SB 209

Testimony on Senate Bill 209
By Lisa M. MacKinnon
Staff Attorney, 1000 Friends of Wisconsin
November 28, 2001

Senate Bill 209 is about gravity. It's about the fact that water flows downhill. Because land use and water quality are inextricably linked, we cannot protect the quality of Wisconsin's shorelands without also addressing the condition, quality and use of the lands above them. How we use land is the basis of all our environmental issues, especially water quality. Land use practices on the uplands—development, agriculture, etc.-- directly affect the quality of the waters below them because the water that flows over and through those lands ends up in our wetlands, streams, rivers and lakes.

Wisconsin is a water rich state. The state's shoreland zoning law aims at protecting these waters. However, current shoreline buffer standards, for example, are far from adequate when it comes to achieving this goal. This bill's designation and protection of upland environmental corridors would provide a valuable complement to the current laws protecting the state's waters.

The bill itself is broad but it provides the necessary impetus for the creation of better environmental protection standards. The specific standards will need to be developed through an administrative rulemaking process that is comprehensive and inclusive. We are eager to be a part of this process and to work cooperatively with municipalities, industries and other interested parties to develop detailed standards.

Our quality of life is dependent on the quality of our land and our water and we can't protect the one without protecting the other. This is why we support SB-209.

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Henderson, Patrick

From: CStepp1017@aol.com

Sent: Wednesday, November 28, 2001 10:34 PM

To: sen.wirch@legis.state.wi.us; sen.cowles@legis.state.wi.us; sen.baumgart@legis.state.wi.us; sen.hansen@legis.state.wi.us; sen.schultz@legis.state.wi.us

Subject: SB209

Dear Senators,
As a member of the Natural Resources Board, I am dismayed at the idea of SB209. While this agency is already understaffed and is going through tremendous re-organizational pains, why on earth would we want to add to the immense workload (*as well as control*) this department already has?

DNR is the agency responsible for so many important things. Our Board is currently reviewing the wide-sweeping non-point rules, mercury reduction rule, Deer 2000 issues, etc. These are the things we should be focusing on. We should not give DNR the power or jurisdiction to decide how to zone the state of Wisconsin! The agency is terribly over-burdened and under-qualified to take on such a tremendous feat.

We must leave zoning issues to the municipalities and stay involved and educated on smart growth planning. This bill looks remarkably like an anti-growth proposal to me. Please give consideration to my remarks.

Again, as a member of the Board I feel qualifed to remark on this proposal, since I have a front-row seat on the inner workings of the department. PLEASE do not forward this!!

Thank you for your consideration,

Cathy Stepp
Natural Resources Board

WMC
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Wisconsin Manufacturers' Association • 1911
Wisconsin Council of Safety • 1923
Wisconsin State Chamber of Commerce • 1929

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President

James A. Buchen
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Government Relations

James R. Morgan
Vice President
Education and Programs

Michael R. Shoys
Vice President
WMC Service Corp.

TO: **Senate Environmental Resources Committee**
FROM: **Jeff Schoepke, Director, Environmental Policy**
RE: **SB 209**
DATE: **November 29, 2001**

Thank you for the opportunity to provide written comments on Senate Bill 209, relating to zoning of upland environmental corridors. WMC opposes SB 209 for several reasons.

SB 209 is not necessary for protection of environmentally sensitive lands. Wisconsin's network of local parks and natural areas is the envy of the nation, helped significantly by state stewardship grants assisting the purchase of property and easements. Local units of government have many competing needs, and we object to the state dictating additional zoning requirements on local units of government.

The 1999-2001 biennial budget enacted groundbreaking "Smart Growth" legislation, requiring all local units of government to develop land use plans. The Smart Growth regulations wisely require communities to consider both economic and environmental needs and interests as they plan. However, consistent with Wisconsin tradition of local control, planning decisions are still primarily a local responsibility. SB 209 trumps the local Smart Growth planning process before most Wisconsin communities have completed or even begun that planning process. WMC believes the Smart Growth process will allow local units of government to consider the importance of such upland environmental corridors and make decisions in the interest of the environmental and economic health of their communities.

Certainly, there are local properties of statewide environmental significance. However, state law already has a mechanism for state protection of such properties. If the DNR deems property is of significant statewide value, it should consider purchasing property with the Stewardship Fund, a $600 million state program.

WMC is also concerned about the impact this bill will have on private property rights. Private property subject to zoning as an upland environmental corridor could lose important development potential, removing rights that were present when the property was purchased. This would reduce the value of property substantially. It also has the potential to shift property tax burdens to other property owners, making Wisconsin's already burdensome property taxes even higher for many property owners.

Finally, WMC is concerned with the broad and vague authority the bill gives DNR to define the term "upland environmental corridor". For example, "woodlands" is listed as one area the DNR may

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consider. A majority of the State of Wisconsin could potentially be defined as "woodlands" and subject to this zoning requirement. The definition of woodland could be also broad enough to significantly curtail timber rights on private property. Such broad terms as "prairie communities" and "rough topography" would also seem to be subject to definition by rule. significantly curtailing existing property rights.

WMC urges the Senate Environmental Resources Committee to reject SB 209 as an overly broad intrusion in local zoning. The bill places too much planning authority in the hands of one state agency, interferes with local implementation of the state smart growth law, and is not necessary to protect environmentally important properties.

Again, thank you for the opportunity to comment on this legislation.

Eskeitz, Anne

From: Lana Ramsey [elramsey@wi.rr.com]

Sent: Thursday, November 29, 2001 6:00 AM

To: sen.wirch@legis.state.wi.us; sen.baumgart@legis.state.wi.us; sen.hansen@legis.state.wi.us; sen.cowles@legis.state.wi.us; sen.schultz@legis.state.wi.us

Subject: SB209

Senator,
I oppose SB209 for the following reason. This bill would require the DNR, in the words of a DNR staffer, to "zone the state. SB209 would create more regulations, more bureaucracy, longer permit times,and less permits granted increasing costs for the housing industry in an economic climate that is uncertain to say the least. We should be concentrating our efforts on sustaining an industry that creates not creating more bureaucracy leading to eliminating jobs because of higher housing costs.
Lana Ramsey
903 Center Street
Union Grove, WI 53182

Wisconsin Counties Association

MEMORANDUM

TO: Honorable Members of the Senate Committee on Environmental Resources

FROM: Jennifer Sunstrom, Legislative Associate JS

DATE: November 29, 2001

RE: SB 209 – Environmental Corridors

The Wisconsin Counties Association (WCA) would like to thank the members of the committee for the opportunity to comment on AB 209, which creates an upland environmental corridor zoning program which is to be designed by the Department of Natural Resources (DNR) and implemented at the local level.

The Wisconsin Counties Association is adamantly opposed to this bill due to both the significant cost to counties and for the additional liability placed on local governments due to potential regulatory takings claims associated with such laws. Like the shoreline zoning program, this bill essentially places another regulatory mandate on counties which is designed by the state, but all fiscal and liability risk is placed on local governments.

Due to the tight fiscal conditions that the state is currently experiencing, the impact of a weakening economy takes its toll at the local level as well. Although WCA understands the need to protect Wisconsin's environmental resources, an environmental program with an estimated cost of over $9.5 million dollars to local governments is simply not acceptable.

If the state believes that the need exists to create an upland environmental corridor zoning program, the state should bear the responsibility for program costs and implementation. If a county chooses to act on behalf of the state and participates in program administration, the county should be provided with maximum flexibility to design a program which meets the needs of the individual county, including the ability to create and enact its own ordinances governing the program.

WCA respectfully asks for your opposition to the bill and thanks you for considering our comments.

If you have any questions, please do not hesitate to contact the WCA office.

