

# Rock River Coalition Rural Development Guidelines and Policies

## Preface

This document is the result of four years of work by the Rock River Coalition Rural Development Concerns Issue Team. They hope that people involved with land use in the basin will consider the policies and suggestions provided in order to protect our agricultural industry and environmental health while allowing for reasonable residential growth in the basin.

## Rock River Coalition

The Rock River Coalition (RRC), a 501(3)(c) not-for-profit volunteer organization, was established in 1994. Its mission is to educate and provide opportunities for people of diverse interests to work together to improve the environmental, recreational, cultural and economic resources of the Rock River Basin.

## Rock River Coalition Rural Development Concerns Issue Teams

The Rock River Coalition (RRC) Rural Development Concerns Issue Team, a group of diverse individuals, has been working on the development of a Rock River Basin Rural Development Policy since 1998. They believe, if adopted by basin communities, these policies would result in a basin that honors residential growth, agriculture and the environment in a balanced, holistic fashion.

***The Rural Development Concerns Issue Team members are:*** David Carpenter, Dodge County Planning; Ken Rowley, Farm Bureau; Margaret Burlingham, LanDesign; Vernon Brummond, Dodge County and Town of Williamstown Board; Ruth Johnson and Jim Congdon, Department of Natural Resources; and Suzanne Wade, UW-Extension.

The team is available to present the ideas contained in the manual to basin groups, county board committees and others. Contact us either at the RRC office: 864 Collins Road, Jefferson WI 53549, 920-674-7443 or by email [rriver@excel.net](mailto:rriver@excel.net). You can also contact the UWEX Rock River Basin Educator at 920-674-7295 or by email [Suzanne.wade@ces.uwex.edu](mailto:Suzanne.wade@ces.uwex.edu).

### ***Rural Development Issue Team Purpose:***

To promote land use policies that enable the Rock River Basin to continue to be an exceptional place to live, work and play by balancing economic growth, agricultural preservation, and protection of its natural resource base. We do this through:

- Developing a common goal among landowners, environmentalists and others to preserve our rural landscape: agricultural, woodland and wetland.
- Recommending to county and town boards specific planning strategies to develop and use land in an orderly and logical way.
- Forming an active, dedicated, working partnership to act on solutions to preserve our rural environment.

### ***RRC Rural Development Concerns Team Objectives:***

- Maintain, preserve and enhance the basin's rural atmosphere, natural resources, scenic values and unique natural features.

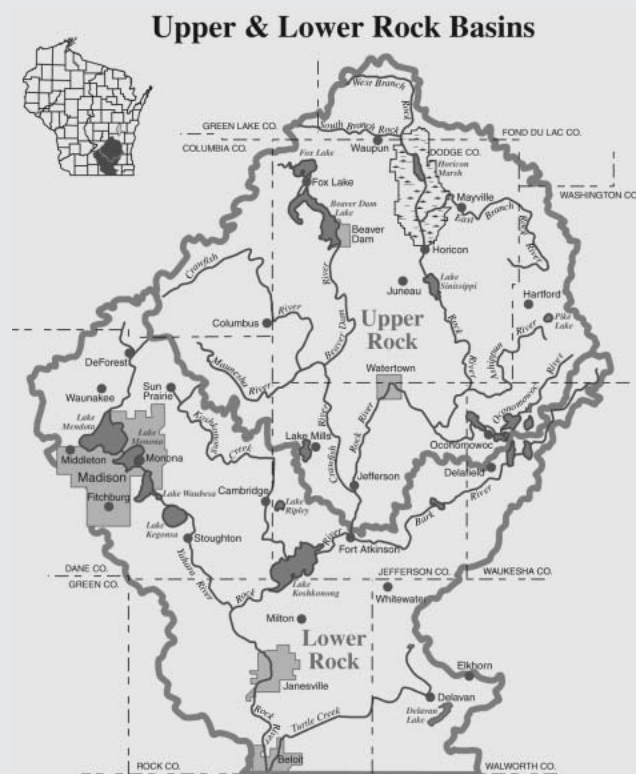
- Encourage and promote a healthy agricultural economy through a variety of programs designed to support the farm economy.
- Focus new areas of growth close or adjacent to existing areas of development and community services. Direct more intense, urban forms of development into areas that can provide adequate municipal services to support the development. Encourage infill, urban renewal, redevelopment and increased housing densities.
- Promote cooperation and coordination between incorporated municipalities and adjoining towns to develop long-range plans and land use regulations that encourage development policies that protect agricultural lands, maintain rural character of the landscape, protect environmental corridors and plan growth adjacent to existing development and facilities.

**The Rock River Coalition (RRC)**, a 501(3)(c) not-for-profit volunteer organization, was established in 1994. Its mission is to educate and provide opportunities for people of diverse interests to work together to improve the environmental, recreational, cultural and economic resources of the Rock River Basin.

Its 150 members and volunteers are private citizens, conservation and historic organizations, businesses, private industries, Chambers of Commerce and local, state and federal agency staff. Membership dues are \$20 for individuals, small businesses and schools, \$25 for families, \$10 for seniors and students, and \$50 for corporations.

In mid 1998, the Department of Natural Resources (DNR) approached the RRC to become its basin-wide partnership group. The RRC agreed and in November 1998, the RRC with the DNR, the Rock River Partnership (RRP) and the University of Wisconsin-Extension (UWEX) hosted a basin-wide forum in Fort Atkinson titled “Rock River Basin—Partnerships for the Future”. Over 1600 basin-wide businesses, private citizens, state, county, local and federal agencies were invited to the forum. The 180 people who attended identified major issues in the basin.

As a result of the first forum, six basin-wide issue teams formed: Surface Water Quality, Wetland/Shoreland, Storm Water, Groundwater, Recreation, and Rural Development Concerns. They have been meeting regularly to develop action plans and implement activities.



# Table of Contents

<b>Preface</b> .....	
a. Rock River Coalition .....	
b. Rock River Coalition Issue Teams .....	
c. RRC Rural Development Issue Team Purpose and Objectives .....	
<b>I. Manual Use and Premise</b> .....	
<b>II. Situation and Context of the Rural Development Issue in the Rock River Basin</b> .....	
a. Problem Context .....	
b. Value and Importance of Farming in Wisconsin .....	
c. Value of Agriculture to the Rock River Basin .....	
<b>III. Concerns with Rural Development and Benefits of Focused Development</b> .....	
a. Domino Effect of Urban Fringe and Scattered Rural Development .....	
b. Higher Cost of Providing Government Services .....	
c. Environmental Benefits of Focusing Development Adjacent to Existing Development .....	
d. Agricultural Benefits of Siting Development Adjacent to Existing Development .....	
e. Community Benefits of Focused Development .....	
<b>IV. Protecting Agriculture as an Asset to the Basin</b> .....	
a. Methods using Direct Payments or Density Incentives .....	
b. Methods to Support Agricultural Profitability .....	
c. Regulatory Methods that Support Farming .....	
<b>V. Rock River Coalition Policy Suggestions</b> .....	
<b>VI. Resources</b> .....	
<b>VII. Appendix</b> .....	

