Heaton-Amrhein, Jennifer A - DATCP

From: M. Schutten <mschutten@wi.rr.com>
Sent: Monday, September 9, 2019 6:13 PM
To: DATCP Livestock Siting Comments
Subject: Public Comments to ATCP 51 : Livestock Facility Siting Administrative Rule Revision
Attachments: ATCP 51 TESTIMONY IDEAS.docx; Highlighted Ordinance for ATCP 51 Testimony.pdf

Categories: Green Category

Please consider the 77 pages contained in the 2 attachments located herewith as my public comments.

Heaton-Amrhein, Jennifer A - DATCP

From: Amanda Walczak <mandawalczak@gmail.com>
Sent: Friday, September 13, 2019 9:22 PM
To: DATCP Livestock Siting Comments
Subject: Fwd: ATCP 51: Livestock Facility Siting Administrative Rule Revision Public Comments
Attachments: ATCP 51 TESTIMONY IDEAS.docx; Highlighted Ordinance for ATCP 51 Testimony.pdf

Categories: Green Category

To Whom It May Concern,

I would like to submit the attached documents as a part of public commentary.

Thank you very much,

Amanda Walczak

Heaton-Amrhein, Jennifer A - DATCP

From: T W <tylerwalczak@gmail.com>
Sent: Friday, September 13, 2019 9:08 PM
To: DATCP Livestock Siting Comments
Subject: ATCP 51: Livestock Facility Siting Administrative Rule Revision Public Comments
Attachments: ATCP 51 TESTIMONY IDEAS.docx; Highlighted Ordinance for ATCP 51 Testimony.pdf

Categories: Green Category

To Whom It May Concern,

I would like to submit the attached documents as a part of public commentary.

Thank you very much,

Tyler Walczak

Heaton-Amrhein, Jennifer A - DATCP

From: Pastor Simone <pastorsimone@centurylink.net>
Sent: Friday, September 13, 2019 4:39 PM
To: DATCP Livestock Siting Comments
Subject: PUBLIC COMMENT ATCP 51
Attachments: Highlighted Ordinance for ATCP 51 Testimony.pdf

Importance: High

Categories: Green Category

MANURE SPREADING REQUIREMENTS: RULE REVISION

Dear Board Members, ATCP 51 allows manure spreading acreage maps to be concealed from the public. Please Change ATCP51 to bring manure spreading maps into the broad daylight. There is a more stringent standard on pg. 56, a) paragraph 2, in the attached ordinance, that would apply a more appropriate and straight forward standard in the ordinance, to the benefit of all.

Our church itself and our families are surrounded by farmland. Improving standard requirements will benefit the health and safety of farm holders, neighbors and water quality upon which all depend.

Thank you.

Pastor Simone Nathan
www.goodearthchurchofthedivine.org
Pastor's Office 3133 Wetland Way
East Troy, WI 53120
262-684-5193

Heaton-Amrhein, Jennifer A - DATCP

From: Thomas Spellman <tmspell@execpc.com>
Sent: Friday, September 13, 2019 2:52 PM
To: DATCP Livestock Siting Comments
Subject: FW: ATCP 51: Livestock Racility Siting Administrative Rule Revision Public Comments
Attachments: ATCP 51 TESTIMONY IDEAS.docx; Highlighted Ordinance for ATCP 51 Testimony.pdf

Categories: Green Category

Dear Committee,

Please add my name to the opinions expressed here. Yes, we are using the same water as was used by the dinosaurs when they were alive. Words cannot express how important it is to keep or water clean. Please take each of the points addressed here and carefully and with an open mind, consider the science highlighted.

Sincerely,
Tom Spellman

Heaton-Amrhein, Jennifer A - DATCP

From: Cookieanderson <cookieanderson1@aol.com>
Sent: Friday, September 13, 2019 9:50 AM
To: DATCP Livestock Siting Comments
Subject: Ground water
Attachments: Highlighted Ordinance for ATCP 51 Testimony.pdf; ATCP 51 TESTIMONY IDEAS.DOCX; image002.png

Categories: Green Category

To Whom It May Concern
I am worried about the amounts of nitrates in our water. Our whole planet is filled with chemicals that are endangering our health and the health of our precious children. Please think long and hard about the LONG TERM IMPACT of how we spread animal waste. Thank you. Gloria Jeanne Anderson. 138 W. Van Norman. Milwaukee. Wi. 53207

Heaton-Amrhein, Jennifer A - DATCP

From: Nan Setterlund <ni.setter@gmail.com>
Sent: Wednesday, September 11, 2019 3:39 PM
To: DATCP Livestock Siting Comments
Subject: Administrative Revisions

Categories: Green Category

I am writing you in regards to the Administrative Rule Revision - ATCP 51 : Livestock Facilities Siting to which I am opposed to your revisions.

Local governments under 93.90(3)(a)(6)(a)(b) can have more stringent standards than your regulations when we are protecting the HEALTH AND SAFETY of the residents of Pepin County.

You have NOT protected us! Our nitrates here in Pepin County are high and NOTHING has been done by you to protect us and our water. Because of your inaction we have passed a Moratorium On Expansion and Creation of Large-Scale Livestock Facilities of 500 or more animal units in Pepin County, Wisconsin. At this time, Pepin County is also working on an ordinance titled, "Ordinance For Licensing The Siting, Expansion And Or Operation of Livestock Facilities in Pepin County, Wisconsin. "

We need to get serious about our situation before it is too late. We need to have not only soil samples taken but also water samples to measure the pollutants in our water.

We need to restrict the spreading of liquid manure when the nitrates are at 10ppm or above, in a well where they are spreading the liquid manure.

We need to start COMPOSTING the liquid manure so that we can restore our organic matter to our soils - and - by COMPOSTING we will also be limiting the amount of nitrogen that gets in our groundwater, as COMPOST holds the nitrogen until the plant calls for it.

The Moratorium and the pending ordinance can be obtained from the Pepin County Land Conservation and Planning Office.

We NEED to stop this polluting of our environment.

We Need to stop supporting and paying for the polluters who are polluting.

NO MORE turning a blind eye.

NO MORE status quo.

NO MORE automatically permitting CAFOs.

NO MORE ignoring our local governments.

NO MORE ignoring the HEALTH AND SAFETY of the rest of us.

NO to your revisions.

Heaton-Amrhein, Jennifer A - DATCP

From: Pat Simpson <pj.simp56@gmail.com>
Sent: Wednesday, September 11, 2019 9:09 AM
To: DATCP Livestock Siting Comments

Categories: Green Category

I oppose your agenda. Please contact pepin county wisc and view the proposed ordinance that does protect pepin county citizens under 93.90. We must enforce the EPA 10 ppm of nitrates. No enforcement has allowed wells in pepin county to be double and triple the enforcement rate. Your lack of enforcement appears to be consent of the continued assault on our waters. The solution to nitrate contamination is simple. Compost. Just compost and the nitrates are held/sequestered until the plant needs them. Compost and protect our water. Enforce the EPAs 10 ppm.

Thank you

Pat Simpson
W6689 Simpson Lane
Durand Wisconsin

Heaton-Amrhein, Jennifer A - DATCP

From:	Loren Johnson <plowjockey48@gmail.com>
Sent:	Tuesday, September 10, 2019 8:38 AM
To:	DATCP Livestock Siting Comments
Subject:	Official Public Comments on Livestock Facilities in Pepin Co. WI
Categories:	Green Category

Dear DATCP Board:

Please register this page of comments and the additional, attached 67 pages of the ***Proposed Ordinance for Licensing the Siting, Expansion and or Operation of Livestock Facilities in Pepin County, Wisconsin*** as my public comment regarding the hearing draft of the proposed changes to ATCP 51, Livestock Facility Siting Administrative Rule.

1) ATCP 51 requires that nutrient management be implemented according to NRCS Standard 590. The more stringent standard in the attached ordinance regarding spreadable compost, page 59, f), should be mandatory in a livestock facility 590. The nutrients in mature compost are not subject to leaching or runoff.

2) It is a known fact that much of the inorganic nitrogen applied under a 590 plan is not used by the crop, instead, leaching to groundwater or running off as surface water. Pages 59 and 60, f) and g), of the attached ordinance should be implemented as a mandatory practice because mature compost stores and warehouses nitrogen until the crop calls for it regardless of what the crop rotation is. Stop emphasizing 590's; start promoting, incentivizing and requiring composting.

3) Any shred of a requirement for water testing is completely absent from ATCP 51! The only real barometer to indicate whether a nutrient management plan is working for *nitrates* is by testing and monitoring groundwater. Mandatory water testing as a requirement to obtain a siting permit is logical protocol. More stringent standard b) on page 57 of the attached ordinance requires mandatory water testing for *nitrates* with ongoing monitoring. In the case of *nitrates*; stop emphasizing soil testing and start requiring water testing.

4) ATCP 51's definition of Livestock Facility is truncated and minimizes the damage done to groundwater from concentrated livestock waste. This definition should be reworked to comply with the definition of a Livestock Facility on page 47 of the attached ordinance which extends the definition from the area where livestock or feedstuffs are stabled, stored, or confined to the outermost "boundary at which waste from the facility, practice, or activity has been stored, applied, or disposed of," which is congruent with the DNR's definition in NR 140.22(3)(a).

5) ATCP 51 does not require manure spreading maps to be submitted with the application for a siting permit if the Livestock Facility operates under a WPDES permit. At present, ATCP 51 allows the manure spreading acreage maps to be sequestered, hidden, and concealed from the public in DNR vaults. Change ATCP 51 to bring the manure spreading maps into the light of day. Please see page 56, a), paragraph 2, for the applicable more strinhttps://mail.google.com/mail/u/0?ui=2&ik=337af16627&attid=0.2&permmsgid=msg-f:1644242155983779979&th=16d185878022b88b&view=att&disp=safegent standard of the attached ordinance.

Heaton-Amrhein, Jennifer A - DATCP

From: John Falk <jgfalk47@gmail.com>
Sent: Monday, September 9, 2019 6:49 PM
To: DATCP Livestock Siting Comments
Subject: Highlighted Ordinance for ATCP 51 Testimony.pdf
Attachments: Highlighted Ordinance for ATCP 51 Testimony.pdf; ATCP 51 TESTIMONY IDEAS.docx

Categories: Green Category

Highlighted Ordinance for ATCP 51 Testimony.pdf
OBJ
OBJ

Sent from my iPhone

Sept 9, 2019

Dear DATCP Board,

Please register this page and the additional enclosed ~~140~~ 125 pages as my public comment regarding the hearing draft of the proposed changes to ATCP 51, Livestock Facility Siting Administrative rule.

Your draft proposal does not include the fundamental changes that would protect the health and safety of Wisconsin residents:

Water testing requirements, both initial and annual; and denial or withdrawal of a siting permit when groundwater pollutants exceed the enforcement level, UNLESS manure is composted.

Local political subdivisions wish to protect the health and safety of their residents.

To do so they must protect the groundwater that their residents are drinking.

Nowhere in your proposed changes do you require a livestock facility to test groundwater for pollutants as a prerequisite for a siting permit. Nowhere in your proposed changes do you require a livestock facility to conduct annual testing of groundwater for pollutants.

To NOT do so is to deny reality.

If the "proof is in the pudding" then proof of the failure of nutrient management plans (NMP) is in the groundwater.

NMPs are a miserable and deadly failure.

Groundwater nitrate levels are excessively high in Wisconsin counties where concentrated animal feeding operations (CAFOS) have been sited, even though they were/are required to have a NMP.

Pg. 1 Cont. on next sheet.

Nitrates from manure from permitted livestock facilities which have the "window dressing" of a "590" plan have steadily polluted groundwater with impunity while DATCP has looked the other way by requiring soil testing.

The water testing and composting requirements of the enclosed proposed ordinance will actually protect health and safety of Wisconsin citizens by immobilizing what is currently allowed to become a water pollutant under ATCP 51, and store it as a nutrient until plant growth demands it.

Water is a hot topic.

DATCP livestock facility citing regulations have got us into hot water.

Composting can get us out.

I request that DATCP enact mandatory groundwater monitoring AND composting of manure as part of their Revisions to ATCP Chapter 51 regulations.

Helen Kees
W6754 Simpson Lane
Durand, WI 54736

Helen M. Kees
9-9-2019

Dear DATCP Board:

Please register this page of comments and the additional, attached 67 pages of the ***Proposed Ordinance for Licensing the Siting, Expansion and or Operation of Livestock Facilities in Pepin County, Wisconsin*** as my public comment regarding the hearing draft of the proposed changes to ATCP 51, Livestock Facility Siting Administrative Rule.

1) ATCP 51 requires that nutrient management be implemented according to NRCS Standard 590. The more stringent standard in the attached ordinance regarding spreadable compost, page 59, f), should be mandatory in a livestock facility 590. The nutrients in mature compost are not subject to leaching or runoff.
2) It is a known fact that much of the inorganic nitrogen applied under a 590 plan is not used by the crop, instead, leaching to groundwater or running off as surface water. Pages 59 and 60, f) and g), of the attached ordinance should be implemented as a mandatory practice because mature compost stores and warehouses nitrogen until the crop calls for it regardless of what the crop rotation is. Stop emphasizing 590's; start promoting, incentivizing and requiring composting.
3) Any shred of a requirement for water testing is completely absent from ATCP 51! The only real barometer to indicate whether a nutrient management plan is working for *nitrates* is by testing and monitoring groundwater. Mandatory water testing as a requirement to obtain a siting permit is logical protocol. More stringent standard b) on page 57 of the attached ordinance requires mandatory water testing for *nitrates* with ongoing monitoring. In the case of *nitrates*; stop emphasizing soil testing and start requiring water testing.
4) ATCP 51's definition of Livestock Facility is truncated and minimizes the damage done to groundwater from concentrated livestock waste. This definition should be reworked to comply with the definition of a Livestock Facility on page 47 of the attached ordinance which extends the definition from the area where livestock or feedstuffs are stabled, stored, or confined to the outermost "boundary at which waste from the facility, practice, or activity has been stored, applied, or disposed of," which is congruent with the DNR's definition in NR 140.22(3)(a).
5) ATCP 51 does not require manure spreading maps to be submitted with the application for a siting permit if the Livestock Facility operates under a WPDES permit. At present, ATCP 51 allows the manure spreading acreage maps to be sequestered, hidden, and concealed from the public in DNR vaults. Change ATCP 51 to bring the manure spreading maps into the light of day. Please see page 56, a), paragraph 2, for the applicable more stringent standard of the attached ordinance.

