

GCAC Public Health and Groundwater Protection Ordinance Subcommittee Summary Report

Committee Background

This report is meant to summarize all of the information that has been discussed to date by the limited term Public Health and Groundwater Protection Ordinance Subcommittee (the subcommittee) in relation to proposed Public Health and Groundwater Protection Ordinance.

The Portage County Groundwater Citizens Advisory Committee voted to form the subcommittee on January 19, 2017. At the same time the subcommittee was formed the following subcommittee charter was discussed and voted on.

SUBCOMMITTEE CHARTER 1-19-2017

“Section 3.2 Subcommittees. GCAC may appoint subcommittees made up of Committee members, and shall designate the Chair of such subcommittee”. Groundwater Citizen Advisory Committee By-Laws adopted 12-17-2015

The Groundwater Citizens Advisory Committee (GCAC) Groundwater Protection Ordinance Subcommittee (subcommittee) is intended to consist of a subset of five GCAC members, and other individuals as appointed by the GCAC Chair, with a general purpose of research, analysis, and providing preliminary findings and recommendations to the full GCAC on a specific set of issues.

This subcommittee is being formed to analyze the proposed draft “Public Health and Groundwater Protection Ordinance” and 35 recommendations submitted to GCAC by concerned citizens of Portage County, while concurrently addressing related issues, which include, but are not limited to:

- Identify threats to groundwater resources and public health from current land use, water, and waste management practices in Portage County;
- Review current County ordinances to determine if they are addressing identified threats;
- Draft recommendations for addressing identified threats to groundwater resources and public health, which may include creation of a groundwater protection ordinance;
- Determine statutory authority for recommendations;
- Maintain constant communication with GCAC, including a written report to the GCAC Committee that will be distributed with the meeting packet.

The Subcommittee will utilize Planning and Zoning Department staff assistance in the conducting and summarizing of information utilized in the discussions.

The projected length of the subcommittee is February 2017 through August 2017.

The work of the Groundwater Protection Ordinance GCAC Subcommittee is undertaken in an advisory capacity for the Portage County Groundwater Citizens Advisory Committee, which is responsible for review and recommendation of the results to the Portage County Planning and Zoning Committee.

The subcommittee met once a month in the months of February, March, May, June, and August to discuss various topics and information related to the proposed ordinance so they could accomplish the tasks laid out in the subcommittee charter. Meetings were attended by subcommittee members, various Portage County Staff and members of the public. Public attendance was as follows: February 31 members of the public, March 44 members of the public, May 18 members of the public, June 33 members of the public and August 20 members of the public. This report will go through each of the tasks listed in the charter and summarize any and all information that was shared during the subcommittee meetings and relates to the listed task. The summary section at the end of the report will go through the final discussion of the subcommittee as well as the recommendations made.

Identified Threats to Groundwater

The majority of the threats identified in the proposed ordinance and during the discussion in the subcommittee dealt with water quality issues, although water quantity was briefly mentioned. The threat most often discussed was **nitrate-nitrogen** followed by **bacteria**. Also identified were **pesticides** and **pharmaceuticals**. There is in depth detailed information on all of these identified threats in the Portage County Groundwater Management Plan and the proposed Public Health and Groundwater Protection Ordinance. The proposed Ordinance and discussions in the subcommittee support all of the findings in the Groundwater Management Plan. Please reference those for additional information. We will be summarizing the discussion of these threats that took place in the meetings. No previously unidentified threats were introduced into the discussion.

One of the primary reasons that all of the water quality and water quantity threats were identified was due to the underlying geology and soils found in Portage County. Most of the County has soils that are highly permeable (water can easily soak into them) and porous (there are relatively large spaces between the soil particles). The combination of high permeability and high porosity creates a situation that allows for groundwater to flow easily and freely. This also allows contaminants to impact groundwater; once they enter the groundwater resource they are able to easily travel. These soils also have a low attenuation capacity or a low ability for the soil to hold these contaminants in place.

