5 instead of 4 for historical good. They're paid for a killed field but there are no incentives for hay, no till, at the end of the day it doesn't make sense.

You feed hay to cows instead of corn – there's an inequity – you offer x number of dollars for having a system – there should be dollar incentives for the practice instead of paying for the equipment – you should pay them for the practice.

Process/Program

Too much emphasis is put on some area which will ignore other parts of the problem.

This is where the problem is – if the DNR knows what the problem is or has something targeted then they'll ignore what is actually said – they're already determined to follow their own thinking –

There should be green waterways on the tributaries not green waterways on the river – by then its too late – tributaries of tributaries – that's what needs the grass waterways. Buffer strips on the Fox River – it's too late. The cost for the government agency to get individual farms to use tillage plow – chisel, or strip tillage would pay off more than programs that have little impact – there are certain areas that won't work – where there is no gain. A blanket policy doesn't work.

Years ago, I knew my whole farm – now there are multiple operations where nobody knows the field. Neither the crop consultant nor the manure operator is going to know the farm - not know the field, or history of that field – that's one of the problems. Soil samples only tell part of the story.

Crop consultants need to play a bigger role – what can be done, what needs to be done. Morrison is part of the problem. The problem is people don't know the field. People are buying up land or renting the back 40, 80, or 120 acres – is there a well? An old neighbor might know – but a lot of farms aren't being used – old homesteads are gone and the old wells are not capped well. Who is to blame? Morrison has a lot of uncapped wells.

As you get further away from the end user, there is no understanding. You don't have to drive a tractor but you need to understand the process – the more people we have implementing policies that don't have working knowledge of the land – the more problems there are going to be.

Farmers ask, Why, we've always done it this way? It's not a good reason; you've got to know why though. Lots of things look good on paper, but they don't transfer well.

You have to go farm by farm – show them the money – whether his money or the government's money, if it benefits them in some way, they'll do it. There will always be 10-20% that just won't change.

With phosphorus, the old ways are hard to change – there's concern with reproductive issues – you have to have phosphorus in their diet or they don't reproduce as well.

Discussion of tables – BMP

#8 – There's no economic incentive – can't do winter rye – heavy soils in May and it's not good for plowing. Grass covers – winter wheat – they dry out the soil.

#5 – You can do it on lighter soils – going field by field is important – you can't do these things using a blanket policy. Also there's no incentive, maybe cost sharing –

No till wheat – with harvest in winter – that’s a viable option – winter rotation for a grain farmer – not cows. Corn is okay but not wheat. It’s not good - the fields sat all winter with nothing on it.

#1 – Very easy to do – easy cost savings, easy to show cost savings. It’s also cheap insurance – a few cents add up. There are appreciable gains – such as manure incorporation. We’ve always used injection – spreading manure on the ground – that’s the worst job in the world. You also have to take in people’s perspectives with the smell – but it has to be done. With hauling liquid – you have to keep it close to the field otherwise it’s not cost effective. There’s a logistics issue. Costs less in the summer unless there’s a penalty or incentive

We’ve allowed dairies to get large without a realistic picture of how it will impact the area. Somehow we have to change this – it makes too much sense to get big – government makes it in their interest to keep expanding. They have logistics problems as well, but they do a better job in managing their manure than a small producer.

They have more cash and more time to do it – you have to be careful not to put too much manure on the fields. Custom operators are under better control and will do a good job for the owner, the bigger farms with professional haulers.

In this area, the carrying capacity is exceeded (animal units to land units) and farmers put too much manure on alfalfa fields and not enough on corn silage.

Scientifically substantiating manure on alfalfa – plus the catch 22 with telling them they have to have the alfalfa for cover. What we need to do is reduce the volume – get less manure – how do you get a more efficient cow, less pounds of manure. They have not really reduced it – they’ve moved it, but not reduced it – they’re just moving it differently.

Until we do something with it – instead of land application – we’re just moving it from point A to point B. Unless you’ve changed the parameters – you can learn a lot – but some ideas – you just wonder if they’re paying attention (government, DNR).

What was the original base load – its hard to know where we need to be....

With the DNR - stream bank erosion, how do we know its not a good thing? Without stream bank erosion you wouldn’t have the Grand Canyon. We don’t actually know what should be happening versus what would be normal. With sediment load, how do we know that its not something else that we are doing that causing sediment load? If we reduce the salt content, does that affect the phosphorus? What is the interaction between all of these? Maybe it enhances the phosphorus load – we don’t really know.

In Milwaukee – they’ve got untreated sewage going into the lake, if they wait long enough, the federal government is going to fix it. But we don’t know what effect it actually has. Due to monitoring, we know a lot more.

## **TMDL Stakeholder Meeting 11/09/07 – CAFO & Near Permit Farms**

Current Efforts –

Cost sharing buffer – my field lies on a corner, cost sharing won't cover hay – if you take out the field for a buffer you lose that crop money. Government and farms have to get on the same page, (harvest hay triangle fields – harvest – double dipping – you've got a tough sell)

It's not even about equipment or the money, the fields are taken away, but we need more ground to put manure on - that's why we didn't take equipment cost sharing

In the book it looks wonderful – but when you get out in the field it just won't work. Putting the plan in place – it won't take anyone's interest.

Federal program

If it's just phosphorus and sediment you can harvest hay, but the federal program won't let you. The county can't offer cost sharing but we don't have it for some.

The conflict of programs – the federal program has money for cost sharing but they're more restricted.

Another one that bothers me – Outagamie County has flat land – with the buffer strips, they like to tell you where you are going, so they don't understand the land set up – you have to do certain things that people with book knowledge don't take into consideration.

A better approach is to look at each individual farm – in spreading manure, each farm and each type of soil needs to be looked at.