# The Rock River Coalition Rural Development Guidelines and Policies Manual

## Section I: Manual Use and Premise

### Manual use

The information contained in this manual is intended as a general guideline for land use issues. Widely varying conditions and existing degrees of development within the basin render a uniform policy for all conditions impractical. *[Editor— this last sentence needs to be emphasized]*

### Manual Premise

The Rock River Basin has Wisconsin's most productive soils and most favorable climate for agriculture. A strong transportation network of highways and rail lines and close proximity to major population centers, markets, commodity exchanges, and ports make the basin an ideal agricultural production area. The basin is also among the most rapidly growing areas in population and development. Land use decisions that are made now will determine the fate of agriculture in the Rock River Basin.

## Section II: Situation and Context of the Rural Development Issue in the Rock River Basin

The Rock River Coalition's Rural Development Concerns Issue Team supports land use planning and development policies which encourage locating future commercial, industrial and residential development to be adjacent to existing development. The Rock River Coalition desires to slow the rate of urban sprawl, reduce the loss of agricultural lands, reduce the degradation of environmentally sensitive lands, maintain a viable agricultural economy and maintain the rural character of the Rock River Basin.

### Problem Context

The geologic, glacial, and vegetative history of the Rock River Basin produced some of the most productive agricultural soils in the state, earning the designation, as the breadbasket of Wisconsin. Dane, Dodge and Fond du Lac counties are among the top agricultural producing counties in the state, grossing more than \$150 million in agricultural products annually. While the 3,700-square-mile basin is still primarily rural and agricultural in character, there are pressures from population growth and urbanization. The Rock River Basin is affected by four population centers: Madison, Milwaukee, Fox River Valley and Beloit/Rockford. Parts of the basin are experiencing some of the most rapid urbanization in the state.

The rural landscape is being transformed by the scattering of residential housing throughout the basin. This pattern of growth and development is changing the landscape and causing land use conflicts that are becoming common in Wisconsin communities. Areas of conflict include: annexation debates, water rights debates, increased flooding, siting of new highways, siting of utilities, individual versus community rights, inequitable government regulation, and conflicts between agricultural land use and adjacent residential property owners. Small, rural communities near the urban centers are experiencing rapid growth and an unwanted change in character to a more urbanized atmosphere.

Wisconsin's natural resources are facing significant threats due to increasing human demands by a growing state population. This population growth, compounded by poorly planned development patterns in the last several decades, has increased demand for water, land, and raw materials.

In its Farming on the Edge study, the American Farmland Trust has identified the region that includes the Rock River Basin as the third most threatened agricultural region in the United States. The analysis concluded that 59 percent of the development in our region was occurring on prime agricultural soils. The suburbs of Milwaukee-Racine, Janesville-Beloit, Madison, Rockford and Chicago are expanding rapidly.

Moreover, the University of Wisconsin Program on Agricultural Technology Studies (PATS) mapped spatial patterns of agricultural land in Wisconsin from 1990-1997. The following maps illustrate the trends in agriculture and land use in the Rock River Basin. Map.....shows that the most productive soils in the state are located in the Rock River Basin. We also have a high percentage of town land taxed as agriculture and a high percentage of farmland in row crops. These maps show how integral agriculture is to the Rock River Basin. Conversely, we also have a relatively high concentration of persons per square mile, a low percentage of aggregate town income from farming, a higher number of new houses per square mile, and a high value of agricultural land sold, showing the urbanization influence in the Rock River Basin

It is estimated that Wisconsin will need 400,000 new living units over the next 20 years to accommodate population growth. However, the amount of land converted from open space or agricultural land to development can be significantly reduced and redirected by good land use planning. Included in land use plans should be strategies for redevelopment and infill as well as allowing for increased housing density in order to site more living units on smaller amounts of land.

Change is inevitable in Wisconsin. Wisconsin citizens want economic opportunities, attractive places to live, and convenient places to recreate. These are not mutually exclusive. However, poorly planned, scattered development poses serious risks to natural resources—agricultural land, habitat, water quality and quantity, air quality, scenic values and more. It is critical that we plan for development that protects the resources we value so that future generations will know the same vistas and resources we treasure today.

How we use the land and the land decisions we make today are perhaps the most important, long-term environmental issues facing Wisconsin. The vast majority of land in Wisconsin is, and will remain, privately owned, where individual landowners, developers, and local governments are the principal land use decision-makers. Whether land is public or private, we are all stewards of the land.

Land use decisions should be made based on the concept of sustainability. Sustainable development means development that maintains or enhances economic opportunity and community well being while protecting and restoring the natural environment upon which people and economies depend. Sustainable development meets the needs of the present without compromising the ability of future generations to meet their own needs.

Communities that are sustainable places to live, work and play:

- Promote informed decision making;
- Maintain natural and cultural aspects;
- Promote local and regional economic prosperity;
- Promote a mutually supportive network of businesses;
- Account for the full environmental, social, and economic costs of new development;
- Plan, finance and provide public facilities and services in a timely, orderly, and efficient way;
- Develop a balanced transportation system that offers people choices to meet their diverse needs and energy-efficient, low-cost modes of travel;
- Use natural resources in a way that sustains them over time;

- Foster livable communities;
- Preserve community character.

### **Value and Importance of Agriculture in Wisconsin**

Agriculture is the nation's largest employer, supplying jobs to 22 million people. In Wisconsin food and fiber is a \$40 billion per year industry, representing 22% of the total economy. One in six state residents are employed in some phase of agriculture, totaling nearly 500,000 jobs (Growing Wisconsin Agriculture Task Force Final Report, September 2001). Agriculture supports jobs not only in production, food processing and equipment manufacture, but also in tourism, hotels and motels, and recreation.

Wisconsin livestock producers comply with and participate in the strongest state conservation and environmental rules and programs in the nation (*Dan Poulson, President Wisconsin Farm Bureau, Animal Agriculture: A Perfect Fit for Wisconsin*); protecting open space, wetlands, wildlife corridors, water quality, and providing recharge areas for our aquifers and drinking water.

The Growing Wisconsin Agriculture Task Force Final Report lists the following reasons to invest in Wisconsin's food and fiber industries:

- Agricultural production and sales represent 22% of the state's economy and 500,000 jobs.
- The food and fiber processing industry includes thousands of tax-paying corporations.
- Exports and sales outside the state—86.25% of dairy products are sold outside of Wisconsin.
- Agriculture supports a variety of industries such as processing, genetics, equipment manufacturing, transportation, storage, packaging, and tourism.
- Wisconsin has natural advantages for agricultural production such as access to fresh water and a good growing climate, with 10 million acres of land currently in cropland.
- A world-renowned university and technical college infrastructure that has a significant reputation in food science and agricultural research.
- The good growing climate and soil types allow a diversity of crops and livestock to be produced.
- Wisconsin's geographic location and proximity to population centers provide an advantage for markets, shipping and transportation.
- A rich cultural heritage based on agriculture and the widely known America's Dairyland image.

### **Agriculture in the Rock River Basin**

It is difficult to obtain exact figures on the value of agriculture in the Rock River Basin because demographic reports are done on a countywide basis and our watershed includes only parts of several counties. In Wisconsin, the counties in the Rock River Basin account for 2,906,647 acres or 19% of the farmland, 13,962 farms or 21% of the farms statewide, and contribute \$1.26 billion or 22% of the total agricultural products sold from farms in Wisconsin (1997 Census of Agriculture).

Five of the top fifteen Wisconsin counties for market value of agricultural products sold are part of the Rock River Basin, contributing \$890 million to the economy. These counties and their state ranking are: Dane #1, Dodge #4, Fond du Lac #7, Jefferson #11, and Rock #12 (1997 Census of Agriculture).