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WISCONSIN WETLANDS ASSOCIATION
222 South Hamilton Street · Suite #1 · Madison, Wisconsin 53703 · (608) 250-9971

Do no dishonor to the earth lest you dishonor the spirit of its people. For the gifts of life are the earth's and they are given to all.

To: Senate Environment Committee Members
From: Charlie Luthin, Executive Director
November 29, 2001

WWA TESTIMONY ON SENATE BILL 209

The Wisconsin Wetlands Association, a statewide non-profit organization, is fully supportive of the concept of environmental corridor protection as provided in SB 209. The idea of establishing and maintaining interconnected upland habitat and landscape is long overdue. The principal of upland corridor protection is an important next step and complement to what already exists for shoreland protection.

The evolving science of "conservation biology" has clearly demonstrated the importance of maintaining a viable, interconnected mosaic of upland and lowland habitats in order to ensure the survival of the majority of our wildlife species (and I'm NOT talking about deer, but rather the hundreds of amphibians, reptiles, birds and small mammals that we share the landscape with). This need is increasing as our landscape and associated habitats are increasingly fragmented by random, unplanned, unregulated "develop-where-you-will" sprawl.

I like to use the example of amphibians to illustrate this vital point. Most frogs, toads and salamanders require both upland and wetland habitats to survive. Wetlands are critical breeding areas, but many amphibians live the majority of their adult life cycle in upland habitats. In fact, it has been well documented that some species will migrate ½ mile or more to and from their wetland breeding spots. Although a wetland may be protected, there is no opportunity for our amphibian friends to survive without the adjoining upland habitat also left intact. For example, a housing development that avoids the wetland but that completely surrounds the wetland with houses and mowed yards will inadvertently cause the demise of the area's amphibian populations. It is imperative, if we are to ensure the survival of these sensitive organisms, that we maintain habitat corridors. Our frogs and salamanders are truly the "canary in the mine shaft"—environmentally sensitive species that are good indicators of a healthy—or a sick—landscape.

We have much to learn from Europe as we plan the future of our American landscape. The Germans saw centuries ago that their landscape would quickly be engulfed by residences unless a mechanism was put into place to ensure that farmland and open space were maintained. With close to 80 million inhabitants, Germany still has privately owned open green spaces because they limited urban expansion to key areas. As a result, important green corridors still exist on their crowded landscape, and they are able to maintain healthy populations of diverse wildlife by ensuring the continuation of these corridors.

We encourage the Legislature to recognize the importance of having a long-range view of protecting our landscape. By protecting upland environmental corridors we are ensuring the future of the quality of our state and the landscape we all love.

SB 209 Upland Environmental Corridors – What the bill does:

1. DNR must define what upland corridors are. Woodlands, wildlife habitat areas, areas of steep slope or rough topography, etc.

2. DNR must set standards for identifying and protecting these areas.

3. Mapping. Regional Planning Commissions must map the upland corridors in their regions using the DNR definition.

   If a city or village is not under the jurisdiction of a RPC, then the city or village must either map the upland environmental corridors within their boundaries or they can contract with an RPC.

   If mapping is not completed by January 1, 2007, DNR will complete the mapping by January 1, 2008.

4. Objectives.. DNR must also establish objectives for protecting upland environmental corridors from land use practices that reduce the corridors natural values, i.e. the amount and type of development that may occur in an upland environmental corridor.

5. Ordinances. Each city or village must then enact an ordinance that meets the objectives set by DNR. If the city or village fails to enact the ordinance within one year after the mapping is completed, DNR must then enact it for them.

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
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COMMENTS ON SENATE BILL 209 SUBMITTED BY THE SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION STAFF

We are hereby transmitting the comments of the Southeastern Wisconsin Regional Planning Commission staff with regard to 2001 Senate Bill 209 related to the definition, mapping, and zoning of upland environmental corridors. We would ask that the comments which follow be considered by the Committee on Environmental Resources and made part of the record of the hearing to be held by the Committee on November 29, 2001.

We support legislation which would result in the increased protection of upland environmental corridors. A 1993 analysis of the status of regional land use plan implementation in Southeastern Wisconsin concluded that there is a need to strengthen efforts to protect and preserve the environmental corridors of the Region and concluded further that, while substantial progress has been made with respect to the protection of lowland corridors, many upland corridor areas remain vulnerable to loss through inappropriate development.

We offer the following comments pertaining specifically to the legislation under consideration:

1. It is suggested that the legislation take into account more explicitly the upland corridor-related planning framework already established in formally adopted regional plans throughout the State. In Southeastern Wisconsin, in particular, the preservation of environmental corridors, both lowland and upland, is one of the most important recommendations of the adopted comprehensive plan for the Region. Under the regional planning program in Southeastern Wisconsin, environmental corridors have been precisely identified through the systematic application of resource-related mapping criteria. The environmental corridor criteria and mapping process are thoroughly documented in Commission publications. The environmental corridor concept as promulgated by the Commission is well understood by county and local units of government and by the development community and other private interests in Southeastern Wisconsin. The configuration of environmental corridors as promulgated by the Regional Planning Commission is an integral element of the regional land use plan and the regional water quality management plan (including the sanitary sewer service area component of that plan)--all of which have been endorsed by the Wisconsin Department of Resources, other State agencies, and Federal agencies. The environmental corridor concept as promulgated by the Commission has likewise been incorporated into many local plans and zoning ordinances by communities and counties in Southeastern Wisconsin. In short, the environmental corridor concept is already deeply entrenched in Southeastern Wisconsin. This same set of circumstances may apply in varying degrees to other regions in the State.

   Given the foregoing, it is suggested that the following be inserted as a new subparagraph after line 17 on page 7:

(c) In carrying out its responsibilities under subparagraphs (a) and (b), the department shall incorporate criteria and standards for the delineation of upland environmental corridors set forth in plans that have been prepared and formally adopted by regional planning commissions under Section 66.0309(10) as of the effective date of this legislation. Such criteria and standards would apply within the regions concerned, provided they are at least as inclusive as the statewide standards.

With this change, subparagraph (c) in line 18 on page 7 would become subparagraph (d).

2. County, city, and village ordinances for the protection of upland environmental corridors should not be confined to minimum state standards. Accordingly, it is suggested that the phrase "or exceeds" be placed after the word "meets" on line 16 on page 8, as well as after the word "meets" on line 13 on page 9.

3. Section (5)(c)3 on lines 7-9 on page 10 implies that upland environmental corridor preservation ordinances would not apply to statutorily defined shoreland areas. It should be recognized that, while shoreland wetlands are protected under state-mandated shoreland regulations, other (non-wetland) areas are not necessarily protected. To eliminate this gap in protection, it is suggested that the word "wetlands" be inserted before the word "areas" in line 8 on page 10.

4. As drafted, the legislation gives local units of government one year to enact an upland corridor protection ordinance after completion of the required mapping. This is a very short period of time in which to draft regulations, conduct public review, and adopt such an ordinance. It is suggested that the timeframe be lengthened, specifically by substituting the phrase "two years" for the phrase "one year" in line 1 on page 10.

The Commission staff appreciates the opportunity to comment on the Act 209, and hopes that its comments will prove to be useful to the Environmental Resources Committee.

Respectfully submitted,

William J. Stauber
Chief Land Use Planner

WJS/ws/wb
doc 55859

LAND INFORMATION Bulletin
Land Information & Computer Graphics Facility
University of Wisconsin-Madison
Technical Paper No. 1 1998

TECHNICAL SERIES

ENVIRONMENTAL CORRIDORS

Land Use Planning Guide

As computers become faster and cheaper, geographic information systems (GIS) are moving out of the computer labs and into the community. GIS software is more user friendly than ever before and digital geographic data are more readily available and easier to access. As a result, citizens and local governments are beginning to embrace the technology with the hope that better-informed land use planning and management decisions will emerge.

This technical bulletin is first in a series that addresses how GIS can help you or your organization develop land use planning applications. It is not intended as a "cookbook" for a particular application; rather, it is a conceptual model that can help you construct your own applications.