What motivations exist?

Financial

Also time invested, it's a business, are you getting a return on your investment?

Consumers will always be the ones to be compensated – we had to get big and get more land and we had to get faster – they drove us to get big because there is pressure to get big – consumers created the problem by getting paid decently.

How can we make it cheaper – how to get another bushel of corn, how to get another pound of milk? We have to fight for land – make use of every piece of land possible – unless the housing market keeps going – the cost has prompted the farms to get larger so they're getting a return on the five acres that we don't plow. The incentive is to cut costs by getting bigger.

Experience, education – tillage practices, manure management, good networks – the dairy industry has changed over the last 15 years. Sand, water, manure, you need a chemist to figure it all out.

The sprinkler system – that's a 20 lb hit per cow but now its all the water the technology is not keeping up with both ends of it.

Manure technology and then business

A lot of this comes down to economics

Phosphorus – a lot of different ways to spread manure – a spreader is not really concerned about the phosphorus part of it.

There are different types of manure that won't run –

Some spreaders are sloppy; somehow we have to make sure the applicators are doing a better job

There is sloppy and fast versus quality

Applicators will move a tremendous amount of manure and do it cheaply –

I'm ashamed of some of the practices of manure spreaders (custom applicators)

Sand for bedding – some don't want to work with sand – sand separation systems – custom operators will keep costs really low and do a really poor job – pay a little more for a professional job

Any incentives in this area would be good –

I think its reality – how would you force quality? Some look for quality, some look for price – how cheap? It's commonsense – is it really what you want as an industry? It's the proper way of doing things.

I'll never win an award for being an environmentalist because I'll be the next to have an air line break –

There's a difference between having an accident and doing a poor job.

Certified Nutrient Management Plan (CNMP) – there's some cost sharing in that

What concerns about TMDL process

What is the total load going to be? Where is the water testing and total load testing?

The sad part is you put one bad apple in there and it spoils the whole program.

How do you address these issues? It's tough to do.

Concerns:

The big one that concerns me is what are we going to do when we get too much rain? We follow all these procedures and now say its September and my pit is full – I have no more space, I can't spread it for six months, you can't clothespin a cow – where are you going to go – to the city and pay for storage?

The government should pay for it – I don't think we should pay the cost – you're tying my hands together. A solution is needed – for an avoidable situation. In the 70's and 80's we had some nightmares. If they want all of these things to happen they have to have solutions.

BMP Costs

Discussion of incorporation rules – small operations versus large operations – how they are different.

Corn silage does not break down like it used to.  
Every time we change land use, something different happens out there.

In East De Pere, everyone has nice green lawns, they mow their lawns, take the mower to the sewer ditch, rinse off the mower and all of that goes into the sewer.

It's frustrating having a crop consultant and someone else can just put fertilizer all over their lawn without having the soil tested, without paying attention to how much they should actually use.

It happens on golf courses, any place with large turfs – these people will have to manage better. It's not just agriculture.

## **TMDL Stakeholder Meeting 11/12/07 – CAFO & Near Permit Farms**

The bulk of loads are going to come from lawn fertilizers. Farms are very regulated already and its injected – whereas the golf courses spreading fertilizers - the fertilizers are put on top of the land. Small farmers get away with spreading manure on top as well. We can't do that because we're watched. We have field limits, soil samples, manure samples. We're regulated for buffer strips along Apple Creek. We can't distribute along the ditches – we're already highly regulated.

Some are conscientious, some are not conscientious. Some are a lot more careless. The more careless are cheaper. You get the cheaper applicators and they're more careless. Our manure (carried in Penske trucks) – the trucker is very conscientious, clean, and reputable. They're washing the equipment to prevent disease – current management practices are adequate for CAFO's. Are there people who police other CAFO's? Our truckers are careful about manure pits – how much goes in and how much goes out and where they're applying it. You need to look at what factors are in the motivation. Respect and pride – local pride. We take pride in our community. We have a neighbor who applies on top right before a rain. We don't want to be the bad guy – didn't want to squeal but it would have gone through our farm's ditch so we had to talk to the DNR. You have to get genetic testing to prove that it's not your manure. So there's different types of conscientiousness....

In implementing conservation programs, you have to look at how cost effective it is, you have to consider the fuel costs, the fertilizer costs – why wouldn't you want to be more cost efficient? \$70,000 – 80,000 annually for applying manure.

In the last couple of years we've reached the limit on saturated ground and we've had to store it – what if we get a wet fall – we can't do like Milwaukee does and dump it into the lake. There's no limit now – but it will happen in 2010 – we're busy adding more storage space because we can't haul on frozen ground. But if the ground is saturated already and we get a wet fall, we can't spread it – you've got that 72 hours or less rule. And what about slope – the erosion – we're on flat ground so we're not as affected as some others who lie on a slope. But it might be a place to look to see that they're regulating everyone. Blanket covers won't work....

There's got to be individual analysis – some don't need the buffer strips like HEL (highly erodible land) – Madison can't write up rules and regulations that cover everyone – what about abandoned wells – not all of them have been closed up with bentonite.

Discussion of tables –

These are blanket rules – but we're already doing most of these methods. We do 98% of this – we incorporate, we chisel plow....

A lot of times it's a simple change – but people don't adjust to change, especially to new methods. If you can get them to change, then they're doing very good.

The cover crops are not practical – and we've already implemented 1, 2, 3 and 7 – also 6. (?)We do the cross laterals into ditches that are already buffered...

The real problem in this area is not urban sprawl – it's the land concentration (animal unit to land unit). They're cut-throating to get land to get the manure out cheaper. We're swapping manure – we're putting manure on land that is closest to us (but belongs to another farmer) while they're putting manure on our land that is closest to them. It's our 1<sup>st</sup> year trial –

What does the DNR need to be aware of?

