DRAFT

Green County
Livestock Facility Study Group
Report & Recommendations

Submitted to the Green County Board for Consideration on May 8, 2018

Study Group Participants

VOTING MEMBERS

Listed alphabetically by last name.

- **Paul Beach** -- *Appointed County Board Member At Large*
- **Jen Brooks –** *Appointed public citizen**
- **Craig Edler –** *Appointed public citizen**
- **Tom Daly** – *Chair, Green County Towns Association*
- **Ken Hodgson** – *Chair, Green County Agriculture and Extension Education Committee*
- **Barb Krattiger** – *Representative, Green County Health Committee*
- **Oscar Olson** – *Chair, Green County Land and Water Conservation Committee*
- **Bert Paris** – *Appointed public citizen**
- **Bethany Storm** – *Appointed public citizen**

**Appointed public citizens were chosen through a public application process, nominated by the Green County Land and Water Conservation Committee, and appointed by the County Board.*

NON-VOTING MEMBERS

Listed alphabetically by last name.

- **Todd Jenson** – *Department Head, Green County Land & Water Conservation Department*
- **Mark Mayer** - *Agriculture & Natural Resources Educator, Green County UW-Extension*
- **RoAnn Warden** – *Department Head, Green County Health Department*
- **Adam Wiegel –** *Department Head, Green County Land Use & Zoning*

FACILITATOR

- **Victoria Solomon** - *Community Resource Development Educator, Green County UW-Extension*

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Background

The Green County Livestock Facility Study Group was established by resolution of the Green County Board on August 8, 2017 when the Green County Board passed a moratorium on animal feedlot permitting (see "Appendix A: Moratorium on Animal Feedlot Permitting").

PURPOSE

The purpose of the Study Group is to use science-based information to provide the Green County Board with science-based recommendations developed to effectively protect groundwater, surface water, air quality, and public health and safety.

PROCESS

The Livestock Facility Study Group used the process outlined below to develop the key findings and recommendations outlined in this report.

The Study Group has strived to be transparent throughout this process. All of the Study Group's meetings were posted public meetings. The Study Group has a web page on the Green County UW-Extension website. This web page includes information on each of the Study Group's meetings, including video recordings of each of the presentations to the Study Group. The web page also includes a listing of the resources and reports referenced by the Study Group. Additionally, members of the public had the option of contacting the Study Group's facilitator to be included on a listserv to receive meeting updates to stay up to date on the Study Group's progress.

Development of the Study Group

- The Study Group consisted of 4 county board members, 4 members of the public, the chair of the Green County Towns Association, and 4 non-voting advisory members.
    - The 4 members of the county board were chosen because of their positions on county board committees.
    - The 4 members of the public were selected by the Green County Land & Water Committee of the Green County Board after inviting Green County residents to apply to be part of the Study Group.
    - The 4 advisory members were chosen because of their subject area expertise.
    - The chair of the Green County Towns Association was chosen because of the importance of the perspective of the towns.

Gathering and Synthesizing Research-Based Information

- The Study Group identified topical areas it would need information on in order to develop recommendations.
- The advisory members then invited subject area experts to present to the group. (See "List of Presentations" on page 4 for a listing of these presentations).
- The Study Group also collected research-based articles on the subject.

Brainstorm Recommendations

- The Study Group brainstormed recommendations and invited Green County residents to share, in written form, research-based ideas to submit to the brainstorming process as a way to invite public input.

Feedback from Green County Corporation Counsel

- Once the Study Group brainstormed recommendations, they were sent in draft form to Green County Corporation Counsel to receive feedback regarding legal implications of the recommendations.

Development of Recommendations

- The Study Group reviewed the recommendations and information from Corporation Counsel and then determined what recommendations it wants to make to the County Board.
- The Study Group also identified the county departments it viewed as appropriate implementers of the recommendations.

Report to County Board

- The Study Group will report its recommendations to the County Board at the County Board meeting on May 8, 2018.

LIST OF PRESENTATIONS

Sept. 27, 2017	**Livestock Facility Siting** *Chris Clayton, Livestock Facility Siting Program Manager, Wisconsin Department of Agriculture, Trade, and Consumer Protection*
Oct. 12, 2017	**Groundwater in Green County** *Madeline Gotkowitz, Hydrogeologist, Wisconsin Geological & Natural History Survey* **Green County Land and Water Conservation** *Todd Jenson, County Conservationist, Green County Land & Water Conservation Department* **Nutrient Management in Green County** *Tonya Gratz, Conservation Technician, Green County Land & Water Conservation Department*
Oct. 24, 2017	**Green County Groundwater Quality** *Kevin Masarik, Groundwater Education Specialist, Center for Watershed Science and Education, UW-Extension* **Zoning in Green County, Wisconsin** *Adam Wiegel, Zoning Administrator, Green County Land Use & Zoning*

Nov. 14, 2017	**Concentrated Animal Feeding Operations and Human Health in Wisconsin** *Rob Thiboldeaux, Senior Toxicologist, Wisconsin Bureau of Environmental and Occupational Health, Department of Health Services* **Agriculture Trends in Green County** *Mark Mayer, Agriculture Agent, UW-Extension Green County*
Nov. 28, 2017	**Kewaunee County's Experience** *Chuck Wagner, Member, Kewaunee County Board*
Dec. 12, 2017	**Green County Ordinances** *Todd Jenson, County Conservationist, Green County Land & Water Conservation Department*
Jan. 9, 2018	**Concentrated Animal Feeding Operations WPDES Permit Program** *Mark Cain, Wastewater Engineer, Bureau of Watershed Management, Wisconsin Department of Natural Resources*
Jan. 30, 2018	**Groundwater Resources and Susceptibility in Green County, Wisconsin** *John Rice, Hydrologist, TRC Environmental, Madison* *James Wedekind, Geologist, TRC Environmental, Madison* *Jesse Papez, GIS Analyst, Cartographer, and Geologist*