Ordinance No._____

PROPOSED ORDINANCE FOR LICENSING THE SITING, EXPANSION AND OR OPERATION OF LIVESTOCK FACILITIES IN PEPIN COUNTY, WISCONSIN

THE COUNTY OF PEPIN, WISCONSIN, DOES HEREBY ORDAIN AS FOLLOWS:

Section 1. Authority

This Ordinance is adopted pursuant to the powers granted under the Wisconsin Constitution, and Wisconsin Statutes including, but not limited to, Sections 93.90(3)(a)(6)(a)(b) and 59.03(2).

Section 2. Purpose and Findings

PURPOSE: The purpose of this Ordinance is to comply with requirements of Sec. 93.90 of Wis. Statutes, Wis. Adm. Code ATCP 51, and or to establish standards and authority to protect the public health or safety of the people of the County of Pepin, Wisconsin, by:

a) setting forth more stringent standards for obtaining a License for the Siting, Expansion and or Operation of Livestock Facilities in the County of Pepin, Wisconsin, to protect the public health or safety of Pepin County residents;

b) and utilizing aerobic microorganisms to transform highly-soluble, inorganic, forms of nitrogen (N) compounds in Livestock Manure, into less soluble, less mobile, organic

forms so as to reduce leachability in soil thereby protecting the public health or safety of Pepin County, Wisconsin, residents.

FINDINGS: Pursuant to Sec. 93.90 (3)(a)(6)(a)(b) of Wis. Statutes, the Pepin County, Wisconsin, Board of Supervisors, hereby finds that the standards in this Ordinance, including Sec. 6(3)(a-g), are more stringent than standards of Wis. Adm. Code ATCP 51, and "are based upon reasonable and scientifically defensible findings of fact" as documented by findings listed herein and adopted by said Board. Further, that the more stringent standards in this Ordinance, including Sec. 6(3)(a-g), clearly demonstrate that the more stringent standards are "necessary to protect public health or safety."

FINDINGS OF FACT

1. The legal threshold limit on the amount of a substance that is allowed in public drinking water systems in the United States under the Safe Drinking Water Act is referred to as the Maximum Contaminant Level (MCL). Currently, the enforcement level for nitrates listed in Wisconsin's Public Health Related Groundwater Standards, which codifies the United States Environmental Protection Agency (USEPA) MCL for nitrates,is 10 mg/l (nitrate as N). [1] Wisconsin law prohibits the issuing or reissuing of approval to a facility, practice or activity where the enforcement standard for a substance [2] [3] has been exceeded, unless an exemption has been granted. [4] Further, Wisconsin law prohibits an exemption if any **further increase in the concentration of nitrates or a substance of public welfare concern presents a threat to public health or welfare.** [5]

2. Groundwater from many Pepin County, Wisconsin, wells is testing at 10 mg/l (nitrate as N) or is testing in excess of 10 mg/l (nitrate as N) for nitrates. [6] [7] [8] [9] Maps referenced in citations 6-9 are attached hereto in Addendum I.

3. Pepin County, Wisconsin is comprised of soils that are highly susceptible to groundwater contamination. [10] [11] [12] [13] [14] [15] [16] Maps referenced in citations 10-16 are attached hereto in Addendum I.

4. The USGS Web Soil Survey lists ***only 0.4% of soils in Pepin County***, Wisconsin, as being "very favorable" for the application of livestock manure on or into land. [17] Map referenced as citation 17 is attached hereto in Addendum I.

5. Nitrates, composed of inorganic nitrogen (N) compounds, are very mobile in soil and have a high potential to migrate to groundwater due to weak soil retention and high water solubility. [18]

6. Cattle and calves represent the vast preponderance of livestock in Pepin County, Wisconsin. Their nitrate production is used herein to exemplify the production of nitrates in livestock excreta in Pepin County, Wisconsin. 2017 statistics show that 28,500 head of cattle and calves resided in Pepin County, Wisconsin in 2017. [19]

7. At an average weight of 700 pounds, each animal would annually produce, on average, 105 pounds of nitrogen, contained in excreta. [20] Multiplying Pepin County's total head of cattle times the cattle's annual excreta nitrogen production (28,500 cattle X 105 lbs.) results in 2,992,500 lbs. of nitrogen produced from cattle in Pepin County, Wisconsin during 2017.

8. Research conducted in Wisconsin on inorganic nitrogen applications to land in a corn cropping system, resulted in as much as 53% of the nitrogen leaching to groundwater. [21] Pepin County's highly permeable, thin,soils combined with karst or porous bedrock geological features facilitates the contamination of groundwater with nitrates, a component of Manure, as evidenced by eight maps [10-17] and attached hereto in Addendum I.

9. In 2017, nearly **1.5 million pounds** of nitrates (2,992,500 lbs. X 50% leach rate), from cattle excreta, are estimated to have leached into Pepin County's groundwater. [22]

10. Pepin County groundwater, contaminated by leached nitrates, an inorganic compound, is the source of drinking water for the majority of Pepin County residents. [23]

NEURAL TUBE BIRTH DEFECTS POSITIVELY ASSOCIATED WITH NITRATES

11. The neural tube is the hollow longitudinal dorsal tube formed in vertebrate embryos [including humans] that gives rise to the **brain** and **spinal cord.** [24]

12. In human babies the neural tube normally closes 4 weeks after conception. [25]

13. Neural tube defects are various congenital defects, such as **spina bifida** and **anencephaly**, caused by incomplete closure of the neural tube during early embryonic development. [26]

14. Risk of neural tube defects (NTD's) increase as drinking water nitrate levels increase. Increased neural tube defects were observed in babies where maternal drinking water was above the Maximum Contamination Level (MCL) for nitrates (10 mg/l) compared to areas where the maternal drinking water was less than 10 mg/l. [27]

15. Anencephaly (an . en . sef . a . lee) is a severe congenital condition in which a large part of the skull is absent along with the cerebral hemisphere of the brain. [24] To view schematic of an anencephalic baby view site listed at citation #28. [28]

16. A case-control study revealed that a mother's risk of having an anencephalic baby **doubled** if she was living in an area where drinking water was greater than >5 mg/l compared to mothers in areas where the drinking water was less than < 5 mg/l. [29]

17. Anencephaly leads to death in days or weeks. [30]

18. Among mothers whose drinking water nitrate level tested **equal to or greater than 3.5 mg/l of nitrate**, there was an association with having a baby expressing a neural

tube defect. [31]

PREMATURE BIRTHS POSITIVELY ASSOCIATED WITH NITRATES

19. Higher concentrations of nitrate were positively associated with **premature babies and babies with low birth weight**, with a significant dose-response trend. Higher nitrate concentrations were also associated with intrauterine growth restrictions (IUGR). [32]

"BLUE BABY" OR METHEMOGLOBINEMIA POSITIVELY ASSOCIATED WITH NITRATES

20. "Nitrate toxicity is related primarily to the *in vivo* conversion to nitrite after ingestion. The health hazards from consuming water with nitrate are related to the direct toxicity of nitrite--that is, its ability to directly oxidize hemoglobin, changing it to methemoglobin, which cannot bind oxygen. Accumulation of methemoglobin (methemoglobinemia) occurs if this oxidation process overwhelms the protective reduction capacity of cells." [33]

21. Research indicates that pregnancy complications were associated with excess levels of methemoglobin. Women with anemia, toxemia and threatened **spontaneous abortion/premature delivery, were 5X more likely** to have significantly higher methemoglobin levels when compared to mothers with normal pregnancies. [34]

22. Further, methemoglobin levels were higher in both cord blood and maternal blood with births that were preterm and low birth weight relative to cord blood and maternal blood associated with normal birth outcomes. [35]

BIRTH DEFECTS POSITIVELY ASSOCIATED WITH NITRATES

23. Central nervous system **(brain and spinal cord)** defects are associated with private well sources for drinking water. Nitrate exposure from water from private wells increased the risk of having a baby with a brain or spinal cord defect. [36]

24. "Statistically significant risk increases occurred specifically for **malformations of the central nervous system and musculoskeletal system.** Reanalysis of the data by estimated water nitrate concentration demonstrated a nearly **threefold [3X] increase in risk** for women who drank water containing 5-15 mg/l of nitrate, and a **fourfold [4X] increase in risk** for those consuming >15 mg/l of nitrate". [37]

25. A case-controlled study showed a correlation between pregnant women's consumption of groundwater and the occurrence of congenital birth defects. The positive association between higher nitrates levels in drinking groundwater by pregnant women and deaths due to congenital malformations indicates that **nitrates are a human teratogen.** [38]

26. Using information from the National Birth Defects Prevention Study of 3,300 case mothers, it was determined that mothers who ingested nitrates equal to or greater than 5.42 mg/l daily versus those mothers who ingested less than 1 mg/l of nitrate daily were nearly **2X (times) more likely to have a baby with a cleft palate, cleft lip, or limb deficiency.** [39] To view schematic of oral clefts view site listed in citation #40. [40]

27. Oral clefts were statistically significantly associated with maternal groundwater consumption. **Oral clefts were 4X more likely** in maternal women drinking

groundwater with nitrate levels greater than 15 mg/l. [41]

28. In 2018, it was presented to the Pepin County Board of Supervisors that the Director of Pepin County's Public Health Department, Heidi Stewart, BSN, reported that "That blue baby syndrome is rare, but there are birth defects related to high nitrate levels in drinking water." [42]

SPONTANEOUS ABORTIONS

29. "A report on a ***cluster of spontaneous abortions*** in LaGrange, Indiana, cited nitrate-contaminated water from private wells as the possible cause (CDC 1996). The cases included a 35-year-old woman who experienced 4 consecutive miscarriages and a 37-yr-old and a 20-year-old who each experienced one miscarriage. All three women lived within 1 mile of each other and were in the first trimester of pregnancy at the time of the miscarriages. Testing of the wells serving the homes of the women found nitrate to be the only elevated contaminant. The wells had nitrate levels over the MCL, with reported levels of 19.0 mg/l, 26 mg/l, and 19.2 mg/l (nitrate-N) for the three women, respectively." [43]

30. Higher levels of methemoglobin were also found in women who spontaneously aborted during their first three months of pregnancy. [44]

31. Drinking water nitrates are suspect in causing **spontaneous abortions**, along with other adverse reproductive complications. The relation between drinking water nitrate and spontaneous abortion continues to be underestimated. [45]

32. "Spontaneous abortions may be a more sensitive indicator of adverse reproductive effects from relatively low levels of drinking water contamination." [46]

THYROID CANCER AND OTHER THYROID ABNORMALITIES

33. Thyroid hormones are critical for neurological development, skeletal growth, metabolism and the normal biological functioning of the human system. [47] Iodide is an essential element in the synthesis of thyroid hormones. When iodide uptake by the thyroid gland is "outcompeted" by nitrates, formation of thyroid hormones is reduced. Iodide is an essential element in the synthesis of thyroid hormones which are needed for the normal functioning of the thyroid gland. Research suggests that the function of the thyroid gland is altered when it is exposed to nitrates. "Nitrate competes with the uptake of iodide by the thyroid, thus potentially affecting thyroid function." [48] The history of the epidemiology and etiology of goiter was explored as early as 1956. [49] Research on the association between high nitrates in drinking water and goiters over the next 40 years confirmed this association. [50] [51] [52] [53] [54]

34. Nitrates compete with iodide for their "positions" in the thyroid gland leading to the malfunctioning of the thyroid gland which can, in turn, lead to adverse health effects. [55] [56] The thyroid is a gland that regulates many of the body's functions. Danish scientists found that hypertrophy, or enlargement of the thyroid gland, was dose related to intake from nitrates in drinking water. [57]

35. When nitrates inhibit thyroidal iodide uptake, the thyroid produces to much of one hormone and to little of another. An increased level of thyroid stimulating hormone leads to goiters. [58] [59] [60] Epidemiological studies have ***positively associated*** increased nitrate consumption in drinking water with ***hypothyroidism and hyperthyroidism and other thyroid disorders.*** [61] [62]

36. A cohort study of 21,977 women in Iowa who drank water with nitrate levels in excess of 5 mg/l for 10 years or more were **2.6 X more likely to develop thyroid cancer** than women whose water source never exceeded 5 mg/l. [63]

COLON AND RECTAL CANCER

37. Ingested nitrate is the raw material for the synthesis of compounds which have been shown to be carcinogenic in animal studies. A recent case-control study revealed that the risk of getting **colorectal cancer (CRC)** when drinking nitrates above 10 mg/l per day was almost **1.5X more** than if drinking less than 5 mg/l of nitrate per day. [64]

38. The association between nitrate levels in drinking water and cancers of the colon and rectum has been reported in recent research at several different sites with various modeling. An analysis of 1.7 million individuals was done using proportional hazard models. Statistically significant increased risk for colorectal cancer was found at drinking water levels above 3.87 mg/l. [65]

39. A Wisconsin case-control study revealed that women residing in rural areas were at nearly **3X the risk of developing proximal colon cancer** when drinking water nitrate levels were >10 mg/l compared to women whose drinking water nitrate levels were less than 0.5 mg/l. [66]

DIABETES

40. "Insulin-dependent diabetes mellitus (IDDM) is a condition resulting from an autoimmune process in which insulin-producing pancreatic beta cells are destroyed." [67]

41. The association between ***juvenile diabetes*** and higher nitrate levels in domestic drinking water have been demonstrated. [68]

42. Research has found positive associations between nitrate levels in drinking water and the incidence of IDDM. In 1992 a study in Finland indicated a tendency toward Type I diabetes with increasing nitrate levels in drinking water. [69]

43. The suspected route of cause and effect between nitrates and diabetes is the nitrate to nitrite to nitrosamine "pathway." The free-radical damage of nitrosamines can destroy the insulin producing cells in the pancreas. An ecological study in the United States demonstrated ***positive association*** between ***insulin dependent diabetes mellitus and nitrates in drinking water.*** [70]

44. Studies indicate that higher levels of nitrate intake are associated with increased risk of Type I diabetes. The suspected pathway that results in the ultimate damage to the insulin producing beta cells of the pancreas is nitrates to nitrites to free- radical producing nitrosamines. [71]

METHEMOGLOBINEMIA (BLUE-BABY SYNDROME)

45. Methemoglobinemia, or blue-baby syndrome, was first reported in the early 1940's by an Iowa City, Iowa, physician after he was presented with two different cyanotic infants. The babies were being fed formula made with water from a well. [72]. To this day, infants drinking formula made from private well water are placed in a high risk category. [73]