Inform people of what the intent is instead of cramming regulations down our throats.

One shoe doesn't fit all – they ought to come by each farm – do an individual analysis.

The wet year – when we have saturated soil – it can be perfect for 9 years - there should be a “forgiveness clause” because then the 10<sup>th</sup> year comes along.

We do the box manure, pen manure – it doesn't run, and it acts like a cover crop, covering the soil.

They need to be talking about 2010 regulations, restrictions – some of these farms have cattle walking through the creeks –

## **TMDL Stakeholder Meeting 11/14/07 - Agency**

Agriculture has been blamed for some time – the perception is that rivers are important – but people don't make the direct connection that agriculture sees the link – (NRCS). Their perception is that agriculture isn't too concerned – the trade off or incentive that may be of interest – Public agencies have cried wolf for so long that agriculture is a major contributor to nonpoint source pollution – to reduce pollution from farms, we don't have data to quantify pollution. Where its coming from, how much is there and where is it going?

Agriculture is a for-profit business. If they make a high enough living producing their product then they can afford to implement environmental programs.

Agriculture is concerned that regulations will be impacting their business. Farmers feel that they are doing okay but agencies have been saying that more and more reductions are needed – for instance, the buffer strips that Bill Hafs works on. But cities are status quo – it's not working. Now we're saying the status quo needs to be cut in half again.

We have a lot more information and data but we haven't raised the bar.

The Ag side isn't distanced from water – but urban areas have the immediate local water body and they're distanced from the effects. Milwaukee is dumping sewage right into the water body.

Urbanization – preventing sediment loss – farmers don't care about keeping farms productive, they just care about selling it eventually – and sediment loading is a huge issue.

Are we willing to pay farmers for being good stewards and not just manipulating the final product?

There's a small percentage that won't change but most want to be environmentally responsible – but mortgage bankers are encouraging cost-effectiveness.

We have a jaded agriculture – they are hung up and strung up on sediment issues – phosphorus is 9, 10 times over – fertilizer products are having a costly effect on the watershed – and it has a high cost.

Globally implement a change – maintain a yield without destroying our water sources.

There are groups of farmers who are more interested in being responsible but cost-sharing is a concern. They have economic as well as environmental interests.

I have never been on a farm that intentionally polluted the farm or water.

There is a statewide perspective versus the local perspective.

There are very similar conversations around the state. The Northeast is different because you have a collision of cows and people on the land. There is more sensitivity – you need to make it a more positive pressure - we have the highest coverage of nutrient management practices.

The northeast is a step ahead. Some do the right thing, others do what they have to do – others don't appreciate the government interference or current efforts.

It isn't going to work unless you pay people to be environmental stewards.

Nobody pays me not to speed. We pay farmers – it becomes an expectation, an entitlement. Cost sharing has worked against us.

Cheap food has not helped the farmer. Unless you're a big corporation, you can't pass the buck.

Nutrient management – that will make money even if there is no cost sharing.

Yet we pay them \$28 per acre to have nutrient management. And after – do they implement, do they follow through on the plan – no, the plan sits on the shelf. If they don't follow it, what good is it?

50% are actually implementing the plan. Folks who have the plan may not follow them completely but they are going to implement some of it.

Get people to think about nutrient management – that's good.

The East water project – lots of gaps in what we have to do. Lots of policy gaps, non-point swings the bat – load up crop needs aren't appropriate

It's the distribution problem with cows. Manure management.

Corn prices, increasing soil phosphorus...BMP's we have 500,000 implemented

Policies with the farmers to work with – in the bay we haven't made progress, instead its gotten worse. It's 2 or 3 times the phosphorus runoff –

Aggressive farm economics put farmers at a disadvantage –

With factories, there is pollution prevention, process changes inside the plant - we have to do this with farmers – there's no reason for farmers to feed high phosphorus feed to cows, we need to work to eliminate this – to expect to do pollution prevention and end of pipe pollution control.

An obese person who is told to go up another 40 pounds, when the environment is already sick and we're going to increase the loads....

Land owners do whatever they want – no regulations, no accountability, for land management in the cities. We need a simple policy change to get land owners in the urban areas to restrict fertilizers.

There needs to be a level playing field between farmers and urban areas.

Cost sharing – didn't pay producers

If you look over the farms in 2002/2003 – the corn and prices – the perception is skewed on both sides of the fence...

Do we know that cutting TSS and phosphorus – cutting it in half – is that going to be enough?

There are always entitlements; it's not easy to change perceptions.

What is good enough? Do we have the science or the technology to actually cut loads?

What about economic stability? How much debt do they have to go into? How is it going to impact their business? Will the bank cover cost sharing? The biggest thing is economic decisions.

They are convinced they're never going to achieve results based on the criteria but only if it makes money – such as dewatering animal waste, the fuel costs involved, these are economic decisions.

Smaller farms are struggling economically...saving them money is an instant buy. If its cost effective, or makes money.

For phosphorus or sediment loads – you have to give them incentives.

And to do it you need to go farm by farm, a universal prescription doesn't work. You need one on one contact but the county is the regulator – you need one on one without the regulators.

There's a time investment, the likelihood is limited potential where without positive change, voluntary efforts would be disastrous.

There is a big community benefitting from reduction of phosphorus and sediment – far less stakeholders in the farming community and it's not fair. Somebody has to step up to the plate to get the job done. The future of the economy depends on our actions. Vacations on the weekends, people who head toward cleaner water. People will want and wish for cleaner water – for swimming, drinking, you don't need to have perfect water

for them to enjoy it. There is a great big group (urban population) that benefits and a few thousand stakeholders (farmers), and not that many people to help the farming community. Take the road budget compared to the water budget. We don't have our priorities right. (Reference to St. Norbert study on water quality and air quality – state of the community report).