KEY FINDINGS

Groundwater in Green County

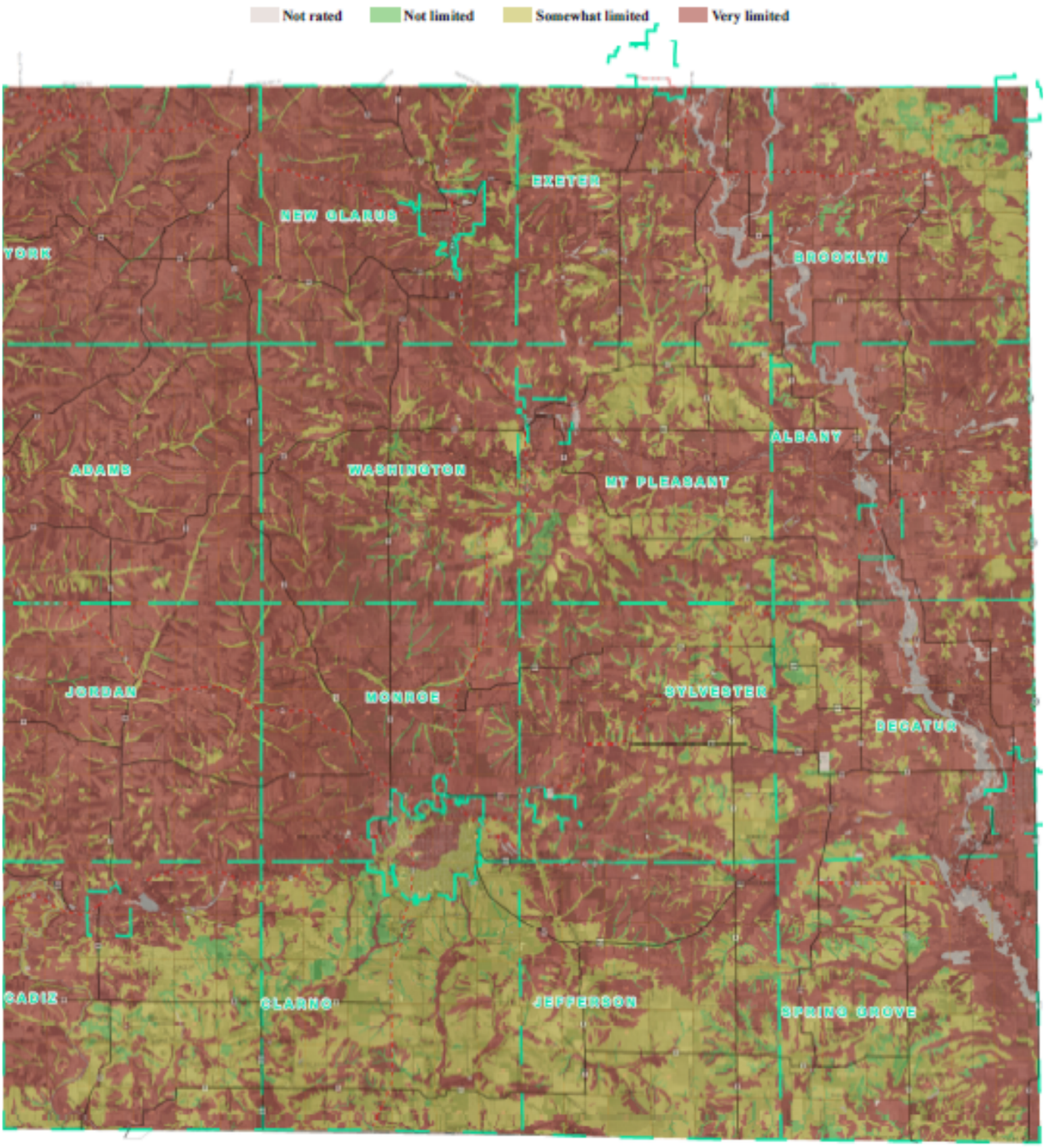
INTRODUCTION

All of the approximately 37,000 residents of Green County rely on groundwater for drinking, cooking, bathing, irrigating and watering livestock. The quantity of groundwater in Green County has been sufficient to meet Green County's needs according to Kevin Masarik with the University of Wisconsin Extension Service and Madeline Gotkowitz with the Wisconsin Geological and Natural History Survey, but their data indicates the quality of that groundwater is a concern. Those people that live in a municipal district have their water tested often to insure safety and quality. Rural residents are responsible for testing their own wells. There are approximately 7,000 private wells and 90 high capacity wells in Green County according to Todd Jenson, Green County Conservationist.

What is a high capacity well?
According to the Wisconsin DNR, a high capacity well is a well that has the capacity to withdraw more than 100,000 gallons per day, or a well that, together with all other wells on the same property, has a capacity of more than 100,000 gallons per day.

As reported in the University of Wisconsin-Extension's 2014 report on agriculture in Green County, "Green County farmers own and manage 302,295 acres of 81 percent, of the county's land. This includes cropland, rangeland, pasture, tree farms and farm forests. As stewards of the land, farmers use conservation practices, such as no-till, cover crops, crop rotation, [managed grazing,] nutrient management, and integrated pest management." According to the Groundwater Resources and Susceptibility study completed by TRC in January of 2018, all of the groundwater in Green County is susceptible to contamination to varying degrees based on the types of soils and depth of those soils to the fractured bedrock. According to the Natural Resource Conservation Service Web Soil Survey, 69.9% of the acreage in Green County has "very limited" capability of handling agricultural disposal of manure and food-processing waste (Map 1: Soil Capability Map). The "very limited" category in this soils inventory states "that the soil has one or more features that are unfavorable for [land spreading]. The limitations generally cannot be overcome without major soil reclamation, special design or expensive installation procedures." Therefore the County should recognize that land spreading on this landscape is not without risk to groundwater contamination. Once groundwater is contaminated, it is very difficult and often costly to clean it. The average cost of a new well in Green County is $10,000 and the cost of a reverse osmosis system ranges from a few hundred to several thousands of dollars depending on usage. For the purposes of this study, the Livestock Facility Study Group decided to focus on contamination by nitrates, coliform bacteria, E. coli, and atrazine type pesticides due to the research-based risks they pose to human health.

Map 1: Soil Capability in Green County



LAND USE & WATER QUALITY

Susceptibility, Capability, and Vulnerability
Susceptibility, capability, and vulnerability are three similar terms used to describe risk. Groundwater is *susceptible* to contamination when there is either a direct or indirect conduit from the land surface to the groundwater. Soil has the *capability* of filtering different substances from water as it percolates through the soil. Areas that are most *vulnerable* to contamination are areas above fractured karst bedrock where there are thin soils, soils with limited capacity of using and retaining excess nutrient loads or capturing bacteria, sandy soils with little organic matter, or a combination of those factors. These vulnerable areas are demonstrated by TRC Environmental on Map 2: Green County Susceptibility Map.

What factors contribute to groundwater susceptibility?
"Whether or not groundwater at a particular site is contaminated depends on a variety of factors, including:

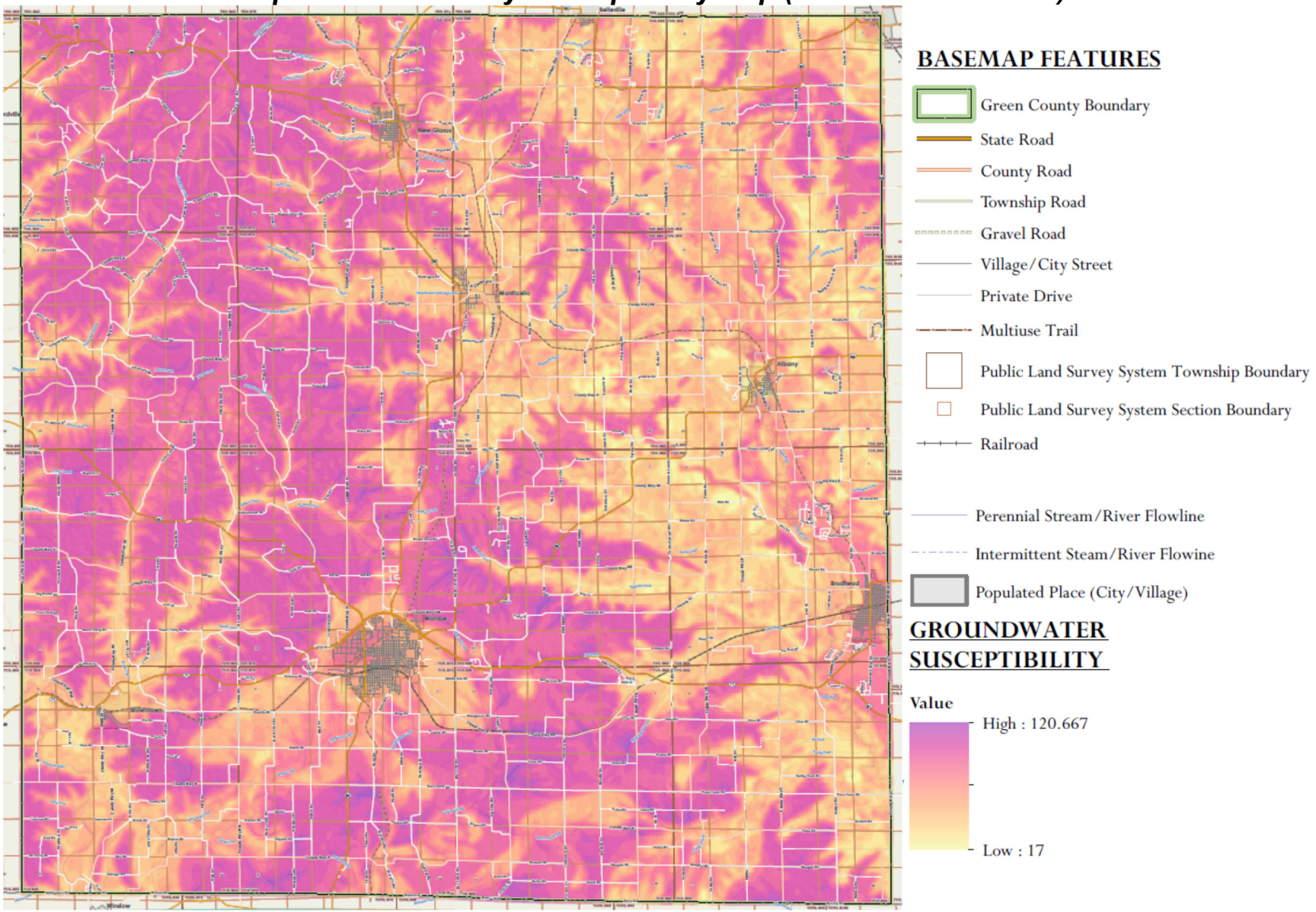
- The type of substance released, the concentration of the released substance; and site-specific soil conditions. (Source: TRC Environmental presentation).
- Groundwater can be contaminated by farms through runoff from land application of manure, leaching from manure that has been improperly spread on land, or through leaks or breaks in storage or containment units. (Source: Understanding Animal Feeding Operations and Their Impact on Communities).
- Site-specific subsurface conditions." (Source: TRC Environmental presentation).