Dane, Dodge and Fond du Lac Counties each produced \$150 million/year or more in agricultural products, the highest Wisconsin valuation category. Rock, Jefferson and Columbia Counties each produced agricultural products with a value over \$100 million.

Agricultural production of feed grains and animal products ranks highly in the Rock River Basin (2001 Wisconsin Agricultural Statistics):

- Four of the top five counties producing corn for grain are in the Rock River Basin: Dane #1, Rock #3, Dodge #4 and Columbia #5
- Two of the top five counties producing corn for silage: Dane #1, Dodge #4
- One of the top five counties producing wheat: Dodge #5
- Three of the top five producing soybeans: Rock #1, Dane #2, Dodge #5
- One of the top five producing alfalfa hay: Green #3
- One of the top five producing sweet corn: Dodge #5
- One of the top five producing milk: Dane #3
- Two of the top five for all cattle and calves: Dane #4, Dodge #5
- Two of the top five for all hogs and pigs: Dodge #3, Dane #4

Agricultural production and jobs contribute immensely to the economy of Wisconsin. Favorable soils and growing conditions, proximity to markets, environmental benefits, and recreation and tourism potential point to the need to keep agri-business strong in the Rock River Basin.

### **What is Prime Agricultural Land?**

A-1, Class I, prime land, are they all the same? When talking about agricultural land and zoning, each of these classifications has a different meaning. Designations involving a letter and a number, such as A-1 are zoning classifications. Classifications vary among counties but “A” generally stands for agriculture, “R” for residential, and “C” for commercial. The A-1 Exclusive Agricultural District zoning classification generally means that this land is zoned exclusively for agricultural production and associated facilities such as the farmer’s own home and associated barns, sheds, silos and the like. A-1 has nothing to do with soil type or prime land; it is simply a zoning classification.

Soil capability classes, such as Class I through Class VIII relate to soil characteristics. Soil classes for each county are defined in the Soil Survey of that particular county. Soil Surveys are available free from county Natural Resources Conservation Service and Land and Water Conservation Departments. This valuable book maps all the soils in the county and lists their names and characteristics for agriculture, building, conservation, recreation, construction materials, water resources and more. Capability classes and sub-classes show, in a general way, the suitability of soils for most kinds of field crops. Class I has few limitations (such as erosion, wetness, shallow or stony) to crop growth, Class II soils have moderate limitations for crop growth and require moderate conservation practices, and Class III and above soils have severe limitations for crop growth or may require extensive conservation practices.

The term “prime agricultural land” may mean something slightly different in each county. Jefferson County, for example has defined “prime land” as those soil types that are identified within the Soil Survey of Jefferson County, Wisconsin as Class I and Class II and also Class III soils that exhibit prime agricultural capabilities based on comparable expected yields to Class I and II. The soils with the least limitations for crop growth and yields are generally considered “prime agricultural soils”.

## **The Tension between Prime and Poor Soils, Development and Agriculture**

It is overly simplistic to say that all prime soils should be preserved for farming, and development can only occur on the poorer soils. Several issues often crop up in this discussion such as:

- Some farmers have very little or no prime soils (as defined by their county) and have adapted their farming operation to a less desirable soil type. Through conservation measures and an appropriate selection of crops and livestock, they can run a successful operation.
- Prime soil types in capability Class I are often the most level soils and most desirable for both farming and development. Construction on level sites generally incurs fewer costs than construction on steep slopes. An example of this situation is on the east side of Janesville where some of the most productive soil in Wisconsin is being sub-divided.
- Steep slopes are often desirable for residential housing because of the views. These areas are often picturesque and unique and also desirable for public parks and open space for the enjoyment of all. Building on steep slopes can cause excessive erosion and increase the speed and volume of run-off. The Jefferson County Land Use Plan suggests restricting development on slopes greater than 20%.
- Construction on Class III through VIII soils can have a great impact on the environment due to the potential for severe erosion, building failure and water pollution in naturally wet areas, costs associated with flooding, and water contamination in areas of fissured bedrock, just to name a few.
- Generally, on land with steep slopes, poor drainage, or unstable soils, the cost of construction increases because of special design features needed.
- Interspersing development on poorer soils that occur within prime soils makes farming difficult due to increased traffic and vandalism in rural areas and objections from new neighbors about noise and smells.

There is no “ideal” soil type or location for farming or development. Each community needs to weigh the costs and benefits of each land use decision.

### **Section III: Concerns with Rural Development and Benefits to Focused Development**

Development in rural areas is a problem for many reasons. The RRC Rural Development Concerns Issue Team has organized these reasons into five categories:

- A. Domino Effect of Urban Fringe and Scattered Rural Development
- B. Higher Cost of Providing Government Services to Fragmented Development
- C. Environmental Benefits of Focusing Development Adjacent to Existing Development
- D. Agricultural Benefits of Siting Development Adjacent to Existing Development
- E. Community Benefits of Siting Development Adjacent to Existing Development

The concerns listed in this section can be greatly reduced by strong growth management ordinances and policies.

*“Fifty years ago, the problem was convincing a public that had mostly grown up on farms that there was value in preserving what seemed like an endless countryside. Today, we are a majority suburban nation and the problem is instilling reverence for the cities we have left behind. The natural movement needs to treat cities with the same reverence as natural areas. The movement should not abandon its dedication to the preservation of wilderness but should add to it—with equal dedication—an affection for cities.”*

*Farms & Neighborhoods—Keeping Both Strong  
A Dane County Executive Design Dane! Initiative, July 2000.*

### **A. Domino Effect of Urban Fringe and Scattered Rural Development**

Scattered rural development can have a domino effect. Once one farmer decides to sell, others want to sell. After the initial sale and development approval has occurred, the precedence of approving a subdivision not connected to municipal facilities can be used successfully as the justification for approving the next subdivision. The presence of a rural home becomes the justification for approving the next. Developers are then drawn to areas where it is easy to acquire land and permits. Construction of roads leads to more people, which lead to more road construction and improvements. The establishment of a family member or friend in a remote location tends to attract other family members or friends. As the number of houses increase, the need for services increase.

As home numbers increase, conflicts with agriculture increase; this tends to discourage continued farming in the area. Available farm support services decrease as their agricultural business base decreases. The remaining farmers must then drive farther to get materials or services. Development potential increases land value, making it more difficult for farmers to purchase land for production or to rent land.

### **B. Higher Cost of Providing Rural Government Services**

Scattered rural housing can force local governments to consider expanding their services to meet the demands—normally costing more than will be recovered in new tax base revenues. According to a 2000 UW-Extension study referring to nonfarm rural residences, for every dollar generated in revenue, it costs between \$1.01 and \$1.30 to provide services. (UWEX WLURP Report #2 May 2000). It should be pointed out that other UW-Extension studies do challenge the accuracy of these types of “Costs of Services” ratios. These studies can be helpful in moving local residents forward in thinking about the ramifications of alternate ways to develop or not develop. Each community, considering development, should analyze their unique conditions regarding cost of services and other local impacts. The University of Wisconsin has a work book to assist communities trying to determine cost of services. {editors note need reference for these studies, be sure Margaret’s UW workbook is in bibliography}

The fiscal and nonfiscal impacts of scattered rural development can include:

- Road construction cost per resident increases with a dispersed population. More cost is incurred to repair or improve roads and bridges. Costs of maintaining older substandard roads increase with more cars on the road. Greater demand for safer roads: i.e. more plowing and salting, more guardrails, straightening. Increased safety measures needed at railroad crossings.
- Cost to provide public water supply if residential wells become contaminated or ground water levels drop. In the Rock River Basin, an average of 13% of the rural wells have nitrate levels above the enforcement level while other areas have high arsenic levels caused by the drawdown of ground water levels.
- Greater demand for police, fire protection and emergency response services. House damage in fires increases significantly due to lack of water and longer response time. Medical emergencies more likely to result in fatalities due to length of response and travel time to hospital. Cost of refuse pick up can increase as travel distances and number of pick-ups increase (many communities charge an annual fee to each home for this service).

