



Walworth County
Land Conservation Committee
Monday, February 14, 2011 at 1:30 p.m.

**Walworth County Government Center
County Board Room 114
Elkhorn, WI 53121**

Land Use and Resource
Management Department

*Dan Kilkenny – Chair, Jerry Grant - Vice Chair
Randy Hawkins - Supervisor*

Donald Henningfeld – USDA/FSA Representative, Dorothy C. Burwell – Citizen Member

(Posted in Compliance with Sec. 19.84 Wis. Stats.)

AGENDA

1. Call to order
2. Roll call
3. Approval of the Agenda
4. Approval of Minutes from December 20, 2010 LCC Meeting
5. Public Comment
6. Discussion/Possible Action – Potters Lake Rehabilitation District Representative nomination of Roy Lightfield. Michael Cotter (enclosure, page 1)
7. Discussion/Possible Action – Response from Keith Foye, DATCP Regarding Walworth County Adopting an Additional Farmland Preservation Zoning District for Non Metallic Mining in Agricultural Preservation Areas. Fay Amerson/Deb Grube (enclosure, pages 2-7)
8. Discussion/Possible Action Draft Farmland Preservation Plan Public Hearing Dates. Louise Olson/Fay Amerson (enclosure, pages 8-9)
9. Discussion/Possible Action – SEWRPC Planning Report No. 52, “A Regional Water Supply Plan for Southeastern Wisconsin,” transmittal letter, and model resolution to endorse the Plan; referred from County Board. Michael Cotter/Matthew Weidensee (enclosure, pages 10-45)
10. Discussion/Possible Action – Wisconsin Land Information Association Award for Louise Olson and Rich Colbert. Michael Cotter (enclosure, page 46)
11. Discussion/Possible Action – Eldon and Donna Stanton, Voluntary Notice of Noncompliance, Farmland Preservation Program; Louise Olson (enclosure, pages 47-48)
12. Next Meeting Date
13. Adjournment

It is possible that a quorum of the County Board or a committee of the County Board could be in attendance. Submitted by: Michael P. Cotter, Director, Land Use and Resource Management Department Louise Olson, Deputy Director, Land Conservation Committee Designee

Posted: February 9, 2011

Walworth County Land Conservation Committee

MINUTES

DRAFT

Monday, December 20, 2010 at 1:30 p.m.

Walworth County Board Room 114
Elkhorn, WI 53121

The meeting was called to order by LCC Chair Kilkenny at 1:30 p.m.

Roll call - Committee members present included: Supervisors Hawkins, Kilkenny, Grant, Citizen Member Burwell, and USDA/FSA Representative Henningfeld. A quorum was declared.

County staff present – David Bretl, County Administrator; Michael Cotter, Director of Land Use & Resource Management (LURM); Louise Olson, Deputy Director, LURM; Fay Amerson, Urban Manager, LURM; Neal Frauenfelder, Sr. Planner, LURM; Matt Weidensee, Associate Planner, LURM; Deb Grube, Sr. Zoning Officer; and Joeann Douglas, Recording Secretary.

Also in attendance – Nancy Russell, Walworth County Board Chair; Carl Redenius, Walworth County Board Supervisor, Attorney Anthony Coletti, Greg Igl, USDA/NRCS; Shirley Grant, Joe McHugh/ Geneva Lakes Conservancy; Beverly Gamane, Lynn Lein and Robert McIndoe, Spring Prairie township

Approval of the Agenda – **Supervisors Hawkins and Grant moved and seconded approval of the agenda. Motion carried 5-0.**

Approval of the Minutes – **Supervisors Grant and Hawkins moved and seconded approval of the November 15, 2010 LCC meeting minutes as presented. Motion carried 5-0.**

Public Comment – No general public comments. Public comments, if necessary will be made during the agenda item discussions.

WLWCA Conference Report - Dorothy Burwell reported that it was one of the best conferences to date with the main speaker being new director of NACD who was instrumental for getting a sizeable grant from the Walton Foundation for Dane County. The only resolution important to Walworth County was the support of legislation requiring comprehensive well testing; which by a narrow margin. Breakout sessions included storm water management and successful lobbying of legislators

WLWCA Update Related to Resolution #3, Supporting Legislation to Comprehensive Well Water Testing Prior to Real Estate Transfers – The legislation involves testing prior to the transfer or sale of property. Testing, if passed, would include coli form bacteria, nitrates, heavy metals, volatile compounds, and radium. In Walworth County, private individuals do the well testing and sanitation inspections for real estate transactions. In some counties, the county does well testing and sanitation inspections for real estate, and a mandate may come up in future legislation.

Correspondence to Mary Beth Gibbons-Adams – Referred from CZA. Michael Cotter suggested placing the letter on file, since staff has discussed the issue at length and during the Smart Growth process.

Supervisors Grant and Hawkins moved and seconded placing the correspondence on file. Motion carried 5-0

Farmland Preservation Plan Policy Options and Considerations - Louise Olson reminded the committee their role is to review and make recommendations. The Farmland Preservation Plan draft hearing is set for sometime in October, 2011. The Zoning Ordinance changes related to FPP will be set for the end of

2012. The LCC is considered part of the public participation FPP process per statutory requirements. The staff was instructed at the November 15, 2010 meeting to correspond with DATCP asking the questions they deem appropriate related to dealing with nonmetallic mining and the Walworth County Farmland Preservation zoning ordinance. Ms Olson assured the LCC the information was reviewed with staff, DATCP, UW Extension, and other counties throughout the state. As part of the packet, definitions were provided from s.s.Ch. 91 and Ch 92. Fay Amerson explained the five policy options and considerations including discussion of the language in the state statute, reflections from the Comp Plan, public opinion from Comp Plan deliberation. Advantages and disadvantages for each of the policy consideration have been reviewed impartially by LURM staff.

A. Non Metallic Mining – Fay Amerson said we are revisiting non metallic mining from the November (2010) LCC Meeting. The question to act upon is, “Should the Farmland Preservation Plan recommend a new policy related to non metallic mining in Agricultural Preservation Areas, by allowing nonmetallic mining with a County approved Conditional Use Permit?” Neal Frauenfelder reminded the LCC that the concern was for the conversion fee for non metallic mining for gravel pits. Chair Kilkenny asked if it would be possible to create an additional farmland preservation zoning district such as A-1 M, to allow a non-metallic mineral extraction operation after a rezone and conditional use hearing at both the town and county level only for farmland preservation areas. It could be allowed on a case by case basis to assure possible mineral extraction areas are kept confidential. The zoning district approach would preserve the veto authority for both the towns and county. **Citizen Member Burwell and Supervisor Grant moved and seconded to have staff contact DATCP to determine their opinion on the non metallic mining item for discussion.** Discussion followed regarding authority to refuse mining even though it is zoned the new A1-M designation. **Motion carried 5-0.**

B. Non-Farm Residences – Matt Weidensee said the farmland preservation statutes allow for there to be additional residences added under farmland preservation. The policy question is, “Should the Farmland Preservation Plan recommend some level of residential development in a Farmland Preservation Zoning District?” DATCP’s concept is to allow non farm residences as long as they are not greater than a ratio of 1 residence for each 20 acres. There cannot be more than 4 non-farm residences plus the existing farm residence on the parcel. Advantages and disadvantages to allowing residential development were explored. The staff had concerns about the *base farm tract* concept on property rights and the applicability of the forms of property ownership. Discussion followed about the county’s more restrictive policy of 35 acre minimum lot size requirement. **Citizen Member Burwell and USDA/FSA Representative Henningfeld moved and seconded to confirm the present 35 acre lot size requirement. Motion carried 5-0.**

C. AEA – Fay Amerson said this is a new, non-regulatory tool which allows for additional tax credits to landowners. There were three policy questions regarding Agricultural Enterprise Areas. 1.) “Should the Farmland Preservation Plan support the establishment of AEAs in Walworth County” 2.) “Should the Farmland Preservation Plan recommend areas where AEAs should be established?” and 3.) “Should the Farmland Preservation Plan recommend that the County establish a procedure for accepting and signing onto petitions to establish Agricultural Enterprise Areas?” Discussion followed regarding the county’s role in AEAs. **USDA/FSA Representative Henningfeld and Supervisor Grant moved and seconded to support the establishment of AEAs in Walworth County, to NOT recommend areas where AEAs should be established, and to recommend that the staff establish a procedure for accepting and signing onto petitions to establish Agricultural Enterprise Areas. Motion carried 5-0.**

D. PACE – Fay Amerson said Purchase of Agricultural Conservation Easements is another tool for the

purchase of development rights on agricultural land. The state has appropriated in their bi-annual budget \$12,000,000. in bonds to fund the grant program which pays for 50% of the costs and a local entity paying the other 50%. Joe McHugh, Geneva Lakes Conservancy suggested an ad hoc committee with a liaison from the County, Farm Bureau, UW Extension, etc. Policy considerations were, 1.) “Should the Farmland Preservation Plan support the use of the PACE program in Walworth County?” 2.) Should the Farmland Preservation Plan recommend areas where PACE Grants should be directed?”, 3.) “Should the Farmland Preservation Plan recommend that the County establish a procedure for processing PACE Grant Applications?”, and 4.) “Should the Farmland Preservation Plan recommend the County establish a *Walworth County Farmland Preservation Legacy Fund* for the purchase of agricultural easements on targeted Walworth County farmlands?” Discussion followed regarding the 4 policy considerations.

Citizen Member Burwell and Supervisor Hawkins moved and seconded the Farmland Preservation Program support the use of the PACE program in Walworth County, recommend areas where PACE Grants should be directed, and recommend that the County establish a procedure for processing PACE Grant applications Mr Cotter recommend the ad hoc committee for a *Walworth County Farmland Preservation Legacy Fund* to purchase agricultural easements on targeted Walworth County farmlands not be part of the motion. Chair Kilkenny said the establishment of a *Walworth County Farmland Preservation Legacy Fund* would be a funding question subject to Walworth County Board policy recommendations **Motion carried 5-0.**

E. Agricultural Related Uses – Deb Grube gave the policy questions, “1.) Should the Farmland Preservation Plan recommend further consideration of the following uses (currently permitted as a conditional use in the A-1 district) within an Agricultural Preservation Zoning District? • Bottling of Spring Water, • Production of animal and marine fat and oils, • Off season storage facilities, • Land Restoration, • Business directory signs (exceeding two), • Sewage Disposal Plants, • Airports, airstrips and landing fields, • Governmental and cultural uses such as. . . park and ride facilities, • Utilities, provided all principal structures . . . except business, park and industrial, • Schools and Churches, • Contractor storage yards, • Flea markets.” And “2.) Should the Farmland Preservation Plan recommend further consideration of the following uses for additional agricultural-related uses and accessory uses, within an Agricultural Preservation Zoning District? • Commercial horse barns, • Farm Food Service (restaurant)” Discussion followed. **Supervisor Grant and Citizen Member Burwell moved and seconded to have the Farmland Preservation Plan recommend further consideration to the above listed uses and additional uses with the exception of Bottling of Spring Water, Schools and Churches, and Flea Markets. Motion carried 5-0.**

Proposed Zoning Ordinance Amendment referred by County Zoning Agency related to Farm Food Service in the A-4 Districts as a Farm Family Business - Bob McIndoe representing the town of Spring Prairie spoke and said they supported the proposed ordinance amendment and said Yuppy Hill Poultry Farm. was a prime example of what can be done with a farm family business. Ms Lynn Lein features her own egg and pork products in a small café open only 5 hours on Sunday, and was written up favorably in the Milwaukee Journal/Sentinel. Mr. McIndoe said what constitutes an agricultural related businesses have been a long debate. The Spring Prairie Board and Planning Commission think the enterprise run by Lynn Lein is a model, and ideal for a farm family business. Attorney Colletti concurred with Mr. McIndoe. Deb Grube said that Yuppy Hill is a qualifying use as a conditional use. County Board Chair Russell said she supports it since this use goes along with Dairy Breakfast and provides a farm family business without forcing a rezone into a business district which is far more desirable. **Citizen Member Burwell and USDA/FSA Representative Henningfeld moved and seconded supporting the ordinance amendment. Motion carrier 5-0**

Next Meeting Date – Monday, January 17, 2011 at 1:30 p.m.

Adjournment – **On motion and second by Supervisor Grant and Hawkins, Chair Kilkenny adjourned the meeting at 3:19 p.m. Motion carried 5-0.**

Submitted by Joeann Douglas, Recording Secretary. Minutes are not considered final until approved by the committee at the next regularly scheduled meeting.

Nonmetallic Mining in Farmland Preservation Areas

The state farmland preservation program, (chapter 91, of the Wisconsin Statutes,) authorizes the County to allow nonmetallic mineral extraction in a farmland preservation zoning district, if conducted with a conditional use permit, if it is determined that all of the following apply:

- a) The operation complies state statutes and administrative rules, the County Nonmetallic Mining Reclamation Ordinance and any applicable requirements of the department of transportation concerning the restoration of the mining site.
- b) The operation and the location of the nonmetallic mining site in the farmland preservation zoning district are consistent with the purposes of the farmland preservation zoning district.
- c) The operation and the location of the mining site in the farmland preservation district are reasonable and appropriate, considering alternative locations outside the farmland preservation zoning district, or are specifically approved under state or federal law.
- d) The operation is reasonably designed to minimize the conversion of land around the mining site from agricultural use or open space use.
- e) The operation does not substantially impair or limit the current or future agricultural use of surrounding parcels of land that are zoned or legally restricted to agricultural use.
- f) The farmland preservation zoning ordinance requires the owner to restore the land to agricultural use, consist with any required locally approved reclamation plan, when extraction is completed.

Current Policy adopted in the Comprehensive Plan (Page X-7)

The land use element of this comprehensive plan designates certain lands for mineral extraction, largely following existing M-3 Mineral Extraction zoning. Additional land for mineral extraction (sand, gravel, clay, stone) may be needed during the planning period, although the specific locations have not been determined. The County and the concerned town will consider proposals for new or expanded mineral extraction areas on a case-by-case basis, taking into account the impacts on adjacent land uses, impacts on the natural resource base, impacts on highways, and other factors. All such proposals will be subject to the County zoning ordinance and non-metallic mining reclamation ordinance. These areas will have to be rezoned into the M-3 Mineral Extraction zoning district and receive a conditional use permit. Such uses will be accommodated without amending the comprehensive plan. The property will be rezoned back to the original zoning following reclamation.

Public Opinion:

The policy of allowing nonmetallic mining as a conditional use in the A-1, Prime Agricultural Land District, was discussed extensively during the preparation of the County Comprehensive Plan by the Smart Growth Advisory Committee. The Advisory Committee included representatives from each Town. The Towns were not in favor of allowing mining in A-1 Prime Agricultural Land District, as a conditional use and wanted to maintain their zoning authority over nonmetallic mining activities.

Policy Consideration: Should the Farmland Preservation Plan recommend a new policy related to nonmetallic mining in Agricultural Preservation Areas, by allowing nonmetallic mining with a County-approved Conditional Use Permit?

Advantages of allowing nonmetallic mineral extraction activities within a farmland preservation zoning district with a County-approved Conditional Use Permit.

1. No need to rezone property back to original zone district after mining site has been successfully reclaimed to an agricultural use.
2. Property owner would not have to pay the rezone agricultural conversion fee if nonmetallic mining activities are conducted on parcel within a farmland preservation zoning district.
3. Generally nonmetallic mining is a temporary use.

Disadvantages of allowing nonmetallic mineral extraction activities within a farmland preservation zoning district with a County-approved Conditional Use Permit.

1. Towns would give up veto power enabled by a rezoning petition or action.
2. Inconsistent with the findings approved with County Comprehensive Plan.
3. Comprehensive Plan amendment necessary.

Other considerations:

Counties can be more restrictive than the state minimum standards.

State has not adopted Administrative Rules related to non metallic mining in an farmland preservation areas.

Staff recommendation memo dated, December 9, 2010.

12/20/2010 Land Conservation Committee Decision and Decisions:

The committee asked the staff to explore and consider establishing a new zoning district (A-1m) for allowing mining in a agricultural preservation area with a County-approved conditional use permit.

Policy Consideration:

Should the Farmland Preservation Plan recommend creating a new agricultural nonmetallic mining zoning district applicable within the Farmland Preservation Areas to allow the extraction and processing of nonmetallic minerals?

See attached opinion from Keith Foye, DATCP, dated January 4, 2011, regarding creating a an additional farmland preservation zoning district that would allow for nonmetallic mining.

See attached *Draft Agricultural/Mineral Extraction Zoning District, A-1 (m)* prepared by Debora Grube, Walworth County Zoning Manager.

Advantages of creating new Farmland Preservation Zoning District, A-1m Zoning District to allow nonmetallic mining in Farmland Preservation Areas.

1. Mining in an Agricultural Preservation Area would continue to require a rezone petition and be subject to local Town approval.
2. The rezoning of the farmland/agricultural preservation zoning district to the Farmland Preservation Mining District would not be subject to a rezone conversion fee.
3. Would limit mineral extraction in farmland preservation areas for limited or short-term duration and project specific uses.
4. May not require an amendment to the Comprehensive Plan.

Disadvantages:

1. Will require an amendment to the Comprehensive Plan.
2. The decision to create a new farmland preservation zoning district is a direct response to the state rezone conversion fee.

2/14/2011 Land Conservation Committee Decision and Decisions:



State of Wisconsin
Scott Walker, Governor

Department of Agriculture, Trade and Consumer Protection
Ben Brancel, Secretary

January 4, 2011

Louise A. Olson, Deputy Director
Walworth Co. Land Use &
Resource Management Dept.
100 West Walworth Street
P. O. Box 1001
Elkhorn, WI 53121

Dear Lou:

This letter is in response to your question about Walworth County adopting an additional farmland preservation zoning district that would exist for instances where the county wanted to rezone a property for a nonmetallic mineral operation.

This type of zoning district could be certified by the department. However, to be certified, the zoning district would have to meet the requirements under ss. 91.42 through 91.46, Wis. Stats. The statutes do not allow nonmetallic mineral extraction as a permitted use. Nonmetallic mineral extraction would have to be a conditional use in a certified farmland preservation zoning district subject to the provisions of s. 91.46(6), Stats. This includes the requirement that the land be "restored to an agricultural use, consistent with any required locally approved reclamation plan, when extraction is completed". The county could choose to first have to rezone the property to this zoning district, but would then have to issue a conditional use permit to allow nonmetallic mining.

If Walworth County develops a zoning district as your letter proposes, and if the department certifies the district, rezoning land from another certified farmland preservation district to the district that is certified which allows nonmetallic mining, rezoning the land would not be subject to the rezone conversion fee.

Requiring the farmland to be rezoned to a district that allows nonmetallic mining as a conditional use seems to be an additional step and cost that normally would not be required by the statutes. However, these types of choices are at the discretion of the local government.

Sincerely,

Keith Foye, Chief
Land Management Section
(608) 224-4603

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6

FOR REVIEW ONLY. . . . New Agricultural Mineral Extraction District.

A-1m Agricultural/Mineral extraction district.

(1) *Principal uses.* All uses in this **prime** agricultural district are conditional uses.

(2) *Conditional uses.* **Conditional uses listed below shall be limited to temporary, short term, and project specific where the farmland preservation land will be reclaimed to pre-existing (A-1) agricultural soil production conditions when extraction is completed,** and must be approved in accordance with the procedures established in division 4 (conditional use procedures).

- a. Aggregate or ready-mix plant. **(portable)**
- b. Clay, ceramic, and refractor minerals mining.
- c. Crushed and broken stone quarrying.
- d. Mixing of asphalt. **(portable)**
- e. Nonmetallic mining services.
- f. Processing of top soil. **(portable)**
- g. Sand and gravel quarrying.
- h. Washing, refining, or processing of rock, slate, gravel, sand or minerals. **(portable)**
- i. The extension of any existing mineral extraction related uses.

(3) *Yard requirements.*

All excavations shall be at least 200 feet from the right-of-way of any public or approved private street or property line. The Committee may vary this requirement for shallow clay barrow excavation when the excavation and backfilling is conducted in a continuous phase and the barrow material is replaced on site for the re-establishment of the original grade after considering such evidence as may be presented at the public hearing bearing upon the general purpose and intent of this Ordinance. In no case shall the setback requirement be reduced to less than 2 1/2 times the proposed maximum depth. All accessories, such as offices, parking areas, and stock piles, shall be at least 100 feet from any right-of-way or property line.