Where is Green County's groundwater susceptible to contamination?
Map 2: Green County Susceptibility Map "provides an objective basis for evaluating the vulnerability of groundwater to pollution from surface impacts" (Source: TRC Environmental presentation). Different land uses impact groundwater differently. This map does not reflect land use or impact of land use. Note that this map does not do any of the following:

- "Predict areas that will be (or are) contaminated;
- Predict areas that are safe from contamination; or
- Replace site-specific data evaluation." (Source: TRC Environmental presentation).

This map shows relative susceptibility. The color depiction does not indicate that any one area is safe from contamination or that contamination is inevitable in another area.

Map 2: Green County Susceptibility Map (TRC Environmental)



What is the Wisconsin Well Water Quality Interactive Viewer?
It is an educational tool to help people better understand Wisconsin's groundwater resources. The Viewer summarizes private well water quality data from the Center for Watershed Science and Education, the Wisconsin Department of Agriculture, Trade, and Consumer Protection, and the Wisconsin DNR. The Viewer relies mostly on voluntarily submitted well water samples from homeowners and other well water data collected by state agencies over the past 25 years. Homeowners and local governments can use this tool to:

- *See what we know about general well water quality in Wisconsin.*
- *Compare water quality in your area to nearby towns or counties.*
- *Encourage well testing in areas where little data exists.*

Source: UW-Stevens Points' Center for Watershed Science and Education

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Nitrates

A higher percentage of wells in Green County measure high in nitrates, compared to wells in other areas of Wisconsin.

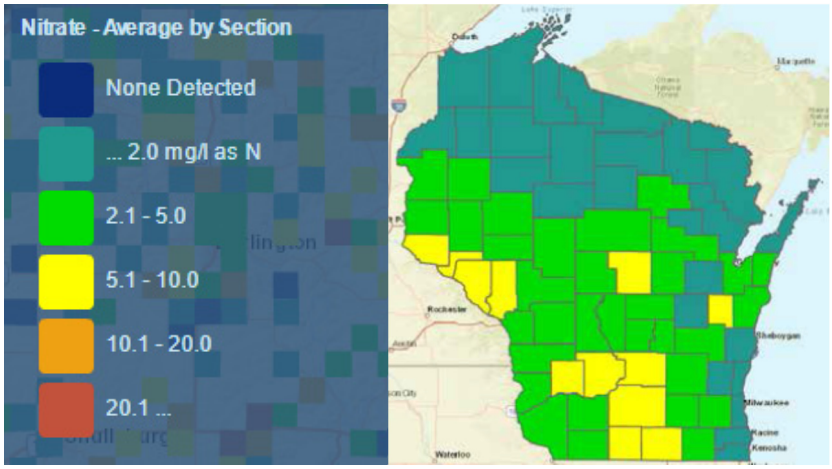
- Natural levels of nitrate in Wisconsin's groundwater are generally less than 1 mg/L. Amounts greater than this indicate that land use in an area is impacting groundwater. Sources of nitrate include agricultural fertilizers, lawn fertilizers, septic system drain fields, and other nitrogen sources such as animal manures, bio-solids, industrial sludge, etc.

- Nitrate levels higher than 10 mg/L are considered unsafe for infants and women who are pregnant or trying to conceive. The Wisconsin Department of Health Services recommends everyone avoid long-term consumption of water with greater than 10 mg/L nitrate-nitrogen. See specific risk factors in Public Health and Safety Key Findings.

- In Wisconsin, approximately 9% of wells tested indicate levels of nitrate higher than 10 mg/L. In Green County, approximately 16% of wells exceed state and federal limits for safe drinking water with levels of 10 mg/L or more of nitrate (Figure 1). In general, higher nitrates are located in the southeastern area of Green County (Figure 2). Nitrate levels between 1 and 10 mg/L have been found in 76% of the wells tested. (Source: Wisconsin Well Water Viewer).

- According to Kevin Masarik with the Center for Watershed Science and Education at the University of Wisconsin-Stevens Point, nitrate levels between 1 and 10 mg/L are evidence of land use impacts and often indicate susceptibility of the groundwater to other possible contaminants. Nitrate has been known to cause many health issues (see public health and safety for more detailed descriptions). The percentage of wells testing positive for nitrates indicates that the County's groundwater is more susceptible than other parts of the state to nitrate and other contaminants.

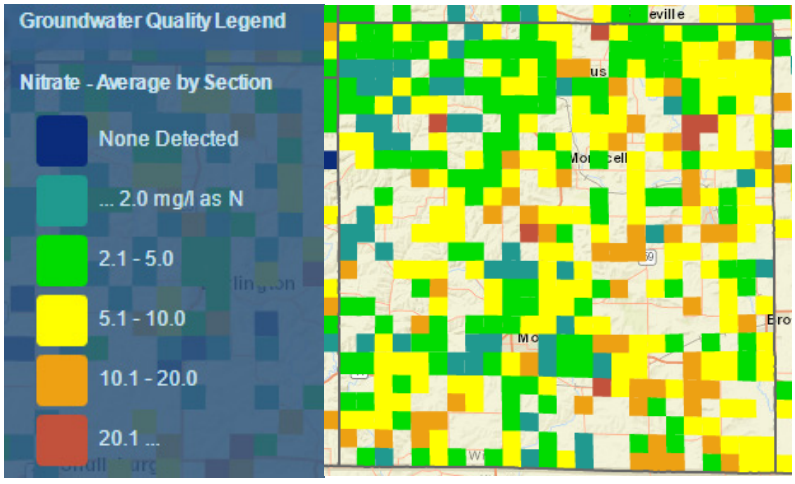
Figure 1: Nitrate Levels by County in Wisconsin



Source: Wisconsin Well Water Viewer. www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx

Figure 2: Nitrate Levels in Green County by Section.

Sections that are blank do not have sufficient data to calculate an average.



Source: Wisconsin Well Water Viewer.
www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx

Coliform Bacteria & E. coli

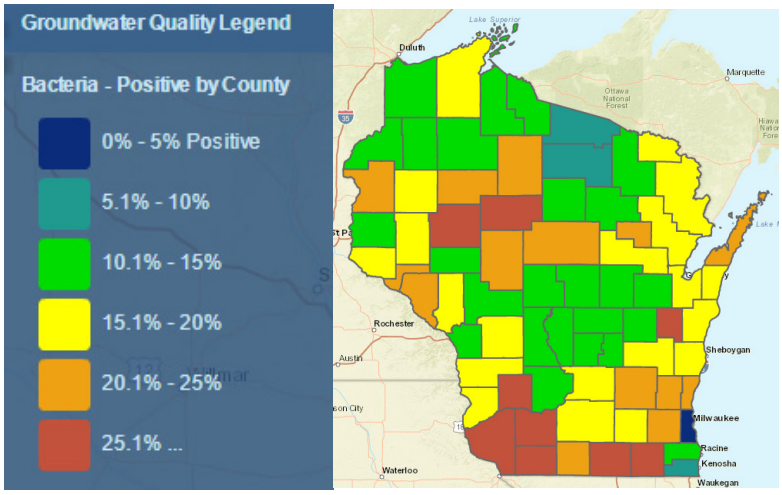
More Green County wells are, on average, contaminated with coliform bacteria and *E. coli* than Wisconsin.

- A coliform bacteria test measures a well's ability to produce clean water. It is not necessarily an indication of groundwater quality; because it doesn't distinguish between well construction susceptibility and groundwater susceptibility. Coliform bacteria indicates potential sanitary defect that could allow pathogens (bacteria or viruses that make people sick) to enter a well water supply.

- On average, approximately 15% of wells in Wisconsin test positive for coliform bacteria and approximately 1%-2% of wells are contaminated with *E. coli*. E.coli is a specific type of bacteria that indicates contamination by either human or animal waste. In Green County, approximately 23% of wells have tested positive for coliform bacteria and approximately 2.2% have detected *E. coli* (Figure 3). (Source: Wisconsin Well Water Viewer).

