Farmland Preservation Plan
Douglas County, Wisconsin

December 11, 2017
Acknowledgements

Douglas County Farmland Preservation Plan Steering Committee

Appointed by Douglas County Board on Thursday, January 21, 2016

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A RESOLUTION FROM SUPERVISORS ON THE DOULAS COUNTY LAND CONSERVATION COMMITTEE AND THE FARMLAND PRESERVATION PLAN STEERING COMMITTEE APPROVING THE FARMLAND PRESERVATION PLAN

WHEREAS, Chapter 91 of the Wisconsin Statutes requires counties to have certified Farmland Preservation Plans in order for the county and its citizens to be eligible to participate in the Farmland Preservation Program; and

WHEREAS, the Farmland Preservation Program helps farmers and local governments preserve farmland, protect soil and water, and minimize land use conflicts; and

WHEREAS, Douglas County has been working through a formal and comprehensive process to revise its Farmland Preservation Plan, including participation from stakeholders, municipalities, and the general public; and

WHEREAS, the Douglas County Farmland Preservation Plan includes a clear articulation of county policies related to preserving farmland and promoting agricultural development; and

WHEREAS, the Douglas County Farmland Preservation Plan establishes a local vision for agricultural preservation and development, is a nonbinding guidance document which can help the County and towns establish policies to protect farmland for the future, and makes the County and towns eligible to participate in other parts of the Farmland Preservation Program; and

NOW THEREFORE BE IT RESOLVED that the Douglas County Board of Supervisors does approve the Douglas County Farmland Preservation Plan to be implemented for the next ten years, effective until December 31, 2027.
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Farmland Preservation Definitions
(Summary – See full definitions in Chapter 91, Wisconsin Statutes; Farmland Preservation)

**A-1 Agricultural District:** A district identified by the Douglas County Zoning Ordinance that is intended to provide for the continuation of general farming and related activities in those areas best suited for such development; and to prevent the untimely and uneconomical scattering of residential, commercial, or industrial development into such areas.

**Accessory Use:** Any of the following land uses on a farm: building, structure, or improvement integral to an agricultural use; activity or business operation integral to an agricultural use; a farm residence. Any activity conducted by the farmer that requires no buildings, structures, or improvements other than those described, that employs no more than 4 full-time employees annually, and that does not impair or limit the current or future agricultural use of the farm or of other protected farmland; any other use that the department, by rule, identifies as an accessory use.

**Agriculture Enterprise Area:** Local communities can voluntarily pursue designation of an “agricultural enterprise area” (AEA) by submitting a petition to the Department of Agriculture, Trade and Consumer Protection (DATCP). Through this designation, the community can encourage continued agricultural production and investment in the agricultural economy. Landowners within designated AEAs are eligible to enter into voluntary farmland preservation agreements.

**Agriculture Related Use:** Any of the following: agricultural equipment dealership; facility for agricultural supplies; facility for storing or processing agricultural product; facility for processing agricultural wastes; facility for providing veterinary services (primarily livestock), pharmaceuticals related to animal husbandry.

**Agricultural Use:** Any of the following activities conducted for the purpose of producing an income or livelihood: crop or forage production (cultivated plants: field crops, fruit, vegetables, ornamental and medicinal, plants for energy production, textile use); keeping livestock; beekeeping; nursery, sod, Christmas tree production; or floriculture; aquaculture; fur farming; forest management (any with written forest management plan); enrolling land in a federal agricultural commodity payment program or a federal or state agricultural land conservation payment program or any other use that the department, by rule, identifies as an agricultural use.

**Farm:** All land under common ownership that is primarily devoted to agricultural use.

**Farm Residence:** Any of the following structures that are located on a farm: a single family or duplex residence that is the only residential structure on the farm or is occupied by an owner or operator of the farm, a parent or child of an owner or operator of the farm, an individual who earns more than 50 percent of his or her gross income from the farm. Or, a state certified migrant labor camp.

**Farmland of Statewide Importance:** This is land, in addition to prime and unique farmland, that is of statewide importance for the production of food, feed, fiber, forage, and oil seed crops. Criteria for defining and delineating this land are determined by the appropriate state agency or agencies. Most of these lands occur north of the escarpment on the Lake Superior clay plain. The Lake Superior lowland clay plain was
formed during the glacial period when it was submerged under glacial Lake Superior and red clay was deposited on the old lake bed.

**Farmland Preservation Agreement:** Eligible landowners may choose to enter into a farmland preservation agreement with the Wisconsin Department of Agriculture, Trade and Consumer Protection if their land is located within a designated agricultural enterprise area. Under the 15-year agreement, the landowner may claim the farmland preservation tax credit in exchange for keeping the land in agricultural use and meeting state soil and water conservation standards. This tax credit is worth either $5 per acre, or $10 per acre if the land is also covered by farmland preservation zoning. Landowners must use Schedule FC-A when filing an income tax return to claim this credit.

**Farmland Preservation Area:** An area that is planned primarily for agricultural use or agriculture-related used, or both, and that is identified in a farmland preservation plan.

**Farmland Preservation Program:** The Wisconsin Farmland Preservation Program is designed to help local governments and landowners preserve agricultural land, minimize conflicting land uses, and promote soil and water conservation. Owners of farmland who participate in the program receive an income tax credit incentive.

**Farmland Preservation Zoning:** An optional tool that towns and counties can use to adopt a local ordinance certified by the state as a Farmland Preservation Zoning Ordinance. These certified ordinances ensure that land use in the farmland preservation district is limited to agriculture and other compatible uses. Often a certified ordinance has minor differences with existing ordinances.

**Income Tax Credit Incentive:** Landowners who are Wisconsin residents are eligible for tax credits provided the farm is in compliance with soil and water standards and produces at least $6000 in gross farm revenue the previous year or $18,000 over the previous three years. The incentive varies on a per acre basis, however, it only applies if the county has a certified Farmland Preservation Zoning district, a Farmland Preservation Agreement and/or a designated Agricultural Enterprise Area.

**Prime farmland:** Defined by the Natural Resources Conservation Service (NRCS) as land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops. The land is also available for cropland, pastureland, forestland, or other land but not water or urban built-up land. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Generally, prime farmlands have adequate and dependable water supply from precipitation or irrigation; have favorable temperature and growing season; have acceptable acidity or alkalinity; have few or no rocks; are permeable to air and water; are not excessively erodible; are not saturated with water for long periods of time; and do not flood frequently or are protected from flooding.
Glossary of Acronyms

4-H - National 4-H Council

A-1 – Agricultural zoning district

AI - Avian influenza

APHIS - Animal and Plant Health Inspection Service

AWAC – Animal Waste Advisory Committee

BMP – Best management practices

CAFO - Concentrated animal feeding operation

CL – Conservation loan

CSA – Community supported agriculture

DATCP - Department of Agriculture, Trade and Consumer Protection

DC Comp Plan – Douglas County Comprehensive Plan 2010-2030


DDT – Dichloro-diphenyl-trichloroethane

EQIP – Environmental Quality Incentives Program

F-1 – Forestry zoning district

FFA – Future Farmers of America

FLU – Future land use

FPA Map – 2017 Douglas County Farmland Preservation Area Map

FPP – 2017 Douglas County Farmland Preservation Plan

FSA – Farm Service Agency

FWHMP – Fish and Wildlife Habitat Management Plan

GCS – Groundwater contamination susceptibility

GIS – Geographic Information Systems

HPAI - Highly pathogenic avian influenza
WDACP - Wildlife Damage Abatement and Claims Program
WDNR – Wisconsin Department of Natural Resources
WDWD - Wisconsin Department of Workforce Development
WFU – Wisconsin Farmers Union
WPDES - Wisconsin Pollutant Discharge Elimination System
Overview of Douglas County Farmland Preservation Planning Process

The Douglas County Farmland Preservation Plan was developed over a 24-month period by the Douglas County Farmland Preservation Plan Steering Committee (FPP Steering Committee). The sixteen-member FPP Steering Committee was appointed by the Douglas County Board on January 21, 2016. Membership included local farmers with businesses representing dairy, beef, sheep, crops, farm markets, horticulture and feed supplies; county extension staff; county conservation staff; county zoning staff; federal agriculture conservation staff; a water resource planning consultant; rural town officials; and county board supervisors. Five meetings were coordinated and facilitated by a private consultant who is a resident of rural Douglas County. All FPP Steering Committee meetings were noticed by the county, open to the public and held at the Amnicon Town Hall. The FPP Steering Committee meeting agendas and minutes may be viewed on the Douglas County Farmland Preservation Plan web page at http://www.douglascountywi.org/892/Farmland-Preservation-Plan.

In addition to FPP Steering Committee meetings, presentations were given to the Douglas County Towns Association, the Town of Cloverland, the Town of Highland and the Town of Lakeside. The presentations were scheduled to provide background information to the Towns ahead of a request to review and approve the proposed Farmland Preservation Area Maps. The presentations may be viewed on the Douglas County Farmland Preservation Plan web page (see link above). Progress updates regarding the farmland plan were regularly provided to the Douglas County Land Conservation Committee (LCC) and the Douglas County Planning and Zoning Committee.
List of FPP Steering Committee Meetings:

February 9, 2016 – Kickoff Meeting and Farmland Planning Overview
March 1, 2016 – Addressing the Farmland Preservation Plan Required Elements
March 22, 2016 – Overview of Draft Farmland Map and Develop Trends that Might Impact Farmlands
April 12, 2016 – Continue Addressing the Farmland Preservation Plan Required Elements
June 7, 2016 – Vision, Goals and Objectives
October 10, 2017 – Final Farmland Preservation Plan Review and Recommendation to Approve

List of Additional Presentations/Progress Updates:

March 15, 2016 – LCC Progress Update
June 22, 2016 - Town of Cloverland; Farmland Planning Presentation and Draft Map Review
June 28, 2016 - LCC Progress Update
July 19, 2016 – Douglas County Towns Association Unit Meeting; Farmland Planning Presentation
August 9, 2016 - Town of Lakeside Farmland Planning Presentation and Draft Map Review
September 9, 2016 – DATCP Request for One-Year Extension of Planning Grant
March 21, 2017 - LCC Progress Update
May 16, 2017 - LCC Progress Update
June 13, 2017 - Town of Highland; Farmland Planning Presentation and Draft Map Review
July 12, 2017 - Douglas County Planning and Zoning Committee – FPP Progress Update
August 9, 2017 - Douglas County Planning and Zoning Committee – FPP Progress Update
October 11, 2017 - Douglas County Planning and Zoning Committee – FPP Progress Update
October 12, 2017 - LCC Progress Update
November 8, 2017 - Douglas County Planning and Zoning Committee – FPP Progress Update
November 21, 2017 – Douglas County Towns Association Unit Meeting; Farmland Planning Update

List of Hearings and Final Approval Meetings:

October 12, 2017 – LCC Public Hearing - Farmland Preservation Plan
December 21, 2017 – Douglas County Board - Farmland Preservation Plan Final Approval
Overview of Farmland Preservation Planning in WI

The Wisconsin Farmland Preservation Act was enacted in June 1977 to provide assistance to local governments for farmland planning and to provide tax relief to farmers who chose to participate in the program. Farmers could participate and receive tax credits under signed contracts to preserve farmlands until 1980, at which time counties were required to develop plans. These plans were directly connected to a constituent’s eligibility to receive tax credits and other program benefits.

The 1977 Farmland Preservation Program was repealed and recreated in 2009 by Governor Doyle in response to growing pressures to convert farmlands to nonagricultural use. The Working Lands Initiative, 2009 Wis. Act 28 is intended to address rapid land conversion and protect the $59 billion industry vital to the state’s economy and cultural heritage. The Working Lands Initiative directs local governments to revise existing plans to better preserve agricultural land, minimize conflicting land uses, and promote soil and water conservation through planning, zoning, Agricultural Enterprise Areas, Agricultural Conservation Easements and tax credits.

The Working Lands Initiative requires counties to update and modernize their existing farmland preservation plans by 2017. The Working Lands Initiative created guidance that assures consistency between local plans; allows for flexibility in designating areas planned for farmland preservation; and provided planning grants to counties to assist with the costs of developing updated farmland preservation plans. Under s. 91.10(2), Wis. Statutes, a farmland preservation plan must be consistent with a county’s comprehensive plan, if there is one; and counties are encouraged to utilize the same understanding of consistency as required by the comprehensive planning law.

The Working Lands Initiative requires certification of plans every ten years and it changed the process for certifying a revised county farmland preservation plan. Under the former program, farmland preservation plans (FPP) required certification by the Land and Water Conservation Board; now they are certified directly by the Department of Agriculture, Trade and Consumer Protection (DATCP). Certified plans are tied to tax credits and are required to enable participation in FPP programs. A certified FPP is the first step in accessing other state planning and incentive programs that promote farming in the state.

A revised FPP requires the following seven elements. Each of these elements is addressed in the body of this plan.

1. A county policy related to farmland preservation and agricultural development and enterprise.
2. Identification of the development trends that may affect farmland preservation.
3. Identification, description and documentation of key trends in the agriculture industry, including agricultural lands and specific actions the county will take to preserve farmland and promote agriculture.
4. Clearly identified farmland preservation areas that will be preserved for agriculturally related uses for fifteen years following adoption.
5. A description of the rationale used to identify farmland preservation areas and how they were mapped.
6. Clearly understandable maps and text.
7. Identification of other county actions and programs used to help preserve farmlands.
Overview of Existing Douglas County Plans and Ordinances that Address Agriculture

The FPP Steering Committee expressed the need for “synergy” between plans.

*Synergy* = the interaction or cooperation of two or more organizations, substances, or other agents to produce a combined effect greater than the sum of their separate effects.

The FPP Steering Committee developed a plan for preserving farmlands that incorporates relevant aspects of several existing county plans that address agricultural issues. To maintain the extensive work that has already been done by other county stakeholders, the vision, goals, objectives and actions from the following plans were reviewed and included in this plan. Existing agricultural issues were revised, reorganized and combined to minimize redundancy and, where needed, add clarity.

1982 Douglas County Farmland Preservation Plan

Douglas County adopted its first Farmland Preservation Plan in 1982 (1982 FPP) to allow farmers to remain eligible for state benefits. The 1982 FPP was driven by three broad objectives: maintaining a viable agriculture community, protecting the county environment and directing future growth. The goals, objectives, actions and the existing farmland preservation map identified in the 1982 FPP were used as a starting point for updating the current plan.

The following rationale was used to develop the 1982 FPP Map:

1. The land is under current agricultural use as identified by air photo analysis or on-site inspection.
2. The land has been historically farmed as per analysis of 1938, 1958, and 1966 air photos.
3. The land is potentially productive with improvements such as irrigation or drainage.
4. The land is a farm woodlot less than 80 acres that adjoins other lands scheduled for preservation under the same ownership.
5. The lands was specifically identified in public mapping sessions as being of local significance.
6. Lands included will be mapped in 100 acre blocks.

Douglas County Land and Water Resource Management Plan - For Implementation 2010 - 2020

The Douglas County Land and Water Resource Management Plan - For Implementation 2010 - 2020 (DC LWMP) outlines a comprehensive program for protecting and enhancing water and natural resources in Douglas County. It was developed to meet requirements in Chapter 92 of the Wisconsin Statutes. The DC LWMP outlines goals, objectives and activities identified by a workgroup of volunteer citizens from
throughout the county and serves as a guide for the Land Conservation Committee and its staff through 2020.

The following is the list of DC LWMP goals that specifically address agricultural activities:

• Agricultural owners meet the NR 151 Performance Standards.
• Manure storage systems follow standards to protect groundwater.
• Protect wetlands from the impacts of development (agricultural, forestry, residential).
• Educate agricultural landowners about wetland values, restoration options and technical assistance and incentive programs, such as the Wetland Reserve Program.
• Educate agricultural landowners about surface water protection.
• Change agricultural practices to protect water and wetlands.
• Douglas County Priority Farm Strategy, DC LWMP, 2009.

**Douglas County Watershed-Based Approach to Wetland Management in the Lake Superior Basin, May 2016**

The watershed-based plan for wetland management developed for the Lake Superior Basin (LSB) of Douglas County utilizes the best available scientific information to identify watersheds that indicate high vulnerability to increased surface water runoff due to large storm events, recommends actions to reduce this risk, and is consistent with community land-use goals. This plan presents an opportunity to work with landowners, both public and private, to implement land management practices that will maintain a strong agricultural community, improve watershed health, reduce the risks associated with flooding and encourage economic growth and development.

Land-use changes and loss of wetlands in LSB watersheds impact Lake Superior freshwater resources by reducing water storage capacity and increasing the volume and velocity of runoff. This contributes to flashy stream flow conditions that erode and further incise stream channels, undercut banks and create turbidity and sedimentation problems. Severe storm events in May and June of 2012 resulted in flooding and significant damage to infrastructure in Douglas County and the City of Superior. Projected increases in the frequency of large storm events due to climate change are likely to add to the existing problems of erosion, sedimentation in coastal wetlands, flooding and flood-related infrastructure damage (Wisconsin’s Initiative on Climate Change Impacts, 2011). Strategic wetland protection and restoration can help to regulate stream flows, reduce floods and flood damages, and remove sediments and pollutants from stormwater runoff.

Based on the best available information, this plan identifies watersheds that indicate high vulnerability to increased surface water runoff due to large storm events, recommends actions to reduce this risk, and maintains consistency with community land-use goals. However, while recommended actions are targeted at vulnerable watersheds, they should be considered to be beneficial in all Lake Superior watersheds regardless of their ability to aid in ‘slowing the flow’ of surface water on the landscape. This plan presents an opportunity to work with landowners, both public and private, to implement land management practices that will maintain a strong agricultural community, improve watershed health, reduce the risks associated with flooding and improve the overall resiliency of Douglas County communities to climate change.
Based on the criteria and prioritization process developed by the Watershed Planning Committee, the watersheds (HUC12) with the largest amount of wetland loss and sub-watersheds (HUC14) with greater than 30-40% open land cover have been listed as the highest priority for wetland restoration and preservation (See Table 1). Additional site-level criteria will be used to evaluate parcel suitability and recommendations will be finalized and approved by appropriate entities. Sites meeting the identified criteria will be eligible for wetland restoration and protection projects as funding becomes available. Public and private lands that meet the criteria for either restoration or preservation will be compiled and utilized to develop a request for landowner participation. A listing of landowners who may be interested in developing wetland projects on their land will be developed.

**Table 1 - Watershed Rank, Douglas County Watershed Based Approach, 2016**

<table>
<thead>
<tr>
<th>Watershed (HUC 12)</th>
<th>Wetland Loss (%)</th>
<th>Tier 1 Number sub-watersheds (HUC 14) &gt; 40% open land</th>
<th>Tier 2 Number sub-watersheds (HUC 14) 30-40% open land</th>
<th>Total number of subwatersheds</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bardon-Pearson Creeks</td>
<td>26.5</td>
<td>15</td>
<td>4</td>
<td>25</td>
</tr>
<tr>
<td>Poplar River</td>
<td>21.1</td>
<td>4</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Lower Amnicon River</td>
<td>20.8</td>
<td>6</td>
<td>3</td>
<td>14</td>
</tr>
<tr>
<td>Copper Creek</td>
<td>18.5</td>
<td>3</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Upper Brule River</td>
<td>18.4</td>
<td>1</td>
<td>2</td>
<td>10</td>
</tr>
<tr>
<td>Lower Nemadji River</td>
<td>16.7</td>
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</tr>
<tr>
<td>Balsam Creek</td>
<td>15.4</td>
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<td>0</td>
<td>8</td>
</tr>
<tr>
<td>Lower Brule River</td>
<td>15.4</td>
<td>2</td>
<td>2</td>
<td>7</td>
</tr>
</tbody>
</table>

For wetland restoration, site-level criteria will include, at a minimum, all identified potentially restorable wetland areas that:

- are located on or adjacent to transitional agricultural land.
- have identified pour points and catchments that intersect highways and roads.
- have a direct hydrologic connection to streams and rivers.
- are adjacent to current wetlands with significant surface water detention function.
- are adjacent to public land currently managed for conservation and/or preservation of unique habitats.
For wetland preservation, site-level criteria will include, at a minimum:

- current wetlands with moderate to high function for stormwater detention, especially in the headwaters and floodplain areas in all Lake Superior Basin watersheds of Douglas County.
- current wetlands adjacent to public land currently managed for conservation and/or preservation of unique habitats.
- additional priorities for restoration and preservation include watersheds within which priority subwatersheds are located and headwater and floodplain wetlands.