Plan Preparation and Adoption **Walworth County Farmland Preservation Plan**

Sequence of Events and Schedule

Pursuant to Subchapter II of Chapter 91 of the Wisconsin State Statutes related to State Farmland Preservation Program, the following benchmarks and deadline dates have been drafted for the preparation and adoption of Walworth County Farmland Preservation and to meet State plan certification requirements.

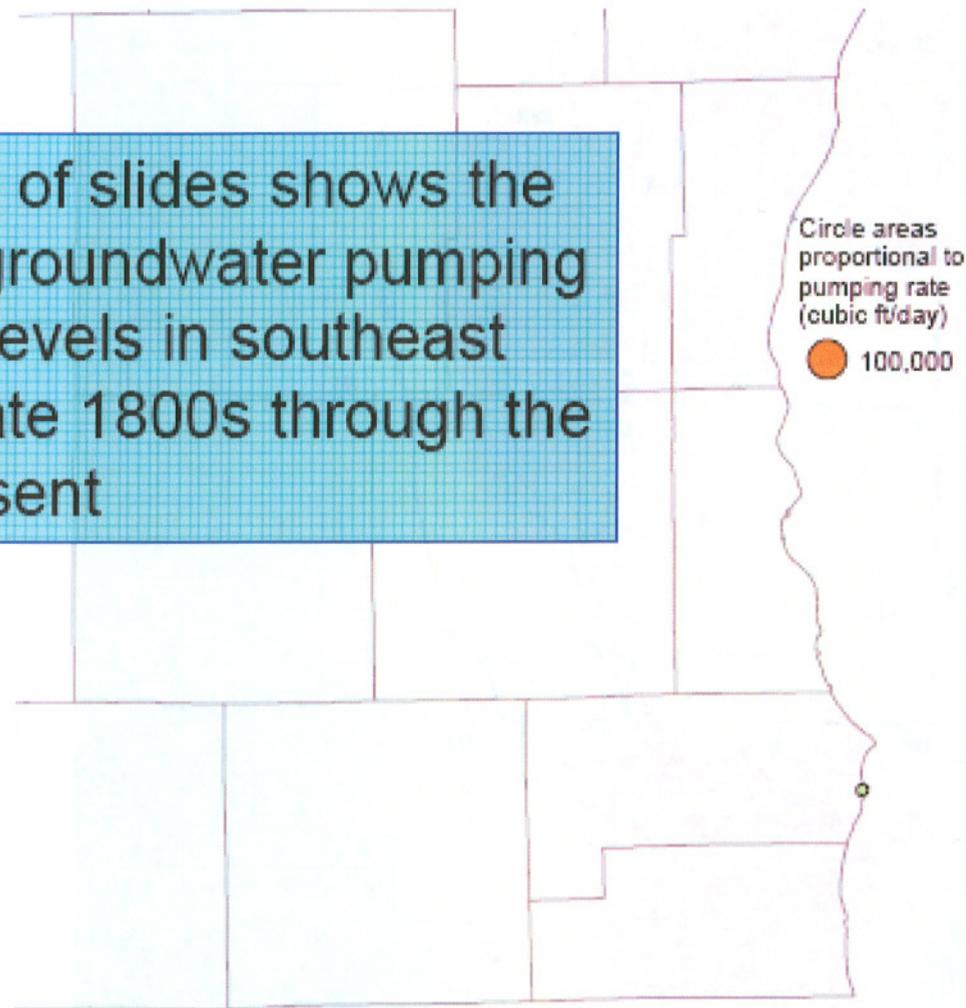
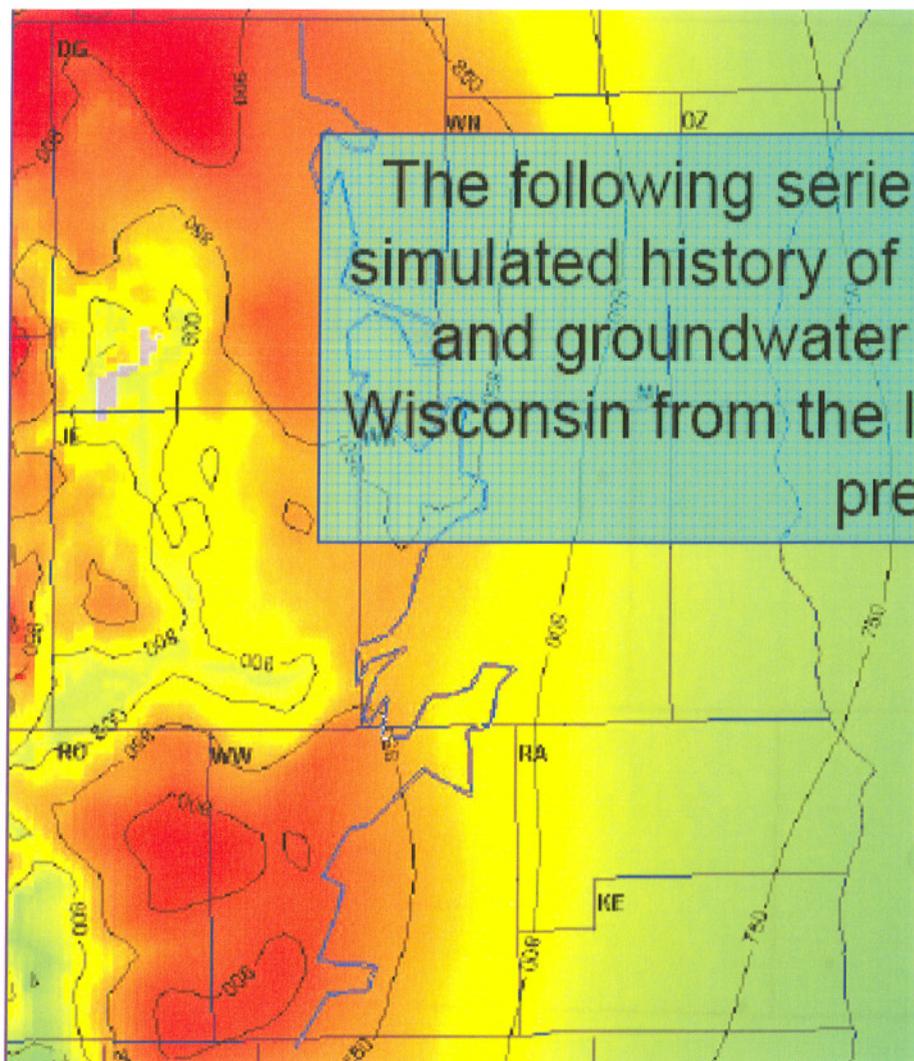
October 2009	Working Lands Initiative Presentation – LCC & CZA
November 2009	LCC – Farmland Preservation Plan Grant
January 2010	LCC – Working Lands Initiative Presentation
February 2010	WLI/ FPP Presentation & Public Hearing – Questionnaire & Comments distributed
February 2010	Walworth County awarded State Grant for preparation of Farmland <i>Preservation Plan</i>.
February 2010	Walworth County Staff prepares <i>Walworth County Farmland Preservation Plan Prospectus, Public Participation Plan, Plan Development Schedule and Plan Development Budget</i>.
March 2010	Resolution forwarded by LCC to County Board of Supervisors to accept State Grant and authorize LURM staff prepare <i>Walworth County Farmland Preservation Plan (Draft) approve Planning Prospective, and Public Participation Plan, Plan Development Schedule and Plan Development Budget</i>.
March/ April 2010	<i>Farmland Preservation Plan</i> development by LURM Staff.
May 2010	<u>LCC</u> and <u>CZA</u> review of drafted plan elements, time table & public hearing's questionnaire & comments received.
July 2010	Continue <i>Farmland Preservation Plan</i> Development
September 2010	<u>LCC</u> review draft plan elements appendices

October 2010	<i>Plan Development, public outreach and participation. (Town meetings, if needed)</i>
November 2010	<i>Plan Development, public outreach and participation. (Town meetings, if needed)</i>
December 2010	<i>Farmland Preservation Plan (Draft) completed.</i>
January 2011	<i><u>LCC</u> and <u>CZA</u> to review Draft Plan.</i>
February 2011	<i>Walworth County Farmland Preservation Plan (Draft) completed and Public Hearing authorized by <u>CZA</u> and <u>LCC</u>. Draft Plan submitted to <u>WIDATCP</u></i>
April /May 2011	<i>Public hearing on Walworth County Farmland Preservation Plan (Draft)</i>
April –June 2011	<i>Towns Review Farmland Preservation Plan Update as an Amendment to Comprehensive Plan</i>
July 2011	<i>Walworth County Farmland Preservation Plan (Final Draft) adoption considered by <u>County Zoning Agency</u> and <u>County Land Conservation Committee</u>.</i>
September 30, 2011	<i>Self-Certification and County board-adoption of Walworth County Farmland Preservation.</i> <i>Certified Walworth County Farmland Preservation Plan submitted to <u>WIDATCP</u>.</i>
November 2011	<i>Amendment to <u>Multi-jurisdictional Comprehensive Plan for Walworth County</u> considered by the County Board.</i>
December 31, 2011	<i>State Certification of Walworth County Farmland Preservation Plan.</i>

Throughout the Farmland Preservation Plan development County Board of Supervisors will be informed.

Amended: January 31, 2011

The following series of slides shows the simulated history of groundwater pumping and groundwater levels in southeast Wisconsin from the late 1800s through the present



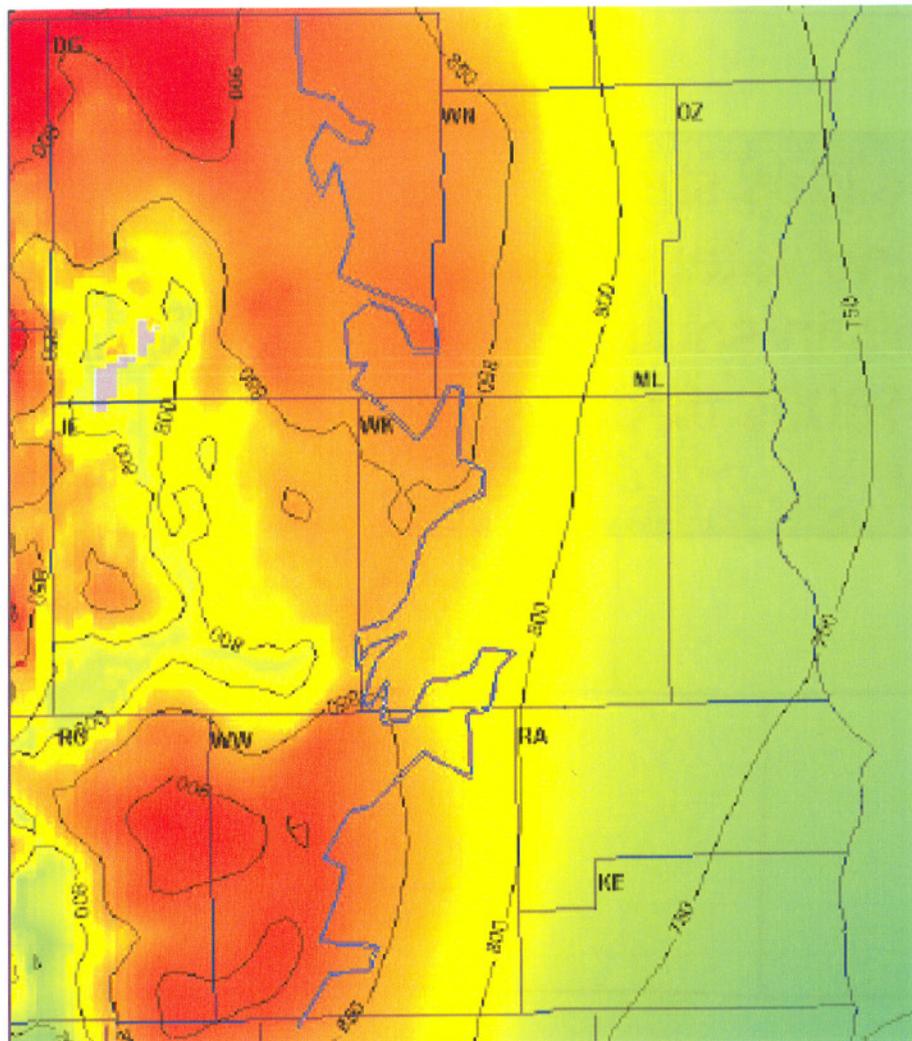
Water Levels in the Sandstone Aquifer
(feet above sea level)

Well Locations and Pumping Rates

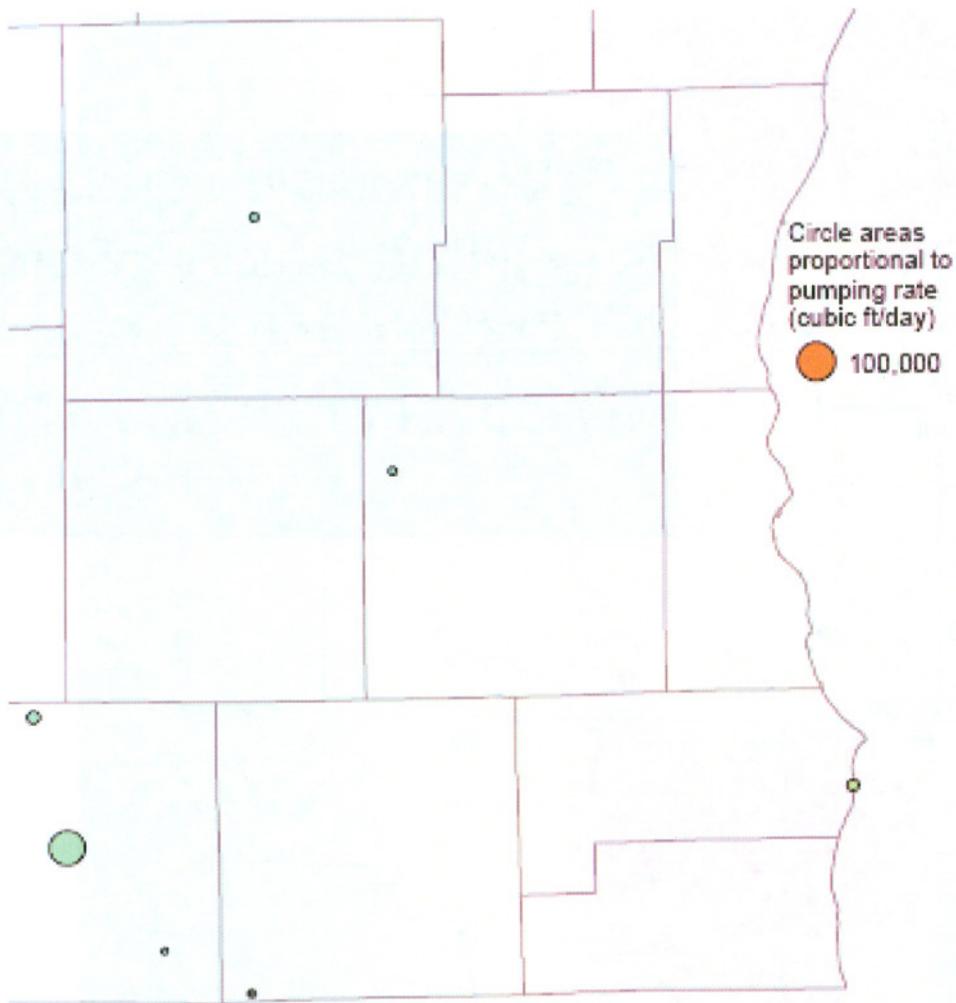
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● Deep

Pre-1864

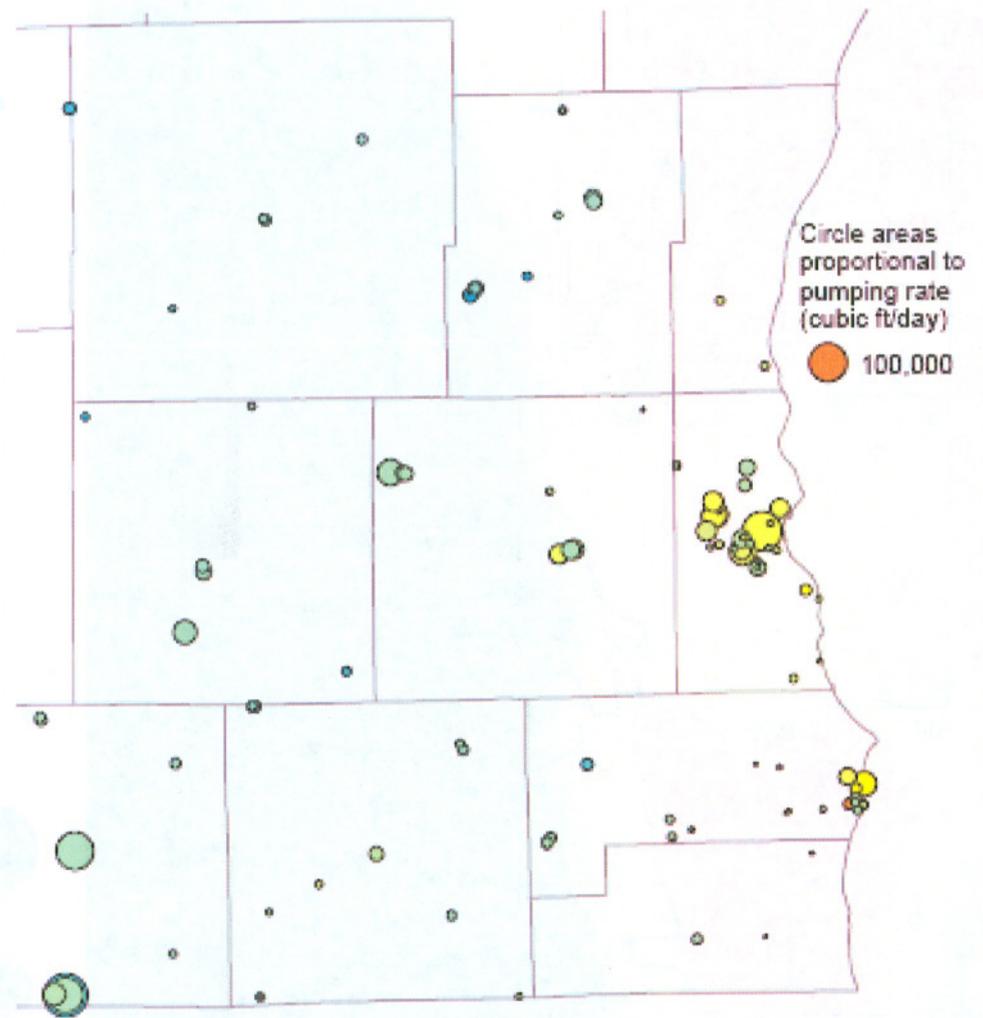
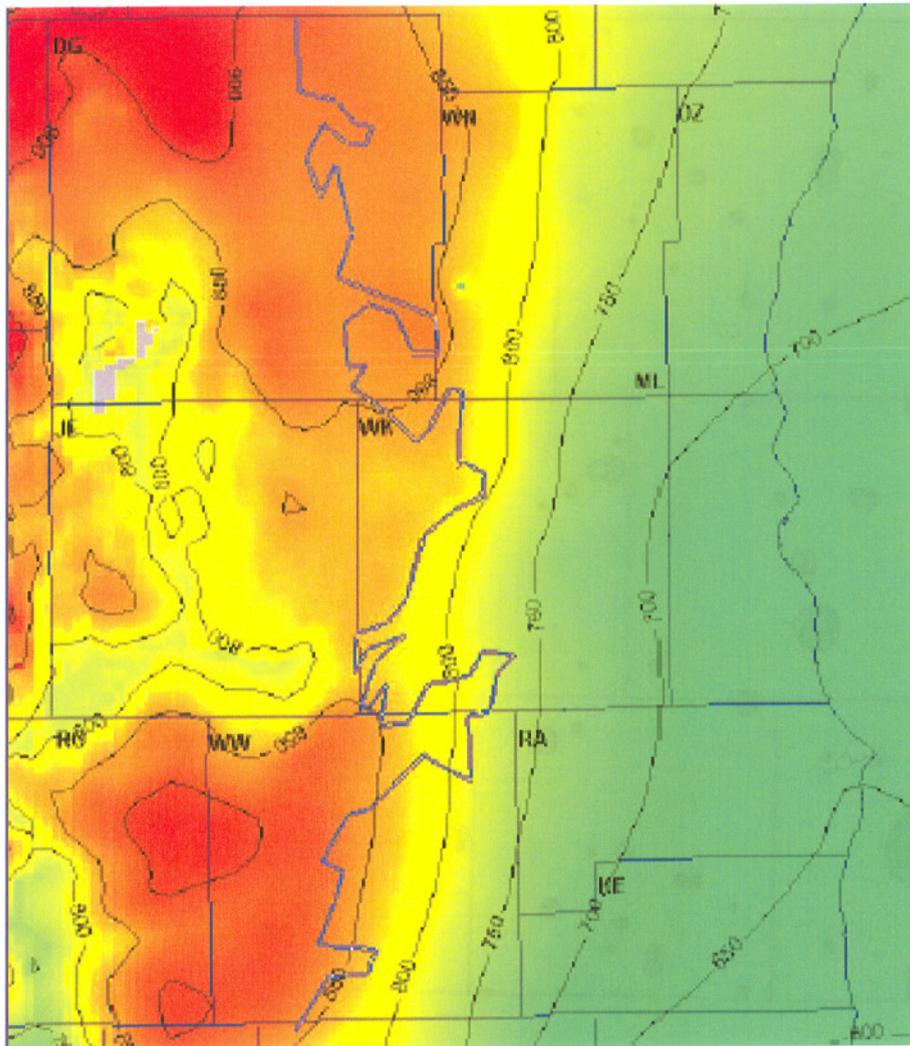


