Appendices
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Appendix A - WLIS Project Team Membership List

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Appendix B - Wisconsin Land Council Resolution 2-99

WISCONSIN LAND COUNCIL

FURTHER STUDY OF A WISCONSIN LAND INFORMATION SYSTEM

RESOLUTION 2-99

WHEREAS, Wisconsin State Statutes s. 16.023 provides that the Wisconsin Land Council (WLC) shall "create a technical working group to study the development of a computer based Wisconsin land information system and recommend to the governor legislation to implement such a computer system."

WHEREAS, the Wisconsin Land Council's Technical Working Group has prepared a May, 1999 Wisconsin Land Information System report, and the Wisconsin Land Council has approved the four architectural components contained in that report, and the Wisconsin Land Information Board has also accepted the spirit and intent of that report.

WHEREAS, Wisconsin State Statutes s. 16.967 provides that the Wisconsin Land Information Board (WLIB) "shall direct and supervise the land information program and serve as the state clearinghouse for access to land information."

WHEREAS, Wisconsin State Statutes s. 16.966 (3) provides that the Wisconsin Department of Administration (DOA) "may develop and maintain geographic information systems relating to land in this state for the use of governmental and non-governmental units."

WHEREAS, the Memorandum of Understanding between the WLIB, WLC and DOA provides that the WLC agrees to "in concert with the WLIB, study the development of a confederated statewide computer-based Wisconsin Land Information System which builds upon the WLIP [Wisconsin Land Information Program] investments in data, technology, and institutional arrangements and upon other agencies and private sector investments in land information technology."

WHEREAS, the Wisconsin Land Council's Technical Working Group, in its Final Report dated May 26, 1999, recommends the creation of a Wisconsin Land Information System Project Team, which will be appointed by the Wisconsin Land Information Board and the Wisconsin Land Council.

NOW, THEREFORE BE IT RESOLVED THAT a Project Team be created to accomplish the implementation steps listed in the Wisconsin Land Council's Technical Working Group report, which includes analyzing potential design alternatives, preliminary cost estimates and feasibility considerations and developing a plan, including a proposed budget and implementation schedule, for a Wisconsin Land Information System. The Office of Land Information Services will provide staff support to the Project Team.

BE IT FURTHER RESOLVED THAT the WLIS Project Team will have no more than ten members, with half appointed by the Chair of WLC and half appointed by the Chair of WLIB. The team will consist of persons knowledgeable and experienced in the development of such systems.

BE IT FURTHER RESOLVED THAT the WLIS Project Team will forward its proposals to the Wisconsin Land Council and the Wisconsin Land Information Board no later than July 1, 2000 for their review and approval. The Wisconsin Land Council and the Wisconsin Land Information Board will make such review and approval no later than September 1, 2000. The Wisconsin Land Council and the Wisconsin Land Information Board will submit an approved proposal to the Governor by October 1, 2000 for consideration as part of the 2001-2003 State Biennial Budget.

BE IT FURTHER RESOLVED THAT the Wisconsin Land Council's Technical Working Group will provide technical advice as needed to the WLIS Project.

BE IT FINALLY RESOLVED THAT the Chairs of the Wisconsin Land Council and the Wisconsin Land Information Board shall jointly resolve policy and other critical issues associated with the implementation of the Wisconsin Land Information System.

Appendix C - Wisconsin Land Information Board Resolution 2-99

WISCONSIN LAND INFORMATION BOARD

FURTHER STUDY OF A WISCONSIN LAND INFORMATION SYSTEM

RESOLUTION 2-99

WHEREAS, Wisconsin State Statutes s. 16.023 provides that the Wisconsin Land Council (WLC) shall "create a technical working group to study the development of a computer based Wisconsin land information system and recommend to the governor legislation to implement such a computer system."

WHEREAS, the Wisconsin Land Council's Technical Working Group has prepared a May, 1999 Wisconsin Land Information System report, and the Wisconsin Land Council has approved the four architectural components contained in that report, and the Wisconsin Land Information Board has also accepted the spirit and intent of that report.

WHEREAS, Wisconsin State Statutes s. 16.967 provides that the Wisconsin Land Information Board (WLIB) "shall direct and supervise the land information program and serve as the state clearinghouse for access to land information."

WHEREAS, Wisconsin State Statutes s. 16.966 (3) provides that the Wisconsin Department of Administration (DOA) "may develop and maintain geographic information systems relating to land in this state for the use of governmental and non-governmental units."

WHEREAS, the Memorandum of Understanding between the WLIB, WLC and DOA provides that the WLC agrees to "in concert with the WLIB, study the development of a confederated statewide computer-based Wisconsin Land Information System which builds upon the WLIP [Wisconsin Land Information Program] investments in data, technology, and institutional arrangements and upon other agencies and private sector investments in land information technology."

WHEREAS, the Wisconsin Land Council's Technical Working Group, in its Final Report dated May 26, 1999, recommends the creation of a Wisconsin Land Information System Project Team, which will be appointed by the Wisconsin Land Information Board and the Wisconsin Land Council.

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BE IT FURTHER RESOLVED THAT the WLIS Project Team will forward its proposals to the Wisconsin Land Council and the Wisconsin Land Information Board no later than July 1, 2000 for their review and approval. The Wisconsin Land Council and the Wisconsin Land Information Board will make such review and approval no later than September 1, 2000. The Wisconsin Land Council and the Wisconsin Land Information Board will submit an approved proposal to the Governor by October 1, 2000 for consideration as part of the 2001-2003 State Biennial Budget.

BE IT FURTHER RESOLVED THAT the Wisconsin Land Council's Technical Working Group will provide technical advice as needed to the WLIS Project.

BE IT FINALLY RESOLVED THAT the Chairs of the Wisconsin Land Council and the Wisconsin Land Information Board shall jointly resolve policy and other critical issues associated with the implementation of the Wisconsin Land Information System.

Appendix D - Project Team Scope of Work

Development of the Scope of Work for the WLIS Project Team

The scope of work developed by the Team came from two sources: the TWG report and the Joint Resolution 2-99 of the WLC and WLIB. After careful review and consideration of the language in these documents and consideration of the timeline for the completion of the Team's work, the Team adopted a modified scope it felt would not compromise any of the long-term benefits. The major changes include:

- Removed the creation of alternatives for the project scope, including a work plan and timeline for each; instead the Team will develop a single scope, with a plan and timeline;
- Removed the creation of prototypes.

While the Team removed and/or modified some items, the scope will not be adversely affected as the Team recognizes the advantages of doing these items. The Team will work to design a system that fulfills the vision articulated in the TWG report in that it will support a wide range of participants with varying levels of technological sophistication. The Team agreed to adopt a more relaxed/informal approach to some of the steps. In place of "official" reports and estimates, the Team will discuss the items internally, and develop sufficient documentation to support future inquiries into alternatives considered, while saving the time of preparing more formalized documentation.

The language in the TWG Report:

"Implementation

1. Perform a needs assessment and outline the requirements of shareholders that will participate in the system.
2. Develop and recommend a project scope, including alternatives for meeting defined requirements.
3. Prepare a work plan and timeline for each alternative.
4. Prepare estimates of cost for each alternative.
5. Prepare a preliminary design based on the selected alternative.
6. Develop prototypes during the design phase to test the functionality of the proposed WLIS.
7. Prepare a final design, cost estimate, and time line for the creation of the WLIS."

The language in the Joint Resolution:

". . . analyzing potential design alternatives, preliminary cost estimates and feasibility considerations and developing a plan, including a proposed budget and implementation schedule, for a Wisconsin Land Information System."

WLIS Project Team Scope of Work – As Developed by the Team

1. Outline the requirements of shareholders that will participate in the system.
2. Develop and recommend a project scope.
3. Prepare a preliminary conceptual design for the system, including work plan and timeline.
4. Prepare cost estimates.
5. Prepare functional requirements, cost estimates and timeline for the 1st biennial phase of the project.
6. Draft decision item(s) language for WLIS.

An addendum to "Development of the Scope of Work for the WLIS Project Team"

Redline/Strikeout of TWG Document compared to WLIS Project Team Scope

1. ~~Perform a needs assessment and~~ outline the requirements of shareholders that will participate in the system.

2. Develop and recommend a project scope~~, including alternatives for meeting defined requirements.~~

3. Prepare a preliminary conceptual design for the system, including work plan and timeline ~~for each alternative~~.

4. Prepare cost estimates ~~of cost for each alternative~~.

~~5. Prepare a preliminary design based on the selected alternative.~~

~~6. Develop prototypes during the design phase to test the functionality of the proposed WLIS~~.

~~7.~~ 5. Prepare ~~a final design~~ functional requirements, cost estimates, and time-line for the ~~creation of the WLIS~~ 1st biennial phase of the project.

6. Draft decision item(s) language for WLIS.

WISCONSIN LAND INFORMATION SYSTEM REPORT

As approved by the Wisconsin Land Council
October 14, 1999

Wisconsin Land Council
Technical Working Group
Originally submitted
May 26, 1999

FINAL REPORT OF THE WISCONSIN LAND COUNCIL
TECHNICAL WORKING GROUP

EXECUTIVE SUMMARY

Intent of the Report

The purpose of this report is to provide a concept that can serve as a vision of what a Wisconsin Land Information System (WLIS) could and should be. It is the intent of the Technical Working Group (TWG) that this report give the Wisconsin Land Council (WLC) and the legislature a starting point for discussion to be used as the basis for finding opportunities and crafting initiatives in this and future biennia and budgets for developing the WLIS. This report is not intended to be either a final recommendation or a set of specifications for the WLIS. A recommendation on how to complete a plan and specifications for the WLIS is contained in this report.

Legislative Charge

The TWG has been charged with the following: [Wisc. Stat. 16.023 (1) (f)]"…to study the development of a computer-based Wisconsin land information system and recommend to the Governor legislation to implement such a computer system." This report was developed based upon this charge and with awareness related to legislative programs and studies, such as the Wisconsin Land Information Program (WLIP) and its definition of land information *[as defined in the Data section of this report, and the report of the Governor's Task Force on Land Use].*

Vision

The Wisconsin Land Information System (WLIS) will be a computer-based system of land information distributed throughout all levels of government in Wisconsin. It supports land information applications such as comprehensive planning. A common interface will provide access to land information for interested citizens, professionals and elected officials. The WLIS builds incrementally on existing investments and standards for data and technology made by the WLIP and many other public and private initiatives.

The Wisconsin Land Information System (WLIS) as envisioned will consist of four design elements whose characteristics describe the "architecture" of the WLIS:

- Computer Applications and programs to support access, query, display and decision making related to land information.
- Data consisting of integrated land information from federal, state and local sources, including data sets, statutes, administrative rules, plans and metadata.
- Technology in the form of computer systems to support distributed access and a variety of formats for publication and distribution.
- Organization in a framework that emphasizes broadly based participation and coordinated integration of activities.

Recommendations

The TWG recommends that the Council take no formal approval action on this report until it has been forwarded for review and comment to the Wisconsin Land Information Board (WLIB), the Wisconsin Land Information Association (WLIA), the Office of Land Information Services (OLIS), the State Agency Resource Working Group (SARWG) and other interested organizations and persons.

The TWG recommends the creation of a WLIS Project Team *[described in the Organization section of this report]* to be appointed by WLIB and WLC. The team would continue the design and implementation planning of the WLIS. An implementation recommendation is contained in this report.

The TWG recommends that it be reconvened by the Council subsequent to action on this report to advise the Council on its recommendations and to guide the development and implementation of the WLIS.

The TWG identified a number of legislative and budget issues, some of which affect current discussions regarding the Governor's 1999-2001 Biennial Budget recommendations. It is recommended that the Council consider these issues in its discussions.

FINAL REPORT

The Wisconsin Land Information System (WLIS) Architecture

This final report of the Technical Working Group examined four architectural components that include computer applications, data, technology, and organization. The TWG developed legislative, budget, implementation, and policy recommendations based on the results of discussions and study of these four components. The TWG also provided recommendations on the future of the group.

Reflecting an interest in building upon the best aspects of existing systems, the TWG identified numerous web sites describing similar efforts. A review of these sites revealed that there were no sites that could be recommended as representing the complete vision for the WLIS. Portions of the vision and similar characteristics are found throughout many of these sites. A sample of sites can be obtained from the Office of Land Information Services (OLIS), Department of the Administration (DOA).

Key Characteristics of the WLIS Computer Application

1. Audience: The WLIS will provide benefits for a wide audience through a wide range of functions. For example:
   a) Enhancing the land-related data creation, management, and dissemination functions of public agencies,
   b) Developing and providing application tools for public and private organizations, such as those involved in land use decision-making, and
   c) Providing Web-based access to information and applications for individual citizens.

2. Development: The WLIS will be developed by multiple participants in the land information community. It will encompass a wide range of applications developed in a phased coordinated sequence. The WLIS will be designed to be flexible and extensible.

3. Functionality:
   a. Application tools will be developed to more effectively develop, monitor, communicate, and identify conflicts in land use plans and support land use decision-making at the local level.

   b. Data and systems will be accessible to everyone through the Internet. Data will be updated at appropriate intervals. Large-scale local data, multi-jurisdictional data, and statewide data will be integrated within a distributed system. Applications will be developed to interface with cross-walk tables with standardized data content and structure.

c. Web based servers at state, regional, and local levels will be used to pull together data. The WLIS will provide appropriate guidance based on the knowledge level of the user. The WLIS will have the ability to print Land Information System (LIS) maps at access points.

d. A search engine will be designed to identify what is in WLIS with pointers to internal and external data sources. A common framework will be created for all applications at the local, regional, and state level.

e. The WLIS will include the Web-based delivery of commonly used land information via a distributed repository and from local land information systems linked through an indexing and retrieval system.

f. The WLIS will support land use planning facilitated by data query, analysis, and display tools.

g. The WLIS will lead in the development of appropriate cross-walk standards for land information and related data and development of strategies to encourage the use of the WLIS, including local aids and incentives.

h. Tools and applications will be provided to enable basic functions, for example, to readily link or summarize standard data tables, or to enable conversion among commonly-used data formats, datums, map projections, and coordinate systems.

Key Characteristics of the WLIS Data

1. The WLIS data will include land information. Wis. Stat. Sec. 16.967(1) sets forth the operative definition of land information used throughout this report. The definition is *inclusive* rather than *exclusive*. The definition is " . . . *any* physical, legal, economic or environmental information or *characteristics* concerning land, water, ground-water, subsurface resources, or air in this state". The use of the term *"any"* is expansive and is not limited by the words that follow. The word *"characteristics"* is emphasized to highlight the notion that land information is any information that can be geographically referenced to areas, lines and points on the earth. Non-traditional examples of "geo-referenced" data include social, economic, health or other statistical information organized or aggregated by location such as parcels, census blocks, zip codes, minor civil divisions, the Public Land Survey System, counties, service regions, natural zones, or regions. The statutes provide an extensive, but not exhaustive, list of other examples "including information relating to topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife, associated natural resources, land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial

photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections."

2. The WLIS will be a distributed system. Its purpose will be to provide accessible current and historical data through the use of appropriate standards for structure and content to allow effective use by a wide range of applications.

3. Each WLIS data set will have identified custodian(s), for example, the WLIP data custodians. Data will be updated by custodians as part of their normal work flow with the goal of providing accurate and timely planning and decision-making.

4. The WLIS data structures and content will be designed to facilitate activities related to the comprehensive master plan definition found in the State Budget.

5. The WLIS data will be based on general structure and content standards to facilitate integration, exchange, and use. Local and specialized data will be kept in forms most appropriate for immediate or primary use, with well-defined cross-walk methods or templates to facilitate application development, integration, exchange, and use.

6. The WLIS data will have documentation and indexing (metadata) suitable for producers and end users.

7. The WLIS data and system will be dynamic, will be implemented in phases, and will continue to evolve.

8. The WLIS will support integrated and aggregated views of locally produced data, as needed to support regional and statewide analysis, planning and decision-making.

9. The WLIS will include status tracking of data and projects and provide reporting capabilities.

10. Development and implementation of the WLIS and its data will be integrated and coordinated with WLIP.

11. The WLIS will capitalize on existing land information investments made by WLIP, government agencies, the private sector, and others.

12. Data structure and content standards will support temporal views.

13. Data will be obtained from WISCLINC, as well as other local, regional, state and federal sources, e.g., standardized population statistics.

14. The WLIS should maximize the value of date collected by agencies for statutory purposes and to allow it to be used for land use planning. The system should provide information compiled using this data such as transformed data, studies, and research reports.

Key Characteristics of the WLIS Technology

1. The WLIS will use commercial off-the-shelf software solutions to the fullest extent possible. Particularly, this means that appropriate packaged applications should be used rather than developing custom solutions.

2. Networking and communication connections should follow industry standards to the fullest extent possible.

3. The WLIS will use multiple methods to deploy land information and applications, including Internet servers, local networks, CD-ROM and other digital media, and hard-copy products. Combinations of methods will be used as appropriate for applications and audiences.

4. Appropriate technology specifications will be developed for the design of the WLIS, which also will identify minimum technology requirements for all users. However, technology updates will be the responsibility of the users.

5. The WLIS will utilize BadgerNet to the fullest extent possible for connection to the Internet. [http://badger.state.wi.us/.statewide/.badgernet/]

6. The system architecture will include multiple, multi-tiered servers.

7. More than one server will be used. For instance, while there will be a primary web server, the WLIS will link to other web servers for specific content, for example, the State Cartographer's Office (SCO) web site.

8. In general, the WLIS will capitalize on all related technology investments. This includes, but is not limited to, data and metadata, software, Internet services, metadata servers, hardware, network services etc.

Key Characteristics of the WLIS Organization

1. The organizational structure of the Wisconsin Land Information System (WLIS) will be a matrix of several organizations that have statutorily defined roles and responsibilities and *de facto* activities. A conceptual matrix listing the WLIS organizations and responsibilities is shown below.

Wisconsin Land Information System ORGANIZATIONAL NETWORK Responsibilities (which would be further subdivided)	WLIB[a]	WLC[b]	OLIS	WLIS Project Team	State LIS Staff	SCO	LIO Council	County Land Info Offices	Other Land Info Agencies	Professional Organizations[c]	Univ. & other Ed Institutions[d]	Other
System design and implementation plan												
Data creation & management												
Application Development												
Information Access												
System Operation												
System Administration												

a) Includes Technical Sub-Committee.

b) Includes Working Groups (Technical, State Agency Resource, and State-Local Government-Private Sector).

c) Includes Wisconsin Land Information Association, etc.

d) Includes University of Wisconsin Land Information and Computer Graphics Facility, etc.

2. The WLIS will be supported by a coordinated structure of multiple organizations with related roles, including parallel and complementary state and local activities.

3. The design and implementation planning of WLIS will be conducted primarily by a new *WLIS Project Team*. The team would include, but is not limited to, representation from major state and local Land Information System (LIS) operations. The team will be skilled in technical, organizational, and institutional aspects of system operation; make day-to-day technical decisions; initiate system design and technology transfer; "interface" with policy and advisory groups; and report to WLC and WLIB and their designees as the authority for technical decisions.

4. Appropriate committees and teams will be formed to guide, manage, and implement the WLIS. Responsibilities for several types of activities and functions will be defined, and include roles of initiate, design, consult, approve, implement, manage, provide user support; a designated "lead" organization for each activity and function; and specified "chains-of-command" to move functions along the sequence of actions.

Recommendations

Implementation

The TWG recommends the creation of a WLIS Project Team, which will be appointed by the WLIB and the WLC. The team will consist of persons knowledgeable and experienced in the development of such systems and be assigned the task of contracting for and managing both private and public expertise to perform the following tasks:

1. Perform a needs assessment and outline the requirements of shareholders that will participate in the system.

2. Develop and recommend a project scope, including alternatives for meeting defined requirements.

3. Prepare a work plan and timeline for each alternative.

4. Prepare estimates of cost for each alternative.

5. Prepare a preliminary design based on the selected alternative.

6. Develop prototypes during the design phase to test the functionality of the proposed WLIS.

7. Prepare a final design, cost estimate, and time line for the creation of the WLIS.

Policy

The TWG identified a number of policy issues that need to be addressed as part of the implementation of the WLIS. The TWG did not have the time to explore them, nor was it clear to the TWG that policy issues were intended as part of the TWG charge. It is recommended that further attention be given to these issues and that policies be established to guide the implementation, operation, and administration of the WLIS.

1. Access. Who will have access to what WLIS data?
2. Copyright and licensing. Who "owns" WLIS information and what does that entitle them to?
3. Development of data. The WLIS will not contain all the data needed. How should it be developed?
4. Distribution. How will WLIS data be distributed and under what terms and at what cost?
5. Liability. Who is responsible for errors and omissions in the WLIS and with what legal consequences?
6. Privacy. What personal privacy rights are affected and what are the potential consequences?
7. Security. Who can add and update WLIS data and how is that restricted and assured?

8. Custodial responsibility. How is ownership of the WLIS data determined and what are owner obligations?
9. Cost recovery. Is cost recovery appropriate?
10. Open records. Are current open records laws adequate to address the WLIS? What publicly available data is WLIS intended to provide access to?
11. Hardware requirements. Who establishes minimum requirements and how?
12. Funding Mechanism. How will the system be funded?

Future of the Technical Working Group

The TWG requests that it be continued and reconvened by the Council for the following purposes:

1. Advise the Council on the recommendations in the final report after it has been reviewed by the WLIA, WLIB, OLIS, SARWG, and other interested organizations and persons.
2. Oversee, evaluate, and prioritize the work of the Project Team.
3. Recommend the WLIS to the Wisconsin Land Information Board and the Wisconsin Land Council.

Appendix

Creation of the Technical Working Group

Governor Thompson's 1997-99 Biennial Budget recommendations as enacted by the Wisconsin Legislature established the new Wisconsin Land Council [Wisc. Stat. 15.107(16)]. Among the charges to the Council is the following:

Wisc. Stat. 16.023(1)(f) "Establish a Technical Working Group that is composed of the state cartographer, a representative of the University of Wisconsin System who has expertise in land use issues and any other land use experts designated by the council's chairperson..."

Composition and Activities of the TWG

The TWG consisted of 26 people with recognized knowledge and experience in land information systems and technologies. The group included representatives of federal, state and local governments; regional public and private planning organizations; private non-profit and for-profit organizations; the WLIB and the WLIA. Seven all-day, facilitated meetings were conducted. Additional meetings of committees and small groups also occurred in person, by conference call and by email. Approximately 1,500 person hours of discussion, debate, thought and considered deliberation were invested in developing this report.

Technical Working Group Members

The Secretary of the Department of Administration made the following appointments:

Chair

Doug King, Department of Administration – doug.king@doa.state.wi.us

Vice-Chair

Loren Hoffmann, Office of Land Information Services – loren.hoffmann@doa.state.wi.us

Required by Statute

Ted Koch, **State Cartographer** - tkoch@facstaff.wisc.edu

Steve Ventura, **UW System**, Institute of Environmental Studies, and Department of Soil Science - sventura@facstaff.wisc.edu

Federal Government

Kent Pena, U.S. Natural Resources Conservation Service - kpena@wi.nrcs.usda.gov

State Government

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Greg Landretti, Revenue - glandret@dor.state.wi.us

Tanace Matthiesen, Transportation – tanace.matthiesen@dot.state.wi.us

Lisa Morrison, Agriculture Trade and Consumer Protection - morrila@wheel.datcp.state.wi.us

Jerry Sullivan, Office of Land Information Services – jerry.sullivan@doa.state.wi.us

Regional Planning Commissions

Mark Walter, Council of Regional Planning Organizations - mwalter@baylakerpc.org

Local Government Land Information Officers

David Schmidt, Winnebago County – jrehbein@co.winnebago.wi.us

Kathy Swingle, Burnett County - kswingle@win.bright.net

Wisconsin Initiative for Statewide Cooperation on Landscape Analysis and Data [WISCLAND]

Bob Gurda, Wisconsin State Cartographer's Office - sco@facstaff.wisc.edu

Wisconsin Land Information Association

Damon Anderson, Wisconsin Land Information Association - olio@execpc.com

Non-Profit Organizations

Diann Danielsen - danielsen@co.dane.wi.us [alternate for Jane Licht and former DOT representative]

Lynn Grube, Government Information Processing Association of Wisconsin - oneida@newnorth.net

David Hart, UW Land Information and Computer Graphics Facility - dahart@facstaff.wisc.edu

Chuck Kell, American Planning Association – Wisconsin Chapter – kellc@co.portage.wi.us

Jane Licht, Wisconsin Register of Deeds Association - licht@co.dane.wi.us

Bill Malkasian, Wisconsin Realtors Association - wem@wra.org

Private for Profit Organizations

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Nancy von Meyer, Fairview Industries - nancy@fairview-industries.com

Technical Working Group Meetings and Dates

The following all-day, facilitated meetings were conducted. Additional meetings of committees and small groups also occurred in person, by conference call, and by email.