Several key land conservation and management strategies have been identified that should be implemented to address the watershed goal of reduction in surface water runoff. They include:

- managing timber harvests to maintain a minimum of 40% forest cover in watersheds (HUC 14).
- implementation of wetland preservation and restoration projects in priority subwatersheds and the watersheds within which they are located.
- implementation of stream and riparian/floodplain restoration and protection projects in priority locations identified as potentially restorable stream reaches.

Farmland preservation has community and economic significance for Douglas County and conservation of existing farmland is an important consideration when evaluating potential wetland restoration sites. Historic information shows a pattern of smaller wetlands on the landscape that provided surface water retention at multiple locations in the drainage network. This supports the concept of smaller restoration sites that could potentially be located adjacent to current active agricultural areas rather than converting the farmland itself. Wetland restoration projects in the region have demonstrated that transitional agricultural areas have a high restoration potential when surface water drainage patterns are re-established. This should be an alternative approach to the current practice of developing large wetland mitigation banks on farmland that results in a cumulative loss of agricultural land.
Douglas County Comprehensive Plan 2010-2030 and Farmland Preservation Plan Consistency

Existing county comprehensive plans must be consistent with the county farmland preservation plans under s. 91.10(2), Wis. Stats. The county should treat the 2017 Douglas County Farmland Preservation Plan (DC FPP) and the Douglas County Comprehensive Plan 2010-2030 (DC Comp Plan) as the same document rather than two separate plans. Because the DC FPP is part of the DC Comp Plan, the entire document must be internally consistent.

The Farmland Preservation Planning Steering Committee (FPP Steering Committee) has made an effort to develop a DC FPP that is internally consistent with the DC Comp Plan. To assure clarity, the Douglas County Planning and Zoning Committee approved a resolution regarding consistency between the DC FPP and the DC Comp Plan. The resolution is stated below.

2017 Douglas County Farmland Preservation Plan/Douglas County Comprehensive Plan 2010-2030 Consistency Resolution

A RESOLUTION FROM THE DOUGLAS COUNTY PLANNING AND ZONING COMMITTEE APPROVING CONSISTENCY BETWEEN THE FARMLAND PRESERVATION PLAN AND THE COMPREHENSIVE LAND-USE PLAN

WHEREAS, Chapter 91.10(2) of the Wisconsin Statutes requires counties to include Farmland Preservation Plans in the counties’ Comprehensive Land-Use plans; and

WHEREAS, Douglas County is currently going through a formal and comprehensive process to revise its Farmland Preservation Plan; and

WHEREAS, the revision process has included participation by municipalities to resolve any potential conflicts with proposed farmland preservation areas and future land-use categories as described in the county’s Comprehensive Land-Use Plan; and

WHEREAS, any inconsistencies between farmland preservation areas and future land-use are addressed in the county’s revised Farmland Preservation Plan; and

NOW THEREFORE BE IT RESOLVED that the Douglas County Planning and Zoning Committee approves the revised Farmland Preservation Plan become part of the Comprehensive Land-Use Plan and where there are any inconsistencies between the two plans, the inconsistencies be resolved in favor of the Farmland Preservation Plan therefore making the Farmland Preservation Plan supersede the Comprehensive Land-Use Plan; and

BE IT FURTHER RESOLVED that this resolution be added to both plans in order to help make the relationship and consistency of the plans more clear.
Douglas County adopted its DC Comp Plan on December 19, 2009. A copy of the DC Comp Plan can be viewed or downloaded from the Douglas County Planning and Zoning web page at http://www.douglascountywi.org/. The FPP Steering Committee reviewed all relevant sections of the DC Comp Plan and, with some revisions to improve clarity, combined related issues and updated important ideas and used them as a baseline for creating the revised DC FPP and Farmland Preservation Area Map (FPA Map).

Summary of Relevant Sections of the DC Comp Plan:

- **Chapter 5 Natural, Cultural & Agricultural Resources** includes the Agricultural Resources section (pages 5-77 through 5-82) which addresses demographics and trends for farming and forest industries and contains the existing Douglas County Prime Farmland Map 5.17.
- **Chapter 9 Implementation** outlines the vision, goals, objectives and policies for Agricultural Resources (pages 9-27 through 9-31).
- **Chapter 8 Land Use** describes land use issues and trends (pages 8-1 through 8-45) and includes definitions for standard Future Land Use categories provided to each town for consideration (pages 8-46 through 8-50) and the Future Land Use maps for each town (Maps 8.5 through 8.21).
- **Appendix B Future Land Use Categories** lists the Future Land Use categories selected by each town and adopted under individual Town Comprehensive Plans.

The existing Douglas County Prime Farmland Map 5.17 included in the DC Comp Plan shows areas in the county that are considered prime farmland by the USDA Natural Resources Conservation Service. It includes Prime Farmland, Farmland of Statewide Importance and Prime Farmland if Drained. These classifications are based largely on soil suitability for farming practices. The FPP Steering Committee used these soil suitability classes as the basis for creating the new Douglas County Farm land Preservation Area map.

The Town Future Land Use Maps 8.5 through 8.21, included in the DC Comp Plan are intended to provide a generalized visual depiction of the desired future land use and development pattern for each town. The future land use maps are not zoning maps, nor are they official maps, but rather they provide a decision-making tool for use by the county and local units of government. Mapping of future land uses in Douglas County was largely undertaken by local units of government (LUG), as part of the county-wide comprehensive planning process. LUGs selected from the 14 standard categories - some with modifications – and chose those that best fit the needs of the individual town/village.

Under this Farmland Preservation Planning process, each LUG was asked to address any inconsistencies between its existing future land use maps and the revised Farmland Preservation Area Map prior to adoption of this plan. That process is described on page 18.
2017 Douglas County Farmland Preservation Areas

The 2017 Douglas County Farmland Preservation Areas Map (FPA Map) (See Map 1) identifies areas in the county that will be preserved for farming and farm related activities. Douglas County understands the FPA Map and the adoption of a Farmland Preservation Plan does not impose land use restrictions by itself nor does it create farmland preservation tax credit eligibility by itself.

The purpose of identifying Farmland Preservation Areas in the county is to:

• Establish a local vision for agricultural preservation, agricultural development, and the development of agricultural enterprises at the county level.

• Provide a nonbinding guidance document to help Douglas County establish policies to protect farmland for the future.

• Qualify Douglas County for participation in other parts of the Farmland Preservation Program, such as Agricultural Enterprise Areas and Farmland Preservation Zoning, which are tied to tax incentives.

The FPA Map was created in cooperation with local officials, stakeholders and a board approved steering committee. Douglas County is fully committed to preserving farmlands and to supporting agricultural enterprises; however it is equally committed to honoring the existing Town Future Land Use Maps (FLU Maps) adopted under the Douglas County Comprehensive Plan 2010-2030. The FLU maps can be found in the DC Comp Plan, Chapter 8, Maps 8.5 through 8.21. Each Town addressed any future land use conflicts and directed the county on how to resolve those conflicts using the process described below. Town maps showing the 2017 Douglas County Farmland Preservation Areas are included in Appendix A.

Process for Resolving Town Future Land Use Conflicts
To adhere to the State’s consistency requirements and to reconcile any potential conflicts, each Town was provided with a Review Copy Map. The Review Copy Map superimposed the proposed FPA Map over each Town’s FLU Map. The Review Copy Map legend clearly indicated areas where there were no conflicts and areas where there were potential conflicts. A Town Decision Sheet accompanied the Review Copy Map that identified options for resolving any conflicts. In some cases, alternative options were provided that would allow Towns to eliminate the conflicts, usually through language changes. Each Town made its final decision based on its own priorities and needs. Six of Douglas County’s 16 townships responded via Decision Sheet directing the county how to resolve conflicts. Ten of the 16 townships indicated by default that FPA Map conflicts should be resolved in favor of the FLU Maps. In those cases, any proposed farmland preservation areas in conflict with a future land use were removed from the final FPA Map.
Towns Indicating Specific Actions via Decision Sheets:

**Amnicon:**

- Commercial, Industrial and Single Family Residential classes will remain as is and the county will remove the conflict areas from the FPA Map.
- The Rural Residential class will remain in the FPA and the county will add the following language criteria to the Farmland Preservation Plan:
  
  “Any group of parcels in the ‘Rural Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA.”

**Brule:**

- Commercial, Government/Institutional and Single Family Residential classes will remain as is and the County will remove the conflict areas from the FPA Map.
- The Shoreland Residential class will remain in the FPA and the county will add the following language criteria to the Farmland Preservation Plan:
  
  “Any group of parcels in the ‘Shoreland Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA.”

**Cloverland:**

- The Rural Residential class will remain in the FPA and the county will add the following language criteria to the Farmland Preservation Plan:
  
  “Any group of parcels in the ‘Rural Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA.”

**Highland:**

- The Shoreland Residential class will remain as is and the county will remove the conflict areas from the FPA Map.

**Maple:**

- Commercial and Government/Institutional classes will remain as is and the county will remove the conflict areas from the FPA Map.
- The Rural Residential class will remain in the FPA and the county will add the following language criteria to the Farmland Preservation Plan:
  
  “Any group of parcels in the ‘Rural Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA.”
Solon Springs:

- Commercial, Government/Institutional, Scenic River, Rural Activity Center, Single Family Residential, and Rural Residential classes will remain as is and the county will remove the conflict areas from the FPA Map.

Summit:

- Commercial, Industrial, and Government/Institutional classes will remain as is and the county will remove the conflict areas from the FPA Map.
- The Rural Residential class will remain in the FPA and the county will add the following language criteria to the Farmland Preservation Plan:

  “Any group of parcels in the ‘Rural Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA.”

- The Shoreland Residential class will remain in the FPA and the county will add the following language criteria to the Farmland Preservation Plan:

  “Any group of parcels in the ‘Shoreland Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA.”

Towns indicating that all areas in conflict with the Town FLU Map shall be removed from the FPA Map:

- Bennett
- Dairyland
- Gordon
- Hawthorne
- Lakeside
- Oakland
- Parkland
- Superior
- Wascott
Rationale Used to Identify/Update the Douglas County Farmland Preservation Area Map

The Douglas County Farmland Preservation Area Map (FPA Map) (See Map 1) was developed using the criteria outlined in Table 2 below. The original Douglas County Prime Farmland Map 5.17, 2009 (See Map 2) included in the Douglas County Comprehensive Plan 2010-2030 (DC Comp Plan) was used as the starting point during the farmland planning process. The original Prime Farmland Map was based on soils and identified all “Prime Farmlands”, “Prime Farmlands if Drained” and “Farmlands of Statewide Importance” as defined by the Natural Resources Conservation Service (NRCS).

The updated/revised Douglas County Farmland Preservation Area Map (FPA Map) INCLUDES:

- The “Prime Farmlands” soil class and the “Farmlands of Statewide Importance” soil class that also have a Town Future Land Use (FLU) classification that is compatible with agricultural and agricultural-related uses;
- All lands that are currently in agricultural use as indicated in the DC Comp Plan, which includes areas known at the “Highway 2 or Lake Superior Grasslands” (See Map 3)
- Any parcels zoned as A-1 that are contiguous with lands that have an existing agricultural use.

The updated/revised Douglas County Farmland Preservation Area Map (FPA Map) EXCLUDES:

- Areas in the county planned for non-agricultural development within the next fifteen years;
- The “Prime Farmlands if Drained” soil class included in the original Douglas County Prime Farmland Map 5.17, 2009. This soil class was removed because agricultural use in these areas is not compatible with current wetland regulation or conservation efforts.

Per DATCP requirements, the FPA Map clearly identifies land that should be preserved for farming and farm related activities. The mapping criteria and rationale used to develop the FPA Map are shown in Table 2 below. The Town Future Land Use Categories either included on or excluded from the FPA Map are listed in Table 3 below. Lands demarcated as preserved farmlands on the updated FPA Map will be primarily used for agricultural use and agricultural-related uses.
### Table 2 – Mapping Criteria and Rationale for Farmland Preservation Area Map

<table>
<thead>
<tr>
<th>Mapping Criteria/Layer:</th>
<th>Rationale:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lands depicted as “Prime Farmland” as designated by the U.S. Department of Agriculture.</td>
<td>Prime Farmland is a designation assigned by U.S. Department of Agriculture defining land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these land uses.</td>
</tr>
<tr>
<td>Lands depicted as “Farmland of Statewide Importance” as designated for agriculture by the U.S. Department of Agriculture.</td>
<td>Farmland of Statewide Importance meets specific criteria based on the physical and chemical properties of the soils, and the climatic environment of soil occurrence. It is land that has statewide importance for the production of food, feed, fiber, forage and oilseed crops.</td>
</tr>
<tr>
<td>Lands currently in agricultural use as indicated in the DC Comp Plan.</td>
<td>This is an overlay that identifies land that is currently in agricultural use as shown in Map 8.3 Existing Land Use included in the DC Comp Plan. This allows for the preservation of lands with active agriculture and agricultural-related use.</td>
</tr>
<tr>
<td>Parcels zoned as A-1 that are contiguous with lands that have an existing agricultural use.</td>
<td>This is an overlay that selects A-1 zoned parcels that are contiguous with any land that is in current agricultural use. This allows for the expansion of existing farms in areas that are currently being farmed.</td>
</tr>
<tr>
<td>Highway 2 Grasslands identified in the Wisconsin Land Legacy Report/Later renamed the Lake Superior Grasslands in the Wisconsin Wildlife Action Plan.</td>
<td>A series of grasslands that provide important habitat for many northern birds, mammals, waterfowl, and amphibians and remain largely in agriculture use in Douglas County. Maintaining this area in grasslands supports agriculture and the grassland species that use the habitat.</td>
</tr>
<tr>
<td>“Town Future Land Use” classifications that are compatible with agricultural and agricultural-related use.</td>
<td>To be consistent with DATCP requirements, only lands slated for uses consistent with agriculture or agricultural-related development within the next 15 years are included in the FPA Map.</td>
</tr>
<tr>
<td>Town FLU Categories Included in the FPA Map</td>
<td>Town FLU Categories Excluded from the FPA Map</td>
</tr>
<tr>
<td>--------------------------------------------</td>
<td>-----------------------------------------------</td>
</tr>
</tbody>
</table>
| Agriculture                                | Commercial                                    | Rural Residential - "Any group of parcels in the ‘Rural Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA."
| Douglas County Land                        | Extraction                                    | Shoresland Residential - “Any group of parcels in the ‘Shoresland Residential’ class resembling a sub-division (less than five acres) will be excluded from the FPA."
| Forest or Forest-harvested                | Government/Institutional                      |                                                       |
| Forest Residential                         | Industrial                                    |                                                       |
| Forest Roads or Trails                     | Lake Lots                                     |                                                       |
| Forestry, Wildlife Conservation, Outdoor, Recreation | Mitigated Wetland |                                                       |
| Mitigated Wetland                          | Residential                                   |                                                       |
| Outdoor Recreation                         | Rural Activity Center                         |                                                       |
| Park and Recreation                        | Sanitary System                               |                                                       |
| Recreational Trails                        | Scenic River                                  |                                                       |
| Rural Conservation                         | Shoreland Commercial                          |                                                       |
| Rural Traditional                          | Single Family Residential                     |                                                       |
| Special Use                                | Structure                                     |                                                       |
| State Land                                 | Transportation                                |                                                       |
| Transitional Lands                         | Utilities                                     |                                                       |
|                                            | Wild Lakes                                    |                                                       |
Map 1 - 2017 Douglas County Farmland Preservation Area Map
Source: Douglas County Comprehensive Plan 2010-2030
MAP 3 - LAKE SUPERIOR GRASSLANDS (FORMERLY HIGHWAY 2 GRASSLANDS)

November 2017
Farmland Preservation Plan Policy

The following vision, goals, objectives and actions provide a framework for preserving farmlands, farming and agriculture related industries in the county. It includes and expands on the extensive effort made by stakeholders during Douglas County’s comprehensive planning process and fully supports the commitment made to agriculture and the rural character of the county. A cross reference is provided in parenthesis when the language was obtained from an existing plan.

The FPP Steering Committee understands that agricultural industries are vital to the economic and social fabric of the county. All societies depend on food production and sustainable communities and, because Douglas County is no exception, the committee strongly promotes direct and local involvement in these activities. They also understand this in the context of living in a county with extensive natural areas and water resources. Because of this, Douglas County has a significant role in preserving biodiversity for the state while at the same time preserving its rural agricultural traditions.

Preserving farmlands and promoting sustainable agriculture in Douglas County communities is the foundation of this plan. Implementing this plan will be dependent on the county receiving adequate staffing, support and funding. It will also depend on farm entrepreneurs and the community at large to participate directly in the protection and enhancement of farmlands in Douglas County.

Vision

By 2030, agriculture in Douglas County is thriving and is a well-balanced part of the overall economy in partnership with sustainable forest management and strong protection policies for water, air and soil. Existing agricultural lands and prime farmlands are maintained and preserved to meet the present and future needs of agriculture in the community.

Douglas County promotes:

- A diverse array of agricultural products.
- Zoning and other policies that protects productive agricultural land.
- Forests managed according to best management practices.
- Maintaining the current balance of forest, agricultural and recreational land.
- The preservation of historically farmed and prime farmlands designated on the approved 2017 Douglas County Farmland Preservation Map.
Goals, Objectives and Actions

FPP Goal 1 - Maintain and preserve agricultural land suitable to the present and future needs of agriculture in the county. [Goal 1, 1982 DC FPP]

**Objective 1a:** Identify prime acreage and promote farming on those lands. [Objective AR-2(a), DC Comp Plan]

**Actions:**

i. Include lands classified by the USDA NRCS as Prime Farmland or as Farmlands of Statewide Significance on the Farmland Preservation Area Map.

ii. Include lands with an existing agriculture land use in the Farmland Preservation Area Map.

iii. Include lands zoned as A-1 that are contiguous to existing farmlands on the Farmland Preservation Areas Map.

iv. Preserve lands identified in the 2017 Douglas County Farmland Preservation Areas Map for agricultural activities.

v. Consider petition for “Agricultural Enterprise Areas”.

vi. Recommend development of an exclusive agriculture zoning district with a 35 acre minimum lot size in the areas designated as “Prime Farmland” in the 2017 Douglas County Farmland Preservation Areas Map.

vii. Promote the expansion of existing agricultural networks (such as Organic Valley) or other farm cooperatives (such as Burnett Dairy) in Douglas County.

viii. Implement Wisconsin Working Lands Initiative programs under the Farmland Preservation Program to encourage preservation of farmlands shown in the 2017 Douglas County Farmland Preservation Areas Map.

ix. Ensure development is consistent with agricultural land goals.