Water Levels in the Sandstone Aquifer
(feet above sea level)



Well Locations and Pumping Rates
● Shallow ● Deep

1880-1900



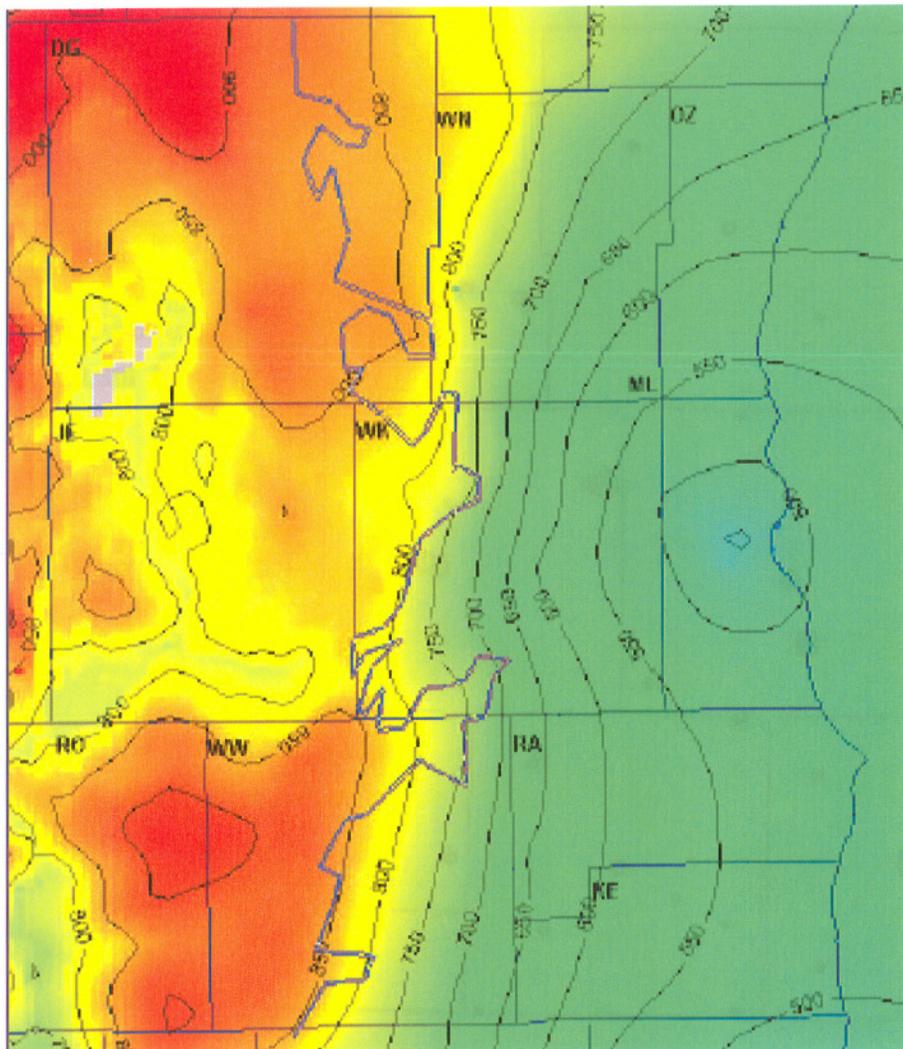
Water Levels in the Sandstone Aquifer
(feet above sea level)

Well Locations and Pumping Rates

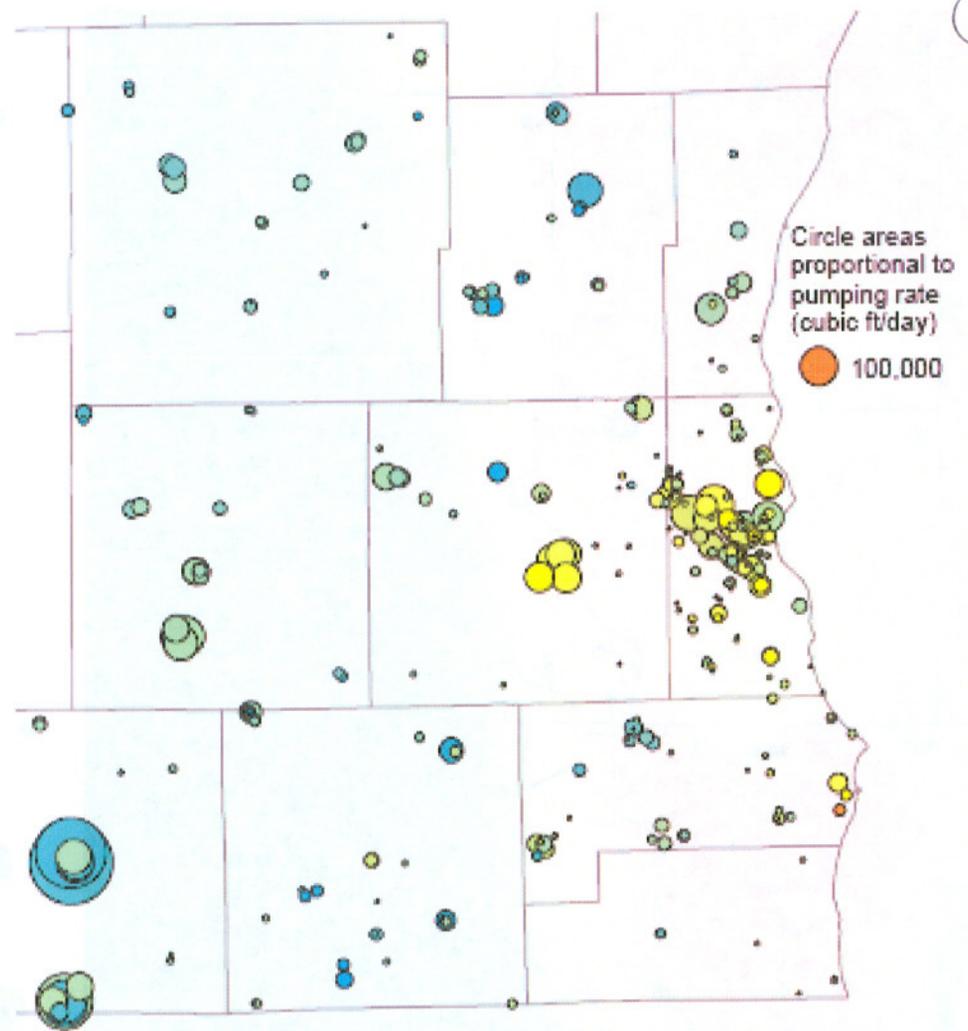
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1920-1930



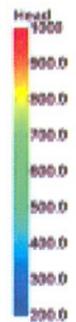
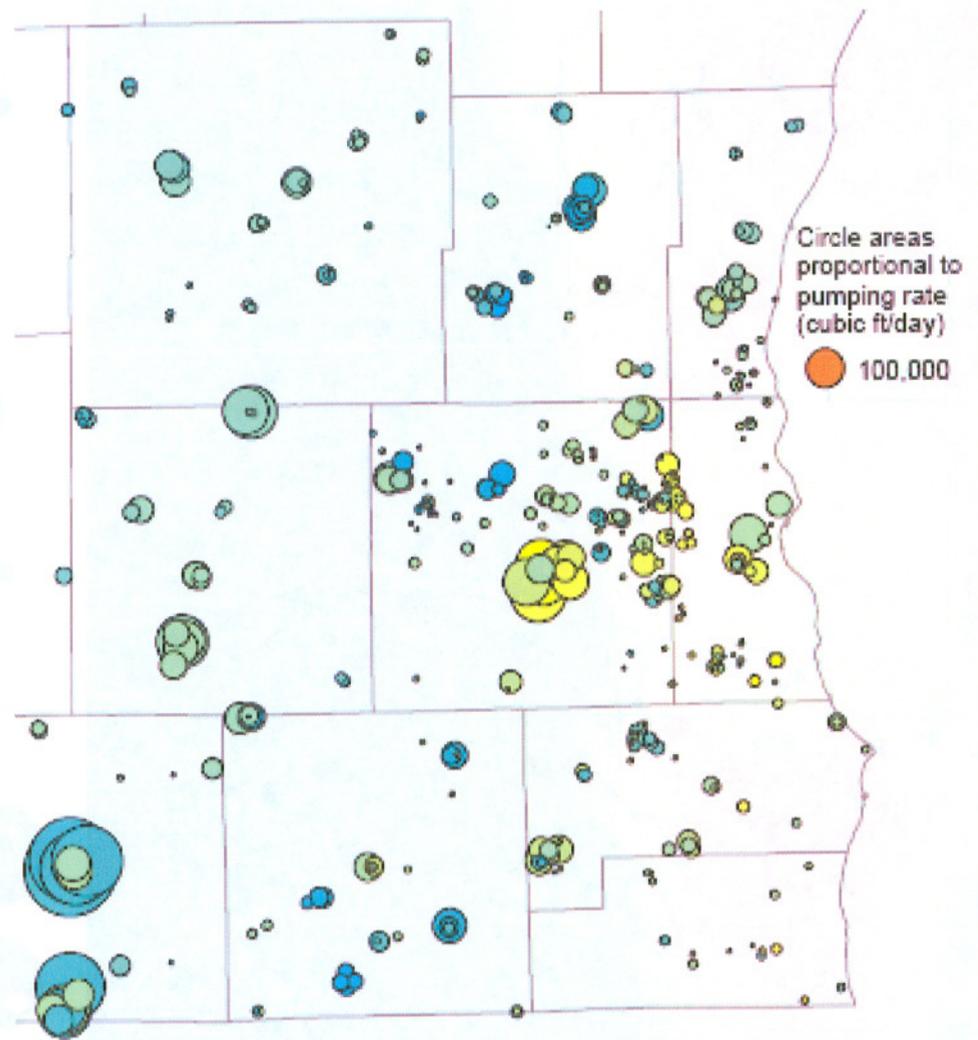
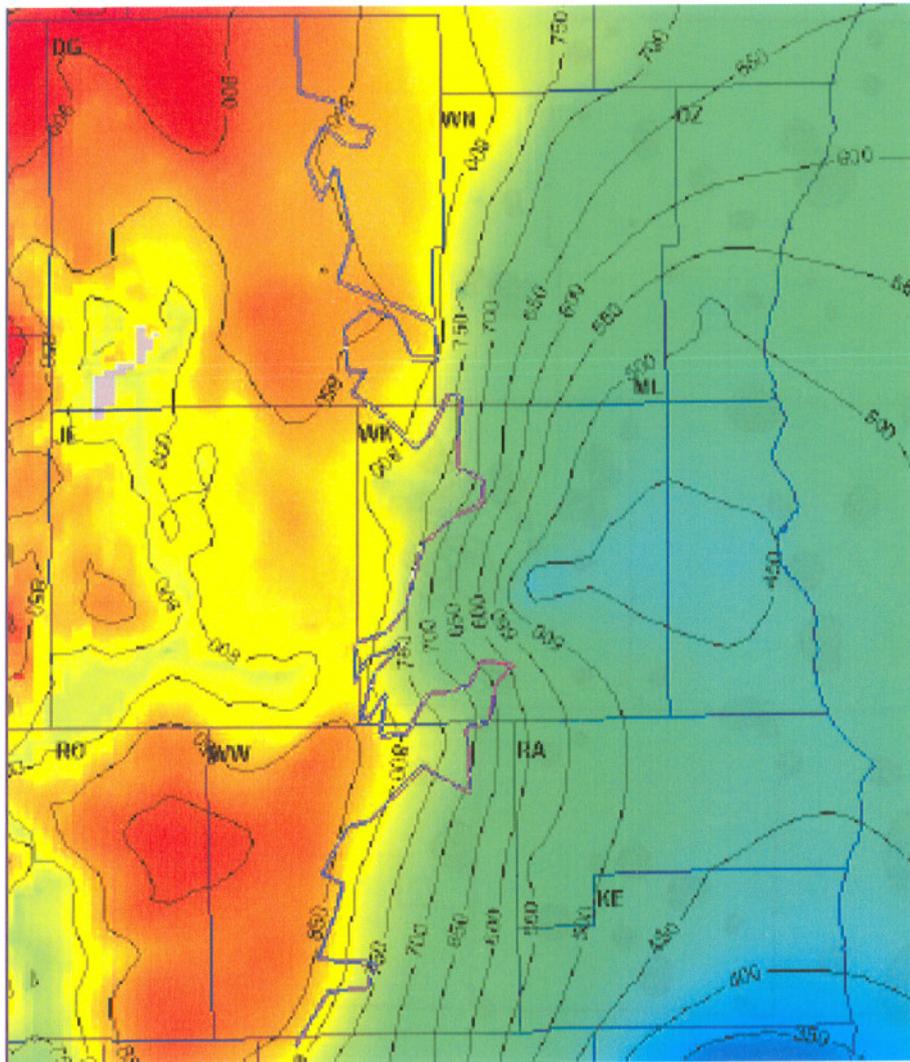
Water Levels in the Sandstone Aquifer
(feet above sea level)



Well Locations and Pumping Rates

● Shallow ● Deep

1950-1961



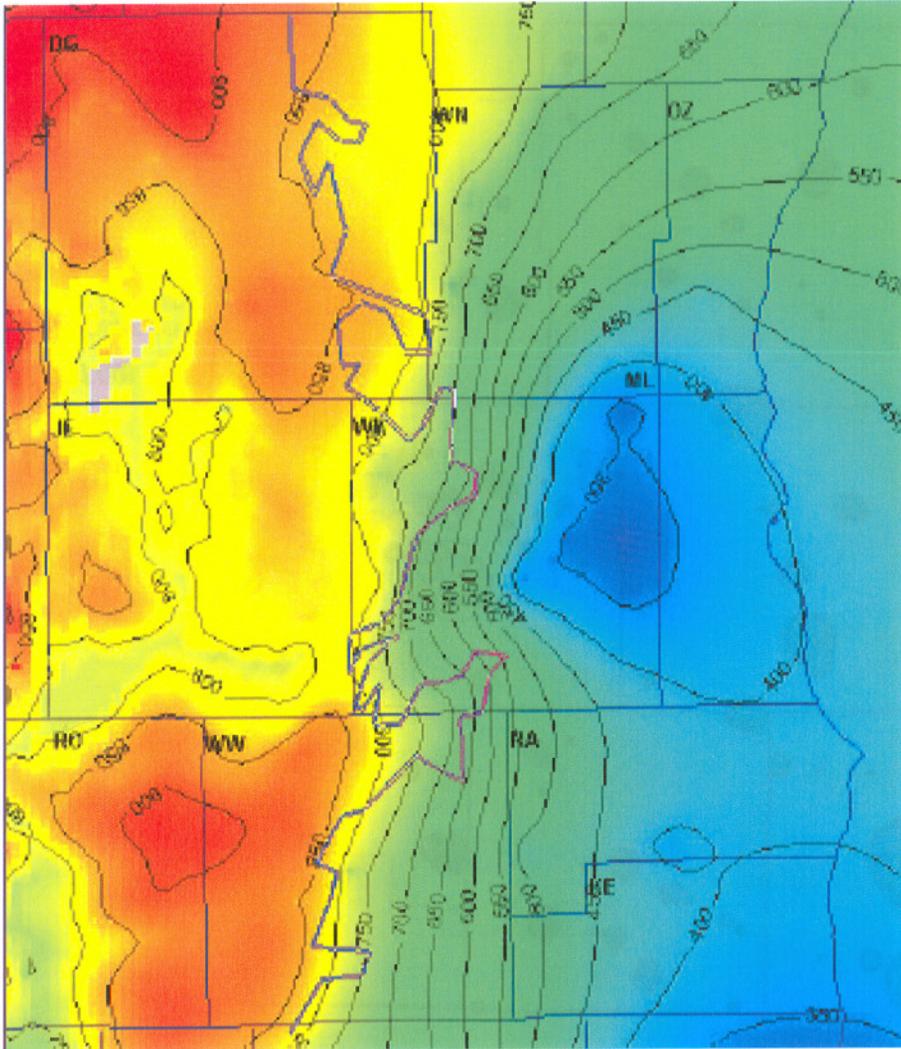
Water Levels in the Sandstone Aquifer
(feet above sea level)

Well Locations and Pumping Rates

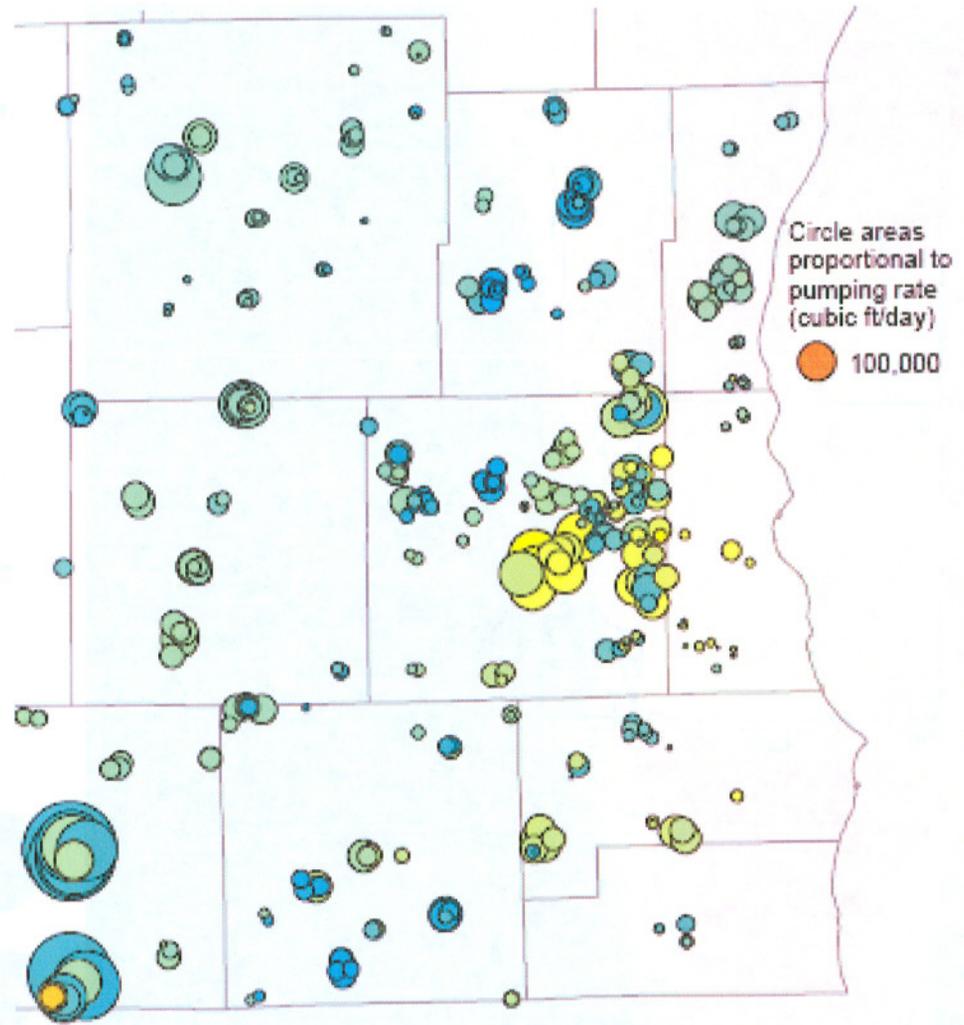
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1970-1980