November 30, 1998

January 7, 1999

February 4, 1999

March 4, 1999

April 22, 1999

May 6, 1999

May 21, 1999

Appendix F - WLIS Stakeholders Matrix

	A - System Design and Implementation	B – Data Creation and Management	C – Application Development	D - User Access - View	E - User Access – Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
General Public - examples:				X	X	X	X			
Land Owners				X	X	X	X			
Agribusinesses		X		X	X	X	X			
Attorneys				X	X	X	X			
Business Geographics Users/Market Research Groups				X	X	X	X			
Child Support Agencies				X	X	X	X			
Commercial Data Resellers		X		X	X	X	X			
GIS / IT / Mapping Consultants		X		X	X	X	X			
Health Care organizations		X		X	X	X	X			
Land Title Companies		X		X	X	X	X			
Market Research Groups				X	X	X	X			
Other Information Systems		X		X	X	X	X			
Out of State Spatial Data Requestors – Public, Private				X	X	X	X			
Planning & Design Consultants, Architectual Engineers, Landscape Architects, etc.		X		X	X	X	X			
Private Forest Managers		X		X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access – Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
Real Estate Developers		?		X	X	X	X			
Interest and Advocacy Groups - examples:										
Affordable Housing Advocates				X	X	X	X			
Alliance of Cities				X	X	X	X			
Common Ground Foundation				X	X	X	X			
Council of Regional Planning Organizations				X	X	X	X			
Environmental Interests (1000 Friends, etc.)		?		X	X	X	X			
ESRI Wisconsin Users Group				X	X	X	X			
Geographic Info Technology Association				X	X	X	X			
League of WI Municipalities				X	X	X	X			
National States Geographic Information Council				X	X	X	X			
Register of Deeds Assoc.				X	X	X	X			
Urban and Regional Information Systems Association, etc.				X	X	X	X			
WI Association of Land Conservation Employees				X	X	X	X			
WI Association of Consulting Engineers				X	X	X	X			
WI Association of Manufacturers and Commerce				X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
WI Builders Association				X	X	X	X			
WI Chapter of the American Planning Association				X	X	X	X			
WI Counties Association				X	X	X	X			
WI County Code Administrators				X	X	X	X			
WI County Surveyors Association				X	X	X	X			
WI Farm Bureau				X	X	X	X			
WI Initiative for Statewide Coop. on Landscape Analysis & Data		X		X	X	X	X			
WI Land Information Association				X	X	X	X			
WI Real Prop Listers Assoc.				X	X	X	X			
WI Realtors Association				X	X	X	X			
WI Roadbuilders Association				X	X	X	X			
WI Society of Land Surveyors				X	X	X	X			
WI Taxpayers Alliance				X	X	X	X			
WI Towns Association				X	X	X	X			
WI Chapter, American Society of Landscape Architects				X	X	X	X			
WI Chapter, International Right of Way Association				X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
Cultural Resource Concerns – examples:		X								
Local Historical Societies		X		X	X	X	X			
Archeologists		X		X	X	X	X			
Municipal government – examples:										
City Mayors and/or Managers, village presidents, town chairs				X	X	X	X			
Emergency Managers - Public Safety, Hazmat		X		X	X	X	X			
Housing Authorities		X		X	X	X	X			
Law Enforcement				X	X	X	X			
Municipal assessors				X	X	X	X			
Municipal attorneys				X	X	X	X			
Municipal clerks				X	X	X	X			
Municipal emergency managers				X	X	X	X			
Municipal engineers, surveyors				X	X	X	X			
Municipal planners, zoning administrators				X	X	X	X			
Municipal treasurers				X	X	X	X			
Parks and Recreation				X	X	X	X			
Tourism				X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
Education – examples:										
Cooperative Education Service Agencies		X		X	X	X	X			
School Districts		X		X	X	X	X			
Vocational Technical and Adult Education				X	X	X	X			
County government - examples:										
Clerk of Courts				X	X	X	X			
County Boards, Committees				X	X	X	X			
County Land Conservation Committees				X	X	X	X			
County Land Information Offices				X	X	X	X			
County planning agencies				X	X	X	X			
County Register of Deeds				X	X	X	X			
County Surveyors				X	X	X	X			
Emergency Managers - Public Safety, Hazmat		X		X	X	X	X			
Highway Commissioners		X		X	X	X	X			
Parks and Recreation		X		X	X	X	X			
Real Property Listers				X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
Special Function Districts- examples:										
Regional planning commissions		X		X	X	X	X			
Water Service		X		X	X	X	X			
Sewer Service Area		X		X	X	X	X			
Great Lakes Intertribal Council		X		X	X	X	X			
Utilities - Public and Private		X		X	X	X	X			
State Government - examples:										
Wisconsin Land Council				X	X	X	X			
State Agency Resource Work Group										
State, Local, Private Work Group										
Technical Work Group										
Wisconsin Land Information Board				X	X	X	X			
Administration		X		X	X	X	X			
Agriculture, Trade, Consumer Protection		X		X	X	X	X			
Board of Commissioners of Public Lands		X		X	X	X	X			
Commerce		X		X	X	X	X			
Corrections		X		X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
Geological & Natural History Survey		X		X	X	X	X			
Health & Family Services		X		X	X	X	X			
Justice		X		X	X	X	X			
Military Affairs		X		X	X	X	X			
Natural Resources		X		X	X	X	X			
Public Instrction		X		X	X	X	X			
Public Service Commission		X		X	X	X	X			
Revenue		X		X	X	X	X			
State Cartographer's Office		X		X	X	X	X			
State Historical Society		X		X	X	X	X			
Transportation		X		X	X	X	X			
Workforce Development		X		X	X	X	X			
State Agency Database Administrators				X	X	X	X			
State Agency Address Users Group				X	X	X	X			
UW System - examples:										
UW Extension – GIS Initiative, Local Government Center				X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
UW Applied Population Laboratory				X	X	X	X			
UW Land Information Computer Graphics Facility		?		X	X	X	X			
UW Environmental Remote Sensing Center				X	X	X	X			
UW Urban & Regional Planning										
UW Milwaukee - School of Architecture and Urban Planning				X	X	X	X			
UW Stevens Point - GIS, Groundwater Centers				X	X	X	X			
State Legislature - examples:										
Legislators				X	X	X	X			
Legislative committees				X	X	X	X			
Legislative service bureaus				X	X	X	X			
Legislative Technical Services Bureau		X		X	X	X	X			
Federal government - examples:										
Bureau of Indian Affairs				X	X	X	X			
Bureau of Land Management		X		X	X	X	X			
Dept. of Defense		X		X	X	X	X			

	A - System Design and Implementation	B – Data Creation and Management	C - Application Development	D - User Access - View	E - User Access - Analyze (application with analysis)	F - User Access - Query (select records via query)	G - User Access - Download	H - System Operation	I - System Administration	J - Standards, policy, and practices
Federal Emergency Management Agency		X		X	X	X	X			
Federal Geographic Data Committee		X		X	X	X	X			
National Aeronautics and Space Administration		X		X	X	X	X			
National Geodetic Survey		X		X	X	X	X			
National Park Service - Midwest Regional GIS Center		X		X	X	X	X			
National Resource & Conservation Service		X		X	X	X	X			
US Bureau of the Census		X		X	X	X	X			
US Forest Service		X		X	X	X	X			
US Geologic Survey - National Mapping Division, Water Resources Division , Biological Resource Division		X		X	X	X	X			
US Postal Service		X		X	X	X	X			

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Appendix G - WLIS Analysis Contact List

Stakeholder Group	Date	Contact/Interview
General Public – examples:		
Land Owners		
Agribusinesses		
Attorneys		
Business Geographics Users/Market Research Groups		
Child Support Agencies		
Commercial Data Resellers	3/22/2000	Tapestry Software Presentation – Sedona Group (Register of Deeds Assn)
GIS / IT / Mapping Consultants	3/23/2000	GIS Software Intergrator – GeoAnalytics
	5/23/2000	ESRI Rep - Mike Koutnik
	6/7/2000	Uclid Software
Health Care organizations		
Land Title Companies		
Market Research Groups		
Other Information Systems		
Out of State Spatial Data Requestors - Public, Private		
Planning & Design Consultants, Architectural Engineers, Landscape Architects, etc.	3/21/2000	Municipal Engineering Consultant - Ruekert & Mielke
	4/5/2000	Planning Consultants - Vandewalle and Associates
	3/28/2000	Planning Consultants – Vierbicher Associates
	3/29/2000	Orthophotography, Engineering Consultants - Ayres Associates
Private Forest Managers		
Real Estate Developers		
Interest and Advocacy Groups – examples:		
Affordable Housing Advocates		
Alliance of Cities		
Common Ground Foundation		
Council of Regional Planning Organizations	3/24/2000	Council of Regional Planning Org.

Stakeholder Group	Date	Contact/Interview
ESRI Wisconsin Users Group		
Geographic Info Technology Association		
League of WI Municipalities	4/6/2000	League of WI Municipalities
National States Geographic Information Council		
Register of Deeds Assoc.		
Urban and Regional Information Systems Association, etc.		
WI Association of Land Conservation Employees		
WI Association of Consulting Engineers		
WI Association of Manufacturers and Commerce		
WI Builders Association	3/31/2000	WI Builders Association
WI Chapter of the American Planning Association	3/10/2000	WI Chapter of the American Planning Association
WI Counties Association		WI Counties Association
WI County Code Administrators		
WI County Surveyors Association		
WI Farm Bureau		
WI Initiative for Statewide Coop. On Landscape Analysis & Data		
WI Land Information Association	3/1/2000 - 3/3/2000	Wisconsin Land Information Association Conference
WI Real Prop Listers Assoc.		
WI Realtors Association	4/3/2000	WI Realtors Association
WI Roadbuilders Association		
WI Society of Land Surveyors		
WI Taxpayers Alliance	3/24/2000	WI Taxpayers Alliance
WI Towns Association	4/19/2000	WI Towns Association
Cultural Resource Concerns – examples:		
Local Historical Societies		
Archeologists		

Stakeholder Group	Date	Contact/Interview
Municipal government – examples:		
City Mayors and/or Managers, village presidents, town chairs		
Emergency Managers – Public Safety, Hazmat		
Housing Authorities		
Law Enforcement		
Municipal assessors		
Municipal attorneys		
Municipal clerks		
Municipal emergency managers		
Municipal engineers, surveyors	3/14/2000	City Engineering – Madison
Municipal planners, zoning administrators	3/14/2000	City Planning – Madison
	3/22/2000	Municipal Community Development - New Berlin
	3/20/2000	Town Planning Commission - Sun Prairie
	4/11/2000	Municipal Community Development – Menasha
	4/11/2000	Municipal Planning – Oshkosh
Municipal treasurers		
Parks and Recreation		
Tourism		
Education - examples:		
Cooperative Education Service Agencies		
School Districts	4/7/2000	Madison Metropolitan School District
Vocational Technical and Adult Education		
County government – examples:		
Clerk of Courts		
County Boards, Committees		
County Land Conservation Committees		
County Land Information Offices	3/16/2000	County Land Information Officer – Iowa
	3/22/2000	County Land Information Officer – Brown
	3/20/2000	County Land Information Officer – Sauk
	3/21/2000	County Land Information Officer – Waukesha

Stakeholder Group	Date	Contact/Interview
	4/11/2000	County Land Information Officer – Winnebago
County planning agencies	4/11/2000	Winnebago County Planning and Zoning
County Register of Deeds		
County Surveyors		
Emergency Managers – Public Safety, Hazmat		
Highway Commissioners		
Parks and Recreation		
Real Property Listers		
Special Function Districts- examples:		
Regional planning commissions	3/21/2000	SEWRPC, Waukesha
	3/22/2000	East Central RPC, Menasha
Water Service		
Sewer Service Area	3/30/2000	Madison Metro Sewerage District
Great Lakes Intertribal Council, Tribal GIS	4/6/2000	Kickapoo Reserve Management
Utilities - Public and Private	3/16/2000	Utility - Madison Gas & Electric GIS Manager
	3/30/2000	Metro Transportation District – Madison
State Government – examples:		
Wisconsin Land Council		
State Agency Resource Work Group		
State, Local, Private Work Group		
Technical Work Group		
Wisconsin Land Information Board		
Administration	4/6/2000	Demographics Service Center
Agriculture, Trade, Consumer Protection	5/2/2000	Agriculture, Trade, Consumer Protection
	5/11/2000	Pesticide Data Base Tech Sub Comm Briefing
Board of Commissioners of Public Lands		
Commerce		
Corrections		
Geological & Natural History Survey		
Health & Family Services		
Justice		

Stakeholder Group	Date	Contact/Interview
Military Affairs		
Natural Resources	4/7/2000	Natural Resources
Public Instruction		
Public Service Commission		
Revenue		
State Cartographer's Office	2/24/2000, 4/6/2000	State Cartographer
State Historical Society	3/28/2000	State Historical Society of Wisconsin
Transportation	4/6/2000	Wisconsin State Patrol
Transportation		
Workforce Development		
State Agency Database Administrators		
State Agency Address Users Group		
UW System – examples:		
UW Extension - GIS Initiative, Local Government Center	3/27/2000	UW Extension – Community Economic Development
	3/27/2000	UW Extension - Local Govt
UW Applied Population Laboratory		
UW Land Information Computer Graphics Facility	3/30/2000	Land Information Computer Graphics Facility – UW
UW Environmental Remote Sensing Center	3/28/2000	Environmental Remote Sensing Center – UW
UW Urban & Regional Planning		
UW Milwaukee - School of Architecture and Urban Planning		
UW Stevens Point - GIS, Groundwater Centers		
State Legislature – examples:		
Legislators		
Legislative committees		
Legislative service bureaus		
Legislative Technical Services Bureau		

Stakeholder Group	Date	Contact/Interview
Federal government – examples:		
Bureau of Indian Affairs		
Bureau of Land Management		
Dept. of Defense		US Military Academy Mapping Dept.
Federal Emergency Management Agency		
Federal Geographic Data Committee		
National Aeronautics and Space Administration		
National Geodetic Survey		
National Park Service – Midwest Regional GIS Center		
National Resource & Conservation Service	5/2/2000	National Resource & Conservation Service
US Bureau of the Census		
US Geologic Survey – National Mapping Division, Water Resources Division , Biological Resource Division		
US Forest Service		
US Postal Service		

Appendix H – Analysis Summary

Methodology and Approach

There were multiple sources for requirements analysis - the Technical Working Group's Final Report, the web requirements survey, and personal contact via e-mail, phone and site visits to numerous representative members of the stakeholder community. * The overwhelming majority of the representative stakeholders were suggested by the State Cartographer and the members of the Project Team.

In preparing to gather requirements for a WLIS, the approach found in the client/server development software RadPath® from Corporate Computing, Inc. was selected. A version of the User Requirements Form found in this package and modified for this project, was used in site visits and phone interviews. While many stakeholders were interviewed, not all contacts (See Appendix 7) resulted in a data sheet – several yielded short responses or referrals to others, while others were instructive in the technologies employed in land information disciplines. The data sheets resulting from these interviews and contacts are found in Appendix 9.

Questions

A series of standard questions was designed to develop an understanding of requirements for a WLIS and to gain keener insight into the challenges inherent in developing such a system. The series of questions was designed with the secondary purpose of gaining an appreciation of the specific business needs and uses of land information by the individual stakeholders.

Each stakeholder or stakeholder group was asked, unless it was obvious or irrelevant, questions concerning:

- their central operational or business goals,
- their current needs, problems, and information products,
- their customers,
- the current land-related software and data,
- which data sets they viewed a essential to a WLIS,
- what functions a WLIS should offer or support,
- what they viewed as risks or constraints in developing a WLIS,
- what assumptions they had about a WLIS, and
- what issues or concerns generally they saw as related to land-related information that may impinge on the successful development of a WLIS.

Also recorded were miscellaneous information that arose during the discussions.

Synthesis of Analysis

Visions of a WLIS

From the numerous discussions and interviews, a handful of commonly shared images of what a WLIS essentially would be. Most frequently mentioned was the concept of WLIS providing a 'first-stop' web presence, comprising an encyclopedia of Wisconsin land information and a comprehensive collection of links to land information resources on the Web. Closely related to this was the notion

* identified in Appendix ...

that WLIS should offer a facility for access to data and metadata to ease the task of locating, securing and working with land-related data from all sources.

The advent of the requirement for the development of comprehensive land use plans, stimulated by the passage of 'Smart Growth' legislation, led to two other primary concepts for the central focus of a WLIS. The first was the idea that the system would offer a 'Planner's Toolkit', a series of application services which would permit the development of a comprehensive land use plan for a jurisdiction*. The second, closely related view was that of a more general set of planners' tools, supporting planning activities of all types, but not with the production of a completed plan as a product of the application.

Finally, a number of stakeholders viewed a WLIS from a purely mechanical perspective, as a network of nodes, involving hardware, software and internet connections, with no specific functionality specified other than generically serving hypertext information or providing FTP capability.

Functionality Desired

- Node operator's tool kit
- Continual promotion of standards to facilitate building a statewide system; establish common naming conventions; promote standardized data models
- Automatic translation mechanisms
- Technical guidance – i.e., steps to convert data from one projection system to another
- Mechanism for data, metadata exchange
- Siting telecommunications towers (distance from airports, elevation, line of sight)
- Utility service routing
- Potential commercial site identification (vacant lots, utility service, schools, public transit, etc.)
- Intelligent mapping (e.g., point links to permitting requirements, etc.)
- Transportation corridor planning
- Industrial site location
- Wizard-driven functions (New Berlin, Brown Co.)
- Economic development tool kit
- Gazetteer – Search by community name or location on a map
- Power user interface

* This vision of a WLIS was widely disputed by a number of stakeholders as not possible given the nature of the Smart Growth requirements and the quality of available data.

Data/Information Desired

- Soils
- Hydrologic (Groundwater, Water table layers)
- Land Use
- Floodplain
- Summary of planning legislation
- Pending legislation on land-related issues
- Insurance data (fire codes)
- Road center line
- Census, demographic
- Major power line routes statewide
- Wetlands
- Watershed
- Stormwater runoff
- Navigable waterways
- Orthophotos and street-level photos
- Environmental corridors
- Shorelines
- Conservancy areas
- Household census data
- Transportation
- Master address file from USPS
- DOR demographics (type of business via sales tax data)
- Isolated natural areas
- State agency data
- Road condition rating
- Well heads
- Land fills – active and closed
- Archaeological sites
- Drainage basins
- Sewer service area
- Well testing data
- Streets
- Right of way
- Easements
- Transportation infrastructure (signals, sidewalks, speed limits, bus cutouts)
- Street, road construction
- Slopes

- School district boundaries
- Parking inventory
- Land cover
- SIC/NAICS data

Risks/Issue

- Liability
- Privacy
- Public safety – a tool for criminals, if public
- Copyright and licensing
- Revenue stream replacement
- Cost recovery mechanism for data production once it is available and distributed on the web
- Data currency varies by respondent – ranges from daily to 1 year
- Varying datum (NSDI), projection systems, coordinate systems, software formats
- No standards for layer contents
- No standard conventions for symbols (utilities and other infrastructure)
- Data availability restrictions (Milwaukee project, State Historical Society, Nature Conservancy)
- Concern with Local Roads Project (DOT)
- State agencies are not as concerned with data at the same scale as Regional Planning Commissions, Counties, Municipalities
- Lack of a common land use coding system
- Lack of common zoning taxonomy
- DOR needs to take leadership in establishing common assessment practices and standards
- Statewide public-private data-sharing arrangement
- Maintenance of system data - e.g., industrial site selection (Dept of Commerce-sponsored effort) cited as an example of this challenge

Assumptions

Assumptions were surprisingly few, given the widely disparate nature of the body of stakeholders. Generally, it was assumed that WLIS will be evolutionary, continuing to develop and change in response to changing needs, that WLIS will be designed to be flexible enough to be able to make these shifts, and that there may need to be incentives to provide data, metadata, and adherence to WLIS standards for the system to succeed.

Appendix I - Functional Requirements Analysis Data Sheets

Date: 03/14/00

Stakeholders: **Peter Olson, Madison City Planning**
Bill Lanier, Madison City Planning
Dan Seidensticker, GIS/RPC
Dave Davis, Madison City Engineering
Jeff Dux, Madison City Engineering
Loren Hoffmann, OLIS
Jerrry Sullivan, OLIS

Business Goals:

- Support other city departments, public

Current Needs/Problems/Products

- Infrastructure:
  - Utility mapping (Madison Metropolitan Sewage District)
  - Town of Madison
  - Existing landfills
  - City Parks
- Ownership - parcel mapping
- Existing Landfills

Customers:

- Police (sector maps)
- Fire Dept (response time analysis) - FieldView at each of the 10 fire stations
- District and City Attorney - crime incident mapping
- Assessor's Office (availability on WWW generated the lowest level of citizen requests and challenges ever)
- City Water Utility and Streets - FieldView on 40-50 laptops
- City Parks
- Alders, Mayor - variations on existing map products
- Neighborhood associations, other groups
- Telecommunications companies - (routing of new fiberoptic lines)
- Builders, developers
- Traffic engineering
- Lending institutions (esp. mortgage companies) - zoning, floodplain data
- Contractors:
  - water/utility mapping - size of mains, laterals, type of material, shut-off valves

Current data/software:

- Geomedia
- Microstation (40 seats)
- ArcInfo/ArcView/ArcExplorer
- MapObjects
- FieldView (100 seats)

- Data exchange with Madison Gas & Electric, County Register of Deeds (legal descriptions)
- Developers required to submit 2-ft contour data for sub-division plat (digital submission encouraged)
- Image archive (1/2 - 2/3 complete) from City Assessor's Office (contact Mike Kurth, Dave Faust in MIS for further information); jpg format - thumbnail and 6" X 4"
- 1-foot digital elevation models
- Digital contours at 2 feet ($2600/section)
- Building footprints (planimetric) - stormwater runoff calculations
- Floodplain data (from FEMA)
- Historical photographs - Developer requirement - significant workload

WLIS Data/Information Needs:

- Statewide centerline data
- Setbacks

WLIS High-Level Functions:

- Annexation support

Risks and Constraints:

- Lack of standards to facilitate building a statewide system - seen as an ongoing task for a WLIS.
- Liability - disclaimers not effective

Assumptions: None discussed.

Issues:

- Concern with DOT Local Roads Project - City's maps will be better, maintained than DOT
- Spent 1 year+ cleaning up data
- Will not release building footprint data
- Sections do not match

Miscellaneous: None discussed.

Date: 3/16/00

Stakeholders: Scott Godfrey, Iowa County LIO
Christine

Business Goals:

- ❑ Serving other County Departments and public

Current Needs/Problems/Products:

- ❑ Parcel mapping with heavy emphasis on rural focus - will be complete in about a year

Customers:

- ❑ County staff and elected officials
- ❑ Property owners (often related to property line concerns)
- ❑ Potential land buyers
- ❑ Realtors
- ❑ Title Companies
- ❑ Municipalities (address uses)

Current data/software:

- ❑ Microstation
- ❑ ArcView
- ❑ Parcel data
- ❑ Orthophotography data
- ❑ Parcel-based owner data (via link to AS 400)
- ❑ Land use data
- ❑ Hydrologic layers
- ❑ Soil quality (County ordinance prohibits building on prime agricultural land)
- ❑ Land Net File - PLSS at +/- 30 feet

WLIS Data/Information Needs:

- ❑ Floodplain data
- ❑ Soil data
- ❑ Summary of planning and other legislation - pending and in effect
- ❑ Insurance data
- ❑ Centerline data
- ❑ Topographical data - (telecommunications - siting cell towers - distance from airports and elevation)
- ❑ Census data
- ❑ Mines - active and abandoned
- ❑ Power lines

WLIS High-Level Functions:

- ❑ Links to other WWW resources
- ❑ Noise level zones w/relation to existing or planned residential development
- ❑ School bus routing (cross-jurisdictional)

- Cross-jurisdictional views (some existing municipalities fall partly into adjoining counties)

Risks and Constraints:

- Liability

Assumptions: None discussed.

Issues:

- Consistency of data
- Loss of revenue stream ($40/ortho plat) not as much of a concern - time savings

Miscellaneous: None discussed.

Date: 03/16/00

Stakeholder: Tim Staatz, Madison Gas and Electric GIS Manager

Business Goals:

- Support construction and maintenance of utility service; assist in business siting; emergency response - critical

Current Needs/Problems/Products:

- Covers Dane, Iowa, Columbia counties - cross-jurisdiction needs

Customers:

- Residential and commercial utility customers, construction contractors, developers
- Emergency government (County, State)

Current data/software:

- Integraph shop
- Land base: intersections and addresses
- Byers MapViewer on notebooks in service vehicles - updated weekly
- Can provide data in DGN (Microstation) or DWG (Autocad)

WLIS Data/Information Needs:

- Parcel data - name, address
- Easements
- Zoning information
- Municipal boundaries
- Permitting information

WLIS High-Level Functions:

- Query - "all vacant lots - with services mapped" - for development planning/promotion
- Aerial information for route selection (e.g., pipeline, electrical service)
- Locating categories of facilities (e.g., hospitals, schools, shopping centers, etc.) geographically
- Intelligent information (e.g., information about jurisdictions, permitting, zoning, etc. retrieved through a geographic interface.)
- Digital dispatch support - e.g., road construction detours, 1-way streets, etc
- Geographically locate capital assets - generating stations, substations, etc.

Risks and Constraints:

- Liability concerns with public access (use instead of Digger's Hotline)
- Lack of common coordinate system to avoid rescaling transferred data
- Lack of common agreement on standard layers (e.g., right-of-way, easements)
- Lack of standard symbology among utilities (no standard for representation of easement, valves, etc.

Assumptions: None discussed.

Issues:

- There may be some restraint due to the perception of lost competitive advantage.

Miscellaneous: None discussed.