**Objective 1b:** Discourage non-agricultural development on tillable lands. [Objective AR-2(b), DC Comp Plan]

**Actions:**

i. Guide development away from productive farmland identified on the 2017 Douglas County Farmland Preservation Area Map and toward land that is least suitable for agricultural use.

ii. Recommend that Town Future Land Use Plans be updated to remove any conflicting land uses that overlap with the “Prime Farmland” classification shown on the 2017 Douglas County Farmland Preservation Area Map.

iii. Any federal, state or local plans that affect agricultural lands should be consistent with the 2017 Douglas County Farmland Preservation Plan to minimize conflicts.

iv. Encourage sub-division review by town boards to assure consistency with farmland preservation.

v. Discourage non-farm uses within areas designated as preserved farmland.

vi. Support incentives and/or assistance to non-agricultural developers to steer them away from preserved farmlands.
vii. Support the concepts in the Douglas County Watershed-Based Approach to Wetland Management in the Lake Superior Basin, May 2016 which allows for restoring smaller wetlands located adjacent to current active agricultural areas rather than converting the farmland itself. This alternative approach should replace the current practice of developing large wetland mitigation banks on farmland that results in a cumulative loss of agricultural land.

**Objective 1c: Maintain existing acreage in agricultural use.** \([Objective AR-2(c), DC Comp Plan]\)

**Actions:**

1. Include acreage in existing agricultural use in the 2017 Douglas County Farmland Preservation Areas Map.
2. Support current agricultural producers and encourage new agricultural uses. \([Policy AR-2(c)(1), DC Comp Plan]\)
3. Encourage extension of public services to areas of low population density to support existing agricultural.
4. Develop a clear policy for locating large mitigation banks in the county and discourage the placement of mitigation banks on prime farmlands identified in the 2017 Douglas County Farmland Preservation Area Map.
5. Define and analyze “transitional” agricultural land acreage and potential farmland losses and develop a policy for addressing those lands.
6. Analyze pipeline threats to farmlands and develop strategies to mitigate losses.
7.

**FPP Goal 2 – Maintain and promote a diverse agricultural community.** \([Goal AR-1, DC Comp Plan]\)

**Objective 2a: Strongly support conventional and non-traditional farms of various sizes.**

**Actions:**

1. Be recognized for various farming enterprises.
2. Review the zoning requirements for development of agricultural / horticultural production for home use (i.e.- poultry, honey, small livestock etc.)
3. Provide assistance to beginner and relocating farmers.

**Objective 2b: Develop and promote markets and programs for locally produced products.** \([Objective AR-1(c), DC Comp Plan]\)

**Actions:**

1. Develop and promote options for marketing; niche marketing.
2. Identify and analyze niches that are trending up and assist with developing programs to meet demands.
3. Explore and analyze potential markets that can be reached via transportation hubs in Superior.
4. Support efforts to advertise local resources and products. \([Policy AR-1(b)(1), DC Comp Plan]\)
v. Support value added products. “Value added,” acknowledged to mean products that have a degree of development and marketing beyond the raw, locally produced product. (Example: forest products certified as achieving sustainable guidelines, dairy products produced and advertised as rBGH free; grass-fed, etc.)

vi. Encourage local entrepreneurs and craftspeople to use local resources and local products. (Objective AR-1(b), DC Comp Plan)

vii. Explore the use of “branding” Douglas County agriculture products (Example: Develop a Douglas County certification program that indicates an agricultural product was created without harming biodiversity and water quality.)

viii. Promote and encourage farmers’ markets, CSA’s and other direct sales programs. (Policy AR-1(c)(1), DC Comp Plan)

ix. Clarify meat marketing rules for direct marketing

x. Encourage central locations for farmers market

xi. Encourage community gardeners/truck farming on private rural plots (rental of plots, leasing)

**Objective 2c: Develop and promote other business strategies for local farmers.**

**Actions:**

i. Promote ag-related development in towns with high densities of farms.

ii. Promote value-added processing of farm products.

iii. Promote and analyze diversification options for new or alternative food and non-food farm products.

iv. Develop strategies to help attract support industries for farming, such as: A full-time county agricultural agent; USDA meat inspector; meat processors, cheese processors; veterinarians that can handle unique farm animals; research farm; transportation specialist to address logistics and capitalize on shipping ports; support (trucking/marketing) for diversified markets, such as apples, onions, organic, berries, nuts, bison, and elk (see examples from Bayfield County).

v. Develop and promote agricultural tourism.

vi. Explore the use of farm energy coops to purchase fuel and goods when energy prices are low.

vii. Support alternative energy in Wisconsin and support WFU Clean Energy Choice policy for local farms.

viii. Recommend co-ops and agricultural enterprise zones to help small farmers with economies of scale (digesters, processing, transportation, farm equipment loan program, disaster relief, commodity supports, loans, debt for nature programs).

ix. Develop land swap opportunities for farmlands that are not viable. Identify key areas to pilot a program.

x. Explore lease-to-own strategies between retiring and new farmers.

xi. Analyze the Food Systems Profile Douglas County, WI by UW Extension to improve production, direct sales, processing and distribution to attempt to be more in line with state and regional indicators.
FPP Goal 3 – Support and promote a strong rural character, culture, and visual quality

**Objective 3a:** Promote education careers and opportunities in agribusiness.  
**Actions:**

i. Work with schools to educate youth on local agriculture and the opportunities for education and careers in the field.  
   [Policy AR-3(a)(1), DC Comp Plan]

ii. Promote agricultural scholarships.

iii. Maintain agricultural professionals in Douglas County.

iv. Encourage FFA and 4-H membership and functions in Douglas County.

**Objective 3b:** Support preservation of agricultural and historical buildings.  
**Actions:**

i. Existing agricultural uses and buildings should be taken into account when locating new development to avoid conflict.  
   [Policy AR-3(b)(1), DC Comp Plan]

**Objective 3c:** Support preservation of rural view-sheds, scenic fields, and corridors.  
**Actions:**

i. Support conservation design that includes consideration of adjacent farmlands.

ii. Create signage identifying the view-sheds of Douglas County and a list of scenic views in Douglas County.

**Objective 3d:** Showcase agriculture at the County Fair.  
**Actions:**

i. Work with the City of Superior and Douglas County to assure that a fairgrounds is sustained in the county.

ii. Develop a new strategy for promoting the county fair throughout the year and encourage farmers to participate.  
   [AR-3(d)(1), DC Comp Plan]

iii. Support development of a coordinating body for the Douglas County Fair

iv. Increase youth participation in a strong agriculturally influenced County Fair.

v. Engage farm organizations in County Fair planning.

xii. Obtain climate change predictions and BMPs for agriculture and assist producers with transition strategies.
**FPP Goal 4 – Support and promote sustainable agriculture, prosperous farmers, and supporting industries.**  
*Goal AR-4, DC Comp Plan*

**Objective 4a:** Promote/showcase the use of locally grown products.  
*Objective AR-4(a), DC Comp Plan*

**Objective 4b:** Promote education and careers in agriculture.  
*Objective AR-4(b), DC Comp Plan*

**Actions:**

i. Assist area schools and UW-Extension with incorporating agricultural education into their curriculum.  
*Policy AR-4(b)(1), DC Comp Plan*

ii. Maintain the professional agricultural infrastructure to support farming.  
*Policy AR-4(b)(2), DC Comp Plan*

**Objective 4c:** Continue to provide education and support for best management practices.  
*Objective AR-4(c), DC Comp Plan*

**Actions:**

i. Utilize county, state, and federal education and financial resources to assist farmers with best business practices, best land management practices and new agricultural techniques and markets.

ii. Promote the use of proper soil conservation and manure management practices to protect surface, ground water, air, and wildlife habitat in the county.  
*AR-4(c)(2), DC Comp Plan*

iii. Promote the use of NRCS’s natural resources conservation programs as a tool for preserving sustainable farms.

iv. Provide public education to promote the acceptance of irrigation, dust, noise, odors, vehicle traffic, etc. as a consequence of some agricultural operations.

v. Recommend that the state work closely with farmers in Douglas County to set goals that are compatible and sustainable for wildlife populations and preserving farmlands in northern Wisconsin.

vi. Develop and promote best management practices to avoid wildlife/farm conflicts for farmers and wildlife managers in northern Wisconsin.

**Objective 4d:** Develop and support legislation and programs that sustain agricultural businesses.

**Actions:**

i. Promote sustainable agriculture in Douglas County and strive to set an example for surrounding counties.  
*AR-4(d)(1), DC Comp*

ii. Develop outreach to conduct an extensive agricultural needs survey and use survey data to improve the sustainable farm economy in Douglas County.

iii. Guide land use controls to protect Prime Farmlands, including the creation of agriculture enterprise zones.  
*AR-4(d)(2), DC Comp*

iv. Develop and seek funding for relevant cost-share programs.

v. Seek additional support for small, sustainable, family farm operations.

vi. Develop and promote farm-owner networks (investment, marketing, leasing, buying, lobbying).
vii. Promote and assist with joint farm infrastructure ventures.

viii. Support taxation policies that encourage agricultural land preservation.

ix. Support continuing education, best management practices, and reporting systems to farmers regarding potential threats to crops and animals.

x. Recommend that the Farmers Union and Cattlemen’s Association continue to be involved in state management planning for wolves and that the wolf be delisted by the federal government so that the state can manage wolf populations.

Objective 4e: Minimize conflicts between farming and local, state, and federal water quality protections and standards that protect groundwater and natural resources.

Actions:

i. Continue to implement the existing Douglas County CAFO ordinance.

ii. Do not allow CAFOs in areas with high susceptibility to groundwater contamination in order to protect wells as well as spring water/artesian resources in Douglas County.

iii. Educate agricultural landowners about surface water protection.

iv. Provide training and education in the implementation of the existing Douglas County Animal Manure Storage Ordinance.

v. Promote conservation and sustainability of prime farmlands by creating or marketing existing incentives and programs that use integrated management techniques that support farms and natural resources such as:
   a. Farm Bill Conservation Programs
   b. Environmental Quality Incentives Program
   c. North American Waterfowl Management Plan
   d. North American Wetlands Conservation Act (NAWCA)
   e. Invasive Species Control Plans
   f. Integrated Vegetation Management
   g. Protection or enhancement of environmental corridors
   h. Wildlife Conservation Plans
   i. Training and cost-sharing for BMPs, animal husbandry, agronomics, etc.

vi. Use conservation of natural resources and physical limits of land as the basis for determining the location and size of farm developments.

vii. Promote forest conservation practices as a use compatible with farmland preservation.

viii. Use guidance in the DC Priority Farm Strategy and Certificate of Compliance to ensure agricultural owners meet NR 151 Performance Standards.

ix. Do not allow high capacity wells in areas where lowering groundwater levels dry up natural springs or reduce availability of groundwater to farms in the area.

x. Develop, sponsor and promote a free, agricultural community-led, voluntary inspection of a minimum number of farms annually.

xi. Develop a systematic private well testing program for early detection of groundwater contamination. Including an annually sponsored well testing program. Target areas with high percentages groundwater susceptibility.
Encourage the use of environmental corridors and buffer areas for soil and water management and separation of conflicting land uses.

**Objective 4f:** Work with the agricultural community to implement a watershed-based approach to wetland restoration. The following actions are taken directly from the Douglas County Watershed-Based Approach to Wetland Management in the Lake Superior Basin, May 2016 (WBA Plan)

**Actions:**

i. Maintain sustainable agriculture in the county while improving watershed health by implementing land use and land cover indicators identified in the WBA Plan.

ii. Develop and promote producer-led watershed councils.

iii. Develop county policies and guidance that address total agricultural open land cover at the sub-watershed scale.

iv. Develop and support a coordinated monitoring and reporting program with the agricultural community to collect surface water and groundwater data and identify criteria for triggering BMPs or policies at the sub-watershed scale (this was adapted from the LWRM Plan).

v. Support the WBA Plan and the restoration of wetlands on existing farmlands to restore habitat and protect water quality in adjacent surface water and groundwater.

vi. Prioritize and target watersheds that have high percentages of open lands for agricultural BMPs and increased support.

vii. Do not allow CAFOs in watersheds with high percentages of existing or future open lands.

viii. Encourage Douglas County to study the feasibility of a land-swap program to protect farmlands and environmentally sensitive lands.

ix. Promote a county led initiative that restores small, connected wetland restoration on PRW’s on existing farms.

x. Support locating wetland restoration on or adjacent to transitional agricultural lands.

xi. Target wetland restoration on lands depicted as “Prime Farmland” as designated by the U.S. Department of Agriculture only when site level environmental protection benefits significantly outweighs the loss of productive farmlands or when farming and restored wetlands are intended to coexist.

xii. Develop a pilot area for using the Wisconsin Phosphorus Index (P Index) as a planning and assessment tool for managing runoff phosphorus losses from cropland (Source: Web. [www.wpindex.soils.wisc.edu](http://www.wpindex.soils.wisc.edu) May 16, 2016.)
Implementation

The Douglas County’s Farmland Preservation Plan (FPP) provides guidance to preserving farmlands and farming enterprises in Douglas County. It is not a work plan nor is it prescriptive. The core action of this plan is to preserve farmlands identified on the Douglas County Farmland Preservation Map. Douglas County Planning and Zoning and the Town Planning Committees are responsible for making land use decisions. The implementation of other aspects of the FPP will depend on established and new partnerships, along with the participation of state and federal governments as well as local citizens, stakeholders and members of the agricultural community.

Potential partners identified in earlier plans and appropriate Douglas County Departments will help implement the objectives and actions outlined in this plan within the context of their respective responsibilities to preserve farmland and support and promote agricultural enterprise in the county. The Douglas County Land Conservation Department focus is on conservation and water quality and the Douglas County University of Wisconsin-Extension works with 4-H and Community Youth Development, Agriculture/Horticulture, Community and Economic Development, Family Living, and FoodWIse issues. The FPP will be implemented over 10 years, from 2018 to 2028.
Demographic and Development Trends with Potential Impacts on Farmland Preservation

Under the Working Lands Initiative, the certified Farmland Preservation Plan must include policies, goals, strategies and proposed actions to increase housing density in areas other than those identified for farmland preservation. In order to do this, it is important to have an understanding of population demographics and local trends in housing and other real estate markets.

County farmland preservation plans are not intended to prevent non-agricultural development within the county. Rather, the idea is to limit non-agricultural development in areas with favorable conditions for agricultural enterprises, and target other areas for non-agricultural development. Any areas slated for non-agricultural growth within the next fifteen years may not be included in a farmland preservation area.

The Douglas County Comprehensive Plan 2010-2030 (DC Comp Plan) adopted on December 17, 2009 fully addresses the demographic and development trends for Douglas County. The information included in this revision of the FPP references that document and adds information when new data was obtained or to reflect discussions that took place at the Douglas County Farmland Preservation Plan Steering Committee (FPP Steering Committee) meetings.

Population (Town and Farm)
The U.S. Census estimates the 2015 population of Douglas County at 43,601. This is a slight increase from the 2000 year population of 43,287 reported in the Douglas County Comprehensive Plan 2010-2030 (DC Comp Plan) but a slight decrease (-1.3%) from the 2010 census.

The DC Comp Plan predicted the population would to continue to decline largely due to a birth rate lower than the migration rate. U.S. census data shows that persons under five years declined by 0.4% between 2010 and 2014 and persons sixty-five years and over increased 1.9% in the same time period. Douglas County’s population growth rate ranks 41 out of 72 Wisconsin counties and it appears that Douglas County’s population is both declining and aging.

In spite of this decline, rural populations appear to be increasing and the FPP Steering Committee speculates that retirees may be returning to the area. The City of Superior Housing Needs Analysis, Sept 2015, identifies an atypical trend in Douglas County during the 2000’s; showing that the rural county population increased by 872 (2.2%), while the City of Superior’s population decreased by 124. Growth usually concentrates in urban areas, however, “approximately 66% of all population growth in the county occurred in towns between 2000 and 2010, with the remaining 33% of growth occurring in villages.” (City of Superior and Douglas County, 2015).

Housing
The US Census reports a total of 22,892 housing units in Douglas County on July 1, 2014. This is an increase of 2,536 housing units from the 2000 census report of 20,356 (DC Comp Plan). Census numbers show approximately 181 housing units added per year over 14 years in all of Douglas County.

The county-wide housing density (total housing units per square mile) was 5.2 in 2000. The DC Comp Plan projects density will be at 8.5 by 2030 (DC Comp Plan). A City of Superior Housing Study, 2015 reports the number of rural Douglas County households (towns only) was 5489 in 2010 and estimates that number will
increase to 6597 in 2025; or approximately 74 households each year with a housing density of 5.3 per square mile. The DC Comp Plan identifies a clear pattern of development that has extended out from the incorporated areas along the major highways and along rivers and lakes between 1940 and 2000.

The USDA Agricultural Census reports 364 farms in Douglas County in 2012. Using estimates from the City of Superior Housing Study, 2015, there would have been approximately 5637 total rural households in 2012. Assuming there is a housing unit associated with each farm, farm housing would have made up 6.5% of the rural housing in Douglas County.

Records from the Douglas County Zoning Office show that the highest number of 2015 year-round dwelling permits were issued in the Town of Superior (10) followed by Summit (6) and Bennett (4). Douglas County permit records also show that Superior, Summit and Amnicon had the highest number of year-round dwelling permits from 1975 and 2015 and Dairyland, Cloverland and Highland had the least. The total number of seasonal dwelling permits from 1975 to 2015 were highest in Wascott, Gordon and Solon Springs and lowest in Maple, Parkland and Amnicon (Table 4 - Number of Building Permits).

Based on a 40-year average of historical dwelling permit records from Douglas County, all unincorporated towns except Bennett and Maple had lower than average permits issued in 2015. County-wide, the number of dwelling permits issued in 2015 is 47% less than the 40 year average (Table 4 - Number of Building Permits). If the number of dwelling permits stays at 2015 levels, then 960 dwellings would be added county-wide by 2025, or 96 dwellings per year. This number falls within the range forecasted by the City of Superior Housing Study, 2015 (595) and the DC Comp Plan, 2010-2030 (1252) (Table 5 - 2025 Dwellings Forecast for Unincorporated Towns).