46. The Safe Drinking Water Act (SDWA), including amendments, set(s) water quality regulations in the United States of America. [74]

47. In 1987 the USEPA set the standards necessary to achieve the goals of the SDWA legislation. The Maximum Contaminant Level (MCL) standard is, by definition, designed as the concentration above which **adverse human health effects may occur.** [75]

48. The Maximum Contamination Level (MCL) for nitrate in drinking water was set at 10 mg/l nitrate-nitrogen (NO3-N) based on blue-baby (methemoglobinemia) cases that were reported that had known nitrate concentrations connected to the water supply. [76]

49. Unlike other contaminants with established MCLs, which have a 10X safety factor built into them, the USEPA has built **no safety factor** into the 10 mg/l for nitrates. [77] [78]

50. Research conducted on **"blue-baby" cases in Wisconsin,** that occured as recently as 1998, revealed that water from private wells from which the water was being drawn to make infant formulas, had nitrate levels of 22.9 mg/l and 27.4 mg/l. [79]

BLADDER CANCER

51. Numerous research studies have shown a positive association between bladder cancer and nitrate levels. Postmenopausal women in Iowa who drank water for 4 years or more with nitrate levels equal to or **greater than 5 mg/l showed a significant association with bladder cancer.** [80]

52. As recently as 2015 research revealed that nitrate levels of 9.5 mg/l were positively associated with bladder cancer. [81]

53. Women who drank water supplies with **nitrates greater than 2.46 mg/l were about 3X as likely to develop bladder cancer** when compared to women drinking water with less than 0.36 mg/l. [82]

OTHER CANCERS: BRAIN, GASTRIC (STOMACH) AND OVARIAN

54. Childhood brain tumors (CBT) may be associated with the levels of nitrates in household drinking water. The risk of astrocytoma, may be associated with increasing levels of nitrates. [83]

55. Research has shown an increased risk of brain cancer in western Washington state among offspring of women who relied exclusively on well water. [84]

56. Research conducted in Yorkshire, England revealed the incidence of cancers associated with the brain and nervous systems to be associated with higher levels of nitrates in drinking water. [85]

57. The risk for development of ***rectal cancer was statistically significantly increased*** for individuals with the highest nitrate exposure. [86]

58. Increased risks of gastric cancer has been reported to be associated with rates of nitrate in drinking water. Research involving the Chilean population has found a "high correlation" between ***deaths from stomach cancer and nitrate levels in drinking water.*** [87]

59. Populations who were at high risk for gastric cancer were drinking water high in nitrates. [88]

60. In 1984, research found a **"significantly elevated" risk between gastric cancer** and drinking water with nitrates greater than or equal to 4.5 mg/l. Communities with high nitrates in their drinking water were **3X more likely to have higher than average stomach cancer** compared to communities with low levels of nitrates in their drinking water. [89]

61. In a case control study the association was studied between gastric cancer mortality and the nitrate levels in municipal water. The study showed that there was a significant positive relationship between gastric cancer mortality and drinking water nitrates. [90]

62. Ovarian cancer has been linked to increased levels of nitrates in drinking water in a cohort study of 21,977 Iowan women. [91] It should be noted that the **increased risk of ovarian cancer** among Iowan women was among those drinking water solely from municipal water supplies. Research indicates that infants of mothers drinking water from private wells are at even greater risk from nitrate exposure then those drinking from municipal water supplies. [92]

OTHER HEALTH EFFECTS

63. Hypertension (diastolic) and increased nitrate levels have a positive association.[93]

64. Onset of **hypertension was approximately 20 years earlier** among those drinking water higher in nitrates, when compared to those in a no nitrate, drinking water control group. [94]

65. Research interest is being shown regarding the association between macular degeneration and nitrate levels. [95]

66. In a Wisconsin, USA, population-based cohort study a positive association was shown between **macular degeneration** and nitrate drinking water levels greater than or equal to 5 mg/l from rural private wells compared to those drinking water from wells with less than 5 mg/l of nitrates. [96]

67. Increased risk of ***non-Hodgkin's lymphoma*** was ***significantly elevated on men and women*** exposed to nitrate levels between 4.5mg/l and 11.3 mg/l. [97]

68. Increased evidence of a positive association between nitrate levels and non-Hodgkin's lymphoma among men was reflected in research in 2003. [98]

69. In a case control study of nitrates in drinking water, including both sexes, it was found that there was a dose-response relationship with a ***significantly increased risk of NHL***. Long term exposure to elevated nitrate levels in drinking water may contribute to NHL risk. [99]

70. Further study is needed to establish if a correlation exists between increased levels of nitrates in drinking water and ***sudden infant death syndrome (SIDS)***. Research has indicated that a correlation does exist. [100]

71. Perhaps most disconcerting and troubling is research showing that transient, moderate thyroid hormone deficiency in human and animals can cause specific developmental defects. Insufficient amounts of thyroid hormones during the early fetal periods are associated with, among other adverse outcomes ***reduced intelligence quotient scores***. [101]

SUMMARY OF HEALTH EFFECTS RELATED TO DRINKING WATER NITRATES

72. Research regarding nitrate's ability to inhibit the thyroidal uptake of iodide to the degree of 50% leaves no room to escape the fact that nitrate is a thyroid disrupting chemical. [102]

73. Tonacchera's 2004 research established that nitrates competitively inhibit iodine uptake into the thyroid gland. The uptake of thyroid disrupting chemicals by the thyroid gland, through disruption of the structure and function of the thyroid gland, ***likely lowers IQ levels***. It appears that "decreased maternal thyroid hormone levels are associated with ***adverse neuropsychological development in children."*** [103]

74. Research confirms what has been observed in humans: "small, transient, decreases in serum total T4" [a thyroid hormone] during the first trimester of fetal development are associated with altered brain and neuropsychological development... and ***"adverse outcomes (e.g. reduced IQ scores)"***.... [104]

75. Although the consequences of a 5-point decrease in an individual's IQ may be difficult to discern, the impact of this 5% shift at the tails results in a 57% national increase in those classified as mentally retarded (IQ < 70) and a concomitant decrease [57%] in individuals considered gifted (IQ > 130)... [105] [106]

76. Currently, methemoglobinemia is "considered to be the end-point of concern for humans from exposure to nitrate in drinking water." Recently, evidence from animal and human studies suggest that drinking water nitrate "effects on ***thyroid gland function are also an end-point concern."*** [107]

77. Studies suggest an association between cancer and exposure to nitrates in drinking water due to the breakdown products of nitrates. The Canadian Federal Government's Health Canada, the department of the government of Canada with responsibility for national public health, will be paying particular attention to "research regarding nitrate exposure and its effect ***on the thyroid, including the neurodevelopmental effects in the most sensitive*** population,"... fetuses and infants. [108]

78. The International Agency for Research on Cancer (IARC) has classified nitrates as a ***2A carcinogen*** stating that "ingested nitrate or nitrite under conditions that result in endogenous nitrosation" is probably carcinogenic to humans." [109]

79. It is suspected that nitrates ingested in drinking water may cause cancer when it is changed or reduced to nitrites and then to N-nitroso compounds (NOC's). ***NOC's cause cancer in humans.*** [110]

COMPOSTING FOR HEALTH

80. All the preceding health Findings of Fact warrant swift action to reduce Pepin County's groundwater contamination by nitrates. The urgency for Pepin County, Wisconsin, to begin incorporating spreadable compost into its fragile and depleted soils is announced by the nitrate pollution levels of its drinking well water. [111] [112] [113] [114]

COMPOST PREVENTS LEACHABILITY OF MANURE NITRATES

81. According to the United States Department of Agriculture-Natural Resources Conservation Service, "Nitrogen, as nitrate or ammonium, is highly soluble and moves rapidly .... in soil solutions." When manure is stored in a ***pit or lagoon under anaerobic conditions*** the nitrogen is either converted into ammonia (NH3) and lost to the atmosphere through volatilization or it is mineralized to ***soluble, leachable, nitrate (NO3)*** *which* ***pollutes groundwater.*** [115]

82. According to the United States Department of Agriculture-Natural Resources Conservation Service, when manure is ***composted under aerobic conditions*** *it is stored in the bodies of dead and living microorganisms* ***as an insoluble, non-leachable form of organic nitrogen.*** "In aerobic conditions, the N will largely remain in the manure as organic N or ammonium." [116]

83. "Animal manure has become a waste product and **an environmental hazard** in intensive husbandry systems. In fact, the large volumes of animal manure are most conveniently disposed of by spreading...in fall or before spring sowing. This corresponds to a time of minimal nitrogen (N) requirement and **great risks of nitrate leaching.**" [117]

84. "Nitrogen losses from ***manure*** applications are mostly driven by volatilization or leaching into surface water and groundwater, with only a ***small amount utilized by the crop*** or immobilized by the added organic matter." In a six year study in Michigan, USA, it was found that, "the manure treated crop plot always showed higher nitrate leaching compared to the other treatments." [118]

85. When manure applications are made to a crop, "a small amount of the nitrogen applied is immobilised (sic) by the added organic matter, a large amount is either lost to the air, or dissolved in surface waters ***and/or transported into groundwater.***" [119]

86. In a 2016 research study comparing the nitrogen stability of four different kinds of nitrogen soil amendments, the manure ***compost was the most stable nitrogen fertilizer*** and the "decomposed manure was the worst." The compost had the highest Cation Exchange Capacity (CEC), compared to other organic fertilizers. This asset allows compost "to adsorb cations,and may give them away or make changes." [120]

87. Compost has something in it (humic acid) that can lock nitrogen onto it and let it go when the plant calls for it. [121]

COMPOSTED MANURE "BANKS" OR STORES NITRATES

88. Composting means a controlled, biological, process wherein the exponential growth of aerobic microorganisms is enhanced and accelerated by mixing organic waste, such as Livestock Manure, with other ingredients such as straw, hemp hurd, stover, corn cobs, oat hulls, flax shives, wood sawdust, or other carbonaceous material to achieve an initial C:N ratio of 30:1 to 40:1, with 40-60% moisture by weight, that is periodically aerated to optimize aerobic decomposition and microbial reproduction. In a windrow composting system, the thermophilic phase will extend for 15 days with temperatures between 131 and 170 degrees Fahrenheit. The length of an additional curing phase lasts between 1-4 months. [122]

89. Compost is the end product of composting consisting of complex, organic compounds of stable, immobilized, humic byproducts consisting of the biomass of both dead and living microorganisms and the undegradable parts of Manure and carbonaceous materials. The parent material is decomposed to the extent that the material will not significantly reheat due to the action of microorganisms when subjected to optimum oxygen, moisture, nutrients, and thermal conditions. [123]

90. **Immobilization** is the conversion of an element, such as nitrogen, from an inorganic form to an organic form by way of microbial biochemistry. [124]

91. "The majority of nitrogen in finished compost, usually over 90%, has been incorporated into organic compounds that are **resistant to decomposition.** [125]

92. The correlation between length-of-time-composted and compost maturity is directly related to the amount of microbial "fixing" or immobilizing of leachable, soluble, inorganic forms of nitrogen **into immobile, non-leachable, organic forms**. [126]
[127]

93. It is during these later stages of composting that humic components, especially humin, are formed. The aromatization and stabilization processes take place during the later stages of composting. [128]

94. Humic substances, components of mature compost, are formed during the later stages of aerobic decomposition of biological masses. Humic substances are the most important fraction of organic matter due to their ability to "mummify" decaying organic tissue or become precipitated as humates on the surface of clay particles. "These stable, or even inert by-products, create the dark, blackish gray color of all compost". [129]

95. Humic rich compost reduces "the toxicity and leaching of nitrogen compounds into the subsoil water. Humic substances hold major plant nutrients in a molecular form which reduces their solubility in water. These binding processes reduce [the] leaching of nitrogen into the subsoil and help prevent volatilization into the atmosphere." [130]

96. " The 4 major components of ***humus, the major building block of compost***, are; humins, humic acids, fulvic acids and humates. Humin is considered the key component of fertile soils due to its ability to increase the soils water holding capacity, and, amongst other benefits, to act as a cation exchange system." [131]

97. " ***Compost applications help build soil humus.*** "The quality of humic substances extracted from composts is influenced by the composting ingredients, techniques, and the length of the composting period." [132] "Not all composts are created equal." [133]

98. Once compost is "finished," the nitrogen in it is immobilized. The nitrogen that was in the water-soluble, leachable, inorganic state in manure, is now transformed into an insoluble, immobile, organic form held in compost. The inorganic nitrogen in livestock manure that threatens groundwater is now ***"banked" as a stable form of organic nitrogen in compost.*** [134] [135] [136]

COMPOST MATURITY MATTERS

99. There are different qualities of compost. A "gold standard" for compost that will protect our natural resources from nitrate pollution and leachability is "very mature" which is correlated to length of composting time. [137] [138]

100. Compost is tested and classified as "very mature, mature, or immature" according to the Compost Maturity Index. The Compost Maturity Index for very mature compost consists of 4 characteristics; well cured, no continued decomposition, no toxicity potential, no impact on plant-available soil nitrogen. [139]

101. "Chemical and biological characteristics of compost are measured, especially compost maturity, by using the Solvita Maturity Index (Woods End Lab, Mt. Vernon, Maine), which qualitatively assesses CO2 and NH3 emissions from compost by color changes in paddles, which are enclosed with the sample for a four hour period". Compost maturity positively correlates with the Solvita Maturity Index. [140]

COMPOST RELEASES NITROGEN ON DEMAND

102. "During composting, unstable nitrogen compounds, such as ammonia, are removed leaving more stable organic forms that must be decomposed by soil microorganisms before they are available to crops. Microbial release of N is relatively slow, reducing potential losses to leaching as crops readily utilize the N as it becomes available." [141] [142]

103. When a plant begins "calling" for nitrogen, soil microorganisms respond by breaking down organic nitrogen in the compost to spoon feed the plant. [143] [144] [145]

104. The slow release of organic N, called **mineralization**, is "the conversion of an element from an organic form to an inorganic state as a result of microbial activity." [146]

105. The humus in spreadable **compost** ***"slowly releases nitrogen*** when called for by the plant in a form readily available for plant utilization." [147] [148]

106. Nitrogen uptake into the plant is facilitated by spreadable compost. "When adequate humic substances are present within the soil, the ***need for N fertilizer is reduced."*** [149]