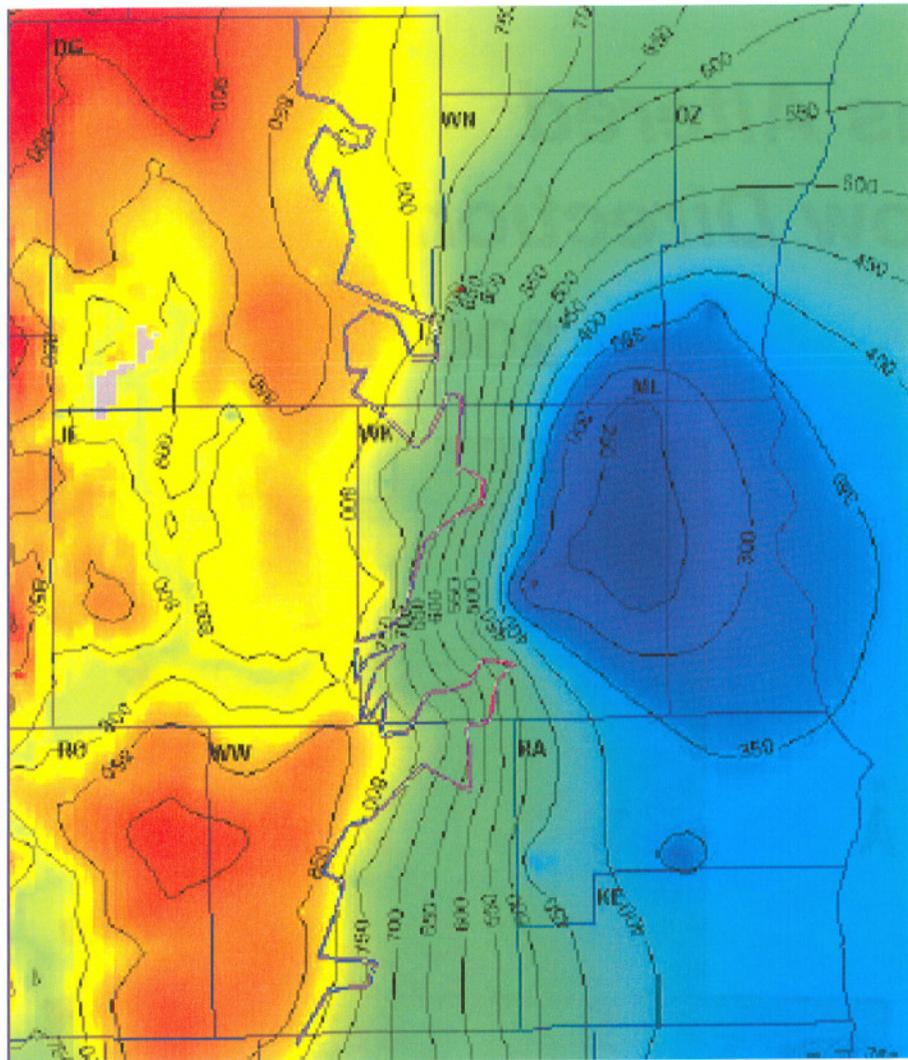


Water Levels in the Sandstone Aquifer
(feet above sea level)

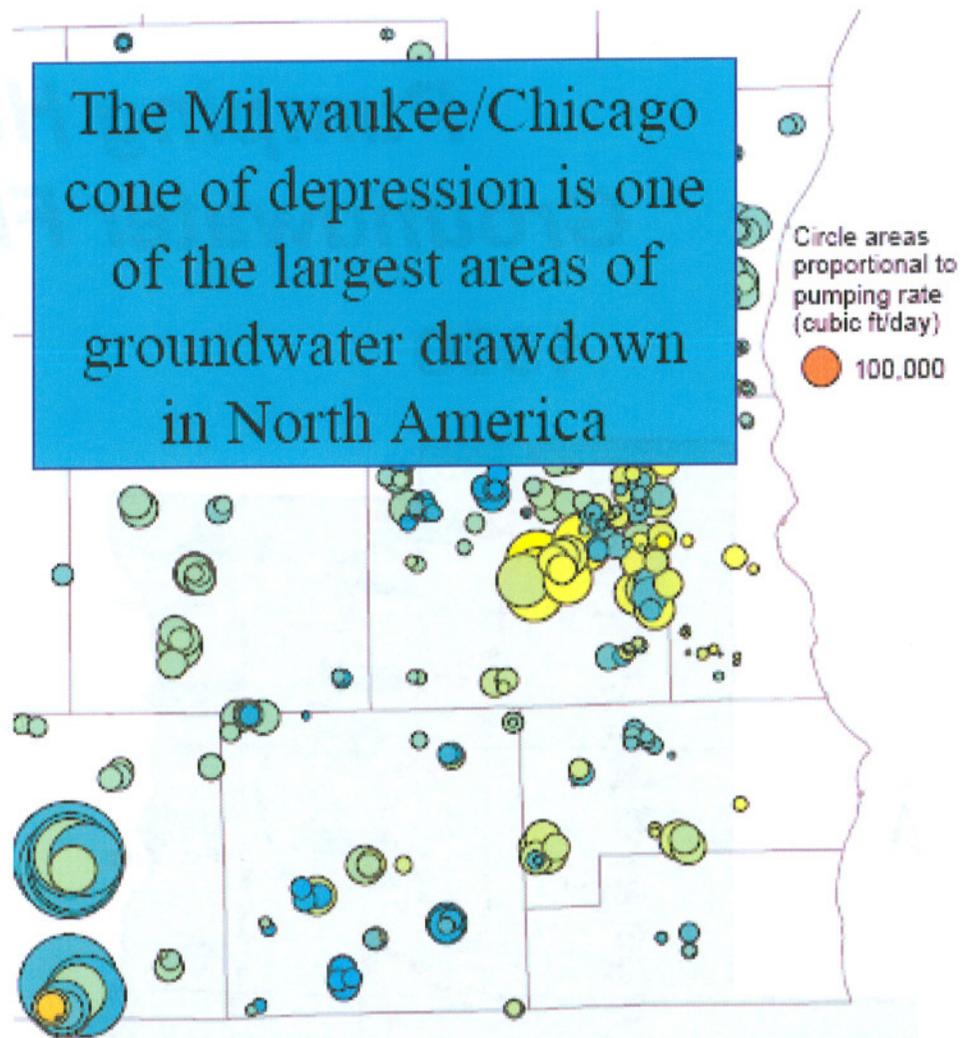
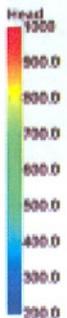


Well Locations and Pumping Rates
● Shallow ● Deep

1990-2000



Water Levels in the Sandstone Aquifer
(feet above sea level)



Well Locations and Pumping Rates

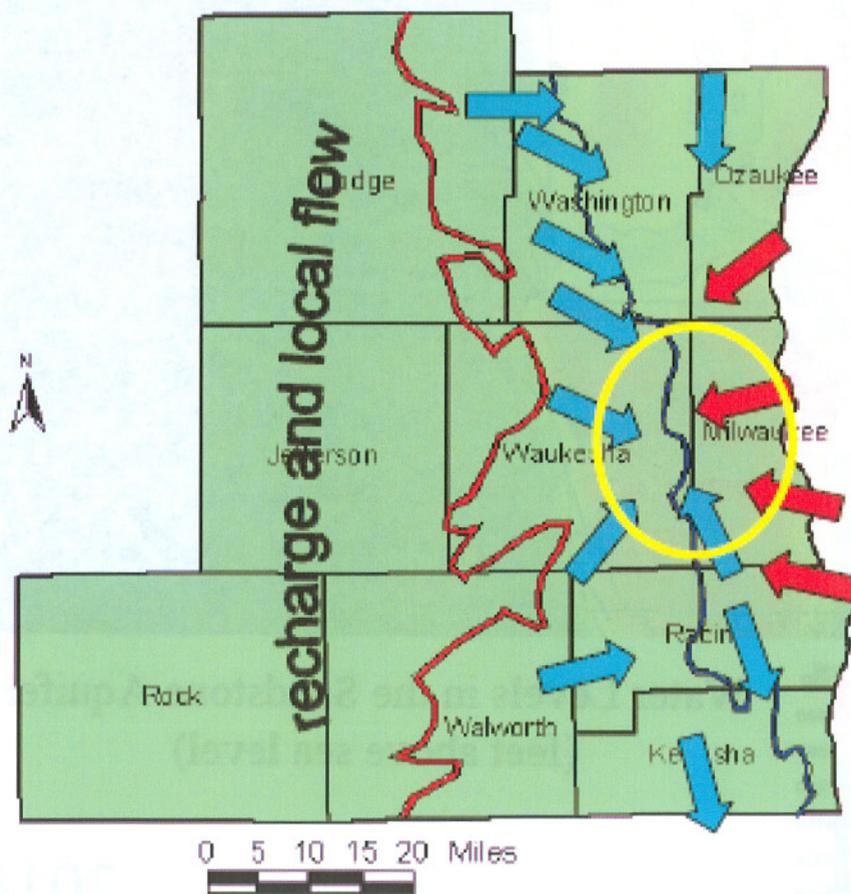
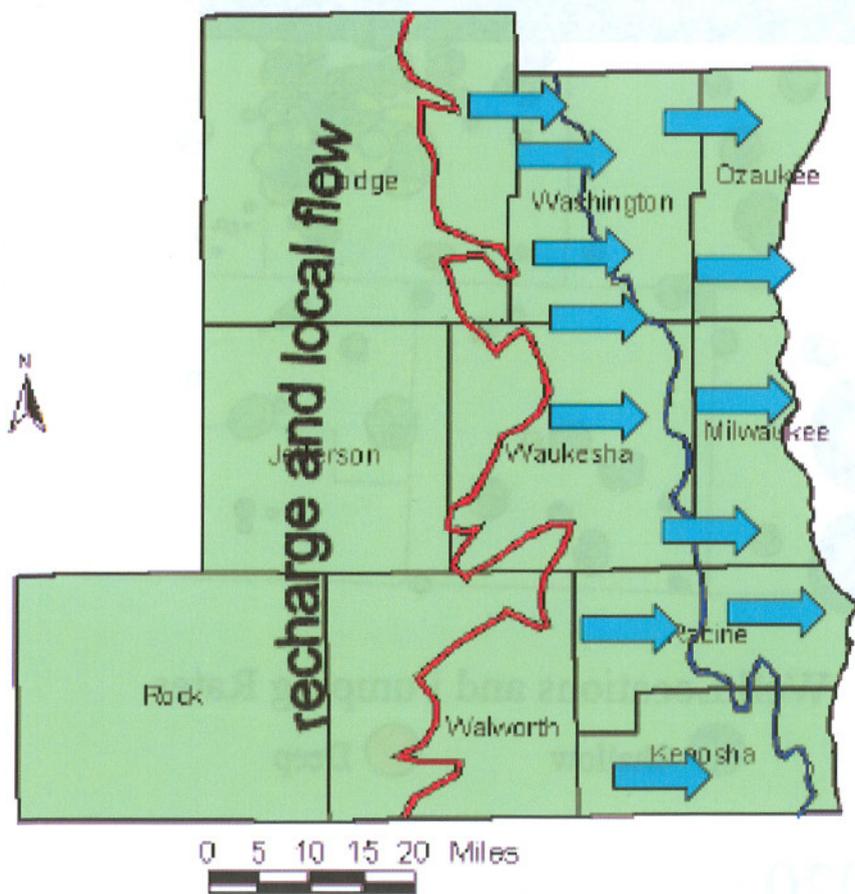
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- Deep

2010-2020

Pumping Has Altered Groundwater Flow Directions

1900

2000



GROUNDWATER RESOURCES OF SOUTHEASTERN WISCONSIN

systems are defined as those systems that have at least 15 service connections used by year-round residents or those that regularly serve at least 25 year-round residents. Privately owned systems typically include residential subdivisions, apartments, condominiums, mobile home parks, and institutions.

In 1995, the majority of municipal water systems (68 percent) were supplied by groundwater, especially those west of the subcontinental divide; and all of the 244 privately owned community systems relied on groundwater as a source. Groundwater was also a primary source of water for agriculture, and the sole source of domestic water supplies in nonserviced areas, self-supplied commercial water supplies, and public water supplies in the inland counties of Walworth, Washington, and Waukesha (see Table 19). In 1995, Walworth and Washington Counties were almost entirely supplied by groundwater while in Ozaukee and Waukesha Counties groundwater constituted more than 80 percent of the total supply (see Figure 11). Locations of high-capacity wells used for municipal, industrial, irrigation, and community water supplies are included in Appendix B.

Groundwater Availability

Recharge to groundwater is derived almost entirely from precipitation. Much of the groundwater in shallow aquifers originates from precipitation that has fallen and infiltrated within a radius of about 20 or more miles from where it is found. The deeper sandstone aquifers are recharged by downward leakage of water through the Maquoketa Formation from the overlying aquifers or by infiltration of precipitation beyond the western edge of the Region where the sandstone aquifer is not overlain by the Maquoketa Formation and is unconfined.

On the average, precipitation annually brings about 32 inches of water to the surface area of the Region. For the area of the counties that primarily use groundwater as a source of supply (Ozaukee, Washington, Waukesha, and Walworth) that would translate into about 2,800 mgd of water. It is estimated that approximately 80 percent of that total is lost by evapotranspiration (Cotter and others, 1969). Of the remaining water, part runs off in streams and part becomes groundwater. It is likely that the average annual groundwater recharge to shallow aquifers varies from less than 3 percent of annual precipitation in parts of lakeshore counties, where there are poorly permeable soils and glacial deposits, to perhaps 10 to 15 percent of annual precipitation in parts of inland counties, where near-surface geologic conditions are more favorable for recharge.

To document the utilization of the shallow aquifers in the Region, it may be assumed, for example, that, on the average, 10 percent of the annual precipitation reaches groundwater. Then, the average groundwater recharge in the four above-mentioned counties was about 280 mgd. Their estimated daily use of groundwater in 1995 was 69.5 mgd, which is about 25 percent of the total amount of groundwater assumed to be recharged in that year. This indicates that there is an adequate annual groundwater recharge to satisfy water demands on the shallow aquifer system in these counties for years to come on an areawide basis. However, the availability on a localized area basis will vary depending upon usage, pumping system configuration, and groundwater flow patterns.

The situation is different for the deep aquifers where withdrawals of groundwater cause supply/demand imbalance in areas of concentrated use of groundwater, which has resulted in the declining potentiometric surface and mining of groundwater. For example, Professor Douglas Cherkauer of the University of Wisconsin–Milwaukee (Cherkauer, personal communication, 1999), estimated that the demand on groundwater from the deep sandstone aquifer in Waukesha County is greater than the available supply (see Table 21).

To satisfy future water demands in the Region, coordinated regional water resource management is needed, which would optimize the conjunctive use of all ground and surface water. Without such integrated management, water shortages would be inevitable in areas of concentrated withdrawals of groundwater from deep aquifers and likely from some limited portion of the shallow aquifers.

MAJOR AQUIFERS AND HYDROGEOLOGIC UNITS

Individual rock units within the Region differ widely in their ability to yield water to wells (see Table 22). From the standpoint of groundwater occurrence, all rocks that underlie the Region can be classified either as aquifers or as confining beds. An aquifer is a rock unit that will yield water in a useable quantity to a well or spring. A

A REGIONAL WATER SUPPLY PLAN FOR SOUTHEASTERN WISCONSIN

Volume One

Chapters 1-12

Table 79

WATER SUPPLY SYSTEM DEVELOPMENT OBJECTIVES, PRINCIPLES, AND STANDARDS

**OBJECTIVE NO. 1—SUPPORT OF EXISTING LAND USE
PATTERNS AND SUPPORT AND DIRECTION OF PLANNED LAND USE PATTERNS**

A regional water supply system which, through its capacity and efficiency, will effectively serve the existing regional land use pattern, promote the implementation of the regional land use plan, and identify any constraints to development in subareas of the Region which may require refinement of the regional land use plan.

PRINCIPLE

An adequate water supply is essential for the well being of the residents and for the economic prosperity of the Region. A sound regional water supply plan should support all of the necessary land use activities within the Region. The regional water supply plan should be designed to serve the needs of both urban and rural land uses, including agriculture and rural-density residential development.

STANDARDS

1. Public water supply systems should be designed to serve lands planned to be developed for urban uses,^a in accordance with the adopted regional land use plan.
2. Areas of high potential for groundwater contamination should be excluded for the siting of potentially contaminating land uses or facilities.
3. Important groundwater recharge and discharge areas should be identified for preservation^b or application of land development plans and practices which maintain the natural surface and groundwater hydrology, while protecting the groundwater quality.
4. Sources of water supply should be specifically allocated to adequately serve lands planned to be maintained in agricultural uses.

PRINCIPLE

The preservation of environmental corridors and isolated natural resource areas in essentially natural, open use yields many benefits, including recharge and discharge of groundwater and the maintenance of surface water and groundwater quality and quantity, as well as maintenance of base flows in and to surface waters; reductions in soil erosion; provision of wildlife habitat; protection of plant and animal diversity; protection of rare and endangered species; maintenance of scenic beauty; and provision of opportunities for recreational, educational, and scientific pursuits.^c

STANDARDS

1. Primary environmental corridors should be preserved^d in essentially natural, open uses, and the extension of urban services, including public water supply services, into such corridors should be avoided, except for corridor-dependent uses, such as recreational facilities and water transmission main, sewage conveyance facilities, and other utility crossings.
2. Secondary environmental corridors and isolated natural resource areas should be preserved in essentially natural, open uses to the extent practicable, as determined in county and local plans.

Uses considered to be compatible with the preservation of environmental corridors and isolated natural resource areas are indicated in Table 80.

PRINCIPLE

The preservation of productive agricultural land is important for meeting future needs for food and fiber. Agricultural areas, in addition to providing food and fiber, can provide groundwater recharge and wildlife habitat and contribute to the maintenance of an ecological balance between plants and animals. Moreover, the preservation of agricultural areas also contributes immeasurably to the maintenance of the scenic beauty and cultural heritage of the Region. The preservation of agricultural lands can maximize return on investments in agricultural soil and water conservation practices; minimize conflicts between farming operations and urban land uses; and help maintain an important component of the economic base of the Region.

Table 79 (continued)

STANDARD

1. The most productive soils, those designated by the U.S. Natural Resources Conservation Service as comprising agricultural soil capability Classes I and II, should be preserved for agricultural use, to the extent practicable, recognizing that certain Class I and Class II farmland will have to be converted to urban use in order to accommodate the orderly expansion of urban service areas within the Region. The extension of urban services, including public water supply services, into such areas should be avoided, except as these lands are converted to urban uses.
2. Development of water sources in areas to be preserved for agricultural uses should be carried out in a manner which preserves the agricultural uses of the land as envisioned in the adopted regional land use plan.