The FPP Steering Committee did not perceive a trend in converting lands used or zoned as agriculture to residential, although that information is not tracked by the Douglas County Zoning Office. The FPP Steering Committee and Douglas County Planning and Zoning Office are confident that there is adequate land zoned as residential to meet the projected housing needs for rural Douglas County and that agricultural lands are not significantly threatened by that sector. The lower than average dwelling permits issued in 2015 suggests new starts are sluggish and density may remain steady as projected by the City of Superior 2015 Housing Study.
### TABLE 4 - NUMBER OF BUILDING PERMITS

<table>
<thead>
<tr>
<th>Town</th>
<th>Year-round Dwelling Permits for 2015</th>
<th>Seasonal Dwelling Permits for 2015</th>
<th>Total Combined Year-round and Seasonal Dwelling Permits for 2015</th>
<th>Total Year-round Dwelling Permits 1975 to 2015</th>
<th>Total Seasonal Dwelling Permits 1975 to 2015</th>
<th>Total Combined Year-round and Seasonal Dwelling Permits 1975 to 2015</th>
<th>Average # of combined permits per year over 40 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amnicon</td>
<td>3</td>
<td>296</td>
<td>14</td>
<td>310</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bennett</td>
<td>4</td>
<td>2</td>
<td>130</td>
<td>33</td>
<td>163</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brule</td>
<td>1</td>
<td>2</td>
<td>185</td>
<td>42</td>
<td>227</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cloverland</td>
<td>1</td>
<td>1</td>
<td>96</td>
<td>28</td>
<td>124</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dairyland</td>
<td>0</td>
<td>1</td>
<td>56</td>
<td>135</td>
<td>191</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gordon</td>
<td>1</td>
<td>6</td>
<td>199</td>
<td>262</td>
<td>461</td>
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<td></td>
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<td>Hawthorne</td>
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<td>3</td>
<td>263</td>
<td>30</td>
<td>293</td>
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<td>Highland</td>
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<td>1</td>
<td>91</td>
<td>100</td>
<td>191</td>
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<td></td>
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<td>Lakeside</td>
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<td>1</td>
<td>146</td>
<td>22</td>
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<tr>
<td>Maple</td>
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<td>148</td>
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<td>159</td>
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<td></td>
</tr>
<tr>
<td>Oakland</td>
<td>2</td>
<td>3</td>
<td>264</td>
<td>56</td>
<td>320</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parkland</td>
<td>2</td>
<td>2</td>
<td>223</td>
<td>11</td>
<td>234</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Solon Springs</td>
<td>2</td>
<td>4</td>
<td>247</td>
<td>150</td>
<td>397</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Summit</td>
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<td>298</td>
<td>59</td>
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<td></td>
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<tr>
<td>Superior</td>
<td>10</td>
<td>11</td>
<td>449</td>
<td>40</td>
<td>489</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wascott</td>
<td>1</td>
<td>11</td>
<td>197</td>
<td>540</td>
<td>737</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>41</td>
<td>64</td>
<td>3288</td>
<td>1533</td>
<td>4821</td>
<td></td>
<td>121</td>
</tr>
</tbody>
</table>

### TABLE 5 - 2025 DWELLINGS FORECAST FOR UNINCORPORATED TOWNS

<table>
<thead>
<tr>
<th>Municipal Unit</th>
<th>Year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000&lt;sup&gt;1&lt;/sup&gt;</td>
</tr>
<tr>
<td>Towns (Unincorporated)</td>
<td>4958</td>
</tr>
<tr>
<td># of Units added</td>
<td>n/a</td>
</tr>
</tbody>
</table>

1. Source: US Census; City of Superior and Douglas County Housing Study, 2015, Maxwell
2. Source: City of Superior and Douglas County Housing Study, 2015, Maxwell
3. Source: DC Comp Plan, 2010-2030, NWRP
Municipal expansion

The FPP Steering Committee is not aware of any current or future plans for municipal expansion. The City of Superior and Douglas County, 2015 housing study reports that the City of Superior is thought to have an excess supply of lots for residential housing (p. 110-111). Forecasts developed by the Northwest Regional Planning Commission in the DC Comp Plan project that there will be a demand for 133 to 204 acres of industrial land and 141-211 acres of commercial land by the year 2030. There is a relationship between municipal growth and the potential loss of farmlands through City and State wetland mitigation programs (See section below on “Key Land Use Issues Related to Preserving Agriculture” p. 72).

Economic Growth

National and state trends show that economic growth has been slow to recover from the “Great Recession” which ended in June of 2009. Some believe there is a silver lining in that the slow recovery will be sustainable (WDWD, 2016). In Wisconsin the seasonally adjusted unemployment rate was 4.3 percent; lower than the U.S. unemployment rate of 5.0 percent (WDWD, 2016). Interest rates are expected to rise over the next few years. This follows the recent increase of the Federal Fund Rate from zero to 0.25% (UWM, 2016). The interest rate for prime industrial bonds is expected to trend upward to about 3.5% over the next years (UWM, 2016).

In addition to increased job levels, wages have increased, and home values are nearly back to prerecession levels (WDWD, 2016). Average household income for Douglas County is $54,000 to $59,999 (WDWD, 2016). Wisconsin personal income grew 2.1% in 2013, slightly above growth nationwide. Although the number of agricultural and agricultural-related jobs in the county remains small and the agricultural job growth rate is the lowest in the county, agricultural jobs are contributing to the economy.

In 2014, agriculture provided 696 jobs in the county, or 3.3% of the county’s labor force of 20,970. The majority of the farms are owned by individuals or families at 90.4 %. Farmers own and manage 8.5% of the county’s land, including cropland, pasture, tree farms and farm forest (UWEX Value and Economic Impact of Agriculture et al, 2014). The Northwest Workforce Development Area Occupation projections are that Farming, Fish & Forestry jobs will decline -15% from 2012 to 2022 (WDWD, 2016).

However small, farming is a prime contributor in some communities because it provides a stable market for many service and retail businesses (DC Comp Plan) and it accounts for 303 jobs in the agricultural processing industries (UWEX et al, 2014). The sale of farm products and the purchase of agricultural inputs in Douglas County contributed $98 million to the local economy and $1.9 million in local and state taxes, not including property taxes paid to support local schools in 2014 (UWEX et.al., 2014).

Economic development within Douglas County has increased significantly. Addition of manufacturers like Feradyne Outdoors, LLC, and Epicurean, Inc, has spurred additional interest from manufacturers outside of the county to inquire about relocating to Superior, WI. Other initiatives, such as Better City Superior, would encourage development through the creation of an exposition district in downtown Superior to increase tourism, job recruiting and revenue generation for local businesses.

The impact of additional employees working within the county and additional tourism would increase the need for local produce and other local farm products.

There are challenges to economic growth within Douglas County, also. With unemployment in Douglas County at 4.5%, (WDWD, August, 2017) our community is very close to full employment. The open
positions advertised by manufacturers are not being filled due to a lack of workers, both skilled and unskilled. There are over 1,000 positions available in Douglas County, unfilled, due to a lack of personnel. This impacts local farmers and agricultural-related businesses negatively as it is difficult to find competent workers for these entities.

Both Douglas County and the State of Wisconsin are looking at ways to attract talent back to our community. The State of Wisconsin is proposing legislation to offer a cash grant award to individuals from a 2-year or 4-year college graduate with a field of study in a high demand field including biotechnology. Individuals would have to live and work in rural Wisconsin (defined as a county with a population less than 50,000 people and a county with a US Census Bureau 2016 population less than the 2010 US Census Bureau population. It is hoped that this initiative will provide some much needed help.

One of the major changes leading to a work force shortage is that Baby Boomers are leaving the labor force in unprecedented numbers; the oldest (born in 1946) will be 70 years old in 2016. The youngest (born in 1964) will be 52 years old, only three years from a rapid decline in their participation in the labor force - The exit of Baby Boomers from the labor market will affect future growth in Wisconsin (WDWD, 2016).

Currently, there are no known planned areas for ag-related business development. The FPP Steering Committee identified the need for leadership and the need to build networks with high quality interns/workers to support and build the agricultural community in Douglas County. Improved communication, formal training for both beginning and seasoned farmers, protection of farms, access to interns and workers, and more information about successful models, such as the Hermit Creek Farm are all needed to grow the industry.

Douglas County saw more than a ten-percent increase in direct visitor spending in 2013 over the previous year, the largest increase of all 72 counties in Wisconsin (Duluth News Tribune, 14 May 2014). Douglas County should continue to look for economic growth opportunities by promoting its high quality of life (DC Comp Plan). Affordable land, changing values in the workforce and food markets, and access to global markets via the internet have the potential to attract small businesses associated with the agricultural industry.

Business Development

The DC Comp Plan identifies many federal, state and local programs, including the USDA Wisconsin Rural Development for retaining and attracting new business to Douglas County. The FPP Steering Committee did not identify any active plans to develop the agricultural industry in the county, however, certain trends, such as the increased demand for organic and local food markets, provide opportunities for future business planning.

Utilities

Public utilities, services and facilities are addressed in the DC Comp Plan. Enbridge Energy plans to build a crude oil pipeline from North Dakota to Superior. The proposed Sandpiper line would carry up to 600,000 barrels of oil per day from the Bakken oil fields of North Dakota to its terminal in Superior.

In addition, a joint endeavor between Minnesota Power and Dairyland Power Cooperative is proposing to build a 525-550 megawatt natural gas generation facility in Superior, WI, called the Nemadji Trail Energy Center. The purpose for this natural gas facility would be to enable the addition of more renewable energy
resources, such as wind and solar, and to deliver affordable and reliable power to consumers in the region. The project benefits the region by providing additional capacity to support additional customer load, replace older coal-generated facilities, and ensure reliability for renewable energy sources. This could impact area farmers by adding revenue streams to them for wind-generator site leases and solar site leases. This project is slated to be completed in 2025.

**Transportation**
Transportation is addressed in the DC Comp Plan. Northwestern Wisconsin leaders would like a four-lane expansion of U.S. Highway 2 from Superior to Hurley to better support logging, biofuels, new business and increased tourism. Additional passing lanes on US 2 were completed in 2015 to help meet the needs of drivers on Highway 2. The FPP Steering Committee did not identify additional transportation needs for the farming community. Future non-agricultural land use is being appropriately located near road corridors. The DC Comp Plan identifies the need to promote a transportation infrastructure that is in keeping with the rural nature of Douglas County.

**Communications**
Communications is addressed in the DC Comp Plan. It notes that cellular and wireless internet services are spotty depending on the service provider. Lack of access to modern, competitively priced business tools, such as free local calling, cellular and internet services may hinder the farming community, especially ag-related industries. Expanding local calling areas and improving access to cellular and wireless services throughout the county, while protecting visual resources, will enable small businesses, including agriculture, to better compete.

A Broadband Expansion Grant Program was created in the state 2011-2013 biennial budget. This program provides reimbursement for equipment and construction expenses incurred to extend or improve broadband telecommunications service in underserved areas of the state. The current 2017-2019 state budget allocates an additional $13 million for broadband expansion grants. The new budget provides for sustained level of funding for the broadband grant program in the future, at $2 million per year beginning in FY 2019 which include a round of Fiscal Year 2019 grants that will extend another $7.0 million to underserved areas of the state (Source: Web. [https://walker.wi.gov/fact-sheets/fact-sheet-broadband-expansion-wisconsin](https://walker.wi.gov/fact-sheets/fact-sheet-broadband-expansion-wisconsin) December 4, 2017).

**Community Facilities and Services**
The community Facilities Direct Loans and Grants Program provides funding for essential community facilities such as municipal buildings, day care centers, and nursing homes. Information about utilities and community facilities can be found in the Douglas County Comprehensive Plan 2010-2030. The following is a summary of additional programs and services that are offered by county and state agencies and organizations:

**Douglas County University of Wisconsin-Extension** offers programming, staff, publications, events and other types of resources in Douglas County in the following program areas:

- 4-H
- Agriculture
- Community Development
- Economic Development
- Family Living
- FoodWise
- Horticulture
- Local Food
- Master Gardener
Douglas County Land & Water Conservation Department (LWCD) offers resources through a variety of conservation programs available to minimize erosion, protect water quality, and enhance riparian habitat. Programs implemented through the LWCD include the Cost-Share Program, Farmland Preservation Program, Wildlife Damage & Abatement, Conservation Reserve Enhancement Program, Environmental Reserve Fund small grant program, and others. Technical assistance and financial assistance may be available to implement eligible conservation practices. The LWCD provides technical assistance to private landowners, municipalities, and Towns for:

- Sediment and erosion control
- Conservation planning & best management practice design and recommendations
- Well testing and proper well abandonment
- Stormwater management
- Shoreland mitigation, stabilization, & habitat restoration
- Wetland restoration
- Access road design & construction
- Agricultural conservation practice design to meet agriculture performance standards
- Non-metallic Mining Reclamation Plan review
- Managed rotational grazing planning, practice design, education
- Additional conservation practices eligible through the Cost-Share program

Natural Resources Conservation Service (NRCS) and Farm Service Agency (FSA) serve Douglas County from the USDA Service Center located in Ashland, WI. NRCS's natural resources conservation programs help people reduce soil erosion, enhance water supplies, improve water quality, increase wildlife habitat, and reduce damages caused by floods and other natural disasters. Public benefits include enhanced natural resources that help sustain agricultural productivity and environmental quality while supporting continued economic development, recreation, and scenic beauty.

Wisconsin Indianhead Technical College in Superior, WI offers the following agricultural related programs:

- Agricultural Power and Equipment Technician
- Business Management
- Construction Essentials
- Dairy Herd Management
- Farm Business and Production Management

University of Wisconsin Superior offers a 4-year degree in Transportation and Logistics Management where students learn the business of efficiently moving and managing people, materials, and products by air, road, rail, pipeline or water. Students actively seek internships, job experience in their field and other opportunities in the area to apply what they are learning. The degree program is one of only 28 programs in the country certified by the American Society of Transportation and Logistics. It is the first program of its kind in Wisconsin and offers courses in marine transportation making UWS one of only 6 universities in the US to do so.

Energy
Energy needs are apparently being met by natural gas, propane and oil services in Douglas County. The prices paid for farm inputs declined throughout most of 2015, which was the first relief farmers have experienced for farm inputs since 2008 (UWM, 2016). The drop in farm input costs coincide with the worldwide decline in crude oil prices. The prices of diesel fuel and gasoline were also down substantially, as
well as the price of LP (UWM, 2016). The Energy Information Agency of the U.S. Department of Energy is projecting oil prices to stay near the 2015 level of $50 per barrel through 2016 (UWM, 2016). Recent forecasts of energy prices, particularly oil prices, however, have been wildly inaccurate, in part because the price of oil is controlled by relatively few influencers and their behavior can be difficult to predict (UWM, 2016).

The Wisconsin Farmers Union (WFU) promotes renewable energy by promoting legislation that would clarify that third party providers of energy are not utility companies. It claims that it would provide both energy savings and certainty for farmers and boost solar companies located in Wisconsin with no government subsidies. WFU cites a 2014 poll by Zogby Analytics that found that 69% of Americans want more choices for their electricity and energy supply. However, Wisconsin citizens must purchase energy from the local electric utility or pay to have an alternative energy source installed on their property. They argue that this effectively gives utility companies a monopoly because most people don’t have the disposable income to install such devices on their own and furthermore, that the proposed Clean Energy Choice would increase competition in the energy marketplace and give consumers more options. It would bring jobs to the state and promote renewable energy sources, all at no cost to ratepayers or taxpayers.

Waste Management
Farm animal waste comes from livestock, poultry, and dairy production. It can be manure from farm animals or the byproducts of meat processing. It can also be the waste byproduct from inland fish farm aquaculture. Animal waste on farms must be managed to protect surface and ground water resources. This is true in all areas of the county, however, the issue is even more pronounced in areas where groundwater contamination susceptibility is medium to high.

In 1998, the Animal Waste Advisory Committee (AWAC) developed the following four general animal waste prohibitions: No overflow of manure storage structures; no unconfined manure piles in a water quality management area, 1000 feet up-gradient from sinkholes, or less than three feet to groundwater or bedrock; no direct runoff from a feedlot with stored manure to waters of the state; and no unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod cover. The prohibitions were considered the basic animal waste guidelines needed to protect water quality. See performance standards and prohibitions in Table 6 below. Douglas County adopted an Animal Manure Storage Ordinance-Section 8.15 on June 15, 2017.

Douglas County offers a recycling program which is responsible for: developing and implementing waste reduction and reuse programs for rural residents; developing strategies to reduce the amount of illegal dumping in Douglas County; improving the cost efficiency and utilization of local recycling programs; providing for the safe disposal of household and agricultural hazardous waste; and working with other agencies to develop a comprehensive solid waste management system.

The county’s recycling program is administered by Northwest Regional Planning Commission (NWRPC). There are 10 drop-off locations, or transfer stations, located around the county (See Map 4). Visit the Douglas County website for more information including location, hours of operation, and contact details. NWRPC is the contact agency for a regional agricultural plastics recycling program.

Solid waste disposal is handled separately by towns and villages outside of the City of Superior. Within the City of Superior, the Public Works Department collects and disposes solid waste and recyclables. The City of Superior operates a regional landfill.
The City of Superior Environmental Services Division of the Public Works Department manages the City assets for wastewater treatment and collections, stormwater treatment and collections, and performs design, construction and inspections of these assets as well as for roads, streets, and sidewalks. Management of these assets involves assuring that federal, state, and local laws and policies are followed for the protection of the public and environment.

The Douglas County Planning and Zoning Department regulates sanitary and privy systems in the county. There are nine sanitary districts in the county and one wastewater treatment facility operated by the Village of Poplar.

**MAP 4 - DOUGLAS COUNTY TRANSFER STATIONS**

# AGRICULTURAL PERFORMANCE STANDARDS AND PROHIBITIONS


For farmers who grow agricultural crops:

a) Farmers growing agricultural crops must meet “T” (tolerable soil loss) on all cropped fields.

b) Agricultural producers must follow a nutrient management plan designed to limit entry of nutrients into waters of the state in 2005 for high priority areas such as impaired or ORW/ERW and 2008 for all other areas.

For farmers who raise, feed or house livestock:

a) Allow no direct runoff from feedlots or stored manure into state waters.

b) Limit livestock access to waters of the state where high concentrations of animals prevent the maintenance of adequate sod cover.

c) Agricultural producers must follow a nutrient management plan when applying or contracting to apply manure to limit entry of nutrients into waters of the State in 2005 for high priority areas such as impaired or ORW/ERW and 2008 for all other areas.

For farmers who have or plan to build a manure storage structure:

a) Maintain a structure to prevent overflow, leakage and structural failure.

b) Repair or upgrade a failing or leaking structure that poses an imminent health threat, or violates groundwater standards.

c) Meet technical standards for newly constructed or substantially-altered structures.

d) Close an existing structure according to accepted standards.

For farmers with land in a water quality management area:

(Defined as 300 feet from a stream, or 1000 feet from a lake or areas susceptible to groundwater contamination)

a) Do not stack manure in unconfined piles.

b) Divert clean water away from feedlots, manure storage areas and barnyards located within this area.

**Four Animal Waste Prohibitions**

- No overflow of manure storage structures
- No unconfined manure piles in a water quality management area, 1000 feet up-gradient from sinkholes, or less than three feet to groundwater or bedrock.
- No direct runoff from a feedlot with stored manure to waters of the state.
- No unlimited access by livestock to waters of the state in a location where high concentrations of animals prevent the maintenance of adequate sod cover.
Environmental Preservation

According to the U.S. Census Bureau, the county has a total area of 1,480 square miles (947,200 acres), of which 1,304 square miles (834,650 acres) is land and 176 square miles (112,640 acres) is water.

Douglas County has a significant land base that supports natural resources and environmental preservation (See Table 7). Land classified as forest, shrub-land, wetland, or barren makes up more than 85% of the county and 38% of that land (314,000 acres) is in state or county public ownership. The high percentage of public lands and forest cover helps preserve diverse biological communities and water quality. The low percentage of agricultural (0.4%) and grassland (8.9%) may reduce threats to the environment at a county-wide scale. Improper agricultural practices or high percentages of agricultural land use at a smaller watershed scale, however, can lead to local problems in groundwater or surface waters.

Table 7 - Douglas County Cover Classification (Acres and % of Total)

<table>
<thead>
<tr>
<th>Cover Class</th>
<th>Acres</th>
<th>Percent of County</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open water</td>
<td>112,640</td>
<td>11.9%</td>
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<tr>
<td>Urban (high and low intensity)</td>
<td>8,409</td>
<td>0.9%</td>
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<tr>
<td>Agricultural (row crops, forage crops, corn)</td>
<td>3400</td>
<td>0.4%</td>
</tr>
<tr>
<td>Grassland (uncultivated, pasture)</td>
<td>84,671</td>
<td>8.9%</td>
</tr>
<tr>
<td>Forest (upland)</td>
<td>470,000</td>
<td>49.6%</td>
</tr>
<tr>
<td>Forest and Shrub (lowland)</td>
<td>170,252</td>
<td>18%</td>
</tr>
<tr>
<td>Wetland (emergent, wet meadow)</td>
<td>9,748</td>
<td>1%</td>
</tr>
<tr>
<td>Barren (sand, exposed rock, bare soil, mixed barren)</td>
<td>4,282</td>
<td>0.5%</td>
</tr>
<tr>
<td>Shrub-land (scrub oak, buckthorn, sumac)</td>
<td>43,833</td>
<td>4.6%</td>
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<tr>
<td>Unclassified/Unknown (roads, powerlines, pipelines, etc.)</td>
<td>39,965</td>
<td>4.2%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>947,200</td>
<td>100%</td>
</tr>
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</table>

Groundwater:

Agriculture has the potential to contaminate groundwater when fertilizers such as nitrogen leach into the groundwater as nitrate. Although all of the 63 private well samples collected in Douglas County from 1990-2006 met the health-based drinking water limit (<10 mg/L) for nitrate-nitrogen, 3% of those samples contained elevated nitrogen (Figure 1 Private Wells Groundwater Quality) and serve as indicators that land use has likely affected groundwater quality (USGS Web. 13 May 2016). Eighty percent of the nitrates found in Wisconsin groundwater (statewide) originates from manure spreading, agricultural fertilizers, and legume cropping systems (USGS Web. 13 May 2016).