107. "High rainfall events did not appear to induce nitrate leaching from compost-amended plots... This indicates that the **rate of *mineralization of these composts*** *was such that the crops were able to utilize the nitrate as fast as it was produced."* [150]

COMPOST HAS THE ABILITY TO DRAW NITRATES FROM THE SOIL

108. Compost has something in it (humic acid) that can lock nitrogen onto it and let it go when the plant calls for it. [121]

109. "The ***composted plot actually had less nitrate leaching than the control plot***, or any of the other plots where fertilizer was applied, including a synthesized "slow release fertilizer." **It appears that compost actually remediated nitrate from the soil.** "There were no apparent causes explaining the lower nitrate concentration in the soil solution in those plots where efficient irrigation was combined with MOW compost application, but this effect was consistent throughout the experiment. Compost-treated plots showed similar results to those observed in unfertilised plots. **These results may have management implications for nitrate leaching control."** [151]

110. The ability of spreadable compost to enhance the plant utilization rate of N may explain why **spreadable compost is actually able to remediate or reduce** nitrates that already existed in the soil before any experimentation began. [152] [153] [154]

111. In research conducted by scientists under the auspices of the United States Department of Agriculture-Agricultural Research Service (USDA-ARS) and the University of Maine Cooperative Extension Service, thirteen different compost samples were taken over a period of 91 days (beginning at day 18 after pile initiation). All of the **composted manures actually appeared to remediate soil nitrates.** "All thirteen ***composts resulted in the NET mineralization*** ... [of nitrogen] when compared to unamended control soil." [155]

112. Six years of research at Michigan State University, Michigan, USA, compared three different types of nitrogen applications to a crop rotation of 3 years of continuous corn followed by 3 years of continuous alfalfa. The three types of nitrogen treatments were *manure, compost, and inorganic fertilizer.* "We wanted to get information on the degree of leaching that occurs when manure and compost are added in quantities large enough to provide the N for a crop and compare them to the leaching from chemical fertilizer use." The results of the study revealed that the crop plots treated with ***compost leached less than the control plot*** in the first three years of an alfalfa-corn rotation. "The manure treated crop plot always showed higher nitrate leaching compared to the other treatments." [156]

113. In a three year study, where chicken manure compost was applied at 50T/A, "After heavy rains, ***control plots were more susceptible to nitrate leaching than compost-amended plots***....." The compost-amended plots appear to remediate or reduce nitrates that were present in the soil **prior** to compost applications. Soil amended with compost not only held its own nitrogen, but appeared to scarf up some of the nitrogen that was already in the soil before the compost was applied. [157]

114. Over a 22 year period, research was conducted on consistent fields in Illinois, USA. The nitrate concentration in tile drainage effluent was measured. "Fields which received nitrogen only as composted manure were remarkably low, similar to those found under forest, unfertilized pastures, meadows and grasslands." [158]

115. Over a 22 year period, research was conducted on consistent fields in Illinois, USA. The nitrate concentration in tile drainage effluent was measured.Nitrate concentrations, which had been less than 2 ppm on composted fields jumped to 10.2 ppm and 17.1 ppm when crop management switched to conventional fertilizer. [159]

116. "Under anaerobic conditions, mineral N was not completely incorporated in organic compounds." However, after composting **"nitrate ions could not be found in any sample."** [160]

REFERENCED CITATIONS

1. NR 140.10, Table 1.
2. NR 140.10.
3. NR 140.12 .
4. NR 140.28 (1).
5. NR 140.28 (4) (a).
6. 2014 Pepin County Nitrate Levels Map with data from 767 Pepin County private wells sampled from 1984 to 2014. Tested by Pepin County Land Management Office.

7. Pepin County Groundwater Nitrate Levels Map displayed by section. Sample dates range from 2015 through 2018. Presented to the Pepin County Board of Supervisors, December 19, 2018, by the Pepin County Conservationist, Chase Cummings as part of 2018 Moratorium on Large-Scale Livestock Facilities Report prepared by the Pepin County Land Conservation and Planning Department, pg. 18, Figure 5.

8. Groundwater Quality Investigation Map of Pepin County, Wisconsin, D.M., Johnson, 1994 Misc. Map 38, Plate 6. A product of the Pepin County Groundwater Resource Investigation, a joint project of the Wisconsin Geological and Natural History Survey and the Pepin County Board of Supervisors

9. Map of Estimated Percentage of Private Wells over Nitrate Standard by County, USGS, published in Wisconsin Groundwater Coordinating Council Report to the Legislature, 2018.

10. Karst Potential Pepin County, Wisconsin. Map 6.01 Pepin County Karst Lands of Pepin County Comprehensive Plan 2013-2033, Wisconsin Geological and Natural History Survey data, September 24, 2013.

11. Soil-Attenuation-Potential Map of Pepin County, Wisconsin, Soil Map 10. 1990. K.J. Cates and F.W. Madison. Wisconsin Geological and Natural History Survey.

12. Pepin County-Depth to Bedrock 2007. Map source Schmidt, R.R., 1987. Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27p. Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, http://wi.water.usgs.gov

13. Depth to Bedrock Map of Pepin County, Wisconsin D.M., Johnson, 1994 Misc. Map 39. A product of the Pepin County Groundwater Resource Investigation, a joint project of the Wisconsin Geological and Natural History Survey and the Pepin County Board of Supervisors.

14. Bedrock Classification Map Pepin County, Wisconsin, Brown, B.A., Bedrock Geology of Wisconsin; Regional Map Series-West Central Sheet. Wisconsin Geological and Natural History Survey. 1988.

15. Pepin County-Depth to Water Table 2007. Map source Schmidt, R.R., 1987. Groundwater contamination susceptibility map and evaluation: Wisconsin Department of Natural Resources, Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177-87, 27p Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, http://wi.water.usgs.gov.

16. Pepin County Groundwater Contamination Susceptibility Analysis. Schmidt, R.R., 1987 Groundwater Contamination Susceptibility Map and Evaluation: Wisconsin Department of Natural Resources Wisconsin's Groundwater Management Plan Report 5, PUBL-WR-177,27 p. Figure created for the "Protecting Wisconsin's Groundwater Through Comprehensive Planning" web site, 2007, http://wi.water.usgs.gov

17. Manure and Food-Processing Waste Spreading Map and Rating Value Table for Pepin County, Wi. (WI091) https://websoilsuvey.sc.egov.usda.gov/App/WebSoil Survey.aspx

18. USEPA; 2007. *Nitrates and nitrites toxicity and exposure assessment for children's health chemical-summary* As posted on November 20, 2014. EPA Teach databases, Washington, DC.http://www.epa.gov/teach/chem_summ/Nitrates_summary.pdf

19. *Wisconsin 2018 Agricultural Statistics, USDA National Agricultural Statistics Service*, pg. 51.

20. *Livestock Facilities Waste Handbook*, Midwest Plan Service, Iowa State University

21. Masarik, Kevin C., et al. 2014. *Long-term drainage and nitrate leaching below well-drained continuous corn agroecosystems and a prairie.* Journal of Environmental Protection, 5, 240-254.

22. Masarik, Kevin C., 1-20-16. *Nitrate in Wisconsin's Groundwater - What, Why & Where?* UW-Ext. & UW-SP.

23. data usa .io and US Bureau & Census.

24. Merriam-Webster.com

25. Pregnancy week by week. Fetal development: The 1st trimester Mayoclinic.org

26. Neural tube defect Medical Definition Merriam-Webster Medical Dictionary Merriam-Webster.com

27. Croen, Lisa A., et al. 2001. *Maternal exposure to nitrate from drinking water and diet and risk for neural tube defects.* American Journal of Epidemiology, 153(4):325-331.

28. CDC https://.www.cdc.gov birth defects anencephaly

29. Croen, Lisa A., et al. 2001. *Maternal exposure to nitrate from drinking water and diet and risk for neural tube defects.* American Journal of Epidemiology, 153(4):325-331.

30. Anencephaly https://www.st.louischildrens.org

31. Brender JD., et al. Dietary nitrites and nitrates, nitrosatable drugs, and neural tube defects. Epidemiology. 2004;15:330-336.

32. Bukowski J., et al. Agricultural contamination of groundwater as a possible risk factor for growth restriction or prematurity. J Occup Environ Med. 2001;43(4):377-383.

33. Manassaram, Deana M., et al. 2006. *A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes.* Environ. Health Perspectives. 114(3):320-327.

34. Tabacova S., et al. Maternal exposure to exogenous nitrogen compounds and complications of pregnancy. Arch Environ Health. 1997;52(5):341-347.

35. Tabacova S., et al. Exposure to oxidized nitrogen: lipid peroxidation and neonatal health risk. Arch Environ Health. 1998;53(3):214-221.

36. Arbuckle, Tye E., et al. 1988. *Water nitrates and CNS birth defects: a population-based case-control study.* Archives of Environmental Health: An International Journal, 43(2): 162-167.

37. Dorsch, Margaret M., et al. 1984. *Congenital malformations and maternal drinking water supply in rural south Australia: a case-control study.* American Journal of Epidemiology. 119(4):473-486.

38. Scragg, Robert K., et al. Birth defects and household water supply Epidemiological studies in the Mount Gambier region of South Australia. Med J Aust. 1982;2(12-13):577-579.

39. Brender, J.D., et al. 2013. *Prenatal nitrate intake from drinking water and selected birth defects in offspring of participants in the national birth defects prevention study.* Environmental Health Perspectives, 121(9):1083-1089.

40. CDC https://www.cdc.gov.birth defects oral clefts

41. Dorsch, Margaret M., et al. 1984. *Congenital malformations and maternal drinking water supply in rural south Australia: a case-control study.* American Journal of Epidemiology. 119(4):473-486.

42. 2018 *Moratorium On Large-Scale Livestock Facilities Report* prepared by the Pepin County Land Conservation and Planning Department, pg. 30.. Presented to the Pepin County Board of Supervisors, December 19, 2018, by the Pepin County Conservationist, Chase Cummings.

43. Manassaram, Deana M., et al. 2006. *A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes.* Environ. Health Perspectives. 114(3):320-327.

44. Schmitz JT., Methemoglobinemia--a cause of abortions? Preliminary report. Obstet Gynecol. 1961;17:413-415.

45. Ward, M. H., et al. 2018. *Drinking water nitrate and human health: an updated review.* Int. J. Environ. Res. Public Health, 15(7):1507- 1557.

46. Manassaram, Deana M., et al. 2006. *A review of nitrates in drinking water: maternal exposure and adverse reproductive and developmental outcomes.* Environ. Health Perspectives. 114(3):320-327.

47. Kirk, A.B., et al. 2006. *Environmental perchlorate: why it matters.* Anal. Chim. Acta, 567(1):4-12.

48. Ward, M. H., et al. 2018. *Drinking water nitrate and human health: an updated review.* Int. J. Environ. Res. Public Health, 15(7):1507- 1557.

49. Hettche, H.O., 1956. *Epidemiology and etiology of goiter in 100 years of research.* Archives uber Hygiene, Bakteriologie, 140:79-105.

50. Horing H., 1987. *Nitrate and thyroid: results of epidemiological studies.* Schriften Reihe fur Gesundheit und Umwelt, Suppl. 1:38-46.

51. Sauerbrey, G., et al. 1988. Research on the endemic goitre and the relation to different drinking-water of four communities of Suhl. Berlin, University of Berlin.

52. Horing H., et al. 1991. The nitrate-dependent endemic thyroid areas. In: Uberla K, Rienhoff O., Victor N., eds. Quantitative methoden in der Epidemiologie. Berlin, I. Guugenmoss - Holzmann, pp.147-153 (Medizinische Informatik und Statistik, 72).

53. Horing, H., 1992. The influence of environmental chemicals on the thyroid. Bundesgesundheitsblatt, 35:194-197.

54. Van Maanen J. M., et al. 1994. Consumption of drinking water with high nitrate levels causes hypertrophy of the thyroid 5. Toxicol Lett.1994;72:365-374.

55. Gatseva, P.D. et al. 2008b. *High-nitrate levels in drinking water may be a risk factor for thyroid dysfunction in children and pregnant women living in rural Bulgarian areas.* Int. J. Hyg. Environ. Health, 211(5-6):555-559.

56. Gatseva, P.D. et al. 2008a. *Iodine status and goitre prevalence in nitrate-exposed schoolchildren living in rural Bulgaria.* Public Health, 122(5):458-461.

57. Van Maanen J. M., et al. 1994. Consumption of drinking water with high nitrate levels causes hypertrophy of the thyroid 5. Toxicol Lett.;72:365-374.

58. Radikova, Z., et al. 2008. *Possible effects of environmental nitrates and toxic organochlorines on human thyroid in highly polluted areas in Slovakia.* Thyroid, 18(3):353-362.

59. Gatseva, P. and Dimitrov, I., et al. 1997. *Population morbidity in a community with nitrate contamination of drinking water.* Folia Med (Plovdiv), 39(4):65-71.

60. Gatseva, P., et al. 1998. *Incidence of goiter among children in a village with nitrate contamination of drinking water.* Folia Med (Plovdiv), 40(3):19-23.

61. Van Maanen J. M., et al. 1994. *Consumption of drinking water with high nitrate levels causes hypertrophy of the thyroid* 5. Toxicol Lett.1994;72:365-374.

62. Tajtakova, M., et al. 2006. *Increased thyroid volume and frequency of thyroid disorders; signs in schoolchildren from nitrate polluted area.* Chemosphere. 62:559-564.

63. Ward, M.H., et al. 2010. *Nitrate intake and the risk of thyroid cancer and thyroid disease.* Epidemiology. 21(3):389-395.

64. Espejo-Herrera, N., et al. 2016 *Colorectal cancer risk and nitrate exposure through drinking water and diet.* Int. J. Cancer. 139:334-346.

65. Schullehner, J., et al. 2018. *Nitrate in drinking water and colorectal cancer risk: A nationwide population-based cohort study.* Int. J. Cancer doi:10.1002/ijc.31306.

66. McElroy, Jane A., et al. 2008. *Nitrogen-nitrate exposure from drinking water and colorectal cancer risk for rural women in Wisconsin, USA.* Journal of Water and Health. 6:399-409. doi: 10.2166/wh.2008.048.

67. Parslow, R.C., et al. 1997. *Incidence of childhood diabetes mellitus in Yorkshire, northern England, is associated with nitrate in drinking water: an ecological analysis.* Diabetologia 40:550-556.

68. Parslow, R.C., et al. 1997. *Incidence of childhood diabetes mellitus in Yorkshire, northern England, is associated with nitrate in drinking water: an ecological analysis.* Diabetologia 40:550-556.