Date: 3/20/2000

Stakeholders: Ted Brenson, Sauk Co. LIO
Sally
Kelley

Business Goals:

- Service to other county departments and the public

Current Needs/Problems/Products:

- 60,000 documents for survey research
- Tie sheet verification
- Base maps for other county departments - wells, septic
- Permitting support - fee requests
- About half done with parcel mapping - projected completion 2003

Customers:

- Mortgage companies
- Title companies
- Builders
- Surveyors
- County Board, Treasurer, Sheriff, Land Conservation
- Public
- Hunters

Current data/software:

- AutoCad
- ArcView
- ArcInfo
- AS400 data access
- Primarily property assessment data
- 8 mapping stations

WLIS Data/Information Needs:

- Watershed
- Orthophotos
- Wetlands
- Survey data
- Soils
- DOT highway plans
- Land conservation - DNR

WLIS High-Level Functions:

- None specified

Risks and Constraints:

- Not as concerned with liability issues - a good disclaimer will suffice
- Concern with revenue stream impact
- Reimbursement for data on the web

Assumptions: None discussed.

Issues:

- One-way data sharing with adjoining jurisdiction - provided them with data, nothing in return

Miscellaneous: None discussed.

Date: 3/20/2000

Stakeholders: Town of Sun Prairie Planning Commission Meeting

Business Goals:

- Develop and maintain land use plan for rural township

Current Needs/Problems/Products:

- Transportation Grant Application
- Dealing with City of Sun Prairie on transportation issues

Customers:

- Town Board, Public

Current data/software:

- None

WLIS Data/Information Needs:

- Wetlands
- Runoff

WLIS High-Level Functions: None discussed.

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues:

- Loss of > 100,000 acres of farmland in Dane County over a short period
- Annexations account for 36% of the loss in farmland

Miscellaneous:

- Parks - Developer pays $600/lot or provides park space
- Vandewalle and Associates, 402 West Lakeside, Madison - 255-3988
- Belinski - Conservation-minded developer (Waukesha)
- Every 5 years owner can create 4 lots - more than 4 requires the owner to create plat and ID 2 septic sites per lot

Date: 3/21/2000

Stakeholders: Don Dittmar, Waukesha Co. LIO

Business Goals:

- Serves County Departments, public

Current Needs/Problems/Products:

- GPS-enabled salt truck tracking
- Parks Dept - route selection/modeling for foot trail
- Sheriff Dept - process server routing
- Meals on Wheels routing
- Visiting Nurse routing
- Emphasis on completing re-monumentation
- Tie sheets will be completed by April

Customers:

- Parks Dept
- Sheriff Dept

Current data/software:

- Integraph
- Oracle
- GeoMedia

WLIS Data/Information Needs: None discussed.

WLIS High-Level Functions: None discussed.

Risks and Constraints:

- Difference in datum - 1927 vs. 1983 (state agencies)

Assumptions: None discussed.

Issues:

- Revenue stream replacement not an issue - haven't developed a market yet
- In exchanging GIS data, text (size, font, placement, occurrences, etc.) poses the biggest issue - even Oracle Spatial does not solve the problem
- 30-day currency of data is acceptable

Miscellaneous:

- Mapping maintenance contracted to Ruekert, Mielke on an hourly basis
- PlanGraphics developed Land Information Inventory and System Development plan
- Call Ted Koch on the feasibility of cross-county applications

Date: 3/21/2000

Stakeholders: William Mielke, Ruekert and Mielke

Thomas Tym, Ruekert and Mielke

Business Goals:

- Engineering and Technology Consulting

Current Needs/Problems/Products:

Customers:

- Municipal engineering services for 50+ jurisdictions

Current data/software:

- Could be supplier of:
  - Stormwater drainage areas
  - Sanitary sewer service areas
  - Facility locations (sanitary & storm sewer, water distribution)

WLIS Data/Information Needs:

- Wetlands
- Environmental corridors
- Isolated natural areas
- Floodplains
- Shorelines
- Conservancy
- Soils
- Land use
- Population
- Household
- Transportation
- FEMA maps
- Groundwater resources
- Aerial photography
- DOR demographics
- DNR Navigable waterways
- Increasing need for Orthophotos
- Increasing need for street-level property photos

WLIS High-Level Functions:

- Gazetteer metaphor - search by community name or select by pointing to a location on a map
- Library functions - index of links to other sites
- Promotion and establishment of common naming convention
- Translator, or "black box" functions for dissimilar data structures
- New data availability notification

- Route selection

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues:

- Data currency
- Data accuracy

Miscellaneous:

- Distributed Geolibraries, National Research Council, (National Academy Press)
- Addressing Issues, URISA
- Demonstration of custom www application supporting their engineering applications

Date: 3/21/2000

Stakeholders: **Southeastern Wisconsin Regional Planning Commission**
Thomas Patterson
William Stauber
John McDougall

Business Goals:

- Data development, long-range planning services

Current Needs/Problems/Products:

- Data development
- Planning services
- Data distribution

Customers:

- Constituent counties and municipalities

Current data/software:

- Not discussed

WLIS Data/Information Needs:

- Land use inventory
- Environmental resource inventory

WLIS High-Level Functions:

- Clearinghouse function - find data and move it
- Promotion of high quality data
- Promotion of complete and accurate meta data
- Accurate underground mapping

Risks and Constraints:

- Central vs. Distributed model for common storage
- MCAMLIS - Subscription model - no public access, no data redistribution - licensed and copyrighted

Assumptions:

- SEWRPC wouldn't benefit a great deal from a WLIS - self-sufficient

Issues:

- Scale - state agencies do not work at the same level of detail or scale

Miscellaneous:

- Strong data development standards
- Embraced technology early - began mapping in mid-1970s
- 40% of state's population live in area covered by SEWRPC counties and municipalities
- Scientific approach to data - mathematical testing of quality of data
- Mid-1980s - extended technology to others - partially state-funded (1983-86)
- 7 counties follow SEWRPC map model standard
- Orthophotography every 5 years

- Recommend not using USGS
- File sizes: 400 sq mi Ortho = 32 mg; Waukesha Co. parcel map = 1 gig; contour map for Milwaukee Co = 20 gig.

Date: 3/21/2000

Stakeholders: David Haines, New Berlin City Community Development

Business Goals:

- Permitting and planning

Current Needs/Problems/Products:

- Building inspections requirements (e.g., sprinklers)

Customers:

- Public - 30 - 50 walk-up requests/week

Current data/software:

- Custom application partially developed by Spatial Solutions
- MapObjects
- Oracle (HP3000/UNIX)
- Building footprints accurate to 12/1999

WLIS Data/Information Needs:

- Groundwater data
- Stormwater
- Wetlands
- Business information - types of business (sales tax - DOR)
- Economic Development - demographic
- Aerial photos - DOT, Utilities

WLIS High-Level Functions:

- Inventory/update status function similar to Microsoft Windows 98 Critical Update functionality
- Attachment dialog function similar to Yahoo!

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous:

- Milwaukee Metropolitan Sewerage District can use their data, functions

Date: 3/22/2000

Stakeholders: Tom Faella, East Central RPC
Jessica Beckendorf, East Central RPC
Rick Stadtmueller, East Central RPC

Business Goals:

- Planning and mapping services for constituent counties and municipalities

Current Needs/Problems/Products:

- Data reorganization - year-long effort - established their metadata standards
- Most counties (4) outsourced parcel mapping to off-shore companies
- 2-3 requests per week for orthophoto product
- Current plans for new shoot;
- Outagamie and Green Lake Counties have individual contracts with Ayres
- Fond du Lac County will get orthophoto from Dept. of Transportation project
- Highway expansion corridors
- Comprehensive plan development - assist or create - 5 (for towns) in the works now - 10 different thematic layers, e.g., wetlands (DNR), road functional class (DOT), land use, soils (NRCS)

Customers:

- Planners
- Consultants
- Towns
- Counties

Current data/software:

- NT/Netware
- ArcInfo
- ArcView
- AutoCad (migrating away from this - most of the counties are also moving away from this)
- 1970 and 1980 10-county orthophoto
- Using WTM - HPGN 83/91 - can display statewide using this

WLIS Data/Information Needs:

- "Start with state agencies" - Highest need is for state agency data
- DOT data
  Road centerlines
  Road condition rating
  Travel demand forecasts
  Right of Way
  Interchanges
  Transportation corridors
  DOT highway planning
- Zoning

- Well heads
- Landfills
- Archaeological data
- Sewer service area

WLIS High-Level Functions:

- Promote a high level land use code structure standard
- Coordinate data access
- Generate standards for wide-spread use
- Transportation corridor planning
- Industrial sites - each RPC given Commerce grant for web site

Risks and Constraints:

- Standards
- Lack of standard land-use coding system (one adopted 25 years ago - LBCS - by planners, but not used; not adopted by any state agencies)
- Skeptical that fully functional planners tool kit is likely
- Liability - disclaimer will suffice
- Revenue stream replacement not an issue

Assumptions:

- Software vendors are moving to deal with differing projection systems, many on-the-fly

Issues:

- Too difficult to access data from the state - too much frustration. Left to go to the counties create it themselves. 10-day to 2-week turnaround in dealing with the state. State contacts often don't know what projection their data is in.
- DNR wetlands data - cost.
- Can't redistribute DNR wetlands data - copyrighted
- Can't redistribute Winnebago County data - copyrighted.

Miscellaneous:

- County-specific coordinate system designed by Nancy von Meyer - several counties share the same projection system
- FEMA and DNR data not very accurate

Date: 3/22/2000

Stakeholders: Noel Halvorsen, Brown County Land Information Officer

Business Goals:

Current Needs/Problems/Products:

- Parcel mapping 80% done (complete end of '01) - in cad and topographic formats; can access either through PLSS or tax parcel or address
- New county-wide Ortho project beginning
- Provides analysis for permit approval
- Contract management/presentation for education, policy development, decision-making

Customers: County board, departments

Current data/software: (* will provide)

- ArcInfo
- AutoCad
- MapObjects
- MapObjects IMS
- ArcCad
- Map 2000
- ArcView
- Visual Basic
- RPG
- COBOL (AS/400)
- Java
- Soils (USDA or NRCS)
- Eventually historical Ortho/aerial photos
- County tax assessment data
- School District boundaries
- Sanitary District boundaries
- Shoreline Floodplain zoning
- Streams (digital Ortho)
- Local street centerline*
- 911 emergency government*
- Regional cross-county economic development (zoning, assessment)*
- Hydrological*
- Terrain contours*
- Floodplain*
- Land use data*
- Land cover*
- Natural Resources management

WLIS Data/Information Needs:

- Commerce industrial site web project
- Master address file from USPS
- State agencies' data (DNR, DOT)
- Planners Tool Kit will be data out and in; will help in initial assessment and help identify conflicts early
- Economic development tool kit
- USGS - Digital elevation models

WLIS High-Level Functions:

- "Black box" capability - integrating layers from disparate sources

Risks and Constraints:

- Currency - Best :daily; Next : weekly; worst : monthly. Automatic update process desirable
- Updates are on a changeable (asynchronous) schedule - won't coincide
- Liability not and issue
- Lack of standards
- Revenue loss offset by productivity gain - positive economic impact

Assumptions:

- Software is getting better at converting coordinate systems on the fly
- Incentives will be found in Smart Growth requirements
- Commercial involvement and support (general contractors, realtors, utilities, etc.) will help support a WLIS
- **Issues:**
- DOR needs to exercise leadership in assessment practices

Miscellaneous:

- Full-time coordination responsibilities
- Discuss datum conversion in ESRI products with Mike Koutnik
- Contact Mark Walter, Bay - Lake RPC
- Brown County only county that does not do zoning - municipalities do, however

Date: 3/24/2000

Stakeholders: Todd Berry, Wisconsin Taxpayers Alliance (telephone conversation)

Business Goals: None discussed.

Current Needs/Problems/Products: None discussed.

Customers: None discussed.

Current data/software: None discussed.

WLIS Data/Information Needs: None discussed.

WLIS High-Level Functions:

- Be able to determine whether parcel owners are state residents or not
- Be able to determine whether parcel owners are residents of the taxing jurisdictions or not
- Be able to look at cross-jurisdictional taxing patterns

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous: None discussed.

Date: 3/28/2000

Stakeholders: Jim Gage, Environmental Remote Sensing Center (UW)

Business Goals:

- Application of basic research

Current Needs/Problems/Products:

- Remote sensing/Image processing (space, aircraft)
- Perform trend analysis integrating older data - agricultural uses
- Identifying gas-line leaks using vegetation anomalies
- Forestry changes
- Writing protocols to integrate data
- Agricultural land analysis

Customers:

- International Crane Foundation
- Alliant Energy

Current data/software:

- Statewide 30-meter resolution (WiscLand)

WLIS Data/Information Needs: None discussed.

WLIS High-Level Functions: None discussed.

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous:

- www.ersc.wisc.edu
- State Cartographer has WiscCon a coordinate transformation program - deals with both UTM and WTM, 1927 and 1983 datums and HARN

Date: 3/28/2000

Stakeholders: Bob Birmingham, State Historical Society of Wisconsin

Business Goals:

- Historic, archaeological and burial site inventory
- Number of federal and state laws require SHSW to monitor compliance

Current Needs/Problems/Products: None discussed.

Customers:

- Public, developers
- Identifying others as a part of the project

Current data/software:

- Paradox migrating to Oracle
- ArcInfo
- Sites on the National Register
- Burial sites
- Archaeological sites
- Historic buildings and neighborhoods

WLIS Data/Information Needs:

- Topographic
- Infrastructure
- Road ways (centerlines)
- Modern features
- Soils
- Parcel owners data

WLIS High-Level Functions:

- Flagging for burial and archaeological site vicinity
- Identify land owners in vicinity of historic feature for notification mailing
- Compliance tracking
- Cell tower siting - anything requiring Federal License must be reviewed by compliance officer

Risks and Constraints:

- Liability - not as much of an issue

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous:

- Undertaking a project (GeoAnalytics is consulting) to migrate 4 data bases from Paradox to Oracle and link to GIS software. Funded by a federal ICTEA grant, it is scheduled to be completed by the end of the year. Data is largely geocoded with address, UTM or PLSS. Project still in assessment phase.

- DNR, Dodge County takes their data. Burial and archaeological sites are identified at the 1/4-1/4 level (archaeological and burial data are exempt from Open Records requirements.)
- Reference: Larry Garvin - Black River Falls

Date: 3/29/2000

Stakeholders: Deirdre Gruendler, The Nature Conservancy

Business Goals:

- Environmental preservation, advocacy

Current Needs/Problems/Products:

- Contract with the UW for GIS services
- Heritage Data System (DNR) - sensitive data not available to the public
- Major project - Baraboo Hills (Sauk and Columbia Counties)
- Major project - Door County
- Major Project - Ashland
- Major Project - Mukwonago watershed
- Uses:
  - -Educational maps (work with GeoAnalytics)
  - -Modeling for advocacy (Highway 12, Septic)
  - -Internal planning - long term ecological monitoring
  - -Analysis of trends in ecological change

Customers:

- Nature Conservancy Board

Current data/software:

- ArcView
- ArcInfo
- Dbf, Access data files

WLIS Data/Information Needs:

- Parcel coverage for the state
- Natural Resources
- Streams
- Hydrologic layers
- Soils
- Vegetation cover

WLIS High-Level Functions:

- Parcel info and ownership info for board of directors - decision making on land purchase and sale decisions
- Technical guidance
  - -Projection parameters - how to move from one projection system to the other
  - -How to deal with state and county coordinate systems - how to move between them, transfer data from one to the other

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues:

- USGS web site - quality of data

Miscellaneous: None discussed.

Date: 3/30/2000

Stakeholders: Steve Ventura, Land Information and Computer Graphics Facility (UW)

Business Goals: None discussed.

Current Needs/Problems/Products: None discussed.

Customers: None discussed.

Current data/software: None discussed.

WLIS Data/Information Needs: None discussed.

WLIS High-Level Functions:

- Assisting cities, villages and towns in meeting Smart Growth requirements
- Promote standardized data model - a minimum set of data elements
- Responsive to changing needs over time - now, there is a focus on the Smart Growth initiative - should serve planners, county boards, mayors, etc.
- Can evolve quickly

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues:

- Future focus on counties' efforts - maintenance of data
- Problem with underlying data models, especially attribute structures

Miscellaneous:

- 1978 Larson Report on the cost of maintaining land records heightened awareness of the importance of land records modernization in Wisconsin
- 1980s - Pilot projects with a resource management focus - USDA funding played a significant role
- Counties required to develop a soil erosion plan at one point
- Look at MIT orthobrowser
- Contacts:
  - Environmental Management Data Center in Onalaska
  - Applied Population Lab (UW) - Roger Hammer

Date: 3/30/2000

Stakeholders: Ned Paschke, Madison Metropolitan Sewerage District
Jim Post, Madison Metropolitan Sewerage District

Business Goals:

Current Needs/Problems/Products:

- Interceptor connection charges data - sensitive data
- Plans and specifications to DNR for review
- MetroGro program mapping
- Facilities mapping
  - operations and maintenance
  - management
  - produce maps for educational, public and design consulting purposes
- Response to operational problems

Customers: None discussed.

Current data/software:

- Microstation
- GeoMedia
- MGE (Integraph)
- ArcView
- System Infrastructure
  -pipelines
  -parcels, property lines
  -easements
  -contours - topography - drainage basins
  -orthophotos
  -Map of the collector system

WLIS Data/Information Needs:

- Environmental corridors (Dane County RPC)
- Soils (especially outside Dane County)
- Well testing results (cross-county - re: MetroGro program)
- Hydrologic layer
- DNR data
- EPA data
- Streets
- Right of Way

WLIS High-Level Functions:

- Make Interceptor connection charge status and tracking available to mortgage and title companies
- Planning tool for projects for new construction and infrastructure maintenance

Risks and Constraints:

- Liability - some concern, but disclaimer will suffice

Assumptions:

- Everything is public information - no thought about restricting or limiting release

Issues: None discussed.

Miscellaneous:

- Close cooperation with the City of Madison
- ASI (formerly Intelligraphics of Waukesha) is the sub-contractor on current project; prime is PlanGraphics
- Can provide MMSD boundaries for developers

Date: 3/30/2000

Stakeholders: Sharon Persich, Planning, Madison Metro Transit

Tim

Business Goals:

- Public transportation

Current Needs/Problems/Products:

- Transportation, route planning
- Eventually, ridership analysis - manual sampling currently

Customers:

- Bus-riding public
- Businesses and others dependent on public access to bus transportation (e.g., employers, health care facilities)

Current data/software:

- ArcView
- ArcInfo
- Trapeze - transit specialty product - facilitates creating bus schedules, but not great GIS
- Bus routes - bus stops mapped

WLIS Data/Information Needs:

- Street centerline
- Parcel (ownership, zoning)
- Census - socioeconomic data (e.g., size of household, auto ownership, income level)
- Building inspection
- Population density
- Transportation infrastructure:
  - speed limits
  - traffic control elements - signals, signs
  - 1-way streets
  - street construction and construction detours
- Slopes
- Stormwater
- City orthophotography (sidewalks, street lanes, bus cutouts, etc.)
- School district boundaries (they have a contract for Madison Metro School District middle and high school bus routes)
- Medical and health care facilities
- Social service agencies - youth and senior citizen, especially
- SIC-coded data and size for employers
- Parking inventory - city, county and university
- University physical plant

WLIS High-Level Functions:

- Cross-jurisdictional access (e.g., cities of Middleton and Madison, county)

Risks and Constraints:

- Liability - not an issue

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous:

- Cooperation - Bill Lanier, Madison City Planning
- Could or would like to provide:
  - Routes with wheelchair access, shelter, pay phones, etc.
  - Ridership figures by route
  - Route numbers, schedule, days of week

Date: 3/31/2000

Stakeholders: Jerry Deschane, Deputy Exec. Vice-President, Wisc. Builders Association

Business Goals: None discussed.

Current Needs/Problems/Products: None discussed.

Customers:

- Builders, developers

Current data/software:

- None

WLIS Data/Information Needs:

- Anything having to do with the ground -
- Zoning
- Hazards, contamination
- Underground storage tanks
- Comprehensive plans
- School district boundaries
- Wetlands
- Soils (**significant issue**)
- Endangered species
- Floodplains
- Slopes - topographic
- Well - heads

WLIS High-Level Functions:

- Layperson usability
- Available links
- Population density analysis

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues:

- Legitimacy - Data/information used should be those that are accepted by all jurisdictions, agencies. For example, there are three different sources of wetlands data: DNR, the County and US Fish and Wildlife.

Miscellaneous: None discussed.

Date: 4/3/2000

Stakeholders: Walter Peterson, State Capitol Police (telephone conversation)

Business Goals: None discussed.

Current Needs/Problems/Products:

- Squad car GPS location using mapping interface

Customers: None discussed.

Current data/software: None discussed.

WLIS Data/Information Needs:

- Orthrophotography for SWAT situation support and planning

WLIS High-Level Functions: None discussed.

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous: None discussed.

Date: 4/3/2000

Stakeholders: Wisconsin Realtors Association

Bill Malkasian, Executive Vice President

Peter Shuttleworth, Eastern MLS

Kevin King, South Central MLS

Margery Chapman, North Eastern MLS

Business Goals:

- Unexplored - foreshortened interview

Current Needs/Problems/Products:

- Mapping capability

Customers:

- Realtors, home buyers

Current data/software:

- Can provide historical (~10 years) of tax records (1.2 million)
- Can provide assessor records

WLIS Data/Information Needs:

- Tax records
- School District boundaries
- Zoning
- Hazardous sites
- Local government data
- Floodplain

WLIS High-Level Functions:

- Access via Address and/or parcel id
- Mapping

Risks and Constraints:

- Unexplored - foreshortened interview

Assumptions:

- Skeptical of prospect of WLIS success due to past track record and awareness of factional nature of Wisconsin Land Information community. Each county setting up its own web site perceived as reinforcement of this local focus, further making integration unlikely.

Issues:

- Three different sources of flood plain data.
- Residential data needs to be current - within 30 days
- Lack of cooperation with State agencies in proposed partnering arrangements
- Frustration with the Land Information Program among their membership - after over $40 million nothing to show for it from their perspective. Perception that academics and counties have appropriated/taken over the program and are neither sharing with them or each other.

- Concern over being asked to pay for data and other products being produced with Land Information Program funds.

Miscellaneous:

- Private information company (Wiredata in Milwaukee) developing services for realtors.
- www.nearmyhome.com - public website for homeowners

Date: 4/4/2000

Stakeholders: Rob Gottschalk, Vandewalle and Associates

Business Goals: Planning consulting services

Current Needs/Problems/Products:

- Comprehensive land use planning
- Zoning ordinance planning
- Neighborhood planning
- Land use inventory - Lincoln County
- Kickapoo Valley (spans three counties)

Customers:

- Small to mid-size communities - hundreds of municipalities
- Counties

Current data/software:

- Various software platforms
- Wetlands, flood plain (issue: confidence in quality of data)

WLIS Data/Information Needs:

- Parcel information
- Wetlands (DNR)
- Steep slopes (USGS - must be manipulated)
- Soil types (USGS - 30-year old county soil survey data)
- Flood plain (FEMA)
- Orthophotography
- Environmental corridors
- Current municipal boundaries (Boundary Review)
- Urban service areas (DNR)
- Waterways

WLIS High-Level Functions:

- Comparison capability
- Cross-jurisdictional

Risks and Constraints:

- Compatibility
- Data maintenance - accurate and up to date
- Legitimacy of data
- Precision of scale
- Liability in reference to their data is a significant concern

Assumptions:

- Data transfer time could be significant - not an issue
- Nevertheless, may still have to create a fair amount of data

- The importance of the currency and accuracy of the data is dependent on the scale of the project

Issues:

- Takes as much as 3 weeks to get data from DNR - first you have to locate the right person; metadata is OK
- Used to take 3-4 weeks to get orthophoto data
- "Buying data from a public agency is troubling" - paying a service or handling fee is not an issue

Miscellaneous:

- Legally blighted areas - subjective interpretation
- WiscLand is an excellent resource for land cover
- Follow up with 1000 Friends

Date: 4/6/2000

Stakeholders: Don Harrier, Demographics Service Center, DOA

Business Goals:

Current Needs/Problems/Products:

- Statewide population projections (1993 and 1998)
- Year-ahead projections for Dept of Revenue
- Statewide population estimates (annually)

Customers:

- Dept of Revenue
- All cities, towns and villages

Current data/software: None discussed.

WLIS Data/Information Needs:

- Unemployment data
- Infrastructure
- Land cover
- Population projections - age, race, sex
- Census data
- Agricultural census (DATCP)
- School enrollments
- Right of way
- Parcels
- Zoning
- Environmental corridors
- Soils
- Slopes (topography)
- Socioeconomic data
- Unemployment rates
- Poverty rates

WLIS High-Level Functions: None discussed.

Risks and Constraints:

- Legitimacy of data - one accepted source (similar data available from DSC, Census)

Assumptions:

- Reference: August Cibarich, DWD on labor market, unemployment data
- Interpretation of the data will be an increasingly key role

Issues: None discussed.

Miscellaneous:

- Libraries, RPCs are affiliates for census data (Tiger files)

Date: 4/7/2000

Stakeholders: Tim Potter, Madison Metropolitan School District

Business Goals: None discussed.

Current Needs/Problems/Products:

- District Boundaries
- Geocoding students home addresses
- Boundary planning
- School construction planning
- Enrollment projections
- Correction and confirmation of parcel school tax assessment

Customers:

- School Board
- School Board attorney
- District real estate manager
- Three adjoining school districts
- Madison Metro Transit

Current data/software:

- ArcView

WLIS Data/Information Needs:

- Parcels
- Assessments
- Annexation data
- Developable property
- Centerline
- Slopes
- Wetlands
- Flood plain
- Address ranges

WLIS High-Level Functions: None discussed.