- While there are types of *E. coli* that are harmless, other types can make people sick (Source: U.S. Centers for Disease Control and Prevention).

Figure 3: Coliform Bacteria in Wisconsin Counties



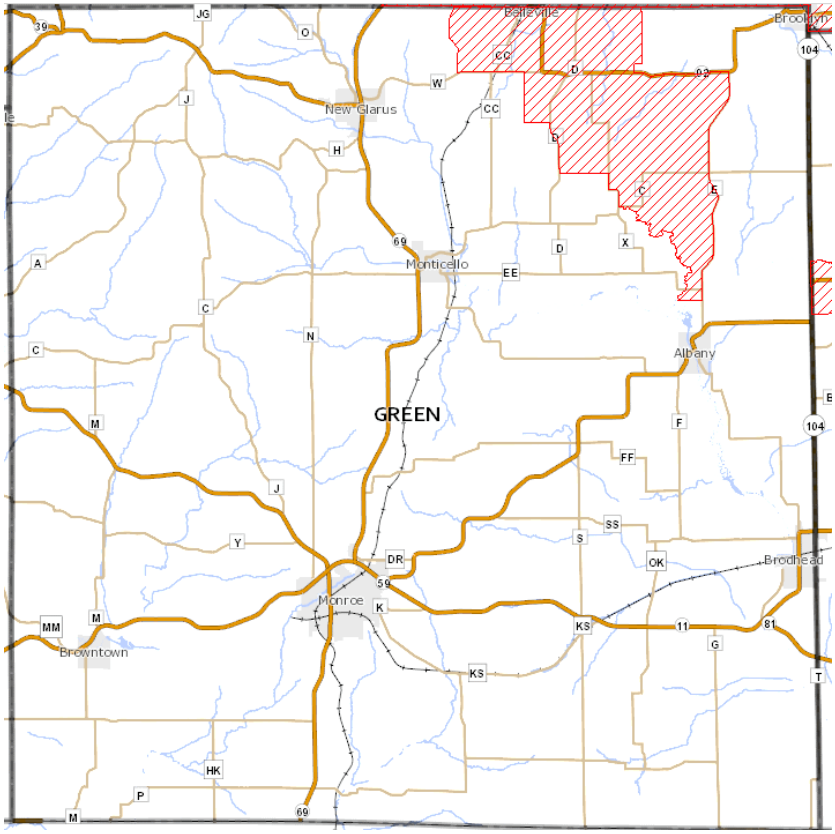
Source: Wisconsin Well Water Viewer.
www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx

Ag Pesticides (Atrazine Type Pesticides)

The percentage of Green County wells that have tested positive for atrazine type pesticides is higher than the percentage of Wisconsin wells that have tested positive for the same pesticides.

- Atrazine type pesticides have been linked to causing developmental delays in children and some types of cancers. According to the Wisconsin Department of Agriculture, Trade, and Consumer Protection, "if people drink water for many years that contains 3 parts per billion or more of atrazine or its metabolites, they may develop cardiovascular, reproductive, or other health problems." If atrazine is found to be at the 3 parts per billion level, the use of atrazine in that area may be prohibited. Figure 4 shows the atrazine prohibition areas in Green County.

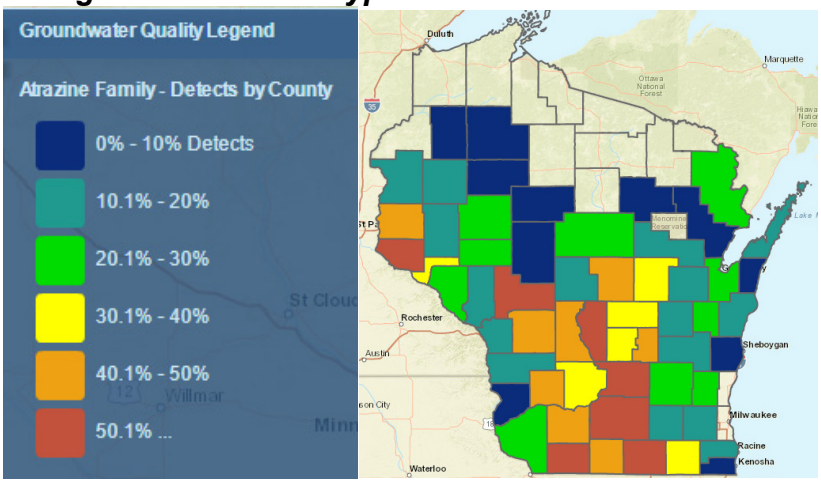
Figure 4: Atrazine Prohibition Area in Green County



Source: Wisconsin Department of Agriculture, Trade, and Consumer Protection
https://datcpgis.wi.gov/maps/?viewer=pa

- It is estimated that approximately 22.9% of wells in Wisconsin contain atrazine (Source: Wisconsin Groundwater Quality: Agricultural Chemicals in Wisconsin's Groundwater). In Green County, well testing data indicates that between 40-50% of wells have tested positive for atrazine type pesticides (Figure 5).

Figure 5: Atrazine Type Pesticides in Wisconsin



Source: Wisconsin Well Water Viewer.
www.uwsp.edu/cnr-ap/watershed/Pages/WellWaterViewer.aspx

CURRENT POLICIES & PROGRAMS

Green County entities are currently addressing groundwater protection in a number of ways. These include:

Well Abandonment. The Green County Land and Water Conservation Department promotes proper well abandonment, targeting non-compliant wells and wells that are no longer used. It also enforces the private water systems ordinance and permits new wells.

Well Testing and Monitoring. The Green County Health Department and Green County UW-Extension provide water testing as well as educational materials on water testing. Water test data is maintained by UW-Steven's Point and can be viewed online using the Wisconsin Well Water Quality Interactive Viewer.

Well Database. The Green County Land and Water Conservation Department maintains a database of all well-drilling records.

Groundwater Study. The Green County Land and Water Conservation Department contracted with TRC Environmental to conduct a groundwater study of Green County. This study was the topic of the presentation on January 30.

Farmer Led Watersheds. The Green County Land and Water Conservation Department continues to assist with farmer led watershed groups in Green County to promote best management practices.

Best Management Practices. The Green County Land and Water Conservation Department provides education and incentives for various best management practices, including managed grazing and no-till farming. The Department provides education, cost-sharing dollars, grant funding, and technical assistance to assist farmers and landowners in adopting best management practices, installing conservation practices, and complying with existing regulations, such as:

- Funding for cost-sharing barnyard runoff control projects;
- Funding for cost-sharing well abandonment projects;
- Staff for project implementation and implementation of livestock ordinances;
- Promotion of no-till;
- Promotion of cover cropping;
- Apply appropriate nutrient management plan;
- Filter strips; and
- Managed grazing.

Septic Maintenance. Green County Land Use and Zoning Department ensures that septic systems are inspected and maintained every three years.

Nutrient Management Plans. The Green County Land and Water Conservation Department and Green County UW-Extension promotes the creation and implementation of nutrient management plans, with training, support, and cost-sharing.

Manure Storage Ordinance. The Green County Land and Water Conservation Department enforces the county's manure storage ordinance. This ordinance protects the surface water and groundwater of Green County by regulating standards for manure storage.

Livestock Siting Ordinance. The Green County Land and Water Conservation Department enforces this ordinance, which regulates farms over 500 animal units and those that increase by more than 20% of livestock. This ordinance protects ground and surface water by ensuring they follow approved practices.

KEY FINDINGS

Surface Water in Green County

What is a watershed?
An area of land that separates waters flowing to different rivers or basins.

What is the 303d list?
When a stream is listed on the 303d list it means that it does not meet the surface water quality standards of the federal Clean Water Act as documented by the U.S. Environmental Protection Agency.

What does "exceptional water resource" mean?
This means the water exhibits the same high quality resource values as outstanding waters, but may be impacted by point source pollution.

What is an "average" water resource?
This means the water quality is not bad enough to get on the 303d list and not good enough to get on the exceptional waters list.

INTRODUCTION

Green County has land in two major watersheds. The Pecatonica River watershed encompasses the western part of the county and the Sugar River Watershed encompasses the eastern part of the county. Many of the streams in the county have the ability to support excellent trout fisheries due to the base flow from cold water springs.