Pesticides used on crops are also a source of contamination in groundwater. Pesticides are used by businesses and homeowners as well as by farmers, but figures for the amounts and specific types of pesticides used are not generally available on a county-by-county basis (USGS Web. 13 May 2016). A 2002 study estimated that 25% of private drinking water wells in the region of Wisconsin, including Douglas County, contained a detectable level of an herbicide or herbicide metabolite. Atrazine, an herbicide used on corn, is one of the pesticides most often found in private drinking water wells in Wisconsin. A June 2013 map (Figure 2 Wisconsin Private Wells Tested for Atrazine) produced by DATCP shows the locations and concentration levels of private drinking water wells tested
for atrazine in the state (WI Groundwater Coordinating Council, 2015). Of the twenty-one wells tested in, or near the border of Douglas County, one well detected atrazine.

The number of wells impacted by fertilizers and pesticides associated with agricultural use appear to be low in Douglas County, at least as compared to other areas of the state. This may be in part due to the low density of farms operating in areas of highly susceptible groundwater contamination or the low density of farms in general. However, existing well data is very limited and much of it is based on private well samples voluntarily submitted by the citizens. To increase the likelihood that groundwater remains safe for drinking, agricultural BMPs should be broadly supported by the farming community and CAFOs should not be authorized in areas of the county where groundwater susceptibility is medium to high. A systematic well testing program is being developed for early detection of groundwater contamination (See Douglas County Groundwater Program 2017-2018 below). The maps below show the Depth to Water Table (Figure 3) and the permeability of Soil Characteristics (Figure 4) which are both important in land use planning.

The composite Groundwater Contamination Susceptibility (GCS) Map in (Figure 5) is made up of five GIS layers; depth to bedrock, type of bedrock, soil characteristics, depth to water table and characteristics of surficial deposits. It can be used by local officials to help make sound groundwater management and land use decisions. The GCS Map does not show areas that will be contaminated, or areas that cannot be contaminated and it should not be used alone to site development or agriculture. It highlights areas sensitive to contamination in a general way by showing differences in the ability of water to move from the land surface to the water table. Whether an area will have groundwater contamination depends on the likelihood of contaminant release, the type of contaminants released and the sensitivity of the area to the contamination. In turn, the likelihood of contaminant release depends on the type and intensity of the land use and contaminant sources in an area.

**Douglas County Groundwater Program 2017-2018**

The Douglas County Land and Water Resource Management Plan was developed to meet requirements in Chapter 92 of the Wisconsin Statutes. The intent of the plan is to foster local water quality planning and increase public participation in natural resource management. The plans are intended to provide counties, through their Land Conservation Committees, the tools, flexibility, and funding to be able to address both statewide goals as well as priorities identified at the local level. The goals, objectives, and actions contained in the Douglas County plan were established in 2009 by a workgroup of volunteer citizens from throughout the county and will guide the work of the Land Conservation Committee and their staff through 2020. The Land and Water Resource Management Plan contains four goals; one of these goals addresses groundwater. Here is the groundwater goal from the plan:

**Goal 2. Protect and understand groundwater quality to supply clean water for drinking and recharging surface waters and wetlands.**

**Objectives**

- A. A baseline inventory of drinking water quality is available in Douglas County.
- B. Potential impacts to groundwater are minimized (road salt, herbicides, etc.).
- C. Private wells are properly sealed and closed when not in use.
- D. Manure storage systems follow standards to protect groundwater.

**Activities**

1. Develop and implement a home well sampling program – at a minimum test for nitrates and bacteria. Record the results in a data base and map in a Geographic Information System (GIS).
2. Provide cost sharing and technical assistance for well closures.
3. Provide technical assistance in the planning, design, and construction or closure of manure storage facilities.

Recommendation from the Large Livestock Facilities Study Group

The Douglas County Large Livestock Facilities Study Group was formed in 2016 to address the issues of regulating large livestock facilities, i.e. Concentrated Animal Feeding Operations (CAFOs) in Douglas County. The study group recommended that Douglas County should gain a better understanding of the baseline quality of our surface and groundwater resources in order to make informed decisions about locating CAFOs in Douglas County. The study group recommended that priority be given for well testing through the groundwater program in areas where CAFOs would potentially be located in the future.

Wisconsin Coastal Management Grant Proposal

Douglas County has received a grant from the Wisconsin Coastal Management Program for the following tasks:

Task 1: Groundwater Susceptibility GIS Analysis. This task will compile existing datasets and produce draft maps to guide design of a groundwater well sampling program. Geology and soils, depth to groundwater, land use, aquifer extent and use, surface water quality and impairment status information will be combined with data present in the on-line 2007 USGS/UW-Extension Groundwater Contamination Susceptibility Map tool. The compiled data will be used to identify focus areas within the county that have both a moderate to high susceptibility for contamination, the potential for large livestock facilities use, and a scarcity of existing data on groundwater quality and use.

Timeline: October - December 2017

Major milestones: Draft maps will be completed and used to educate well owners and the public about the well sampling program and groundwater use and susceptibility in general.

Task 2: Groundwater Well Sampling Program. This task is aimed at providing an understanding of baseline groundwater quality conditions in areas of the county that are susceptible to groundwater contamination. A voluntary well sampling program will be designed, targeting up to 500 well owners, who will be contacted within the focus areas identified in Task 1. Participation will be limited to approximately 100 participants, and well owners will be charged a nominal fee ($20) for participation, a subsidized cost for well testing. Sampling kits will be distributed, collected, and delivered to the lab at UW-Stevens Point. Laboratory analysis results will be summarized and distributed to participants.

Timeline: January - March 2018

Major milestones: An education/solicitation event will be held to encourage participation, a press article will be published, and flyers will be mailed. Samples will be collected by well-owners and delivered to centralized locations for delivery to UW-Steven’s Point. Sample analysis will take place, and data received and verified by the county. Data will be added to the existing dataset, and baseline water quality maps will be prepared.
Task 3: Technical Assistance for Properly Closing Wells. This task will encourage proper well abandonment by educating targeted well owners about the importance of limiting the potential of well contamination on their property. Well owners will be offered technical assistance and cost sharing to properly seal wells that are no longer in use. Participation will be limited by requests and available cost share funding; however 5 wells will be sought to properly abandon.

Timeline: January - June 2018

Major milestones: Information and other educational materials about cost sharing and well abandonment will be included with the other outreach aspects of the county groundwater program. Five wells will be sought to properly abandon through cost share program.

Work products:

- Water quality data for areas of Douglas County that are susceptible to groundwater pollution. These will be made available to the UW-Extension for use in their water quality viewer.
- County-scale susceptibility and water quality maps for use in education and results distribution.
- Five wells properly abandoned through cost sharing and well abandonment program.

Assistance from Towns and Villages:

These are some aspects of the program where the Land Conservation Department is especially seeking assistance from Towns and Villages:

- Assist with encouraging citizen participation in events and in well tests
- Provide locations for educational events
- Provide locations for pick-up/drop-off of well tests
- Assist with encouraging citizen participation in well abandonments

Partners

- Douglas County Health Department
- Wisconsin Land+Water Conservation Association
- UW-Steven’s Point lab testing facility
- UW-Extension Groundwater Education Specialist
- Barr Engineering
Figure 1 - Private Wells Groundwater Quality

NOTE: The mapped groundwater quality may not be representative of the actual groundwater quality for the area displayed. The map is based on private well samples voluntarily submitted by the citizens of Wisconsin and are not a statistically random distribution for the area. Do not extrapolate mapped results to specific areas or addresses. The Center for Watershed Science and Education is not responsible for the use or application of the map.

Groundwater Center - Center for Watershed Science and Education - UWSP
**Figure 2 - Wisconsin Private Wells Tested for Atrazine**

![Map of Wisconsin showing private wells tested for atrazine]

*This map was created June 4, 2013 and depicts the most recent atrazine results for private wells in Wisconsin.*

Figure 3 - Douglas County Depth to Water Table

This resource characteristic map was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.


Figure created for the “Protecting Wisconsin’s Groundwater Through Comprehensive Planning” website, 2003, http://wi.notes.usgs.gov/gwcomp/
This resource characteristic map was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.


This groundwater-contamination susceptibility map is a composite of five resource characteristic maps, each of which was derived from generalized statewide information at small scales, and cannot be used for any site-specific purposes.


Figure created for the “Protecting Wisconsin’s Groundwater Through Comprehensive Planning” web site, 2007. http://wi.water.usgs.gov/gwcomp/
Natural Springs

Springs are a critical natural resource, supplying water for streams and wetlands. In addition to lending scenic beauty to state and county parks, the habitats created by springs often harbor endangered and threatened species, such as the Forcipate Emerald (*Somatochlora forcipata*), which are dependent on the flow of spring water for survival. Springs also provide the cool, oxygen-rich water necessary for trout survival. For researchers, springs also provide windows to the groundwater: they are important points of groundwater discharge, sources for chemical analysis, and places to directly measure groundwater elevation (UWEX, Web. 15 June 2016).

Human activities often threaten springs. Springs are often lost during the construction of new roads, quarries, and housing developments. In addition, lowering of groundwater levels through high-capacity well pumping has dried up many springs in Wisconsin. “A high capacity well is a well that has the capacity to withdraw more than 100,000 gallons per day, or a well that, together with all other wells on the same property, has a capacity of more than 100,000 gallons per day. Residential wells and fire protection wells are excluded from the definition of a high capacity well, and their pumping capacities are not included in the calculation of a property's well capacity. In accordance with Sections NR 812.09(4)(a) & (b), Wis. Adm. Code, prior department approval is necessary for the construction or operation of a high capacity well system, school well or wastewater treatment plant well.” (Wisconsin DNR. Web. [http://dnr.wi.gov/topic/Wells/HighCap/](http://dnr.wi.gov/topic/Wells/HighCap/) 19 November 2017). The WDNR reviews high capacity well applications using criteria defined in the code. If a proposed high capacity well falls within a groundwater protection area, an environmental impact statement may be required, however, not in all cases. A Groundwater Protection Area is defined by the State as being within 1,200 feet of a trout stream or an outstanding or exceptional resource water body (Source: Web. [http://dnr.wi.gov/topic/wells/documents/HighCapacity/ReviewProcess.pdf](http://dnr.wi.gov/topic/wells/documents/HighCapacity/ReviewProcess.pdf) 4 June 2017). High capacity wells may be replaced or repaired without permit (S. Rannenberg, personal communication, 10 October 2017).

The WDNR currently lists 31 active high capacity wells in Douglas County (See Table 8). According to the Water Withdrawal and High Capacity Well Viewer (Web [http://dnrmaps.wi.gov/H5/?viewer=Water_Use_Viewer](http://dnrmaps.wi.gov/H5/?viewer=Water_Use_Viewer) 4 June 2017), there are no well applications pending review; no recently approved wells; and no wells approved and not yet drilled listed in Douglas County, WI.
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Surface Water
The quality of surface waters in Douglas County is considered to be high, again, at least as compared to the southern part of the state. Ten of the county’s 431 inland lakes (2.3%) and ten of the county’s 101 streams (10%) are listed on the State’s 303d Impaired Waters List as not meeting water quality standards. Lake Superior and the St. Louis River are also included on the 303d list. The sources of the impairments identified for Douglas County on the 303d list (Web http://dnr.wi.gov/water/impairedsearch.aspx 13 May 2016) appear to be largely industrial or commercial in nature, and appear to have no waterbodies listed for impairments from farming practices.

In its 2014 water quality report to congress, the WDNR reported mixed results for water quality trends at their long-term trend (LTT) river monitoring stations across the state. There is one LTT station located in a non-wadeable section near the mouth of the Brule River but no LTT stations located on smaller (wadeable) streams in Douglas County. The LTTs across the state show that phosphorus, ammonia, and suspended solids (sediment) concentrations have decreased at a majority of the sites; probably due to a combination of decreases in wastewater effluent concentrations, improved farming practices, construction-site erosion control, and urban stormwater management. Nitrate concentrations have increased, however, at a majority of the stations which is likely due to increased nitrogen fertilizer use on crop fields, and may reflect increased corn production due to high corn prices.

The Wisconsin DNR monitors many streams and lakes on a short term basis which was summarized most recently in the Wisconsin’s 2014 Water Quality Report to Congress (WDNR, 2014). Data collected by the state typically includes parameters that have a state water quality standard such as, water temperature, dissolved oxygen, total phosphorus, total suspended sediment, assessments for fish and aquatic life and recreation, fish biotic indices and macroinvertebrate biotic index. Taken separately these data are not easy to understand nor are they summarized for each stream; so it can be difficult for local government to track changes over time and in particular to predict or detect downward trends that could trigger protective measures before a stream was included on the 303d list.

Land use has a direct impact on water quality and local governments have authority over those uses. County conservation departments have worked for years to install vegetation next to streams to provide filtration for agricultural runoff. Wetland programs work to protect and restore wetlands not only for habitat, but also for flood retention so that excess precipitation does not run off the land too quickly to streams and lakes.

In order to maintain and improve the quality of surface waters in Douglas County a watershed-approach to land and water conservation was adopted by the county in May of 2016. A watershed-approach uses the best available land cover/land use information to determine the best land use management practices that will reduce surface water runoff to streams and lakes. Research has shown that when the amount of open land in a sub-watershed exceeds 40%, the amount and speed of surface water moving over the landscape into local waterways increases. This surface water can carry pollutants, degrade aquatic habitat and contribute to flooding.

Several land cover management strategies have been identified that will work towards reducing the impacts of high amounts of open land in a sub-watershed. They include the preservation and restoration of wetlands, a balance between open and forested land cover and restoration of streambank vegetation. By utilizing these management practices the goals of both farmland preservation and aquatic resource protection can be achieved.
**Phosphorus Challenges**

Phosphorus is a naturally occurring nutrient needed for plant growth, but in excess can cause algae blooms in Wisconsin lakes and streams. Small increases in phosphorus entering waterways can fuel substantial increases in aquatic plant and algae growth, which in turn can reduce habitat quality, recreational use, property values, and public health.

Phosphorus comes from many point and nonpoint pollution sources. Point sources come from wastewater treatment plants or industries with pipes discharging directly into waterways. Nonpoint pollution occurs when heavy rains and melting snow wash over farm fields and feedlots and carry fertilizer, manure and soil into lakes and streams, or carry phosphorus-containing contaminants from urban streets and parking lots. Phosphorus from farmland runoff is less of a problem in Douglas County, due to fewer cropland acres under annual tillage. However, more farms (in all categories of farming) should be developing plans for nutrient management.


Currently, the Lower Eau Claire Lake is the only waterbody on the 303d list that is not meeting the water quality standard for phosphorus. Lake Annicon was delisted for phosphorus in 2014. Every two years, Section 305(d) of the Clean Water Act requires states to publish a list of all waters that are not meeting water quality standards. In the 2016 list update, the WDNR proposes to add 3 new waters in Douglas County as impaired for phosphorus, Bear Creek, Bluff Creek and the Pokegama River (Web [http://dnr.wi.gov/water/impairedSearch.aspx](http://dnr.wi.gov/water/impairedSearch.aspx) 19 November 2017).

**Fish and Wildlife Plans**

**Wisconsin Land Legacy Report – Highway 2 Grasslands/Lake Superior Grasslands**

The Highway 2 Grasslands along US Highway 2 from Ashland to Superior is a series of grasslands that provide important habitat for many northern and grassland birds, mammals, waterfowl, and amphibians uncommon to the region. These grassland communities are not native to the red clay plain but are the result of the conversion of forests to farmland after the northern forest was originally logged. Much of this area was once farmed for hay, pasture, and some small grains; however, now only a fraction is still actively used for agriculture. Fallow farmland is reverting to brush and forest, either naturally or by planting. Where wetlands have reverted to native vegetation or have been restored, they are well utilized by waterfowl from Lake Superior for resting and nesting. The adjoining fields provide excellent feeding areas. These lands with a long history of agricultural use in Douglas County should be preserved as open-space habitat and therefore the Douglas County portion is included in the 2017 Douglas County Farmland Preservation Area Map. The Highway 2 Grasslands were renamed “Lake Superior Grasslands” in the 2015-2025 Wisconsin Wildlife Action Plan (See below).
**2015–2025 Wisconsin Wildlife Action Plan**
The Wisconsin Wildlife Action Plan (WWAP) is the comprehensive resource for the conservation of rare and declining species and their habitats in our state. The WWAP was first published by the department in 2005 and updated in 2015 to satisfy funding eligibility through the State Wildlife Grant Program—the only nationwide program to prevent wildlife from becoming endangered. Over time the WWAP has become a platform to help many partners, organizations and individuals take action (Wisconsin DNR. Web. 19 November 2017).

The Lake Superior Grasslands are identified as one of the Conservation Opportunity Areas (COA) in the WWAP. The COA areas contain significant ecological features, natural communities or Species of Greatest Conservation Need (SGCN) habitat for which Wisconsin has a responsibility for protecting and conserving when viewed from a global, continental, upper Midwest regional or state perspective. They are some of the best places in our state to implement the conservation actions described in the WWAP.” (Wisconsin DNR. Web. 19 November 2017).

**Fish, Wildlife and Habitat Management**
The farming community has unique opportunities to use the land for production while supporting and restoring ecosystem services. In addition to managing water, soil, phosphorus, and waste, farmers can install bird houses, have grassy fence lines and areas of wetland and meadow that make up a network of habitat important to grassland species, for example. Embracing and promoting sustainable agriculture where farms and wildlife in northern Wisconsin co-exist could add to the quality of education and life in addition to providing habitat and clean water for fish and wildlife.

**Fish, Wildlife and Habitat Management Plan, Wisconsin Department of Natural Resources, October 1, 2015 – September 30, 2025**
The Wisconsin Department of Natural Resources Fish, Wildlife and Habitat Management Plan (FWHMP) outlines state goals, objectives and strategies for addressing conservation, management and associated recreation for sport fish, wild birds and wild mammals. It also describes some of the major trends, challenges and opportunities.

The FWHMP reports that since 1800 many species declined due to landscape changes and fragmentation caused by farming and timber harvesting. There were further declines in predators after the introduction of pesticides in the 1940s. Many species were also used for food or were considered a threat to livestock or people and were deliberately eliminated. Some species increased, such as the eastern cottontail rabbit and raccoon. Others increased for a while but then declined, such as the northern bobwhite and the greater prairie-chicken. One species, the passenger pigeon became extinct. Others were extirpated from the state, including the American bison, elk, gray wolf, cougar, American marten, fisher, and wild turkey. White-tailed deer and the black bear declined but remained.