Planning Application: *Environmental Corridors*

This planning guide focuses on one particular application: how to mechanically construct environmental corridor scenarios using GIS. Within this guide, we define what an environmental corridor is and provide a brief history of the concept. We provide a list of prerequisite skills needed for analysis, suggest appropriate data and software, and discuss the functional steps involved in the analyses and production of the digital data and maps.

Once planners identify and map environmental corridors, they can use the corridors to help establish priorities for land purchase and protection, and to evaluate potential threats.

Prerequisite Skills

Each land use application has certain GIS prerequisites. Constructing *this* application requires a basic understanding of GIS concepts and how digital data sets are collected and maintained. A working knowledge of analytical overlay, buffer analysis, and digital elevation models (DEM) for analyzing slope are also useful. This application uses both raster and vector data sets; you will need an understanding of raster-to-vector conversion.

Last, we also encourage a general knowledge of how physical landscapes have been formed and the interplay among resources as provided by the environmental sciences.

History

Almost 40 years ago, Philip J. Lewis, Jr., now professor emeritus of landscape architecture at the University of Wisconsin-Madison, realized that if our nation's natural and cultural features are to be protected and saved for future generations, it is essential to map and create an inventory of these sensitive environmental patterns. Only by identifying these resources can we know what areas to protect from future development.

Instead of fighting for one particular resource, we should protect and enhance the corridors that contain the many features we want to protect

Early inventories of the landscape revealed regional patterns of slopes, wetlands and surface waters. Professor Lewis reasoned that, if protected, these land patterns could act as "form determinants" to guide future growth. By plotting our water, wetlands, and steep topography (12.5 percent slope or greater) within an integrated system, we can classify these patterns as "environmental corridors." Professor Lewis suggested that environmental corridors could then be used to establish priority zones for future studies as a means to guide growth.

By working with local citizens, he developed 220 ***icons*** (see p. 6) that depict specific natural and cultural features ranging from quality fish habitat to historic buildings. He found that 90 percent of these features were found within the corridors containing the water, wetlands, and steep slopes. Lewis called these particular areas "nodes of diversity." His message was this: instead of fighting for one particular resource, we should protect and enhance the corridors that contain a variety of features and values we want to protect.

The environmental corridor approach is now embraced by many planning agencies across the United States, including Wisconsin counties administered by the Southeastern Wisconsin Regional Planning Commission (SEWRPC), and within the county jurisdiction administered by the Dane County Regional Planning Commission.

Data Sources

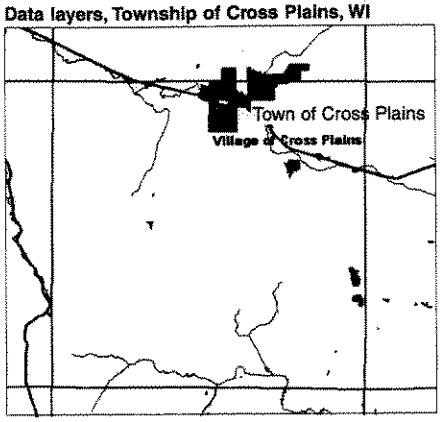
One of the key elements the Land Information and Computer Graphics Facility (LICGF) has emphasized during the entire study of land use in Dane County is the use of data sets that already exist and are public information. LICGF has been able to pull together digital coverages and related database files from all levels of government. Many data sets already exist and are easily accessible (see Table 1 for sample data types and sources). If data are not available in your area, other means of acquisition might be required, including manual digitizing from existing maps or aerial/orthophotos, and scanning with digital rectification. As might be expected, this data-collection step can be the most problematic.

Table 1. Variables used to create environmental corridors

Variable	Data Types	Data Sources
Surface Water	In Wisconsin, all public trust water (i.e., all navigable streams, rivers, and lakes or impoundments)	• U.S. Geological Survey (e.g., hydrography layer from 1:24,000 quandrangle maps or 100k hydro*) • Obtained from locally produced planimetric mapping or orthophotos
Wetlands	In Wisconsin, at a minimum all wetlands connected to public trust waterways and other wetlands as delineated by the U.S. Department of Agriculture (Swampbuster Wetlands) and U.S. Fish and Wildlife as included in the National Wetland Inventory (NWI)	• Wisconsin Department of Natural Resources at 1:24,000 organized by PLSS township • U.S. Department of Agriculture (organized by county soil sheet*) • U.S. Fish and Wildlife Service (organized by 1:24,000 USGS quadrangles)
Steep Slopes	In Wisconsin, steep slopes are defined as those of 12.5% or greater slope (i.e., 12.5 feet vertical drop in a distance of 100 horizontal feet)	• U.S. Geological Survey Digital Elevation Model (DEM) derived from 1:24,000 contours • Locally derived contours or DEM from planimetric or orthophotography mapping activities* • Generalized slope ranges from NRCS soil surveys
Other	Additional areas can be added such as all public lands including local, state, or federal parks, forests, wildlife areas, and public/private preserves, FEMA floodplains or other environmental areas of consequence (e.g., endangered biomes like prairie and oak openings, and habitats of rare species)	• Varies by location (e.g., tax parcel data, FEMA Maps, county park maps, USFS, or NPS data) ** Data sets used by LICGF*

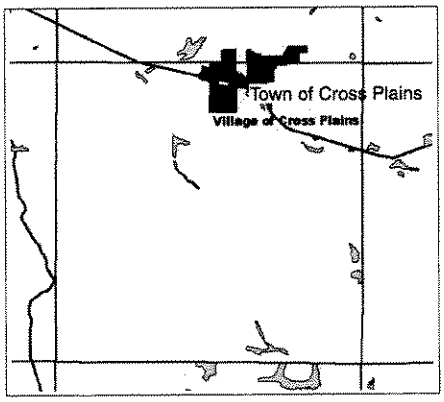
Data Analysis

Data layers, Township of Cross Plains, WI



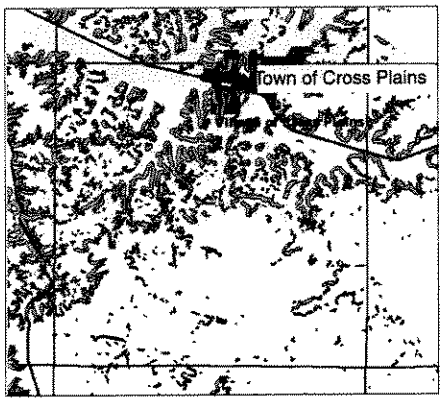
Creating the Water Layer

Surface water includes all public trust water bodies. You can obtain this from the U.S. Geological Survey digital line graphs, or from locally produced planimetric mapping activities (see Table 1). For the construction of environmental corridors, a Buffer Analysis should be used on streams, rivers, and lakes in this layer. In a Buffer Analysis, lines, points, and polygons can be "spread" a discrete distance to make polygons that are within a distance of features. For this application, streams were buffered at 75 feet, representing the area where construction is restricted near navigable waters. The distance chosen could be dependant on stream quality, width of water body, or other features.



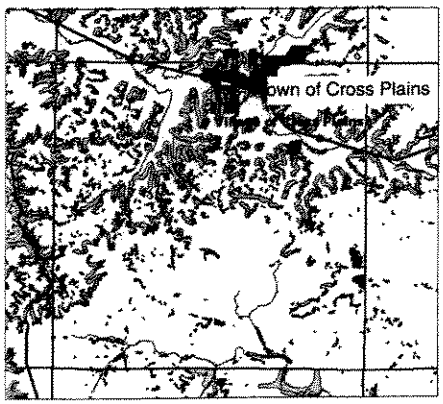
Creating the Wetland Layer

Wetlands for Wisconsin have been mapped by the Department of Natural Resources, and are available from them in digital form. These data need to be edge-matched and registered to make their locations coincide with other digital data. Other wetland maps exist as well, including those created for the "Swampbuster" program, and the National Wetlands Inventory (NWI).