Risks and Constraints:

- Liability - comfortable with a disclaimer
- Privacy - concern with release of some student information
- Difference in parcel schemes

Assumptions:

- Still unable to get seamless map of cross-jurisdiction

Issues:

- City and county use different projection systems, different data bases - e.g., acres vs. square feet
- Coverage's with school district boundaries changes every July 1

Miscellaneous:

- Reference: USGS - Raymaker

Date: 4/7/2000

Stakeholders: Mike Bohn, Dept. of Natural Resources

Business Goals:

- Data management and development - project focus

Current Needs/Problems/Products: None discussed.

Customers:

- DNR program areas - land, water, wildlife
- Partner - The Nature Conservancy
- Partner - Milwaukee Public Museum
- Partner - UW - Stevens Point
- Partner - Rocky Mountain Elk Foundation
- Partner - Tribes
- Partner - UW Herbarium

Current data/software:

- Extensive data holdings
- DNR view (generic ArcView application for District Offices)
- ATRI (Aquatic and Terrestrial Resources Inventory) - application under development, available currently only to DNR
- All data in WTM 83/91
- Use of Mr Sid compression
- ESRI products

WLIS Data/Information Needs:

- Parcel data
- Orthophotography
- Zoning
- Local roads

WLIS High-Level Functions:

- Cookbook - toolkit for conversion between software, projection systems, etc.
- Provide/view DNR-managed lands
- Solid waste and Hazardous waste - produce letters of notice to land owners
- Water quality, wells - identify owners, neighbors
- CSF - Public access to well and water data
- Map interface

Risks and Constraints: None discussed.

Assumptions: None discussed.

Issues: None discussed.

Miscellaneous:

- Wetlands mapping is in another organization - Water Division - operates on a cost-recovery basis; fixed charge to municipalities. Contact Lois Stoerzer
- District offices do not create data

Date: 4/11/2000

Stakeholders: **Dave Schmidt, Winnebago County Planning and Zoning Department**
Matt Tucker, Oshkosh City Planning Department
Jerry Bougie, Winnebago County Planning Office
Bob Braun, Winnebago County Zoning Office
Larry Ellenbecker, Winnebago County, GIS Systems and Evaluation

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Business Goals: None discussed.

Current Needs/Problems/Products:

- WINGS project and site - 20 layers

Customers:

- Appraisers
- Surveyors

Current data/software:

- GenaMap
- ESRI products (ArcInfo, ArcView)
- AutoCad (migrating away from)
- zoning
- census tracts
- lot sizes
- flood plain
- assessment
- area
- age of buildings
- activity (e.g., commercial, educational, etc.

WLIS Data/Information Needs:

- As much data from attribute data bases that can be mapped as is possible.
- Ordinances from other jurisdiction (2X)
- Census
- Sub-division ordinances for other jurisdictions
- DOT transportation corridors
- Data from adjacent jurisdictions
- DOT - "...haven't had good luck...
- DNR - Elevations, flood plain
- State Cartographers Office
- Roads
- Zoning
- Parcels
- Federal data - Soils (NRCS, ASC) - photos

- Utilities - e.g., street lights (billing analysis) - available data
- PSC data - e.g., A&R Pipeline
- RPC data
- Dept of Revenue data
- USGS - Satellite data
- School data
- Emergency services - location of fire stations, etc.
- Hazardous materials data
- Historical data
- Tourism - virtual triptik - National Assn. of Humanities or NEH site

WLIS High-Level Functions:

- Telecommunications cell tower site selection
- Links to land-related web sites
- Road construction notification across county line
- Annexation notification
- Technical information for GIS data and info - techniques for GIS practitioners

Risks and Constraints:

- Maintenance of data - currency
- Liability - not a great concern - comfortable with a disclaimer - no difference from providing a printed product
- Revenue stream displacement - do not foresee a significant drop in income - presume some cost recovery mechanism
- State-bordering counties and adjacent jurisdiction matching
- Sensitive data - lead-based paint, Sheriff's applications

Assumptions:

- Planners Toolkit - skeptical that it can be developed to address all comprehensive planning needs

Issues:

- "Would love to have State data without making 17 phone calls."
- Need to have incentives
- Need to impose minimum of preparation activity to contribute data

Miscellaneous:

- Preference to maintain data locally for web delivery, but not web site itself; interest in migrating from existing county web to this model
- RPCs can act as intermediaries to launch

Date: 4/11/2000

Stakeholders: George L. Dearborn, Jr., Menasha Town Community Development
Jeffrey Smith, Menasha Town Community Development

Business Goals:

- ❑ Serve community development interests

Current Needs/Problems/Products:

- ❑ Aerial photos
- ❑ Hunting maps
- ❑ Recreational areas
- ❑ Topographic maps
- ❑ Future land use
- ❑ Stormwater
- ❑ Environmental maps
- ❑ Soil - Future
- ❑ Police, Fire incident mapping - Future
- ❑ Hazardous material - Future

Customers:

- ❑ Public
- ❑ Real estate agents
- ❑ Developers

Current data/software:

- ❑ ArcView
- ❑ ArcInfo
- ❑ Winnebago County data plus their own
- ❑ Public web mapping application services
- ❑ Water and sewer lines
- ❑ Parcel
- ❑ Zoning
- ❑ Assessments
- ❑ Navigable streams
- ❑ Flood plain

WLIS Data/Information Needs:

- ❑ Population
- ❑ Stormwater
- ❑ 3-D
- ❑ Zoning
- ❑ Census
- ❑ Housing stock

- Regional data
- Demographic
- Vacant buildings
- State base map with minimal information
- State wide well head locations

WLIS High-Level Functions:

- Comparison capability
- Trend analysis capability
- Availability of industrial and commercial land
- Telecommunications cell tower siting
- Serve economic development and promotion state wide
- Search for property of a certain range of acreage

Risks and Constraints:

- Revenue stream displacement not an issue - already deployed to the web
- Liability - a disclaimer will suffice - not that concerned
- Bandwidth
- Connectivity
- Up time
- Quality of data
- Trying to do too much, too soon

Assumptions: None discussed.

Issues:

- Resale of public data by private concerns
- Misuse of data

Miscellaneous:

- Experience with putting assessment data on the web diametrically opposite that of Dane County; overwhelming positive public reaction
- Ref: Article in May issue of APA Journal

Date: 4/19/2000

Stakeholders: Richard Stadelman, Wisconsin Towns Association

Business Goals:

Current Needs/Problems/Products:

- Car-Deer crashes - issue relates to maintenance of roads and safety management

Customers:

- Towns

Current data/software:

- 600 of 1265 towns have computers; less have web access

WLIS Data/Information Needs:

- Road conditions
- Ordinances from other jurisdictions
- Plans from other jurisdictions
- State wide coverage for utility lines, cable, fiberoptic, gas, etc.

WLIS High-Level Functions:

- Management of agricultural interests
- Management/mitigation of conflict over land issues

Risks and Constraints:

- Liability - Disclaimer will suffice

Assumptions:

- Has to be bottom up support for real acceptance

Issues:

- Accountability
- Currency of plans, ordinances
- Need: training for planning activities

Miscellaneous:

- Working closely with and supports DOT Local Roads Project (WISLR)
- Frustration for 15 years - single-entry accounting system in conjunction with DOR - no longer being supported by DOR (previous contact Darrrell Franke)
- Smart Growth requirements will probably lead to towns contracting for planning services cooperatively
- Contact: Brian Ohm - education on planning
- Contact: Jim Schneider - resource agents in each county

Date: 5/2/2000

Stakeholders: **Nicholas Neher, Administrator, Div. Of Agricultural Resource Mgt., DATCP**
Paul Benjamin, Div. Of Agricultural Resource Mgt., DATCP
James P. Vanden Brook, Div. Of Agricultural Resource Mgt., DATCP
Cody Cook, Div. Of Agricultural Resource Mgt., DATCP
Nick Clemens, Div. Of Agricultural Resource Mgt., DATCP
Kent Peña, US Dept. of Ag. - Natural Resources Conservation Service
Ron Tauchen, US Dept. of Ag. - Wisconsin Agricultural Statistics Service

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Business Goals: None discussed.

Current Needs/Problems/Products: None discussed.

Customers: None discussed.

Current data/software:

- ArcInfo
- ArcView
- Atrazine layers - provided 3-4 years ago to WiscLinc, currently on DATCP web site
- Groundwater data
- Soils (NRCS)
- Gypsy moth spray blocks

WLIS Data/Information Needs:

- Orthophotos
- DATCP can/would like to provide:
  - Natural resource layers
  - Agricultural setbacks from lakes and streams
  - Size of farms (in acres and no of livestock)
  - Groundwater data
  - Soils (NRCS)
  - Gypsy moth spray blocks
  - Drainage districts (180+) - wetland drainage - affects 30 counties
  - Phosphorous runoff
  - Statewide seamless parcel layer
  - Orchard spray locations (spray contains lead arsenate)
  - Farmland preservation program - plans, maps, exclusive agricultural zoning districts
- Geology
- Hydrology

WLIS High-Level Functions:

- Livestock disease analysis (confidentiality issue)
- Location of large livestock, poultry operation for siting new operations - (requirement for manure disposal plans)
- Local ordinances on agricultural shoreline zoning
- Local ordinances on livestock manure storage

Risks and Constraints:

- Copyright - experienced difficulty with securing release from 6 of about 30 counties in transfer of orthophoto coverage from DNR; USGS has entered into Innovative Partnership agreements with several counties to insure that new soils data is in the public domain
- Misinterpretation/misuse of soils data (NRCS) - soils data are complex
- Quality of the data - updating soils data (NRCS) with present resources is projected out decades

Assumptions: None discussed.

Issues:

- Scale of data - current orthophoto projects involve precision to 6 inch pixels - USGS/USDA use 1 meter

Miscellaneous:

- DATCP has more tabular than spatial data to offer to WLIS
- DNR had secured orthophoto coverage's from counties, converted them from county coordinate systems to WTM NAD 83/91
- Once atrazine zones were posted on the web, calls to DATCP regarding that dropped significantly; less dramatic experience with publication on the web of Gypsy moth spray blocks
- Counties required to provide land and water use plans to DATCP
- Perrier siting issue could have benefited from availability of data on a WLIS

Appendix J - Requirements Inventory

From the Technical Working Group's Final Report

1. Data and systems will be accessible to everyone through the Internet. Data will be updated at appropriate intervals. Large-scale local data, multi-jurisdictional data, and statewide data will be integrated within a distributed system. Applications will be developed to interface with cross-walk tables with standardized data content and structure.
2. Web based servers at state, regional, and local levels will be used to pull together data. The WLIS will provide appropriate guidance based on the knowledge level of the user. The WLIS will have the ability to print Land Information System (LIS) maps at access points.
3. A search engine will be designed to identify what is in WLIS with pointers to internal and external data sources. A common framework will be created for all applications at the local, regional, and state level.
4. The WLIS will support integrated and aggregated views of locally produced data, as needed to support regional and statewide analysis, planning and decision-making.
5. The WLIS will include the Web-based delivery of commonly used land information via a distributed repository and from local land information systems linked through an indexing and retrieval system.
6. The WLIS will lead in the development of appropriate cross-walk standards for land information and related data and development of strategies to encourage the use of the WLIS, including local aids and incentives.
7. The WLIS will support land use planning facilitated by data query, analysis, and display tools.
8. Application tools will be developed to more effectively develop, monitor, communicate, and identify conflicts in land use plans and support land use decision-making at the local level.
9. Tools and applications will be provided to enable basic functions, for example, to readily link or summarize standard data tables, or to enable conversion among commonly-used data formats, datums, map projections, and coordinate systems.
10. Enhancing the land-related data creation, management, and dissemination functions of public agencies.
11. The WLIS should maximize the value of data collected by agencies for statutory purposes and to allow it to be used for land use planning. The system should provide information compiled using this data such as transformed data, studies, and research reports.
12. The WLIS will include status tracking of data and projects and provide reporting capabilities.

From the Web-based Requirements Survey

13. Grant management support.
14. Administrative rules, which govern the development of public and private land
15. Provide a library of spatial data that each community has and a pathway to that data that is easily accessed. This system would be used for land management purposes as well as coordinating planning functions among and within various jurisdictions as many planning issues transend municipal boundaries.

16. Provide a clearinghouse function for access to land information data statewide. This would be a first stop access point for users of the information to obtain links to the distributed data servers.
17. Provide standards for storage and presentation of the data. The standards would apply to data coordinates (datum, units, projection, etc.), type (shapefile, coverage, drawing, geodatabase, etc.), description(naming, data item description, land use coding, etc.). These standards should be voluntary or applied in exchange for incentives such as financial or technical assistance.
18. Provide standard land planning applications that users could serve with local data. For example: buffering of environmentally sensitive areas, transportation imapct analysis, etc.
19. A single web address for all public and private entities to go to begin their search for land planning related information. This information could be actual data, metadata, administrative rules, statutues, or more general "how to do planning" systems. This is the first place that you go for assistance. From here you may be pointed to many other sites.
20. Infrastructure development within local units of government for data development, sharing and transfer among internal and external users. This specifically relates to smaller, rural resource restricted units of government; the "feeder streams" of a state-wide "river" of information. The main requirement is for hardware: DSL's, routers, wireless communication and the peripherals necessary to connect desktop, public kiosk and main-frame computers. A secondary requirement is resources to maintain such systems. This can be accomplished either through grants to counties; or through a state-wide, Madison-based-and-staffed effort.
21. The recomendations of the TWG are positive and workable. Further clarification is neeeded regarding the role of the OLIS. The OLIS should be involved in the area of system design and implementation but only in broad policy sense. The same holds for database design and structure. This could come in the form of required features or functionality. The actual detail of a db is probably best left to the local level for resolution.The same holds for data creation and management. The OLIS should notregard data creation as a major function except for setting a minimum standard (example: metadata). On user viewing, analysis, querying and downloading the OLIS would best serve the state by acting as a conduit or facilitator to county governments who are the repositories and the main information providers. For example, the OLIS could maintain listing of each county's available information sets,a brief outline of the said data sets metadata and a link to the county's web site housing the information. Additonally the OLIS could publish a set of minimum standards that a county must meet for any web site dealing with land information.
22. Digital Orthophotography, Current Corporate Limits, Topography Information, Benchmark data (elevation), Section Corners, Hydrography, Roads, Parcels
23. Builds on local investments in land information, land information systems, public access systems and IT infrastructure. Accomodates local government information policies and need for variation in policies caused by local consitituent priorities and desires. Keep WLIS flexible and extensible - begin at a modest level (demonstrate early success) and grow over time. Don't try to do all, be all right from the start. The Dane County parcel search page is the most visited county web page. The attribute data is invaluable to local citizens and businesses. They need this before they need maps. Grow WLIS in stages. Deliver appropriate technology and recognize the limitations in local government technology. Most of our towns are challenged by the use of ArcExplorer. They shouldn't be required to purchase or use ArcView until they are ready or have a need. Some of our towns don't even have a computer. Most local governments are still in a CAD environment - don't build this to be GIS-centric; especially don't make it ESRI-centric. Follow the TWG report and

involve the community at every step in the process. A project that fails to closely involve its users and stakeholders will miss the mark, lose credibility, and not be useful.

From Personal Contact with the Stakeholder Community

24. Continual promotion of standards to facilitate building a statewide system; establish common naming conventions; promote standardized data models.
25. Mechanism for data, metadata exchange
26. "Node on the network" – focus on mechanics, hardware, network.
27. Encyclopedia of Wisconsin land information – one stop master web site with links
28. Principal support for Smart Growth – Planner's Tool Box
29. Automatic translation mechanisms
30. Wizard-driven functions (New Berlin, Brown Co.)
31. Access to other jurisdictions' ordinances, plans for comparison
32. Master collection of links to land information resources on the Web
33. Planners tool – application to support planning activities of all types
34. Cross-jurisdictional mapping
35. Digital Orthophoto images for tactical law enforcement support
36. Node operator's tool kit
37. Technical guidance – i.e., steps to convert data from one projection system to another
38. Siting telecommunications towers (distance from airports, elevation, line of sight)
39. Utility service routing
40. Potential commercial site identification (vacant lots, utility service, schools, public transit, etc.)
41. Intelligent mapping (e.g., point links to permitting requirements, etc.)
42. Transportation corridor planning
43. Industrial site location
44. Economic development tool kit
45. Gazetteer – Search by community name or location on a map
46. Power user interface
47. Name & addresses within a specified radius or selected segments of a street or street(s)

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Appendix K - WLIS Software Functions Development Model

The figure below depicts the model used by the Team for identifying the software functions of WLIS, along with the supporting structure – hardware, software, people and organization – necessary to carry out those functions. It is based on the premise that a number of functions are "core" WLIS functions and other functions are primarily the responsibility of data producers or data users. The core of WLIS provides a number of services that currently impede easy transfer of data from creators to users in useable form. As shown by shadings in the figure, some functions overlap between WLIS and users, and between WLIS and data producers. Depending on the final configuration, these are functions that could be part of what WLIS supports.

WLIS Functions and Supporting Components

	Producer functions			User functions	
			WLIS functions		
	data creation	Data management	Query processing, data searching, indexing, conversion, analysis, standards, etc.	Dissemination: data, maps, information products, interfaces	system use
Hardware	digitizers, scanners, GPS, etc.	Database server	WLIS server	map server, internet infrastructure	personal computer
Software	COGO, GIS, image processing, etc.	Database software, e.g., Oracle, SDE	WLIS "middleware", .xml, java, etc.	Internet map server, ftp tools, etc.	browser
People	Agencies and organizations domain staff	Agency and "WLIS-node" staff	WLIS core technical staff	WLIS support staff; domain-specific application developers	WLIS users
Organizations	public agencies, private organizations	Participating WLIS agencies and organizations	WLIS "lead agency"	Participating agencies and organizations; WLIS "lead agency"	WLIS users

Specific functions involved in locating data include query processing, searching, and indexing. Some of these functions are included in the current clearinghouse site, WISCLINC*. To the extent possible, WLIS should leverage and extend what has already been accomplished in WISCLINC.

* http://badger.state.wi.us/agencies/wlib/sco/pages/index.html

Major functions necessary for conversion include software format conversion, semantic conversion, “cross-walk” tables and functions, datum and projection changes, and standards compliance checking.

Software functions to disseminate data may be simple file transfers using file transfer protocol or hypertext markup language marked records. This is based on the assumption that a user’s system has software for display and analysis, such as GIS software, of data now in WLIS formats. WLIS will also provide mapping and other data display functions, only a web browser might be needed.

Appendix L - Wisconsin Land Information Program Custodial Arrangements for Data-related Foundational Elements

May 1999

Prepared by the Wisconsin Department of Transportation for the Wisconsin Land Information Board

Concept of Foundational Element Custodianship

Custodians are responsible for the management of data which represent foundational elements, keeping the data current, reliable and accessible. Custodians may also be responsible for the management and monitoring of physical objects, be it through mandate, statutes, federal laws or acts, missions or appointments.

Custodians designated by the Wisconsin Land Information Board act as stewards and champions for a Wisconsin Land Information Program (WLIP) Foundational Element, or a subset of a Foundational Element. Custodial responsibilities may be shared among organizations, for example, by region, level of government, or function. In this case, it is the responsibility of the *Primary* WLIB Custodian to coordinate the activities of these related custodians as they relate to the Wisconsin Land Information Program.

Custodial Responsibilities

These responsibilities include:

1. Provide guidance and subject area expertise to the Wisconsin Land Information Board as relates to the Foundational Element;

2. Data collection, management, and maintenance activities (e.g.., ongoing database maintenance and updates; assuring data consistency, completeness, and integrity; metadata maintenance);

3. Data distribution (directly or through data brokers, by means of a standardized distribution policy and procedure);

4. Technical support and assistance (e.g., responding to inquiries from data consumers or prospective users regarding access, data characteristics, limitations, legal considerations, and appropriate use of the data);

5. Training and education;

6. Public outreach and stakeholder and interagency relations;

7. Standards and policy development;

8. Research and development.

Custodial Qualifications

The successful exercise of custodial responsibilities requires the following minimum characteristics in a Foundational Element Custodian:

1. Adequate financial and staff resources to support an ongoing commitment to develop and maintain the data and any related physical object;

2. Staff with the professional expertise and qualifications to carry out custodial responsibilities.

Relationship to Data and Other Foundational Element Roles

Stakeholders are those parties who have a vested interest in the development, management and maintenance of the Foundational Element. Stakeholders are essential participants in policy and legislation development, program planning and management, and compliance and monitoring activities.

Data Producers create data based on known business requirements. These requirements are obtained from Data Custodians. Data Producers are responsible for creating the initial metadata documentation describing the content, structure, quality, and lineage of the data; such metadata is subsequently maintained by the Data Custodian.

Data Custodians develop business requirements based on the needs of Data Consumers.

Data Consumers use data for specific purposes within a particular business context. The consumer is responsible for determining whether a data set is appropriate for its intended use.

Data Brokers obtain data sets from Data Custodians for distribution to Data Consumers. Data Brokers are responsible for providing information about or access to data and metadata, processing data requests and charges, and determining and providing product definition and data distribution formats. Data Brokers act as the conduit between Data Custodians and Data Consumers. Data brokering activities are an integral part of a data clearinghouse.

Scope of Custodial Authority

A Foundational Element Custodian does not derive any additional authority beyond those authorities granted to the Wisconsin Land Information Board or its statutory responsibilities for the Wisconsin Land Information Program.

Custodial Authority

Foundational Element Custodians, in consultation with Stakeholders and Data Consumers, are generally empowered to:

1. Make final decisions concerning the development, management and maintenance of the physical objects;.
2. Make final decisions concerning the development, management and maintenance of the data;
3. Determine the schedule for data maintenance (updating);
4. Determine the frequency of data updates and develop procedures for maintaining currency;
5. Determine the required policies and procedures for assuring data integrity.

Foundational Element Definition

WLIP Custodial Arrangements for Foundational Elements must include a definition of the Foundational Element. The definition should include a description of the Foundational Element under stewardship and the scope or extent of responsibilities.

Stakeholders

WLIP Custodial Arrangements for Foundational Elements must identify key stakeholders who have vested business or professional interests in the development and maintenance of the Foundational

Element, and who should work with the Custodian to carry out responsibilities for the Foundational Element.

References

Federal Geographic Data Committee, *Framework Introduction and Guide*, 1997.

Ries, Tom and David Fletcher, *Dismantling Communication Barriers to Spatial Data Access*, Geographic Information Systems for Transportation (GIS-T) Symposium Proceedings, 1994.

Wisconsin Department of Natural Resources, *Custodial Responsibilities for Automated Geographic Data Layers*, July 1995.

Wisconsin Department of Transportation, WisDOT Environmental Data Base Building Project, *Data Roles*, September 1993.

Wisconsin Interagency Datasharing Workgroup, meetings and discussions on data roles, 1993-1995.

Wisconsin Land Information Board, *Modernizing Wisconsin's Land Records Through Decentralized and Integrated Land Information Systems*, 1993.

Wisconsin Land Information Board, *Instructions for State Agency Integration Plans*, Appendix A, Custodial Responsibilities for Automated Geographic Data Themes, 1994.