- Septic systems in rural subdivisions may contaminate groundwater in specific situations.
- High utility construction costs with dispersed population. Storm related utility repair costs could increase.
- Any subdivision development increases costs for road improvements and may result in the need for larger culverts to handle the greater volume of stormwater runoff.
- Unless effective construction erosion controls and storm water management practices are implemented and enforced there is an increased need for ditch maintenance and clean-up due to sedimentation from construction site erosion and greater storm water volume.
- School bus transportation costs are higher per pupil due to greater travel distance with dispersed population.
- Hard for students to be involved in activities and part-time jobs, resulting in increased use of cars or trips per car.

### C. Environmental Benefits of Development Adjacent to Existing Development

- Prevents wildlife habitat loss, fragmentation of woodlots and forests, and loss of environmental corridors. Many species cannot tolerate extensive human activity. Scattered development can disrupt mating patterns, causing genetic isolation and weakening species health. It can also destroy important migration, resting and feeding areas.
- Protects open space, green space and scenic vistas: Agricultural land and open space are positive values for most people.
- Potentially reduce the amount of impervious surfaces such as roads resulting in negative impacts on stream flow, water quality, habitat and groundwater
- Mass transit, which reduces reliance on motor vehicles thereby reducing air pollutant emissions, is not feasible without sufficient population densities.
- Open space is necessary for hunting safety and wildlife management. Diminished hunting opportunities due to residences and posted land.
- Reduced number of deer/car collisions with diminished property damage and human injury.
- Increased snowmobiling opportunities.
- Reduced potential for introduction of exotic, non-native nuisance species.

### D. Agricultural Benefits of Siting Development Adjacent to Existing Development:

- An adequate base of agricultural land must be maintained to a) produce food crops required to feed our population in the future, b) support local agriculture related business and c) produce raw products near manufacturing facilities. If agriculture declines in an area there will not be adequate business to maintain the farm support businesses. Cost of agricultural production will increase if remaining farmers have to travel farther for services and markets.
- Good planning for development reduces loss of prime agricultural land.

### Lakeshore Development an Exception

Throughout Wisconsin, lakes and rivers are increasingly threatened by residential development. In southern Wisconsin, few buildable lots are available on lakes, and rivers are seeing increased development pressure. Many times a smaller house or cottage is purchased and replaced with a much larger house. This increases the impermeable surfaces near the lake and increases the amount of runoff entering the lake.

*The Rock River Coalition does not support increasing development near lakes and rivers without adequate environmental protection measures.*

- Farming operations and farm related industries are often incompatible with residential development. DATCP receives the greatest number of complaints each year from non-farmers about odor and noise. Ordinances and regulations addressing concerns of residential property owners may restrict or interfere with farming and farm industry operation.
- Combination of commuters, residential and service delivery traffic on the road with farm equipment is dangerous.

**E. Community Benefits of Siting Development Adjacent to Existing Development:**

- Efficient and cost-effective utilities and services
- Cities support a range of transportation choices such as public transportation, bicycle paths, and walking, which can reduce the need for parking in the city center
- Shorter driving distances to school, work, shopping and recreation, preserving resources
- Shorter emergency response times
- Increased range of housing choices and costs
- Discernable edges of the community contribute to a sense of place or character in both the city or village and the countryside
- When communities grow in size they typically offer a wider range of cultural opportunities, stores, and restaurants
- Greater variety of jobs due to a more diverse economy
- Mixed-use zones consisting of a combination of residential and commercial are convenient and economical
- Walkable opportunities increase (healthier lifestyle)
- Greater opportunities for a diverse population
- Opportunities for in-fill development to more efficiently use land resources.
- Designated and accessible public open space that preserves environmental corridors.

**Concerns with Focusing Development near Existing Development:**

- Many small hamlets and communities feel additional development will change their character.
- Public services such as sewerage and water may not be available or may be at or near limit.
- Many people want a country home.
- Increasing likelihood of border disputes and a greater need for boundary agreements.

**Section IV: Protecting Farming as an Asset to the Basin**

The financial return to those in the business of agriculture has fallen well below the level needed to keep many farmers successfully operating. When an agricultural operation fails financially, the strategy is often to sell some of the land. Such land is usually marketed for development because of the higher value paid. If there were other methods of providing sufficient cash flow, agricultural and open space resources could be better preserved.

With this in mind, the RRC Team took a broad view of implementation methods that protect and promote agriculture. These methods fell into these categories:

1. Direct incentives or payments
2. Methods to make farming more profitable
3. Regulatory Methods that support farming in the community

Regulation is the foundation of a strong growth management plan. However, the Team felt that using a mix of implementation methods would be a better solution than regulation alone. The reason for this belief is:

- Landowners are frequently interested in maintaining their land as farmland or for conservation but can't afford not to sell it.
- Fairness: asking society to share in cost of preserving land for environmental purposes, groundwater recharge, wildlife, and open space rather than on the backs of farmers.
- Everybody's needs are being met: There is community cooperation.
- Funds provided as compensation can be reinvested in the farm.
- Younger farmers are able to get started: cheaper land means less debt. Conversely, retiring farmers need to have their long-term financial needs met.
- History shows that an economic solution to the land use problem is better than a regulatory solution.

### **Regarding implementation methods described below.**

Not all of these methods are unilaterally endorsed by the committee for all areas of the basin. The question of how to manage development is an important decision for local citizens and their elected representatives to make based on the needs and unique features of the community. Most, but not all, of the descriptions of practices are from the American Farmland Trust

#### **A. Methods using Direct Payments or Density Incentives**

These are ways to encourage restricted land use to preserve farming or good environmental practices. Some directly compensate farmers through payments or tax deductions such as purchase of agricultural conservation easements and transfer of development rights while others place the financial incentive on the development community such as cluster bonus. Mitigation policies permanently protect land in proportion to land that is developed and can involve landowner compensation.

- **Purchase of Agricultural Conservation Easements (PACE) and Purchase of Development Rights (PDR)**

PACE programs use tax revenue or other funds to pay the landowner to permanently remove the option for development from all or part of their land. The "conservation easement" is the legal document that sets forth the development restrictions on a parcel of land and transfers with the deed to subsequent owners. This concept is often called "purchase of development rights" in Wisconsin.

Agricultural conservation easements are designed specifically to protect farmland. The landowner retains ownership and the right to use the land for farming and other purposes that do not

interfere with or reduce agricultural viability. They hold title to their properties and may restrict public access, sell, give or transfer their property, as they desire. Conservation easements limit land to specific uses and thus protect it from development. Agreements are voluntary and are created between private landowners and qualified land trusts, conservation organizations, or government agencies. Conservation easements can also protect wetlands, woods, and natural areas.