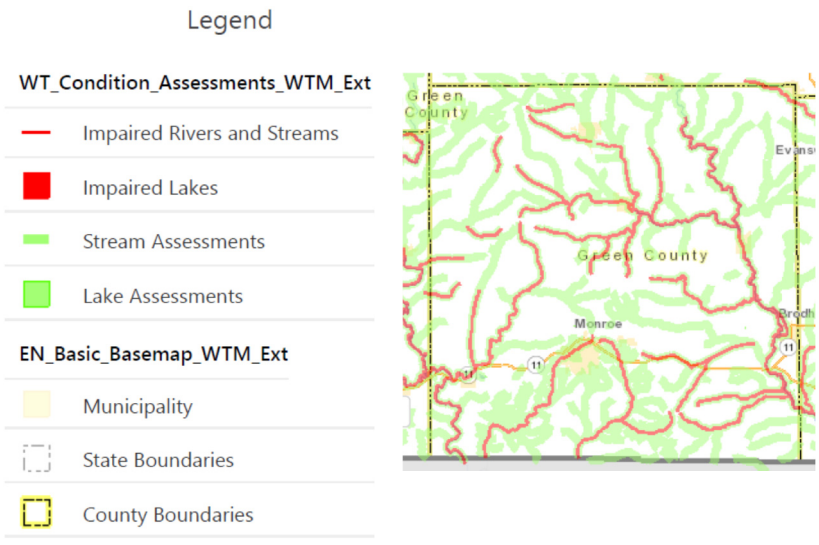
What is the current quality of Green County's surface water?
There are 433 miles of streams in Green County.

- Approximately 45% of those miles are on the 303d list. (Source: Jenson).

- About 36% of those stream miles are on the exceptional water resource list. (Source: Jenson).

- Approximately 19% of those miles are considered average. (Source: Jenson).

Map 1: 303D Streams in Green County



Source: Wisconsin Surface Water Data Viewer. https://dnrmaps.wi.gov/H5/?Viewer=SWDV

LAND USE AND SURFACE WATER

Land use can both positively and negatively affect surface water condition. Phosphorus runoff is one of the major pollutants of the surface water in Green County according to Todd Jenson, Green County Conservationist. Phosphorus comes from two main sources; effluent from sewage treatment plants and runoff from agricultural fields. It is important to note that surface water condition does not affect groundwater according to Madeline Gotkowitz with the Wisconsin Geological and Natural History Survey.

CURRENT POLICIES & PROGRAMS

Green County entities are currently addressing surface water protection in a number of ways. These include:

Stream Restoration. The Green County Land and Water Conservation Department works on projects designed to remove streams from the Wisconsin DNR's 303d waters list and to improve trout streams. It also works to establish stream bank buffers.

Drainage Districts. There are four drainage districts in Green County. They were formed to straighten and improve streams to improve agricultural production. These districts are good for surface water because they keep the streams clean, free of brush and debris, and promote having buffers along the streams.

Phosphorus Management. The Green County Land and Water Conservation Department works with several villages in Green County to address phosphorus issues, including assisting with phosphorus trading.

Nutrient Management Plans. The Green County Land and Water Conservation Department provides technical assistance and cost sharing for nutrient management plans, which include many best practices. Currently 17% of Green County cropland is under a nutrient management plan.

Response to Contamination Spills. Green County Land and Water Conservation Department works with DNR to handle these in a timely manner. All spills over 250 gallons are required to be reported to WI DNR.

Permitting. CAFO permittees much identify environmentally sensitive areas and prove the site to be safely located.

Addition of Staff. Both the Land and Water Conservation Department and the Wisconsin DNR are adding staff to increase outreach and compliance.

KEY FINDINGS

Public Health & Safety

INTRODUCTION

Any livestock facility may impact public health and safety in a number of ways relating to water quality, pathogens, traffic safety, and air quality. Ultimately these impacts can have a negative impact on public health and safety as well as quality of life.

Water Quality

Elevated nitrates in drinking water can be especially harmful to infants, leading to blue baby syndrome and possible death. Nitrates oxidize iron in hemoglobin in red blood cells to methemoglobin. Most people convert methemoglobin back to hemoglobin fairly quickly, but infants do not convert back as fast. This hinders the ability of the infant's blood to carry oxygen, leading to a blue or purple appearance in affected infants. However, infants are not the only one who can be affected by excess nitrates in water. Low blood oxygen in adults can lead to birth defects, miscarriages, and poor general health. (Source: Understanding Concentrated Animal Feeding Operations and Their Impact on Communities). Additionally, recent studies have implicated nitrate exposure as a possible risk factor associated with lymphoma, gastric cancer, hypertension, thyroid disorder and birth defects (Source: Environmental Human Health & Safety Risk to Water Quality, Air Quality, Soil Quality, and Natural Areas from Concentrated Animal Feeding Operations). See the "Groundwater" section for more information on water quality and nitrates in Green County.

Traffic Safety

Large livestock facilities can increase the volume of traffic on roads, potentially damaging roads and causing traffic safety concerns (source: Rock Prairie Dairy Rapid Health Impact Assessment).

Air Quality

Large livestock facilities can cause a number of concerns relating to air quality and odor. These can have negative mental health effects which can also translate to negative, quantifiable physical impacts (source: Rock Prairie Dairy Rapid Health Impact Assessment). Table 1 shows a number of pollutants typically found in air surrounding CAFOs, along with the related health risks. See the "Air Quality" section for more information on this topic.

Table 1: Typical Pollutants Found in Air Surrounding CAFOs

CAFO Emissions	Source	Health Risks
Ammonia	Formed when microbes decompose undigested organic nitrogen compounds in manure.	Respiratory irritant, chemical burns to the respiratory tract, skin, and eyes, severe cough, chronic lung disease.
Hydrogen Sulfide	Anaerobic bacterial decomposition of protein and other sulfur containing organic matter.	Inflammation of the moist membranes of eye and respiratory tract, olfactory neuron loss, death.
Methane	Microbial degradation of organic matter under anaerobic conditions.	No health risks. Is a greenhouse gas and contributes to climate change.
Particulate Matter	Feed, bedding materials, dry manure, unpaved soil surfaces, animal dander, poultry feathers.	Chronic bronchitis, chronic respiratory symptoms, declines in lung function, organic dust toxic syndrome.

Source: Understanding Concentrated Animal Feeding Operations and Their Impact on Communities by the National Association of Local Boards of Health (2010).

Pathogens

Livestock facilities can be a breeding ground for rodents, insects, and birds. All of these animals can carry pathogens, which can cause disease (source: Rock Prairie Dairy Rapid Health Impact Assessment, Understanding Concentrated Animal Feeding Operations and Their Impact on Communities). Table 2 shows some of the pathogens found in animal manure.

What is a pathogen?
A pathogen is a bacterium, virus, or other microorganism that can cause disease.

Table 2: Select Pathogens Found in Animal Manure

Pathogen	Disease	Symptoms
Bacillus anthracis	Anthrax	Skin sores, headache, fever, chills, nausea, vomiting
Escherichia coli	Colibacilosis, Coliform mastitis-metris	Diarrhea, abdominal gas
Leptospira pomona	Leptospirosis	Abdominal pain, muscle pain, vomiting, fever
Listeria monocytogenes	Listerosis	Fever, fatigue, nausea, vomiting, diarrhea
Salmonella species	Salmonellosis	Abdominal pain, diarrhea, nausea, chills, fever, headache
Clostirdum tetani	Tetanus	Violent muscle spasms, lockjaw, difficulty breathing
Histoplasma capsulatum	Histoplasmosis	Fever, chills, muscle ache, cough rash, joint pain, and stiffness
Microsporum and *Trichophyton*	Ringworm	Itching, rash
Giardia lamblia	Giardiasis	Diarrhea, abdominal pain, abdominal gas, nausea, vomiting, fever
Cryptosporidium species	Cryptosporidosis	Diarrhea, dehydration, weakness, abdominal cramping

Source: Understanding Concentrated Animal Feeding Operations and Their Impact on Communities by the National Association of Local Boards of Health (2010).

CURRENT POLICIES & PROGRAMS

There are a number of efforts currently in place to address public health and safety. These include the efforts listed below:

Rodents & Insects

The Green County Health Department accepts complaints on rodents and insects and will monitor or provide surveillance and education on this topic. The Department investigates whether it is a human health hazard or a public health nuisance.

Communicable Diseases

The Green County Health Department investigates possible sources of infection on reported communicable diseases. The Department may offer testing when appropriate to affected families and provide education to prevent the further spread of disease.