Creating Steep Slopes Layer

As a by-product of the orthophoto production process, a model of the land surface is also created. After converting this surface model into a grid (raster), it is easy to compute the slope. For analysis purposes, we used ArcView Spatial Analyst. This uses grid files directly for analysis, and computes slope at each cell of the grid by determining the average slope between all nearest neighbors. This slope map can then be queried to create a new grid with all the slopes over 12.5 percent. The grid can then be converted into a shapefile for speed in printing, and for use by individuals who do not have access to a GIS with surface analysis capacity.



Creating Environmental Corridors – Putting it all Together

The three layers above define the patterns we use to construct environmental corridors. Once you collect the layers, you are ready to combine steep slopes, water, and wetlands to create your environmental corridor map. Both the buffered water and steep slopes represent mostly linear features. Where water runs near or between steep slopes, or into or through a wetland system, the interaction creates more diversity and a higher quality corridor. These patterns can be mapped and visually interpreted to create broader corridors where these features are in proximity. GIS software can also automatically combine adjacent and nearby features into broader corridors by filling small gaps.

Establishing Priorities

As mentioned earlier, once the corridors are mapped, the process of establishing priorities is just one function this application can serve. For example, to prioritize the corridors, the following analyses could be conducted, and each factor ranked on a scale from least to most important:

- Corridors that connect existing parks and reserves
- Fish habitat measures (e.g., cold-water to warm-water species)
- Proximity to urbanization (threatened corridors)
- Existing and proposed land use
- Density of natural and cultural resource/symbols icons (plotted by citizens and/or experts)
- Path of potential urban impact (growth by regions)
- Visible areas from navigable waters or scenic routes (e.g., viewshed analysis from waterway, most-often-seen areas)
- Quality and size of streams
- Wildlife habitat (quality and size of woodlands, wetlands, etc.)
- Preservation and improvement of surface and groundwater quality; wellheads

Software Functionality

For this application, a variety of spatial analysis functions are necessary for developing the environmental corridors. These include:

Logical Selection on Themes: Points, lines, and polygons in the GIS are linked to a database of attributes. Individual polygons can be selected by various attributes: forested land, state land, etc.

Analytical Overlay: Multiple polygon layers can be combined to create new composite layers, maintaining the attributes from their originals. A layer of wetlands can be combined with a parcel ownership layer to identify the size and ownership of wetlands in each parcel. Similarly, line layers, such as streams or trails, can be intersected with ownership to identify the lengths of line segments in each polygon. Points can be intersected to discover what soils, parcel, and cover type they fall within.

Buffer Analysis: Lines, points, and polygons can be "spread" a discrete distance to make polygons that are within that distance of the features. For instance, streams can be buffered at 75 feet, representing the area where construction, in Wisconsin, is restricted near navigable waters.

Proximity Analysis and Allocation: Whereas buffering works by creating a polygon at a fixed distance from a feature, another form of proximity analysis is a gridded distance, where each grid cell holds the distance from a source line, point, or polygon (Euclidean distance), or the identification of the nearest one (allocation).

Theme-on-Theme Selection: Similar to analytical overlay, and logical selection, this uses the geographic features from one layer to select features from another.

Mapping Spatial Components:

Site Variables in Environmental Corridors

Surface water
Streams, Rivers, Lakes

In Wisconsin, all public trust waters (i.e., all navigable streams and lakes or impoundments.

Wetlands
Existing, Historic, Drained, Farmed

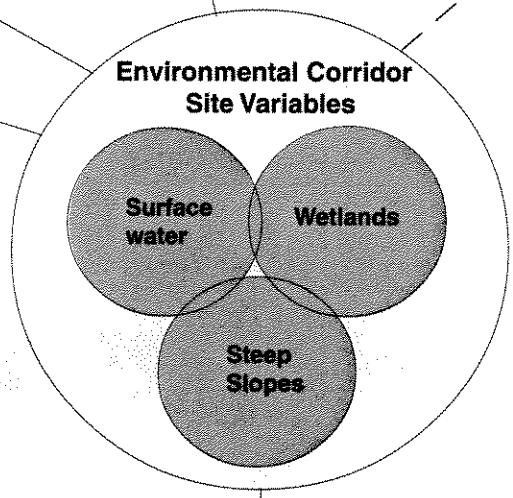
In Wisconsin, at a minimum all wetlands connected to public trust waterways and other wetlands as delineated by the U.S. Dept. of Agriculture (Swampbuster Wetlands) and U.S. Fish and Wildlife as included in the National Wetland Inventory.

Steep Slopes
Greater than 12.5%

In Wisconsin, steep slopes are defined as 12.5% or greater (e.g., 12.5 feet of vertical drop in a distance of 100 horizontal feet).

Other
Forests, Floodplains, Prairies, Parks

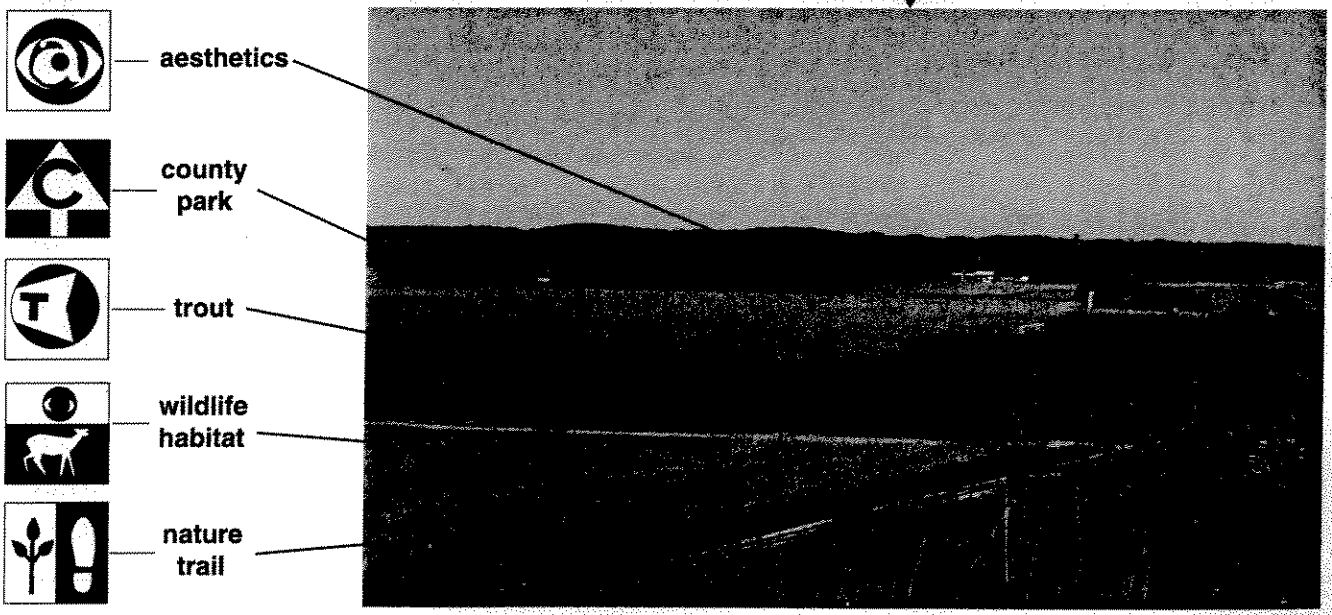
Additional areas can be added such as all public lands including local, state, or federal parks, forests, prairies, wildlife areas, archeology sites, and public/private preserves, FEMA floodplains or other environmental areas of consequence (not used here).