Conservation easements are attractive to farmers because it is a way to directly compensate farmers for not developing their land. The farmer may then use the money to invest in the farm operation, for retirement savings, for education, or any other purpose. Some landowners, who want to see their property remain in its current state, are able to donate a conservation easement to a non-profit conservation organization. The landowner gets the satisfaction of knowing their land will never be developed and an income tax deduction.

### **Town of Dunn, Dane County**

The Town of Dunn is located just south of the City of Madison and east of the City of Fitchburg within sight of the State Capital and on the shores of Lake Waubesa.

On April 22, 1997 (Earth Day) the Town of Dunn protected its first property, the Sinaiko Farm (see pictures), under its purchase of development rights program. The program was funded by a 50-cent assessment per \$1000 equalized valuation that the taxpayers approved by referendum in 1996. Since that time, the Town of Dunn has protected 1763.58 acres and has a waiting list of 26 landowners. Funding has come from the assessment, \$1.46 million in grants from the USDA Farmland Protection Program, and matching grants from the DNR Stewardship program and Dane County Conservation Fund, and local land trusts. In April 2000, electors approved a \$2.4 million bond issue, totally funded by the previous assessment and adding no new taxes, to continue the program. <http://town.dunn.wi.us>

**Need actual picture files that were placed in the word doc.**

## Creative Incentives to Keep Farmers Farming

Frequently a farmer has financial pressures or concerns for the future that a community may be able to address as a cost effective means of keeping land in agriculture. Coverage could be based on an agreement to keep land in agriculture. Some of these ideas include:

- ***Life Insurance:***  
A life insurance policy for an agreed upon amount could be provided to the landowner that, upon the demise of the landowner, would help provide the financial legacy the landowner would have otherwise provided through sale of the family farm.
- ***Long-term Care or Health Insurance:***  
Many farmers, or their spouses, work off the farm in order to have health insurance. By providing either health care or long term care—their focus is likely to stay on farming.
- ***Disability Insurance***  
Disability insurance could be provided to the landowner that would provide a stable, agreed upon level of lump or annual funds to the landowner if he/she should become disabled and unable to perform work for a wage.
- ***Education Fund***  
College/Technical School Tuition: At the state or possibly county level, tuition could be paid for designated family members (this could include the farmer/spouse and other close relations) for either a specified amount and/or number of years.
- ***Farm Management and Retraining Assistance***  
A stipend is paid to farmers who complete additional training in farm management or vocational training of the farmer who must then maintain their land in open space or agriculture, even if they no longer farm it themselves.

- **2002 Farm Bill Working Lands Conservation Programs**

The USDA has several conservation programs that directly compensate farmers for installing streambank buffers, restoring grasslands, and creating wildlife habitat. Compensation for permanent easements are available in some of these programs and installation costs are either cost shared or 100% compensated. Compensation rates vary between counties, according to soil type. Contact your local USDA Farm Service Agency and Natural Resources Conservation Agency for details.

- **Density bonuses or cluster bonus**

Zoning ordinances that encourage clustering allow or require houses to be grouped close together on small lots to protect open land. The portion that is not developed may be restricted by a conservation easement. Cluster zoning has been used more successfully to preserve open space or to create transitional areas between farms and residential areas than to protect farmland. It is often used to create “conservation subdivisions”. As used here, instead of a requirement, landowners would receive a tax credit for ‘clustering’ or for developing land adjacent to existing development. [Dodge County is one of the counties in Wisconsin that has a density bonus in its ordinance.]

## Zoning: Is it a Tool for Agriculture or Open Space Preservation?

### What Zoning is:

Zoning is the most common means of regulating land use in the United States. Some form of zoning exists in almost every municipality in the nation. It is also a major tool for implementing plans.

Zoning regulations typically define districts by uses and intensity. They include a specific list of land uses allowed in each district along with a map of zoning districts, and a procedure for people to interpret these elements for individual cases. General zoning regulates the use of land, lot size and the configuration of structures, and special zoning programs. In Wisconsin these special zoning programs include exclusive agricultural zoning, floodplain zoning and shoreland zoning.

### Benefits of Zoning:

Agricultural zoning is the most widely used technique for farmland protection, and it provides a "baseline" level of protection. Zoning represents a foundational layer of farmland protection by helping to keep conflicting farm and nonfarm land uses separate. It also can help prevent the fragmentation of the farmland base into parcels too small to farm. In general, zoning can be an effective regulatory tool for preserving land resources and urban containment.

*\*\*\*\*\*Need to also add Smart Growth comment\*\*\*\*\**

### Zoning Limitations:

Zoning, by itself, cannot be depended upon to protect and preserve open space. If a zoning ordinance is weak or ineffective, it is often easy to obtain a variance from the provisions of the zoning ordinance.

The administration of zoning ordinances lies in the hands of zoning administrators and elected and appointed officials. Elected and appointed officials are not generally involved enough with the zoning ordinance to understand and remember all its complexities. Even among well-intentioned administrators biases, errors and prejudicial judgments can occur, resulting in differential enforcement.

Zoning maps are subject to errors, and those based in part on soil suitability are subject to soil survey errors. Sometimes the unsuitability of soils for development, for example, in wetlands, shallow soils, high bedrock, and steep slopes, might keep such land open. But even in these cases, adjacent land that is appropriate for agricultural use needs stronger protection from development than just zoning laws. Zoning maps may sometimes be subject to border disputes between adjoining municipalities with disagreements as to where one district begins and another ends.

Attempts to provide open space through zoning can result in a "takings" challenge where landowners may contend that they have been deprived of any practical use of their property.

In Wisconsin, state laws governing zoning are weak, and therefore it is essential that local ordinances are well crafted and utilize strong language.

Jefferson County has one of the strongest zoning ordinances in Wisconsin. An updated county plan and ordinance has resulted in significantly enhanced protection and preservation of agricultural land.

## B. Implementation Methods to Support Agricultural Profitability

Municipalities can help reduce costs, frustration, time commitments and other barriers for farmers that can help increase agricultural profitability. They can:

- Support farmer education classes and training programs provided by University of Wisconsin-Extension or the local Technical College.
- Provide assistance to landowners for the development of new cooperative services i.e. manure composting, methane generation or manure brokering.
- Create methods to expedite permits for critical agricultural businesses. Requirements for achieving expedited status would be established in advance and agreed on by the community.
- Economic development councils can focus on maintaining agricultural businesses:
  - These councils could focus more effort on agriculture, especially those businesses that increase agricultural sustainability: marketing, manure, fertilizer, and nutrient management.
- Encourage unique opportunities for agricultural related businesses (value added)—provided environmental concerns are addressed. Some of these are very controversial and need total community input. We have included a detailed discussion of the following in Appendix B.
  - Wind farms
  - Ethanol
  - Cellular towers
  - Large Dairy Farms

## C Regulatory Methods that Support Farming

Municipalities can use several innovative methods to help support farming, including adopting ordinances, implementing special fees, transferring development rights and other practices. The following are some examples:

- ***Agricultural District***  
Agricultural district laws allow farmers to form special areas where commercial agriculture is encouraged and protected. Each law provides incentives such as automatic eligibility for differential assessment, protection from eminent domain and municipal annexation, enhanced right-to-farm protection, exemption from special local tax assessments, and eligibility for state Purchase of Agricultural Conservation Easement programs
- ***Agricultural Protection Zoning (APZ)***  
Agricultural protection zoning ordinances designate areas where farming is the primary land use and

## Agricultural Alternatives

- Many farmers assume that increasing animal numbers will automatically result in increased profitability. However, the first step for individual farms to increase profitability is to fine tune productivity and financial management decision-making. Many farmers have found economic success by looking for alternate strategies that have few environmental impacts, if managed correctly. Intensive Rotational Grazing
- No till (reduces machinery needs and time)
- Organic Farming
- Farm Tours
- Bed and Breakfast
- Specialty markets
  - Specialty soybeans for tofu or blue corn for chips
  - Specialty cheese: raw milk, sheep, goat
  - Seasonal crops such as cut flowers or pumpkins and gourds
  - Industrial hemp (currently only legal in Canada)
- Local Direct Marketing (promoted in the Rock River Basin by Michael Fields Institute)

discourage other land uses in those areas. APZ also restricts the density of residential development in agricultural zones. The agricultural land base is stabilized by keeping large tracts of land relatively free from non-farm development, also reducing the likelihood of conflicts and maintaining a “critical mass” of agricultural land.