Nitrate-nitrogen

Nitrate-nitrogen concentrations in groundwater were the most often identified and discussed threat. This could be in part due to the fact that nitrate-nitrogen concentrations are often used as an indicator of other possible contaminants. Wells that have high nitrate-nitrogen concentrations are most likely to be contaminated with agricultural pesticides, pharmaceuticals and other chemicals (June 29, 2017 Meeting).

Nitrogen is essential for all living things to grow and survive. Contributing sources of nitrogen have been identified as 90% agricultural, 9% septic systems, and 1% lawns/other. Agricultural sources of nitrogen can be further broken down into manure and/or commercial fertilizer (May 30th Meeting). Citizens have shared that there are concerns that the bio-solids and manure being land applied in the County are contributing to increased nitrate-nitrogen concentrations (February 30, 2017 Meeting).

Land use in the County does effect the nitrate concentrations found in groundwater in Portage County. According to the Wisconsin DNR drinking water is three times more likely to exceed the nitrate standard in agricultural areas compared to forested areas.

Elevated nitrate-nitrogen concentrations pose public health concerns (February 23, 2017 meeting). The health effects of elevated nitrate-nitrogen concentrations include methoglobinemia (blue baby syndrome), possible links to birth defects and miscarriages (both humans and livestock) and cancer. In the human body, nitrates can convert into nitrite and then to n-nitroso compounds, which are some of the strongest known carcinogens. As a result, additional human health concerns can include an increased risk of non-hodgkin's lymphoma, stomach cancer, bladder and ovarian cancer. Additionally fish, amphibians, and aquatic invertebrates can have serious health issues and possible death from elevated nitrate-nitrogen concentrations (June 29, 2017).

Approximately one out of every five private wells in the County tested currently exceed the federal and state drinking water standard for nitrate-nitrogen, a level nearly twice the state average. Of the 118 community water systems (bars, restaurants, churches, etc.) tested in 2016, 22% had increasing nitrate-nitrogen concentrations, 11% were decreasing, and 67% had no trend up or down; 10% of these community water systems exceed the drinking water standard and almost 1/3 are approaching the standard (June 29, 2017 Meeting).

The public has shared numerous concerns that there are instances of residential wells that have been tested and have increased nitrate-nitrogen levels, including levels of 38 mg/L in the Town of New Hope in a recent 2017 water test. A resident in the Town of Hull has levels testing in the 50- 60 mg/L range. YMCA Camp Glacier Hollow this year exceeded the 10 mg/L drinking water standard and kids are having to bring their own drinking water to camp. (February, March, May, June, and August Meetings)

Additionally, citizens have expressed concern over trying to determine the source of nitrate/nitrogen in these wells that have elevated nitrate/nitrogen concentrations (August 3, 2017 Meeting). A number of factors can make direct identification of a contaminant source difficult, however.

Bacteria

Bacteria, specifically *E. coli* bacteria, were also identified as a threat to groundwater (February 23, 2017 Meeting). Bacteria can be both naturally occurring and human induced. Coliform bacteria are naturally occurring in soil and are found on vegetation and surface waters. While coliform bacteria does not cause illness or health risks for humans, its presence is an indication that a water system is at risk of more serious forms of contamination.

The presence of *Escherichia coli* or *E. coli* bacteria is an indication of fecal contamination of the groundwater. *E. coli* bacteria are present in the intestines of warm blooded animals and are typically found in their fecal matter along with other pathogenic bacteria, viruses, and parasites which can cause illnesses.

There is again citizen concern that the bio-solids and manure being land applied in the County are contributing to an increased risk of bacterial contamination (February 23, 2017 meeting).

Pharmaceutical and pesticides

Pharmaceuticals and pesticides were also listed as threats to groundwater by concerned citizens. There was little discussion of these items specifically, only that they often occur in tandem with elevated nitrate-nitrogen concentrations. Additionally, there was concern that the bio-solids and manure being land spread in the County could contribute to an increase in these products. Both of these items can have health related impacts associated with them.

Current County Regulations

With all of the threats, the comment heard the most was that Portage County must do something to protect its water quality from the threats listed above. There is a shared sentiment from meeting attendees that what the County has done in the past is not working for solving the water quality issues in the County or that the County needs to be doing a better job enforcing the current regulations that it has.