Multiple Issue Maps

Each environmental corridor is a unique blend of natural and cultural characteristics. After interviewing knowledgeable local people statewide, Professor Philip Lewis developed 220 specific ***icons*** depicting natural and cultural features—from waterfalls and trout streams to effigy mounds and historical buildings. Here are some icon examples placed on a Dane County, Wisconsin site:

Icons



Software

The GIS software used to create our environmental corridors included both ARC/INFO 7.1.2 and ArcView 3.0a. We also used the Spatial Analyst extension to ArcView to create steep slopes. Spatial Analyst functions in a raster environment, and easily converts grid coverages to vector data.

We also used Microsoft Excel to perform exploratory data analyses through grouping and sorting of variables.

Selected References

Lewis, Philip H. 1998. *Tomorrow By Design*

Lewis, Philip H. 1997. *A Regional Design Process for Sustainability*

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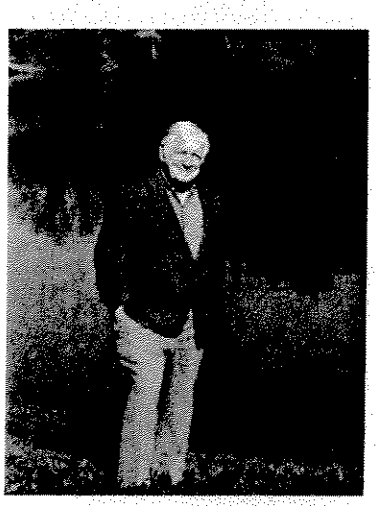

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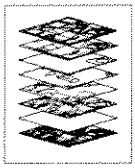

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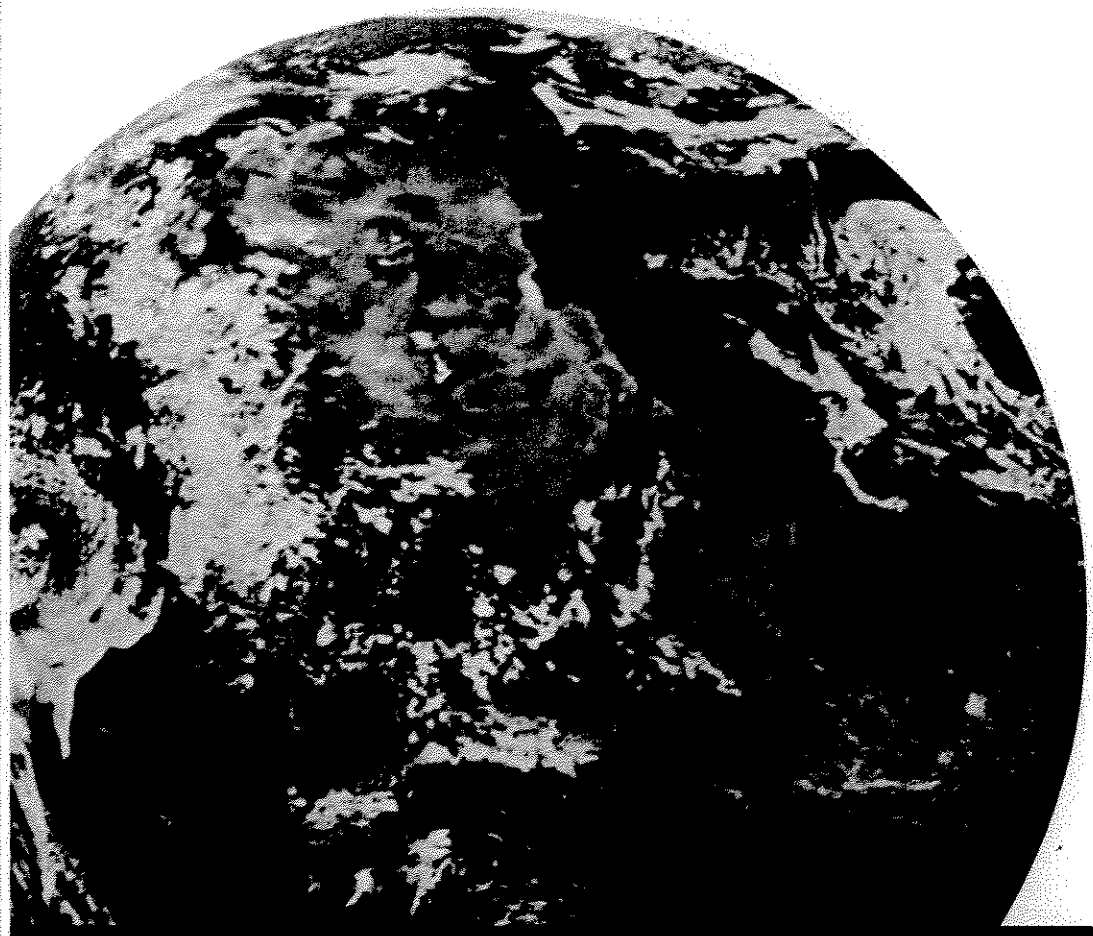


A Regional Design Process for Sustainability

250,000 people daily...

1,750,000 each week...

7.5 million a month... 94 million a year

There are many pressures on the intricate dynamic balance of our planet. Perhaps the most immediate of these is the ever growing human population. In 1993, world population swelled by about 90 million people: 246,000 additional people every day. It appears certain that the total human population will eventually reach the earth's carrying capacity.

Where are we going to put 365 cities of about 250,000 this year and every following year?

These ever-increasing needs are putting tremendous pressures on the earth's resources. The best evidence now available indicates that if the present growth trends in world population continue and industrialization, pollution, food production, and resource depletion continue unchanged, the limits to growth on this planet will be reached sometime within the next 100 years. The many beneficial effects of technological developments will not allow us to escape this reality.

The creation of centers of population peripheral to our larger cities (continuous urbanization along American coastlines, expanding rings of new commercial and residential centers around our established large cities at population densities decreasing with distance from the city center) demands proportionally more land and other resources per person than in more central areas.

Proliferation of social problems is evidence of stress. People flock to the cities when agricultural workers are displaced because of technological improvements, increased size of farms, and decreased numbers of farms. They also leave rural areas when food production slumps due to the vagaries of weather and poor agricultural practices.

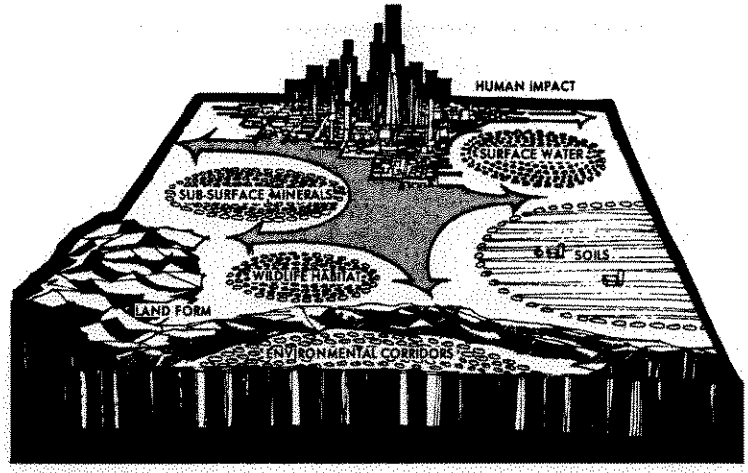
One does not begin to think about the importance of a Regional Design Process toward reversing such trends until the scale and rapidity of these changes are realized. The degree and scope of the degradation caused by them can be overwhelming and create a dangerous state of hopelessness and unwillingness to act, or simple abdication of responsibility in the face of seemingly inevitable change for the worse. Action, coupled with wisdom, is called for.

We begin by understanding and applying the many phases of the regional design process.

As early as the mid-fifties it was obvious that if the natural and cultural resources of the country and the world were to be saved and enhanced for this and future generations, it was of great importance to identify and map these environmental patterns soon.