“No net loss of farmland” policies prohibit the conversion of land subject to Agricultural Protection Zoning unless an equal amount of agricultural land of the same or better quality is added to the agricultural protection zone.

- ***Conservation Subdivision Ordinance***

Some municipalities require all new subdivisions to be designed using a conservation design. Typically this requires homes to be clustered in specific areas of the subdivision, leaving environmentally sensitive areas in public ownership either by the subdivision association or the appropriate government. Conservation subdivisions usually manage stormwater in a regional design approach rather than property-by-property. A model Conservation Subdivision Ordinance has been prepared by the state as part of the Smart Growth Initiative. [UWEX, Ohm 2002]

- ***Density Bonus for Animals***

Counties may limit the number of animals that can be raised on a parcel of land through a permit system. A “density bonus” would allow a producer to have more animals, when appropriate environmental measures are taken. The density bonus threshold would be described in the applicable zoning code. See ‘Large Dairy Operation’ discussion Appendix B.

- ***Development or Impact Fees***

A fee is paid by a developer based on increased services that will need to be provided to the new residents. These can be adjusted according to distance or number of residences. This is a disincentive for development in agricultural areas.

- ***Mitigation ordinances and policies***

Mitigation ordinances make developers pay for farmland protection by requiring developers to permanently protect farmland for every acre of agricultural land they convert to other uses, usually by placing a conservation easement on farmland in another part of the municipality.

### **Highway 12 Agreement in Dane County**

Mitigation is being used in the Highway 12 reconstruction corridor between Middleton and Sauk City. An agreement was reached in March 1999 that allowed highway expansion to move forward in exchange for \$15 million for protection of natural resources in the Baraboo Hills and \$500,000 for planning in Sauk and Dane Counties. Dane County Executive Kathleen Falk explained: “Working with DOT, communities and conservation organizations, we can use these funds to buy, for example, development rights so farmers can stay in farming and prevent sprawl, and we can purchase key segments of the Ice Age Trail or add on to some of our best county parks in the area”. (*Capital Times*, March 10, 1999) The Sauk County Purchase of Development Rights program to implement key provisions of the agreement was initially funded with \$5 million from the agreement. The Nature Conservancy also receives matching funds from the settlement to fulfill the agreement and works with a multitude of partners to do so (*The Nature Conservancy Wisconsin Chapter* (newsletter), Winter 2002-2003).

- ***Right to Farm Legislation and Statements***

All 50 states have at least one right-to-farm law intended to protect farmers and ranchers from nuisance

lawsuits. These laws are a state policy assertion that commercial agriculture is an important activity and support the economic viability of farming by discouraging neighbors from filing lawsuits against agricultural operations.

- ***Transfer of development rights***

This program allows landowners to transfer the right to develop one parcel of land to a different parcel of land. TDR can shift development from agricultural areas to areas planned for growth. The farm land is restricted with a permanent agricultural conservation easement. A developer purchasing development rights is often allowed greater density development as an incentive, which increases profitability.

### **Town of Cottage Grove**

The Town of Cottage Grove, east of Madison, has completed one TDR transaction. These transactions require that a city or village work cooperatively with surrounding farmers to accomplish their goals.

## **Section V: RRC Policy Summary**

Nestled throughout this document are suggestions for governmental policies. Below we have summarized those policy recommendations. We believe that, as appropriate, communities should adopt the following policies.

1. Communities should protect rural agricultural land and open space by the following methods:
  - a. Only allow subdivision development in areas adjacent to existing developments.
  - b. Encourage locating subdivisions adjacent to existing sewer services and utilities.
  - c. Cities should abide by the same wetland preservation rules as rural areas.
  - d. New development near lakes and rivers in general should not be allowed unless all environmental concerns are addressed.
  - e. Guide rural housing through strong land use plans, farmland preservation plans and agricultural protection zoning and other zoning ordinances (e.g., Jefferson County, which has planned for a limited number of scattered homes)
  - f. Municipalities (cities, counties, towns and villages) should develop Purchase of Agricultural Conservation Easement or Purchase of Development Rights programs.
  - g. Counties or towns should identify exclusive agricultural districts or farm priority areas and develop a plan for the location of agricultural support businesses.
  - h. Municipalities should work with local land trusts to protect threatened and ecologically sensitive lands.
2. Subdivisions that are developed should utilize principals to retain groundwater infiltration, manage storm water and preserve wildlife habitat.
3. Municipalities should modify plans and zoning regulations to allow for a variety of setbacks, street widths and density standards to support conservation subdivision and traditional neighborhood design.
4. Counties should partner with the agricultural community and others to enhance economic profitability by supporting market research studies to identify value-added and/or niche market opportunities that also demonstrate environmental stewardship.
5. Economic development interests should examine the feasibility of a regional brand that identifies and promotes locally grown products.

6. Counties and towns should market Badger Care to rural farm families and encourage the state to allow full tax deductions for health insurance for farm families.
7. Counties should develop agricultural incentive programs that mesh needs of farmers to have a good quality of life with agricultural productivity and sustainability. Communities should work with the state to meet insurance needs of farm families.
8. Counties and towns should develop methods of expediting farm permits, providing environmental standards are met.

**The Rock River Coalition is sharing this document with elected officials, planners and others interested in good land use in the basin through meetings and presentations. Any group who would like a presentation on these principals can contact the RRC at 920-674-7443 or at [rriver@excel.net](mailto:rriver@excel.net).**

**The team will continue to work towards sound land use through education and partnerships. Anyone is welcome to join the team. Future activities are likely to include planning roundtables for professional planners in the basin to share their experiences, and workshops on conservation or low-impact subdivision design.**

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## APPENDIX A

### Wind Energy

Alternative sources of fuel are changing the landscape in Wisconsin. A wind farm with 20 turbines is operating near Montfort in Iowa County along Hwy 18. The 215-foot towers with 110-foot blades are imposing structures, which even attract tourists! The approval process at Montfort ranks “as one of the warmest welcomes ever bestowed on a wind power project in the US” according to Michael Vickerman, executive director of RENEW. (Alliant Energy News, *Alliant Energy-WP&L Contracts for Additional Wind Energy from FPL Energy’s Montfort Wind Farm*, [www.alliantenergy.com](http://www.alliantenergy.com), 6/19/01). A 28-turbine wind farm is proposed near Addison in Washington County. It has been beset by controversy and lawsuits, primarily due to noise and concerns of bird and bat mortality. The proposed location is along the critical bird migration route and bat nesting area of the Niagara Escarpment.