In the last 80 years, fisher, elk, American marten, trumpeter swan, and whooping crane have been reintroduced into the state and gray wolf and moose recolonized the state on their own. Bald eagle and Osprey rebounded once harmful pesticides such as DDT and its derivatives were banned in the 1970s. White tailed deer, coyote, raccoon, and Canada goose have increased, taking advantage of the human-shaped landscape.

Habitat conversion is the primary concern facing bird species in Wisconsin. Grassland birds that had fallen 40% since 1968 have now stabilized at low levels, and some species show increases as a result of significant investments in Farm Bill Conservation programs. Some species sensitive to landscape-scale features, however, continue to
decline due to changing agricultural practices and land use. Open landscapes with abundant grasslands support these types of birds.

Many wetland birds have increased in population since the 1990s reflecting the success of conservation efforts associated with the Clean Water Act, North American Waterfowl Management Plan, and North American Wetlands Conservation Act (NAWCA).

Many of Wisconsin’s game mammals are adaptable and do well in a variety of habitats, including human-dominated areas, and thus can cause damage or nuisance situations. The Department continues to contract with the USDA Wildlife Services for response to deer, bear, and wolf damage. Deer populations are currently in a re-building phase in the more heavily forested areas but continue to be robust in the farmland. The gray wolf was delisted then relisted to the federal endangered species list several times. Wisconsin implemented a wolf harvest season during 2012-2014 when the state had management authority and 528 wolves were legally harvested. Intensive monitoring of the wolf population is ongoing, and a Wolf Management Plan is in progress, pending the return of management authority to the state.

The FWHMP does not indicate what the population goals are for fish and wildlife species or how many acres of specific habitat types are required to support sustainable populations. It does identify strategies that promote involvement, such as increasing citizen advisory groups to help resolve high profile fish and wildlife issues. There may be opportunities for farmers to participate directly in state management issues such as habitat restoration and population monitoring.

The State should work closely with farmers in Douglas County to set goals that are compatible and sustainable for wildlife populations and preserving farmlands in northern Wisconsin. Best management practices for avoiding wildlife/farm conflicts should be developed and promoted for farmers and wildlife managers in northern Wisconsin.

Farmland Regulatory, Voluntary and Funding Programs

Federal Agricultural Wetland Regulations


The two most important Federal regulatory wetlands programs that directly affect farmers are the Section 404 permitting program and Swampbuster. Swampbuster discourages the conversion of wetlands for agricultural production by denying USDA farm program benefits to individuals who choose to convert wetlands. Swampbuster generally allows farmers to continue using the normal farming practices they have always used—so long as additional wetlands are not converted or wetland drainage increased. Section 404 of the Clean Water Act requires individuals to obtain a permit from the U.S. Army Corps of Engineers before discharging dredged or fill material into waters of the United States, including most wetlands.

Most routine, ongoing farming activities do not require individual Section 404 permits. Many normal farming, silvicultural, and ranching activities that involve discharges of dredged or fill materials into waters of the United
States are exempted from Section 404. The Natural Resources Conservation Service (NRCS) is the lead agency for identifying wetlands on agricultural lands. Farmers can obtain a single wetlands determination by NRCS to satisfy the requirements of both Section 404 of the Clean Water Act and the Swampbuster provision of the Food Security Act.

**State Agricultural Performance Standards**

**NR243**

The NR243 animal waste and feedlot program is designed to provide financial and technical assistance to those operations that are impacting water quality. This is a complaint-based program and participants are cited and ordered to repair an operation to meet water quality standards. Investigations and citations are issued by DNR, cost-sharing is administered by DATCP, and LCC and LWCD are responsible for implementation of this program (DC LWM Plan, 2009).

**NR151 Performance Standards and Prohibitions**

In 1998, the Animal Waste Advisory Committee (AWAC) developed four general animal waste prohibitions. The prohibitions were considered the basic animal waste guidelines needed to protect water quality. The Wisconsin Department of Natural Resources (WDNR) developed NR 151 beginning with the basic prohibitions developed by AWAC. This rule is part of eight WDNR rules that address runoff pollution, the major cause of polluted waters in Wisconsin and the United States. NR151 includes Subchapter II that addresses agricultural performance standards for nutrient management; nonpoint source pollution and cropland soil erosion control. The agricultural performance standards have been adopted by Douglas County and are included in the Douglas County LWM Plan, 2009.

**Douglas County Agricultural Related Regulation**

**Cropland Soil Erosion Control Plan (Waiver Granted)**

Douglas County received a waiver from the requirement that they develop a cropland soil erosion control plan. In requesting the waiver, the county stated that due to minimal row cropping, soil erosion on cropland was not a major threat to the waters of Douglas County. The waiver was granted by the Wisconsin Land and Water Conservation Board and the Department of Agriculture, Trade & Consumer Protection on January 29, 1998 and is found in Appendix D of the Douglas County LWMP, 2009.

**Douglas County Implementation of Agricultural Standards**

Volume II of the Douglas County LWMP, 2009 addresses implementation of the NR151 standards in detail and presents goals, objectives and activities for plan implementation, and includes a detailed plan of work. The work plan lists partners, hours and funding needed, and annual benchmarks. Priority activities are identified in both the list of activities and in the work plan.
Douglas County Livestock Facilities Licensing Ordinance 8.10

The purpose of this ordinance is to comply with requirements of Section 93.90 of Wis. Statutes and ch. ATCP 51, Wis. Adm. Code (ATCP 51), and to establish standards and authority to protect the public health and safety of the people of the County of Douglas. This ordinance sets forth the procedures for obtaining a license for the siting of new and expanded livestock facilities in the County of Douglas.

Douglas County Large-Scale Concentrated Animal Feeding Operations Ordinance – Section 8.14

This ordinance is to effectively, efficiently, and comprehensively regulate the operations of Large-Scale Concentrated Animal Feeding Operations of 1,000 animal units or greater (“CAFOs”), without respect to siting, to protect public health (including human and animal health), safety, and general welfare, to prevent pollution and the creation of private nuisances and public nuisances, and to preserve the quality of life, environment, and existing small-scale livestock and other agricultural operations of Douglas County. It became effective on May 18, 2017.

Douglas County Animal Manure Storage Ordinance – Section 8.15

This ordinance regulates the location, design, construction, installation, operation, alteration and use of animal manure storage facilities, as well as abandonment and the application of manure from these facilities in order to prevent water pollution and thereby protect the health of Douglas County residents and transients; prevent the spread of disease; and promote the prosperity and general welfare of the citizens of Douglas County. It is also intended to provide for the administration and enforcement of this Ordinance and to provide penalties for its violation. It became effective on June 15, 2017.

Federal Voluntary Conservation Programs

USDA works with other government agencies and private groups to help restore and use wetlands in ways that balance environmental responsibility and profitability. Several Federal programs that benefit wetlands are available. Voluntary, incentive-based programs offer technical and/or financial assistance to help landowners make the most of valuable wetland resources. Volunteer programs include:

Environmental Quality Incentives Program (EQIP)

EQIP is a voluntary program that provides financial and technical assistance to agricultural producers to plan and implement conservation practices that improve soil, water, plant, animal, air and related natural resources on agricultural land and non-industrial private forestland. EQIP may also help producers meet federal, state, tribal, and local environmental regulations. (Source: https://www.nrcs.usda.gov/wps/portal/nrcs/main/national/programs/financial/equip/)

Wetlands Reserve Program, USDA, Natural Resources Conservation Service

Offers landowners easement payments and restoration cost share to restore and protect converted, farmed, or otherwise degraded wetlands.
Conservation Reserve Program, USDA, Farm Service Agency

Offers long-term rental payments and cost-share assistance to establish permanent vegetative cover on cropland that is highly erodible or contributing to a serious water quality problem. Environmentally sensitive acres are targeted for assistance.

Conservation Stewardship Program/Forest Stewardship Program, USDA, Forest Service

Helps landowners protect and enhance their forest lands and associated wetlands. Provides landowners with cost-share and technical assistance for riparian and wetland protection and improvement.

Partners for Wildlife, USDI, Fish and Wildlife Service

A stewardship program for the restoration and protection of wetlands and other wildlife habitat on privately owned lands.

North American Waterfowl Management Plan, USDI, Fish and Wildlife Service

An international strategy for reversing the decline of migratory waterfowl populations through wetlands protection, restoration, and enhancement. Habitat can be purchased, leased, or protected with conservation easements. Landowners are offered economic incentives for farming practices that benefit waterfowl.

North American Wetlands Conservation Act, USDI, Fish and Wildlife Service

An international wetlands conservation program to encourage partnerships among public agencies and other interests to protect, enhance, restore, and manage an appropriate distribution and diversity of wetland ecosystems and other habitats for migratory birds and other wildlife and fish in North America; to maintain current or improved distributions of migratory bird populations; and to sustain an abundance of waterfowl and other migratory birds consistent with the goals of the North American Waterfowl Management Plan. Grant funds are available on a one-to-one matching basis with non-Federal U.S. sources.

Federal Funding Programs for Conservation and Renewable Energy

Grants, loan guarantees, and financial assistance awarded by U.S. Department of Agriculture through the Farm Bill is one of the primary methods for farms to partially fund the installation of energy conservation and efficiency projects and practices. NRCS addresses energy-related issues under the Strategic Initiatives for “Climate Change Adaptation and Mitigation” and “Energy Conservation and Sustainable Production.” These new initiatives support the Secretary of Agriculture’s corporate goals for national leadership in climate change mitigation and adaptation, which include emphasis on conservation and greater efficiency in energy, use as well as greater emphasis on biofuels and renewable energy. More information can be found at https://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/stelprdb1048433.pdf.
Farm Service Agency (FSA)

Conservation Loan (CL) program

Provides farm owners and farm-related business operators access to credit to implement conservation techniques that will conserve natural resources. CL funds can be used to implement conservation practices approved by the Natural Resources Conservation Service (NRCS) including implementation of manure management and manure digester systems and the adaptation of other emerging or existing conservation practices, techniques or technologies. For more information see www.fsa.usda.gov.

Rural Development

Rural Energy for America Program Renewable Energy Systems and Energy Efficiency Improvement Loans and Grants

Provides guaranteed loan financing and grant funding to agricultural producers and rural small businesses for renewable energy systems or to make energy efficiency improvements. (Source: https://www.rd.usda.gov/programs-services/rural-energy-america-program-renewable-energy-systems-energy-efficiency).

Business and Industry Guaranteed Loans

This program bolsters the availability of private credit by guaranteeing loans for rural businesses. (Source: https://www.rd.usda.gov/programs-services/business-industry-loan-guarantees).

Value Added Producer Grant

The Value Added Producer Grant program helps agricultural producers enter into value-added activities related to the processing and/or marketing of new products. The goals of this program are to generate new products, create and expand marketing opportunities, and increase producer income. Applicants may receive priority if they are a beginning farmer or rancher, a socially-disadvantaged farmer or rancher, a small or medium-sized farm or ranch structured as a family farm, a farmer or rancher cooperative, or are proposing a mid-tier value chain. Grants are awarded through a national competition. Each fiscal year, applications are requested through a notice published in the Federal Register and through an announcement posted on Grants.gov. (Source: https://www.rd.usda.gov/programs-services/value-added-producer-grants).
Agricultural Characteristics and Trends

There have been steep declines in agriculture in Wisconsin. In 1848, when Wisconsin was founded, 2 out of 3 of the approximately 130,000 residents (or 67%) lived on a farm (UWEX-CLUE, 2010). Today, 2.6% of Wisconsin’s population (or about 140,000 residents) live on a farm (UWEX-CLUE, 2010).

A 2014 Associated Press article reports that Wisconsin had the most significant farm losses in the nation between 2007 and 2012. During that time frame, the state lost 8,700 farms and more than 620,000 acres of farmland. The 11% decrease in the number of farms surpassed the national average of 4.3%. Experts speculate the losses are due to loss of pasture or marginal lands or that farmers are just getting out of the business (Milwaukee Journal Sentinel, 2016). In spite of the decreased number of farms, Wisconsin remained among the top ten states in number of farms and agricultural sales. Wisconsin farms produce $9 billion in sales (UWEX-CLUE, 2010). While larger farms dominate Wisconsin’s agricultural landscape, small diverse farms appear to be a growing phenomenon. Since 1992, the number of small farms doubled, however, during the same time period, mid-sized farms declined by about a third (UWEX-CLUE, 2010).

Douglas County was settled in 1855 and agriculture was subsistence in nature as well as a main source of income for residents. In the early 1900’s Douglas County farmers produced milk, meat and produce to the City of Superior. In 1934, there were 2,681 farms. According to the DC Comp Plan, Douglas County farms have declined 80% since 1920. The biggest decline occurred between 1960 and 1970 and largely stabilized after that. Between 1970 and 2000, 27 more farms were lost. Seven towns lost farms between 1990 and 1997 (Gordon, Hawthorne, Highland, Lakeside, Maple, Parkland, Summit) and eight towns had farm increases during that same period (Amnicon, Bennett, Brule, Cloverland, Dairyland, Oakland, Solon Springs, Superior). There have been no changes in Wascott, where there are still no farms.

Thirty-two dairy farms were lost between 1989 and 2002, with the biggest losses in Cloverland, Lakeside, Parkland and Superior. The volatility of milk prices may be a factor. Dairy farmers were hard hit in 2009 by a combination of high feed and low milk prices (Milwaukee Journal Sentinel, 2016).

Over the years, the number of farmers and farmland has gone down, following a statewide trend. According to the 2007-2008 Wisconsin Blue Book, Douglas County had 391 farms in 2002 with an average farm size of 217 acres. The 2015-2016 Wisconsin Blue Book reports a decline in 2012 with 364 farms with an average farm size of 194 acres.

Agriculture remains an important part of the Wisconsin economy, with agriculture being defined as on-farm operations and food processing. In 2012, agriculture contributed a total (i.e., direct, indirect and induced combined) of 413,500 jobs (11.9% of state total employment) to the Wisconsin economy. This is a 16.8% increase from 354,000 in 2007. Agriculture represents $30.1 billion in total income (10.9% of state total) and $88.3 billion to total industrial sales/revenue (16% of total total). Deller, Steven, D., Contribution of Agriculture to the Wisconsin Economy, UW Extension Updated for 2012, Released September 2014.

Even in the most urban parts of the state agriculture’s contribution is notable. When directly compared, it is clear that food processing, contributes more to the state’s economy than on-farm activity. This is mostly because of the strength and size of the processing related to dairy and meat.
The market value of products sold in Douglas County totaled nearly $8 million in 2012; a 24% increase from $6,101,000 in 2007 (USDA Census, 2012) and a 41% increase from $4,696,000 reported in 2002 (DC Comp Plan). Total farm production expenses reported in 2002 was $5,519,000 or an average of $14,114 per farm. Farmers saw net losses in 2002 and the average net cash income per farm in 2012 was $633 (UWEX-CLUE, 2010). Total farm production expenses reported in 2012 was $7,923,000 or an average of $21,768 per farm.

By 2014, Douglas County Agriculture had generated $72.4 million in economic impact including sale of farm and value added products. Purchasing of agriculture inputs and services added 14.6 million of economic activity to the local economy. This includes fuel, seed, fertilizers, machinery, veterinary services and agriculture consulting. Top commodities were cattle and calves ($2.4 million), Grain ($1.0 million), Milk ($0.99 million) and fruit, tree nuts, and berries ($0.10 million).

Processing of agriculture products is a major part of the agriculture industry in Douglas County. This processing accounts for $26.1 million of income and accounts for 303 jobs. (Douglas County Agriculture Value and Economic Impact, 2014, University of Wisconsin, Extension)

Farming in Douglas County has an intangible value associated with the connection to a way of life that has become unique, if not rare. It also enables residents of the area to access local food, provides opportunities for non-farmers to engage with the farming community and it provides the opportunities and independence associated with small business. These values will become even more important if extreme weather patterns, aging farmer demographics, high farmland conversions and severe water pollution in areas of concentrated farming lead to threatened food security.

Key Agricultural Specialties
The Douglas County Comprehensive Plan 2010-2030 lists the market value of agricultural products sold by commodity group from 2002. With the exception of spring wheat for grain and Canola, Douglas County ranks low in sales of most commodity groups when compared to other parts of the state. Census data from 2012 shows that all top crop and livestock items are down from 2002, with the exception of layers which is up by 370.

Current Trends
There are no known non-traditional farm “trends” in Douglas County associated with cranberries and aquaculture. However the FPP Steering Committee recommended support for cranberry bogs with the proper permits. There is anecdotal evidence that small businesses with short-term seasons, such as maple syrup or Christmas tree production are becoming more popular. A goal identified in this plan is to maintain and promote a diverse agricultural community. Many of these non-traditional enterprises can be successful on smaller parcels of land or on land that is forested, which may attract cottage industries and change attitudes by helping potential newcomers to the industry or local officials see farming as a small business that should be fully supported.

Current Needs
The FPP Steering Committee identified the following as needs to adequately support existing and future agriculture activities in the county. The lack of these support industries have a direct impact on profitability of Douglas County farmers. Efforts to attract these support industries should be made to help attract, maintain and grow existing farms.
• Full-time county agriculture agent
• USDA meat inspector
• Meat processors
• Cheese processors
• Veterinarians that can handle unique farm animals
• Research farm
• Transportation specialist to address logistics and capitalize on shipping ports.
• Support (trucking/marketing) for diversified markets, such as apples, onions, organic, berries, nuts, bison, and elk (see examples from Bayfield County).

Crops
In 2012, Douglas County crop market value for products sold accounted for 52% of total agricultural products sold (Table 9), up from 33% as reported in the DC Comp Plan, 2009. Livestock market value, however, dropped from 66% in 2002 (DC Comp Plan, 2009) to 48% in 2012 (Table 9). With the exception of hay and forage, the top crop items have changed from corn, berries and nursery stock in 2002 (DC Comp Plan, 2009) to soybeans, wheat and canola in 2012 (Table 9).

Forage-land used for all hay and haylage, grass silage, and greenchop appears to be the top crop (in acres) in 2002 and in 2012, although acres in other crops were not reported (}
Table 10). Douglas County harvested 4,200 acres and produced 9,100 tons of hay alfalfa (dry) in 2011 which increased to 13,000 tons in 2012 with 5,440 acres harvested (USDA Agricultural Statistics, 2013). Douglas County harvested 16,700 acres and produced 20,500 tons of all other hay (dry) in 2012. This was a decline from 2011 where 18,400 acres were harvested and 23,600 tons were produced (USDA Agricultural Statistics, 2013). Douglas County did not publish production information on corn for grain or silage, soybeans, oats, or winter wheat (USDA Agricultural Statistics, 2013). The state rank for value of products sold increased slightly from 67 in 2002 to 68 in 2012.

Livestock and Dairy
In 2012, milk production increased 4% in Wisconsin from the previous year and the state maintained its status as the nation’s largest cheese producer (USDA Agricultural Statistics, 2013). Eggs (+7%), broilers (+21 % in production value), trout (+23%), mink pelts (+19%; more than any other state) and honey production (+21%) were also increased in 2012 in Wisconsin (USDA Agricultural Statistics, 2013).