The council is not discussing TSS or Phosphorus loads – to get the money you need public awareness, whatever target you're talking about. You need to expand the media contact.

In the Green Bay/De Pere local government, there's maybe 100 employees governing 250,000 humans – 1.6 million human equivalent in the rural areas and less than 20 people to deal with them on a one to one basis.

Going out to land is work intensive and its not going to happen unless there is an economic incentive.

PCB's in the river – the perception of people with the St. Norbert study, as far as air and water quality, is not very good.

Farmers are notorious for rubber-necking - so they're looking around at the cities -

Most important ideas -

Don't limit ourselves. We need to step out of the box. Other solutions may work. We need to be creative, focus on pollution prevention, set limits, and develop policies where there are gaps. We need to limit cows or ship the manure out – the economics will be a driving force.

We need to promote more new technology - to reduce the total loads. There are digesters, and other new technologies.

And we need to create new strategies.

Water pollution prevention plans, we need to share between agencies – and not just regulate but get public involvement as well.

We need an ear to hear, develop our listening skills to bring them into the involvement process. They're not sure we listen to their comments. If we continue to act in an agency process we won't get the participation.

It's not just regional, we have shared watersheds. We need to incorporate their comments, and views as well as be equitable. We also need to engage the community and other agencies, such as the farm bureau, and the dairy business association.

Nutrient management will be required, and cost sharing is necessary. It reduces environmental risk - as farms get bigger – there's a community acceptance issue. Farms are part of the community.

The TMDL effort should be coordinated with the nutrient management effort within counties and their land and water resource management planning activities.

## Appendix D: Written Responses to Survey Questions

To answer today:

1. On a continuum from “not at all important” (represented by a 1) to “very important” (represented by a 10), how important is it to reduce phosphorous going into the Lower Fox River Basin? How about sediment, using the same scale?

1	2	3	4	5	6	7	8	9	10
0	1	2	0	4	0	3	2	0	5

Comments:

- They are concerned with their property (Ag.); only concerned about bay if it impacts their business.
- 8/9 Stakeholders aware of the issues; 3 Stakeholders unaware of the issues
- Me; 5 Average for all stakeholders; 2/3 Those not aware
- There are a lot of #1's; I would guess on average #2.5
- They are concerned but limited by their operation and funding
- 10 = P; 10 = S
- 10 = P; 10 = S
- 10 = P; 10 = S
- 7 = P; 7 = S
- 10 = P; 10 = S
- 5 to 8

2. On a continuum from “not at all” (represented by a 1) to “outstanding” (represented by a 10), how well do current efforts to control phosphorous work? How about sediment?

1	2	3	4	5	6	7	8	9	10
0	1	2	1	4	0	4	0	0	0

Comments:

- 5 I would like the DNR to prove the source of the sediment.
- 6 Interest; 4 Implementation
- 8 We are headed in the right direction
- 5-6
- Okay – but could be better.
- 7 = P; 7 = S
- 4 = P; 3 = S
- 4 = P; 5 = S; Tools are in place, money needs to be put into place to implement tools – namely NR151; need staff money.
- 2 = P; 4 = S
- Brown County sewage plan / stormwater ordinance does not control phosphorus levels, only the reduction of sediment percentage (TSS) by 80%

**What do you think are obstacles to implementing these current efforts?**

Lack of staff, GBMSD/De Pere Waste Water have 100 employees to treat 250,000 human waste in Brown County. LCD's/NRCS/DNR have less than 20 staff = 16 million humans. Economics needs to drive the water quality vehicle. Not enough land; education; other waste; mismanagement

Politics, money, staff, knowledge, preconceived or real barriers or practices, awareness of the connections.

Linkage of issues - hard to make people aware of 1) where phosphorus/sediment is coming from; 2) where it goes; and 3) what problems it causes.

Trying to get all to gain in on some kind of project.

Cost, ease of implementation, timely permitting process.

Confidence in outcomes from changes in management.

Farmers are going to feel singled out.

Making it too complicated.

Mega-farms, number of people involved.

Education of the people involved.

1) cost; 2) knowledge; 3) no enforcement.

Challenge to handle manure from livestock operations.

Economics, realities of farming (soil type, equipment, yields, need for manure hauling). Cow numbers increasing.

Cow numbers #1 – If we increase numbers, we're increasing amount of phosphorus on the same number of acres and increasing the amount of acres being spread (which are all tillable) and increasing the sediment run off.

Dairy manure.

Enough man power to enforce, patrol individual farms.

Farmers who don't come to these meetings must not have concern on this issue.

**What strategies/efforts to reduce agricultural sources of phosphorus and/or sediment loads represent the best common-sense solutions to you? Here, we are thinking about regulations, cost-sharing programs, best management practices, permits, education, voluntary programs, or state or local government led efforts.**

Best management practices; education.

Cost sharing programs; BMP's; permits.

1) BMP's; 2) cost-sharing programs; 3) permits; 4) education.

Cover crops, soil testing and manure testing/nutrient management, conservation tillage; timing of application of manure, residue/manure application interaction on runoff.

Discovery Farm work shows greatest phosphorus losses (excluding tile lines) to be Fall and Spring runoff. Cover crops should then have the greatest impact (cost sharing/best management practices).

Cost sharing to good stewards of the land not the "bad" ones.

More cow restraint, get a plan, and preview results.

Education #1, best management practices #2, cost-sharing programs #3, state or local government led efforts #4, voluntary programs #5.

Cost sharing #1, Need regulation or laws to enforce #2.