69. Moltchanova, E., et al. 2004. *Zinc and nitrate in the ground water and the incidence of Type 1 diabetes in Finland.* Diabetic Medicine, 21(3):256-261.

70. Kostraba, Jill N., et al. 1992. *Nitrate levels in community drinking waters and risk of IDDM: An ecological analysis.* Diabetes Care, 15(11):1505-1508.

71. Longnecker, Matthew P., et al. 2001. Environmental contaminants as etiologic factors for diabetes. Environmental Health Perspectives. 109(6):871-875.

72. Comly, H., 1945. *Cyanosis in infants caused by nitrates in well water. JAMA, 129(2):112-116.*

73. Greer, F. R., 2005. *Infant methemoglobinemia: the role of dietary nitrate in food and water.* American Academy of Pediatrics, 116(3):784-786.

74. Safe Drinking Water Act of 1974, 1974. *Public Law 42 U.S.C.*

75. U.S. EPA 2002b, 2002. *Edition of the drinking water standards and health advisories.* EPA-822-R-02-038. Washington, DC:U.S. Environmental Protection Agency.

76. Walton G., et al. 1951. *Survey of literature relating to infant methemoglobinemia due to nitrate-contaminated water.* Am J Public Health, 41:986-996.

77. Johnson, CJ., et al. 1990. *Continuing importance of nitrate contamination of groundwater and wells in rural areas,* Am J Ind Med., 18:449-456.

78. Walton G., et al. 1951. *Survey of literature relating to infant methemoglobinemia due to nitrate-contaminated water.* Am J Public Health, 41:986-996.

79. Knobeloch L., et al. 2000. *Blue babies and nitrate-contaminated well water.* Environmental Health Perspectives, 108(7):675-678.

80. Jones, R. R., et al. 2016. *Nitrate from drinking water and diet and bladder cancer among postmenopausal women in Iowa.* Environmental Health Perspectives, 124(11):1751-1758.

81. Espejo-Herrerra N., et al. 2015. *Nitrate in drinking water and bladder cancer risk in Spain.* Environmental Research, 137:299-307.

82. Weyer, P.J., et al. 2001. *Municipal drinking water nitrate level and cancer risk among older women: The Iowa women's health study,*11(3):327-338.

83. Mueller, B.A., et al. 2004. *Household water source and the risk of childhood brain tumors: Results of the SEARCH international brain tumor study. Int. J. Epidemiol., 33:1209-1216.*

84. Mueller, B.A., et al. 2001. *Residential water source and the risk of childhood brain tumors.* Environ. Health Perspect., 109:551-556.

85. Barrett, J.H., et al. 1998. *Nitrate in drinking water and the incidence of gastric, esophageal, and brain cancer in Yorkshire, England.* Cancer Causes Control, 9(2):153-159.

86. Yang, C.Y. et al. 2007. *Nitrate in drinking water and risk of death from colon cancer in Taiwan.* Environ. Int., 33(J5):649-653.

87. Armijo, Rolando, et al. 1981. *Epidemiology of gastric cancer in Chile: I - case-control study.* International Journal of Epidemiology, 10(1):53-56.

88. Xu, G., et al. 1992. *The relationship between gastric mucosal changes and nitrate intake via drinking water in a high risk population for gastric cancer in Moping County. China,* European Journal of Cancer Prevention, 1:437-443

89. Gilli, G., et al. 1984. *Concentrations of nitrates in drinking water and incidence of gastric carcinomas: First descriptive study of the Piemonte region, Italy.* Science of the Total Environment, 24:35-48.

90. Yang, C.Y., et al. 1998. *Calcium, magnesium, and nitrate in drinking water and gastric cancer mortality.* Jpn. J. Cancer Res., 89(2):124-130.

91. Weyer, P.J., et al. 2001, *Municipal drinking water nitrate level and cancer risk in older women: The Iowa women's health study.* Epidemiology, 12(3):327-338.

92. Arbuckle, Tye E., et al. 1988. *Water nitrates and CNS birth defects: a population-based case-control study.* Archives of Environmental Health: An International Journal, 43(2): 162-167.

93. Morton, W.E., et al. 1971. *Hypertension and drinking water, a pilot statewide ecological study in Colorado.* J. Chron. Dis., 23,573-45.

94. Malberg, J.W., et al. 1978. *Nitrates in drinking water and the early onset of hypertension.* Environ. Pollut., 15.

95. Klein, B.E.K., et al. 2013. *Nitrate-nitrogen levels in rural drinking water: Is there an association with age-related macular degeneration?* J. Environ. Sci. Health Part A, 48:1757-1763.

96. Klein, B.E.K., et al. 2013. *Nitrate-nitrogen levels in rural drinking water: Is there an association with age-related macular degeneration?* J. Environ. Sci. Health Part A, 48:1757-1763.

97. Gulis, G., et al. 2002. *An ecologic study of nitrate in municipal drinking water and cancer incidence in Trnava District, Slovakia.* Environ. Res., 88(3):182-187.

98. Cocco, P., et al. 2003. *Nitrate in community water supplies and incidence of non-Hodgkin's lymphoma in Sardinia, Italy.* J. Epidemiol. Community Health, 57(7):510-511.

99. Ward, M.H., et al. 1996. *Drinking water nitrate and the risk of non-Hodgkin's lymphoma.* Epidemiology, 7(5):465-471

100. George, M., et al. 2001. *Incidence and geographical distribution of sudden infant death syndrome in relation to content of nitrate in drinking water and groundwater levels.* Eur. J. Clin. Invest. 31(12):1083-1094.

101. Miller, M.D., et al. 2009. *Thyroid-disrupting chemicals: Interpreting upstream biomarkers of adverse outcomes.* Environ Health Perspect, 117(7):1033-1041.

102. Tonacchera, M., et al. 2004. *Relative potencies and additivity of perchlorate, thiocyanate, nitrate, and iodide on the inhibition of radioactive iodide uptake by the human sodium iodide symporter.* Thyroid, 14(12):1012-1019.

103. Miller, M.D., et al. 2009. *Thyroid-disrupting chemicals: Interpreting upstream biomarkers of adverse outcomes.* Environ Health Perspect, 117(7):1033-1041.

104. Miller, M.D., et al. 2009. *Thyroid-disrupting chemicals: Interpreting upstream biomarkers of adverse outcomes.* Environ Health Perspect, 117(7):1033-1041.

105. Schettler, T., 2001. *Toxic threats to neurologic development of children.* Environ Health Perspect, 109(suppl 6):813-816.

106. Weiss, B., 1997. *Endocrine disruptors and sexually dimorphic behaviors: a question of heads and tails.* Neurotoxicology, 18(2):581-586.

107. Health Canada, 2013. *Guidelines for canadian drinking water quality: Guideline technical document--Nitrate and nitrite.* Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

108. Health Canada, 2013. *Guidelines for canadian drinking water quality: Guideline technical document--Nitrate and nitrite.* Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Health Canada, Ottawa, Ontario.

109. IARC, 2010. *Ingested nitrate and nitrite and cyanobacterial peptide toxins.* International Agency for Research on Cancer, Lyon. 464 pp. (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 94).

110. IARC, 2010. *Ingested nitrate and nitrite and cyanobacterial peptide toxins.* International Agency for Research on Cancer, Lyon. 464 pp. (IARC Monographs on the Evaluation of Carcinogenic Risks to Humans, Volume 94).

111. 2014 Pepin County Nitrate Levels Map with data from 767 Pepin County private wells sampled from 1984 to 2014. Tested by Pepin County Land Management Office.

112. Pepin County Groundwater Nitrate Levels Map displayed by section. Sample dates range from 2015 through 2018. Presented to the Pepin County Board of Supervisors, December 19, 2018, by the Pepin County Conservationist, Chase Cummings as part of 2018 Moratorium on Large-Scale Livestock Facilities Report prepared by the Pepin County Land Conservation and Planning Department, pg. 18, Figure 5.

113. Groundwater Quality Investigation Map of Pepin County, Wisconsin, D.M., Johnson, 1994 Misc. Map 38, Plate 1. A product of the Pepin County Groundwater Resource Investigation, a joint project of the Wisconsin Geological and Natural History Survey and the Pepin County Board of Supervisors.

114. Map of Estimated Percentage of Private Wells over Nitrate Standard by County, USGS, published in Wisconsin Groundwater Coordinating Council Report to the Legislature, 2018.

115. NRCS, 2007. *Manure chemistry - nitrogen, phosphorus, & carbon.* Manure Management Information Sheet, 7:1-4.

116. NRCS, 2007. *Manure chemistry - nitrogen, phosphorus, & carbon.* Manure Management Information Sheet, 7:1-4. Atallah, Therese, et al. 1995. *Effect of storage and composting on the properties and degradability of cattle manure.* Agriculture, Ecosystems & Environment, 54(3):203-213.Atallah, Therese, et al. 1995. *Effect of storage and composting on the properties and degradability of cattle manure.* Agriculture, Ecosystems & Environment, 54(3):203-213.

117. Atallah, Therese, et al. 1995. *Effect of storage and composting on the properties and degradability of cattle manure.* Agriculture, Ecosystems & Environment, 54(3):203-213.

118. Basso, B., et al. 2005. *Impact of compost, manure and inorganic fertilizer on nitrate leaching and yield for a 6-year maize-alfalfa rotation in Michigan.* Agriculture, Ecosystems and Environment, 108:329-341.

119. Gregory, P.J., et al. 2002. *Environmental consequences of alternative practices for intensifying crop production.* Agriculture, Ecosystems and Environment, 88:279-290.

120. Lorin, E.F. Higor, et al. 2016. *Stabilization of confined beef cattle manure: characteristics of produced fertilizers.* Eng. Agric., Jaboticabal, 36 (5): 877-885.

121. Lorin, E.F. Higor, et al. 2016. *Stabilization of confined beef cattle manure: characteristics of produced fertilizers.* Eng. Agric., Jaboticabal, 36 (5): 877-885.

122. Pepin County Livestock Facility Siting/Expansion License Ordinance (PCLFSELO)

123. Pepin County Livestock Facility Siting/Expansion License Ordinance (PCLFSELO)

124. Passel.unl.edu.nitrogen, 2019 Plant and Soil Sciences eLibrary, University of Nebraska-Lincoln.

125. University of Massachusetts Amherst, 2019. *Compost and manure use and nutrient management. New England Vegetable Management Guide.*

126. Kalamdhad, Ajay S., et al. 2009. *Organic matter transformation during rotary drum composting.* Dynamic Soil, Dynamic Plant, pg. 93-98.

127. Griffin, T.S., et al. 2007. *Compost maturity effects on nitrogen and carbon mineralization and plant growth.* Compost Science & Utilization, 15 (4):228-236.

128. He, Xiao-Song, et al. 2013. *Structural transformation study of water-extractable organic matter during the industrial composting of cattle manure.* Microchemical Journal, 106:160-166

129. Kalamdhad, Ajay S., et al. 2009. *Organic matter transformation during rotary drum composting.* Dynamic Soil, Dynamic Plant, pg. 93-98.

130. Pettit, Robert E. Dr., Emeritus Associate Professor, Texas A&M University, 2008. *Organic matter, humus, humate, humic acid, fulvic acid, and humin.*

131. Pettit, Robert E. Dr., Emeritus Associate Professor, Texas A&M University, 2008. *Organic matter, humus, humate, humic acid, fulvic acid, and humin.*

132. Pettit, Robert E. Dr., Emeritus Associate Professor, Texas A&M University, 2008. *Organic matter, humus, humate, humic acid, fulvic acid, and humin.*

133. Cooperband, Leslie, University of Wisconsin-Madison-Center for Integrated Agricultural Systems, 2002. *The art and science of composting a resource for farmers and compost producers.* Pgs.1-13.

134. Griffin, T.S., et al. 2007. *Compost maturity effects on nitrogen and carbon mineralization and plant growth.* Compost Science & Utilization, 15 (4):228-236.

135. Atallah, Therese, et al. 1995. *Effect of storage and composting on the properties and degradability of cattle manure.* Agriculture, Ecosystems & Environment, 54(3):203-213.

136. He, Xiao-Song, et al. 2013. *Structural transformation study of water-extractable organic matter during the industrial composting of cattle manure.* Microchemical Journal, 106:160-166.

137. California Compost Quality Council, 2001. *Compost maturity index.* California Compost Quality Council, pgs. 2-2, 3-5, 3-7.

138. Griffin, T.S., et al. 2007. *Compost maturity effects on nitrogen and carbon mineralization and plant growth.* Compost Science & Utilization, 15 (4):228-236.

139. California Compost Quality Council, 2001. *Compost maturity index.* California Compost Quality Council, pg. A-3.

140. Griffin, T.S., et al. 2007. *Compost maturity effects on nitrogen and carbon mineralization and plant growth.* Compost Science & Utilization, 15 (4):228-236.

141. Maynard, Abigail A., 1993. *Nitrate leaching from compost-amended soils.* Compost Science & Utilization, 1 (2): 65-72.

142. Eghball, Bahman, et al. 1999. *Phosphorus-and nitrogen-based manure and compost applications: Corn production and soil phosphorus. Soil Sci. Soc. Am. J., 63:895-901.*

143. Lorin, E.F. Higor, et al. 2016. *Stabilization of confined beef cattle manure: characteristics of produced fertilizers.* Eng. Agric., Jaboticabal, 36 (5): 877-885.

144. Lim, Li Yee, et al. 2018. *A review on the impacts of compost on soil nitrogen dynamics.* Chemical Engineering Transactions, 63:349-354.

145. Ryals, R.,Silver, W.L., 2013. Effects of organic matter amendments on net primary productivity and greenhouse gas emissions in annual grasslands. Ecological Applications, 23; 46-69.

146. Soil Science Society of America, 2008. *Glossary of Soil Science Terms 2008.* Pg. 40.

147. Pettit, Robert E. Dr., Emeritus Associate Professor, Texas A&M University, 2008. *Organic matter, humus, humate, humic acid, fulvic acid, and humin.*

148. .Augustin, C., et al. 2010. *Composting animal manures: A guide to the process and management of animal manure compost.* NDSU Extension Service North Dakota State University.

149. Pettit, Robert E. Dr., Emeritus Associate Professor, Texas A&M University, 2008. *Organic matter, humus, humate, humic acid, fulvic acid, and humin.*

150. Maynard, Abigail A., 1993. *Nitrate leaching from compost-amended soils.* Compost Science & Utilization, 1 (2): 65-72.