OBJECTIVE NO. 2—CONSERVATION AND WISE USE OF THE SURFACE WATER AND GROUNDWATER SUPPLIES

A regional water supply system which conserves and wisely utilizes the surface water and groundwater supplies of the Region, so as to sustain those supplies for future, as well as existing needs.

PRINCIPLE

The sustainability^e of the surface water and groundwater supplies should be maintained through the careful design, operation and use of the water supply systems.

STANDARDS

1. The use of the deep sandstone aquifer should be managed so that the potentiometric surface in that aquifer is sustained or raised under use and recharge conditions within the Southeastern Wisconsin Region. Declines in the potentiometric surface of the aquifer within the Region due to uses in areas beyond the Region should be identified for purposes of promoting interregional planning and action.
2. The uses of the shallow aquifer should be managed so that the aquifer yields are sustainable.
3. The uses of the deep and shallow aquifers should be managed so as to minimize the ecological impacts on the surface water system of the Region.
4. Lake Michigan as a source of supply should be utilized recognizing the constraints of the current regulatory framework and the status and provisions of the Great Lakes-St. Lawrence River Basin Water Resources Compact.

PRINCIPLE

The lakes, rivers, and wetlands of the Region are intimately connected to each other and to the groundwater of the area. These resources provide scenic beauty, fish and wildlife habitat, fishing, swimming, and boating opportunities to residents and visitors to our Region. This, in turn, supports the business and jobs that depend on these activities. In addition, the tax base generated by the higher values of waterfront properties adds greatly to the economic wellbeing of the counties of our Region. Surface water quality and quantity are vital to the economic stability, social fabric, and community wellbeing of the area.

1. The use of groundwater and surface water for water supply purposes should be carried out in a manner which minimizes adverse impacts to the water resources system, including lakes, streams, springs, and wetlands.

PRINCIPLE

Conservation of water can help to sustain supplies, as well as reduce energy usage, reduce wastewater flows, and minimize water supply infrastructure development needs and operating costs. The effectiveness of water conservation programs will be dependent upon the willingness of users to conserve and the ability of suppliers to implement changes in policies and rules governing water use.

STANDARDS

1. Residential per capita water usages should be reduced to the extent practicable based upon the conclusions developed in SEWRPC Technical Report No. 43, *State-of-the-Art of Water Supply Practices*, and recognizing that differences in levels of conservation may be appropriate, depending upon the source of supply and related natural resources.
2. Both indoor and outdoor water uses should be optimized through conservation practices which do not adversely affect the public health.

Table 79 (continued)

3. Water uses for commercial, industrial, and institutional land uses should be reduced to the extent practicable through water conservation measures, duly considering the source of supply and related natural resources, as well as the economic viability and economic development needs of the Region.
4. Unaccounted-for water in utility systems should be minimized.

PRINCIPLE

Urban and rural land use development, including stormwater management and related land management practices, have important impacts on groundwater recharge with respect to the quantity of the recharge water.

STANDARDS

1. The type and extent of stormwater management and related land management practices should be determined through preparation of local stormwater management plans and land development practices and policies specifically considering the impact of those activities on groundwater recharge and should promote such practices which maintain or enhance the natural groundwater hydrology to the extent practicable, while protecting surface water and groundwater quality and quantity.

OBJECTIVE NO. 3—PROTECTION OF PUBLIC HEALTH, SAFETY, AND WELFARE

A regional water supply system which protects the public health, safety, and welfare.

PRINCIPLE

An adequate, high-quality water supply is essential to the social and economic welfare of an area. Public water supply facilities and sources should protect the public health, safety, and welfare by providing pure, safe, healthful drinking water in sufficient quantities and pressures to meet demands, including fire protection requirements. In order to do so, it is necessary to protect and enhance the quality of surface water and groundwater quality, as well as to provide appropriate protective measures between the sources of supply and the uses of that supply.

STANDARDS

1. Water supply systems should be designed, constructed and operated to deliver finished water to users which meets the drinking water standards established by the Wisconsin Department of Natural Resources to protect the public health, safety, and welfare. Those standards are set forth in this chapter and Appendix H.
2. Water supply systems should be designed, constructed, and operated consistent with technically sound water supply industry standards directed toward the protection of the public health, safety, and welfare.
3. The selection of sources of supply and the design, contribution and operation of related treatment facilities should be made cognizant of the potential presence of unregulated emerging pollutants, such as pharmaceuticals, personal care products, and certain viruses.
4. The reuse of wastewater should be evaluated for applications where there is no potential for direct human consumption and limited potential for direct human contact, unless the pre-use treatment level is such as to preclude risks to public health.
5. Surface water and groundwater supply treatment plants should be provided with state-of-the-art barriers to substances harmful to human health and safety.
6. Water supply sources and treatment processes should be selected to minimize potential problems with subsequent treatment and disposal of created waste streams.
7. Groundwater and surface water sources of water supply should be protected from sources of contamination by appropriate siting, design, and land use regulation.

PRINCIPLE

Urban and rural land use development and related land management practices, including stormwater management and waste disposal practices, have an impact on surface water and groundwater quality.

Table 79 (continued)

STANDARDS

1. The level of treatment and design provided at public sewage treatment plants and industrial wastewater discharge locations should be determined directly related to the achievement of adopted water use objectives and supporting surface water and groundwater standards. These objectives and standards are set forth in Appendices I and J for the receiving waters and the safety and public health requirement of any potentially affected water supplies.
2. The density, design, operation, and level of treatment of onsite sewage disposal systems should be related to the achievement of the groundwater quality standards and the safety and public health requirements of any potentially affected water supplies.
3. The type and extent of stormwater management or associated preventive land management practices to be applied in both urban and rural areas should be determined by State and local regulations, local stormwater management plans, county land and water management plans, and farm management plans directly related to protection of potentially affected water supplies and to the established water quality standards for the receiving surface water and groundwater systems.
4. There should be no known wastewater or stormwater discharges to the surface water or groundwater systems used for water supply of inorganic compounds, synthetic compounds, volatile organics, or other substances in quantities at levels known to be bioaccumulative, acutely or chronically toxic or hazardous to human health, fish or other aquatic life, wildlife, and domestic animals.

OBJECTIVE NO. 4—ECONOMICAL AND EFFICIENT SYSTEMS

The development of water supply facilities, operational improvements, and policies, that are both economical and efficient, best meeting all other objectives at the lowest practical cost, considering both long-term capital and operation and maintenance costs.

PRINCIPLE

The total financial resources in the Region are limited and investment in construction and operation of water supply facilities must recognize that resources applied in this area will not be available for investment in other areas. Total water supply costs, therefore, should be minimized while meeting and achieving other water supply objectives.

STANDARDS

1. The sum of water supply system operating and capital investment costs should be minimized. Costs for waste disposal byproducts of water treatment, long-term energy and operation and maintenance, and legal costs should be considered.
2. Maximum feasible use should be made of all existing and committed water supply facilities, which should be supplemented with additional facilities only as necessary to serve the anticipated water supply needs.^f
3. The use of new or improved technologies and management practices should be allowed and encouraged if such technologies and practices offer economies in construction costs or by their superior performance lead to the achievement of water supply objectives at a lesser cost.
4. Water supply facilities should be designed for staged or incremental construction where feasible and economical so as to limit total investment in such facilities and to permit maximum flexibility to accommodate changes in the rate of population growth and the rate of economic activity growth or changes in the technology for water supply management.

OBJECTIVE NO. 5—RESPONSIVE AND ADAPTIVE PLANS

The development of water supply systems, operations, and policies which are flexible and adaptive in response to changing conditions, and redundant with respect to source of supply.

PRINCIPLE

As human understanding of the factors affecting water supply improves, the activities necessary for the achievement of the established water supply objectives and supporting standards may require modification for responding to varying short- and long-term changes in conditions and emerging challenges. The conduct of such activities requires that the adopted plan and the designated management agencies have sufficient operational flexibility and monitoring capacity to respond to changing conditions.

Table 79 (continued)

STANDARDS

1. The recommended regional water supply plan components should be adaptable to change in scope, capacity, and effectiveness to the extent practicable.
2. The recommended water supply plan should be designed to incorporate redundancy, system backup features, and emergency operation requirements to the extent practicable in order to insure a safe delivery of water.
3. The regional water supply plan components should be designed for staged incremental construction to the extent practical, so as to permit maximum flexibility to accommodate unanticipated changes in future conditions.
4. The regional water supply plan should be adaptable to changes in the regulatory structure, including the Great Lakes-St. Lawrence River Basin Water Resources Compact and the State of Wisconsin 2003 Act 310.
5. The regional water supply plan should consider the possibility of long-term climate cycles that can affect recharge rates and water demand.
6. The regional water supply plan should consider the possibility of changes in economic conditions, security issues, and regulations that can affect the demand for water supply and need for and types of water supply facilities.

^aUrban development is defined as an area devoted to urban-density residential, commercial, industrial, governmental and institutional, recreational, and utility and communication uses. "Urban-density" residential development includes the following density ranges: high-density (at least 7.0 dwelling units per net residential acre); medium-density (2.3 to 6.9 dwelling units per net acre) and low-density (0.7 to 2.2 dwelling units per net acre). The term "urban service area" refers to areas that are intended to accommodate urban development insofar as they are served by basic urban services and facilities, including public sanitary sewer service and typically also including public water supply service and a local park, school, and shopping area.

^bAs used herein, the term "preserve" generally means to retain areas in existing, often natural, open, uses. In some cases, the plan may specifically indicate the types of uses that are able to be accommodated while maintaining the overall integrity of the natural resource base. This standard indicates that certain areas should be preserved; it does not indicate the measures—such as public acquisition, conservation easements, or land use regulation—that are recommended to be used to assure the desired preservation. Such measures are dealt with in the plan and plan implementation chapters of this report.

^cEnvironmental corridors are elongated areas in the landscape which contain concentrations of natural resource features (lakes, rivers, streams, and their associated shorelands and floodlands; wetlands; woodlands; prairies; wildlife habitat areas; wet, poorly drained, and organic soils; and rugged terrain and high-relief topography) and natural resource-related features (existing park and open space sites; potential park and open space sites; historic sites; scenic areas and vistas; and natural areas and critical species habitat sites). Primary environmental corridors include a variety of these features and are at least 400 acres in size, two miles long, and 200 feet in width. Secondary environmental corridors also contain a variety of these features and are at least 100 acres in size and one mile in length. Isolated natural resource areas are smaller concentrations of natural resource features that are physically separated from the environmental corridors by intensive urban or agricultural uses; by definition, such areas are at least five acres in size.

^dAs used herein, the term "preserve" generally means to retain existing conditions. In some cases—for example, when used in relation to environmental corridors or isolated natural resource areas—this term has been specifically defined to indicate certain types of uses that are able to be accommodated while maintaining the overall integrity of the existing resources. The objectives and standards presented in this table indicate that certain areas should be preserved; they do not indicate the measures—such as public interest ownership, conservation easements, or land use regulation—that may be used to help assure the desired preservation. Such measures are dealt with in the plan and plan implementation chapters of this report.

^eSustainability may be defined as the condition of beneficially using water supply resources in such a way that the uses support the current and probable future needs, while simultaneously ensuring that the resource is not unacceptably damaged by such a beneficial use. For purposes of this water supply planning program, unacceptable damage is defined as a change in an important physical property of the groundwater or surface water system—such as water level, water quality, water temperature, recharge rate, or discharge rate—that approaches a significant percentage of the normal range of variability in that property. Impacts that are 10 percent or less of the annual or historic period of record range for any property will be considered acceptable, unless it can be shown that the cumulative effect of the change will cause a permanent change in an aquatic ecosystem by virtue of increasing the extremes of that property to levels known to be harmful.

^fFor purposes of regional water supply planning, the determination of excess, or available, capacity in existing and committed water supply facilities, as well as the reliability of that capacity, must be accomplished in close cooperation with the facility owners concerned.

Source: SEWRPC.

Table 80

GUIDELINES FOR DEVELOPMENT CONSIDERED COMPATIBLE WITH ENVIRONMENTAL CORRIDORS AND ISOLATED NATURAL RESOURCE AREAS

Component Natural Resource and Related Features within Environmental Corridors ^a	Permitted Development																		
	Transportation and Utility Facilities (see General Development Guidelines below)				Recreational Facilities (see General Development Guidelines below)													Rural-Density Residential Development (see General Development Guidelines below)	Other Development (see General Development Guidelines below)
	Streets and Highways	Utility Lines and Related Facilities	Engineered Stormwater Management Facilities	Engineered Flood Control Facilities ^b	Trails ^c	Picnic Areas	Family Camping ^d	Swimming Beaches	Boat Access	Ski Hills	Golf	Playfields	Hard-Surface Courts	Parking	Buildings				
Lakes, Rivers, and Streams.....	-- ^e	-- ^{f,g}	--	-- ^h	-- ^j	--	X	X	--	--	--	--	--	--	--	--	--		
Shoreland.....	X	X	X	X	X	X	X	X	--	X	--	--	X	X	X ^j	--	--		
Floodplain.....	-- ^k	X	X	X	X	X	X	X	--	X	X	X	X	X	X ^l	--	--		
Wetland ^m	-- ^k	X	--	--	X ⁿ	--	--	X	--	--	--	--	--	--	--	--	--		
Wet Soils.....	X	X	X	X	X	--	X	X	--	X	--	--	X	--	--	--	--		
Woodland.....	X	X	X ^p	--	X	X	X	X	X	X	X	X	X	X	X ^q	X	X		
Wildlife Habitat.....	X	X	X	--	X	X	X	X	X	X	X	X	X	X	X	X	X		
Steep Slope.....	X	X	--	--	-- ^r	--	--	--	--	X ^s	X	--	--	--	--	--	--		
Prairie.....	--	-- ^g	--	--	-- ^r	--	--	--	--	--	--	--	--	--	--	--	--		
Park.....	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	--	--		
Historic Site.....	--	-- ^g	--	--	-- ^r	--	--	--	--	--	--	--	X	--	--	--	--		
Scenic Viewpoint.....	X	X	--	--	X	X	X	--	X	X	X	--	X	X	X	X	X		
Natural Area or Critical Species Habitat Site.....	--	--	--	--	-- ^q	--	--	--	--	--	--	--	--	--	--	--	--		

NOTE: An "X" indicates that facility development is permitted within the specified natural resource feature. In those portions of the environmental corridors having more than one of the listed natural resource features, the natural resource feature with the most restrictive development limitation should take precedence.

APPLICABILITY

These guidelines indicate the types of development that can be accommodated within primary and secondary environmental corridors and isolated natural resource areas while maintaining the basic integrity of those areas. Throughout this table, the term "environmental corridors" refers to primary and secondary environmental corridors and isolated natural resource areas.

Under the regional plan:

- As regionally significant resource areas, primary environmental corridors should be preserved in essentially natural, open use—in accordance with the guidelines in this table.
- Secondary environmental corridors and isolated natural resource areas warrant consideration for preservation in essentially natural open use, as determined in county and local plans and in a manner consistent with State and Federal regulations. County and local units of government may choose to apply the guidelines in this table to secondary environmental corridors and isolated natural resource areas.

GENERAL DEVELOPMENT GUIDELINES

- **Transportation and Utility Facilities:** All transportation and utility facilities proposed to be located within the important natural resources should be evaluated on a case-by-case basis to consider alternative locations for such facilities. If it is determined that such facilities should be located within natural resources, development activities should be sensitive to, and minimize disturbance of, these resources, and, to the extent possible following construction, such resources should be restored to preconstruction conditions.

The above table presents development guidelines for major transportation and utility facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

- **Recreational Facilities:** In general, no more than 20 percent of the total environmental corridor area should be developed for recreational facilities. Furthermore, no more than 20 percent of the environmental corridor area consisting of upland wildlife habitat and woodlands should be developed for recreational facilities. It is recognized, however, that in certain cases these percentages may be exceeded in efforts to accommodate needed public recreational and game and fish management facilities within appropriate natural settings.

The above table presents development guidelines for major recreational facilities. These guidelines may be extended to other similar facilities not specifically listed in the table.

- **Rural Density Residential Development:** Rural density residential development may be accommodated in upland environmental corridors, provided that buildings are kept off steep slopes. The maximum number of housing units accommodated at a proposed development site within the environmental corridor should be limited to the number determined by dividing the total corridor acreage within the site, less the acreage covered by surface water and wetlands, by five. The permitted housing units may be in single-family or multi-family structures. When rural residential development is accommodated, conservation subdivision designs are strongly encouraged.

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Table 80 (continued)

- **Other Development:** In lieu of recreational or rural density residential development, up to 10 percent of the upland corridor area in a parcel may be disturbed in order to accommodate urban residential, commercial, or other urban development under the following conditions: 1) the area to be disturbed is compact rather than scattered in nature; 2) the disturbance area is located on the edge of a corridor or on marginal resources within a corridor; 3) the development does not threaten the integrity of the remaining corridor; and 4) the development does not result in significant adverse water quality impacts; 5) development of the remaining corridor lands is prohibited by a conservation easement or deed restriction. Each such proposal must be reviewed on a site-by-site basis.

Under this arrangement, while the developed area would no longer be part of the environmental corridor, the entirety of the remaining corridor would be permanently preserved from disturbance. From a resource protection point of view, preserving a minimum of 90 percent of the environmental corridor in this manner may be preferable to accommodating scattered homesites and attendant access roads at an overall density of one dwelling unit per five acres throughout the upland corridor areas.
- **Pre-Existing Lots:** Single-family development on existing lots of record should be permitted as provided for under county or local zoning at the time of adoption of the land use plan.
- All permitted development presumes that sound land and water management practices are utilized.

^aThe natural resource and related features are defined as follows:

Lakes, Rivers, and Streams: Includes all lakes greater than five acres in area and all perennial and intermittent streams as shown on U.S. Geological Survey quadrangle maps.

Shoreland: Includes a band 50 feet in depth along both sides of intermittent streams; a band 75 feet in depth along both sides of perennial streams; a band 75 feet in depth around lakes; and a band 200 feet in depth along the Lake Michigan shoreline.

Floodplain: Includes areas, excluding stream channels and lake beds, subject to inundation by the 100-year recurrence interval flood event.

Wetlands: Includes areas that are inundated or saturated by surface water or groundwater at a frequency, and with a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.

Wet Soils: Includes areas covered by wet, poorly drained, and organic soils.

Woodlands: Includes areas one acre or more in size having 17 or more deciduous trees per acre with at least a 50 percent canopy cover as well as coniferous tree plantations and reforestation projects; excludes lowland woodlands, such as tamarack swamps, which are classified as wetlands.

Wildlife Habitat: Includes areas devoted to natural open uses of a size and with a vegetative cover capable of supporting a balanced diversity of wildlife.

Steep Slope: Includes areas with land slopes of 12 percent or greater.

Prairies: Includes open, generally treeless areas which are dominated by native grasses; also includes savannas.

Park: Includes public and nonpublic park and open space sites.

Historic Site: Includes sites listed on the National Register of Historic Places. Most historic sites located within environmental corridors are archaeological features such as American Indian settlements and effigy mounds and cultural features such as small, old cemeteries. On a limited basis, small historic buildings may also be encompassed within delineated corridors.

Scenic Viewpoint: Includes vantage points from which a diversity of natural features such as surface waters, wetlands, woodlands, and agricultural lands can be observed.

Natural Area and Critical Species Habitat Sites: Includes natural areas and critical species habitat sites as identified in the regional natural areas and critical species habitat protection and management plan.

^bIncludes such improvements as stream channel modifications and such facilities as dams.

^cIncludes trails for such activities as hiking, bicycling, cross-country skiing, nature study, and horseback riding, and excludes all motorized trail activities. It should be recognized that trails for motorized activities such as snowmobiling that are located outside the environmental corridors may of necessity have to cross environmental corridor lands. Proposals for such crossings should be evaluated on a case-by-case basis, and if it is determined that they are necessary, such trail crossings should be designed to ensure minimum disturbance of the natural resources.

^dIncludes areas intended to accommodate camping in tents, trailers, or recreational vehicles which remain at the site for short periods of time, typically ranging from an overnight stay to a two-week stay.

^eCertain transportation facilities such as bridges may be constructed over such resources.

^fUtility facilities such as sanitary sewers may be located in or under such resources.