Cost share programs depending on the program; Best management practice; Education.

Continue current efforts - utilize more phosphorus indexing. More buffer/filters. No new regulation. Continue cost-sharing.

Honestly - I do not know of an effective practice with taking economics into account.

All of the above.

Increased staffing; new technology (waste to energy); dewater animal waste – reduce transport of liquid waste – energy from waste – reduced land needs/land costs.

Nutrient management based on P indexes – however, getting the proper management is difficult. Ultimately regulation sets the speed limit. Cost share works but money is limited and follow through with implementation is difficult to track and check.

Education at all levels – bring to children so they can carry-on and be aware from the beginning!! Bottom-up!!! Allow farmers/developers/land owners to be part of all decision-making processes!!

Follow 590 plans; more minimum and no till practices utilized.

Grazing instead of (fall) plowing.

Provide funding for existing programs and we'd meet TMDL.

Be sure each affected agency is involved in crafting solutions.

Remember that every action has a reaction to water.

**What do you think are trouble spots with current efforts to reduce phosphorous and/or sediment loads? Here, we are thinking about regulations, cost-sharing programs, best management practices, permits, or other state or local government-led efforts.**

Agricultural production is primary contributor. Urban sector is also at fault. Cost sharing needs to be increased if more management practices are to be implemented.

People do not correlate clean water with what we are doing to the land.

See #2 above. Further - eliminate mandatory requirement of C/S funding to bring farm into compliance with NR151. Need secure source of staff funding to retain county staff to implement minimum Ag performance standards of NR151.

Implement existing laws; develop workable BMP's.

Everyone thinks others are responsible = city versus country. \*Problems with knowing the damage phosphorus has on water when one is told it is good for their lawns.

**Are there any quick fixes that could help reduce phosphorous and/or sediment loads?**

No.

Legislative action; regulations; grass production.

Vegetated buffers are quite effective in reducing phosphorus and sediment from reaching surface water. A strong push to administer existing programs such as CREP would be helpful.

Minimum tillage.

Phosphorus free fertilizer (but has cost). Quick fix in a residential area is proper design of sewage systems in new subdivisions.

**What is the best way to get farmers involved in the TMDL process?**

Make it mandatory for all.

Personal contact.

Be fair on how we look at things.

Local meetings – information.

Show economic/agronomic advantage to their business.

I hate to say it! Cost share – money talks – can we ever do it for the right reason instead? Doubtful!

Money.

Through consultants and agric. agents – county level; Kevin Erb does a great job with passing along information.

Cost sharing.

Start with educational and/or informational sessions....

Education – to them directly or through nutrient planner.

Word of mouth through agronomists/crop consultants, people who work with them on a daily basis.

Education, demonstrations – to show how and also reinforce – it could work for them.

**What public information strategies would you recommend to get stakeholders involved in the TMDL process?**

You have to get the media involved and get their buy in to help “advertise” the issue – it seems that issues in the news develop stakeholder interest.

Good advertisement to these stakeholders – ensure they will be heard.

**Who else should be involved in the TMDL process? (name and affiliation)**

Landscapers/ Golf courses/ Cash croppers.

People in cities and towns are probably more responsible for over-fertilizing.

A representative of Winnebago County area; communities with stormwater Phase II permits for urban; NEWSC – (northeast Wisconsin stormwater consortium).

Brown County Planning, Glacierland RC&D.

All people.

Nutritionists and manure haulers.

Manure haulers #1 problem of over application. Just because I make a recommendation on how much manure to apply doesn't mean it gets done.

Actual farmers.

What about farmers? Aren't they the ones who we are picking on?

Legislators/elected officials.

Fox/Wolf Watershed Alliance/NEWSC - Sue Olsen and Peter Schleinz.

**Of all the things we've considered today, what is the most important for me to remember and take back to the DNR as the TMDL process moves forward?**

Keep everyone informed; no surprises.

There is more phosphorus getting into streams than there should be.

Never going to attain clean water for environmental purposes, need to clean water by economics to be the driver; promote new technologies; staffing and economics.

We will probably never know the "right" answer but we should not be afraid to make radical suggestions regardless of politics, social "rights, economics, etc. The changes in how the bay has historically been used should be reviewed as well. Significant loss of wetlands has had a dramatic impact....PCB's, homeowners, etc....Why was the Bay called "Green Bay" in the beginning?

Suggestion: Maybe one implementation strategy could be to develop a "farmer interest group" that would allow for them to come in during decision-making/implementation phase that would have a significant role in these processes! Need to have buy-in!!!!

Be sure we are not rushing into some areas too fast. Be sure they are going to work first.

Finding the best way to do this economically and the most effective way to clean up the Fox River.

Everyone needs to do their part. Check all angles. No stone unturned.

Cost effective, simple, well thought-out process.

Keep us all involved and informed.

Greatest impact for lowest \$'s.

Make it simple, yet consistent.

Make it attainable by the people who are supposed to implement it.

Do the practices with the most return first. Keep the farmers informed about what to expect for the future. This allows them to plan.

Make sure practices implemented on individual farms are practical and economically sound for the producer. This way there would be better chances of the producer participation and continue to have practices in place.

Additional regulation not needed – current efforts in nutrient management are still improving. Education of growers needs to improve.

Common sense – all the practices in the world cannot be achieved unless they are practical enough to implement. And unfortunately as of today I cannot say there are any that are effective for the dairy farmer. The grain farmer “yes” no till, minimum till is probably, but not for the farmer that has to haul manure.

Cooperation, education, demonstration, not necessarily in that order.

Follow 590 plans – more minimum and no till practices utilized.

This has all been discussed before. This is not nothing new.

Make recommendations practical – use TMDL to bring various state & federal money to implement plan.

Do something.