Early inventories revealed regional patterns, such as mineral deposits, steep topography, surface water, etc., that if protected and enhanced, could be utilized as 'form determinants' to guide future growth.

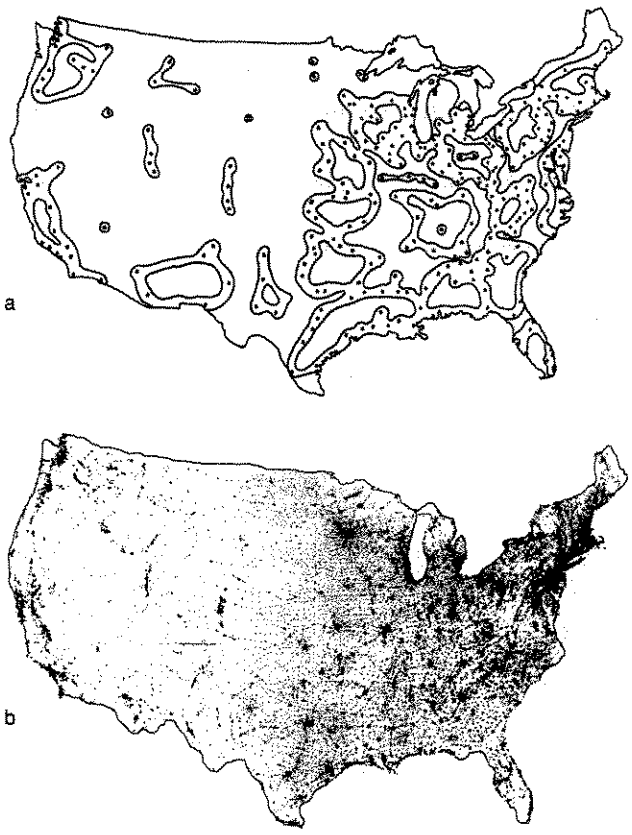
a surface water
b farmlands
c aquifers
d historic sites



Guiding Urbanization in Harmony with Critical Resources

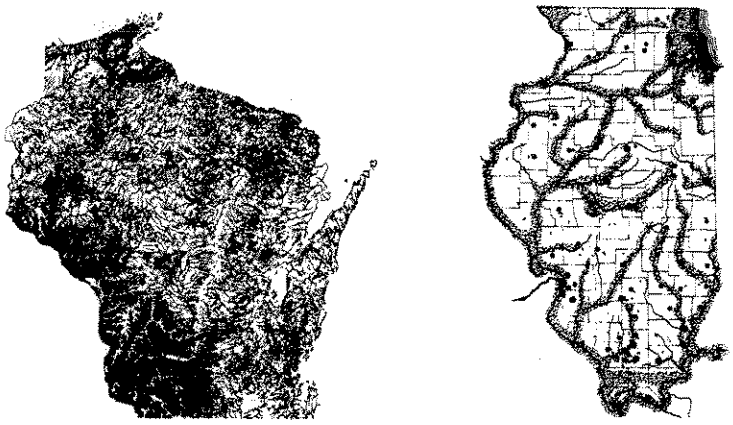
a ● Cities of 20,000+
◎ Constellations

b Urban Lights at Night



Once critical resource patterns were identified, we connected the urban patterns of 20,000 or more inhabitants in a manner that made the least impact upon our recognized life sustaining patterns. The result was a sequence of twenty-three 'urban constellations' spread across the face of the United States.

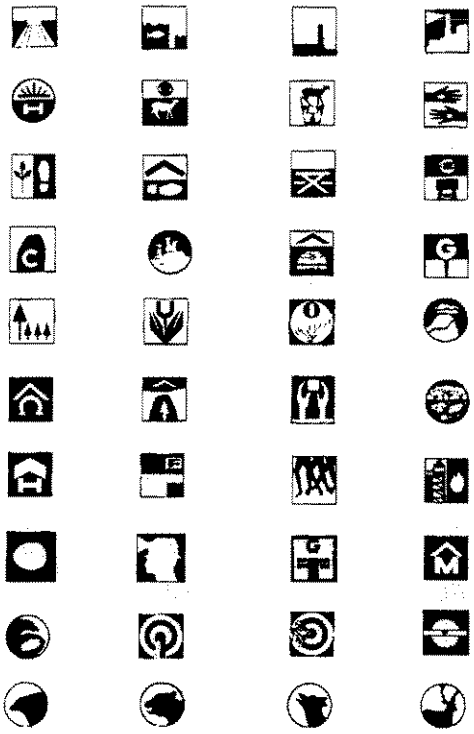
Wisconsin and Illinois Focus

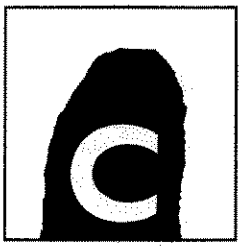


Plotting our precious water, wetland, and steep topography of 8% or greater as integrated regional systems within these upper Midwest landscapes revealed patterns we called 'Environmental Corridors'. We only save and enhance such life support systems by first identifying them through extensive inventory and plotting procedures.

Using U.S. Geological Survey maps, it was possible to see where these diverse corridors were subject to change by human action and land use practices. Such corridor segments could then be used to establish priorities for detailed and intensive ecological studies to guide growth and impact.

Rural Landscape Value Features

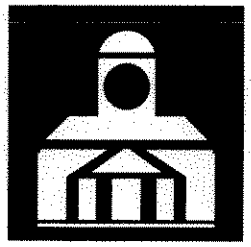




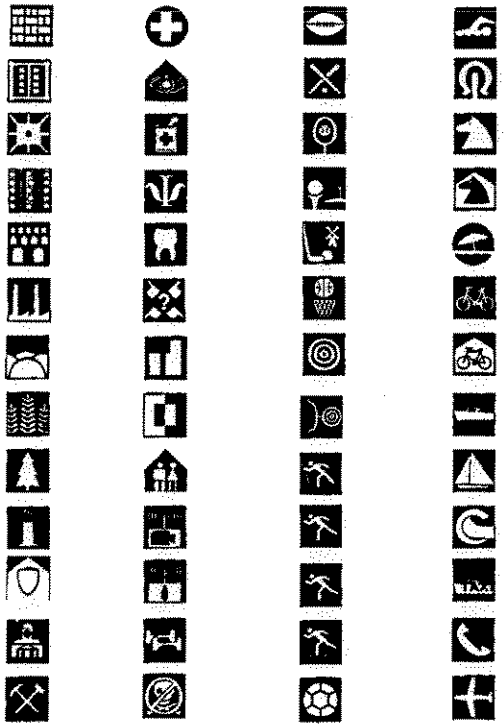
CAVE

By working with knowledgeable local people through interviews, icons were developed depicting 220 specific natural and cultural features ranging from castle rocks, waterfalls, and virgin timber, to historic buildings, all held in high esteem by local citizens.

Urban Landscape Value Features

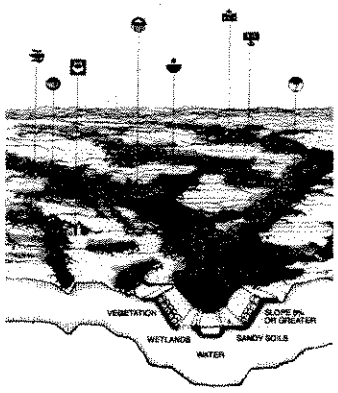


COURTHOUSE



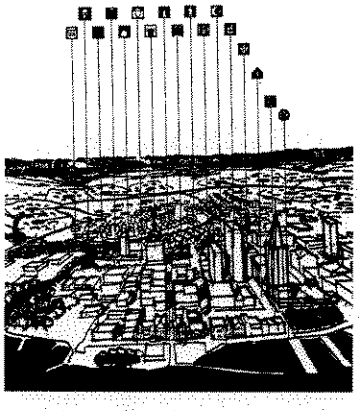
A set of icons were created reflecting urban values of local importance.