^gElectric power transmission lines and similar lines may be suspended over such resources.

^hCertain flood control facilities such as dams and channel modifications may need to be provided in such resources to reduce or eliminate flood damage to existing development.

ⁱBridges for trail facilities may be constructed over such resources.

^jConsistent with Chapter NR 115 of the Wisconsin Administrative Code.

^kStreets and highways may cross such resources. Where this occurs, there should be no net loss of flood storage capacity or wetlands. Guidelines for mitigation of impacts on wetlands by Wisconsin Department of Transportation facility projects are set forth in Chapter Trans 400 of the Wisconsin Administrative Code.

^lConsistent with Chapter NR 116 of the Wisconsin Administrative Code.

^mAny development affecting wetlands must adhere to the water quality standards for wetlands established under Chapter NR 103 of the Wisconsin Administrative Code.

ⁿOnly an appropriately designed boardwalk/trail should be permitted.

^oWetlands may be incorporated as part of a golf course, provided there is no disturbance of the wetlands.

^pGenerally excludes detention, retention, and infiltration basins. Such facilities should be permitted only if no reasonable alternative is available.

^qOnly if no alternative is available.

^rOnly appropriately designed and located hiking and cross-country ski trails should be permitted.

^sOnly an appropriately designed, vegetated, and maintained ski hill should be permitted.

Source: SEWRPC.

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METHOD OF EVALUATION

A rank-based method was used to compare the anticipated performance of the alternative plans with respect to the agreed-upon water supply development and management objectives utilizing the standards supporting each objective. In this method, the alternative plans were evaluated and ranked on the basis of the ability to achieve the water supply objectives. In instances where two or more alternative plans were found to have similar performance levels relative to an objective concerned, the rankings were averaged. For example, if Alternative Plan 1 was expected to best achieve a given objective; Alternative Plan 4 was expected to most poorly achieve the objective; and Alternative Plans 2 and 3 were expected to achieve the objective moderately and equally well, the ratings for Alternative Plans 1 through 4 would be 1.0, 2.5, 2.5, and 4, respectively. The rankings of each alternative plan under each of the five objectives were then totaled to establish the rank order of the plans.

For each objective, the ranks of the alternative plans were derived by ranking their expected performance relative to the standards supporting the objective. For some standards, additional analyses were performed in order to establish ranks for the alternative plans. These analyses are presented in Appendix M. A similar procedure to the one described above with respect to the objectives was used to address standards where two or more alternative plans were expected to have similar performance levels. For each alternative plan, the rankings derived by application of the standards supporting the objective were totaled to yield a numerical value for the objective. These values were then converted to ranks. This procedure was followed in order to give each objective equal weight in the evaluation.

Some of the alternative plans included one or more subalternatives. These subalternatives differed from one another in such details as to which water treatment plants were to be utilized to provide water supply to communities to be provided with Lake Michigan water; the number and routes of water transmission mains; and, in the case of Alternative Plan 4, the means of providing return flow to Lake Michigan from communities located west of the subcontinental divide. For the purposes of the comparative evaluation the best of the subalternatives considered under each alternative plan concerned was used in the ranking based upon consideration of costs, environmental impacts, and implementability of the subalternatives.

EVALUATION BASED UPON STANDARDS

The rank-based evaluation of the alternative plans with respect to the standards supporting the agreed-upon water supply development and management objectives is presented in Table 145. The following text describes the findings of the comparisons made for each standard, and presents the basis for the rank orders given in the table.

Objective No. 1—Support Existing Land Use Patterns and Support and Direction of Planned Land Use Patterns

Standard 1—Public Water Supply Systems Should Be Designed to Serve Lands Planned to Be Developed for Urban Uses, in Accordance with the Adopted Regional Land Use Plan

The planned municipal water supply service areas in the design year 2035 are presented in Chapter IV of this report. These service areas are based upon a reevaluation and refinement of the areas proposed to be served by municipal water supply facilities in the adopted design year 2035 regional land use plan.¹ Because these service areas are identical under all four alternative water supply plans, the expected abilities of the alternative plans to achieve this standard are equal and the plans were given identical ranks.

¹SEWRPC Planning Report No. 48, A Regional Land Use Plan for Southeastern Wisconsin: 2035, June 2006.

Table 145 (continued)

Standard	Alternative Plan ^b			
	1	2	3	4
Objective No. 5—Responsive and Adaptive Plans (continued)	--	--	--	--
5. The regional water supply plan should consider the possibility of long-term climate cycles that can affect recharge rates and water demand	4.0	3.0	2.0	1.0
6. The regional water supply plan should consider the possibility of changes in economic conditions, security issues, and regulations that can affect the demand for water supply and need for and types of water supply facilities	1.0	2.0	3.0	4.0
Subtotal	9.0	13.0	17.0	21.0
Rating	1.0	2.0	3.0	4.0

NOTE: The alternative plans are as follows:

Alternative Plan 1—2035 Forecast Conditions under Existing Trends and Committed Actions

Alternative Plan 2—2035 Forecast Conditions with Limited Expansion of Lake Michigan and Shallow Groundwater Aquifer Supplies

Alternative Plan 3—2035 Forecast Conditions with Groundwater Recharge Enhancement

Alternative Plan 4—Further Expansion of Lake Michigan Supply

^aPlanning objectives, principles, and standards are presented in Chapter V of this report.

^bAlternative plans are ranked 1 to 4, with 1 representing the alternative plan expected to best achieve the standard. When the performance of two or more alternative plans are anticipated to be the same, the ranking relative to the remaining alternative plans are averaged.

^cDrinking water standards are set forth in Chapter V and Appendix H of this report.

^dWater use objectives and supporting water quality standards and criteria are set forth in Appendices I and J of this report.

Source: SEWRPC.

Standard 2—Areas of High Potential for Groundwater Contamination Should Be Excluded for the Siting of Potentially Contaminating Land Uses or Facilities

No differences are envisioned under the four alternative plans with respect to the siting of potentially contaminating land uses or facilities. Therefore, the expected abilities of the alternative plans to achieve this standard are equal and the plans were given identical ranks.

Standard 3—Important Groundwater Recharge and Discharge Areas Should Be Identified for Preservation or Application of Land Development Plans and Practices Which Maintain the Natural Surface and Groundwater Hydrology, While Protecting the Groundwater Quality

Important groundwater recharge areas in the Region were identified in a separate technical report developed as a part of the regional water supply planning program.² In addition, the location of known springs were identified and shown on Map 21 in Chapter II of this report. Under Alternative Plan 3, it is envisioned that about four square miles of area with moderate to very high groundwater recharge potential would be dedicated to rainfall infiltration

²SEWRPC Technical Report No. 47, Groundwater Recharge in Southeastern Wisconsin Estimated by a GIS-Based Water-Balance Model, July 2008, prepared by the University of Wisconsin-Extension and the Wisconsin Geological and Natural History Survey.

facilities. Therefore, this alternative plan was assigned the highest rank. Because it may be expected that preservation of these areas would be achieved, perhaps to a lesser, but equal, degree under Alternative Plans 1, 2, and 4, the expected abilities of these alternative plans to achieve this standard were given identical ranks.

Standard 4—Sources of Water Supply Should Be Specifically Allocated to Adequately Serve Lands Planned to Be Maintained in Agricultural Uses

Because of the decentralized nature of agricultural land use within the Region, allocation of water supply to agricultural uses does not involve construction of centralized transmission and distribution systems. Instead, agricultural uses tend to rely upon water that can be captured at or near the points of use. The model results documented in Chapter VIII indicate that the alternative plans that place less reliance on groundwater and make greater use of Lake Michigan water as a source of public water supply may be expected to result in greater water storage in the aquifers, as measured by associated drawups in the deep aquifer, and changes in baseflow contributions from the shallow aquifer to the surface water system. As a result, more water would be available in the aquifers for agricultural uses under alternative plans that place less reliance upon groundwater as a source of public water supply. Accordingly, such plans were judged to make available more water to serve lands planned to be maintained in agricultural uses. Based upon this evaluation, Alternative Plan 4 was judged to have the best ability to meet this standard and was assigned the best rank. While the sources of water envisioned to be used for public water supply under Alternative Plans 2 and 3 are the same, the additional recharge provided to the groundwater system under Alternative Plan 3 may be expected to provide a greater increase in storage in the aquifers than may be expected under Alternative Plan 2. Therefore, Alternative Plan 3 was assigned the next best rank. Because Alternative Plan 1 places the greatest reliance upon groundwater as a source of public water supply, it was judged to have the poorest ability to meet this standard and was assigned the poorest rank.

Standard 5—Primary Environmental Corridors Should Be Preserved in Essentially Natural, Open Uses, and the Extension of Urban Services, Including Public Water Supply Services, Into Such Corridors Should Be Avoided, Except for Corridor-Dependent Uses, Such As Recreational Facilities and Water Transmission Main, Sewage Conveyance Facilities, and Other Utility Crossings

Under all four alternative plans, it is expected that the delineated primary environmental corridors within the Region will be preserved as recommended in the adopted design year 2035 regional land use plan. The component of Alternative Plan 3 providing for the preservation of the areas with high, and very high, groundwater recharge strengthens the case for preserving the corridors. Thus, Alternative Plan 3 was assigned the highest rank. The expected abilities of the other three alternative plans to achieve this standard were given identical lower ranks.

Standard 6—Secondary Environmental Corridors and Isolated Natural Resource Areas Should Be Preserved in Essentially Natural, Open Uses to the Extent Practicable, As Determined in County and Local Plans

Under all four alternative plans, it is expected that the delineated secondary environmental corridors and isolated natural resource areas within the Region will be preserved as recommended in the adopted design year 2035 regional land use plan. Because the areas concerned are identical under all four alternative water supply plans, the expected abilities of the alternative plans to achieve this standard were considered equal and the plans were given identical ranks.

Standard 7—The Most Productive Soils, Those Designated By the U. S. Natural Resources Conservation Service As Comprising Agricultural Soil Capability Classes I and II, Should Be Preserved for Agricultural Use, to the Extent Practicable, Recognizing That Certain Class I and Class II Farmland Will Have to Be Converted to Urban Use in Order to Accommodate the Orderly Expansion of Urban Service Areas within the Region. The Extension of Urban Services, Including Public Water Supply Services, Into Such Areas Should Be Avoided, Except As These Lands Are Converted to Urban Uses

While the planned municipal water supply service areas are identical under all four alternative plans, Alternative Plan 3 envisions conversion of about four square miles of agricultural and other open lands as sites for rainfall infiltration facilities. Therefore, this alternative plan would not achieve this standard as well as the other three alternative plans. Therefore, Alternative Plans 1, 2, and 4 were given identical ranks and Alternative Plan 3 was given a lower rank.

Composite Plan Element 7—Water Conservation Measures

The composite plan includes provisions for comprehensive water conservation programs, including both supply side efficiency measures and demand side water conservation measures. These conservation programs are recommended to be applied on a utility-specific basis to reflect the source of supply and existing infrastructure, as summarized in Table 59 of Chapter IV of this report. That table was developed under, and was initially presented in the state-of-the-art of water supply practices report prepared under the regional water supply planning program.³ Expected reductions in demand vary from 4 to 10 percent on an average daily demand basis and from 6 to 18 percent on a maximum day demand basis. The water conservation measures described are primarily related to the municipal water utility water service areas. However, the composite plan envisions that the low-level water conservation measures would also apply to private individual, self-supplied water systems.

Composite Plan Element 8—Groundwater Recharge Area Protection and Stormwater Management Practices Components

Alternative Plan 3 included a groundwater recharge area protection component and a stormwater management practices component. The comparative evaluation of the alternative plans indicates that the recommended protection of groundwater recharge areas and the recommended stormwater practices significantly contributed to Alternative Plan 3 being ranked highest or second highest with respect to meeting Objectives 1 and 2 relating to the support of the land use plans and the conservation and wise use of the surface water and groundwater systems, respectively. These components of Alternative Plan 3 have particular advantages with respect to meeting the standards relating to groundwater sustainability and surface water quantity and quality.

The groundwater recharge protection area component of the composite plan is directed toward the protection of the recharge of areas classified as having a high or very high recharge potential based upon the analyses of the recharge potential within the Region. As noted in Chapter VIII, this component may be expected to be largely achieved through implementation of the design year 2035 regional land use plan since that plan recommends preservation of the environmental corridors, isolated natural resource areas, and prime and other agricultural areas—areas that facilitate recharge. About 75 percent of the high recharge potential areas, and 78 percent of the very high recharge potential areas may, under the adopted land use plan, be expected to be preserved. Sound land subdivision design and stormwater management practices should also assist in maintaining the natural hydrology in the new rural, suburban, and low-density urban residential areas identified in the regional land use plan.

The stormwater management component of the composite plan would provide for the inclusion of stormwater management practices, including treatment and infiltration systems, which—to the extent practicable—maintain the natural hydrology of, and the recharge potential in all new residential and in some nonresidential developments. This component is intended to apply to residential and some nonresidential developments served by both municipal and private water supply systems in order to contribute to the sustainability of the groundwater supply, as well as for related stormwater management purposes. Such practices are considered important, even in areas served by individual wells and onsite sewage disposal systems where the majority of the water used is returned to the aquifer. Such areas do experience some losses in water used and the stormwater management practices can contribute to meeting broader aquifer recharge objectives. Both of these components may be expected to be achieved largely through implementation of the regional land use plan and through State and local programs and regulations. In this regard, provisions of Chapter NR 151 of the *Wisconsin Administrative Code* and through county and municipal stormwater management ordinances adopted in accordance with Chapter 216 of the *Wisconsin Administrative Code* are considered important regulations. The application of sound land subdivision design practices, particularly the application of conservation subdivision design, and of good stormwater management practices are recommended to enhance infiltration. Such practices are particularly important in areas where the groundwater analyses associated with well siting, as described under Composite Plan Element 9 identify potential negative impacts on surface waters as a result of well siting.

³SEWRPC Technical Report No. 43, State-of-the-Art of Water Supply Practices, June 2007.

Two subalternatives to the composite water supply plan were developed and evaluated. The two subalternatives to the composite plan were comprised of the 10 elements of the composite plan as described previously and are the same in all respects, except for the source of supply considered for the City of Waukesha Water Utility and the interrelated number of rainfall infiltration systems. Under the first subalternative plan, the City of Waukesha would continue to utilize groundwater as a source of supply, with the supply being obtained about equally from the shallow and deep aquifers. Under the second subalternative, the City of Waukesha would be connected to a Lake Michigan supply and a return flow component would be included for the water used by the City of Waukesha Water Utility.

A comparative evaluation of the two subalternatives to the Composite Plan indicated that both subalternatives could be expected to meet most of the plan objectives and supporting standards. This is to be expected, given that the subalternatives to the Composite Plan were designed with the intent of meeting those objectives and standards. However, Subalternative 2 to the Composite Plan was found to meet the objectives more fully, primarily because it offers advantages related to the long-term sustainability of the deep aquifer, reductions in chloride discharges to the surface waters, and improvement in groundwater-derived baseflow inputs to the surface water system. Subalternative Plan 2 also offers an opportunity to utilize excess Lake Michigan water production capacity and provide potential cost advantages to both supplier and supplied utilities. Subalternative 2 to the Composite Plan also better preserves the groundwater aquifer for other land uses, such as agriculture. Accordingly, it was concluded that Subalternative 2 to the Composite Plan should be considered as the preliminary recommended plan to be presented for public review and reaction; and based upon that review and reaction, to be refined as may be found necessary to produce a final recommended plan.

The preliminary recommended plan includes the following elements:

- For the vast majority of water utilities, the existing sources of supply—generally Lake Michigan, the shallow aquifer, or a combination of shallow and deep aquifers underlying the Region—were determined to be adequate to meet existing and planned water demands. Therefore, the plan proposes that these utilities continue to utilize their existing sources of supply. The utilities concerned are given in Table 182.
- The plan proposes that, over time, five utilities—the City of Delavan Water and Sewage Utility, the City of Elkhorn Water Utility, the City of Hartford Water Utility, Village of Union Grove, and the Town of Bristol Utility District No. 1—place greater reliance on use of the shallow groundwater aquifer as a source of water supply, either by replacing existing deep wells with shallow aquifer wells or by supplementing pumpage from existing deep wells with pumpage from shallow aquifer wells as new wells are constructed. In the case of the City of Hartford Water Utility, a new shallow aquifer well, treatment system, elevated storage tank, and interconnecting piping were expected to be operational during 2010. This will enable the Utility to abandon the existing deep aquifer well.
- The plan proposes the conversion to Lake Michigan as a source of water supply of existing utility service areas, or portions of utility service areas, which currently have return flow to Lake Michigan in place. Seven of these service areas—the eastern portion of the City of Brookfield Municipal Water Utility service area, the City of Cedarburg Light & Water Commission, the Village of Elm Grove, the Village of Germantown Water Utility, the Village of Grafton Water and Wastewater Commission, the Village of Saukville Municipal Water Utility, and the Town of Yorkville Utility District No. 1—are located east of the subcontinental divide. Two of the service areas—the central portion of the City of New Berlin Water Utility and the City of Muskego Public Water Utility—are located in communities that straddle the subcontinental divide, but are within the Milwaukee Metropolitan Sewerage District sanitary sewer service area and, therefore, have existing return flow.
- The plan proposes that the City of Waukesha would be connected to a Lake Michigan supply and would provide a return flow to Lake Michigan. Return flow could be provided by returning treated wastewater either to Lake Michigan or to streams tributary to Lake Michigan.

in a previous comment, the State Public Service Commission encourages the regionalization of water supply systems in order to achieve economies of scale, and has found that expanding existing utility service area boundaries is more favorable for rate payers and less costly for utilities than the creation of new utilities. Additional text has been added to the report to clarify this point.

Comments Regarding the Recommended Water Conservation Program Component of the Plan

- **Comment:** The plan should provide more specifics regarding the recommended water conservation programs.

Response: The proposed plan recommends that the scope and content of the water conservation programs be determined on a utility-specific basis, reflecting the type and sustainability of the source of supply and existing infrastructure conditions. Details regarding the kinds of measures recommended for these programs are set forth in Chapter IX of this report; while recommended levels of water conservation for individual utilities are set forth in Appendix K of this report. The types of measures to be considered and the levels of conservation to be achieved are based upon the information provided in SEWRPC Technical Report No. 43, *State-of-the-Art Water Supply Practices*, July 2007. The recommended measures are intended to constitute a guide to be used by local utilities in developing utility-specific programs. Implementation of these programs will require selection of measures and refining of program details in subsequent planning conducted by the individual utilities.

The water conservation programs developed by the water utilities will have to be designed to meet the requirements of the Wisconsin Department of Natural Resources rulemaking process. This rule-making process is being carried out to meet the requirements of the Great Lakes-St. Lawrence River Basin Water Resources Compact and Wisconsin Act 227, related groundwater protection legislation, and the September 2006 Report to the Governor on Water Conservation. The Wisconsin Act 227 requires that the WDNR establish statewide water conservation and efficiency goals and objectives and to establish rules specifying the requirements for water conservation and efficiency for applicants for new or increased diversions. The WDNR intends to initiate the water conservation rulemaking process during 2009, with completion expected on or about the end of 2010. The Public Service Commission of Wisconsin also considers any proposed water conservation measures during its review of water utility budgets and rates.

- **Comment:** Water conservation education is important.

Response: As noted above, the proposed plan recommends that the scope and content of the water conservation programs be determined on a utility-specific basis, reflecting the type and sustainability of the source of supply and existing infrastructure conditions. Details regarding the kinds of measures recommended for these programs are set forth in Chapter IX of this report; while recommended levels of water conservation for individual utilities are set forth in Appendix K of this report. Public information and education programming is specifically identified as an element of each recommended level of water conservation program. As noted above, the Public Service Commission of Wisconsin and the Wisconsin Department of Natural Resources have important roles in establishing water conservation programs.

Comments Regarding the Placement of High-Capacity Wells

- **Comment:** Groundwater monitoring needs to be conducted in the area where a high-capacity well is proposed before the well is drilled and commissioned.
- **Comment:** An evaluation regarding the impacts of proposed high-capacity wells on surface waters and private wells should be required.