**To respond to later (yes, homework!):**

**Considering the current approaches to reduce phosphorous and sediment loadings into the Fox River and its tributaries, what is one thing that works well? What doesn't work at all?**

Following a nutrient management plan accomplishes both goals of phosphorus and sediment reduction. Nutrient management plans that are not implemented will not help accomplish these goals at all.

Reduced tillage, buffers, cover crops, Nutrient Management, Pest Management and grass based farming will continue to play a role in the reduction of both sediment and phosphorus inputs to the Fox River. Conservation options for each type and class of producer is necessary. As was said, one size does not fit all. These practices should be encouraged and made economically viable for producers in the watershed. More government regulations without proper farmer involvement will not only alienate farmers from the process, but will also cause frustration and backlash for the "rural" portion of the TMDL process.

Existing BMP's are sound. If 70% of loading comes in just 20 days or so – and much of the phosphorus is soluble we need innovation and sound science based on policy – if we are to make progress.

(Works) If everybody does their part by reducing phosphorus at their operation; (Doesn't work) if it is not watched or enforced by DNR.

(Works) Conservation tillage, reduced phosphorus in feed; (Doesn't work) Buffer strips, it makes more sense to grass ditches with narrow strips in fields than the 180 ft along the edge of streams, brooks, and larger ditches/creeks to see results in sediment/phosphorus reduction.

Educators and education – in urban/rural settings. A lot of small things contribute to the big things.

I don't think the filter strips are working at all.

(Works) Areas with cost sharing. As long as there is cost sharing all practices will work.

I suggest keeping high P fields out of corn silage longer – example: most producers will grow 4 to 5 years corn silage if this was reduced to 2 years there would be 2 to 3 years less in a rotation that erosion could happen.....I'm assuming it will be wheat then alfalfa.

(Works) Growers that have wheat in the rotation will sometimes come back and summer seed alfalfa (if there is enough soil moisture at planting in August) and/or make a summer

manure application onto wheat ground if they're going to corn or alfalfa next in the rotation...(Doesn't Work) Initial spring tillage: due to amount of clay present in soils in area (unlike other parts of the state)...But most growers have limited time to put in cover crops in the fall, plus concern in spring for it to dry out, etc.

(Works) Buffers along streams – low cost and effective (Doesn't work) Unfunded mandates.

**Regarding the proposals and suggestions made during the meeting, which idea/suggestion seems the most promising to you? Why?**

Economics needs to be considered. Who will pay for benefits, and who will receive benefits? One suggestion mentioned at the meeting was to examine the current Nutrient Management standards/recommendations regarding "allowing" manure applications on fields where soil test P levels already exceed 50 ppm. If 25 ppm is optimum, why not use that value as the threshold? That may be an easy change to make programmatically, but not as easy to sell politically.

Ideas that seem most promising are to involve all stakeholders to get buy-in, and utilizing one-on-one contacts.

Work directly with Ag. Farmers – be innovative and creative. Avoid politics which does not address real issues.

Increase manure incorporation from 50% to 85%. For everybody, not just CAFO's to reduce runoff.

Reducing phosphorus in feed or conservation tillage - It saves the producer money which he will immediately see. Instant financial incentives work great.

We have to be more specific on how we regulate the specifics. There is a terrific difference on application of manure – 72 hours is too big a window if its raining. Maybe more specifics – farmers are looking for cheaper instead of the way it should be done.

Finding the source is the first place to start. If CAFO farms are doing what they are supposed to do, they should not be the problem.

Cover crops on corn silage and soybean land. It is easy to do and gave a lot of phosphate run off control.

Limiting to 2 year corn silage in a corn alfalfa rotation. Because cow numbers will not go down, nor will soil test P – It stands to reason if we increase cow numbers, we will increase soil test P. The only way to reduce this in to the Lower Fox is to reduce sediment. And this can be accomplished by reducing the years in rotation that corn silage to decrease soil loss over a crop rotation.

As we discussed during the meeting the dairy P feed ration reduction is promising since many producers are already doing this and just need to reach the last one. If you can show some data of the ones already doing it you should be able to convince the remainder. Increase manure incorporation will be easier for the liquid manure application producers but more challenging for the solid manure daily haul producers especially if they don't have storage. The third suggestion is to stabilize soil test P – might be double if hauling to lower test sites and erosion concerns are no worse or better.

Funding implementation of NR151 - Why? The rule is already in place. Addresses most significant sources of NP pollution - Full implementation would pay big dividends towards improved water quality.

### **What is the most important to emphasize in the report?**

The most emphasis should be placed on the need to educate local stakeholders on their requirements under the TMDL.

Make everybody aware and not to try railroading anything upon us.

Streamlining of rules – there are too many groups with a say on the environment (EPA, State DNR, National DNR, County land conservation offices, and so on) They really need to be on the same page or better yet, combined so we only have to deal with the headaches caused by one government agency.

It should be workable to people who have to abide by the rules – we still need to keep BMP's and common sense on this. People don't want the DNR to get tougher but they're concerned about others not doing what they should or could.

Finding the sediment source should be the first that should be done.

Either need to cost share or make it a law and enforce it.

That conservation tillage will not work with animal waste. The manure must be incorporated, in doing so we destroy the residue. Cover crops won't work because of the spring delay in planting. We have to keep the sediment out of the streams by reducing the amount of time high risk fields are in corn silage, or filled, and have them in hay production longer in the rotation.

The importance of having a nutrient management plan as your starting point to know which fields are of concern, how much you could apply and if alternative sites should be located for application.....

Fund existing programs.

**How important is it for key stakeholders to be represented and involved during the TMDL process? How should this representation/involvement occur?**

See response to number 2 - (Ideas that seem most promising are to involve all stakeholders to get buy-in, and utilizing one-on-one contacts).