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Appendix M – 1998 Wisconsin Land Information Program Assessment Survey

1998 Wisconsin Land Information Program Assessment Survey

SUMMARY INFORMATION

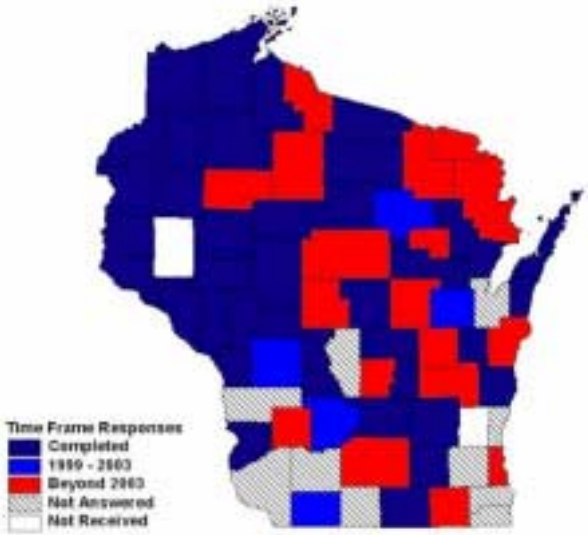
Number of Counties

	Already Complete		If No, Estimated Completion Time					
Activity	**Yes**	**No**	**1999**	**2000**	**2001**	**2002**	**2003**	**Beyond 2003**
Densification of horizontal control from (HARN)	**37**	**27**	**3**	**1**			**1**	**18**
Densification of vertical control network	**11**	**54**	**1**	**1**	**2**		**1**	**40**
Remonumentation of PLSS section corners	**10**	**57**	**1**	**2**	**4**	**6**	**4**	**44**
Coordinate values on PLSS section corners	**10**	**56**	**1**	**3**	**4**	**3**	**4**	**48**
Digital base map in vector format	**30**	**37**	**4**	**7**	**2**	**3**	**5**	**15**
Image bases (digital orthophotography)	**40**	**29**	**5**	**15**	**2**	**1**	**2**	**11**
Vector elevation data (contours/spot elevations)	**15**	**51**	**2**	**7**	**5**	**2**	**2**	**26**
Raster elevation data (terrain matrix, DEM)	**22**	**43**	**2**	**8**	**3**		**1**	**24**
Parcels	**13**	**57**	**4**	**15**	**5**	**3**	**7**	**22**

Zoning	**15**	**54**	**6**	**9**	**6**	**5**	**6**	**18**
Soils	**27**	**43**	**7**	**9**	**4**	**3**	**7**	**17**
Wetlands	**38**	**30**	**1**	**6**	**2**	**2**	**4**	**15**
Administrative boundaries	**30**	**39**		**13**	**2**	**3**	**4**	**16**
Street centerlines	**34**	**34**	**3**	**7**	**7**	**2**	**3**	**12**
Street addresses	**20**	**49**	**4**	**10**	**10**	**6**	**6**	**14**
Land use mapping	**13**	**54**	**1**	**6**	**9**	**6**	**9**	**21**
Natural resources	**11**	**57**		**3**	**6**	**5**	**6**	**30**
Infrastructure and facilities management	**7**	**58**	**2**	**2**	**1**	**2**	**6**	**39**

The following pages graphically depict the completion status of the above summarized WLIP data or activities. (http://www.lic.wisc.edu/wlip2/)

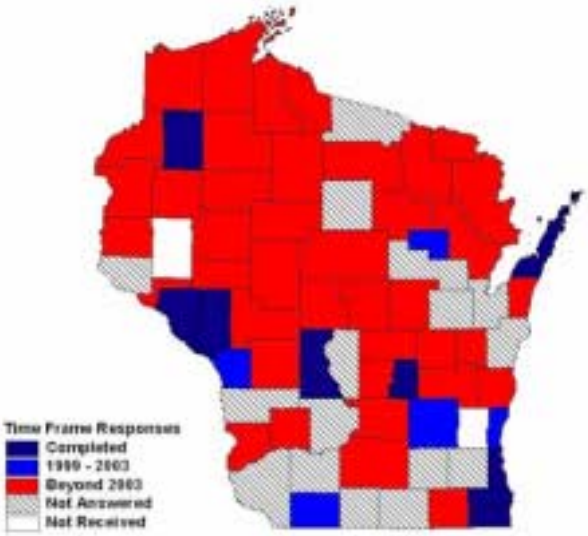
Completion Time for Densification of Horizontal Control from HARN



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF), University of Wisconsin - Madison, 1298

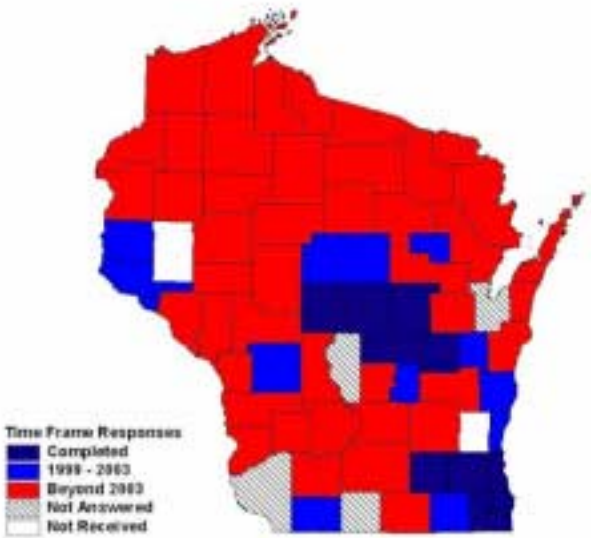
Completion Time for Densification of Vertical Control Network



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF), University of Wisconsin - Madison, 1298

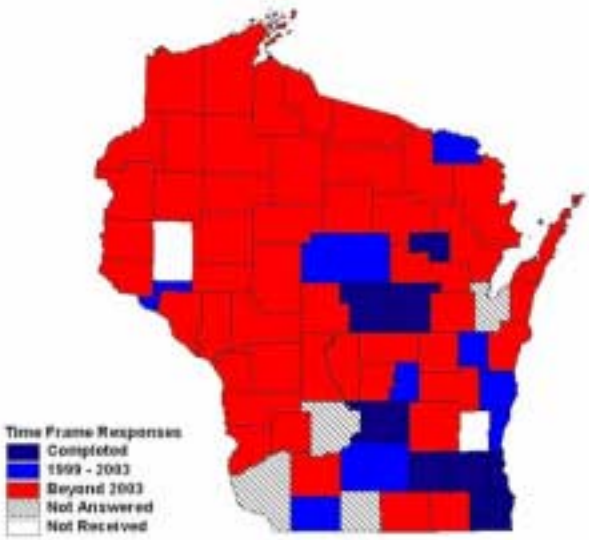
Completion Time for Remonumentation of PLSS Section Corners



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF), University of Wisconsin - Madison, 1298

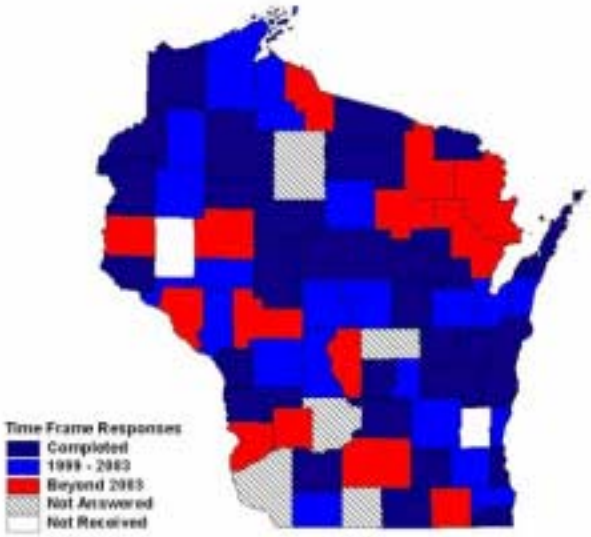
Completion Time for Coordinate Values on PLSS Section Corners



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF), University of Wisconsin - Madison, 1298

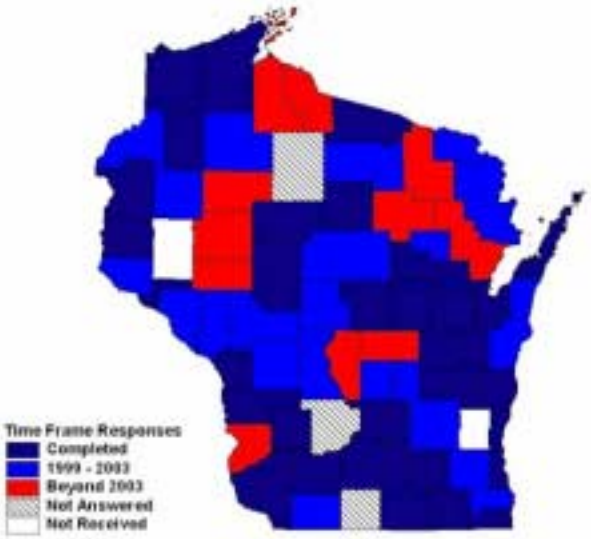
Completion Time for Digital Base Map in Vector Format



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1298

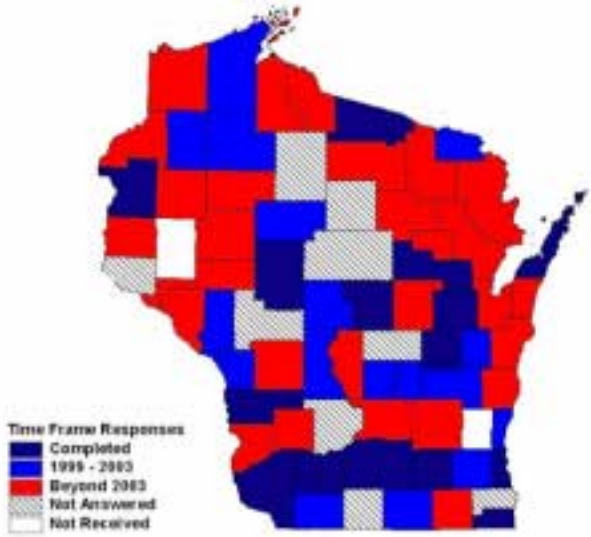
Completion Time for Image Bases (Digital Orthophotography)



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1298

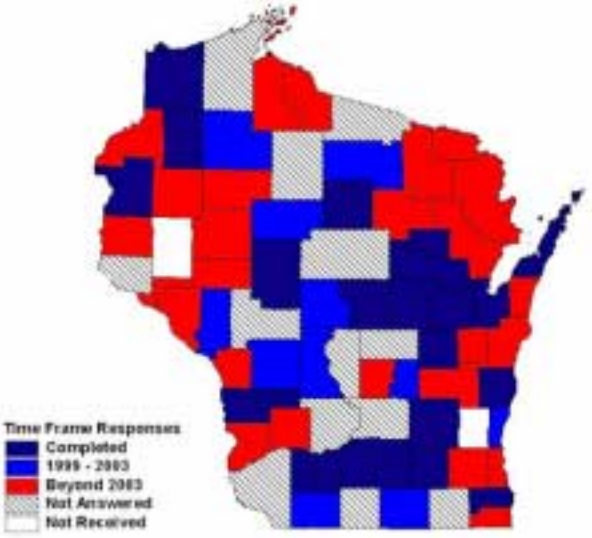
Completion Time for Vector Elevation Data



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1298

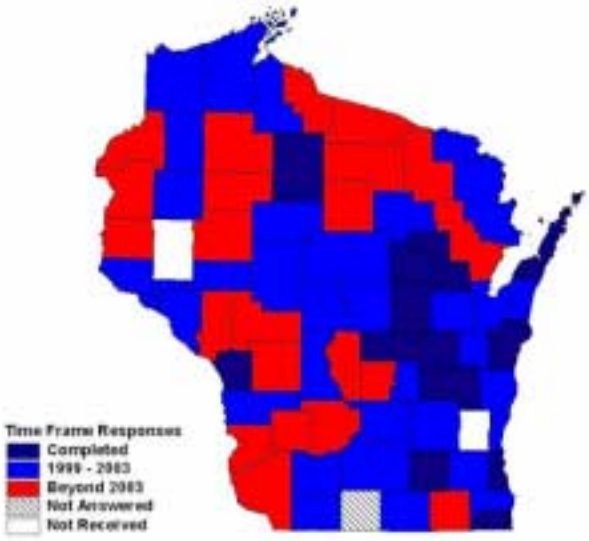
Completion Time for Raster Elevation Data



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1298

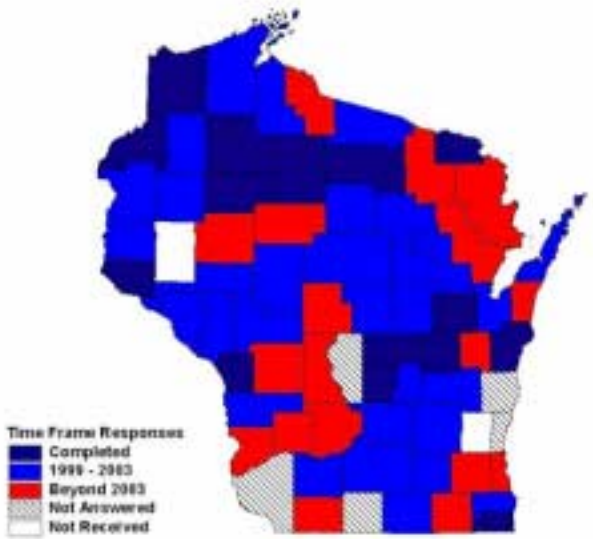
Completion Time for Parcels



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1999" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1299

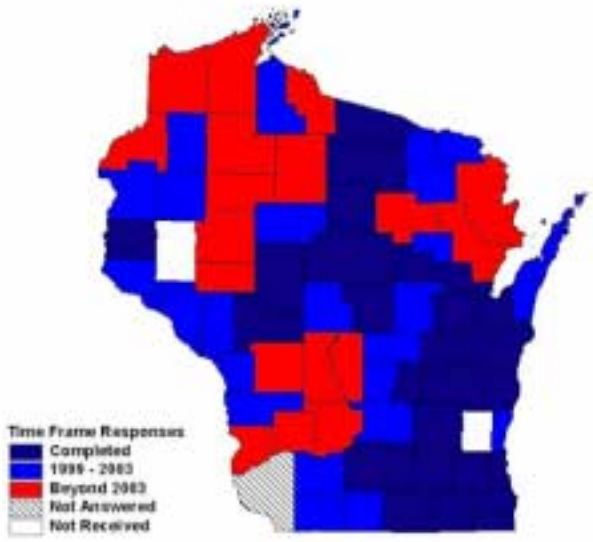
Completion Time for Zoning



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1999" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1299

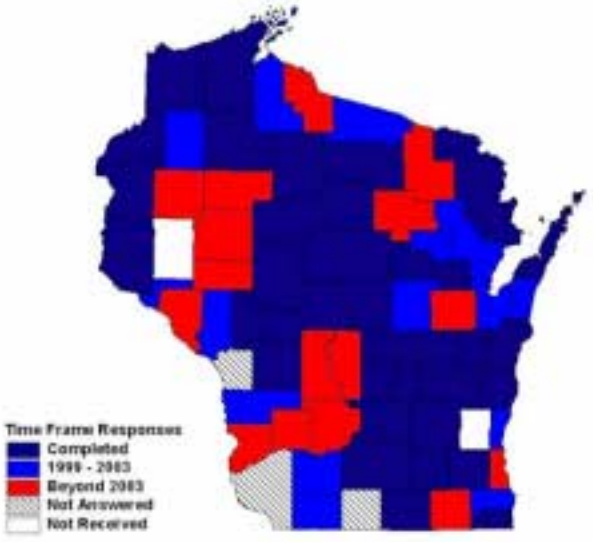
Completion Time for Soils



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1999" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1299

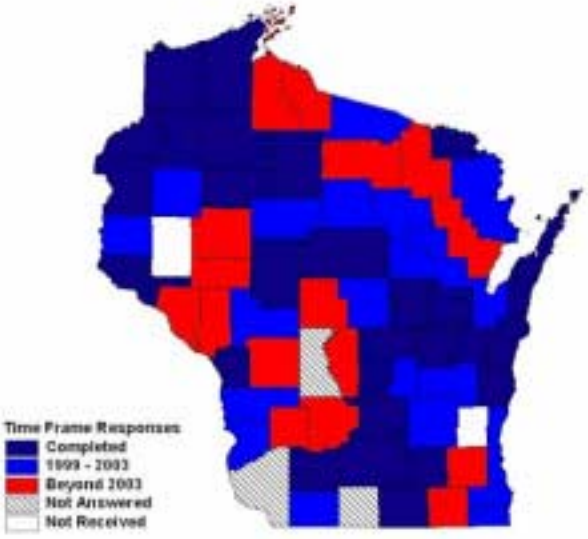
Completion Time for Wetlands



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1999" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1299

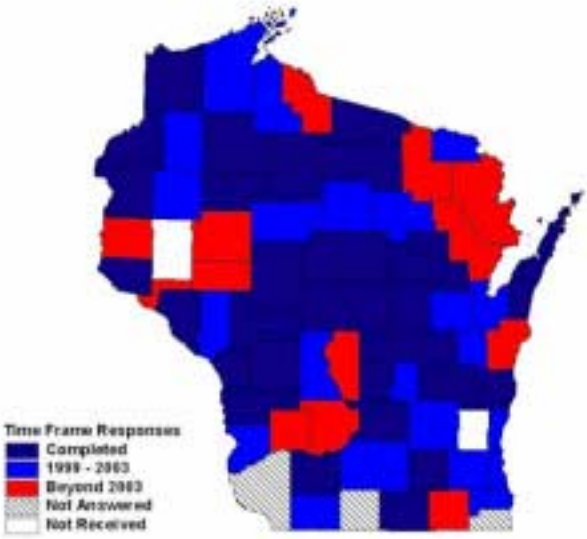
Completion Time for Administrative Boundaries



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1288

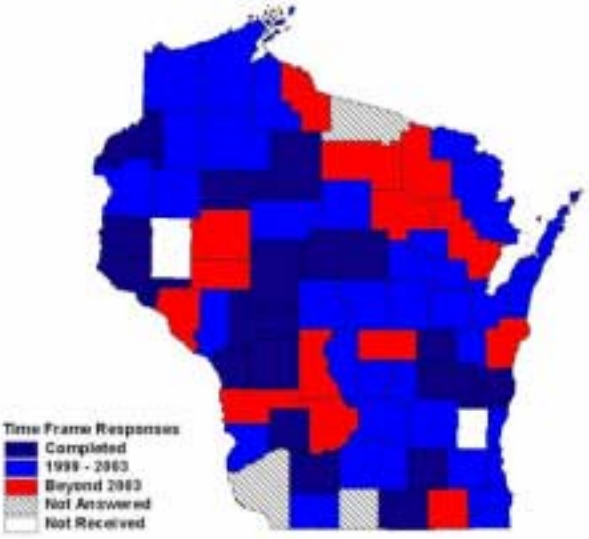
Completion Time for Street Centerlines



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1288

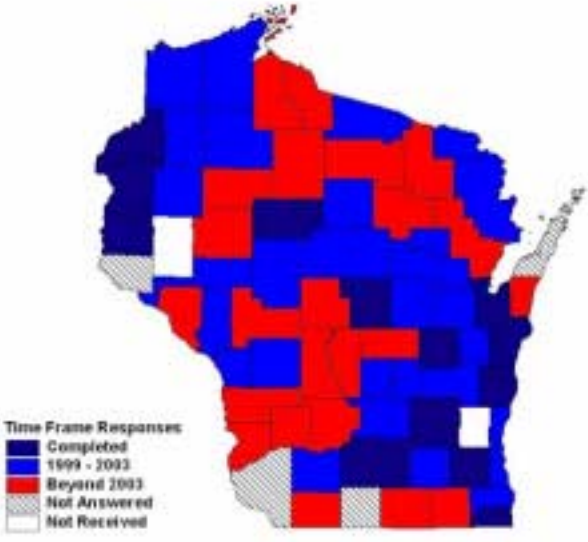
Completion Time for Street Addresses



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1288

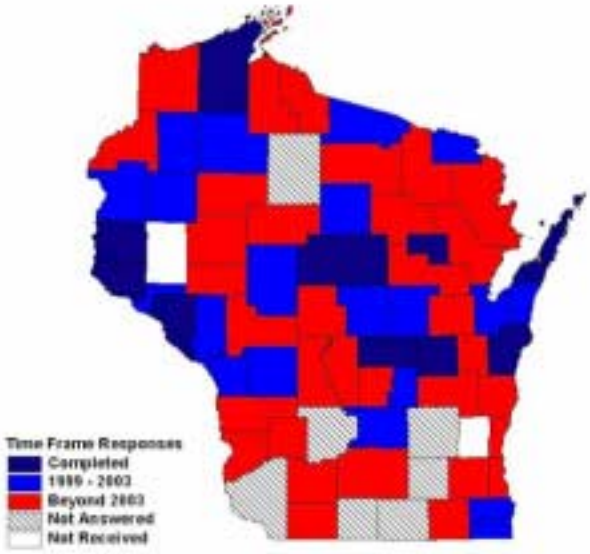
Completion Time for Land Use Mapping



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1998" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 1288

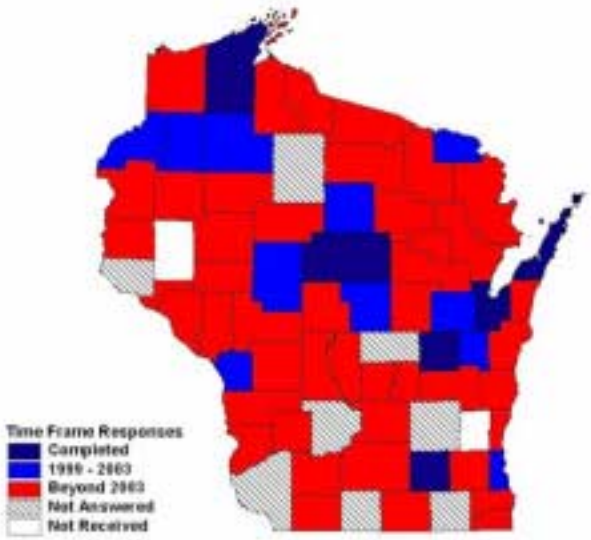
Completion Time for Natural Resources



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1999" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 12/99

Completion Time for Infrastructure & Facilities Management



Data Source: "Assessment of the Status, Progress, and Benefits of the Wisconsin Land Information Program 1999" results

Produced By: The Land Information & Computer Graphics Facility (LICGF) University of Wisconsin - Madison, 12/99

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Appendix N - East Central and West Central Wisconsin Regional Planning Commissions' Land Information System

East Central Wisconsin Regional Planning Commission

Regional Land Information System

At this point, the Regional Land Information System has three components:

1. Design and implementation of an archival system and metadata database for all GIS data which has been developed or acquired since the initiation of East Central's GIS program in the early 1990s. The data is being standardized for easy access by all staff on the local area network.

2. Serving of GIS data on the Internet. This will make regional data available to planning cooperators in the region and will form East Central's contribution to the Wisconsin Land Information System.

3. Development of regional data which conforms to the needs of the 1999 Wisconsin Act 9 Comprehensive Planning Legislation. This effort will provide data to municipalities within the region which are working on developing comprehensive plans and will form the GIS data for East Central's own Regional Comprehensive Plan.

Details of the three components follows:

REGIONAL COMPREHENSIVE PLAN DATA:

Section (2) CONTENTS OF A COMPREHENSIVE PLAN states that the plan shall include 10 elements, 8 of which start "A compilation of objectives, policies, goals, **maps**, and programs..." Since the planning legislation does not define the level of detail or standards which the maps should follow, the data described here will become a guide that East Central communities can use for development of data for individual plans.

Maps that are referred to by element may include:

(a) Issues and opportunities element. Background information on the local governmental unit and a statement of overall objectives, policies, goals and programs of the local governmental unit to guide the future development and redevelopment of the local governmental unit over a 20–year planning period. Background information shall include population, household and employment forecasts that the local governmental unit uses in developing its comprehensive plan, and demographic trends, age distribution, educational levels, income levels and employment characteristics that exist within the local governmental unit.

This element could be completed on a local level without maps since it refers to background information and forecasts which generally are designated for a full local governmental unit. On a county or regional level, where demographics vary, descriptive maps could be produced. These maps would display information from a demographics database related to a Municipal Civil Division (MCD) GIS layer.

GIS layers required:

Municipal Civil Divisions

(b) Housing element. A compilation of objectives, policies, goals, maps and programs of the local governmental unit to provide an adequate housing supply that meets existing and forecasted housing demand in the local governmental unit. The element shall assess the age, structural, value and occupancy characteristics of the local governmental unit's housing stock. The element shall also identify specific policies and programs that promote the development of housing for residents of the local governmental unit and provide a range of housing choices that meet the needs of persons of all income levels and of all age groups and persons with special needs, policies and programs that promote the availability of land for the development or redevelopment of low–income and moderate–income housing, and policies and programs to maintain or rehabilitate the local governmental unit's existing housing stock.

Housing units could be mapped in a land use inventory which shows parcels which are currently used for single family, duplex and multi family uses. To plan for the promotion of the availability of land for the development of low-income or moderate income housing, land could be mapped which is currently undeveloped and suitable for residential development. Plan maps could be developed which display target areas for such development using zoning or incentives for developers to meet these targeted uses.

GIS layers required:

Existing Land Use (which includes single, duplex and multi family uses)

Development Status (which shows land currently available for residential development)

Existing Zoning

Plan maps required:

Housing Plan (which shows land targeted or zoned for low and moderate income housing)

Future Zoning

(c) Transportation element. A compilation of objectives, policies, goals, maps and programs to guide the future development of the various modes of transportation, including highways, transit, transportation systems for persons with disabilities, bicycles, walking, railroads, air transportation, trucking and water transportation. The element shall compare the local governmental unit's objectives, policies, goals and programs to state and regional transportation plans. The element shall also identify highways within the local governmental unit by function and incorporate state, regional and other applicable transportation plans, including transportation corridor plans, county highway functional and jurisdictional studies, urban area and rural area transportation plans, airport master plans and rail plans that apply in the local governmental unit.

This element will require existing transportation infrastructure maps and local, state, regional and other applicable plan maps.

GIS layers required:

Existing Transportation

Highway Functional Classes

Existing Plan Maps Required:

Local Transportation Plans (Urban and rural area transportation plans)

Regional Transportation Plans

State Transportation Plans

Corridor Plans

County Highway Functional and Jurisdictional Studies

Airport Master Plans

Rail Plans

Comprehensive Plan Maps Required:

Maps Illustrating a Comparison of Local and State and Regional Plans

Planned Infrastructure Improvements (which includes roads, transit, systems for persons with disabilities, bicycle routes, railroads, airports, trucking and water transportation)

(d) Utilities and community facilities element. A compilation of objectives, policies, goals, maps and programs to guide the future development of utilities and community facilities in the local governmental unit such as sanitary sewer service, storm water management, water supply, solid waste disposal, on–site wastewater treatment technologies, recycling facilities, parks, telecommunications facilities, power–generating plants and transmission lines, cemeteries, health care facilities, child care facilities and other public facilities, such as police, fire and rescue facilities, libraries, schools and other governmental facilities. The element shall describe the location, use and capacity of existing public utilities and community facilities that serve the local governmental unit, shall include an approximate timetable that forecasts the need in the local governmental unit to expand or rehabilitate existing utilities and facilities or to create new utilities and facilities and shall assess future needs for government services in the local governmental unit that are related to such utilities and facilities.