151. Diez, J.A., et al. 1997. *Nitrate leaching from soils under a maize-wheat-maize sequence, two irrigation schedules and three types of fertilisers.* Agriculture, Ecosystem and Environment, 65: 189-199.

152. Basso, B., et al. 2005. *Impact of compost, manure and inorganic fertilizer on nitrate leaching and yield for a 6-year maize-alfalfa rotation in Michigan.* Agriculture, Ecosystems and Environment, 108:329-341.

153. Diez, J.A., et al. 1997. *Nitrate leaching from soils under a maize-wheat-maize sequence, two irrigation schedules and three types of fertilisers.* Agriculture, Ecosystem and Environment, 65: 189-199.

154. Griffin, T.S., et al. 2007. *Compost maturity effects on nitrogen and carbon mineralization and plant growth.* Compost Science & Utilization, 15 (4):228-236.

155. Griffin, T.S., et al. 2007. *Compost maturity effects on nitrogen and carbon mineralization and plant growth.* Compost Science & Utilization, 15 (4):228-236.

156. Basso, B., et al. 2005. *Impact of compost, manure and inorganic fertilizer on nitrate leaching and yield for a 6-year maize-alfalfa rotation in Michigan.* Agriculture, Ecosystems and Environment, 108:329-341.

157. Maynard, Abigail A., 1993. *Nitrate leaching from compost-amended soils.* Compost Science & Utilization, 1 (2): 65-72.

158. Goldstein, W., et al. 1998. Impact of agricultural management on nitrate concentrations in drainage waters. American Journal of Alternative Agriculture, Vol(13) Number 3: 105-110.

159. Goldstein, W., et al. 1998. Impact of agricultural management on nitrate concentrations in drainage waters. American Journal of Alternative Agriculture, Vol(13) Number 3: 105-110.

160. Atallah, Therese, et al. 1995. *Effect of storage and composting on the properties and degradability of cattle manure.* Agriculture, Ecosystems & Environment, 54(3):203-213.

Section 3. Definitions:

The following 12 definitions are incorporated by reference into this ordinance from WI ATCP 51.01 by referenced numbers,without reproducing them in full.

(1) Adjacent

(4) Animal unit

(9) Complete application for local approval

(13) Expanded livestock facility

(18) Livestock

(20) Livestock structure

(23) Manure

(30) Person

(33) Property line

(37) Separate species facility

(43) Waste storage facility

(47) WPDES permit

DEFINITIONS:

ADMINISTRATOR

The county department, currently titled the Pepin County Land Conservation and Planning Department, which provides an array of services to landowners in the county that protect farmland, soil, and water resources. The department cooperates with federal and state conservation programs by assisting with the implementation of nutrient management planning and manure storage facilities.

ANIMAL UNIT INVENTORY

A count of Livestock and the calculation therefrom, pursuant to Adm.Code NR 243.05 and ATCP 51.01(4) with equivalents shown in Appendix A, Worksheet I, of the number of Animal Units at an Operator's Livestock Facility, to be Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator.

ANIMAL UNIT INVENTORY RECORD

A part of this Ordinance, attached herein as Addendum III, in which the data generated from the Initial and Annual Animal Unit Inventories is recorded.

ANNIVERSARY DATE

The same day and month, of any subsequent year, that Pepin County, Wisconsin, initially issued a Livestock Facility Siting, Expansion and or Operation License to a Licensee.

ANNUAL ANIMAL UNIT INVENTORY

The Animal Unit Inventory taken at a Licensee's Livestock Facility on each Anniversary Date of the License to be Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator.

ANNUAL OFFICIAL DRINKING WELL WATER TEST

The Official Drinking Well Water Test sample taken from the Original Well, as identified by Location of Well, at a Licensee's Livestock Facility on each Anniversary Date of the License, to be Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator.

COMPOST

The end product of Composting consisting of complex, organic compounds of stable, immobilized, humic by-products, containing the biomass of both dead and living microorganisms,and the undegradable parts of Manure and carbonaceous materials. The parent material is decomposed to the extent that the material will not significantly reheat due to the action of microorganisms when subjected to optimum oxygen, moisture, nutrients, and thermal conditions.

COMPOSTED

Composted is the past tense of Compost.

COMPOSTING

A controlled, biological, process wherein the exponential growth of aerobic microorganisms is enhanced and accelerated by mixing organic waste, such as Livestock Manure, with other ingredients, such as straw, hemp hurd, stover, oat hulls, flax shives, wood sawdust, or other carbonaceous material to achieve an initial C:N ratio of 30:1 to 40:1, with 40-60% moisture by weight, that is periodically aerated to optimize aerobic decomposition and microbial reproduction. In a windrow composting system, the thermophilic phase will extend for 15 days with temperatures between 131 and 170 degrees Fahrenheit. The length of an additional curing phase lasts between 1-4 months.

CONDUCTED BY

The Pepin County Land Conservation and Planning Department, or an entity under their auspices, or the Administrator, will oversee the Residential Official Drinking Well Water Test by collecting a water sample at a Pepin County, Wisconsin, residence, to be drawn at a point between the wellhead and any water filtration or treatment device including, but not limited to, a reverse osmosis (RO) unit, water softener, iron filter or proprietary mechanical device, maintain the chain of custody to a lab certified pursuant to, Wis. Adm. Code NR 149.19, or the water testing and certification standards of the USEPA, pay for testing of nitrates in the water sample at a certified lab, and archive the original lab test results in the Pepin County Land Conservation and Planning Department, or Administrator.

The Pepin County Land Conservation and Planning Department, or an entity under their auspices, or the Administrator, will oversee an Initial Official Drinking Well Water Test, Annual Official Drinking Well Water Tests, and will perform an Initial Animal Unit Inventory and Annual Animal Unit Inventories at an Operator's Livestock Facility following these protocols: collect an Initial Official Drinking Well Water sample and Annual Official Drinking Well Water samples drawn at a point between the wellhead and any water filtration or treatment device including, but not limited to, a reverse osmosis (RO) unit, water softener, iron filter or proprietary mechanical device, maintain the chain of custody to a lab certified, pursuant to Wis. Adm. Code NR 149.19 or the water testing and certification standards of the USEPA, pay for testing of nitrates in the water sample at a certified lab, archive the original lab test results in the Pepin County Livestock and Water Registry, and record test results on Addendum II of this Ordinance, the Pepin County Livestock and Water Record, attached herein to this Ordinance, which will be archived in the Pepin County Livestock and Water Registry; perform an Initial Animal Unit Inventory and Annual Animal Unit Inventories of all Livestock types at the Operator's Livestock Facility, and use the data generated to complete Addendum III, Animal Unit Inventory Record, attached herein to this Ordinance, which will be archived in the Pepin County Livestock and Water Registry, and recording total Animal Units from Addendum III onto Addendum II, the Pepin County Livestock and Water Record, which will be archived in the Pepin County Livestock and Water Registry.

DRINKING WATER WELL

An engineered hole, deeper than it is wide, that is bored, dug, pounded, or drilled in the ground to a depth of ten feet or more below the land surface, to gain access to subsurface water for potable use that is from a non High-Capacity Well.

DRINKING WELL WATER

Water obtained from a Drinking Water Well.

DRINKING WELL WATER TEST

A test on Drinking Well Water, in which the nitrate testing shall be conducted in accordance with Table A of Wisconsin NR 809.113(1) in a laboratory holding certification pursuant to Wisconsin NR 149.19 or pursuant to the water testing and laboratory certification standards of the United States Environmental Protection Agency (USEPA).

EXPANSION

The addition of Animal Units, at a Livestock Facility, after the effective date of this Ordinance, by an Operator that was sited in Pepin County, Wisconsin, prior to the effective date of this Ordinance, by any means, including, but not limited to, reproduction, purchase, acquisition, combination, merger, lease, rent, inheritance, transfer or gifting, which Populates an Operator's Livestock Facility to 500 Animal Units or more, or which Populates an Operator's Livestock Facility that was sited in Pepin County, Wisconsin, with 500 or more Animal Units, before the effective date of this Ordinance by 5% or greater. The acquisition of a Livestock Facility with Animal Units, even though more Animal Units are not added to the combined facility, if the combined Animal Units are 500 or greater.

GROUNDWATER MONITORING WELL

As defined in Wis. Adm. Code NR 141.05(21), any cased excavation or opening into the ground made by digging, boring, drilling, driving, jetting or other methods for the purpose of determining the physical, chemical, biological or radiological properties of groundwater.

GROUNDWATER MONITORING WELL WATER

Water obtained from a Groundwater Monitoring Well

GROUNDWATER MONITORING WELL WATER TEST

An analysis of Groundwater Monitoring Well Water in which the nitrate testing shall be conducted in accordance with Table A of Wis. Adm. Code NR 809.113(1) in a laboratory holding certification pursuant to Wis. Adm. Code NR 149 or pursuant to the water testing and laboratory certification standards of the USEPA.

HIGH CAPACITY WELL

A well that has the capacity to draw 25,000 or more gallons per day.

INITIAL ANIMAL UNIT INVENTORY

The first Animal Unit Inventory Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator, at an Operator's Livestock Facility in satisfaction of Section 6, 3.c. of this Ordinance and Addendum III, attached herein as part of this Ordinance, as License application requirements.

INITIAL OFFICIAL DRINKING WELL WATER TEST

The first Official Drinking Well Water Test Conducted By, or under the auspices of the Pepin County Land Conservation and Planning Department, or Administrator, that is obtained from a non-High Capacity Well at an Operator's Livestock Facility, and analyzed in accordance with provisions of Wis. Adm. Code NR 149.19, or pursuant to the water testing and laboratory certification standards of the USEPA.

LICENSE

The Livestock Facility Siting, Expansion and or Operation License required by Pepin County, Wisconsin, in accordance with the Ordinance for Licensing the Siting, Expansion and or Operation of Livestock Facilities in Pepin County, Wisconsin,as presented in Addendum IV of this Ordinance.

LICENSE APPLICATION

The submission of information by an Operator, to the Pepin County Land Conservation and Planning Department, or an entity under their auspices, or Administrator, of ATCP 51, Appendix A, Application Form and Worksheets, Application for Local Approval, New or Expanded Livestock Facility; including Worksheet 3, Part B, 2.a., "Attach map showing where waste will be applied to land " or, if an Operator, under a WPDES permit, maps with Manure spreading acreage identified, which were required to be submitted to the WDNR with an Operator's application for a WPDES permit, pursuant to Wis. Adm.Code NR 243.12.

LICENSE APPLICATION RENEWAL

The annual submission by each Licensee to the Pepin County Land Conservation and Planning Department, or an entity under their auspices, or Administrator, of ATCP 51, Appendix A, Application Form and Worksheets, Application for Local Approval, New or Expanded Livestock Facility; including Worksheet 3, Part B, 2.a., "Attach map showing where waste will be applied to land " or, if an Operator, under a WPDES permit, maps with Manure spreading acreage identified, which were required to be submitted to the WDNR with an Operator's application for a WPDES permit, pursuant to Wis. Adm.Code NR 243.12, no less than 60 days prior to the Anniversary Date..

LICENSE RENEWAL

The Livestock Facility Siting, Expansion and or Operation License required by Pepin County, Wisconsin, from a Licensee on each Anniversary Date of the License in accordance with the Ordinance for Licensing the Siting, Expansion and or Operation of Livestock Facilities in Pepin County, Wisconsin, as presented in Addendum V of this Ordinance.

LICENSEE

The holder of a License.

LIVESTOCK FACILITY

Land and or structures, other than a pasture or grazing area, extending to the outermost boundary at which waste from the facility, practice, or activity has been stored, applied or disposed of, or permitted or approved for storage, application, or disposal, or where livestock feedstuffs, compost, waste, and waste storage, have been, are, or will be located and where livestock have been, are, or will be stabled, confined or concentrated and will be fed or maintained by the same owner(s), manager(s) or Operator(s) for a total of 45 days or more in any 12-month period. For purposes of this Ordinance, Separate Species Facilities are not considered separate Livestock Facilities when calculating total Animal Units on a Livestock Facility, and Related Livestock Facilities are collectively treated as a single Livestock Facility.

LIVESTOCK FACILITY SITING ACTIVITIES

Activities regarding the planning and implementation of a Livestock Facility, through developing, constructing, Populating and operating, including, but not limited to, clearing, grading, filling, leveling, well construction, construction of pads, spillways, structures, animal housing, compost facilities, manure storage facilities, and Populating with Livestock.

LOCATION OF WELL

The geospatial depiction of a Drinking Water Well identified by the collective parameters of: United States Postal Service (USPS) address; Global Positioning System (GPS) coordinates; and, when available, the Unique Well # assigned by the Wisconsin Department of Natural Resources (WDNR).

MASTER NITRATE MAP

A Public Land Survey System (PLSS) map of Pepin County, Wisconsin, delineated to 40 acres, overlaid with township names and boundaries, named waterways, and named federal, state, county, and town roads, that will serve as a geographical database, created, maintained, updated, and housed by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator, on which:

Drinking Well Water nitrate test results, from Drinking Well Water within Pepin County, Wisconsin, equal to or greater than, the MCL for nitrates pursuant to Wis. Adm. Code NR 809(11)(2), are spatially plotted and identified by Location of Well, and;

Assigned nitrate values pursuant to Section 6, 3.e. of this Ordinance which are equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), are designated and recorded, and;

Groundwater Monitoring Well Water Test results for nitrates, within Pepin County, Wisconsin, that test equal to or greater than the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2,) are recorded, and;

All past, present and future Drinking Well Water Test results for nitrates from non-community water systems, pursuant to Wis. Adm. Code NR 809.04(57), within Pepin County that test equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), encompassing those facilities included under the definition of "non-transient non-community water systems" in Wis. Adm. Code NR 809.04(58), such as all schools, day care centers, and factories not served by a community water system as defined under Wis. Adm. Code NR 809.04(5), and all facilities included under the definition of "transient non-community water systems" in Wis. Adm. Code NR 809.04(89), such as, churches, motels, parks, restaurants, gas stations, taverns, etc., not served by a community water system as defined under Wis. Adm. Code NR 809.04(5), are recorded, and;

All Drinking Well Water Test results plotted on the Wisconsin Geological and Natural History Survey Misc. Map 38,1994, Groundwater Quality Investigation Maps of Pepin County, Wisconsin, Plate 6, as cited in Section 2 this Ordinance and described at citation [8], and numbered as Map 3 of Addendum I of this Ordinance, that tested equal to or greater than the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), are plotted, and;

All past, present, and future Drinking Well Water Tests for nitrates conducted on Drinking Well Water from within Pepin County, Wisconsin, that tested equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), that were supervised, facilitated or Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator, including the qualifying Initial and Annual Official Drinking Well Water Tests and Residential Official Drinking Well Water Tests are plotted, and;

All past, present, and future Drinking Well Water Test results for nitrates conducted on Drinking Well Water from within Pepin County,Wisconsin, that tested equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), that were supervised, facilitated or Conducted By, or under the auspices of, the Pepin County Zoning Department/Land Management Department/Environmental Health Office and Pepin County

Health Department are plotted, and;

All past, present, and future Drinking Well Water Test results for nitrates conducted on Drinking Well Water from within the Village of Stockholm, that lie in the public purview, that tested equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), are plotted, and;

All assigned nitrate values pursuant to Section 6, 3.e. of this Ordinance, identified on this map, can be adjusted based on actual Drinking Well Water Test results.