If farmers, as well as other stakeholders, such as the cheese industry are not included in the process they will not be vested in the outcome. However, if meetings are available and convenient in the TMDL process, and they feel as though they have had ample input, they will be more willing to participate in any decision that is made. If efforts are made to include these opinions, but few farmers are actually reached, efforts should be expanded and re-evaluated. Maybe Town information meetings could be held that are more accessible for farm participants. Private agronomy and crop consultants should also be contacted about any suggested changes in Nutrient Management plans, since that group is generally a trusted advisor to agriculture.

I also think we need to have some means of working with clean water advocates, boaters, sailors, fishermen, shore land owners.

Very important – through public meeting.

Very, it's essential. I can [concur] in any way but it must happen if you truly want results and not empty gestures.

It's very important to me – keep us informed with one on one contacts. Small community meetings elicit fear - they don't want to speak out against neighbors – when you go against neighbors and their practices....it's hard suggesting ideas without offending people's neighbors.

By personal contact.

Very important. A letter should be sent to invite to a fact finding meeting.

Very, they will give you an indication whether one of your practices are practical enough to implement before you waste your time implementing something that will never get done.

If you want it to be effective you need the involvement of stakeholders, such as farmers, consultants, etc. who would implement any practices that would affect the TMDL. Probably should look at a combination of willing innovators but also identify key producers and/or their planners on acreage deemed critical to reduce P and sediment.

It is important for the agencies and groups responsible for implementation to be at the table to get something that can be easily implemented at the ground level.

**Do you think the phrase "Restoring our Water Heritage" is effective in conveying the need to reduce phosphorus and sediment to the public? Why or why not?**

No, because it doesn't convey the purpose of the project clearly. It is not simple conceptually. If you have to think about what it means, then it is not conveying the message.

That phrase might go over with sportsman's groups and the general public, but may not be as understandable to farm groups. Maybe language like "managing P and sediment discharges to the Fox River equitably from rural and city sources" could be included with the explanation.

Not sure.

Yes, but everybody needs to know what phosphorus levels are doing to the water.

Not necessarily because many people don't know what it was like before or how it has impacted their lives or if there really is a problem in the first place.

Not sure how to answer – people are thinking it's not a big deal when it is a big deal – it's a very important issue.

Yes, because that can relate to everyone.

Yes.

No. Few actually know our water heritage, I for one, do not know what our water was like prior to the land being tilled, does anyone? Were records of water quality kept in the 1800's? I doubt it.

It could be but also needs to get across to the public what level of P and sediment this is.

It's okay.

**Please indicate how involved you would like to be as the process moves forward. For example, would you like to receive information, attend meetings, take a more active role in implementing the TMDL, or what? Other comments?**

We would like to continue to participate as needed by providing an Ag perspective, and continue to receive information regarding the project, meetings, progress, etc. Other: Nutrient management is the practice farmers must use to comply with the TMDL.

[We] would like to be notified of future meetings, and continue to receive information as the plan progresses. We could make staff available to attend meetings depending on other scheduling.

I generally have time for the policy and strategy discussions – actual facilitation of efforts will need to be done by some organization which embraces this effort as part of its mission.

I would like to be updated on the process and upcoming meetings.

I wouldn't mind – through meetings or mail or one on one phone conversations. What concerns me is that some people can make big changes but they don't care and the changes don't do anything.

I don't know if I can do more but I will help where ever I can.

Attend meetings or take an active role.

I want to make sure you do not waste your time developing plans for implementation which will later be put into rules by the LCD, or NRCS - that will never be followed by any producers because they're not practical.

Keep me informed of developments. May be able to attend some meetings depending on time of year.

Involve me in discussions regarding implementation – not I&E, monitoring, other.

## **Appendix E:**

### **Responses to Telephone Interview Questions**

**What factors influence you to incorporate pollution control strategies (i.e. buffer strips, conservation tillage, or other best method practices) in your farming operation?**

Cost-sharing; saving time/soil/energy/fuel

What works, if it works for us.

Cost-sharing

Cost; how much will new equipment cost; benefits; if it's effective; does it satisfy the letter of the law?

The lay of the land, if it will work

Cost sharing; care about doing what happens to the land; if it works economically; if it benefits the farm/land

We have to.

I'm transitioning to organic farming – it's a lifestyle change – pasturing cows, getting back to natural production.

Cost sharing; incentives for retiring fields; purchasing different equipment

**What strategies/efforts to reduce agricultural sources of phosphorus and/or sediment loads represent the best common-sense solutions to you?**

Soil test every 3 years; Reduction of phosphorus according to what is needed; avoiding highly erodible land (HEL); looking at slope and not surface applying manure

Incorporation of manure; buffer strips; basic soil erosion prevention practices (angled tilling); avoiding spreading manure before rain/on frozen soil.

Preventing runoff-buffer strips; keep things clean (scraping barnyard) so rain doesn't carry manure into creek.

All methods work in different ways.

Nutrient management plan, using a crop consultant

Buffer strips-heavy rains are very destructive; no plow reduces wind erosion; (concern about limited land availability with buffer strips - he has only an acre next to streams).

I'm cutting back phosphorus in feed intake - managing manure output. By applying manure according to nitrogen needs instead of phosphorus needs, they've been able to increase gallons of manure to acres.

Nutrient management plan, using a crop consultant

I'm using less phosphorus in fertilizers and less phosphorus in feed. I don't practice conservation tillage since I'm on flat land

Rotating manure applications; soil testing; injection of manure

We don't spread our manure - we have renting ground and it's injected. Fertilizers are pretty expensive - but our ground has been tested and we're at maximum.