This element will require an inventory of the existing public facilities mentioned above and could include maps showing planned infrastructure improvements. Much of the mapping for this element will be derived from existing urban area sewer service area planning maps.

GIS layers required:

Public Facilities (including sanitary sewer service, storm water management, water supply, solid waste disposal, on–site wastewater treatment facilities, recycling facilities, parks, telecommunications facilities, power–

generating plants and transmission lines, cemeteries, health care facilities, child care facilities and other public facilities, such as police, fire and rescue facilities, libraries, schools and other governmental facilities)

Comprehensive Plan Maps required:

Planned Public Facilities (including above facilities)

Sewer Service Area Plan Maps

(e) Agricultural, natural and cultural resources element. A compilation of objectives, policies, goals, maps and programs for the conservation, and promotion of the effective management, of natural resources such as groundwater, forests, productive agricultural areas, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and nonmetallic mineral resources, parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources.

This element will include maps of existing agricultural, natural and cultural resources as well as those showing which of these areas deserve planned protection. In addition plan maps could be included including those which designate protection of natural resources and Open Space, Park and Recreation Plan maps.

GIS layers required:

Groundwater Resources

Planted and Natural Forests

Productive Agricultural Areas

Existing Non Irrigated Agricultural Areas

Existing Irrigated Agricultural Areas

Hydrography

Environmentally Sensitive Areas

Threatened and Endangered Species Habitat

Floodplains

Wetlands

Wildlife Habitat

Metallic and Nonmetallic Mining Resources

Parks

Open Spaces

Historic and Cultural Resources

Community Design Resources

Recreational Resources

Other Natural Resources

Comprehensive Plan Maps required:

Protected Natural Resources (including parks, conservation areas, designated open spaces, etc.)

Open Space, Park and Recreation Plan maps

(f) Economic development element. A compilation of objectives, policies, goals, maps and programs to pro-mote the stabilization, retention or expansion, of the economic base and quality employment opportunities in the local governmental unit, including an analysis of the labor force and economic base of the local governmental unit. The element shall assess categories or particular types of new businesses and industries that are desired by the local governmental unit. The element shall assess the local governmental unit's strengths and weaknesses with respect to attracting and retaining businesses and industries, and shall designate an adequate number of sites for such businesses and industries. The element shall also evaluate and promote the use of environmentally contaminated sites for commercial or industrial uses. The element shall also identify county, regional and state economic development programs that apply to the local governmental unit.

This element will require an inventory of existing industrial sites and buildings, displaying existing land which is designated for industrial uses (such as vacant land in existing industrial parks and zoned areas). Also inventoried will be environmentally contaminated sites. In addition plan maps will display land suited for an adequate number of sites for commercial and industrial uses.

GIS layers required:

Existing Industrial Sites and Buildings (including used and vacant sites in industrial parks and zoned areas)

Existing Environmentally Contaminated Sites

Comprehensive Plan Maps required:

Planned Industrial Sites

(g) Intergovernmental cooperation element. A compilation of objectives, policies, goals, maps and programs for joint planning and decision making with other jurisdictions, including school districts and adjacent local governmental units, for siting and building public facilities and sharing public services. The element shall analyze the relationship of the local governmental unit to school districts and adjacent local governmental units, and to the region, the state and other governmental units. The element shall incorporate any plans or agreements to which the local governmental unit is a party under s. 66.023, 66.30 or 66.945. The element shall identify existing or potential conflicts between the local governmental unit and other governmental units that are specified in this paragraph and describe processes to resolve such conflicts.

This element will require a display of the relationship between school districts and local government units and between the local unit and regional, state and other governmental units. Also inventoried will be areas where conflicts and/or agreements exist between jurisdictions for siting and building public facilities and services.

GIS layers required:

Local, Regional and Other Governmental Units

School Districts

Public Facilities

Areas With Inter Jurisdiction Plans, Agreements and Conflicts

Plan Maps required:

Planned Schools and Public Facilities

(h) Land–use element. A compilation of objectives, policies, goals, maps and programs to guide the future development and redevelopment of public and private property. The element shall contain a listing of the amount, type, intensity and net density of existing uses of land in the local governmental unit, such as agricultural, residential, commercial, industrial and other public and private uses. The element shall analyze trends in the supply, demand and price of land, opportunities for redevelopment and existing and potential land–use conflicts. The element shall contain projections, based on the background information specified in par. (a), for 20 years with detailed maps, in 5–year increments, of future residential, agricultural, commercial and industrial land uses including the assumptions of net densities or other spatial assumptions upon which the projections are based. The element shall also include a series of maps that shows current land uses and future land uses that indicate productive agricultural soils, natural limitations for building site development, floodplains, wetlands and other environmentally sensitive lands, the boundaries of areas to which services of public utilities and community facilities, as those terms are used in par. (d), will be provided in the future, consistent with the timetable described in par. (d), and the general location of future land uses by net density or other classifications.

This element will obviously require further specification by the Office of Land Information Services in order to meet its objectives. The element will at a minimum require mapping of current and projected land uses.

GIS layers required:

Current Land Use

Current Land Use Conflicts

Productive Agricultural Soils

Soils With Building Site Limitations

Floodplains

Wetlands

Other Environmentally Sensitive Lands

Plan Maps required:

Potential Land Use Conflicts

Areas to be Served by Public and Community Services (5 Year Increments)

Future Land Uses (5 Year Increments)

(i) Implementation element. A compilation of programs and specific actions to be completed in a stated sequence, including proposed changes to any applicable zoning ordinances, official maps, sign regulations, erosion and storm water control ordinances, historic preservation ordinances, site plan regulations, design review ordinances, building codes, mechanical codes, housing codes, sanitary codes or subdivision ordinances, to implement the objectives, policies, plans and programs contained in pars. (a) to (h). The element shall describe how each of the elements of the comprehensive plan will be integrated and made consistent with the other elements of the comprehensive plan, and shall include a mechanism to measure the local governmental unit's progress toward achieving all aspects of the comprehensive plan. The element shall include a process for updating the comprehensive plan. A comprehensive plan under this subsection shall be updated no less than once every 10 years.

This element will not require GIS maps.

Summary of GIS layers and maps needed for Comprehensive Plan:

GIS layers required (Current Conditions):

Municipal Civil Divisions

Existing Land Use

Development Status Existing Zoning

Existing Transportation

Highway Functional Classes

Local Transportation Plans

Regional Transportation Plans

State Transportation Plans

Corridor Plans

County Highway Functional and Jurisdictional Studies

Airport Master Plans

Rail Plans

Groundwater Resources

Planted and Natural Forests

Productive Agricultural Areas

Existing Non Irrigated Agricultural Areas

Existing Irrigated Agricultural Areas

Hydrography

Environmentally Sensitive Areas

Threatened and Endangered Species Habitat

Floodplains

Wetlands

Wildlife Habitat

Metallic and Nonmetallic Mining Resources

Parks

Open Spaces

Historic and Cultural Resources

Community Design Resources

Recreational Resources

Other Natural Resources

Existing Industrial Sites and Buildings (including used and vacant sites in industrial parks and zoned areas)

Existing Environmentally Contaminated Sites

Local, Regional and Other Governmental Units

School Districts

Public Facilities

Areas With Inter Jurisdiction Plans, Agreements and Conflicts

Current Land Use

Current Land Use Conflicts

Productive Agricultural Soils

Soils With Building Site Limitations

Other Environmentally Sensitive Lands

Plan Maps Required:

Housing Plan

Future Zoning

Maps Illustrating a Comparison of Local and State and Regional Plans

Planned Infrastructure Improvements

Planned Public Facilities

Sewer Service Area Plan Maps

Protected Natural Resources

Open Space, Park and Recreation Plan maps

Planned Industrial Sites

Planned Schools and Public Facilities

Potential Land Use Conflicts

Areas to be Served by Public and Community Services (5 Year Increments)

Future Land Uses (5 Year Increments)

East Central Wisconsin Regional Planning Commission

Regional Land Information System Layers:

Version 1.0 April 12, 2000

In the next 5 years East Central will be working on a number of plans, each of which will require analysis and mapping using GIS data. In reviewing the needs of these plans, the following layers should be developed as the basis of the Regional Land Information System. These are the layers which will be created regionwide, according to the Data Standards currently used by the GIS staff. All of the layers should be built for display both at poster size (~ 30" x 40" and report size 11" x 17")

Roads:

- Coded to functional class, as well as ownership (federal, state, county, public, private).
- Buffered according to legal right of way where known, standard buffer table when not known.
- Complete with symbols, road names where practical.

Hydrography:

- Developed from County base maps where practical, from DNR 24K hydro layer where not.
- Complete with names where practical.

Public Land Survey System (PLSS):

- Developed from DNR 24K landnet.

Municipal Civil Divisions (MCD):

- Developed from County data where practical.
- Including County, City, Village, Town boundaries, with names.

Railroads:

- Developed from existing County and State data.
- Buffered with known or standard buffer distance.

Census Geography (TIGER):

- 2000 Census MCDs, Tracts, Blocks coded with a subset of Census demographic data.

Transportation Analysis Zones (TAZs):

- One georeferenced coverage for Fox Cities, Oshkosh, Fond du Lac areas, other areas based on MCD boundaries.

Soils:

- Coded for limitations for dwelling units due to a standard classification system based on steep slopes, high groundwater and high bedrock.
- Coded for prime agricultural use based on individual county standards.

Floodplains:

- Consistently coded and based on FEMA maps.

Wetlands:

- Developed from DNR digital wetland base.

Environmentally Sensitive Areas:

- Consistently coded regionwide, based on hydrography, soils, floodplains, wetlands data.

Land Use:

- Based on 2000 time frame, developed from 2000 aerial photography.
- Coded with a standard East Central coding scheme.

Zoning:

- One consistent layer developed from local zoning maps.
- Aggregated to general categories such as Residential, Commercial/Industrial, Agricultural, Open Space.

Watershed Boundaries:

- Developed from DNR 24K hydrography.

West Central Wisconsin Regional Planning Commission

Land information for comprehensive planning as suggested by 1999 Wisconsin Act 9. Jay Tappen, West Central Wisconsin Regional Planning Commission

Section 16.967(1), Wisconsin Statutes defines land information as:

> *Land information is any physical, legal, economic, or environmental information or characteristics concerning land, water, ground-water, subsurface resources, or air in this state.*
>
> *Land information includes information relating to topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife, associated natural resources, land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections.*

Section 66.0295(2), Wisconsin Statutes states that a comprehensive plan shall contain nine elements including: an issues and opportunities element; a housing element; a transportation element; a utilities and community facilities element; an agricultural, natural and cultural resources element; an economic development element; an intergovernmental cooperation element; a land use element; and an implementation element. Various information and data within each element are identified; however, the level of detail necessary to satisfy each element is not clearly defined.

The following listing is an attempt to further identify land information data sets, and their possible sources, suggested by the comprehensive planning law and current planning practice as a basis for discussion for inclusion in a Wisconsin Land Information System. Depending on the relevant problems and issues, and desired level of inquiry, the level of detail described below may not be necessary for all jurisdictions. Obviously, much of the socio-economic, housing and resource data will be useful for more than one element. Finally, this listing is by no means exhaustive; it is a first cut of what came immediately to mind. All information would be tied to a location with a stated positional accuracy.

I. Issues and Opportunities Element

Background information on the local governmental unit and a statement of overall objectives, policies, goals and programs to guide the future development and redevelopment... Background information shall include ***population, household, and employment forecasts****... and* ***demographic trends, age distribution, educational levels, income levels and employment characteristics****...*

Historic Census Data by Planning Jurisdiction, 1950 through 2000 for general demographics, change over decennial periods

Comparative Historic Census Data by Planning Jurisdiction, surrounding communities, similar communities in the region, and the state, 1950 through 2000 population, change over decennial periods

1980, 1990 and 2000 Census, Summary Tape File 1A and 3A or their equivalent by Planning Jurisdiction, Census Tract, and Census Block Group or their equivalent, change over decennial periods

1980, 1990 and 2000 Census, Summary Tape File 1B, by Census Blocks or their equivalent, change over decennial periods

Department of Administration, Demographic Services, population forecast by Planning Jurisdiction, forecast data for other parameters may or not be available (generally forecasts should be done by the planning jurisdiction during the planning process)

Housing Element

A compilation of objectives, policies, goals, maps and programs... to provide an adequate housing supply that meets existing and forecasted housing demand... assess the ***age, structural, value and occupancy characteristics of the housing stock****... identify specific policies and programs that promote development of housing for residents... provide a range of housing choices that meet the needs of persons of all income levels and age groups, and persons with special needs... promote the availability of land for low and moderate income housing... and to maintain or rehabilitate existing housing stock.*

1980, 1990 and 2000 Census, Summary Tape File 1A and 3A or their equivalent by Planning Jurisdiction, Census Tract, and Census Block Group or their equivalent, change over decennial periods

1980, 1990 and 2000 Census, Summary Tape File 1B, by Census Blocks or their equivalent, change over decennial periods

CDBG Housing Surveys, where available; occupant income; housing age and condition; children under 7, handicapped and elder status

Local Housing Plans

Transportation Element

A compilation of objectives, policies, goals, maps and programs for the future development of various modes of transportation, including ***highways, transit, transportation systems for persons with disabilities, bicycles, walking, railroads, air transportation, trucking and water transportation****... compare objectives, policies, goals and programs to state and regional transportation plans... identify* ***highways by function*** *and incorporate* ***state, regional and other applicable transportation plans****...*

1980, 1990 and 2000 Census, Summary Tape File 3A or its equivalent by Planning Jurisdiction, Census Tract, and Census Block Group or their equivalent, change over decennial periods

1980, 1990 and 2000 Census Journey To Work by Planning Jurisdiction

1990 and 2000 CTPP by Planning Jurisdiction, TAZ (metropolitan areas)

WDNR and WDOT highway, roads, trails, railroads 1:100K

Locally available streets and highways

Local highway, bicycle and pedestrian plans

Local inventories of other listed transportation facilities

Utilities and Community Facilities Element

A compilation of objectives, policies, goals, maps and programs to guide future development of utilities and community facilities such as ***sanitary sewer service, stormwater management, water supply, solid waste disposal, on-site wastewater treatment, recycling facilities, parks, telecommunications facilities, power generating plants and transmission lines, cemeteries, health care facilities, child care facilities and other public facilities, such as police, fire and rescue facilities, libraries, schools, and other governmental facilities****...*

Wellhead Protection Plans

Public Water Supply Facilities Plans

Sanitary Sewer Facilities Plans

Sewer Service Area Plans

On-site Wastewater Treatment Facilities Permits

Stormwater Management Plans

Private Well Permits

WDNR and local inventories of landfills, dumps, transfer stations, waste-to-energy, recycling facilities

Local inventories of other listed utilities and community facilities

Agricultural, Natural and Cultural Resources Element

A compilation of objectives, policies, goals, maps and programs for the conservation, and promotion of the effective management, of ***natural resources, such as groundwater, forests, productive agricultural areas, environmentally sensitive areas, threatened and endangered species, stream corridors, surface water, floodplains, wetlands, wildlife habitat, metallic and non-metallic resources, parks, open spaces, historical and cultural resources, community design, recreational resources and other natural resources****...*

NRCS Digital Soil Survey and interpretive tables, by County

WDNR GEODISC 3.0

WDNR WISCLAND

WDNR 1:24K Hydrography

WDNR Digital Wetlands Inventory

WDNR and local forest inventory

FIRM/FEMA Floodplains or locally produced improved floodplain data

WDNR Bureau of Endangered Resources inventory, including Natural Areas

State Historical Society of Wisconsin, architectural, historical and archeological site inventory

USGS 30-meter Digital Elevation Model

Local Flood Mitigation Plans

Other locally available resource information

Local inventories of other listed resources

Economic Development Element

A compilation of objectives, policies, goals, maps and programs to promote the stabilization, retention or expansion of the economic base and quality employment opportunities, including an analysis of the ***labor force and economic base****...assess categories or particular types of new businesses or industry... assess strengths and weaknesses for attracting and retaining businesses and industries... designate an adequate number of* ***sites for business and industry****...evaluate and promote the use of* ***environmentally contaminated sites****... identify county, regional and state economic development programs that apply*

WDWFD labor force statistics

WDOComm and local manufacturers and business directories

WDOComm and local Industrial Buildings and Sites inventories

WDOComm and local Brownfields Inventory

Federal, WDOComm, WHEDA, local and other state economic development programs

Intergovernmental Cooperation Element

A compilation of objectives, policies, goals, maps and programs for joint planning and decision-making with other jurisdictions, including ***school districts*** *and* ***adjacent local governmental units****, for siting and building public facilities and sharing public services...analyze the relationship of the local governmental unit to school districts and adjacent local governmental units, and to the region, the state and other governmental units...incorporate any* ***plans or agreements under s. 66.023, 66.30 or 66.945****... identify* ***existing and potential conflicts*** *between the local governmental unit and other governmental units*

All governmental, school district and special district jurisdictional boundaries

Inventory of nearby facilities of other jurisdictions

Perimeter land use inventory of adjacent jurisdictions

Joint or special district service areas

Cooperative plans or agreements

Land Use Element

A compilation of objectives, policies, goals, maps and programs to guide future development and redevelopment of public and private property… contain a listing of ***the amount, type, intensity and net density of existing uses of land, such as agricultural, residential, commercial, industrial and other public and private uses****… analyze trends in the* ***supply, demand and price of land****, opportunities for redevelopment and* ***existing and potential land-use conflicts****… a series of maps that shows* ***current land uses and future land uses*** *that indicate* ***productive agricultural soils, natural limitations for building site development, floodplains, wetlands and other environmentally sensitive lands, the boundaries of areas to which services of public utilities and community facilities****… will be provided, and* ***the general location of future land uses by net density or other classifications****.*

WDNR WISCLAND

NRCS Digital Soil Survey and interpretive tables, by County

Sewer Service Area Plans

Other resource data previously listed for identifying environmentally sensitive lands and development limitations

Historic land use inventories

Locally available parcel maps

Existing land use inventories and locally produced future land use maps

Official Maps

Implementation Element

A compilation programs and specific actions to be completed in a stated sequence including proposed changes to any applicable zoning ordinances, official maps, sign regulations, erosion and stormwater control ordinances, historic preservation ordinances, site plan regulations, design review ordinances, building codes, mechanical codes, housing codes, sanitary codes or subdivision ordinances…describe how the elements will be integrated and made consistent with other elements…include a mechanism to measure progress toward achieving all aspects of the comprehensive plan… include a process for updating the comprehensive plan.

Zoning Maps

Sign inventories

Copies of all land development management regulations and other policies

Appendix O - A Comparison of 9 Comprehensive Plan Elements with 15 WLIP Foundational Elements

The purpose of this document is to introduce a framework for comparison of the recently enacted Comprehensive Planning Statutes (s. 66.0295, Wis. Stats.) requirements for 9 explicit plan elements, in relation to the Wisconsin Land Information Program's (WLIP) 15 required Foundational Elements. The legislation and documents for each program may be found at the OLIS web site, http://www.doa.state.wi.us/olis, under Land Council and Land Information Program, respectively. Whereas the Comprehensive Plan Elements are outlined in the legislation, the Foundational Elements have been adopted by the WLIB, and are contained in the document "Uniform Instructions for Preparing County and Agency Land Information Modernization and Integration Plans." All of the submitted 5 year county land information plans, along with those of eleven named state agencies, are posted to this web site. (It should be noted that require WLIP foundational elements are shown in **bold**, while optional elements are shown in plain text. The sequence below follows those of the Comprehensive Plan, adjusting WLIP elements order as needed.)

Statutory Definition of Land Information

Do you have land information? Wis. Stat. Sec. 16.967(1) sets forth the operative definition. The definition is *inclusive* rather than *exclusive*. The definition is: ". . . *any* physical, legal, economic or environmental information or *characteristics* concerning land, water, ground-water, subsurface resources, or air in this state". The use of the term *"any"* is expansive and is not limited by the words that follow. The word *"characteristics"* is emphasized to highlight the notion that land information is any information that can be geographically referenced to areas, lines and points on the earth. Non-traditional examples of "geo-referenced" data include social, economic, health or other statistical information organized or aggregated by location such as parcels, census blocks, zip codes, minor civil divisions, the Public Land Survey System, counties, service regions, natural zones, or regions.

The statutes provide an extensive, but not exhaustive, list of other examples "including information relating to topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife, associated natural resources, land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections."

Comprehensive Plan Elements	***WLIP Foundational Elements***
1. Issues and Opportunities Element Background information on the local government unit. Vision statement. Overall goals, policies, standards and program. Population, household and employment forecasts. Demographic trends: Age distribution, Educational attainment, Income and employment characteristics. Other data sources prepared by local government unit.	*(Note: See also 11: Reconciled Election and Administrative Boundary System, below, for the Census geographies required to spatially reference such demographic data.)*

Comprehensive Plan Elements	*WLIP Foundational Elements*
(For more information on WISCLINC, refer to http://badger.state.wi.us/agencies/wlib/sco/pages/wisclinc.html)	**1. Communication, Education, Training and Facilitated Technical Assistance** Documentation of county/agency data. Resources available. Identification of customer needs. Coordination of education/training with agencies, associations and educational institutions. Use of technology to facilitate education / training. **Use of WISCLINC Clearinghouse &** **Technical Assistance List Server.** Plan to participate in Clearinghouse and List Server.
	2. Geographic Reference Frameworks ***A. Geodetic control networks –*** ***B. High Accuracy Reference Network (HARN).*** **Public Land Survey System (corners, lines, units)** **Remonumentation Status, Coordinate Values.** Photogrammetric base maps. Quadrangle boundaries – *12K, 24K, 62.5K, 100K, 1 degree, (State Atlas).* Image bases: Digital raster graphics (DRG), Digital orthophotos (DOP), Digital orthophoto quadrangles (DOQ.) Satellite imagery – *(Landsat, IRS, SPOT, other).* Digital terrain models: Digital elevation models (DEM), Triangulated irregular networks (TIN), contours, *(spot elevations, breaklines).*
(Refer to the WLIB Parcel Mapping Standard, http://www.doa.state.wi.us/olis/wlip/pdf_files/parmapst.pdf)	**3. Parcel Mapping** **Geodetic reference.** Topology. Address. Easements. Tax exempt lands. **Parcel ID.**

Comprehensive Plan Elements	*WLIP Foundational Elements*
2. <u>Housing Element</u> Policy statements, goals, standards, maps and Action programs. Existing and forecasted housing demand Age, structural, value, and occupancy Characteristics. Range of choices, all income levels / age groups / Special needs. Programs / policies for development/ Redevelopment of low and moderate income Housing. Plans for maintenance / rehabilitation of existing Housing stock.	**4. <u>Parcel Administration</u>** Real estate transactions. Easements. Liens. Covenants. Evidence of Title. Address. **Tax data.** Zip codes (including +4). Assessment class. Tax exempt lands. Optical imaging. **Parcel ID.** **The WLIB's Parcel ID Numbering System.**

3. <u>Transportation Element</u> Policy statements, goals, standards, maps and Action programs. Various modes of transportation: Streets, roads and highways, transit, Paratransit, bicycle, pedestrian, Railroads, air transportation, Trucking, water transportation. Relationship to state/regional trans plans. Functional classification of streets and highway Transportation corridors. County highway functional/jurisdictional study. Urban area transportation plans. Rural area transportation plans. Airport master plans. Wisconsin railroad plan for the county area.	**11. <u>Reconciled Address and Street Network System</u>** Streets, Roads, Highways. Bridges. Rights of way. Centerlines. Address ranges.

Comprehensive Plan Elements	*WLIP Foundational Elements*
4. <u>Utilities and Community Facilities Element</u> Policy statements, goals, standards, maps, and Action programs. Public, semi-public, or private facilities: Sanitary sewer service, potable water, Solid waste disposal, recycling, Park and open space improvements, Stormwater management (major drainageways), aquifer recharge, Telecommunications, energy, cemeteries, Schools, public/municipal buildings, police and fire protection, health care, child care, Plans to acquire. Character, location, timing, sequence, function, Use, capacity of existing and future public Facilities. Police and fire protection. Emergency medical service. Library service, other government services. Other community facilities plans. Public facilities needs assessment (s. 66.55(4)). Sewer service area plan (NR 121).	**15. <u>Infrastructure and Facility Management</u>** Railroads. Transit systems. Harbors. Airports. Recreational Trails: Ice Age Bicycle / Hiking Snowmobile Horseback Riding. Utilities – networks, not districts: Gas Electric Sewer Water Phone Telecommunications. Government facilities. Hazardous materials sites, etc. LUST (Leaking Underground Storage Tanks).

5. <u>Natural and Cultural Resources Element</u> Policy statements, goals, standards, maps, and Action programs. Groundwater. Forests. Productive agricultural soils. Environmentally sensitive lands. Stream corridor protections. Floodplains. Wetlands. Wildlife habitat. Metallic and nonmetallic mineral resources. Parks, open space, recreational resources. Other natural resources. Acquisition of private lands that are to be Preserved for public benefit. Policies for community design. Protection and enhancement of historic and Cultural resources.	**6. <u>Zoning Mapping</u>** Mapping of zoning including: **Shorelands** **Floodplains and floodways** Burial sites Archeological sites Historic/cultural sites Landmarks. **7. <u>Soils Mapping</u>** **8. <u>Wetlands Mapping</u>** **13. <u>Natural Resources</u>** Land cover. Watersheds. Geology Hydrogeology. Forests. Hydrography. Endangered resources. Impacts on the environment: air emissions, groundwater contamination.