The second task the subcommittee had was to review current County ordinances to determine if they are addressing identified threats. Below are the current County Ordinances, State Statutes and Federal Regulations that deal with the identified threats and how they address them.

7.1 Portage County Zoning Ordinance

The Portage County Zoning Ordinance is meant to promote public health, safety, and general welfare, to determine establish, regulate, and restrict the areas within which agriculture, forestry, industry, trades, businesses and recreation and residential uses may be conducted; the areas in in and along natural water courses, channels, streams and creeks in which trades or industries, filling or dumping, erection of structures and location of buildings, may be prohibited or restricted; certain areas, uses or purposes which may be subjected to special regulation and building setback lines and such other uses authorized pursuant to section 59.69, 59.694 and 87.30, Wisconsin Statutes.

The Zoning Ordinance does not deal directly with water quality issues. Within the different zoning districts there are specific districts (A4 and R1) in rural areas that have specific lot size minimums of 2 acres. These lot size minimums were designed to try and provide enough separation and treatment time of septic system discharges between lots. There are other lots size requirements in rural areas that require larger lots sizes.

7.2 Portage County Wellhead Protection Ordinance

The purpose of the Wellhead Protection Ordinance is to institute land use regulations and restrictions to protect the municipal water supplies of the Villages of Junction City, Plover, and Whiting and the City of Stevens Point, and to promote the public health safety and general welfare of the residents of Portage County. The regulations specified in the Wellhead Protection Ordinance apply to the unincorporated areas of the Portage County that lie within the recharge areas for municipal water supply wells and are in addition to the requirements in the underlying zoning district. There are three zones, based on the amount of time it takes for the groundwater in a given area to reach the municipal well. Each zone has permitted and prohibited land uses listed, as well as land uses that may be permitted on a case by case basis, as determined by the Board of Adjustment. Permitted uses in Zone B and Zone C also have design standards for permitted uses that should be followed. The land uses outlined for each zone were all determined by their potential impacts to groundwater quality. These regulations do not limit or target any one contaminant but are meant as a general protection for municipal water sources.

7.4 Portage County Subdivision Ordinance

The purpose of the Portage County Subdivision Ordinance is to guide the growth and development in the unincorporated areas in accordance with adopted development guides and land use plans. Part of this development includes protecting public health as well as preserving natural resources and

preventing the pollution of groundwater. The Portage County Planning and Zoning Office has the ability to review the land suitability for any major land subdivision, County plan or minor subdivision. Part of this suitability is determining if there is adequate quantity and quality to support further development in an area. This ordinance really provides any landowner with an indication of current water quality on the property that is to be subdivided. If the subdivided land does not meet current water quality standards a notation is made on the certified survey map, so that any future buyer of the property may be aware of potential water quality issues.

The Subdivision Ordinance further outlines the process for determining adequate water supply and quality by outlining steps for water testing and/or monitoring to be completed on the property prior to the subdivision

7.9 Private Onsite Sewage System Ordinance

The Private Onsite Sewage System Ordinance is intended to protect public health and groundwater by designing, constructing, installing and maintaining properly functioning private onsite sewage systems. These requirements are met with permits, inspections, and maintenance programs overseen by the County. Private onsite sewage systems are designed to first and foremost remove bacteria and pathogens from private waste that is either maintained on-site in a holding tank or discharged to drainage field. A properly functioning septic system may still discharge nutrients, such as phosphorus and nitrogen to groundwater unless specialized treatment is added to the system. The Ordinance does not currently address the issue of nutrient discharge.

7.10 Animal Manure Storage Ordinance and Nutrient Management Standards

The Animal Manure Storage Ordinance and Nutrient Management Standards Ordinance is intended to prevent water pollution and the spread of disease by regulating the location, design, construction, installation, alteration, and use of animal manure storage facilities, and the application of manure and nutrients. Any person who uses, constructs, installs, reconstructs, replaces the liner, enlarges, or substantially alters an animal manure storage facility or transfer mechanism is subject to the provisions of the ordinance. The Portage County Land and Water Conservation Department may require upgrading, replacement or closure, of any facility that poses an imminent threat to public health, aquatic life or is causing a violation of water quality standards.