Traffic Crashes

The Green County Highway Commission reviews traffic crashes.

What is a communicable disease?

A communicable disease is a disease that is transmitted through direct contact with an infected individual or indirectly through a vector such as a rodent or insect.

KEY FINDINGS

Air Quality in Green County

INTRODUCTION

When looking at air quality, the Livestock Facility Study Group considered gases, odor, and particulates. CAFOs have the potential to release large quantities of gases, odors, and particulates due to the decomposition of the large amount of waste generated by the animals in CAFOs (source: Rock Prairie Dairy Rapid Health Impact Assessment). CAFO emission rates can vary a lot depending on weather conditions, daily activities, time of day, and seasons (source: Rock Prairie Dairy Rapid Health Impact Assessment).

However, there is limited research about the impact of air quality and odor on people who live near CAFOs and monitoring air quality and odor can be difficult and costly (source: Dunn County Livestock Operations Study Group Report).

CURRENT AIR QUALITY IN GREEN COUNTY

There is not much data on the current status of air quality in Green County. While the Wisconsin Department of Natural Resources (DNR) does have air monitoring sites in Wisconsin, none are located in Green County. (Source: Thiboldeaux).

The pollutants commonly connected with livestock operations are ammonia and hydrogen sulfide. In Wisconsin, neither pollutant has risen to the level to be considered a health hazard. (Source: Thiboldeaux). At the same time, in 2017, the Green County Health Department received two air quality complaints that were related to livestock operations. (Source: Green County Health Department).

AIR QUALITY & HUMAN HEALTH

While “increased exposure to air pollution from livestock operations can cause or exacerbate respiratory conditions such as asthmas, eye irritation, difficulty breathing, wheezing, sore throat, chest tightness, nausea, and bronchitis and allergic reactions,” the potential impacts of air pollution from livestock operations vary due to concentration and length of exposure (source: Dunn County Livestock Operations Study Group Report). The greatest concern is for the potential for acute and chronic respiratory diseases among workers from exposure to particulates, gases, and vapors within CAFO facilities (source: Dunn County Livestock Operations Study Group Report).

Limited research makes it difficult to determine health implications of exposure to CAFO emissions beyond property lines (source: Rock County report). While "CAFO odors can still be quite strong beyond the property lines and lead to significant negative effects such as increased anger, anxiety, depression, and fatigue" these effects can "lead to quantifiable physical problems such as high blood pressure and self-reported symptoms such as headaches or nausea" (source: Rock Prairie Dairy Rapid Health Impact Assessment).

CURRENT POLICIES AND PROGRAMS

The Green County Health Department accepts complaints on odor and will monitor or provide surveillance and education on this topic. The Department investigates whether it is a human health hazard or a public health nuisance.

According to the Wisconsin DNR, the Wisconsin Pollutant Discharge Elimination System (WPDES) for CAFOs does not address odor. Odor management scoring is a required part of the Wisconsin Livestock Siting Standards for farms with 500 or more animal units. Additionally, as "odor from land-spreading of manure typically does not expose neighbors to hazardous levels of ammonia or hydrogen sulfide, bad odor has not typically been enough to constitute a nuisance (source: Moving Forward: Bayfield County Large-Scale Livestock Study Committee Report and Recommendations to the Bayfield County Board).

There are a number of identified best management practices to mitigate air pollution and reduce odor; these practices were developed by the Wisconsin Agricultural Waste Air Emissions Advisory Group, convened by the Wisconsin DNR. These practices are designed to reduce emissions of hazardous air pollutants from livestock operations. Many of these practices are included in the odor standard of the Livestock Siting Law.

Recommendations

INTRODUCTION

The Livestock Facility Study Group puts forward the following recommendations for consideration by the Green County Board. These recommendations cannot become policy or have any legal effect without going through the appropriate procedures for implementation.

The recommendations are organized in the following three categories:

- Community mapping and monitoring;
- Best practices and outreach; and
- Rules and regulations.

The categories and the recommendations are not listed in any particular order.

RECOMMENDATIONS

Community Mapping & Monitoring

MAPPING

1. **Inventory and map the environmentally sensitive areas in Green County using recent groundwater study data.**
    - *Rationale*
        - *This can be used to make decisions to reduce groundwater contamination and surface water runoff risk.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land Information Office*

2. **Develop maps showing depth to bedrock for Green County using data from the groundwater study.**
    - *Rationale*
        - *This can be used to make decisions to reduce groundwater contamination and surface water runoff risk.*
        - *Maps are needed by farmers and custom manure applicators to help determine manure application.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land Information Office*

MONITORING

3. **Coordinate well water test results, which are required to be taken every 15 months, to establish water quality trend data.**
    - *Rationale*
        - *This can be used to make decisions to reduce groundwater contamination.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land & Water Conservation Department, Green County Health Department, and Green County UW-Extension.*

4. **Increase surface water monitoring near potential impaired waterways.**
    - *Rationale*
        - *This can be used to monitor and make decisions to reduce and prevent surface water runoff.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

5. **Direct the Green County Health Department to monitor trends in asthma and respiratory diseases in areas of Green County.**
    - *Rationale*
        - *Better understand potential risks related to air quality and particulate matter.*

    - *Stakeholder to Lead Implementation*
        - *Green County Health Department*

TESTING

6. **DNR or county offices have the right to obtain a manure or effluent slurry sample from any livestock facility or private septic system to use as they see fit to track down pollution sources.**
    - *Rationale*
        - *Would allow trace-back to sources of contaminated wells using DNA technology.*

    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

7. **Green County Board and Green County Land and Water Conservation Department request to the Wisconsin Department of Natural Resources to consider for all e. coli positive samples an investigation using microbial source tracking testing if offsite livestock contamination seems plausible.**
    - *Rationale*
        - *Initiate an investigation and allow trace-back to sources of contaminated wells using DNA technology.*

    - *Stakeholder to Lead Implementation*
        - *Green County Board and Green County Land and Water Conservation Department.*

RECOMMENDATIONS

Best Practices & Outreach

OUTREACH

1. **Notify neighbors of off farm spills or spills impacting surface water as soon as possible but within 24 hours.**
    - *Rationale*
        - *Disclosure to area landowners of spills that may lead to private water supplies.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

2. **If e. coli contamination is detected, send letters to nearby households that are potentially impacted.**
    - *Rationale*
        - *Disclosure of potential contamination risk to nearby private well owners.*
    - *Stakeholder to Lead Implementation*
        - *Green County Health Department.*

3. **Encourage the State Veterinarian and local veterinarians to report to local health officials any known zoonotic (disease) outbreaks.**
    - *Rationale*
        - *Disclosure of possible disease outbreaks that would impact humans.*
    - *Stakeholder to Lead Implementation*
        - *Green County Health Department.*

4. **Increase education and outreach to landowners regarding the Wisconsin Manure Runoff Prediction website.**
    - *Rationale*
        - *Increase awareness of weather-related impacts on surface water runoff.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department and Green County UW-Extension.*

5. **Install warning signage on roads with frequent truck stops for traffic safety.**
    - *Rationale*
        - *Improve traffic safety.*

    - *Stakeholder to Lead Implementation*
        - *Green County Highway Department and Green County Sheriff's Department.*

6. **Inform haulers and farmers of requirement that all land applicators have, at a minimum, one set of spreading restriction maps and written instructions present for land application sites where manure is actively being applied.**
    - *Rationale*
        - *Ensure proper application of manure and nutrients.*

    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

BEST PRACTICES

7. **Request NRCS to provide incentives for composting, separating, and treating manure.**
    - *Rationale*
        - *Reduce runoff and odor from manure applications.*

    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department*

RECOMMENDATIONS

Rules & Regulations

LOCAL CONTROL

1. **County board officials need to engage the state legislature on water and air quality regulations and for more local control on these issues.**
    - *Rationale*
        - *Local control has been removed and moved to state government.*
    - *Stakeholder to Lead Implementation*
        - *Green County Board*

PLANNING & ZONING

2. **Review and update the comprehensive plan.**
    - *Rationale*
        - *Provides updated direction and vision for Green County.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land Use and Zoning Department*

3. **Conduct a comprehensive review of county zoning regulations.**
    - *Rationale*
        - *This has not been done since 1970 and could help address several issues identified in this report.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land Use & Zoning Department*