Comprehensive Plan Elements	*WLIP Foundational Elements*
6. Economic Development Element Policy statements, goals, standards, maps, and Action plans. Stabilization/expansion of current Economic base. Quality employment opportunities. Analysis of labor force characteristics. Analysis of economic opportunities for Expansion / retention of existing business. Categories or particular types of new businesses/ Industries desired. Community's strengths and weaknesses vis Attracting and retaining business and Industry. Adequate number of sites of suitable sizes, Types, and locations. Necessary community facilities. Evaluate and promote re-use of environmentally Contaminated sites. Coordinate local economic development Plans for the public acquisition of sites. Improvements to those sites.	*(Sample web based map query for Brownfields, http://commap1.commerce.state.wi.us/BLIS.html)*

7. Intergovernmental Cooperation Element Policy statements, goals, standards, maps, and Action programs. Adjacent local governmental units. School districts. Siting and building public facilities. Sharing public services. Relationship to adjacent local governmental units, the region, the state, and other governmental entities. Plans / agreements prepared pursuant to s. 66.023, s. 66.30, or s. 66.945. Existing or potential conflicts between the local Governmental unit and other governmental Processes to resolve those conflicts.	**10. Reconciled Election and Administrative Boundary System** State outline. County boundaries. Minor civil division boundaries . Utility districts (e.g. water, sewer electric, etc.) Legislative districts: Assembly, Senate, Congressional. Reconciled election system: *(voting district boundaries – Supervisor, Aldermanic).* Tax Incremental Financing districts. School districts – Elementary, Secondary, Unified, Vocational / Technical. Lake districts. Census geographies: Blocks, Block groups, Tracts, Designated places, Urban Areas (UA), Traffic Analysis Zones (TAZ). Native American Lands. Agency Administrative Districts. Zip Codes – boundaries, and points. Public lands – Local, State, Federal.

Comprehensive Plan Elements	*WLIP Foundational Elements*
8. <u>Land Use Element</u> Policy statements, goals, standards, maps, and action programs. Inventory amount, type, intensity and/or net density of existing uses: Agricultural Residential Commercial Industrial Other public and private uses. Analyze trends in supply, demand, price of land. Opportunities for redevelopment. Existing and potential land use conflicts. 20 year projections. Sufficiently detailed maps, in 5 year increments, of future residential, agricultural, commercial, and industrial land uses. Assumptions of net densities. Other spatial assumptions. Maps showing current land uses and future land uses, including: Productive agricultural soils; Natural limitations for building site development; Floodplains, wetlands, other environmentally sensitive lands. Boundaries of service areas, within time frames Specified. General location of future land uses by net density / other classifications.	**12. <u>Land Use Mapping</u>** Mapping of land use. **Dept. of Revenue Land Use Classification System.** **Local government compliant.**

Comprehensive Plan Elements	*WLIP Foundational Elements*
9. <u>Implementation Element</u> Description of public programs and other specific actions to be undertaken in stated sequence to implement the policies, goals, and guidelines of each element of the comprehensive plan. Plans must be updated every 10 years, or sooner.	**5. <u>Public Access</u>** Use of technology to facilitate efficient access (e.g. Internet, query systems, CD). **Open access to data in existing format.** Optional production of customized data on cost-recovery or other basis. **System security.** **Right to privacy.** **9. <u>Institutional Arrangements and Integration</u>** Formal data sharing agreements (MOU, etc.) Cooperative arrangements (e.g. agencies; libraries; schools; RPCs; utilities; privates). Consortia (e.g. inter-county; WISCLAND). Collaborative arrangements (e.g. sharing of local/state staff and budgets; technical assistance; peer review; collegial plan preparation; common help desk; bartering and mentoring etc.) Statutory relationships among counties/state agencies.

	14. <u>Data Base Design</u> Needs assessment. **Design Evaluation.** **Timeline.** Integrateability (both vertical and horizontal). Structure (e.g. topology). Coding scheme. Transaction management. Organizational information flows. **Metadata.** Design budget. **Metadata quality.**

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Appendix P- Proposed Statewide Comprehensive Planning Data

Data type in Italics

Census Geography (TIGER)- *Spatial*

2000 Census Counties, MCDs, Tracts, Block Group Equivalents, Blocks

1990 Census Counties, MCDs, Tracts, Block Groups, Blocks

1980, 1990 and 2000 Census Tables referenced to Census Geography when possible- *Tabular, Spatial*

Summary File 1A

Summary File 3A

Summary File 1B

Census Transportation Planning Package, where available

Transportation Analysis Zones, where available- *Spatial*

Population Estimates and Projections by County, Minor Civil Division- *Tabular, Spatial*

Department of Administration, Demographic Services

Hydrography- *Spatial*

Based on county maps where possible, otherwise DNR 1:24K Hydro, coded with names when possible

Roads- *Spatial*

Coded to functional class, as well as jurisdictional class (federal, state, county, public, private), coded with names when possible

Railroads- *Spatial*

Soils- *Spatial*

Coded for limitations for development, including: steep slopes 12% to less than 20% or 25% and 20% or 25% or greater; depth to bedrock less than 5 feet; depth to groundwater less than 6 feet; and, limitations for dwellings with basements

Coded for potential sand and gravel deposits

Coded for prime agricultural soils, soil capability class and LESA land evaluation, where available

Floodplains- *Spatial*

FIRM/FEMA maps where available

Floodplain site investigation where available

Wetlands- *Spatial*

DNR Wetlands Inventory

Watershed Boundaries- *Spatial*

DNR 1:24K watersheds

WISCLAND land cover- *Spatial*

Digital Orthophotography- *Spatial* 1:12,000 scale or larger

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Appendix Q-Wisconsin State Agency Data Examples

Department of Work Force Development

CARES: W2 participant trends and employment thresholds mapping and database of geocoded addresses

SNAP: Standardized Name and Address Program, employers, SIC, FIPS for the Wisconsin Unemployment Insurance Law

LAUS: Local Area Unemployment Statistics, internal use only

Public Service Commission

Statewide High-voltage Transmission System

Electric Utility Service Territories

Fossil and Nuclear Fueled Power Plant Locations

Renewable Energy Power Plant Locations

Major Natural Gas Pipeline Locations

Water Utility Locations

Telephone Exchange Boundaries

Telephone Local Calling Areas

911 Availability

Telephone Signaling Subscriber Seven Locations

Telephone Digital Subscriber Line Locations

Telephone LATA Calling Areas

Natural Gas Service Territories

Interstate Pipeline Locations

Department of Revenue

Manufacturing and Telecommunication Company Assessment Rolls

Department of Revenue Use Classification System

Equalized value of property in each taxation district

County sales and use tax data

Local exposition sales and use tax data

Stadium sales and use tax data

Premier resort tax data

Department of Agriculture, Trade and Consumer Protection

Groundwater Database

Atrazine Prohibition Areas

Gypsy Moth Program

Department of Natural Resources Web Site (One Page Sample)

http://www.dnr.state.wi.us/org/at/et/geo/metadata/index.html

DNR Geographic Data Layer Overview

This page lists geographic data holdings of the Wisconsin Department of Natural Resources which have statewide coverage and are available for sharing from the DNR Geographic Services Section (DNR/GEO) without restriction, unless otherwise noted.

DNR/GEO is in the process of preparing metadata describing the agency's geographic data. These metadata are structured in a form consistent with the *Content Standards for Digital Geospatial Metadata* developed by the U.S. Federal Geographic Data Committee. Extensive information about metadata is available through the Wisconsin Land Information Clearinghouse ("WISCLINC") website.

As metadata for DNR geographic data are completed, they will be accessible via this page.

- County Boundaries
- Dams
- Deer Mgmt. Units
- DEM (30-meter)
- DEM (75-meter)
- DEM (500-meter)
- DNR Administrative Regions
- DNR Geographic Mgmt. Units (GMUs)
- Ecological Units of Wisconsin (with LTAs)
- Hydrography
- Land Use / Land Cover (250K)
- Landnet Sections
- Landnet Townships
- Minor Civil Divisions
- Misc. Infrastructure
- Named Geographic Features
- Original Vegetation Cover
- Quadrangle Indexes
- 1-by-1-Degree Cell Index
- Railroads
- Roads
- State Trunk Highways
- Turkey Management Units
- Watersheds
- WISCLAND Land Cover Grid
- WISCLAND Land Cover Image (Level 2)
- Wisconsin State Outline

Department of Administration Web Site (One Page Sample)

http://www.doa.state.wi.us/olis/gis/gisdata.asp

All data is in ESRI shapefile format. It is projected to Wisconsin Transverse Mercator (WTM) 1983(91). Specific information on this projection can be obtained by clicking here.

CD-1 -- TIGER™ Wisconsin

The CD contains:

- For each of the 72 counties, 13 themes, which include 1998 municipal boundaries, the 1990 census boundaries, roads, water, and the county outline;
- Statewide files for the municipal boundaries, water, federal and state highways.

  The municipal files are based on TIGER™ 1998, the balance of the files are based on TIGER™ 1995

  Attributes included with state layers description.
  Attributes included with county layers description.

  Total of all files on the CD is approximately 450 megabytes

CD-2 - Administrative Areas and Infrastructure in Wisconsin

The CD contains a collection of files, including:

- School district boundaries (unofficial);
- Legislative districts, including the State Assembly, State Senate, and U.S. House districts (based on 1992 redistricting)
- Telephone Service territories (from the state Public Service Commission);
- Airports (point coverage from U.S. Department of Transportation)
- Hospital and nursing homes (point coverage from WI Dept of Health and Family Services)
- Shipping ports (point coverage from U.S. Army Corps of Engineers)
- Railroads (from WI Dept of Transportation)
- Business locations; 135,000 business locations in the state (based on a 1997 file from WI Dept of Workforce Development)
- Population at the municipal and county level, as of 1-1-99 (based on estimates provided by the Demographics Services Center of the WI Department of Administration http://www.doa.state.wi.us/dhir/boir/demographic/index.asp.

Department of Transportation (One Page Sample of Data)

The following information comes from Appendix A of *GIS at WisDOT: A 10 Year Progress Repor*t. The June 1997 report was prepared by WisDOT's Geographic Information Workgroup and GIS User Group for the modal divisions' Information Technology Oversight Group.

GIS Meeting Business Needs: An index by functional business area

(While this listing should not be considered an exhaustive inventory, it does present many examples of current GIS initiatives at WisDOT. The applications and tools are described in the remainder of this appendix.)

Program management: SDS/Six Year Program

Inventory management: GeoVue

Project management: SDS/Project Records Management System

Bridge management: SDS/Bridge Inventory

Utility management: SDS/Utilities, D2 Utility Application

Real estate management: Right-of-way Inventory

Planning applications: Pavement Management Decision Support System,

3 Year Map Books, Corridor Studies, D6 Local

Roads, Economic Impact Analysis

Construction applications: Construction Maps, Pavement Management

Decision Support System, 3 Year Map Books

Traffic applications: Traffic Sign Inventory

Safety applications: SDS/Crash, D1 Crash Analysis

Transit applications: SDS/Park&Ride, D2 Rideshare

Environmental applications: Corridor Studies, Stormwater Modeling, HazMat

Data

Mapping applications: SDS/Six Year Program, Aerial Photography

Inventory, D6 Local Roads

Survey applications: SDS/Geodetic Control Inventory

WISCLINC Web Site - Other Sources for Wisconsin Geospatial Data (One Page Example)

http://badger.state.wi.us/agencies/wlib/sco/pages/about/othrdata.html

Federal Sources

- The National Atlas of the United States of America
  The USGS in cooperation with various partners maintains this on-line interactive atlas with on-line data to download in ESRI shapefile format.
- National Geodetic Survey (NGS)
- National Ocean Service (NOS) MapFinder Service
  Provides direct Internet access to primary NOS imagery and data holdings for coastal photography, nautical charts, historical maps, coastal survey maps, environmental sensitivity index maps, hydrographic surveys, water level stations, estuarine bathymetry, and geodetic control points.
- USDA-Natural Resource Conservation Service (NRCS): Wisconsin Data & Technology
- United States Geological Survey (USGS): Programs in Wisconsin
- United States Geological Survey (USGS): Status Graphics for Wisconsin Mapping Products
- USGS-Upper Midwest Environmental Sciences Center (UMESC): Available Data & Applications
- USGS' SAST Database
  An Environmental Information System for the Upper Mississippi and Lower Missouri River Basins
- United States Forest Service (USFS): Great Lakes Ecological Assessment
  The Great Lakes Ecological Assessment is an interagency effort to collect and consolidate new and existing environmental, biological, and socioeconomic information to provide a scientific basis for resource planning and management in the Northern Lake States.

State Level GIS Data Sources

- WI Department of Natural Resources - Geo Services (WiDNR-GEO)
- GIS Services at the Wisconsin DOA Office of Land Information Services (OLIS)

County Level Data Sources

- Columbia County Land Information Department: Products, Services, and Fees
- Dane County Land Information Office: Search for Parcel Information
- Door County Website: Door County Land Guide
- Outagamie County Planning Department: Mapping Products & Services
- Ozaukee County Land Information Office
- Winnebago County: WINGS Project

WISCLINC Web Site (One Page Example)

City/Municipality Level Data Sources

- De Pere, Wisconsin
  Choose 'Maps/GIS' from the left menu bar to find Arc Explorer data and projects.
- Town of Menasha Community Development Department
  Comprehensive plan, zoning maps, with potential of more to come.

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Appendix R-Land Roles by Agency

This table is from the State Agency Resource Working Group's Report, November, 1999 (http://www.doa.state.wi.us/olis/wlc/sarwg/sarwg_nov_report.pdf)

PRIMARY LAND USE ROLE			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DOA	Municipal Boundaries	Encourage cooperation between municipalities with regard to boundaries.	Cooperative Boundary Plans
	Municipal Boundaries	(No goal statements listed on form.)	Municipal Consolidation
	Municipal Boundaries	(No goal statements listed on form.)	Municipal Incorporation
	Land Acquisition	Acquire Real Estate for State Purposes	Property Leasing and Acquisition for State purposes
DATCP	Agriculture	Preserve Farmland via Stewardship	County Ag Pres. Plans, Farmland Pres. Program
	Agriculture	Preserve Prime Ag Lands via Farmland Preservation Plans	County Ag Pres. Plans, Farmland Pres. Program
	Agriculture	Prevent the Loss of Top Soil via Grants to Counties	Conservation Compliance Provisions of Farm Pres.
	Agriculture	Protect Land and Water Resources via Conservation Plans	Conservation Compliance-- Farmland Preser. Program
	Agriculture	Preserve Prime Ag Lands via Farmland Preservation Program	Farmland Pres. Program, County Ag Pres. Plans, Conservation Compliance Program
	Agriculture	Evaluate and Manage Pesticides & Fertilizers in Groundwater	Groundwater Protection
	Agriculture	Establish standards & criteria for ordinance controlling manure storage facilities.	Manure Storage
	Agriculture	Preserve Prime Ag Land via Zoning	Exclusive Agricultural Zoning
	Environment	Provide incentive payments for protection of riparian areas, improving water quality and enhancing habitat for endangered species.	Conservation Reserve Enhancement Program

	Environment	Assist counties in development of land and water resource management plans.	Land and Water Conservation Plans
	Environment	Establish standards for drainage district facilities while improving the quality of waters of the state, protect landowners' rights, procedures for disputes...	Drainage Districts
COMM			No programs were listed under primary role.

PRIMARY LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DNR	Environment	Provide a uniform basis for the preparation and implementation of sound floodplain regulations for all municipalities.	Floodplain Management Program
	Environment	To encourage the management of private forest lands...	Forest Tax Law Programs
	Environment	Reduce the adverse effects of poorly planned shoreland and bluff area development...	Lower St. Croix National Scenic Riverway
	Environment	To protect and preserve the scenic beauty and natural values of the lower WI state riverway...	Lower Wisconsin Riverway
	Environment	To protect and restore critical wildlife and fish habitat, preserve high quality natural areas, improve water quality, expand opportunities for outdoor recreation...	Warren Knowles-Gaylord Nelson Stewardship Program
	Environment	Systematically evaluate alternative means of achieving state/fed water quality goals...	Sewer service area planning
	Environment	Provide protection and improvement of critical watershed areas and lake activities and educational and tech assistance...	Lake Protection and Classification Grants Program
	Environment	Numerous wide-ranging goals...(ie: Promote safety and protect life, health and property...)	Water Management Regulations
	Environment	Establish minimum standards for city/village shoreland-wetland zoning ordinances to accomplish shoreland protection objectives of s. 281.31...	Local Wetland Protection Ordinances
	Environment	Protect public rights and interests; protect preserve, restore, and enhance quality of waters in wetlands...	Wetland Water Quality Standards and Water Quality Certification
	Environment	Establish minimum standards for county shoreland zoning ordinances to accomplish provisions of s. 281.31	Shoreland Management Program

DOR	Agriculture	Protect Ag Land via Tax Credit to Farmers	Use-Value Assessment of Farmland
DOT	Transportation	Control Traffic Entering or Leaving Highways	State Highway Controlled Access
	Transportation	Provide a Balanced and Integrated State Trunk Highway System,	Trans. Facility Location & Property Acquisition

PRIMARY LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
BCPL	Environment	Lease submerged lands for the improvement of navigation or for the improvement of harbor facilities.	Submerged land leases
	Property Acquisition	Manage and project public trust lands for the benefit of Wisconsin's citizens	Land Management
SHS	Historic/Cultural Resources	To protect all human burials and burial sites in WI	Burial Site Preservation Law
	Historic/Cultural Resources	Identify, evaluate, inventory historic properties; Administer program; prepare state preservation plan; etc...	Wisconsin Register of Historic Places
	Historic/Cultural Resources	Maintain the historical and architectural character of Wisconsin's communities.	Historic Preservation Ordinance

SECONDARY LAND USE ROLE			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DOA	Comm./Econ. Dev.-Housing	Protect Public Health & Safety	Mobile Home Program
	Comm./Econ. Dev.-Housing	5-year expenditure plan for distributing federal dollars for a variety of programs	State Consolidated Housing Plan
	Comm./Econ. Dev.-Housing	Assist homeless through a variety of funding mechanisms	WI Homeless Shelter & Services Programs
	Comm./Econ. Dev.-Housing	Provide Housing funds based on low income housing needs.	Comm. Dev. Block Grant Program Small Cities Housing
	Comm./Econ. Dev.-Housing	Support housing activities for low to moderate income households.	Home Investment Partnerships program
	Environment / Nat. Res.	Protect & Restore Lakes Michigan & Superior Coastal Resources	Wisconsin Coastal Management Program
	Municipal Boundaries	(No goal listed on form.)	Annexation
	General	To review and certify plats within statutory time limits.	Plat Review Program

SECONDARY LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DATCP	Agriculture	Clean Up Pesticide and Fertilizer Contamination	Agriculture Chemical Cleanup Program
	Agriculture	Ensure awareness of a project's impact on farmland prior to acquisition of property	Agriculture Impact Statements
	Agriculture	Encourage development of Nutrient Management Plans	Nutrient & Pest Management
	Agriculture	Protect & Improve Surface Water via Ag Shoreland Zoning	Agriculture Shoreland Management Ordinances
COMM	Community/ Econ. Dev.	Promote development and redevelopment of business districts	Business Improvement Districts
	Community/ Econ. Dev.	Promote job creation and investment in distressed areas.	Community Development Zone Program
	Community/ Econ Dev.	Promote Economic Development via Enterprise Zones	Enterprise Development Zone Program (COMM/DOR)
	Community/ Econ Dev.	Promote redevelopment of brownfields	Comm. Development Block Grants for Blight Elimination and Brownfields Redevelopment
	Community/ Econ Dev.	Promote business and community development	Community Based Economic Development Program (CBED)
	Community/ Econ Dev.	Promote municipal infrastructure projects	Community Development Block Grants for Public Facilities (CDBG-PF)
	Community/ Econ Dev.	Promote creation and retention of jobs.	Community Development Block Grants for Public Facilities for Economic Dev. (CDBG-PFED)
	Community/ Econ Dev.	Help restore or replace critical infrastructure damaged or destroyed by catastrophe	Comm. Development Block Grants Emergency Grant Prog.
	Community/ Econ Dev.	Promote business development	Industrial Revenue Bonds
	Community/ Econ Dev.	Promote economic development	Tax Incremental Financing
	Community/ Econ Dev.	Promote economic development	Wisconsin Development Fund

	Environment	Promote redevelopment of brownfields	Land Recycling Program
	Environment	Protect Public Health & Waters of the State via Private Sewage Standards	Private Sewerage Codes
DNR	Environment	Establish a system for determining the existence/location of natural areas, native plant/animal communities... (part)	Wisconsin Natural Heritage Inventory (NHI) Program
	Environment	Compensate counties for public county forest lands...(part)	County Forest Program

SECONDARY LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DNR& DATCP	Environment	Provide training, grants. Encourage private forest landowners management...(part)	Forestry Grant Programs
	Environment	Provide for a program of coordinated fish or game management projects(part)	County Conservation Aids
	Environment	Not yet published, new program	Conservation Reserve Enhancement Program (CREP)
	Environment	Development of comprehensive plans for establishment of systems...(part)	County Solid Waste Management Plans
	Environment	Mobilize governmental effort and resources at all gov't levels to accomplish greatest result for WI. Obtain pure drinking water, and protect public health...(part)	Sewer and Water Extension Approvals.
	Environment	To conserve long-term soil productivity, protect quality of natural resources, enhance water quality...(part)	Land and Water Conservation Plans
& COMM	Environment	To further maintenance of safe, healthful conditions, prevent/control soil erosion, adverse effects of stormwater...(part)	Erosion Control Ordinances
	Environment	To further maintenance of safe, healthful conditions, prevent/control soil erosion, adverse effects of stormwater...(part)	Stormwater Management
	Environment	Provide info on improving quality of water in lakes, provide support/guidance to improve water quality assessment /planning (part)	Lake Management Planning Grants Program
	Environment	Provide admin. Framework/financial assistance for implementation of measures to meet non-point source water pollution abatement needs... (part)	Non-point Source Water Pollution Abatement Program

	Environment	Uniform planning process for management and use of DNR managed properties (part)	Property Master Planning
DOR	Agriculture	Preserve Farmland via Income Tax Credits to Farmers	Tax Relief Program for Farmers
	Community/ Econ Dev.	Help Economic Development of Distressed Areas via Tax Credit	Community Development Zone Program
	Community/ Econ Dev.	Promote the Clean-up and Development of Brownfields	Environmental Remediation Tax Increment Financing
	Community/ Econ Dev.	Promote Economic Development of Blighted Areas via TIF	Tax Incremental Financing
	Environment / Nat. Res.	Encourage Forestry on Non-industrial Private Lands	Forest Tax Law Programs
	Historic/ Cultural Res.	Encourage Rehabilitation and Preservation of Historic Places	Tax Credit Program for Historic/Archaeological Places
	General	Provide a Specialized, Technical Appraisal Service for Municipalities	Assessment of Manufacturing Property
	General	Provide for Sharing Revenue & Aids, and Property Taxes to Local Government	Determination of Equalized Property Values

SECONDARY LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DOR	General	Fund General Operations of State Government	Real Estate Transfer Fee
	Transportation	Fund Transportation Facilities & General State Ops	Ad Valorem Utility Taxes
	General	Ensure Consistent Identification of Land Parcels	Assessment Practices
DOT	Transportation	Study Interurban and Intraurban Multimodal Transportation	Corridors 2020
	Transportation	Assure that Regional Transportation Issues Addressed and decisions based on accepted plans	Metropolitan Planning Organizations (MPOs)
	Transportation	Guide Multi-Year Decision-Making via Modal & Intermodel Planning	Statewide System Planning
	Transportation	Provide a Safe, Efficient Highway System via Approval of Local Projects	Transportation Improvement Plans
	Transportation	Provide Financial & Technical Assistance for Freight Rail Service	Freight Railroad Infrastructure Improvement Program
	Transportation	Provide Funding for Facility Improvements for Business Assistance	Transportation Economic Assistance
	Transportation	Provide Awareness of Possible Secondary Land Use Impacts	Secondary Land Use Impacts Analysis
BCPL	Comm./Econ. Development	Provide alternative source of low cost capital to municipalities & school districts.	State Trust Fund Loans
SHS	Historic/Cultural Resources	To preserve the unique historical and architectural features of buildings while meeting modern building code standards	State Historic Building Code

TERTIARY OR OTHER LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM/ACTIVITY**
DOA	Com./Econ. Dev.-Housing	Provide Housing Info & Tech Assistance	Housing Information Service
	Municipal Boundaries	To provide a statutory device to resolve municipal boundary disputes	Cooperative Boundary Agreements
	Municipal Boundaries	Facilitate intergovernmental cooperation by authorizing the sharing of revenue as a possible alternative to annexation.	Municipal Revenue Sharing
	General	Estimate Population Changes	Population Estimates