The 2012 unofficial estimate of milk production in Douglas County was up only slightly from 2011 (USDA Agricultural Statistics, 2013). The number of all cattle and calves also had a slight increase of 100 from 2012 to 2013 (USDA Agricultural Statistics, 2013). There may be more opportunities in Douglas County for grazing and beef operations, which take less time than other types of operations and allow for the possibility of having a second job off the farm.
# Table 9 - 2012 Market Value of Douglas County Agricultural Crops and Commodities

<table>
<thead>
<tr>
<th>Item</th>
<th>Quantity</th>
<th>State Rank*</th>
<th>U.S. Rank*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>MARKET VALUE OF AGRICULTURAL PRODUCTS SOLD ($1,000)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total value of agricultural products sold</td>
<td>7,802</td>
<td>67</td>
<td>2,752</td>
</tr>
<tr>
<td>Value of crops including nursery and greenhouse</td>
<td>4,061</td>
<td>67</td>
<td>2,495</td>
</tr>
<tr>
<td>Value of livestock, poultry, and their products</td>
<td>3,742</td>
<td>66</td>
<td>2,578</td>
</tr>
<tr>
<td><strong>VALUE OF SALES BY COMMODITY GROUP ($1,000)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grains, oilseeds, dry beans, and dry peas</td>
<td>1,056</td>
<td>66</td>
<td>2,225</td>
</tr>
<tr>
<td>Tobacco</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Cotton and cottonseed</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vegetables, melons, potatoes, and sweet potatoes</td>
<td>35</td>
<td>66</td>
<td>2,292</td>
</tr>
<tr>
<td>Fruits, tree nuts, and berries</td>
<td>86</td>
<td>62</td>
<td>1,505</td>
</tr>
<tr>
<td>Nursery, greenhouse, floriculture, and sod</td>
<td>(D)</td>
<td>(D)</td>
<td>(D)</td>
</tr>
<tr>
<td>Cut Christmas trees and short rotation woody crops</td>
<td>2</td>
<td>63</td>
<td>1,254</td>
</tr>
<tr>
<td>Other crops and hay</td>
<td>(D)</td>
<td>43</td>
<td>(D)</td>
</tr>
<tr>
<td>Poultry and eggs</td>
<td>(D)</td>
<td>(D)</td>
<td>(D)</td>
</tr>
<tr>
<td>Cattle and calves</td>
<td>2,365</td>
<td>62</td>
<td>2,224</td>
</tr>
<tr>
<td>Milk from cows</td>
<td>991</td>
<td>66</td>
<td>1,264</td>
</tr>
<tr>
<td>Hogs and pigs</td>
<td>25</td>
<td>56</td>
<td>1,712</td>
</tr>
<tr>
<td>Sheep, goats, wool, mohair, and milk</td>
<td>32</td>
<td>62</td>
<td>2,189</td>
</tr>
<tr>
<td>Horses, ponies, mules, burros, and donkeys</td>
<td>26</td>
<td>60</td>
<td>2,573</td>
</tr>
<tr>
<td>Aquaculture</td>
<td>(D)</td>
<td>(D)</td>
<td>(D)</td>
</tr>
<tr>
<td>Other animals and other animal products</td>
<td>106</td>
<td>53</td>
<td>1,068</td>
</tr>
<tr>
<td><strong>TOP CROP ITEMS (acres)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forage-land used for all hay and haylage, grass silage, and greenchop</td>
<td>22,363</td>
<td>46</td>
<td>866</td>
</tr>
<tr>
<td>Soybeans for beans</td>
<td>991</td>
<td>63</td>
<td>1,669</td>
</tr>
<tr>
<td>Wheat for grain, all</td>
<td>(D)</td>
<td>(D)</td>
<td>(D)</td>
</tr>
<tr>
<td>Spring wheat for grain</td>
<td>(D)</td>
<td>9</td>
<td>(D)</td>
</tr>
<tr>
<td>Canola</td>
<td>(D)</td>
<td>2</td>
<td>(D)</td>
</tr>
<tr>
<td><strong>TOP LIVESTOCK INVENTORY ITEMS (number)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cattle and calves</td>
<td>6,905</td>
<td>65</td>
<td>2,213</td>
</tr>
<tr>
<td>Layers</td>
<td>1,079</td>
<td>59</td>
<td>1,803</td>
</tr>
<tr>
<td>Horses and ponies</td>
<td>583</td>
<td>59</td>
<td>1,873</td>
</tr>
<tr>
<td>Sheep and lambs</td>
<td>345</td>
<td>54</td>
<td>1,730</td>
</tr>
<tr>
<td>Broilers and other meat-type chickens</td>
<td>258</td>
<td>58</td>
<td>1,581</td>
</tr>
</tbody>
</table>

- Represents zero. (D) Withheld to avoid disclosing data for individual operations.
*Ranked items among the 72 state counties and 3,079 U.S. counties, 2012

See “Census of Agriculture, Volume 1, Geographic Area Series” for complete footnotes, explanations, definitions, and methodology.

Source of Table: Web
### Table 10 - Top Crops, 2002 and 2012

<table>
<thead>
<tr>
<th>USDA Census 2012</th>
<th>2012 Acres¹</th>
<th>2002 Acres (Source: DC Comp Plan, 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Top Crops Items</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forage land used for hay and haylage, grass silage, greenchop</td>
<td>22,363</td>
<td>24,530</td>
</tr>
<tr>
<td>Soybeans</td>
<td>991</td>
<td>n/a</td>
</tr>
<tr>
<td>Wheat</td>
<td>Withheld</td>
<td>n/a</td>
</tr>
<tr>
<td>Springwheat</td>
<td>Withheld</td>
<td>n/a</td>
</tr>
<tr>
<td>Canola</td>
<td>Withheld</td>
<td>n/a</td>
</tr>
<tr>
<td>Corn for silage</td>
<td>n/a</td>
<td>Withheld</td>
</tr>
<tr>
<td>Oats</td>
<td>n/a</td>
<td>482</td>
</tr>
<tr>
<td>All berries</td>
<td>n/a</td>
<td>Withheld</td>
</tr>
<tr>
<td>Nursery stock</td>
<td>-</td>
<td>Withheld</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Top Livestock Inventory</th>
<th>2012 Number¹</th>
<th>2002 Number (Source: DC Comp Plan, 2009)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cattle and calves</td>
<td>6905</td>
<td>7502</td>
</tr>
<tr>
<td>Layers</td>
<td>1079</td>
<td>709</td>
</tr>
<tr>
<td>Horses and ponies</td>
<td>583</td>
<td>803</td>
</tr>
<tr>
<td>Sheep and lambs</td>
<td>345</td>
<td>662</td>
</tr>
<tr>
<td>Broilers and other meat-type chickens</td>
<td>258</td>
<td>590</td>
</tr>
</tbody>
</table>

- Represents zero. See “Census of Agriculture, Volume 1, Geographic Area Series” for complete footnotes, explanations, definitions, and methodology.


In 2012, farm expenditures reported in Wisconsin were typically within 1-2% of farm expenditure reported for the United States (Table 11). Exceptions are seen for livestock, poultry and related expenses, which are 6% lower in costs in Wisconsin and in supplies and construction which are 5% higher in costs in Wisconsin (Table 11).

### Table 11 – Wisconsin/USA Farm Production Expenditures

<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Wisconsin 2012 (%)</td>
</tr>
<tr>
<td>Farm services</td>
<td>13</td>
</tr>
<tr>
<td>Rent</td>
<td>6</td>
</tr>
<tr>
<td>Seed, chemicals and fertilizer</td>
<td>17</td>
</tr>
<tr>
<td>Interest, taxes and misc. expenses</td>
<td>7</td>
</tr>
<tr>
<td>Labor</td>
<td>8</td>
</tr>
<tr>
<td>Supplies and construction</td>
<td>14</td>
</tr>
<tr>
<td>Machinery, vehicles and fuel</td>
<td>15</td>
</tr>
<tr>
<td>Livestock, poultry and related expenses</td>
<td>3</td>
</tr>
<tr>
<td>Feed</td>
<td>17</td>
</tr>
</tbody>
</table>

**Existing Agricultural Land Uses**

**Number of farms**

There were 76,800 farms in Wisconsin in 2012 which was a 1% decrease from 2011 (USDA Agricultural Statistics, 2013). The 2012 agriculture census reports there were 364 farms in Douglas County. This is an increase of 9%, from 333 farms in 2007. Approximately 25 farms in Douglas County are over 500 acres; a little over 100 are less than 49 acres and 235 are between 50 and 500 acres (Figure 6). Much of what was once agricultural land in Douglas County has been converted to recreational land (DC IWM Plan, 2009).

**Figure 6 – Douglas County Farms by Size, 2012 (Source: USDA Census 2012)**

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**Agricultural Land Use**

Agriculture is the second most dominant use within Douglas County’s rural landscape. Only forestlands encumber more total acreage. In 2009, the Douglas County Planning and Zoning Department reported 21% of county land was zoned as A-1 and 68% was zoned as F-1.

One of the key indicators used to identify land use change is parcel rezoning, or changes from one zoning designation to another. Between 1971 and 2008 (37 years), there were 63 re-zonings from A-1 (Agricultural) to another zoning district (1.7 per year). The total A-1 acreage lost was 2,127 acres or an average of about 57 acres per year, countywide.

Between 1999 and 2007 (eight years) there was a total of 119 rezones. Thirty-three (or 27%) were rezoned to A-1, mostly from F-1 and most likely for residential development. Four were rezoned out of A-1 to a residential district (0.5 per year). This more recent data shows the rate of rezoning per year from A-1 to another district has declined. It is not clear if development being rezoned to A-1 is increasing farmland acreage. If it is, more than four parcels...
are being added each year. Although the Douglas County Comprehensive Plan 2010-2030 notes that agriculture in Douglas County had been declining for many years, there has been very little conversion of agriculture land to residential (DC Zoning Department Data, 2016).

Agricultural land sales in Wisconsin increased in both the number of sales and the value of the land sold in 2012. There was a total of 2,282 land transactions in 2012. The number of those transactions where the land continued in agricultural use rose by 410 (USDA Agricultural Statistics, 2013).

In Douglas County, there were 72,686 acres of land in farming in 2007 and 70,578 acres of land in farming in 2012. This represents a loss of -3% of land used for farming in five years. According to the DC Comp Plan, the number of farms has increased by 44 since 2000, but the average farm size has decreased by 44 acres.

UWEX-CLUE, 2010 classifies Douglas County as having 0-15% of its total land cover in croplands. The USDA Census of Agriculture, 2012 reports 41.2% of all farmlands are in crops; 17.9% is in pastureland; and 7.2% is in other uses (Figure 7 – Douglas County Lands in Farms by land use, 2012 (Source: USDA Census 2012)). The DC Comp Plan reports that Douglas County ranks 16 out of 72 counties in value of sales related to aquaculture and 13th for all berries, largely due to cranberry production. Douglas County is classified as having 100-200 acres in cranberry production by the Cranberry Institute.

**Figure 7 – Douglas County Lands in Farms by Land Use, 2012 (Source: USDA Census 2012)**
Key Agricultural Resources
(Including available land, soil, and water resources)

Prime Farmland
Prime Farmland is “land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops”. The land is also available for cropland, pastureland, forestland, or other land but not water or urban built-up land. It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. Generally, prime farmlands have adequate and dependable water supply from precipitation or irrigation; have favorable temperature and growing season; have acceptable acidity or alkalinity; have few or no rocks; are permeable to air and water; are not excessively erodible; are not saturated with water for long periods of time; and do not flood frequently or are protected from flooding. The 2017 Douglas County Farmland Preservation Map (See Map 1) shows areas that are considered Prime Farmland as defined by the Natural Resources Conservation Service (NRCS).

Farmland of Statewide Importance
Soils in southern Douglas County are sandy with high water tables. Soils in the northern part of the county consist of clay. The land that occurs north of the escarpment on the Lake Superior clay plain make up the Farmland of Statewide Importance category identified in the Farmland Preservation Area map. This is a key agricultural resource for Douglas County. Farms on the clay plain produce food, feed, fiber, forage, and oil seed crops.

The Lake Superior lowland clay plain was formed during the glacial period when it was submerged under glacial Lake Superior and red clay was deposited on the old lake bed. The growing season along Lake Superior is 140-160 days, which is the same length as the growing season in Wisconsin’s extreme southern counties. The average last frost is May 5th and the average first frost is October 5th. Annual precipitation is 32.1 inches, 60% of which occurs in spring and summer, compared to Madison which has 34.44 inches annually. The average annual temperature is 41°F, which in Madison is 46.3°F. The micro-climate influenced by Lake Superior along the Lake Superior clay plain is particularly good for hay and pasture. The farming disadvantage on the clay plain, however, is that the clay soils are too cold and wet to take advantage of spring temperatures and therefore the growing season is diminished.

The American Farmland Trust points out that although prime agricultural soils are very important, management of land to make it more productive matters just as much and land base is needed for nutrient management infrastructure. The 2017 Douglas County Farmland Preservation Map (Map 1) shows areas that are considered Farmland of Statewide Importance as defined by the Natural Resources Conservation Service (NRCS).
Key Agricultural Infrastructure (Processing, storage, transportation, supply)

The FPP Steering Committee identified the following ag-related industries that are needed to support existing and future agriculture in Douglas County:

- Veterinarians, for unique farm animals
- Research farms
- Transportation specialists
- Grain storage facilities
- Implement dealers
- Meat processors
- Feed mills
- Suppliers
- Distribution
- Farm markets

According to the UWEX Food Systems Profile, Douglas County, WI, there are four food processors in Douglas County compared to the state average of 13.17 and the regional average of 6.19. There are no fruit or vegetable preserving manufacturers; cheese manufacturers; or wineries in Douglas County.

There are two grain/feed dealers in Douglas County and one grain elevator listed on the internet (Web www.yellowpages.com 29 May 2016). There are also feed and tack suppliers listed for the Duluth/Superior area as well as Hayward and Iron River, WI and Esko and Moose Lake, MN.

The Wisconsin Department of Workforce Development (DWD) identified transportation/material moving as the top employment category in the county from their 2006 study with an annual average employment in the Trade, Transportation, and Utilities category of 4,605 jobs which is 30.1% of the total employment in the county. From the Wisconsin Department of Workforce Development, Bureau of Workforce Training, June 2007: of the top ten prominent public and private sector employers in Douglas County two are large truck transportation companies.

Superior plays an important role as a Midwest transportation hub, located on the largest shipping port by tonnage on the Great Lakes and also home to several trucking companies, a major pipeline company and several railroads. Superior is also among the busiest bulk loading ports on the Great Lakes with terminals handling coal, grain, iron ore, limestone, steel, cement and general cargo for an average annual tonnage handled of 36,477,000 tons per year (American Great Lakes Ports Association at www.greatlakesports.org/resource-types/state-fact-sheets/).

These organizations are active partners in leading transportation issues in the area:

- City of Superior Planning and Port Operations
- Duluth-Superior Metropolitan Interstate Committee
- Harbor Technical Advisory Committee
- Duluth-Superior Transportation Association
- Duluth Seaway Port Authority
- US Coast Guard
- US Department of Transportation
- US Maritime Administration
- Wisconsin Department of Transportation – District 8 and Bureau of Aeronautics
- US Customs Bureau
- US Department of Immigration
Key Agricultural Trends (production, enterprises, land conversion)

Organic
The national organic market is “booming” according to the UWEX-CLUE, 2010. According to the Organic Consumers Association (OCA), sales of organic food have grown by 20% annually, and experts predict that the industry's share of the U.S. food market is expected to grow from about 2 percent to roughly 3.5 percent by the end of the decade. OCA also says the demand for organic food is growing so fast that consumer demand is outstripping some domestic supplies and it is likely to grow because consumers are more likely to see organically grown food as a healthy and nutritious option to conventionally grown products.

In Wisconsin, 64% of organic sales are derived from milk, 13% from other livestock, 16% from field crops and 7% from fruits and vegetables (UWEX-CLUE, 2010). Expanding the organic industry is likely dependent on increasing the number of food processors and handlers, since about two-thirds of organic sales go directly to organic cooperatives, processors, mills and packers (UWEX-CLUE, 2010). The location of organic farms, processors and handlers is shown in Figure 8.

Organic Valley (OV) is the largest, independent and farmer-owned cooperative of organic farmers and one of the nation's leading organic brands. Organized in 1988, it represents approximately 1,800 farmers in 36 states. Its 2015 annual meeting drew nearly 400 farmer-owners to La Crosse, Wisconsin. At the meeting, OV indicated they continue to struggle with and plan for the surge in organic sales, shortages on store shelves, feed shortages on the farm and intense competition for farm milk (Organic Valley, 2016).

Although southwestern Wisconsin remains the hub of organic production (UWEX-CLUE, 2010), there are three organic dairy farms in Douglas County and about the same in nearby Bayfield County. This, combined with statistics that show organic milk prices are higher and more stable than conventional milk prices (UWEX-CLUE, 2010), could provide opportunities for expanding organic farming in Douglas County.
Wisconsin Certified Organic
Farms and Processors/Handlers

• Farm (1,159)
• Processor/Handler (169)

Figure 8. Wisconsin Certified Organic Farms and Processors/Handlers
Map by Lisa Morrison, DATCP, 12/19/2011.
CSAs and Niche Markets

The FPP Steering Committee identified diverse and high quality products as opportunities for Douglas County agriculture. CSAs and niche markets, such as mushrooms and garlic are increasing. The number of farms with direct sales per 10k population in 1997 was 7.42. The number of farms increased to 10.96 in 2007, which is about half the state average (UWEX Food Systems Profile, Douglas County, WI). The Food Systems Profile reports there were two farms selling directly through CSA in 2007, which is about a third of the state average.

Community-Supported Agriculture (CSA) consists of a community of individuals who pledge support to a farm operation so that the farmland becomes a community farm, with the growers and consumers providing mutual support and sharing the risks and benefits of food production. Most CSA farms focus on vegetables, but many provide meat, eggs, cheese, preserves, and other farm products directly to consumers. Research has shown that local products are more important to consumers than organic (Figure 9 – Local Trumps Organic).

In 2016, the Douglas County UW-Extension started a local food initiative to understand the nature of the local food systems. Its mission is to support, promote, and coordinate local food infrastructure and resources to increase access to healthy, local food systems. A website has been created to share information with growers and consumers, such as the locations of farm markets, recipes for healthy and seasonal foods, basic soil sampling, and volunteer opportunities surrounding local food. Members of the FPP Steering Committee believe it is essential to provide information and training to consumers who are switching to locally-produced food.

**Figure 9 – Local Trumps Organic**
Concentrated Animal Feeding Operation (CAFO):
There are currently no concentrated animal feeding operations in Douglas County. CAFOs are defined by having greater than 1000 animal units. CAFOs require a Wisconsin Pollutant Discharge Elimination System (WPDES) permit to ensure that adverse impacts to water quality do not occur. Permit applicants must submit detailed information about the operation, a manure management plan, plans and specifications for all manure storage facilities, and a completed environmental analysis questionnaire. Once a WPDES CAFO permit is issued, operators must comply with the terms of the permit by following approved construction specifications and manure spreading plans, conducting a monitoring and inspection program, and providing annual reports. Douglas County adopted a Large-Scale Concentrated Animal Feeding Operations Ordinance on May 18, 2017.

Pasture and Hay Land
USDA Census reports that 22,363 acres of forage land was used for all hay and haylage, grass silage and greenchop in 2012, making it the top crop item for the County with a state rank of 46 out of 72. The number of acres harvested in 2012 (5,440) was up over 1000 acres from 2011 (4,200) (USDA, 2013). The state rank for all hay (dry only) production was 17 in 1999 (USDA, 2013) and 11 in 2014 (Wisconsin 2015 Agricultural Statistics). The FPP Steering Committee has noticed trends for leasing pasture lands to larger farms for grazing.

Production Issues

Wildlife Damages
Wisconsin has a program that assists farmers when wildlife damage their agricultural crops. The Wildlife Damage Abatement and Claims Program (WDACP) provides damage prevention assistance and partial compensation to farmers when wild deer, bear, geese and turkeys damage their agricultural crops. Wildlife managers issue agricultural damage shooting permits to farmers for removal of deer (and occasionally bear, geese and turkeys) that cause damage. Two hundred and sixty-nine wildlife damage claims were submitted in 2015, with appraised losses totaling $1,042,506 in Wisconsin. Douglas County reported no claims under this program for wildlife damage to crops in 2015 (Web http://dnr.wi.gov/topic/WildlifeHabitat/documents/reports/damabate.pdf 15 June 2017).