4. **Use zoning ordinances to create districts that prohibit large livestock facilities in certain areas that are especially vulnerable based on soil type.**
    - *Rationale*
        - *Ensure that large livestock facilities are sited in appropriate areas.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land Use & Zoning Department*

SETBACKS

5. **Revise county code to modify setback distance to 250 feet for manure storage from private wells and 1,000 feet for public wells.**
    - *Rationale*
        - *Reduce potential for surface water and groundwater contamination and odor concerns.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

6. **Revise county code to increase property line setbacks for feedlots over 1,000 animal units.**
    - *Rationale*
        - *Large farms over 1,000 animal units should have a greater setback to reduce odor and potential for ground and surface water contamination in neighboring wells.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department and Green County Land Use and Zoning Department.*

7. **Review and establish proper setbacks for land spreading manure.**
    - *Rationale*
        - *Reduce surface water runoff and odor concerns.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

PERMITTING & FEES

8. **Only a certain amount of well capacity permitted per square mile to relieve the "straw effect."**
    - *Rationale*
        - *Reduce the amount of water taken from one specific area.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department and Green County Land Use and Zoning Department.*

9. **New manure storage permittee applicants must ensure that sufficient funds will be available for pollution clean-up, nuisance abatement, and proper closure of the manure storage if it is abandoned or otherwise ceases to operate as planned and permitted.**
    - *Rationale*
        - *Livestock owners should be responsible for cleanup and proper closure to eliminate contamination of surface water.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

10. **Revise manure storage ordinance permit fee to have a sliding fee schedule per animal unit, not one set fee for everyone.**
    - *Rationale*
        - *Current fees do not cover the current cost to the county and a sliding scale would be a more appropriate fee format.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land & Water Conservation Department*

OPERATIONS ORDINANCE

11. **Create CAFO operations ordinance.**
    - *Rationale*
        - *Would allow County to have more oversight and monitoring of CAFOs.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

12. **Require fall cover crops on fields following corn silage, including sweet corn silage, and soybeans.**
    - *Rationale*
        - *Research has shown this practice reduces soil erosion and unleashing of nutrients and runoff.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department*

13. **Establish best management practices for odor and noise and require windbreaks around barnyards and storage for new and modified structures.**
    - *Rationale*
        - *Reduce odor and noise issues caused by large livestock facilities.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

MANURE STORAGE

14. **Require all new or modified manure storage structures to be double-lined (have a liner of clay plus something additional i.e. HDPE, concrete, etc).**
    - *Rationale*
        - *Reduce potential for groundwater contamination.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

15. **Increase manure storage for all farms building new or modifying existing manure storage structures for a minimum of 3 months and CAFOs to have a minimum of 1 year storage.**
    - *Rationale*
        - *To enable spreading at more optimal times. Eliminates hauling manure on high-risk days.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

NUTRIENT MANAGEMENT & APPLICATION

16. **Require all Green County livestock and crop operations to have an approved Nutrient Management Plan.**
    - *Rationale*
        - *County is currently at 17% of cropland acres in nutrient management plans. Nutrient management plans greatly benefit groundwater and surface water and prevent soil erosion.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

17. **Conduct more land application hauling audits/oversight in sensitive areas.**
    - *Rationale*
        - *Monitoring applications may improve surface and groundwater quality.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

18. **Restrict winter spreading. Encourage winter no-spread and frozen ground manure regulations that restrict January through March manure spreading to reduce nutrient runoff.**
    - *Rationale*
        - *Reduce nutrient runoff and groundwater contamination.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

19. **Do not incorporate or inject manure greater than 4 inches below the soil surface.**
    - *Rationale*
        - *Would help reduce leaching of nitrate into groundwater and keep nutrients in the plant root zone.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*
20. **On soils with less than 12" to bedrock, no manure applications of liquid manure is allowed. Liquid manure is defined as having less than 12% solids content. Avoid mechanical application of manure on these soils and use other available acres, OR, if avoidance is not possible, implement at least two of the following mitigation practices:**
    a. **No liquid manure applications;**
    b. **No fall manure applications;**
    c. **Apply only solid manure in spring;**
    d. **Limit solid manure application rate to 20 tons/acre/year;**
    e. **Apply within 10 days or less from planting date or apply on a growing crop/cover crop treatment;**
    f. **Manure treatment.**
    - *Rationale*
        - *Would help reduce leaching of nitrate into groundwater and encourage better use of nutrients for plant growth.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*
21. **Incorporate manure management prohibitions into Green County's storage ordinance.**
    - *Rationale*
        - *Reduces potential for surface and groundwater contamination.*
    - *Stakeholder to Lead Implementation*
        - *Green County Land and Water Conservation Department.*

ROADS

22. **Require livestock and crop farmers to be responsible for road damage caused by themselves.**
    - *Rationale*
        - *Prohibitive cost to fix and maintain roads and the importance of quality roads in traffic safety.*
    - *Stakeholder to Lead Implementation*
        - *Green County Highway Department and Green County Sheriff's Department.*

ENFORCEMENT & MONITORING

23. If self-monitoring of manure storage has not been done properly, the county should have the right to force the violator to hire county personnel for a fee.

- *Rationale*
  - *Ensure accountability for current self-reporting regulations when needed.*

- *Stakeholder to Lead Implementation*
  - *Green County Land and Water Conservation Department.*

IMPLEMENTATION & STAFFING

24. Increase staff in the Green County Land and Water Conservation Department beyond what is already planned.

- *Rationale*
  - *Additional staff needed to assist with implementation.*

- *Stakeholder to Lead Implementation*
  - *Green County Land & Water Conservation Department*

25. Create an environmental health position in the Green County Health Department.

- *Rationale*
  - *Expertise needed in investigation, outreach, education, and monitoring recommendations.*

- *Stakeholder to Lead Implementation*
  - *Green County Health Department*

APPENDIX A

Moratorium on Animal Feedlot Permitting

The Green County Livestock Facility Study Group was created by the Green County Board on August 8, 2017 when the Board passed the moratorium below. On January 9, 2018 the County Board extended the county's moratorium on animal feedlot permitting by 45 days.

ORDINANCE 17-0801

Amendment Creating Section 9-6 "Moratorium on Animal Feedlot Permitting" in Green County

WHEREAS, Wisconsin Statutes §59.03(2) provides that, except as elsewhere specifically provided in the statutes, the board of any county is vested with all powers of a local, legislative and administrative character; and

WHEREAS, Wisconsin Statutes §59.02(2) permits the enactment of ordinances by the Green County Board of Supervisors; and

WHEREAS, Wisconsin Statutes §59.69 authorizes the Green County Board of Supervisors to adopt regulations to promote public health, safety and general welfare; and

WHEREAS, The Green County Wisconsin Comprehensive Plan Section 2006 3.2.1, p. 60 states, in part, that:

> In order to protect natural resources for the future, it is crucial to be aware of existing water resources, geologic resources, forests and woodlands, wildlife habitat, parks, open space, air, light, and wetlands.

and

WHEREAS, the Green County Board of Supervisors adopted Chapter 5 [Animal Feedlot Ordinance] of Title 9 [Green County Zoning, Public Safety, Health and Welfare; and Sanitary Code Regulations] of the Green County Code on August 14, 2007 to comply with the requirements of Wisconsin Statutes §93.90 and ch. ATCP 51, Wis. Adm. Code and to establish standards and authority to protect the public health and safety of the people of Green County; and

WHEREAS, Green County residents and property owners have expressed concerns about the importance of preserving the quality of life, environment, and existing small-scale livestock and other agricultural operations of Green County while balancing these concerns with Green County's farmers remaining competitive by engaging in large-scale livestock operations; and

WHEREAS, there is a need for adequate time to determine whether amendments to the Animal Feedlot Ordinance are necessary to adequately protect public health and safety and to ensure that future large-scale livestock operations will be sited only where they can be safely and successfully operated; and

WHEREAS, it is deemed to be in the best interest of Green County to create Chapter 6 "Moratorium on Animal Feedlot Permitting" under Title 9; and

WHEREAS, it is deemed to be in the best interest of Green County that the Code be further modified and amended in the manner hereinafter set forth.

NOW, THEREFORE, BE IT ORDAINED by the Green County Board of Supervisors, in legal session assembled, that Chapter 6 [Moratorium on Animal Feedlot Permitting] of Title 9 [Green County Zoning, Public Safety, Health and Welfare; and Sanitary Code Regulations] of the Green County Code is hereby created to read as follows:

CHAPTER 6

MORATORIUM ON ANIMAL FEEDLOT PERMITTING

9-6: MORATORIUM ON ANIMAL FEEDLOT PERMITTING

9-6-1: DEFINITIONS

LIVESTOCK FACILITY: Has the meaning defined in Section 9-5-4-6.