The Ordinance contains standards for design, management, and construction of animal manure storage facilities, standards for closure of an animal storage facilities and standards for management and utilization of animal manure and other nutrients.

The Portage County Animal Manure Storage Ordinance and Nutrient Management Standards reference the Wisconsin State Statute NR 151 and the Federal Natural Resource Conservation Service 590 Nutrient Management Standards. All three of these items are used to address nutrient management. Nutrient Management is the science that links soil, crops, weather, and hydrological factors with cultural, irrigation, and soil and water conservation practices to achieve the goals of optimizing nutrient use efficiency, yields, crop quality, and economic returns, while reducing off-site transport of nutrients that may impact the environment (USDA, 2017).

NR 151

Wisconsin State Statute NR 151 establishes runoff pollution standards for non-agricultural facilities and transportation facilities and performance standards and prohibitions for agricultural facilities and practices designed to achieve water quality standards. The subcommittee was primarily concerned with the agricultural components of this statute which include erosion, tillage setback, phosphorus, manure store, wastewater handling and clean water standards; nutrient management, manure management prohibitions, and local livestock operation ordinances. As well as implementation and enforcement for cropland and livestock ordinances.

Federal 590 Standards

The Natural Resource Conservation Service 590 Nutrient Management Standards direct the amount (rate), source, placement (method of application), and timings of plant nutrients and soil amendments. These standards are what outline the specifics of what must be in a nutrient management plan.

Nutrient management and nutrient management planning was the topic of much discussion in the subcommittee. There was concern over how effective nutrient management plans were as a tool to address the identified threats. Most of this concern was based on the fact that nutrient management plans are based on the greatest amount of economic benefit to a farmer, not necessarily on the conservation of natural resources; especially when it comes to nitrogen applications.

There was also concern with the lack of enforceability of plans or even general follow-up with farmers to see if plans were being used/followed. There were additional concerns that expanding nutrient management plans may potentially increase the use of nitrogen in the County because they may be applying less than the recommendations allow.

There was also discussion surrounding the need to include best management practices into nutrient management plans and/or potentially limit the amount of nitrogen recommended in them.

Recommendations

Throughout the subcommittee discussions there have been a number of recommendations on actions that the Committee should consider and/or take action on. The citizen's request made it quite clear that something needs to be done to address the problem. Additionally, the citizens have made it clear that what has been done in the County is not working or addressing the problem enough. The feeling expressed at the meetings is that any action that is taken should be at the local level.

Suggested recommendations have included:

1. Look at the land use practices that are used within the County
2. Nutrient Management Plans need to take into consideration water quality impacts
3. Increase the number acres covered by nutrient management plans in the County. If the County is covered by nutrient management plans and nitrate-nitrogen doesn't improve this would emphasize this fact.
4. Nutrient management plans should include best management practices that must be followed
5. Increase cost share funding for manure storage, etc. This would increase the required nutrient management plans
6. Alternative forms of nitrogen can be used/encouraged

7. Examine what laws the State is not enforcing and see if there are actions that the County can take
8. Examine what is and is not currently being enforced in current County regulation. Do a better job with enforcement
9. Restrict the spreading of manure in the winter
10. Explore alternative methods of disposing of manure, IE composting, anaerobic digestion
11. Encourage the use of cover crops
12. Restrict the amount of nitrogen that could be applied on fields via nutrient management plans
13. Use farmer-led groups to help come up with solutions
14. Provide incentives to use different farm practices
15. Install recirculating sand filter to minimize nitrates coming from septic systems
16. Explore denuded cow lots as sources of nitrate-nitrogen in the County
17. Put pressure on the 590 standard to make it more groundwater appropriate
18. Encourage the state to tax nitrogen fertilizers
19. Encourage the use of grazing plans/ permanent vegetation on grazed lots or heavily used lots that are not contained.
20. An agronomist should be added to County staff to write, implement, and check nutrient management plans
21. Update current ordinances that we have an place to reflect current needs in the County
22. Need for monitoring to understand what is happening with nutrients in our groundwater
23. Monitoring at the edge of field will let us know what is happening with nutrients on the field
24. Monitoring may be useful when there is a significant land use change
25. None of the Ordinances in the County specifically address nitrates. Need one that addresses this specifically

Summary

The final meeting of the subcommittee was held on August 31, 2017. Prior to this meeting members of the subcommittee had shared that they felt there was no time for them to simply have a discussion about the ordinance itself or any of the identified issues. The August 31 meeting was set aside for any discussion that the subcommittee members felt necessary.