Gray Wolves
The gray wolf (Canis lupus), also known as timber wolf, originally occurred across North America, Europe and Asia (Nowak 1995). The pre-settlement wolf population is estimated at 3000-5000. Settlers converted native habitat into farmland and hunted elk and bison to extirpation and reduced deer populations. As prey species declined, wolves began to feed on easy-to-capture livestock and the legislature responded by creating bounties for wolves. By 1900, no timber wolves existed in the southern two-thirds of the state and by 1960 they were considered extirpated entirely from the State.

With the recolonization of gray wolves in Wisconsin, there has been a simultaneous increase in livestock depredations caused by wolves (Figure 10 - Annual Wolf Complaints). The majority of the losses have been calves and over half a million dollars have been paid for livestock, hunter and pet owners since 1985 in Wisconsin (Lehmkuhler, et al. 2007). The Lehmkuhler et al. report suggests that a small number of farms receive most of the depredation losses, most of which are in northern Wisconsin.
Although there are compensation policies in place for the market value of the animal, there are no estimates or compensation for losses due to time spent searching for missing animals, increased anxiety by the farmer, higher stress levels in the animals that can lead to lower quality meat, aborted or underweight calves, lower overall fitness due to less foraging and more vigilance, or cows that will not rebreed. Best Management Practices, such as moving cows closer to dwellings can increase stress, concentrate pathogens, and by limiting forage, increase the need for supplemental feeding. Installing high security fencing systems or increasing surveillance of herds is not economically feasible (WDNR, Wisconsin Wolf Science Committee, May 2007).

Wolf populations in Wisconsin have grown from 5 packs with 25 wolves in late winter of 1980 (Lehmkuhler, et al. 2007) to 746-771 in late winter of 2015 (WDNR, 2015 Over Winter Wolf Est. Web. 6 June 2016). This is a slight reduction from the winter of 2011 of around 800 wolves (WDNR. Web. 4 June 2016). The 2015 late winter population in Wolf Management Zone 1, which includes Douglas, Bayfield, Ashland, Iron and parts of Sawyer, Price and Rusk, was 319 in 82 packs (WDNR, 2015 Over Winter Wolf Est. Web. 6 June 2016). The gray wolf was federally delisted in January 2012 but was relisted in December 2014.

A WDNR study determined that northern Wisconsin has about 6,000 square miles of habitat that could support 300-500 wolves. Another recent study suggests the state can perhaps support 700 to 1,000 wolves (in late winter), but this level may not be socially tolerated. The 1999 Wisconsin Wolf Management Plan has a management goal of 350 wolves for Wisconsin (Lehmkuhler, et al. 2007). A Wolf Advisory Committee Meeting summary from 10/7/2014 indicates a wolf management plan will be developed for 2015-2025.

The Wisconsin DNR partners with USDA-APHIS Wildlife Services to investigate reported conflicts with wolves. The Wisconsin DNR web page http://dnr.wi.gov/topic/wildlifehabitat/wolf/maps contains an interactive map where users can view the location of verified wolf conflicts; multiple years of wolf depredation and a summary of all wolf conflict investigations for each year; and the Annual Wolf Damage Payment summary which provides a yearly history of compensation paid to individuals for verified deaths or injuries caused by wolves to livestock, hunting dogs or pets. In 2016, Wisconsin paid $200,505 in compensation to individuals whose animals were killed or injured by wolves. Sixty percent ($122,293) of that compensation was paid to farmers for calves, missing calves and cattle (Web http://dnr.wi.gov/topic/wildlifehabitat/wolf/documents/wolfdamagepayments.pdf 9 December 2017).

While Douglas County strongly supports wildlife diversity and embraces the protection of natural resources, the reintroduction of wolves to Wisconsin has presented challenges to Douglas County farmers. The FPP Steering Committee encourages local participation in state wolf management strategies to help represent the farming industry and to help find solutions that allow wolves and farming to co-exist.
Disease and Illness
Douglas County farm animals are at risk for contracting disease that will impact productivity. The financial and social impacts of disease in Douglas County is not well known. Although liver flukes and avian influenza are concerns in Douglas County, the threat is not unique and no specific trends are being reported. Farmers are able to keep Black’s disease (an acute, highly fatal disease of sheep and cattle, usually associated with liver flukes) under control with vaccinations. Efforts should be made to provide continuing education, best management practices, and reporting systems to farmers regarding potential threats to crops and animals. Some issues discussed by the FPP Steering Committee are summarized below.
Liver Flukes
Liver flukes (*Fasciola magna*) are a flat, elongated parasite that looks like a “leech”. It can be ingested by cattle where it migrates from the intestine to the liver and can sometimes cause massive hemorrhage or blood loss. It is hard to detect and is usually found while cutting open the liver either in the packing plant or by a post-mortem examination. Productivity and beef quality are compromised by the presence of liver flukes. Although it can result in death, reduced average daily gain, lower feed conversion, reduced milk production, and lower weaning weights are the most common productivity losses.

In the northern regions the natural host of this fluke is the white-tailed deer making exposure control to this parasite difficult. Deer will pass the fluke eggs in feces. Since the eggs need moisture for development, shallow water and marshy areas are ideal for fluke development. When the eggs hatch, they enter snails, which then become an intermediate host. Further development of the larvae (young flukes) occurs in vegetation until ingested by cattle.

Prevention is a priority in reducing the impact of liver flukes. This can be done by reducing exposure to wet, marshy areas and snails. Deworming programs can help but most are not effective in treating liver fluke infestations.


Avian Influenza
Avian influenza (AI), or “bird flu,” is a virus that infects domestic poultry, such as chickens, turkeys, pheasants, quail, ducks and geese, and wild birds, particularly waterfowl. Direct contact with infected birds, contaminated objects/equipment and aerosol (short distances) can spread the virus which is found in feces, saliva and respiratory secretions. AI viruses are divided into two groups—highly pathogenic (HPAI) and low pathogenic (LPAI)—based on the ability of the virus to produce disease and the severity of the illness it can cause. HPAI spreads rapidly and causes a high death rate in birds. LPAI causes only minor illness and occurs naturally in migratory waterfowl. There are many strains of avian influenza, many of which show little or no visible signs of illness and pose no threat to public health. Each year new strains of AI may appear throughout the world. Biosecurity is a set of practices designed to reduce the risk of spreading disease from sick birds to healthy ones.

(Source: Web [http://datcp.wi.gov/Animals/Animal_Diseases/Avian_Influenza 5 June 2016]

The outbreak of HPAI in spring 2015 had profound impacts on poultry producers, allied industries, and federal and state governments. To address losses, the U.S. Department of Agriculture’s (USDA) Animal and Plant Health Inspection Service (APHIS) announced an interim rule in February 2016 that outlines conditions for the payment of indemnity claims for HPAI (Web [https://www.aphis.usda.gov/aphis 5 June 2016]).
Anticipated Changes in Agriculture (nature, scope, location, focus, processing, supply, distribution)
The 2009 Land and Water Resource Management Plan for Douglas County, WI identifies new topics of particular interest surrounding agriculture including how to best manage land for bio-fuel and carbon sequestration. Studies show that pasture land sequesters more carbon than an equally-sized piece of forest. This, plus other new information and programs such as carbon credit banking, could affect how agricultural land is valued and managed in the future.

Though the number of farmers has been falling for many years, the number of young farmers, defined as farmers under the age of 35 has increased 1.5% in the U.S., according to the latest Agriculture Census in 2014. Although these small changes cannot point to a trend, there is speculation that millennials will change the market and become agricultural entrepreneur’s to address their need to have a healthy food supply sourced from a healthy environment (Web http://fortune.com/2017/03/21/millennials-farming-america/, 9 December 2017).

Other trends in the broader agriculture industry include advancing technology, an increased reliance on information, changing consumer demands, and changing concerns about the environment, food safety, food availability, animal welfare and food costs (Web https://www.ag.ndsu.edu/aglawandmanagement/agmgmt/coursematerials/agtrends 9 December 2017).

Climate Change
In 2011, the Wisconsin Initiative on Climate Change Impacts (WICCI) released its first comprehensive report, Wisconsin's Changing Climate: Impacts and Adaptation (Web http://www.wicci.wisc.edu/publications.php 26 November 2017). The report serves as a resource for helping understand how climate change is affecting Wisconsin. WICCI reports that, except for northeastern Wisconsin, most of Wisconsin has warmed since 1950. Averaged across the state, the warming has been +1.1°F, with a peak warming of 2-2.5°F across northwest Wisconsin. Wisconsin is becoming "less cold", with the greatest warming during winter-spring and nighttime temperatures increasing more than daytime temperatures (}
In addition, Wisconsin is projected to warm by 4-9°F by the middle of this century, based on one emission scenario. Northern Wisconsin is projected to warm the most, while the least warming is expected along Lake Michigan. The mean projected warming rate is about four times greater than what has been observed since 1950 (Figure 12).

The WICCI Agriculture Working Group is also working to share adaptation strategies for Wisconsin’s agricultural industries. A list showing evidence of climate change and its corresponding impact on agricultural production was developed by Dan Looker of Successful Farming magazine (Table 12). It provides a list of potential positive, negative and indirect impacts on Wisconsin agriculture. The lists serve as a starting point for the conversation of how agricultural production could be affected by the changing climate, Web http://www.wicci.wisc.edu/agriculture-working-group.php, 26 November 2017.
Figure 11 - Change in Annual Average Temperature (°F) from 1950 to 2006


Figure 12 - Projected Change in Annual Average Temperature (°F) from 1980 to 2055

TABLE 12 - POTENTIAL CLIMATE CHANGE IMPACTS ON AGRICULTURAL PRODUCTION

By Dan Looker of Successful Farming magazine

Positive Impacts on Agriculture

<table>
<thead>
<tr>
<th>Evidence of Climate Change</th>
<th>Impact on Agricultural Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Longer frost free periods</td>
<td>Use of higher yielding genetics</td>
</tr>
<tr>
<td>Lower daily maximum temperatures in summer</td>
<td>Reduced plant stress</td>
</tr>
<tr>
<td>More freeze/thaw cycles in winter</td>
<td>Increased soil tilth and water infiltration</td>
</tr>
<tr>
<td>More summer precipitation</td>
<td>Reduced plant stress</td>
</tr>
<tr>
<td>More soil moisture</td>
<td>Reduced plant stress</td>
</tr>
<tr>
<td>Higher dew point temperatures</td>
<td>Reduced moisture stress</td>
</tr>
<tr>
<td>Higher intensity of solar output</td>
<td>Increased degree days</td>
</tr>
<tr>
<td>More diffuse light (increased cloudiness)</td>
<td>Reduced plant stress</td>
</tr>
<tr>
<td>Higher water use efficiency</td>
<td>Higher yields</td>
</tr>
<tr>
<td>Warmer spring soil temperatures</td>
<td>Use of higher yielding genetics</td>
</tr>
<tr>
<td>Reduced risk of late spring or early fall frosts</td>
<td>Use of higher yielding genetics</td>
</tr>
<tr>
<td>Increased atmospheric CO2 levels</td>
<td>Increased photosynthesis and yields</td>
</tr>
</tbody>
</table>

Negative Impacts on Agriculture

<table>
<thead>
<tr>
<th>Evidence of Climate Change</th>
<th>Impact on Agricultural Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>More spring precipitation causes water logging of soils</td>
<td>Delay planting, reduced yields, compaction, change to lower yielding genetics</td>
</tr>
<tr>
<td>Higher humidity promotes disease and fungus</td>
<td>Yield loss, increased remediation costs</td>
</tr>
<tr>
<td>Higher nighttime temperatures in summer</td>
<td>Plant stress &amp; yield loss</td>
</tr>
<tr>
<td>More intense rain events at beginning of crop cycle</td>
<td>Re-planting and field maintenance costs; loss of soil productivity and soil carbon</td>
</tr>
<tr>
<td>More droughts</td>
<td>Yield loss; stress on livestock; increase in irrigation costs; increased costs to bring feed and water to livestock</td>
</tr>
<tr>
<td>More floods</td>
<td>Re-planting costs, loss of soil productivity and soil carbon; damage to transportation infrastructure may reduce delivery to milk processing plants</td>
</tr>
<tr>
<td>More over-wintering of pests due to warmer winter low temperature</td>
<td>Yield loss, increased remediation costs</td>
</tr>
<tr>
<td>More vigorous weed growth due to temperature, precipitation and CO₂ changes</td>
<td>Yield loss, increased remediation costs</td>
</tr>
<tr>
<td>Summer time heat stress on livestock</td>
<td>Productivity loss, increase in miscarriages, may restrict</td>
</tr>
</tbody>
</table>
### Evidence of Climate Change

<table>
<thead>
<tr>
<th>Temperature changes increase disease among pollinators</th>
<th>Losses to cropping (forage, fruits, vegetables) systems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increased taxes or regulations on energy-dependent inputs to agriculture (e.g., nitrogen fertilizer)</td>
<td>Profitability impacts on producers; loss of small-scale farm supply dealers</td>
</tr>
<tr>
<td>New diseases or the re-emergence of diseases that had been eradicated or under control</td>
<td>Enlarged spread pattern, diffusion range, and amplification of animal diseases</td>
</tr>
</tbody>
</table>

### Indirect Impacts on Agriculture

<table>
<thead>
<tr>
<th>Situational Change</th>
<th>Impact on Wisconsin Agriculture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulation involving greenhouse gas emissions</td>
<td>Potential increased costs to meet new regulations; opportunities to participate in new carbon markets and increase profits</td>
</tr>
<tr>
<td>Litigation from damages due to extreme events or management of carbon markets</td>
<td>Legal costs may increase</td>
</tr>
<tr>
<td>New weed and pest species moving into Wisconsin</td>
<td>Control strategies will have to be developed; increased pest management costs as well as crop losses</td>
</tr>
<tr>
<td>Vigorous weed growth results in increased herbicide use</td>
<td>Increase in resistance or reduction in time to development of resistance; regulatory compliance costs or litigation over off-site damages from pesticides</td>
</tr>
<tr>
<td>Possibility of increased inter-annual variability of weather patterns</td>
<td>Increased risk in crop rotation, genetic selection, and marketing decisions</td>
</tr>
<tr>
<td>Increased global demand for food production due to climate and demographic changes</td>
<td>New markets; increase in intensification of production; increase in absentee ownership</td>
</tr>
<tr>
<td>Increased period for forage production</td>
<td>Decreased need to large forage storage across winter for livestock operations</td>
</tr>
</tbody>
</table>


### Land Assessment

According to the Wisconsin Department of Revenue, Agricultural Assessment Guide for Wisconsin Property Owners (WDNR, 2017), “the Wisconsin State Constitution and state laws allow for agricultural property to be assessed differently than other classes. The standard for assessing agricultural land in Wisconsin is use-value. Use-value is specific to land only. Use-value requires that the assessed value of farmland is based on the income that could be generated from its rental for agricultural use. Income and rental from farming are a function of agricultural capability. Since any land can theoretically be used for agricultural purposes, statutes and administrative rules limit the benefit of use-value assessment to lands that are devoted primarily to agricultural use. The goal of this valuation is to protect Wisconsin’s farm economy and curb urban sprawl by assessing farmland based on its agricultural productivity, rather than its potential for development.”
“The decline in the number of farms in Wisconsin has been well documented. Like much of the rest of the state, agriculture is undergoing a transition in the northwest region. The total assessed acreage of agricultural lands in the region declined by 22 percent in just a 13-year period between 1990 and 2013.” Source: Northwest Wisconsin Regional Comprehensive Plan, No Date. Web https://www.nwrpc.com/index.aspx?NID=960&PREVIEW=YES 26 November 2017

“In general, agricultural land prices in northwestern Wisconsin are lower than the statewide average. Between 2008 and 2013, the statewide weighted average price per acre ranged from $3,276 to $3,620, compared to $1,260 to $1,449 per acre in the northwest region.” Source: Northwest Wisconsin Regional Comprehensive Plan, No Date. Web https://www.nwrpc.com/index.aspx?NID=960&PREVIEW=YES 26 November 2017.

### Property Assessment Statistics for Douglas County

<table>
<thead>
<tr>
<th></th>
<th>1990</th>
<th>2010</th>
<th>2013</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>RESIDENTIAL</td>
<td>40,193</td>
<td>36,361</td>
<td>35,686</td>
<td>-11%</td>
</tr>
<tr>
<td>COMMERCIAL</td>
<td>4,694</td>
<td>5,812</td>
<td>5,749</td>
<td>22%</td>
</tr>
<tr>
<td>MANUFACTURING</td>
<td>1,012</td>
<td>994</td>
<td>995</td>
<td>-2%</td>
</tr>
<tr>
<td>AGRICULTURAL</td>
<td>74,603</td>
<td>55,705</td>
<td>53,365</td>
<td>-28%</td>
</tr>
</tbody>
</table>


### Key Land Use Issues Related to Preserving Agriculture

**Fallow Farmlands**

Abandoned lands are reverting back to wetland because they are no longer in production. It is uncertain how many acres of land fall into this category. It is also not certain that they should be preserved for farming, since wetland laws may be involved if farming activity is resumed. The FPP Steering Committee recommends allowing transitional farmlands to remain in preserved farmland areas using the strategies outlined in the Douglas County Watershed-Based Approach to Wetland Management in the Lake Superior Basin adopted by the county in 2016.

**Mitigation**

The FPP Steering Committee identified the operation of large mitigation banks as a threat to farmlands. Although new developments are not being built directly on farmland, developments often require mitigation for converted wetlands elsewhere. It is unknown how many acres of farmland in Douglas County have been lost to large mitigation banks, but it is estimated at hundreds of acres.

The mitigation bank registry on the Wisconsin Department of Natural Resources website (Web http://dnr.wi.gov/topic/Wetlands/mitigation/bankingRegistry.html 21 May 2016) provides a list of
mitigation banks approved for business in Wisconsin. One site located in the Town of Cloverland is listed as serving the Lake Superior basin in northern Wisconsin. It is not clear how large this site is or what its impact is on farmlands.

The City of Superior has developed two Superior Special Area Management Plans (SAMP and SAMP II) to address wetland impacts within the city boundaries (City of Superior, 2016). The SAMPs require compensatory mitigation for wetland impacts resulting from new development and highway projects. Under the first SAMP program operated between 1996 and 2007, nearly 125 acres of wetlands were mitigated in the Town of Parkland. Under SAMP II which expires in 2018 (Web http://dnr.wi.gov/topic/wetlands/documents/SAMPGPdraft.pdf 21 May 2016) 140 acres may be permitted under the program during its ten-year lifespan (City of Superior, 2016).

The Douglas County Watershed-Based Approach to Wetland Management in the Lake Superior Basin, May 2016, identifies a strategy that will allow mitigation on smaller wetlands adjacent to existing agriculture rather than converting entire farms for large wetland banks. This approach protects water quality by locating restoration projects in sub-watersheds with the highest needs for managing runoff. At the same time it supports sustainable farming and preserves larger tracts of farmlands. It is also likely to be more successful, since small projects are typically restoration projects rather than new creations.

**Douglas County In-Lieu-of-Fee Compensatory Wetland Mitigation Program**

Douglas County is pursuing the development of a county-sponsored in-lieu-of-fee (ILF) compensatory wetland mitigation program that would provide an alternative to existing wetland mitigation programs. A locally-based ILF program would better address watershed needs, county conservation priorities, and provide for more local input in the siting of wetland mitigation projects.
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Appendix A

2017 Douglas County Farmland Preservation Area Town Maps