Response: The plan includes provisions related to the siting of all new high-capacity wells and for the analysis and monitoring of impacts of such wells on the shallow aquifer. These provisions specify the measures that should be taken in the early stages of locating sites for high-capacity wells in the

Table 189

ANTICIPATED REDUCTIONS IN DEMAND AND POTENTIAL PROGRAM COMPONENTS FOR RECOMMENDED WATER CONSERVATION PROGRAMS

Program Level ^a	Reduction in Daily Demand (percent)		Potential Program Components ^b
	Average	Maximum	
Base	4	6 to 10	Water supply system efficiency actions Meter testing Leak detection and repair Water main maintenance and replacement Water system audits Water production system refinement Evaluation of new water metering technologies
			Moderate level of public information and education Redesign of water bills Collation and distribution of educational materials Presentation to school and civic groups
			Outdoor watering reduction measures Rain barrels Limited lawn and landscape watering restrictions
Intermediate	6 to 8	12 to 16	All of the components of the base-level program
			Higher levels of public information and education Development of school curricula Broader informational program in websites, newspapers, and flyers
			Plumbing retrofits, including provision of low-volume shower heads and toilet displacement device kits
			Water conservation rate structures More aggressive outdoor watering restrictions
Advanced	10	18	All of the components of the intermediate-level program
			Fixture and plumbing management Toilet replacement rebate programs Water softener replacement rebate programs Clothes washing machine replacement rebate programs
			More aggressive conservation rate structures
			Additional outdoor watering restrictions

^aRecommended program levels of water conservation for individual utilities are summarized on Map 126. The plan also envisions that the base-level conservation measures would apply to private individual, self-supplied systems.

^bThe scope and content of the water conservation programs are to be determined on a utility-specific basis to reflect the type and sustainability of the source of supply and the probable future water supply infrastructure requirements.

Source: SEWRPC.

Water Utility, the Village of Darien Water Works and Sewer System, the Village of Genoa City Municipal Water Utility, the Village of Williams Bay Municipal Water Utility, and the Lake Como Sanitary District No. 1 in Walworth County; the Allenton Sanitary District No. 1 in Washington County; and the City of Oconomowoc Utility in Waukesha County monitor water-levels in their deep aquifer wells and periodically reevaluate their water supply management program, including the level of water conservation program required.

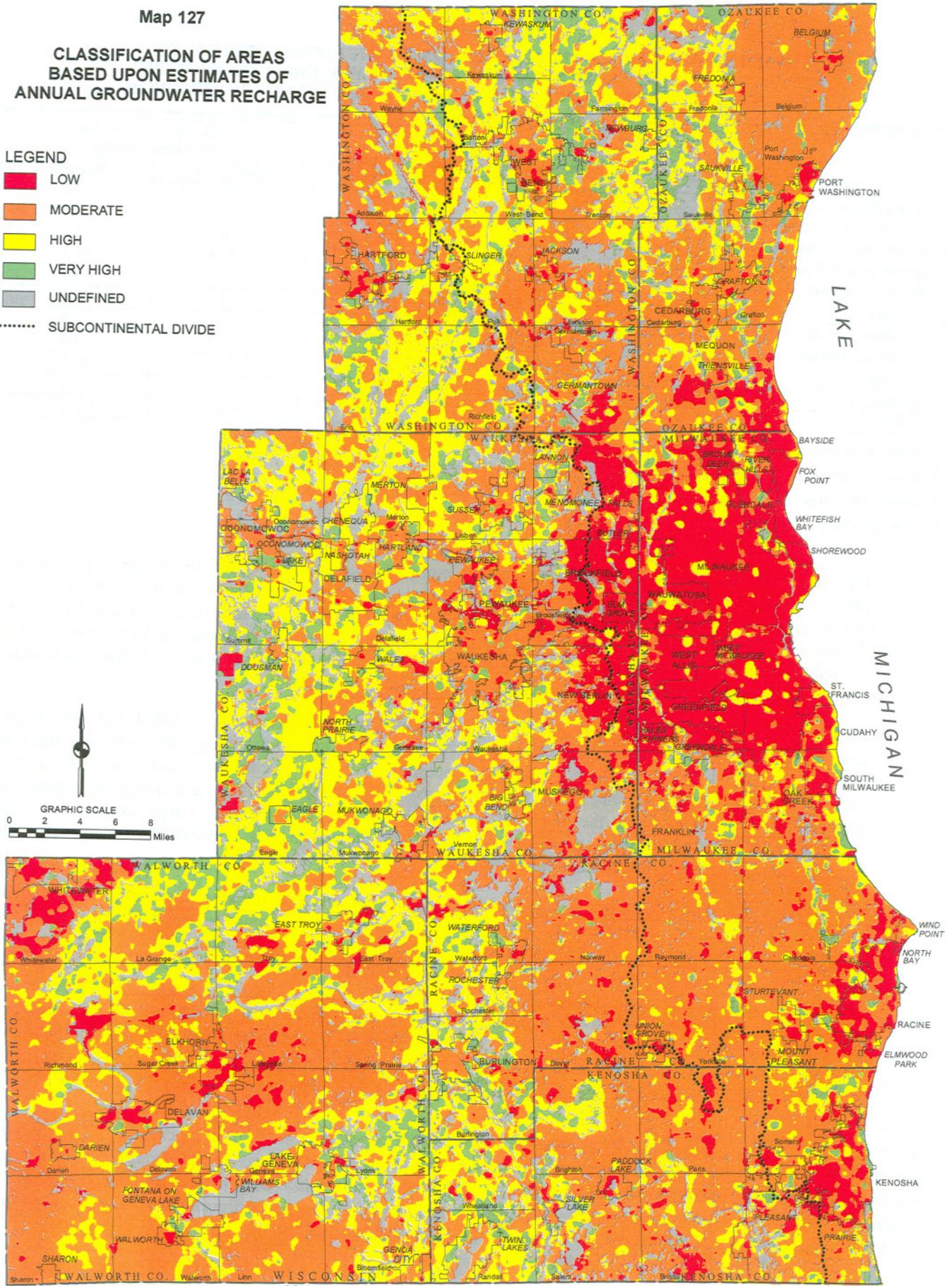
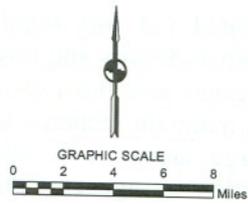
- The plan recommends the protection and preservation of groundwater recharge areas classified as having a high or very high recharge potential. These recharge areas are shown on Map 127. Such protection may be largely achieved through the implementation of the adopted design year 2035

Map 127

**CLASSIFICATION OF AREAS
BASED UPON ESTIMATES OF
ANNUAL GROUNDWATER RECHARGE**

LEGEND

- LOW
- MODERATE
- HIGH
- VERY HIGH
- UNDEFINED
- SUBCONTINENTAL DIVIDE



Source: Wisconsin Geological and Natural History Survey and SEWRPC.

Table 190

AREAS OF HIGH AND VERY HIGH GROUNDWATER RECHARGE POTENTIAL TO REMAIN IN OPEN SPACE USES IN THE SOUTHEASTERN WISCONSIN REGION BASED UPON THE YEAR 2035 REGIONAL LAND USE PLAN FOR SOUTHEASTERN WISCONSIN

Land Use Plan Category ^a	High Groundwater Recharge Potential		Very High Groundwater Recharge Potential	
	Square Miles	Percent ^b	Square Miles	Percent ^c
Primary Environmental Corridor	120.1	18.4	28.9	20.2
Secondary Environmental Corridor	14.5	2.2	1.8	1.3
Isolated Natural Resource Area	17.4	2.7	2.1	1.5
Agricultural and Rural Residential	327.6	50.3	73.3	51.4
Dedicated Recreational Land	9.0	1.4	4.7	3.3
Subtotal	488.6	75.0	110.8	77.7
Sub-Urban-Density Residential	11.5	1.8	2.3	1.6
Low-Density Residential	61.2	9.4	12.1	8.5
Subtotal	561.3	86.2	125.2	87.8
Unprotected	89.9	13.8	17.4	12.2
Total	651.2	100.0	142.6	100.0

^aPlanned land use category in the 2035 regional land use plan.

^bPercent of high water recharge areas located in each land use plan category.

^cPercent of very high water recharge areas located in each land use plan category.

Source: SEWRPC.

regional land use plan and supporting county comprehensive plans, since these plans recommend preservation of the environmental corridors, isolated natural areas, prime and other agricultural areas of the Region that facilitate recharge. As shown on Map 128 and as quantified in Table 190, about 76 percent of the highly rated and very highly rated recharge areas may be expected to be preserved by inclusion in the environmental corridors, isolated natural resource areas, and prime and other agricultural areas identified for preservation in the adopted regional land use plan.

Depending on the zoning and development practices utilized, additional highly rated and very highly rated recharge areas may also be substantially protected through inclusion into suburban-density and low-density residential areas. In these areas, it is recommended that careful site design and the use of stormwater management practices designed to maintain the natural hydrology and maintain recharge be applied.⁶ This will increase the level of protection for the important recharge areas. It is also recommended that the recharge areas be considered for protection and preservation by agencies and organizations involved in land conservancy activities.

Importantly, the plan recommends that consideration be given to expanding the currently delineated primary and secondary environmental corridors as delineated on the regional land use plan to include selected recharge areas classified as having high or very high recharge characteristics. The procedure historically utilized for environmental corridor delineation have been well accepted and consider the location of natural resource features and the extent of the areas occupied by such features. Recharge characteristics could be considered for integration into the current procedure. Such integration should be done on a comprehensive basis as part of the regional land use planning program the next time the corridor delineations are updated, and should be accomplished under the guidance of the Commission Advisory Committee on Regional Land Use Planning.

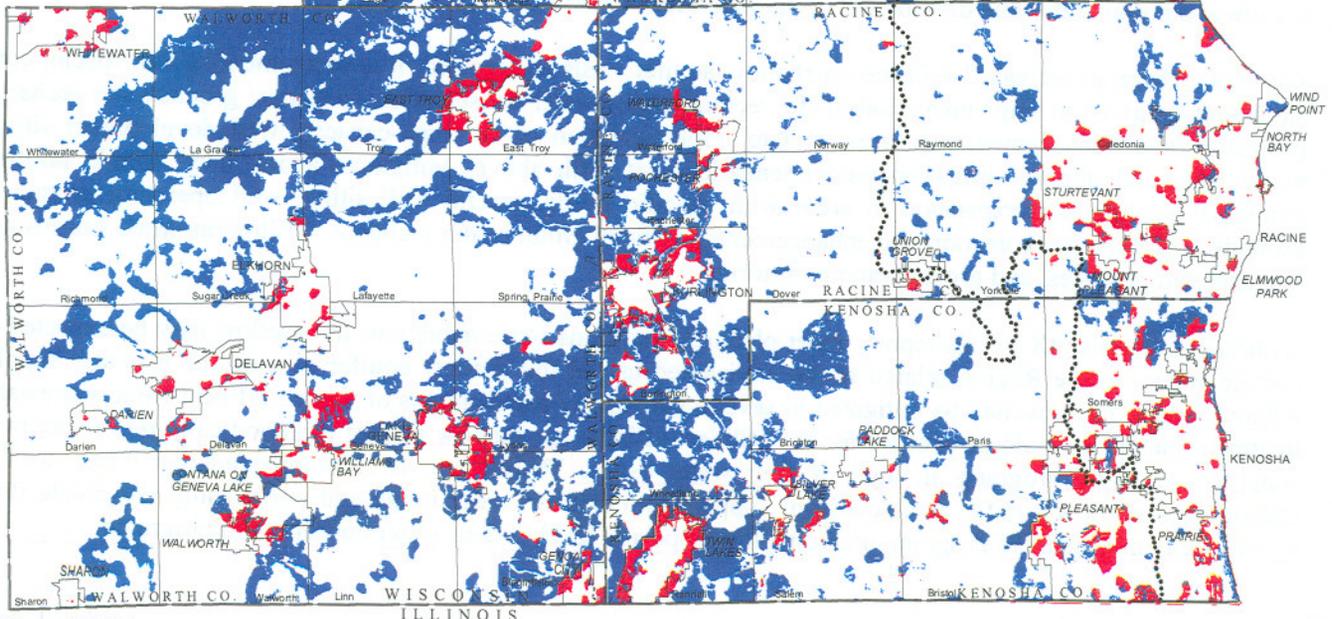
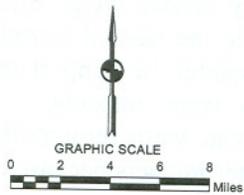
⁶Examples of potential site design and stormwater management practices which could be considered, include the use of permeable pavement; set-aside open space; infiltration basins and trenches' landscaping with drought resistant plants; landscape mulch versus turf grass; conservation subdivision design; and the integration of rain gardens, bioswales, and other groundwater recharge features into site design. However, care must be taken on a site-specific basis to avoid increased potential for groundwater contamination.

Map 128

GROUNDWATER RECHARGE PROTECTION COMPONENT OF THE RECOMMENDED WATER SUPPLY PLAN

LEGEND

- AREAS OF HIGH OR VERY HIGH RECHARGE POTENTIAL NOT PROTECTED THROUGH IMPLEMENTATION OF THE 2035 LAND USE PLAN
- AREAS OF HIGH OR VERY HIGH RECHARGE POTENTIAL PROTECTED THROUGH IMPLEMENTATION OF THE 2035 LAND USE PLAN
- Subcontinental Divide



Source: SEWRPC.

noted above. Accordingly, no- or low-tillage practices could offset potential baseflow reductions, or, in some cases, enhance baseflow if strategically located. Thus, it is recommended that both the enhanced agricultural land infiltration and the constructed rainfall infiltration systems be promoted and evaluated. In this regard, it is recognized that agricultural land operators must make decisions on tillage practices based upon a number of variables which are often more directly tied to crop production. However, it is possible that utilities or other high capacity well developers could provide incentives for changes in cropping practices if it is deemed important to well siting situations.

Special Consideration in Areas with Increased Reliance on Shallow Aquifer Supplies

The recommended stormwater management, high-capacity well siting, and rainfall infiltration practices are intended to form the basis of a procedure intended to abate the negative impacts on surface water systems associated with high-capacity well development. The procedure would provide for initial analyses of potential alternative well sites in order to select sites which minimize adverse impacts on the groundwater and surface water systems. These initial siting analyses would guide the selection of well sites and would be followed by more-detailed analyses of the potential impacts associated with each of the selected sites. Initial monitoring of water levels in private wells to establish a baseline condition is recommended. Where significant potential negative impacts to surface water systems or to existing wells are identified, a mitigation plan would be developed incorporating enhanced recharge based upon stormwater management and infiltration measures. In addition, other mitigation measures, such as pumping protocols and impacted well compensation measures, could be considered. Measures to mitigate impacts on surface waterbodies would include provision of artificial recharge designed to offset the losses in baseflow to the extent practical.

There are significant areas of the Region in which the plan recommends increased reliance on the use of the shallow aquifer as a source of supply. This is particularly true in the western and southwestern portions of the Region. As previously noted, such water use has the potential to impact surface water features, as well as the groundwater aquifer concerned. Review of the potential surface water impacts of the recommended plan—and of alternatives thereto—indicate that potential groundwater-derived baseflow reductions may be expected to range from 1.5 to 4.5 percent on a countywide basis in the outlying counties over the period 2005 to 2035. These impacts may be severe on a localized basis. Such localized impacts would represent worst case situations, since the analyses assume the conversion to municipal systems in 20 areas currently served by private wells. Such conversion is a potential future condition which the plan recommendations recognizes may be needed in only some of these areas. In some of the areas, individual wells may continue to function adequately to support the existing urban development. In many of the areas with the highest potential for surface water impacts, it is expected that some of the potential municipal water supply service areas will remain on private wells through the planning period. In those cases, the result would be a reduction in the indicated surface water impacts because of the lower pumping rates and distribution of the individual wells.

For areas where an increased reliance on shallow aquifer wells is expected, it is recommended that special consideration be given to implementation of the recommended water conservation measures; groundwater recharge protection and enhancement measures; and to implementation of the high-capacity well development siting, monitoring, and impact mitigation recommendations set forth above. Mitigative action may include limiting municipal service area expansion to areas with specific needs, careful well siting, well operating protocols, groundwater recharge protection and enhancements, artificial groundwater recharge, infiltration-based stormwater management practices, and groundwater monitoring.

As noted in Chapter IX of this report, under planned conditions some reductions in baseflow may be expected in surface waters in the Region related to the envisioned use of the shallow aquifer as a source of water supply. Although these impacts may be mitigated in several streams by contributions of treated effluent from wastewater treatment plants, it would be prudent for the utilities utilizing the shallow aquifer to periodically reevaluate their water conservation programs in light of their water usage. Therefore it is recommended that water utilities utilizing the shallow aquifer as a source of supply monitor their water usage and periodically reevaluate their water supply management program, including the scope and level of their water conservation programs.

Auxiliary Water Supply Plan Recommendations

Chloride Reduction Programs

Surface water quality monitoring data documented in various Commission and other agency reports indicate that chloride concentrations in streams and lakes of the Southeastern Wisconsin Region have been steadily increasing over time.¹⁸ The increase in chloride concentrations may be attributed to multiple sources, including: sodium chloride and calcium chloride applied for ice and snow control on land access, collector, and arterial streets and highways, and public and private parking lots; and discharges from water softener systems to either private onsite wastewater treatment systems which discharge to groundwater and thereby ultimately to streams, lakes, and wetlands as baseflow; or which discharge to public wastewater treatment plants which do not remove chlorides and which discharge directly to surface waters. While adequate data are not available to assess trends in chloride concentrations in groundwater, the trends in surface waters and the high solubility of chloride in water suggest that chloride concentrations in groundwater may also be increasing. Overall, the increasing chloride concentrations in surface waters and the potential for increasing concentrations in groundwater should be a cause for concern.

Thus, it is recommended that the municipalities and counties in the Region continue to reevaluate their practices regarding the application of chlorides for street and highway ice and snow control and strive to achieve minimum application rates consistent with safe operation. It is also recommended that municipalities continue to consider alternatives to current ice and snow control programs, such as the program adopted by the City of Brookfield, which calls for applying a sand-salt mix to land access and collector facilities with enhanced street sweeping in the spring of the year to remove accumulated sand; or the program initiated in the City of Franklin which involves application of a salt brine, sometimes along with a liquid derived from sugar beet juice, depending on weather conditions. These programs can serve as models for other municipalities.

As noted above, chlorides used in water softeners can also increase chloride contributions to surface water and groundwater. It may be expected that under the recommended water supply plan, the reduction in hardness in the water provided by those utilities shifting from groundwater to Lake Michigan as a source of supply will eliminate the need for water softening by most users with a resulting decrease in chloride discharges. For those municipalities continuing to use groundwater as a source of water supply, it is recommended that education programs be implemented to provide information about alternative water softening media and the use of more-efficient softeners which are regenerated based upon the amount of water used and the quality of the water.

Stormwater Management Measures Affecting Groundwater Quality

Chlorides that are applied to streets and highways for ice and snow control are conservative constituents that are often dissolved in stormwater runoff. Stormwater infiltration practices do not treat and remove chlorides dissolved in runoff. Thus, special safeguards must be applied to avoid adverse effects of chlorides on groundwater quality. It is, therefore, recommended that the design of stormwater management facilities that directly or indirectly involve infiltration of stormwater consider the potential impacts on groundwater quality. Those effects should be a consideration in the design of infiltration facilities such as infiltration trenches, infiltration basins, bioretention facilities, rain gardens, grassed swales, and subsurface storage and infiltration galleries; and in the design of stormwater detention basins. The WDNR has developed post-construction stormwater management technical standards for site-specific evaluation of stormwater infiltration, infiltration basins, bioretention facilities, and wet

¹⁸See, for example, *SEWRPC Technical Report No. 39, Water Quality Conditions and Sources of Pollution in the Greater Milwaukee Watersheds, November 2007*; *SEWRPC Community Assistance Planning Report No. 273, A Lake Management Plan for Pike Lake, Washington County, Wisconsin, December 2005*; *SEWRPC Community Assistance Planning Report No. 283, A Lake Management Plan for the Waterford Impoundment, Racine County, Wisconsin, Volume One, Inventory Findings, October 2007*; *SEWRPC Community Assistance Planning Report No. 300, A Lake Management Plan for George Lake, Kenosha County, Wisconsin, August 2007*.