MAXIMUM CONTAMINANT LEVEL (MCL)

The legal threshold limit on the amount of a substance that is allowable in drinking water systems in the United States under the Safe Drinking Water Act. A standard set by the United States Environmental Protection Agency (USEPA) for drinking water quality. Wisconsin's Public Health Related Groundwater Standard and Wis. Adm. Code NR 809(11)(2), codifies the USEPA's Maximum Contaminant Level.

NEW LIVESTOCK FACILITY

A Livestock Facility that will be used as a Livestock Facility for the first time, or for the first time since the Livestock Facility was voided of Livestock.

OFFICIAL DRINKING WELL WATER TEST

A Drinking Well Water Test, Conducted By, or under the auspices of the Pepin County Land Conservation and Planning Department, or Administrator, that is obtained from a non-community water system, non-High Capacity Drinking Water Well, and analyzed for nitrates in accordance with the provisions of Wis. Adm. Code NR 149, or pursuant to the water testing and laboratory certification standards of the USEPA.

OPERATOR

Operator is any person or entity that owns, leases, rents, manages, or who has a financial interest therein or will prospectively own, lease, rent, manage, or have a financial interest therein of a Livestock Facility.

ORDINANCE

"Ordinance for Licensing the Siting, Expansion and or Operation of Livestock Facilities in Pepin County Wisconsin," the document within which this definition is housed.

ORIGINAL WELL

The Drinking Water Well, identifiable by Location of Well, located at an Operator's Livestock Facility from which the Drinking Well Water sample was obtained for the Initial Official Drinking Well Water Test.

PEPIN COUNTY LAND CONSERVATION AND PLANNING DEPARTMENT

A division of Pepin County, Wisconsin, as of May 1, 2019, which provides an array of services to landowners in Pepin County, that protect farmland, soil, and water resources. The department cooperates with federal and state government conservation programs by assisting with the implementation of nutrient management planning and manure storage facilities.

PEPIN COUNTY LIVESTOCK AND WATER RECORD

Document which includes: (1) Name of Operator/Licensee; (2) Contact Information for Operator/Licensee; (3) USPS Address of Livestock Facility; (4) Date of License Application; (5) Date of Issuance of License; (6) License Number; (7) Location of Well; (8) Nitrate level of Initial and Annual Official Drinking Well Water Tests in mg/l; (9) and Initial and Annual Animal Unit Inventories and composes Addendum II, attached herein as part of this Ordinance,

PEPIN COUNTY LIVESTOCK AND WATER REGISTRY

A file that contains the following documents for each individual Operator/Licensee: (1) A completed License Application consisting of Chapter ATCP 51, Appendix A, Application

Form and Worksheets, Application for Local Approval New or Expanded Livestock Facility, and, as required under Section 7, License Application, of this Ordinance, if an Operator is operating under a WPDES permit, Manure spreading acreage identifiable on map(s) submitted to the WDNR with an Operator's application for a WPDES permit, pursuant to Wis. Adm. Code NR 243.12,; (2) Addendum II: Pepin County Livestock and Water Record; (3) Original copy of Initial and Annual Official Drinking Well Water Test results; (4) Addendum III: Initial and Annual Animal Unit Inventory Record(s); (5) Addendum IV: Copy of Initial License for New or Expanded Livestock Facility with copy of Initial Official Drinking Well Water Test Results attached; (6) Addendum V: Copy of License Renewal with copy of Annual Official Drinking Well Water Test Results attached. The custodian of the Pepin County Livestock and Water Registry is the Pepin County Conservationist and the repository of the Pepin County Livestock and Water Registry is the Pepin County Land Conservation and Planning Department or Administrator.

POPULATE

To add Livestock at a Livestock Facility

RELATED LIVESTOCK FACILITIES

Two or more Livestock Facilities under common ownership or common management or operation are a single Livestock Facility if at least one of the following is true: (a) they are located on the same tax parcel or adjacent tax parcels of land; (b) the operations use one or more of the same Livestock Structures to collect or store Manure; (c) some portion of their Manure or other wastes is applied to the same landspreading acreage or utilize common systems; (d) Manure, barnyard runoff or other wastes are commingled in a common Waste Storage Facility at any time;(e) animals are transferred between Livestock Facilities; (f) the Livestock Facilities share staff, vehicles, or equipment.

RESIDENTIAL OFFICIAL DRINKING WELL WATER TEST

An Official Drinking Well Water Test for nitrates on non-community water system water, Conducted By, or under the auspices of the Pepin County Land Conservation and Planning Department, or Administrator, on a one-time basis, at no cost to a Drinking Water Well owner and or resident of Pepin County, Wisconsin, and is available to a Drinking Water

Well owner and or resident within a one-half (½) mile radius of a Drinking Water Well in Pepin County, Wisconsin, that has tested equal to, or greater than, the MCL for nitrates on an Official Drinking Well Water Test, Residential Official Drinking Well Water Test, or which has been assigned a nitrate value equal to, or greater than, the MCL for nitrates.

SITE

The act of situating, developing, constructing, Populating, and operating a Livestock Facility.

SPREADABLE COMPOST

Compost that scores an index value of 7-8 as rated by the Solvita Compost Maturity Test (Woods End Laboratory) or in the event of inaccessibility of the Solvita Compost Maturity Test, a change of less than 18 degrees F. on the Dewar Self-Heating Method.

WASTE STORAGE STRUCTURE

Waste Storage Structure includes, but is not limited to, a waste storage impoundment made by constructing embankments, excavating a pit or dugout, including those under a Livestock housing facility, or fabricating a structure for the containment of Livestock Manure including anaerobic manure digesters. Waste Storage Structure includes any engineered pad, vessel, chamber, channel, rotary drum, or tank, along with accompanied catchments, aeration canals, fans, drain sumps, pumps, motors, hydraulic cylinders, turners, transfer carts, Manure transfer lines, holding tanks, precipitation exclusion fabrication, and any other electrical or plumbing installation or equipment necessary to contain and facilitate an aerobic microbial ecosystem for the decomposition of Manure in accordance with NRCS Code 317, Composting Facility.

Section 4 . License Required

An Operator of a Livestock Facility of 500 Animal Units or more shall obtain a License before Siting a Livestock Facility in Pepin County, Wisconsin. An Operator of a Livestock Facility of 500 Animal Units or more that was sited in Pepin County, Wisconsin, before the effective date of the Ordinance, shall obtain a License upon Expansion. An Operator of a Livestock Facility of less than 500 Animal Units sited in Pepin County, before or after the effective date of this Ordinance, shall obtain a License upon Expansion. Licenses expire on the Anniversary Date and each Licensee shall submit a License Application Renewal no less than 60 days prior to the Anniversary Date.

Section 5. Licensing Administration

The Board of Supervisors of Pepin County, Wisconsin, does hereby assign the primary responsibility of administering this Ordinance and related matters, including public hearings pursuant to Section 9., 3. of this Ordinance, issuance of Licenses and License Renewals, and monitoring for Ordinance compliance to the Pepin County Land Conservation and Planning Department, or Administrator, or an entity under their auspices, under the direction of the Pepin County Conservationist.

Section 6. Licensing Standards

The standards for issuing a license are as follows:

1. The state livestock facility siting standards adopted under Wis. Adm. Code ATCP 51, inclusive of all appendixes, attachments and worksheets, are incorporated by reference in this Ordinance, without reproducing them in full, except; 51.01(14)(19)(26)(28)(32)(36)(44), 51.02, 51.04, 51.06(2)(b), 51.08(1)(a), 51.12(6), 51.16(1)(2), 51.30(3), 51.34(3)(b)(5)(a)(2)

2. The following setbacks shall apply to Livestock Structures:

a) Property lines

Except as provided for Waste Storage Structures, Livestock Structures must be located a minimum of 100 feet from the Property Line if the Livestock Facility will have fewer than 1,000 Animal Units, and 200 feet from the Property Line if the Livestock Facility will have 1,000 or more Animal Units. The setback requirement does not prevent the use or Expansion of a Livestock Structure that was located within the setback area prior to the effective date of the setback requirement, except that a structure may not be expanded closer to the Property Line.

b) Public road right-of-way

Except as provided for Waste Storage Structures, Livestock Structures must be located a minimum of 100 feet from public road right- of-way if the Livestock Facility will have fewer than 1,000 Animal Units, and 150 feet from a public road right-of-way if the Livestock Facility will have 1,000 or more Animal Units. The setback requirement does not prevent the use or Expansion of a Livestock Structure that was located within the setback area prior to the effective date of the setback requirement, except that a structure may not be expanded closer to the public road right-of-way.

c) Waste Storage Structure

A new Waste Storage Structure may not be located within 350 feet of a property line, or within 350 feet of the nearest point of any public road right-of-way.

This setback requirement *does not apply* to existing Waste Storage Structures, except that an existing structure within 350 feet of a property line or road may not expand *toward* that property line or road.

3. The following more stringent local standards adopted in this Ordinance are required to protect public health or safety: These more stringent standards are based on reasonable and scientifically defensible Findings of Fact listed in Section 2 of this Ordinance.

a) An Operator, seeking to site a Livestock Facility with 500 Animal Units or more, in Pepin County, Wisconsin, shall not commence Livestock Facility Siting Activities without first being issued a Livestock Facility Siting, Expansion, and/or Operations License from Pepin County, Wisconsin. An Operator, with a Livestock Facility of 500 Animal Units or more already sited in Pepin County, Wisconsin, before the adoption of the Ordinance, shall require a License upon Expansion. An Operator with a Livestock Facility of less than 500 Animal Units sited in Pepin County, Wisconsin, before or after, the adoption of the Ordinance, shall require a License upon Expansion. All Licensees' shall submit an annual License Application Renewal, pursuant to this Ordinance.

When Manure spreading acreage, identifiable on map(s), that shall be submitted with the Operator's or Licensee's License Application or License Application Renewal for Local Approval New or Expanded Livestock Facility, submitted with Operator's ATCP 51, Appendix A, Application Form and Worksheets, Worksheet 3, Part B, 2.a., "Attach map showing where waste will be applied to land;" or when Manure spreading acreage identifiable on map(s) required to be submitted to the WDNR with an Operator's or Licensee's application for a Wisconsin Pollutant Discharge Elimination System (WPDES) permit, pursuant to Wis. Adm. Code NR 243.12, that shall be submitted to the Pepin County Land Conservation and Planning Department, or Administrator, as mandated under Section 7, License Application, of this Ordinance, is incongruent with, and disqualified by standards of this Ordinance, including Section 6, 3., f. and g., the applicant shall be notified that the License Application or License Renewal Application is incomplete, if and until, the Pepin County Land Conservation and Planning Department, or Administrator, verifies that the applicant has a facility in accordance with the United States Department of Agriculture Natural Resource Conservation Service (NRCS), Conservation Practice Standard Code 317, or implements other

solutions that enable the Operator of a Livestock Facility to be congruent with Section 6, 3., f. and g. of this Ordinance.

b) An Operator of a Livestock Facility in Pepin County, Wisconsin, that is required to obtain a License, shall, as part of the License Application, submit to an Initial Official Drinking Well Water Test for nitrates, to be taken from a Drinking Water Well at the Operator's Livestock Facility and Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator. The Licensee shall submit to Annual Official Drinking Well Water Tests for nitrates, which shall be taken from the Operator's Original Well, and shall be Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator within 30 days of the Anniversary Date. If the Original Well has been filled or sealed, pursuant to Wis. Adm.Code NR 812.26, then the Drinking Water Well closest to Location of Well of the Original Well, shall be used as the Drinking Water Well for the Annual Official Drinking Well Water Test.

c) An Operator of a Livestock Facility in Pepin County, Wisconsin, that is required to obtain a License, shall, as part of the License Application, submit to an Initial Animal Unit Inventory, to be taken at the Operator's Livestock Facility and Conducted By, or under the auspices of the Pepin County Land Conservation and Planning Department, or Administrator. The Licensee shall submit to Annual Animal Unit Inventories, which shall be taken at the Licensee's Livestock Facility, which shall be Conducted By, or under the auspices of the Pepin County Land Conservation and Planning Department, or Administrator, within 30 days of the Anniversary Date.

d) Any well owner and or resident within a one-half (½) mile radius of a Drinking Water Well, in Pepin County, Wisconsin, from which the nitrate level on an Official

Drinking Well Water Test was equal to, or greater than, the Maximum Contaminant Level (MCL), and any Groundwater Monitoring Well that tested equal to, or greater than, the MCL for nitrates on a Groundwater Monitoring Well Water Test shall be notified by the Pepin County Health Department, which shall offer the affected well owner and or resident information regarding the dangers to public health or safety from nitrates in drinking water and shall offer a Residential Official Drinking Well Water Test for nitrates, to be Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator, on a one-time basis, at no cost to the owner and or resident of Pepin County, Wisconsin. All Official Drinking Well Water Test results and all Groundwater Monitoring Well Water Test results, equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), shall be spatially plotted and identified, by Location of Well, on the Master Nitrate Map, by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator.