Wind farms are clusters of wind turbines that generate electricity by converting wind kinetic energy into electrical energy. Wind farms are generally located in areas with reliably favorable wind speeds. According to a map by Wisconsin Wind Energy Potential ([www.baywinds.com/new/wiscspot.html](http://www.baywinds.com/new/wiscspot.html)), most areas in the Rock River Basin have a medium wind power potential (about an average annual wind speed of 13.5 to 15.5 miles per hour), with locally high hills or outcrops having the highest potential. Areas in the northern part of the basin have the most potential for wind farming.

Typically, a wind farm takes up only a very small amount of land, leaving the vast majority of the farmland available for agricultural use or left to the local flora and fauna. Each wind turbine uses about one quarter acre of land for the foundation and access roads. Turbines must be spaced about one every 5 acres in the Midwest to avoid creating turbulence. (Wisconsin Energy Center, *Wind Power in Wisconsin*, 2000). However, land use planning must also take into account the transmission lines needed to transport the electricity generated.

Advantages to wind turbines include being a source of renewable and clean energy: they do not generate air or water emissions, and do not produce hazardous waste. Tax payments are made to counties, local communities and schools. Landowners, usually farmers, receive lease payments thus diversifying the income generated by the farm. (Wisconsin Energy Center, *Wind Power in Wisconsin*, 2000)

Environmental impacts often cited are noise and bird mortality. Efforts are being made to mitigate these problems. Noise from the new larger turbines is generally about 50 decibels at about 300-600 feet. This compares to the sound of light traffic at a distance of 100 feet. Carefully locating the turbines out of migration routes or areas with endangered avian species, along with the slower speed of the blades results in lower bird mortality. (Wisconsin Energy Center, *Wind Power in Wisconsin*, 2000)

Other concerns about wind farms include loss of property values, conflicts with land use plans and zoning codes and aesthetics. (Don Behm, “Wind farm lawsuit dropped,” *Milwaukee Journal/Sentinel*, [www.jsonline.com](http://www.jsonline.com), 5/10/01) Concerns found during survey of residents around the Kewanee wind farm included: flicker of the blade’ shadow which can be a major annoyance and can even trigger epileptic attacks, vibration through bedrock to nearby homes and interference with cell phones and TV reception.”

The state Appeals Court ruled in March 2001 that municipalities should only consider public health and safety issues when reviewing requests to build wind turbines. This created a statewide precedent restricting municipal regulation of wind projects. (Don Behm, “Wind farm lawsuit dropped,” *Milwaukee Journal/Sentinel*, [www.jsonline.com](http://www.jsonline.com), 5/10/01)

The Wisconsin Division of Energy is in the process of developing a model wind turbine ordinance for local municipalities.

## Wireless Communication Facilities (Cell Towers)

In 1996, Congress passed the Telecommunication Act, which brought about the deregulation of the telecommunications industry. At this time, there are about six hundred competitive local telephone service providers—more than ten times the number of such providers at the end of 1995. Adding to this is the U.S. Government mandate requiring television stations to convert to digital television by the middle of the next decade. This increase in providers has led to an explosion in the number of cellular towers.

The number of cell towers is predicted to increase four-fold in the near future. While some hope satellite communication technologies will replace land-based towers, it appears unlikely at this time.

Some people have concerns about the aesthetics of the towers. Towers have been disguised as flagpoles, silos, rocks, trees and windmills. These efforts increase, possibly triple, the cost of tower construction. These camouflages are most effective with shorter towers carrying only one antenna, thus necessitating more towers. Co-location or several antennae located on a single tower would be ideal for reducing the number of towers. Unfortunately, there are many obstacles to accomplishing co-location; namely, competitive providers are not eager to share facilities.

Public concern has arisen about the health effects of radio frequency (RF) emissions from cell towers. So far, no conclusive evidence of cell tower health hazards has been found. One study showed that cell phones held to the head emit one hundred times more energy than the area around cell towers. Bird fatalities are an increasing concern. Scientists estimate two to four million songbirds a year are killed, but accurate numbers are unknown. However, tower collisions are not the major cause for the decrease in songbird numbers seen over the past several decades. Natural causes, habitat loss, disease and exhaustion, as well as crashing into other human built structures cause greater numbers of bird death.

One way to decrease the impact of towers on bird fatalities is to change the lighting. The flashing red lights confuse birds more than white strobe lights, causing them to funnel around the lighted area until they hit a guy wire or the tower itself. The red lights are navigational aids and important for small aircraft. Currently the FAA and FCC require them. Shorter towers under 500 feet high could decrease the need for guy wires and reduce tower impact. ["Battered by the Airwaves" by Wendy Weisensel, *Wisconsin Natural Resource Magazine*, February 2000, pgs 9-15]

Cell tower siting on agricultural land can be profitable to the landowners of those sites. Each provider with an antenna on a tower ordinarily makes a lease payment of \$1,000 a month (more or less) to the landowner for the use of less than one acre of land. There are very few endeavors in agriculture that are as profitable per acre and this one is also beneficial to the scores of users of cell phones by increasing continuous signal coverage and decreasing "black hole" areas.

Web references:

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## Larger Dairy Operations

The rural community and economy has changed rapidly over the last several decades. The number of dairy farms in Wisconsin has declined, primarily due to economic forces. At the same time, the average dairy herd size has increased. The continuing trend will likely be towards larger dairy farm operations in Wisconsin. Large dairy farms with more than 500 head accounted for 39% of all milk produced in 2001, up from 29% in 1997. Milk production by dairy farms with fewer than 500 head dropped from 71% of milk produced in 1997 to 61% in 2001 (Source—AgriView, Oct. 31, 2002). Though much discussion and concern has been focused on the large dairy farms, it should be noted that less than 1% of the dairy herds in Wisconsin were this size in 2000. The average dairy farm in Wisconsin has about 70 head of milking cows (UWEX 2002).

At the same time as the number of small farms has declined, the number of rural non-farm residences has increased dramatically. The shift of population demography from small family-run farms to a rural non-farm residential population has significantly changed the rural economy and its sociology. As the number of non-farm residences increases, conflicts between farmers and non-farmers increase. Rural residents with a non-farm background are less likely to be tolerant of odors and noises from farming operations. The largest source of complaints that the Department of Agriculture Trade and Consumer Protection receive regarding farming involves either odor or noise.

As farm operations grow in size, citizens are becoming more concerned about the potential environmental impacts on water and air quality. The actions of a large operation can have greater impact on both the local economy and environment than a small farm. As farms reach the size that require state and local permits the operations raise local awareness and concern. There are many differences of opinion in communities about the trend toward larger farming operations. The siting of large dairy operations in Wisconsin at times has been quite controversial.

There is no definition of what a “large” farm is. A definition frequently used is the size at which an operation must obtain state or local permits for the farm. Presently, animal operations with greater than 1,000 animal units must obtain and meet the requirements of a Wisconsin Pollution Discharge Elimination System (WPDES) Permit, which contains detailed requirements for environmentally safe operations of the facility. For dairy farms, this threshold is about 500 milking cows and associated replacement heifers. Typically, the expanded operation is a dairy that increased its numbers of milking cows to take advantage of the economics of scale. Research over the past decade has not demonstrated that the cost of production goes down as herd size increases. While there are some cost and price advantages to larger farming operations evidence does not prove that large farms produce milk at lower cost. This is because more units of milk must be sold as the profit margins decrease in order to maintain income levels.