9-6-2: MORATORIUM IMPOSED

The Green County Board of Supervisors hereby imposes a moratorium on the establishment of all new livestock facilities that will have 1,000 or more animal units.

9-6-3: EXCEPTIONS TO THE MORATORIUM

The moratorium imposed herein shall not apply to applicants who have submitted completed permit applications to establish a livestock facility of 1000 or more animal units and for manure management before the effective date of the moratorium that are determined to be in complete conformity with all state and county legal requirements in effect as of the date of applications.

9-6-4: DURATION OF MORATORIUM

This moratorium shall be in effect for a period of 270 days from the date this ordinance is passed by the County Board of Supervisors unless the County Board of Supervisors rescinds this moratorium at an earlier date. This moratorium may be extended by the County Board for additional periods of time by a simple majority vote of the County Board. At the expiration of this moratorium this ordinance shall immediately be removed from the County Code.

9-6-5: ACTION AND STUDY DURING MORATORIUM

The Green County Board of Supervisors hereby creates an nine person special study committee which shall be known as the "Livestock Facility Study Group" and which shall consist of five county officials and four interested Green County residents and property owners to be appointed by the Land and Water Conservation Committee. The County officials on the Livestock Facility Study Group are as follows:

The Chair of Land and Water Conservation Committee or his designee

The Chair of Health Committee or his designee

The Chair of the Agriculture and Extension Education Committee or his designee

An at-large County Board Supervisor appointed by the Chair

The Chair of the Green County Towns Association or his designee

The Chair of the Land and Water Conservation Committee shall request and receive applications from Green County residents and property owners who are interested in being part of the Livestock Facility Study Group. From those applications, the Land and Water Conservation Committee shall choose four interested Green County residents and property owners to serve on the Livestock Facility Study Group. Those approved by a majority vote of the Land and Water Conservation Committee shall be recommended for appointment by the County Board Chair to become part of the Livestock Facility Study Group. If possible, the four at-large Livestock Facility Study Group members shall include a small-scale livestock facility owner and a large-scale livestock facility owner.

The County Conservationist, the County UW Extension Agriculture Agent and the County Health Officer shall serve as advisory, non-voting members of the Livestock Facility Study Group.

The Livestock Facility Study Group shall, during the course of the moratorium imposed by this ordinance, research, analyze and synthesize scientific literature regarding the impact of large-scale livestock facilities on ground water, surface water and air quality, specifically as those issues apply in Green County.

Issues considered by the Livestock Facility Study Group shall include, but are not limited to:

1) Researching, gathering, analyzing and synthesizing scientific literature regarding the impact of livestock facilities of 1000 or more animal units on groundwater, surface water, air quality, and public health and safety, specifically as these issues apply to Green County;

2) Identifying areas where new regulations may be needed, where current regulations need to be modified, and where enforcement of current regulations is inadequate and are needed to protect public health or safety;
3) Proposing solutions to mitigate problems and/or shortcomings identified in the report. Examples of county-level regulations could be, but are not limited to:
   a) Implementation of State performance standards to address gaps in the livestock siting ordinance including standards related to processing wastewater, tillage setback, and phosphorus index,
   b) Adoption of zoning measures to create special zones for livestock facilities of 1,000 or more animal units, and
   c) Amendments to the Animal Feedlot Ordinance.

The Livestock Facility Study Group shall report its recommendations on appropriate county-level regulatory approaches relative to the siting and/or operation of livestock facilities, including livestock facilities of 1000 or more animal units within Green County to the full Green County Board of Supervisors at least 30 days prior to the end of the moratorium adopted pursuant to this ordinance or as soon as the Livestock Facility Study Group has developed recommendations based upon its research, whichever comes soonest.

9-6-6: SEVERABILITY

If any section, sentence, clause or phrase of this ordinance should be held to be invalid or unconstitutional by a court of competent jurisdiction, the remainder of this ordinance shall not be affected thereby.

9-6-7: TOWN OPT-OUT AUTHORITY

Any Town may opt-out of this moratorium by action of the Town's governing body and by sending notice of this action to the County Clerk. Any Town that has a moratorium relating to the citing of livestock facilities in effect shall be considered as opted-out of this moratorium until such time as the Town's moratorium is no longer in effect.

SIGNED: LAND & WATER CONSERVATION COMMITTEE

Oscar Olson, Chair	Russ Torkelson
Ken Hodgson	Jeff Williams
Kristi Leonard	Dudley Timm (Chair of FSA)

Motion by Olson, seconded by Torkelson to approve Ordinance 17-0801. After discussion, motion by Grotophorst, seconded by Roth for a roll call vote. Motion for roll call vote carried by a majority voice vote. Roll call vote passed by unanimous "yes" vote by all 27 supervisors present.

APPENDIX B

Scope of Work

The following scope of work was approved by the Green County Land and Water Conservation Committee to guide the work of the Livestock Facility Study Group. The director of the Green County Land Use and Zoning Department was later added as a non-voting advisory member due to the content of the Study Group discussions.

GOAL OF THE STUDY GROUP

To use sound science-based information to provide the Green County Board with science-based recommendations developed to effectively protect groundwater, surface water, air quality, and public health and safety.

SCOPE

The scope of the study group's work is:

1. **Provide record of existing science-based analyses** and monitoring of nutrient pollution levels and trends in Green County.

2. **Researching, gathering, analyzing, and synthesizing scientific literature** regarding the impact of livestock facilities of 1,000 or more animal units on groundwater, surface water, air quality, and public health and safety, specifically as these issues apply to Green County.

3. **Understand county, state, and federal regulations** as it pertains to these issues.

4. **Understand county plans, policies, programs, capacities, and regulations** as it relates to these issues.

5. **Review alternative Wisconsin regulations and approaches** to protecting groundwater, surface water, air quality, and public health and safety as they relate to livestock facilities of 1,000 or more animal units for lessons learned and best practices.

6. **Identifying areas where new regulations may be needed**, where current regulations need to be modified, and where enforcement of current regulations is inadequate and are needed to protect public health or safety.

7. **Propose solutions to mitigate problems** and/or shortcomings identified in the report.

BACKGROUND

The Green County Livestock Facility Study Group was established by resolution of the Green County Board on August 8, 2017.

Structure & Support

The Study Group will be composed of nine voting members and three non-voting advisory members, as follows:

- ***Voting Members***
    1. *Chair of Land & Water Conservation Committee or their designee*
    2. *Chair of Health Committee or their designee*
    3. *Chair of the Ag & Extension Education Committee or their designee*
    4. *An at-large County Board Supervisor appointed by the Chair*
    5. *Chair of the Green County Towns Association or their designee*
    6. *Four members of the Green County public*
- ***Non-Voting Advisory Members***
    1. *Director of Green County's Land & Water Conservation Department*
    2. *Director of Green County's Health Department*
    3. *Green County UW-Extension's Agriculture & Natural Resources Educator*

The Study Group will be supported by a facilitator and a team of technical subject matter experts. The Study Group will also have access to other support resources to assist with research, education, and documentation.

TIMELINE

The Study Group shall report its recommendations to the full Green County Board of Supervisors on Tuesday, March 13, 2018 unless the Group requests, and the Board approves, an extension. The general project process is as follows:

- **Phase 1: Laying the Foundation** (Aug. – Sept. 2017)
- **Phase 2: Gathering Information** (Oct. – Dec. 2018)
- **Phase 3: Developing Recommendations and Write the Report** (Jan. – Feb. 2018)
- **Phase 4: Report to County Board** (March 13, 2018)

ROLES

Facilitator

- Maintain professional neutrality
- Develop and facilitate the project process
- Enforce a civil environment during Study Group meetings
- Write the final report of the Study Group

Voting Members of the Study Group

- Attend Study Group meetings and be active participants
- Complete out-of-meeting pair work as needed
- Contribute to a civil environment during Study Group meetings

Study Group Advisors

- Connect the group with subject experts
- Watch policy changes and how that may impact the process
- Speak to current departmental services, actions, and capacity
- Ask questions regarding areas where there may be gaps in information
- Contribute to a civil environment during Study Group meetings

APPENDIX C

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