e) Any Pepin County, Wisconsin, township section, government lot, or other section aliquot of the Public Land Survey System (PLSS) for Pepin County, Wisconsin, that are absent an Official Drinking Well Water Test for nitrates, as reflected on maps cited in Section 2 of this Ordinance and described at citation numbers, [7,8], and numbered as maps 2 and 3 in Addendum I of this Ordinance and are located in the Pepin County Land Conservation and Planning Department, or Administrator, shall be assigned the nitrate value of the Official Drinking Well Water Test result, from the nearest section, government lot, or other section aliquot tested in Pepin County, Wisconsin, as reflected on maps cited in Section 2 of this Ordinance and described at citation numbers, [7,8], and numbered as maps 2 and 3 in Addendum I of this Ordinance, or from a Residential Official Drinking Well Water Test archived in the Pepin County, Wisconsin, Land Conservation and Planning Department, or Administrator. The nearest section, government lot, or other section aliquot in Pepin County, Wisconsin, as reflected on maps cited in Section 2 of this Ordinance and described at citation numbers, [7,8], and numbered as maps 2 and 3 in Addendum I of this Ordinance, or from a Residential Official Drinking Well Water Test archived in the Pepin County, Wisconsin, Land Conservation and Planning Department, or Administrator, testing

highest in nitrates, shall be used to assign a Drinking Well Water nitrate value to the section, government lot, or other section aliquot in Pepin County, Wisconsin, absent an Official Drinking Well Water Test result for nitrates. All assignments of nitrate values shall be officially designated by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator. All assigned nitrate values, equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), shall be recorded on the Master Nitrate Map, by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator.

f) All applications or injections of Livestock Manure on or into land located in Pepin County, Wisconsin, that is included in a Licensee's Manure spreading acreage identifiable on map(s) submitted with Appendix A, Worksheet 3, Part B, 2.a., "Attach map showing where waste will be applied to land," pursuant to Wis. Adm. Code ATCP 51, Appendix A, Application Form and Worksheets, Application for Local Approval New or Expanded Livestock Facilities or Manure spreading acreage identifiable on map(s) submitted to the WDNR with an Operator's application for a Wisconsin Pollutant Discharge Elimination System (WPDES) permit, pursuant to Wis. Adm.Code NR 243.12, and are submitted in accordance with Section 7 of this Ordinance, are prohibited within a one half (½) mile radius of any Drinking Water Well or Groundwater Monitoring Well in Pepin County, Wisconsin, that has a nitrate value equal to, or greater than, the MCL for nitrates, pursuant to Wisconsin NR 809.11(2) unless the Livestock Manure qualifies as Spreadable Compost. All Official Drinking Well Water Test results and all Groundwater Monitoring Well Water Test results, equal to, or greater than, the MCL for nitrates, pursuant to Wis. Adm. Code NR 809(11)(2), shall be spatially plotted and identified, by Location of Well, on the Master Nitrate Map, by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator.

g) Licensee's are prohibited from applying or injecting Livestock Manure on or into soils as reflected on maps cited in Section 2 of this Ordinance and described at citation [11], numbered as Map 6, and attached herein as Addendum I, that have a soil attenuation potential of least, marginal, or bedrock within 10 ft. of surface on the Soil-Attenuation-Potential Map of Pepin County, Wisconsin; and/or are listed as likely or possible on the Karst Potential Map of Pepin County, Wisconsin, as reflected on maps cited in Section 2 of this Ordinance and described at citation [10], numbered as Map 5, and attached herein as part of Addendum I of this Ordinance; and/or fall outside of the 0.4% of soils in Pepin County, Wisconsin, which have features that are very favorable for applications or injections of Livestock Manure on or into land reflected on a map in Section 2 of the Ordinance and described at citation [17], numbered as Map 12, and attached herein as part of Addendum I of this Ordinance, in any PLSS township section, government lot, or other section aliquot, absent a measured nitrate value from an Official Drinking Well Water Test, or Residential Official Drinking Well Water Test, or Groundwater Monitoring Well Water Test, or an assigned nitrate value pursuant to Section 6, 3.e. of this Ordinance, unless Manure qualifies as Spreadable Compost.

Section 7. License Application

To apply for a License or License Renewal from Pepin County Land Conservation and Planning Department, or Administrator, the Livestock Operator or Licensee must complete Wis. Adm. Code ATCP 51 Appendix A, Application Form and Worksheets, Application for Local Approval New or Expanded Livestock Facility; including Worksheet 3., Part b., 2., a., "Attach maps showing where waste will be applied to land" or, if applicable, shall provide map(s) on which Manure spreading acreage is identified which were required to be submitted to the WDNR with the Operator's or Licensee's application for a WPDES permit, pursuant to Wis. Adm. Code NR 243.12, and supply any information and access required by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator, to facilitate implementation of this Ordinance and its Addendums attached herein.

The Operator or Licensee must file 4 duplicate copies of completed: Appendix A, Wis. Adm, Code ATCP 51; if applicable, shall provide map(s) on which Manure spreading acreage is identified which were required to be submitted to the WDNR with the Operator's or Licensee's application for a WPDES permit, pursuant to Wis. Adm. Code NR 243.12, and all information submitted for implementation of this Ordinance, inclusive of all required maps and engineering design specifications, with the Pepin County Land Conservation and Planning Department, or Administrator.

Section 8. License Application Fee

A non-refundable License Application or License Application Renewal fee of $1,000, payable to Pepin County, Wisconsin, Treasurer, shall accompany a License Application or License Application Renewal for the purpose of offsetting the county's costs to review and process the License Application or License Application Renewal.

Section 9. Application Procedure

1. Pursuant to Wis. Adm.Code ATCP 51.30 (5), within 45 days after Pepin County Land Conservation and Planning Department, or Administrator, receives a License Application or License Application Renewal, it shall notify the applicant, by USPS certified, return receipt, mail whether the License Application or License Application Renewal is complete. If the License Application or License Application Renewal is not complete, the Pepin County Land Conservation and Planning Department, or Administrator, shall notify the Operator or Licensee and shall describe the additional information needed. Within 14 days after the applicant provides all of the required information, the Pepin County Land Conservation and Planning Department, or Administrator, shall notify the applicant that the License Application or License Application Renewal is complete. This notice does not constitute an approval of the proposed Livestock Facility.

2. Upon notification to an applicant that their License Application or License Application Renewal is complete, the County Clerk of Pepin County,Wisconsin, shall, within 14 days,

send by first class mail, a completed copy of Appendix C, Notice to Adjacent Property Owners, pursuant to Wis. Adm. Code ATCP 51.30(6), to the recorded owner of each parcel of land that is adjacent to the Operator's or Licensee's Livestock Facility, and to persons who reside or own land within two miles of the Operator's or Licensee's Livestock Facility.

3. The County Clerk of Pepin County, Wisconsin, within 14 days after the Pepin County Land Conservation and Planning Department, or Administrator, has notified an applicant that the License Application or License Application Renewal is complete, shall notice a public hearing regarding the License Application or License Application Renewal with Class 2 notices, the last of which is at least a week before the public hearing, to receive information from the applicant and receive public input on the License Application or License Application Renewal.

4. Pursuant to Wis. Adm. Code ATCP 51.32(5), the Pepin County Land Conservation and Planning Department, or Administrator, shall grant or deny a License Application or License Application Renewal within 90 days after the Pepin County Land Conservation and Planning Department, or Administrator, gives notice pursuant to Wis. Adm. Code ATCP 51.30(5) that the License Application or License Application Renewal is complete. The Pepin County Land Conservation and Planning Department, or Administrator, may extend this time limit for good cause, including any of the following:

The Pepin County Land Conservation and Planning Department, or Administrator, needs additional information to act on the License Application or License Application Renewal; or

The applicant materially modifies the License Application or License Application Renewal.

5. The Pepin County Land Conservation and Planning Department, or Administrator, shall give written notice to the applicant of any time extension in which to issue a final decision granting or denying a License Application or License Application Renewal. The notice shall specify the reason for the extension, and the extended deadline date by which the Pepin County Land Conservation and Planning Department, or Administrator will act on the

License Application or License Application Renewal.

Section 10. Criteria for Issuance of a License

Upon submission of a completed License Application or License Application Renewal, and after consideration of oral and written testimony sworn to at a public hearing regarding the License Application or License Application Renewal, and, if the Operator or Licensee, in accordance with Section 5 of this Ordinance, is verified to be in compliance with all standards of Section 6 of this Ordinance, only then, shall a License or License Renewal be issued or renewed.

If standards of this Ordinance, necessary to protect public health and or safety are not met, as mandated in Section 6 of this Ordinance and authorized by Wis. Statute 93.90, and Wis. Adm.Code ATCP 51.10(3)(a-d), then a License or License Renewal shall be denied.

Section 11. Record of Decision

The Pepin County Land Conservation and Planning Department, or Administrator, must issue its License Application and License Application Renewal decisions in writing. The License Application or License Application Renewal decisions must be based on written findings of fact supported by evidence in the public hearing record and the License Application or the License Application Renewal. If Pepin County Land Conservation and Planning Department, or Administrator, approves the License Application or License Application Renewal, it must give the Operator or Licensee a duplicate copy of the approved License Application or License Application Renewal marked "approved." Within 30 days of a decision on a License Application or a License Application Renewal, the Pepin County Clerk is required to implement actions under ATCP 51.34(5)(a)(b). Failure to comply with 51.34(5)(a) or (b) does not invalidate the decision of Pepin County Land Conservation and Planning Department, or Administrator, to grant or deny a License Application or License Application Renewal for local approval, or to withdraw a local License Application or License Application Renewal approval.

Section 12. Transferability of License

A License or License Renewal is non-transferable. A Licensee shall notify the Pepin County Land Conservation and Planning Department, or Administrator, of a change in the status of the Operator of the Livestock Facility.

Section 13. Expiration of License

A License or License Renewal expires on its Anniversary Date, if not suspended or revoked prior to the Anniversary Date.

Section 14. License Terms and Modifications

A License or License Renewal issued under this Ordinance is conditioned on the Livestock Operator's or Licensee's compliance with the standards in Section 6 of this Ordinance and information provided in the License Application. A violation of the standards of this Ordinance may result in suspension and/or revocation of the License or License Renewal. Any willful violation of Section 6., 3., f. or g. shall result in revocation of the License or License Renewal.

Section 15. Compliance Monitoring

Compliance with this Ordinance shall be monitored by, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator as follows:

1. Upon adoption of the Ordinance, Animal Unit Inventories shall be Conducted By, or under the auspices of, the Pepin County Land Conservation and Planning Department, or Administrator, at an Operator's or Licensee's Livestock Facility at a reasonable time and date to insure that standards of this Ordinance and are being complied with.

2. If the Operator or Licensee refuses the Pepin County Land Conservation and Planning Department, or Administrator, the right to view the Livestock Facility, the Pepin County Land Conservation and Planning Department, or Administrator, may utilize the assistance of the Sheriff, or a deputy Sheriff, to obtain an inspection warrant from the circuit court to inspect the Livestock Facility for the purpose of monitoring compliance with this Ordinance for the protection of public health and safety pursuant to Wis. Stats. 93.90 and Wis. Adm. Code ATCP 51.

3. If a Licensed Livestock Facility is found to be non-compliant with Section 6 of this Ordinance, the Pepin County Land Conservation and Planning Department, or Administrator, shall issue a written notice via USPS, certified, return receipt mail to the Livestock Facility Licensee stating the conditions of non-compliance and directing that compliance with the Ordinance occur within 90 days of the postmark on the certified, non-compliance notice.

4. If non-compliance of the Ordinance standards, as described in the written non-compliance notice given by the Pepin County Land Conservation and Planning Department, or Administrator, continues past the stated time to comply, the Pepin County Land Conservation and Planning Department, or Administrator, may take further action as provided in this Ordinance, including, but not limited to, issuance of a citation or injunctive relief.

5. If the Livestock Facility Licensee disputes that the standards of the Ordinance have not been complied with, the Livestock Facility Licensee may request a hearing with the Pepin County Land Conservation and Planning Department, or Administrator, in writing within five days of the postmark on the notice of non-compliance. The Pepin County Land Conservation and Planning Department, or Administrator, shall schedule a hearing to be held in conjunction with the Pepin County Land Conservation and Planning Committee within 30 days of the postmark on the notice of non-compliance pursuant to Section 15., 3., of this Ordinance to determine if the standards of the Ordinance have been complied with.

Section 16. Penalties

Any Operator or Licensee who violates any of the provisions of this Ordinance, or who fails, neglects or refuses to comply with the provisions of this Ordinance, or who knowingly makes any material false statements or omissions in any document required to be submitted under the provisions hereof, shall be subject to the following penalties:

1. Pay a forfeiture to Pepin County, Wisconsin, of not less than $ 5,000 nor more than $ 50,000, plus the applicable surcharges, assessments and costs for each violation.

2. Each day a violation exists or continues shall be considered a separate offense under this Ordinance.

3. In addition, the Pepin County Land Conservation and Planning Department, or Administrator, may seek injunctive relief from a Pepin County Circuit Court to enjoin further violations.

4. In addition, the Pepin County Land Conservation and Planning Department, or Administrator, may suspend or revoke the License or License Renewal under this Ordinance after due notice to the Livestock Facility Licensee and a public hearing in conjunction with the Pepin County Land Conservation Committee to determine whether the License or License Renewal should be suspended or revoked.

Section 17. Appeals

Wis. Adm. Code ATCP 51.34(3)(a) and Wis. Stats. Sec. 93.90 (5), provide that any "aggrieved person" may request review by the State Livestock Facility Siting Review Board of any decision by the Pepin County Land Conservation and Planning Department, or Administrator, in connection with a License Application or License Application Renewal. An "aggrieved person" may challenge the decision on the grounds that the Pepin County Land Conservation and Planning Department, or Administrator, incorrectly applied the standards under this Ordinance or violated Wis. Stats. 93.90.

An "aggrieved person" under this section as defined in Wis. Stats. 93.90 (5) means a person who applies to the Pepin County Land Conservation and Planning Department for Local Approval New or Expanded Livestock Facility, a person who lives within 2 miles of a Livestock Facility that an Operator or Licensee is proposing to Site or Expand, or a person who owns land within 2 miles of a Livestock Facility that an Operator or Licensee is proposing to Site or Expand.

Section 18. Severability

If any provision of this Ordinance, or its application to any person, Livestock Facility Operator or Licensee, entity, or circumstance, is held to be invalid, the invalidity does not affect other provisions or applications of this Ordinance that can be given effect without the invalid provision or application, and to that end, the provisions of this Ordinance are severable.

Section 19. Effective Date

The Ordinance for Licensing the Siting, Expansion and or Operation of Livestock Facilities in Pepin County,Wisconsin, is effective upon adoption by the Pepin County Board of Supervisors.

Adopted this _____ day of _____, _____, by the Pepin County Board of Supervisors.

_____

Chairperson, Pepin County Board of Supervisors