Table 191

OPTIONS FOR PROVIDING WATER SUPPLY TO SELECTED POTENTIAL NEW MUNICIPAL WATER UTILITIES AND SELECTED PORTIONS OF EXISTING 2035 MUNICIPAL WATER UTILITY SERVICE AREAS NOT CURRENTLY SERVED

Service Area	Options for Providing Water Supply
Kenosha County Village of Silver Lake Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Town of Salem Proposed Utility^a
Village of Twin Lakes Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Powers-Benedict-Tombeau Lakes Area Proposed Utility
Town of Salem Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Partial cooperative supply with the Paddock Lake Municipal Water Utility^a 3. Partial cooperative supply with the Village of Silver Lake Proposed Utility^a
Powers-Benedict-Tombeau Lakes Area Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Village of Twin Lakes Proposed Utility
Ozaukee County Town of Cedarburg Area	<ol style="list-style-type: none"> 1. Cooperative supply with the City of Cedarburg 2. Cooperative supply with the Village of Grafton 3. Separate utility supply utilizing groundwater
Town of Fredonia-Waubeka Area Potential Utility	<ol style="list-style-type: none"> 1. Cooperative supply with the Village of Fredonia 2. Separate utility supply utilizing groundwater
Racine County Village of Rochester Area Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Village of Waterford Water Utility^b
Town of Waterford Area Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Village of Waterford Water Utility^b
Walworth County Delavan Lake Sanitary District Area	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Delavan Water and Sewerage Commission^c
Town of East Troy-Potter Lake Area Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Village of East Troy Municipal Water Utility^d 3. Cooperative supply with the Village of Mukwonago Municipal Water Utility 4. Cooperative supply with the East Troy Sanitary District No. 3
Town of Lyons Area Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Country Estates Sanitary District^e
Washington County Town of Hartford Areas Adjacent to the City of Hartford Water Utilities' Projected 2035 Service Area	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the City of Hartford Water Utilities^f
Village of Richfield Areas Adjacent to the Village of Germantown Water Utility's Projected 2035 Service Area	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Village of Germantown Water Utility^g
Waukesha County	
Village of Elm Grove Potential Utility	<ol style="list-style-type: none"> 1. Cooperative supply with the City of Brookfield Municipal Water Utility^h 2. Cooperative supply with the City of Milwaukee Water Works 3. Cooperative supply with the City of Wauwatosa Water Utility
Village of Lannon Potential Utility	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the Village of Menomonee Falls
Town of Delafield Areas Adjacent to the City of Waukesha Water Utility's Projected 2035 Service Area	<ol style="list-style-type: none"> 1. Separate utility supply utilizing groundwater 2. Cooperative supply with the City of Waukesha Water Utilityⁱ

U.S. Department of Interior, Geological Survey

The USGS conducts continuing programs for water resource appraisal and monitoring. Programs conducted by the USGS include monitoring of groundwater levels, computer modeling of groundwater levels and flow, assessments of water use and water use trends, gaging of streamflow and lake levels, and monitoring of water quality. As a part of these programs, the USGS conducts a cooperative stream gaging program in cooperation with the Southeastern Wisconsin Regional Planning Commission and several local units of government, water utilities, and wastewater utilities. Through these programs the USGS can provide valuable assistance to local agencies involved in implementing the recommended water supply plan.

The USGS was an important cooperator in the development of the regional water supply planning program for the Region. In that role, the USGS developed a groundwater simulation model for the Region which served an important quantitative role in evaluating existing and alternative future conditions during the planning process. The groundwater simulation model which was developed and operated by the USGS included a surface water interface which allows the assessment of surface water baseflows under existing and alternative future conditions.

Private Organizations

Land trusts and conservancies—such as the Caledonia Conservancy, the Cedar Lakes Conservation Foundation, the Geneva Lake Conservancy, the Kenosha/Racine Land Trust, the Kettle Moraine Land Trust, the Land Trust of Walworth County, the Milwaukee Area Land Conservancy, the Muskego Lakes Conservancy, the Ozaukee Washington Land Trust, the River Revitalization Foundation, the Tall Pines Conservancy, and the Waukesha County Land Conservancy—purchase, or obtain conservation easements on, environmentally valuable lands through member contributions, land or easement donations, and grants obtained from other sources. These organizations can play a significant part in plan implementation through coordination of their land acquisition and easement programs on the recommendations in the plan for preservation of important groundwater recharge areas.

Water efficiency and conservation groups and coalitions, such as the Alliance for Water Efficiency and the Waukesha County Water Conservation Coalition, may be able to assist in plan implementation by providing technical information and assistance related to water efficiency and conservation and by providing materials and assistance in the education of water users.

PLAN ADOPTION, ENDORSEMENT, AND INTEGRATION

Upon adoption of the regional water supply plan for the Southeastern Wisconsin Region by resolution of the Southeastern Wisconsin Regional Planning Commission, in accordance with Section 66.0309(10) of the *Wisconsin Statutes*, the Commission will transmit a certified copy of the resolution adopting the plan, together with the plan itself, to all local legislative bodies within the study area and to all of the existing Federal, State, areawide, and local units and agencies of government that have potential plan implementation functions. It is recommended that each of the concerned agencies and units of government endorse the regional water supply plan and integrate the findings and recommendations of the plan into their planning, regulatory, and other activities related to water supply.

Endorsement, or formal acknowledgment of the regional water supply plan by the local legislative bodies and the existing local, areawide, State, and Federal level agencies concerned is highly desirable to assure a common understanding among the several governmental levels and to enable their staffs to program the necessary implementation work. A model resolution for endorsement of the regional water supply plan for the Southeastern Wisconsin Region is provided in Appendix Q. Endorsement of the recommended regional water supply plan by any unit or agency of government pertains only to the statutory duties and functions of an endorsing agency within its geographic area of jurisdiction, and such endorsement does not and cannot in any way preempt or commit action by another unit or agency of government acting within its own area of functional and geographic jurisdiction. Nor does endorsement formally commit the endorsing agency or unit of government to carry out plan implementation. However, endorsement will indicate that the plan will be used as a guide in considering water supply issues.

Upon endorsement of the plan by a unit or agency of government, it is recommended that the policymaking body of the unit or agency direct its staff to review in detail the elements of the water supply plan. Once such review is completed, the staff can propose to the policymaking body for its consideration and approval the steps necessary to fully integrate the water supply plan elements into the plans and programs of the agency or unit of government.

The importance of integrating the regional water supply plan into county and community planning efforts cannot be overly emphasized. The State's comprehensive planning legislation enacted in 1999 effectively requires that cities, villages, towns, and counties prepare and adopt long-range comprehensive plans—including nine prescribed plan elements⁶—and further specifies that, beginning in 2010, zoning, land subdivision regulations, and official mapping regulations must be consistent with such plans. The year 2035 regional land use plan is intended to serve as a regional framework for the required planning and the regional land use plan serves as the basis for the regional water supply plan. The regional water supply plan includes recommendations that relate directly to four of the required local comprehensive plan elements, including the land use element; the agricultural, natural, and cultural resources element; the utilities and community facilities element; and the intergovernmental cooperation element. The State comprehensive planning law does not mandate consistency between local comprehensive plans and the regional land use and water supply plans.⁷ It is, nonetheless, strongly recommended that cities, villages, towns, and counties use the regional land use and water supply plans as a framework for the preparation and implementation of their comprehensive plans, integrating the findings and recommendations of the regional plans as appropriate.

Local-Level Agencies

It is recommended that the Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha County Boards of Supervisors formally endorse the regional water supply plan for the Southeastern Wisconsin Region by resolution, pursuant to Section 66.0309(12)(a) of the *Wisconsin Statutes*, after review, a report, and recommendation by the appropriate county committees.

It is recommended that the plan commissions of the cities, villages, and towns within the Region, endorse the regional water supply plan by resolution, pursuant to Section 62.23(3)(b) of the *Wisconsin Statutes*, and certify such adoption to their respective governing bodies, and that upon such certification the governing bodies also act to endorse the recommended plan.

It is recommended that the governing boards and commissions of the municipal water utilities in the Southeastern Wisconsin Region endorse the regional water supply plan by resolution.

It is recommended that the governing boards and commissions of the Allenton Sanitary District No. 1 in the Town of Addison, Washington County; the Town of Bristol Utility District No. 1 and the Town of Bristol Utility District No. 3, in Kenosha County; the Brookfield Sanitary District No. 4 in the Town of Brookfield, Waukesha County; the Caledonia East Utility District and the Caledonia West Utility District in the Village of Caledonia, the North Cape Sanitary District in the Towns of Norway and Raymond, Town of Yorkville Utility District No. 1, in Racine County; and the Country Estates Sanitary District in the Town of Lyons, the Town of East Troy Sanitary District No. 3, the Lake Como Sanitary District No. 1 in the Town of Geneva, the Pell Lake Sanitary District No. 1 in the Town of Bloomfield, and the Troy Sanitary District No. 1 in the Town of Troy, all in Walworth

⁶The nine required elements of comprehensive plans as prescribed in the State comprehensive planning law include the following: issues and opportunities; housing; transportation; utilities and community facilities; agricultural, natural, and cultural resources; economic development; intergovernmental cooperation; land use; and implementation.

⁷Under the State comprehensive planning law, local comprehensive plans must incorporate regional transportation plans. This is the only consistency requirement between local comprehensive plans and regional plans specified in that law.

affected to protect the water supply in the aquifer and to remedy in a timely fashion any problems with private wells resulting from installation and operation of the new well or wells.

In instances where potential negative impacts on surface waterbodies are identified, consideration should be given to alternative well sites, modified pumping schedules, and developing artificial recharge to compensate for surface water baseflow changes as described under the next plan component.

The well siting procedures are envisioned to also incorporate source water protection considerations. These considerations include well separation from potential sources of contamination, the establishment of wellhead protection areas, and the development and implementation of wellhead protection plans. Such measures are normally carried out for municipal utility wells as a matter of sound practice and in order to comply with WDNR site regulations.

IMPLEMENTATION OF THE PLAN RECOMMENDATIONS CONCERNING ENHANCED RAINFALL INFILTRATION

Implementation of the enhanced rainfall infiltration recommendations of the regional water supply plan can be best achieved in conjunction with the results of the analyses performed as part of implementation of the high-capacity well siting element described in the previous section. It is recommended that these infiltration systems be installed as a mitigative measure to provide additional recharge when such analyses indicate that installation of the high-capacity well or wells would result in impacts to surface waterbodies and existing private wells. The primary responsibility for the development and installation of these infiltration systems rests with the utility or other entity installing the high-capacity well that would generate the impact.

The primary responsibility for implementing plan components which provide for increased groundwater recharge through changes in agricultural land tillage practices should also rest with the utility or other entity proposing to install a well. However, in such cases, the agricultural land owner would have to be a partner in the proposed project and the county land and water conservation committee should be asked to lend support. In this regard, it is recommended that the county land and water conservation committees serving Kenosha, Milwaukee, Ozaukee, Racine, Walworth, Washington, and Waukesha Counties consider the groundwater recharge benefits of low- or no-tillage practices along with other factors as they update county land and water conservation plans and other programs and policies, and that they consider partnering with water utilities to pursue cost share funding which may be available for conversion to no-till practices.

In addition to the development of enhanced infiltration systems in conjunction with well siting, it is envisioned that there will be opportunities to enhance infiltration in conjunction with other open space preservation and management opportunities. Open space preservation can often serve multiple purposes, such as recreation, wildlife habitat, stormwater management, and preserving rural heritage. Another such objective can be groundwater recharge. As such, land trusts and conservancies may have a role in development of enhanced recharge systems.

Development of the constructed systems will require additional second-level planning and analysis in order to determine the best approach to the location, design, and configuration of the infiltration system concerned.

Locating sites for these systems will require site-specific analyses to ensure that they are located in the recharge areas of the waterbodies and private wells expected to be impacted, and that they are located in suitable areas for shallow groundwater recharge. A variety of designs and methods are possible for these systems and the appropriate design will need to be determined on a case-by-case basis. The systems could be in the form of rain gardens, larger bioretention basins, infiltration ponds, infiltration ditches, and other systems. On a Regional basis, a mix of various measures developed on a site-specific basis will likely be the most effective means of providing groundwater recharge. It is recommended that consideration be given, as appropriate, to developing groundwater monitoring programs in conjunction with the rainfall infiltration systems. Because the rainfall infiltration facilities can potentially be developed to serve multiple purposes over-and-above groundwater recharge, including reducing stormwater runoff rates and volumes, providing aesthetic amenities, and improving wildlife habitat, the sites will have to be specifically designed to serve the desired purposes.

There are multiple benefits attendant to enhancing rainfall infiltration on agricultural lands by changing tillage practices, including reductions in runoff and erosion. In considering the application of groundwater infiltration measures, the estimates of the groundwater recharge effectiveness should be developed on a site by site basis.

FINANCIAL AND TECHNICAL ASSISTANCE¹⁴

It is important for water utilities and local units of government within the Region to effectively utilize all available sources of financial and technical assistance for the timely implementation of the recommended plan. In addition to utilizing public utility earnings and current tax revenue sources, such as property taxes, fees, fines, and State-shared taxes, the local units of government can also make use of revenue sources such as borrowing, special taxes and assessments, special assessments, areawide assessments, contributions in aid of construction, impact fees, and establishment of stormwater utilities.

Various types of technical and financial assistance useful in plan implementation are also available from county, State, and Federal agencies. The types of assistance available include State and Federal cost-share funding for such projects as the development, installation, and upgrading of water utility infrastructure, groundwater recharge area protection, and stormwater management measures; technical advice on land and water management practices related to stormwater management provided by Federal Natural Resources Conservation Service staff and county land conservation staffs; groundwater monitoring and modeling services provided by WGNHS and USGS staffs; and educational, advisory, and review services provided by the University of Wisconsin-Extension Service and the Regional Planning Commission.

Borrowing

Local units of government are normally authorized to borrow so as to effectuate their powers and discharge their duties. Chapter 67 of the *Wisconsin Statutes* generally empowers counties, cities, villages, and towns to borrow money and to issue municipal obligations not to exceed 5 percent of the equalized assessed valuation of their taxable property, with certain exceptions, including school bonds and revenue bonds. The general obligation bonds issued are secured by the full faith and credit of the municipality due to its ability to levy property taxes to support the principal and interest payments of the bonds. In addition, Chapter 66 of the *Wisconsin Statutes* empowers municipalities to borrow money and issue public improvement bonds to finance the costs of construction and acquisition of any revenue-producing public improvement of the municipality. These revenue bonds are issued with a pledge of future rates or charges being available to support the bonds. The principal and interest payments for revenue bonds are payable solely from the revenue generated by the project or utility.

Special Taxes and Assessments

Municipalities have special assessment powers for constructing public works or improvements under Section 66.0701 of the *Wisconsin Statutes*. In addition, counties and cities have special assessment powers for park and parkway acquisition and improvements under Sections 27.065 and 27.10(4), respectively, of the *Wisconsin Statutes*. Counties are empowered under Section 27.06 of the *Wisconsin Statutes* to levy a mill tax to be collected and placed into a separate fund and to be paid out only upon order of the county park commission for the purchase of land and other expenses. Town sanitary districts, metropolitan sewerage districts, cities, and villages also have taxing and special assessment powers under Sections 33.32(5), 200.13(1), 66.0827(2), and 62.18(16) of the *Wisconsin Statutes*.

¹⁴The financial assistance programs described in this section and the accompanying appendices were active as of the date of publication of this report. Such programs are subject to modification or elimination based on budget considerations, and additional programs may be enacted over time to address emerging issues. As this plan is implemented, information on grant program changes should be collated as necessary. The Catalog of Federal Domestic Assistance Programs can be accessed at <http://www.cfda.gov>. Additional information on grants can be accessed through the University of Wisconsin-Madison Libraries Grants Information collection at: <http://grants.library.wisc.edu>.



Administration

David A. Bretl
County Administrator

Suzanne Harrington
Administrative Assistant

Tammy L. Werblow
Administrative Assistant

Memorandum

To: Michael Cotter, Deputy Corporation Counsel/Land Use and Resource Management Director

C: John Orr, Information Systems Director

Via Email

From: David A. Bretl, County Administrator

Date: January 28, 2011

Re: Wisconsin Land Information Association Award

Thanks for passing along the information concerning the Land Information Association's "Local Government Achievement" award won by Lou Olson and Rich Colbert. This is a credit to both Lou and Rich and reflects positively on the efforts of LURM, Information Technology and Walworth County.

Please agendaize this award for the next available Land Conservation meeting with a recommendation to recognize both Lou and Rich at an upcoming County Board meeting.

DAB/sh



Form prepared by:
Wisconsin Department of Agriculture, Trade & Consumer Protection
Division of Agricultural Resource Management
Bureau of Land and Water Resources
PO Box 8911
Madison WI 53708-8911
Phone: 608-224-4500

Farmland Preservation Program (FPP)

Notice of Noncompliance with Soil and Water Conservation Requirements (ss. 91.80 and 91.82, Wis. Stats).

Form must be used by counties to notify FPP participants and Department of Revenue of non-compliance with requirements specified in s. 91.82, Wis. Stats.

LANDOWNER

NAME **ELDON L STANTON DONNA M STANTON**

ADDRESS **W9308 TERRITORIAL ROAD**

CITY **WHITEWATER**

STATE **WI**

ZIP CODE **53190**

TELEPHONE NUMBER
(608) 883-6722

LOCATION

COUNTY **WALWORTH**

TOWN, VILLAGE, OR CITY **RICHMOND**

SECTION 5	TOWNSHIP 3N	RANGE 15E
SECTION 6	TOWNSHIP 3N	RANGE 15E
SECTION	TOWNSHIP	RANGE

AFFECTED PARCEL NUMBERS **C R 500004A, C R 600001A, C R 600010**

Please continue on other side

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Landowner Name: Eldon + Donna Stanton

FINDINGS UNDER s. 91.82, Wis. STATS.

To issue a Notice of Noncompliance the LCC must make one or more of the following findings:

The county land conservation committee finds that the owner has done one or more the following (check all that apply):

- Failed to comply with applicable land and water conservation standards required under s. 91.80, Wis. Stats.
- Failed to permit a reasonable inspection under s. 91.82 (1) (c) 1., Wis. Stats.
- Failed to certify compliance as required under s. 91.82 (1) (c) 2., Wis. Stats.
- Wishes to voluntarily refrain from collecting the tax credits and thus waives the right for a hearing and farm inspection. This voluntary option is not available for persons subject to a farmland preservation agreement.

Eldon Stanton
 Landowner Signature

Donna Stanton
 Landowner Signature

Based on the findings listed above and a review of the affected farm operations at a hearing of the County Land Conservation Committee as described below, the Committee hereby issues a Notice of Noncompliance under s. 91.82, Wis. Stats., for the landowner(s) and property described above. As of the date of this notice, the landowners are not eligible to claim Farmland Preservation Tax Credits under s. 71.613, Wis. Stats., on the property described above, unless this notice is subsequently canceled and not in effect at the end of the taxable year to which the claim relates.

HEARING

DATE

JURISDICTION (list county, village, city, or town)

LAND CONSERVATION COMMITTEE AUTHORIZATION

CHAIR, COUNTY LAND CONSERVATION COMMITTEE OR DESIGNEE

DATE

ADDRESS 100 West Walworth P.O Box 1001 Rm 222
 Elkhorn, WI 53121

TELEPHONE AND NAME OF CONTACT
 (262) 741-7903

If you have any questions regarding this notice, please contact the County Land Conservation Department at the address and phone number provided above.

This notice, issued by the Land Conservation Committee, shall be provided to the Wisconsin Department of Revenue. If a county land conservation committee determines that an owner has corrected the failure described in a notice of noncompliance, it shall withdraw the notice of noncompliance and notify the owner and the Department of Revenue of the withdrawal.

Send a copy of the notice to:

Wisconsin Department of Revenue
 DOR-FARMLAND 5-144
 RSOB - Audit Bureau
 PO Box 8906
 Madison, WI 53708-8906

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