Discussion during this meeting largely centered around the recommendations listed above, in the summary report. These discussions included recommendations that GCAC perhaps should consider in their upcoming work. These discussions included:

1. Advocating for water quality based requirements/considerations in the Federal 590 standards
2. When NR 151 is reviewed advocate for a special management area in the Central Sands similar to Kewaunee County but based on nitrates
3. Create nutrient management plans that:
 - a. Incorporate best management practices
 - b. Are based on water quality concerns
 - c. Reduce nitrogen inputs
 - d. Are not required but are incentivized
4. Review the Portage County manure management ordinance for storage and application suggestions
5. Educational opportunities on

- a. Best management practices
 - b. Cover crops
 - c. Alternative forms of nitrogen
 - d. What is a violation and citizens should do
6. Identify fields with nutrient needs and work with farmers who may have an excess of nutrients to apply on those fields (“Manure bank”)
 7. Work with well drillers and homeowners on understanding groundwater flow and siting of septic fields in relation to wells
 8. Review current County ordinances such as the Zoning, Wellhead Protection, Subdivision, and Animal and Manure Management Ordinances with the focus being on groundwater protection and what could be done with those ordinances to better protect groundwater
 9. Explore the use of County Zoning to place less intense agricultural practices on certain soil types more prone to groundwater contamination
 10. Look into the location and prevalence of denuded cow lots in the County and promote the use of grazing plans
 11. An important goal should be to try and achieve 100% use of nitrogen fertilizers in agriculture, instead of losing some of it to leaching/groundwater

After discussing the topics listed above it, the members of the subcommittee felt that they were ready to vote on a recommendation for the proposed Public Health and Groundwater Protection Ordinance.

Subcommittee members felt that nitrate concentrations in the groundwater of Portage County were a significant concern that needed to be dealt with. They also felt that the current actions that the County were taking were not enough to address the concern. The subcommittee made the recommendation to GCAC that “an ordinance regarding groundwater quality in Portage County be considered, and towards that end, GCAC consider the following: the proposed ordinance, existing ordinances, and the Groundwater Management Plan”. The motion passed with a vote of 4 members in favor of the motion and 2 against the motion. Those members against the motion, expressed concern that the motion said “an ordinance”. They felt that it might tie GCAC to the specific idea of an ordinance. They would have preferred if the motion had said that that GCAC consider actions.

Feedback Received on the Summary Report

There were some items of feedback received on the Summary Report. The subcommittee members felt that instead of debating whether those items should be included into the report or not, that they instead be listed in list form so those reading the summary report could understand what was shared with the subcommittee.

Feedback received was as follows:

- Should natural background levels of nitrate-nitrogen be listed in the description
- A concern that the list of Ordinances didn’t quite fit into the Summary report. They seemed more like a reference list, where the rest of the report referenced the conversations that were had. Perhaps, referencing where in the meetings each of the ordinances were discussed would help?

- Should there be a summary paragraph? Perhaps something about the Committee not feeling like they had adequate time to discuss? Should the results from tonight's meeting be incorporated into a summary?
- "No previously unidentified threats were introduced into the discussion" – Is this accurate?
- Are these issues that should be identified and/or discussed in the report?
 - o How about the change in quantity when the DNR removed pumping limits on large ag?
 - o What about legal suits being filed in the state, pushing toward local control?
 - o What about a chemical mix of pesticides and herbicides in the groundwater?
 - o What about an explanation of new EPA 2017 standards expanding public health issues
 - o How about the size of farm waste equaling the size of municipal waste facilities/without equal standard/tax and/or oversight.
- There is no mention of NR 140 (the groundwater quality standards) or safe drinking water act
- There is a need to identify local soil types that identify sites that are susceptible to groundwater contamination
- Tools are available to identify and target contaminated water resources