90% of these values were found to occur in the corridors where water, wetland, and steep topography are found, often in patterns of concentration we call nodes of diversity. As a result, more than one hundred conservation groups in the state were approached with this message: "instead of fighting for a particular resource like a song bird, or historical building mandated by individual organization goals, let us join hands to protect and enhance the corridors that have been shown to contain most of the values we all want to protect for future generations".



The Wisconsin Inventory of 1961-62 was funded by a one-cent state sales tax on cigarettes that generated fifty million dollars that secured 33,000 acres per year of these outstanding resources for ten years. Presently, a two hundred and fifty million dollar Stewardship Program supports such land acquisition in Wisconsin.

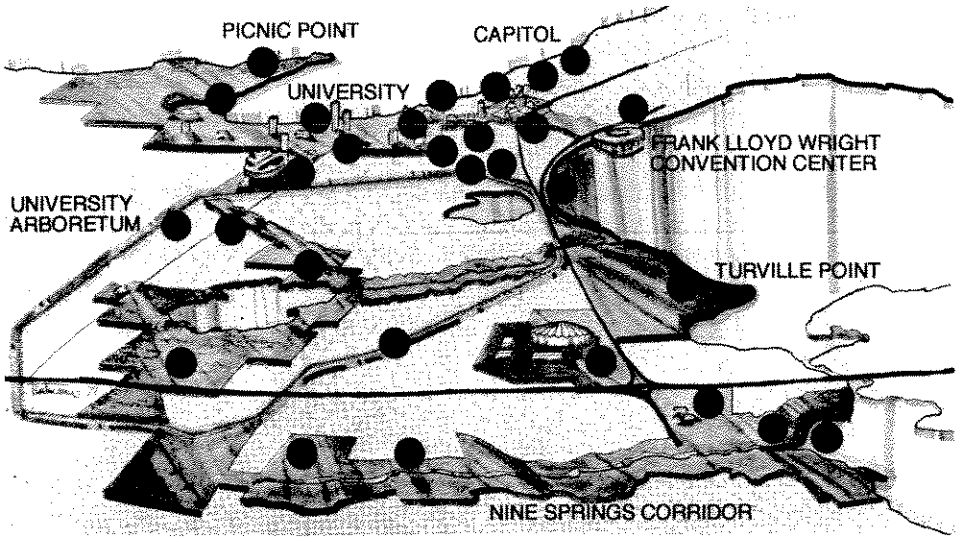
Urban icons occur on street corridors, and indicate those that are candidates for street enhancement.



To demonstrate such an urban-rural corridor in the Capitol city, a proposal to the national endowment for the Arts was submitted, suggesting such a corridor loop be called an E-Way (Environmental, Educational, Ecological, and Exercise Way).

The National Endowment of the Arts in 1969 approved a grant that detailed plans for the completion of the E-Way which demonstrated the practicality of identifying, protecting, and enhancing a model environmental corridor closest to the state legislature and the University of Wisconsin, both located in Madison, Wisconsin. The E-Way was designed to show how a community's existing natural and cultural resources found within the corridor could be identified and accentuated to elevate environmental, ecological, and aesthetic planning decisions to a higher priority within the community development decision-making process and to provide a permanent aesthetic and recreationally enjoyable corridor system for the use of residents and tourists alike.

The E-Way connects the urban and rural corridor in a loop system, that includes many diverse land uses. It includes many of the Capitol's most prominent and aesthetically pleasing environmental landmarks. Most of the corridor properties connecting these jewels within this twenty-one mile system have been purchased by continued effort on the part of federal, state, and county governments as well as many private individuals and organizations. The Dane County Parks Department has the responsibility of coordinating this program.



State Capitol
Veterans Museum
State Historical Museum
Madison Public Library
Kids' Crossroads
Repertory Theater
Children's Museum
Historic Homes Tour

UW Campus
Elvehejm Art Museum
State Historical Society
UW Kohl Center
University Museums
UW Marsh
Picnic Point,
Archeological Sites

Camp Randall Stadium
UW Arboretum
Arbor House
Oakland and Campbell
Streets
Vilas Park Zoo
Nevin Fish Hatchery
Elizabeth McCoy Farm

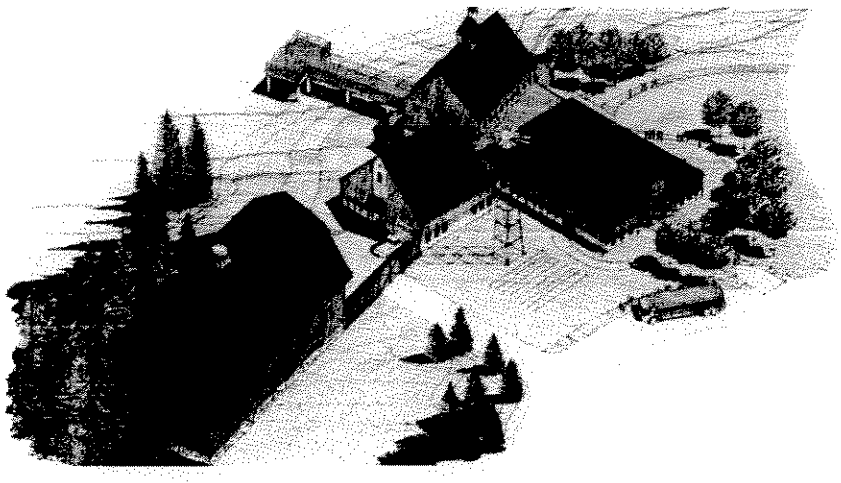
Sewerage Plant
Lake Farm County Park
Ho-Chunk Nation Site
Dane County Coliseum
Turville Point, Olin Park
Monona Causeway
MononaTerrace
Future Transit

The protection and enhancement of the various E-Way systems' corridors requires more than land acquisition, it requires careful management and stewardship of the watershed.

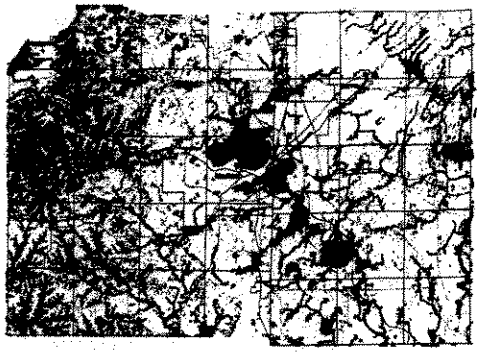
Fortunately, the University of Wisconsin-Madison staff and students have provided critical data and recommendations for the Dane County E-Way with regard to stewardship: the protection and enhancement of the resources present throughout the area.

Recognizing urban constellations, environmental corridors, natural and cultural icons, and nodes of outstanding diversity is not sufficient in itself. Regional designs to guide growth can succeed only with public support. This requires effective communication to inform the public. Effectively disseminating information so that each citizen can make individual informed decisions about the future is essential. No plan to attain sustainability can succeed unless it is based solidly on democracy and informing the voting public, because ultimately, sustainability depends on the collective impact of the actions and behaviors of many people.