Cited advantages of larger dairy operations include:

- Allowing the farmer to have a lifestyle similar to other business managers. This change in operation allows the farmer to have reasonable work hours and time away from the farm operation.
- Direct job creation (hired labor instead of family members) - employment with good benefits, and salaries.
- Local business economy benefits with increased purchases and service needs benefiting contractors, cooperatives, farm implement dealers, veterinarians, etc.
- Sustain other farmers by buying feed and hay locally and securing services such as custom heifer raising and custom harvesting.
- Maintain rural character of a community. After property is developed, it is unlikely it will be used for farming in the foreseeable future

- Manure can be used to replace traditional commercial fertilizers or, because of the large amount produced, to generate electricity.
- Improved tourism. People may travel to see the farm.
- Have greater environmental oversight than smaller farms. Permitted farms must have and follow a nutrient management plan.

Though closely regulated by the WPDES permit process, the potential of severe environmental impacts is greater due to the large amount of manure to be managed. Good environmentally protective management of large animal operations primarily includes the challenges associated with the safe handling of very large quantities of manure. Typically one dairy cow produces about 22 tons of manure annually (85% of this is water or 3.4 tons dry matter).

The potential environmental impacts of large dairy operations can include:

- Groundwater impacts (nitrogen, bacteria, and pharmaceuticals) related to infiltration of manure from large, intensively used cattle yards, leaking or failed manure storage pits and/or land spreading of manure on sensitive areas. E. Coli contamination of groundwater can cause significant illness and death.
- Surface water impacts (phosphorous, nitrogen or ammonia, bacteria and pharmaceuticals) on rivers, streams or lakes, related to direct runoff from the barnyard and cattle lots, failure of manure storage pits, or land spreading of manure on sensitive land areas. Farms, urban runoff and sewage discharge are all possible sources for the pathogen 'cryptosporidium' that infected more than 350,000 people in Milwaukee in 1993 resulting in a number of deaths.
- Odor problems associated with large-scale animal operations come from the animal buildings and adjacent yards and manure storage pits, and/or are related to the land application of the manure.
- Land spreading of manure, when it exceeds the ability of the crop to take up the nutrients in the manure, can result in increased phosphorus and nitrate levels in the soil. Both of these conditions can significantly increase either the phosphorous concentrations in nearby waterways via surface water runoff, or increase the nitrate levels in groundwater through downward percolation.
- Manure generated from large numbers of animals in one location often must be transported greater distances over public roads, increasing large truck traffic, road maintenance and potential for spillage on roadways.

The public may be more aware of the potential problems created by large dairy operations but overall the environmental impacts of these operations is probably less than smaller dairy farms because of stricter regulations for large operations. In total, the contribution of pollutants to ground and surface waters is probably greater from small dairy farms due to fewer regulations and the total larger number of animals. However, when there is a problem with larger farms, it is likely to be catastrophic.

Animal operations with less than 1,000 animal units must comply with the four Wisconsin Manure Management Prohibitions. These include: no overflow of manure storage structures; no unconfined manure stacking (piling) within Water Quality Management Areas; no direct runoff from feedlots or stored manure to waters of the state, and no unlimited livestock access to waters of the state where high livestock concentrations of animals prevent adequate sod cover maintenance. The newly enacted NR151 Non-Point Runoff regulations, meant to encourage voluntary compliance, require that all farms have nutrient management plans by 2008 and those in high priority water areas by 2005 if 70% cost sharing is available.

## Ethanol Plants

Ethanol is a renewable fuel made from plants. An ethanol plant converts corn (or some other organic material such as cheese whey) into the gasoline additive ethanol. Typically one bushel of corn makes 2.67 gallons of ethanol. In the Midwest, many, if not most, ethanol production plants use significantly large quantities of corn to generate ethanol.

Most often, ethanol plants are large-scale agri-businesses, where farmers simply sell their produce to the mill. However, under the “Minnesota Ethanol Program,” ([www.mda.state.mn.us/Ethanol/MEP4'99.htm](http://www.mda.state.mn.us/Ethanol/MEP4'99.htm)), small, farmer owned ethanol facilities are given state support. These new corn-processing plants may represent a new strategy for the long-range profitability of farmers and farm communities. Another aspect of the Minnesota program supports “New Generation Farmer Co-ops.” These businesses were designed to provide farm members greater direct cash return for their crops.

Because the Rock River Basin is the geographic corn producing and dairying center of Wisconsin, this area has good raw material potential for siting an ethanol plant. Other important factors associated with potential plant sites include: good near-site road or railroad connections, significant water supply, and adequate potential workers.

The potential advantages of ethanol plants include:

- They provide a strong local market for corn and/or potentially other food processing byproducts such as cheese whey.
- Beneficial byproducts of the process include carbon dioxide, which is compressed and sold for carbonation in soft drinks and stillage (the dried distilled grain residue), which is a high protein/energy animal feed.
- Considered a renewable energy source, reducing use of petrochemicals.
- Cleaner burning fuel, although it is less efficient since there are fewer btu's/gallon than gasoline, which can reduce vehicle mileage.

The potential environmental impacts associated with ethanol plants are:

- The process produces an odor of sour beer/stale bread that is offensive to some residents.
- Recently, the EPA has found that many if not most plants (especially the older plants) are releasing carbon monoxide, methanol, formaldehyde and acetic acid =during the drying process at levels many times greater than they promised.
- Heavy traffic movement brings high volumes of raw materials into the plant and transporting ethanol out of the facilities.
- Typically the plants operate 24 hours; so nighttime lighting and plant operations change the countryside aesthetics for nearby residents.
- Depending upon the local water supply, there could be potentially significant impacts on local groundwater aquifers, due to the high level of water usage in ethanol production.
- The increased value of corn means producers will replace more environmentally friendly crops such as alfalfa and hay with corn.
- Farmers are less likely to enroll in conservation programs when corn prices are high since the return on the land makes it financially unsound to remove the land from production.

#### Other potential concerns

- As more corn is used for ethanol, other users of corn will pay a higher cost per bushel leading to increased beef, hog, and poultry prices.

The closest ethanol plant to the Rock River Basin is the Badger State Ethanol LLC in Monroe. They started production in mid-September 2002. The founders of the plant come from Watertown, WI and Lena, IL. The \$56.4 million plant expects to produce 40 million gallons of ethanol per year from 14.8 million bushels of corn and provide 30-40 skilled and semi-skilled jobs. The source corn comes from over 37 elevators in Rock River basin, western Wisconsin, Illinois and Iowa. As a byproduct, 128,000 tons of distiller's grain for animal feed is produced.

Cooperative Plus, Inc. (CPI) near Whitewater is provides grain to ethanol. The ethanol market is definitely helping to move grain out of the Whitewater facility during harvest times, reducing storage costs and increasing efficiency, according to Doug Cropp, Manager. Transportation costs are also reduced by shipping grain by rail to Monroe, rather than to Chicago or Illinois and Mississippi River ports. Mr. Cropp expects that this new market will provide a better price on corn to local farmers.

Manure can also be used to generate power through the use of manure digesters. The Natural Resource Conservation Service is currently looking for sites where a group of smaller farms could collectively benefit. \*\*\*\*\*Add re Ken\*\*\*\*\*?????