Rotational pasturing, no phosphorus feed, no chemical fertilizers - animal nutritionist was pushing phosphorus for reproduction. Cows are far healthier now.

Incorporating manure; incorporating fertilizer into soil so it does run.

**What is the best way to get you or other farmers involved in the TMDL process?**

Education; working with a crop consultant

Education; examples by other farmers; talking to other farmers

Some farmers are older and looking to sell the land and they aren't going to want to invest the money.

Education programs; Funding assistance

Financial assistance, everybody expects us to do things but it all costs.

County cost share; cost incentives and expense reduction

More knowledge, education; smaller community groups for education

Taking suggestions from crop consultant (open, not sure)

We all should reduce pollution. We need to prevent it from running into rivers; controlling runoff on slope; already doing what he can.

Mandatory meetings, local meetings; using a crop consultant/crop scout.

Good questions. Farming is good right now, milk prices are up but it's taken a while to get here - and we're watched pretty closely. Don't know.

Health – had cancer 2 years ago, went organic have more energy today. My neighbor has 500 cows, he spreads his manure – soil has no smell. My soil has a good, earthy smell to the soil. You turn over a shovel-full of dirt and there are earthworms in it. My neighbor has chemical crops, atrazine in the water. Atrazine causes prostate cancer.

Financial incentives; education – training/brochures.

**What factors hinder you from incorporating pollution control strategies? What obstacles are there?**

Nothing, you just need to work out a plan that is effective

Investment cost; if it's not cost effective.

None for us - if we can do something, we will.

Cost; expense - how much labor will it take? Is there enough time or staff?

Cost; we were denied cost sharing because we didn't do it the way they wanted; no cost sharing available – also the funds are gone for the cost sharing program.

If the rules are workable-if strategies don't work, if they're too restrictive. (i.e. no manure on certain fields - 250 acres of buffer strips and lost 5 acres).

Money. We do as much as we can with what we have.

If it requires additional work – if there are fuel costs – or if it means extra labor time.

**What concerns do you have about the TMDL process? How can we address them?**

Initial cost – if there is no cost sharing was available; cost effectiveness; people hate change, cost sharing helps.

That they use common sense; take into consideration individual farming practices and individual farm; too much government control and no common sense.

How is it going to affect us - our future plans (retirement - expecting to leave farming); cost.

Make sure that it's fair for everybody. (agric - different farms/urban)

Smaller farms are okay, we have enough land (for manure application) but larger farms don't have enough land. Because of the price of fertilizers, and the size of the herd, they're fighting for land.

They need to look at more than just agriculture - the neighbor (large lawn) puts on a lot of fertilizer, far more fertilizer than needed - professional fertilizers over fertilize golf

courses, urban lawns. They also need to look at other forms of phosphorus - i.e. geese produce high amounts of phosphorus.

We all need to help clean out the river, or we'll destroy the river - they need to get the city people involved (fertilizers on lawn).

Don't make it too restrictive, or unworkable in practical ways. Education versus regulation - its an obvious problem.

Allow us to farm the way we can – they make us do a lot now.

Don't know enough about it.

That the DNR don't have an understanding of farming – they might come out with impractical ideas or procedures.

**What suggestions do you have for the DNR to keep in mind as they implement this TMDL?**

The benefits of clean water – water quality, people take it for granted.

Common sense - use common sense

People cannot implement new policies all at once - keep in mind that it will take time to change.

If it's going to cost too much for smaller farms; if the price of milk goes down then we can't afford to do it.

Use sound science- accept scientific practices.

Listen to farmers - they make up rules for them but they never listen to them. We had barnyard runoff and what they wanted us to do was simply not feasible. We can hold water back in other ways. A blanket policy doesn't work and shows they are not really listening. Buffer strips on flat ground and not much slope - certain policies aren't effective for everyone.

Keep costs and convenience in mind. There is only so much that we can spend to fix a problem. Don't make it overly difficult to run a business.

Most farms will cooperate as long as it doesn't cost a fortune.

Step on those farms that don't have enough land to spread the manure on. The DNR will not touch over-application of manure. Farms don't have their land close enough so they have to spend money on hauling it – they won't – they'll overapply it to land that is closer so they don't have to haul it.

Listen to farmers about practicality and economic as well as environmental concerns because if its too expensive, it won't get done.

**How would you like to receive updates or further information?**

Mail or flyer – address is confirmed correct.

Mail - address is correct.

Mail - address is correct.

Mail – correction of address.

Mail - address is correct.

Mail - address is correct

Email – email given.

Doesn't matter - mail

Mail –address given.

Email – email given.

Mail – address is correct

Mail – address is correct

**What final idea/comment/or suggestion should be highlighted in our report?**

We are not stupid or uneducated; we will work to assist the DNR; we need cooperation.

Use common sense

DNR is doing their job - they work hard. As long as people don't try to hide spills they'll work with you\*\*

Use sound science, accepted practices. And use education.

I know that the DNR is doing the best they can and I know things have to be done. I get my soil samples tested and do whatever I can.

Keep in mind other phosphorus sources - fertilizers on lawn. Landscaping, lawns use high concentrations - they're applying enough fertilizer to cover 500 sq. feet when it should be 50 sq. ft. We have agronomists, crop consultants, soil samples are required. Blamed the farmers anyway when the city people should have soil samples required.

It's an important strategy but it must be done through education versus regulation.

Financial help would be nice to get it going.

Tell them to get back to nature – they're pushing milk production and you get this liquid manure. My cows are healthy and they have thick manure – it won't run – the liquid stuff is always running off the land. Correct the soils – take away the artificial and chemical fertilizers, quit pushing antibiotics – get back to pasturing.

The DNR should improve communication with farmers – listen – communicate both ways.