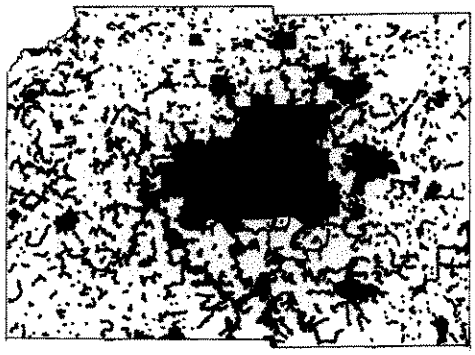
> I know of no safe depository of the ultimate powers of the society but the people themselves; and if we think them not enlightened enough to exercise their control with a wholesome discretion, the remedy is not to take it from them, but to inform their discretion.
>
> Thomas Jefferson 1820



At present funds are being raised to build a Heritage Center within the E-Way corridor as well as a major exhibit to involve the public in knowing the basic nature of our regional natural, cultural, and social resources and how our way of life depends upon them. The exhibit will also explain how we are involved in using and/or preserving them; how to step lightly on the land, how our land use policies will affect the future of our populace and the place in which we live. Basically the Heritage Center and its exhibits will provide an environment that supports and encourages the discovery of the history, culture, and resources both natural and recreational of the Dane County Region through interactive programs, events, and exhibits.



Environmental Corridors



Platted Properties

Such exhibit material is now available in both the University of Wisconsin land information and computer graphics facility, and at the Dane County Planning Commission office.

In our age of cultural, ecological, and economic instability, we seek durability. This durability is found in the discovery of uniqueness and the preservation of diversity and continuity. Most discoveries are acts of art and creation, and preservation of our heritage results in enlivened perception, a primary requirement of the arts. Education of the mind and senses by engagement with the record of our history and all of its discoveries is necessary for further discoveries and inventions. The view of the region as a collective work of art requires that regional studies require a strong measure of its discipline be directed toward artfulness, conjecture, and intuition.

Training in the art and design professions sharpens the ability to perceive the quality of each space, based on scale, texture, pattern, climate, and similar factors. Combined with historical and ecological understanding, a skilled designer can focus attention, entertain, and delight the senses. Working with researchers steeped in the knowledge of physical, social, historical, artistic, and economic characteristics of the region, exhibits showing how the land was formed and changed, how people and all their activities changed it and were changed by it, can be portrayed.

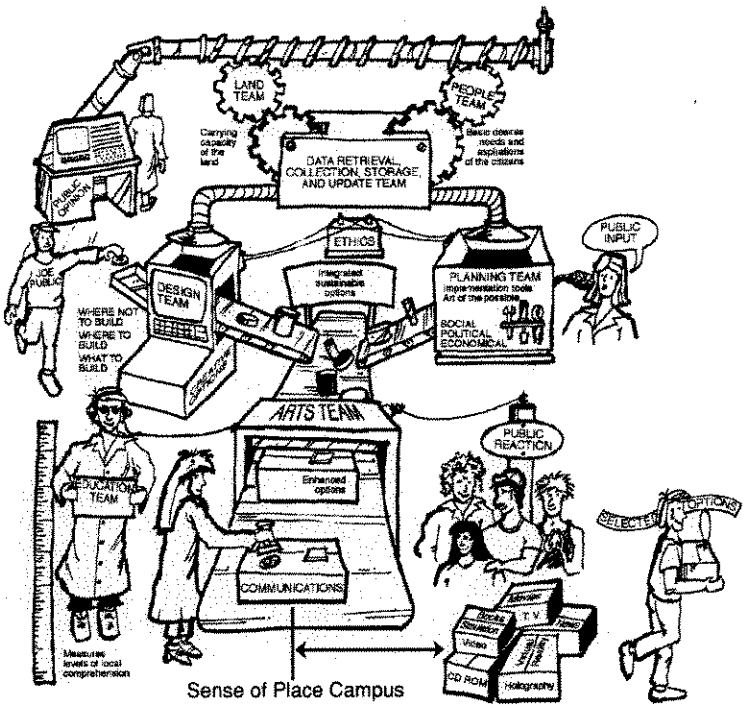
All the characteristics of the place need to be portrayed accurately, evocatively, completely, and with imagination. Three dimensional scenes, replicas of artifacts, models, maps, and other displays need to be devised from the chosen knowledge that we can encompass about the selected site. These representations will include references to other education and entertaining resources available (such as the State Historical Society, libraries, ethnic societies, cultural resources, governmental agencies, recreational opportunities and organizations).

There is beauty, too, in the patterns abstracted from the land in the process of analyzing its characteristics, as well as contrasting ugliness and dissonances in the misuse of our heritage. By observing, forming questions, and finding the answers, we will learn and find much to delight and entertain from our natural and cultural heritage in its many forms and details. There are stories of settlement, the lore of plants and minerals, the individual and collective history of us all to form an endless and exciting source of interest.

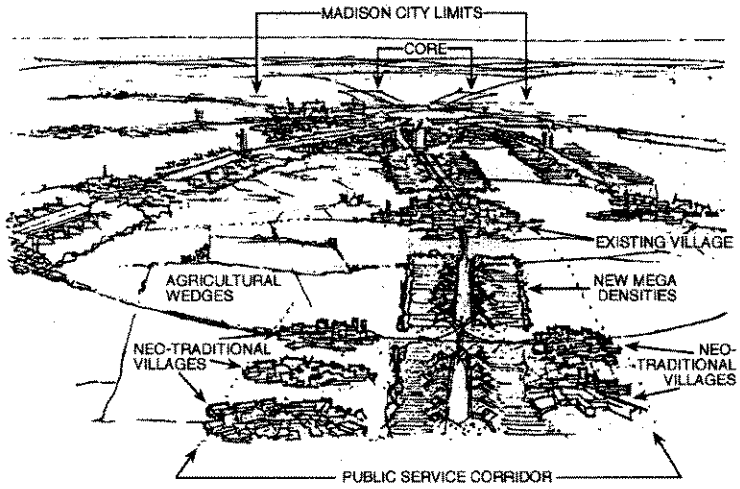
Summary

Sense of Place Campus

One of the basic goals of the Academy of Sustainable Design is to develop a better understanding of the regional design process, its value, and long term requirements. One component of the process recognizes the need for interdisciplinary staff and eventually a 'sense of place' campus to house such an activity, providing even better resource data to build a sustainable tomorrow.



Sense of Place Campus



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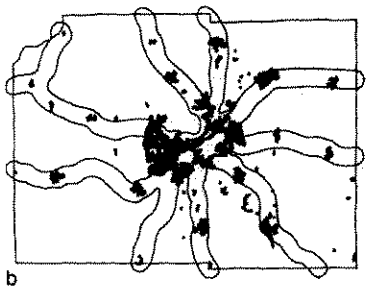

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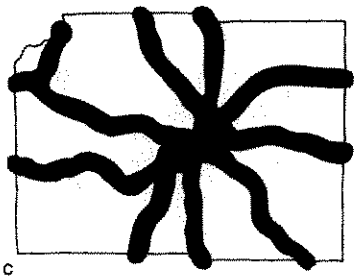

c

a Dane County
b Rail and Urban Patterns
c Rail Corridors

Another goal is to seek new urban options. Most Dane County communities lie on existing rail transit corridors. One option might be to encourage new growth adjacent to the existing rail corridors containing future integrated utilities and fiber optic potentials. Such strategies would leave farmland and scenic diversity as buffer wedges in between.

Exploring New Urban Patterns

The overall purpose of the Academy is to study and promote the principles and processes of sustainable design at the local, regional, and national levels. These principles and processes are based on the integration of environmental, economic, and social goals.

The focus of the Academy is three fold:

1 Education and information dissemination
2 Strengthening communities through design
3 Stewardship of natural and cultural resources

The regional design process for sustainable design provides a critical understanding of and access to regional values and visions. The method calls for use of interdisciplinary teams imbued with an integrated land and social ethic to perform inventories of resources and provide options that:

Sustain and restore our life-support system
Enhance our quality of life
Preserve and add to our sense of place
Include awareness of and respect for natural and cultural diversity
Permit beneficial choices among alternatives
Inform the discretion of the public by means of such tools as:

E-Ways
Sustainable land use demonstrations
Awareness Centers
Academies of Sustainable Design
Sense of Place Campuses

MARSHALL ERDMAN ACADEMY

SUSTAINABLE DESIGN

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