DATCP			No programs were listed as tertiary or other.
COMM, WHEDA, SHS, PSC & DOT	Agriculture	Development of WI grown commodities	Agribusiness Guarantee
	Agriculture	Promote modernization and expansion projects of WI dairy producers	Dairy 2020 Early Planning Grant Program
	Comm./Econ. Development	Promote minority business development	Minority Business Development Fund
	Comm./Econ. Development	Promote neighborhood redevelopment	Reinvestment Neighborhoods
	Comm./Econ. Development	Promote rural economic development	Rural Economic Development Program
	Environment/ Nat. Res.	Promote environmental remediation of properties	Petroleum Environmental Cleanup Fund Award Program (PECFA)
	Environment/ Nat. Res.	Promote Small Business & Water Quality by Helping w/ Sewage Systems	Wisconsin Fund
	Environment/ Nat. Res.	Promote recycling	Recycling Demonstration Grant Program
	Environment/ Nat. Res.	Promote recycling	Recycling Early Planning Grant Program
	Environment/ Nat. Res.	Protect waters of the state from sedimentation.	Erosion Control Ordinances
	Historic/ Cultural Res.	Protect Historic Buildings	Historic Building Code
	Property Acquisition	Facilitate new electric transmission lines	Right-of-Way & Easement Acquisition
	Transportation	Promote economic development	Freight Railroad Infrastructure Improvement Program

TERTIARY OR OTHER LAND USE ROLE (continued)			
AGENCY	**SUBJECT/ CATEGORY**	**GOAL STATEMENT (FROM FORMS)**	**PROGRAM / ACTIVITY**
DOR			No programs were listed as tertiary or other.
DOT			No programs were listed as tertiary or other.
BCPL	Municipal Boundaries	Maintain a record of the public domain	Public Land Survey System
SHS			No programs were listed as tertiary or other.
UW	OTHER-Education	Educate, Convey, Facilitate & Conduct Applied Research	University of Wisconsin and associated degree programs, departments
UW-EXT.	OTHER-Education	Educate, Convey, Facilitate & Conduct Applied Research in Land Use Issues	UW-Extension--Cooperative Extension, Continuing Ed

Appendix S-Potential WLIS Tabular Data Examples

Tax Parcel Data Bases

Sanitary Permits Data Bases

Well Permits Data Bases

Conditional Use Permits Data Bases

State, County and Local Manufacturers and Business Directories

Industrial Buildings and Sites Inventories

Brownfields Inventory

NRCS Soils Interpretations

Group Home Licenses

Plant Closings

School Enrollments

Public Library Statistics

Wisconsin Community Health Profiles

Health Care Provider Inventory

Health Surveys

Births and Infant Deaths

Deaths

Marriages and Divorces

Crime Statistics

Workforce Profiles

Occupational Licenses

Traffic Counts

Accident Data

Local Road Data Files

- Bridge Data
- Rights-of-Way
- Segment Information

Pavement Evaluation Files

National Personal Transportation Survey

Airport Inventory

Petroleum Environmental Cleanup Fund

CAMEO/ALOHA EPCRA Data

Underground Storage Tank Inventory

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Appendix T-Potential WLIS Documents Examples

Local Land Use Plans

Local Transportation Plans (Urban and rural area transportation plans)

Regional Transportation Plans

State Transportation Plans

Corridor Plans

County Highway Functional and Jurisdictional Studies

Airport Master Plans

Rail Plans

Sewer Service Plans

Public Facilities Plans

Parks and Recreational Plans

Land and Water Conservation Plans

Housing Plans

Zoning Ordinances

Subdivisions Ordinances

Occupancy and Maintenance Codes

Building Codes

Erosion Control Ordinances

Stormwater Management Ordinances

Open Space, Recreation and Park Plans

Economic Profiles

Intergovernmental Agreements

Boundary and Shared Revenue/Facilities Agreements

Environmental Impact Statements

Wellhead Protection Plans

Groundwater Management Plans

Environmental Studies

Local Flood Mitigation Plans

Literature on Federal, WDOComm, WHEDA, local and other state economic development programs

State Statutes and Administrative Rules

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Appendix U-Cataloging of Digital Documents

Cataloging of Digital Documents

The *MARC 21 Format for Bibliographic Data* is designed to be a carrier for bibliographic information about printed and manuscript textual materials, computer files, maps, music, serials, visual materials, and mixed materials. Bibliographic data commonly includes titles, names, subjects, notes, publication data, and information about the physical description of an item. The bibliographic format contains data elements for the following types of material:

Books - textual material that is monographic in nature.

Serials - textual items with a recurring pattern of publication, e.g., periodicals, newspapers, yearbooks.

Computer files - used for computer software, numeric data, computer-oriented multimedia, online systems or services. Other classes of electronic resources are coded for their most significant aspect. Material may be monographic or serial in nature.

Maps - all types of cartographic materials, including sheet maps and globes.

Music - printed music, manuscript music, nonmusical sound recordings, and musical sound recordings.

Visual materials - projected media, two-dimensional graphics, three-dimensional artifacts or naturally occurring objects, and kits. Used for archival visual materials when format or medium is being emphasized.

Mixed materials - primarily archival and manuscript collections of a mixture of forms of material. Material may be monographic or serial in nature.

Web Sites for Cataloging Digital Documents

http://www.und.edu/dept/library/Departments/abc/Catedocs.htm

http://libweb.uoregon.edu/catdept/tools/catdoc.html

http://www.itcompany.com/inforetriever/catinet2.htm

http://www.willamette.edu/~aweible/dlc/arlene.htm

http://gulib.lausun.georgetown.edu/dept/catalog/tools/

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Appendix V-Conclusions and Recommendations

Key Points-Introduction

1. We believe that this report represents the vision and spirit of the efforts of the Technical Working Group.
2. We recommend that this report be used as a guide for the long-term development of the system.
3. We concluded that because of time and money constraints we would not be able to do the needs-assessment, the alternatives, nor the prototyping.
4. We concluded that although there was inadequate resources for a formal needs-assessment, we would survey representative stakeholders for additional perspective.
5. We concluded that alternatives would be constructed within subject context within this report as best as possible.
6. We recognize the importance of prototyping and recommend that it be done in future implementation phases.

Key Points-Requirements

1. We recognize the importance of understanding stakeholder needs.
2. We used four methods to collect, create, and validate system requirements.
3. We conclude that the system should be a statewide system easily accessible by the public.
4. We conclude that the system should be a web-based and distributed.
5. We conclude that the system should be—among other things—a catalogue of spatial and non-spatial links using an indexing retrieval system.
6. We conclude that the system should be a source for accessing and transferring spatial and non-spatial land information, data, and metadata.
7. We conclude that the system should be a platform supporting integrated and aggregated views of state and locally produced data, capitalizing on data already created by state agencies and local governments.
8. We conclude that the system should be dynamic, providing an application framework for web-mapping and non-spatial data integration and processing.
9. We conclude that the system should be a means for promoting standards, and standardized data content and structure.
10. We conclude that the system should be a means for providing cross-walk functions between non-standard data.

11. We conclude that the system should be a means of supporting land management decisions, including comprehensive land use planning.

Key points-Project Scope-Project Narrative

1. We recommend that the system be a distributed approach to data management and distribution.
2. We recommend that multiple cooperative nodes should support data retrieval and product development through a common Web interface.
3. We recommend that each node maintains additional data appropriate for a local context, as well as the capability to query and retrieve data from other nodes.
4. We conclude that a system supporting replication is less vulnerable to service failure and can be more efficient in serving clients than a single central repository alternative.
5. We conclude that many organizations and individuals will be involved in the development of the system components.
6. We conclude that some of the implementation and management should be centralized for efficiency and effectiveness.
7. We conclude that the only characteristics that will distinguish the "core" node from any distributed node are that 1) it will house the 'parent' searchable metadata database and 2) it will be the initial staging point for data replication to the distributed nodes.
8. We recommend that the design and implementation of the system should be done in phases based on the availability of data and the state of technology.
9. We recommend that the system build incrementally on existing investments and standards in land information.
10. We recommend that the system target should be to serve a wide audience, including public agencies, private organizations, and individual citizens.
11. We recommend that the system provide Web-based access to information and support for functions oriented to "enhancing land-related data creation, management and dissemination".
12. We recommend that the system be developed and maintained by "multiple participants in he land information community" in a phased process.
13. We recommend that the system have a common user interface to local, multi-jurisdictional, and state agency data.
14. We recommend that the system should support land information applications, such as zoning and the new Smart Growth Comprehensive Planning Legislation.

Key Points-Project Scope-Jurisdictional Scope

15. We conclude that the system should provide access to land-related data held by public agencies and private organizations.
16. We recommend that state agencies and counties specifically mentioned in the Wisconsin Land Information Program should be the initial focuses of design and development efforts.
17. We recommend that early nodes should be state agencies and larger municipalities that already have land information systems, smaller units of local government, and special districts who wish to collaborate with counties or regional planning commissions and regional planning commissions themselves.
18. We recommend that Federal agencies should provide data to the system.
19. We recommend that private organizations contribute data to the system, particularly if these data are created using public funds.
20. We recommend that the design and architecture of the system be as open as possible to motivate collateral application development by individuals and private organizations.
21. We recommend a model for the preparation and distributed deployment of land information systems data as show by a graphic in the document text.

Key Points-Project Scope-Levels of Participation

22. We recommend that the system accommodate multiple levels of optional (input) participation.
23. We recommend that Level I have a searchable data base containing a minimum set of information about what data exists, where it exists, what it consists of, what format it is in, and how data sets can be obtained.
24. We recommend that at Level 1, for spatial data, all agencies that receive funding from the Wisconsin Land Information Program be required to provide documentation of data sets generated through program funds.
25. We recommend that at Level 1, at a minimum, all state agencies and counties should be required to provide minimal metadata. Non-spatial land related information, such as laws, rulings, and procedures, should also be documented.
26. We recommend that an important Level 1 first step is to create simple information indexing procedures and metadata entry software that can be used to document both digital and paper records.
27. We recommend that at Level II, the system should provide real-time access to data via request routing and via direct access.
28. We recommend that at Level II, data should be delivered periodically to the system nodes for general availability.

29. We recommend that the system nodes would support functions such as indexing, searching, converting, analyzing, mapping, and data maintenance.

30. We conclude that the node concept will allow some jurisdictions to provide local access to certain data sets from their own databases—particularly commonly requested data—without the added time and expense of maintaining their own Web presence.

31. We recommend the Level II carry two basic obligations: (a) to provide info about its capabilities and (b) to maintain a minimum level of query support.

32. We recommend multiple publication paths.

33. We recommend that Level II system design for data distribution and deployment have two major components: 1) data replication throughout the system and 2) the provision of data by providers into the system.

34. We recommend four data distribution and deployment options for Level II data providers.

35. We recommend that Level II option one offers the data providers the ability to convert their data to system standard-compliant format for staging of converted data and metadata to a system distributed data node accessible via the Internet, or on the system core node also accessible via the Internet.

36. We recommend that Level II option two provides for the staging of system-standard formatted data and metadata directly on core system data node, which is accessible via the Internet.

37. We recommend that Level II option three varies from the preceding option only in that it stages the data and metadata on a distributed data node (which is then replicated to the core system data node.)

38. We recommend that Level II option four would have the core staff provide data conversion services for the data provided to the WLIS standard-compliant format and stage the data on core system node for later replication to all nodes.

39. We recommend that for Level III, multiple nodes maintained at various levels of government and the private sector to provide data and services.

40. We recommend that for Level III the nodes would be customized for geographic regions, domain areas, or other preferences.

41. We recommend that for Level III, the data archive would include primarily locally generated data and when a query involved integration with data created and maintained across a more extensive area, the node would seek this information from allied nodes.

42. We recommend that for Level III, specifications for maintaining a system will depend on functional requirements that emerge from the development of detailed system design specifications but it will have a minimum standard configuration.

43. We recommend that for Level III, standard, customizable WLIS node templates providing basic WLIS functionality and a common look-and-feel should be designed and developed to

function 'out-of-the-box' so that distributed node sites can be implemented without significant effort.

Key Points-Project Scope-Project Phasing

44. We conclude that because the system deals with such a broad range of functions and participant environments, development is likely to occur in a non-linear sequence.

45. We conclude that the development cycle is likely to be a series of smaller projects, ordered based on logical dependencies.

46. We conclude that activities such as application development and development of distributed node models and web templates can only take place after core tools have been developed and documented.

47. We assume that the design and implementation of the system will take place in phases, over at least two state budget biennium cycles.

48. We conclude that a phased approach will permit the development of prototypes and solution testing that is considered necessary for the successful development of the system.

49. We conclude that the first to benefit from the system will be those organizations and individuals already routinely using automated land information systems.

50. We conclude that another group that will realize early benefits of the system are those with applications that can be supported by the system, but have been stymied from using automated land information for many reasons, including lack of data access.

51. We conclude that although the system will be open to anyone, including individual citizens, developing applications to meet specific interests will be a low priority, both because the needs are so disparate and diffuse, and because direct benefits are not compelling.

Key Points-Project Scope-Project Deliverables

52. We conclude that the deliverables from the first two phases of the project fall into three broad categories: design, development and operation.

53. We recommend that a system metadata standard model be developed, accepted by the States' land information community, and published.

54. We recommend that a system metadata database—addressing spatial and non-spatial data—be developed.

55. We recommend that once the system metadata model is established, selected standard data sets should be identified, and procedures and agreements should be established for acquiring and regular updating these key data sets.

56. We recommend that when the planning begins for the establishment of distributed data nodes, a data replication model should be developed.

57. We recommend that the system be designed to insure that the WLIS standard data sets are synchronized on a timely basis.

58. We recommend that security measures should be developed as nodes are created.

59. We conclude that once the design stage of the project is largely complete, development of individual components of the system can proceed.

60. We conclude that the creation of the core elements would likely begin with the construction of the structure and framework of core user interface (which would become the basis for the templates for the distributed node web templates).

61. We conclude that these will be followed by the development of the metadata entry and query-retrieval tools.

62. We conclude that before the network begins to add the distributed nodes, the cross-walk conversion batch process for both the core and distributed nodes must be designed and developed.

63. We recommend that the process be designed to be extensible for independent customization and it must also have the capability to accept non-destructive updates as they are made available by the core technical staff.

64. We recommend that the systems distributed nature necessitates the planning and design of an intelligent load-balancing or redirection mechanism.

65. We conclude that this network architecture provides the ability for any participant to develop an application which accesses standard system data, as well as any other data, locally stored, staged on a WLIS distributed or core node or otherwise made accessible on the internet.

66. We recommend that local application protocol be developed to permit the linking of locally developed applications to any accessible system data source.

67. We conclude that the WLIS core staff will provide for the ongoing maintenance and enhancement of WLIS applications (such as the cross-walk process), the development of standard information products, general data services and the creation and maintenance of the WLIS database schema.

68. We assume that another organizational structure will maintain system data and metadata standards.

<u>Key Points -Project Scope-Critical Success Factors</u>

69. We recommend the adoption of critical system success factors dealing with participation, access, data, prototypes, and participants.

<u>Key Points –Project Scope-Benefits</u>

70. We conclude that access to data for both professional and public stakeholders will keep users better informed, will require fewer resources spent by public agencies in providing data and information to the public in satisfaction of open records responsibilities and will increase accountability of agencies providing data and information.
71. We conclude that participation will be flexible.
72. We conclude that the system will reduce or eliminate redundant costs and efforts in the integration of data and the development of data.
73. We conclude that data will be shared.
74. We conclude that economies-of-scale will occur by pooling of resources.
75. We conclude that there will be better, more informed decision-making.
76. We conclude that data quality will be improved.
77. We conclude that investment will be leveraged in existing land information.
78. We conclude that there will be increased interoperability among participants.
79. We conclude that there will be opportunities to produce new data.

Key Points-Project Scope-Assumptions

80. We assume that there will be an administrative body, or bodies, to provide guidance, support, operation and decision-making services, as well as management of core assets.
81. We assume that a system administrative body will establish and publish commonly-accepted standards for data and metadata that will be used by direct participants in the system, and will be used as the target for participants who convert via the cross-walk process.
82. We assume that there will be sufficient bandwidth made available to accommodate significant data transfer requirements, both dynamic and automatic.
83. We assume that the system is a publicly accessible system. Therefore, data providers and users can be any the system participant from any sector.
84. We assume that the system participants will have the option of selecting the publication path alternative that best suits their needs and interests. In this regard, state agencies are on a par with other data providers - they can provide data using any of the alternative publishing paths.
85. We assume that there will be a gradual migration by the system participants from emphasis on presentation to data storage to data collection. In terms of publication paths, this might mean moving from Path 4 to 1 to 2 to 3.
86. We assume that data can be passed through intermediaries (e.g., Regional Planning Commissions can serve counties, municipalities, etc.; counties can serve municipalities,

metropolitan multi-jurisdiction districts, etc.; private entities can serve any public and/or private organization.)

87. We assume that promotion of desired or preferred paths will probably require differential levels of incentives such as financial support for hardware, network connectivity, software, and grants.

88. We assume that a single, central data services repository is not scalable to meet the potential demand of a fully-developed the system; Distributed the system Data Nodes, with an intelligent load balancing mechanism, will be required to adequately serve the needs of such a system.

89. We assume that although not to the exclusion of other entities, it seems that organizations with the scale and resources of state agencies, Regional Planning Commissions, and some counties are likely candidates to support a Distributed Data Node.

Key Points-Project Scope-Constraints & Risk Analysis

90. We conclude that there are constraints on system development that include copyright, liability, lack of vision, lack of local funding, lack of program buy-in, privacy, custodial responsibility, lack of enforcement of existing standards, lack of standards, revenue stream replacement, perception of unfunded mandate, no cost recovery pass-through, participation constraints, lack of participation /cooperation, existing local investment in land information.

91. We conclude that risks facing the system include the willingness to provide information, copyright & redistribution restrictions creating data gaps, liability, privacy, perception of unfunded mandate, ownership, funding limitations, lack of standards, and lack of enforcement.

Key Points-Preliminary Conceptual Design-Overview

1. We acknowledge that Wis. Stat. Sc. 16.967 mandates The Wisconsin Land Information System.
2. We recommend that the system be a web-based distributed system and should include all types (spatial and non-spatial) of land information.
3. We recommend that this system will serve as a 'Catalog' of Wisconsin land information and function as a 'Server' of these data sets.
4. We recommend that all land based data sets will be contained within a general structure and adhere to content standards to facilitate integration, exchange, and use.
5. We recommend that metadata documentation and indexing will be an essential component of all data sets and will identify custodians for these data sets.

6. We recommend that metadata crosswalk tables be integrated into the system to facilitate data integration and application development.
7. We recommend that the system be a confederated, distributed repository for all locally produced land based data to support local, regional and statewide analysis, planning and decision-making, in particular, the system will be designed to facilitate activities related to the comprehensive master planning requirements contained within the recently enacted "Smart Growth" legislation.
8. We recommend that the system design and functionality must be flexible and durable to withstand the broad spectrum of stakeholders in this system.
9. We recommend that the system be a dynamic enterprise, which will require a phased implementation and a system flexibility to allow its growth, evolution and expansion.

Key Points-Preliminary Conceptual Design-Physical Design

10. We conclude that the physical design—hardware and network configurations—will develop and evolve from basic foundations.
11. We conclude that the only physical difference between the core and distributed nodes might be the establishment of a single load-balancing device.
12. We conclude that the desire and cost-benefit considerations of participants will determine the number of distributed nodes.
13. We recommend that the interconnection of the nodes be dynamic and flexible.

Key Points-Preliminary Conceptual Design-Logical Design

14. We recommend that the system be considered a framework for building applications such as the mapping and spatial analysis functions of comprehensive planning.
15. We recommend that the main components of the system framework include core software functions, a data base design, a set of standards, and a user interface.

Key Points-Preliminary Conceptual Design-Logical Design-Software Functions

16. We conclude that jurisdiction-based bounding may be sufficient, though bounding rectangle support— interactive on-screen or coordinate based—would be more useful to some users and that jurisdiction-based bounding be done with text input or pick-lists.
17. We conclude that an Internet search engine will be needed to find "the system-linked" data stored in remote locations and/or accompanying metadata.
18. We conclude that since much of the data useful for the system remain relatively stable over time, indexes of available data should be built from all levels of participation.

19. We recommend that at least for spatial data, the system will provide data in standard forms and formats.
20. We conclude that for other kinds of data such as text or image documents, it will be necessary to limit the output to common formats such as .pdf and .jpg.
21. We conclude that the chosen formats should support basic spatial data models – area, line, and raster-based approaches such as ArcView Shapefiles, AutoCad .dxf files, and geo-TIFF files.
22. We conclude that text-based documents should be provided as .pdf files.
23. We conclude that database tables should be provided in both text format such as delimited ASCII and in one or more common data base formats such as Dbase, Access, and Oracle.
24. We recommend that the system should be able to inter-convert geographic data between latitude/longitude, county coordinates, Wisconsin Transverse Mercator, Universal Transverse Mercator, and State Plane Coordinates.
25. We recommend that it should support NAD'27, NAD'83, and NAD'83-91.
26. We recommend that for basic geographic data, starting with the Foundational Elements of the Wisconsin Land Information Program, the system should have a standard set of geographic objects and accompanying attribute schemas.
27. We recommend that to the extent possible, these should be based on existing standards and common professional practice.
28. We recommend that the system rely on the use of standards for metadata, data and reference systems.
29. We conclude that to effectively promote the use of standards within the data creator/provider community, effective standards education and incentives will be necessary.
30. We recommend that one component of the standards promotion effort is to have software tools that help create data in standard forms and help ensure compliance with standards. Similar tools will be needed for other standards.
31. We conclude that the system may provide whole data sets in a limited number of spatial and non-spatial formats, and that such file transfers should be made nearly transparent to the end user.
32. We recommend that file transfer standards be defined.
33. We recommend that transfer of pre-formatted images of spatial data such as already created maps in *jpeg* or *gif* formats can be handled similar to file transfers with html and *ftp* tools.

Key Points-Preliminary Conceptual Design-Database Design

34. We conclude that the system database exists primarily on the system output side—the system supports a limited set of standardized output formats and objects.

35. We conclude that regarding what comes out of the system, the system database design consists primarily of data lists and indexes of available data, and standards guiding how data are acquired, processed and presented.

36. We conclude that a somewhat unprecedented database design element that will be necessary for the successful functioning of the system is a dynamic mapping of the system nodes, including information about hardware, software, network architecture, and other information needed to successfully access and retrieve information from a heterogeneous environment.

37. We recommend that one element of the database design that should be maintained dynamically is a list of common data sets that the system users can expect the system to provide.

38. We recommend that such a list should be initiated as a concatenation of several existing lists, such as the Foundational Elements of the Wisconsin Land Information Program, the Framework Layers specified by the Federal Geographic Data Committee, and data sets required to support comprehensive planning.

39. We recommend that the system have an on-going process in place for identification, development, promotion, and enforcement of standards.

40. We conclude that documentation of data sets through various types of metadata is the lynchpin of the system.

41. We recommend that the system user interface and underlying search and query tools are the primary mechanisms for organizing data relations and presentation.

42. We recommend that the look and feel of the interface accommodate a range of sophistication of users, and will provide varying degrees of support for access and data dissemination At all levels though, it will be the means for traversing the relations and pointers inherent in metadata and indices.

43. We conclude that the system will need to maintain information about each site in an accessible form – essentially “the system node metadata” in a central repository, so that the characteristics of the entire system can be readily determined.

Key Points-Preliminary Conceptual Design-Theme Core Standards and Data Cross-walks

44. We recommend that the core of the system provide a number of services that currently impede easy transfer of data from creators to users in useable form.

45. We conclude that the key data processing functions of the system are to *acquire*, *convert* and *disseminate* data in forms useable and understandable to end users.

46. We conclude that the major functions necessary for conversion include software format conversion, semantic conversion ("cross-walk" tables), datum and projection changes, and standards compliance checking.

47. We recommend that a systematic approach to set up processes to identify some essential subset or nucleus of the theme attribute structure and content, which we call thematic core tables which can be thought of as core data dictionaries for the theme.

48. We recommend that a new workgroup or an existing committee draft a core standard for a land information theme.

49. We recommend that the theme workgroup post their work on a WLIP web site and accept comments, review and other input from interested parties.

50. We recommend that workgroup identify a timeline for developing the standard, and for an open review period.

51. We recommend that after acceptance, the standard be published and available to all.

52. We recommend that the workgroup activities be organized and conducted to maximize participation.

53. We recommend that the core standard include a data model, with tables, fields and spatial feature representation, a content standard, unique identifiers, minimum requirements for data elements and the structure and content of the theme crosswalk table.

54. We recommend that a data custodian or designee develop crosswalks.

55. We recommend that the system staff should provide guidance and assistance to help the data custodians in organizations populate crosswalk tables for themes.

<u>Key Points—Preliminary Conceptual Design—WLIS Data—Key Characteristics</u>

56. We recommend that land-related data for the system have at least a minimum of eight components that identify the data, suggest the necessary minimum elements of metadata and help us understand how data is organized and used in the system.

57. We recommend that the system include spatial, tabular and document data.

58. We recommend data themes that describe the data.

59. We recommend data custodians are those who produce, maintain or update the data.

60. We recommend that a number of functions be served such as comprehensive planning, property assessment and taxation, zoning administration, land conservation, town road maintenance and groundwater protection.

61. We recommend that the system use currently available data and any future data as it becomes available.

62. We recommend that the system employ a timestamp to manage the temporal aspects of the WLIS information.

63. We recommend that the system consider geographic or areal extent to provide a spatial reference to the data and be considered as another way of organizing and facilitating access to the data.

64. We recommend consideration for implementation of land-related data that is currently available from potential WLIS participants that could be implemented into the system.

Key Points-Preliminary Conceptual Design-WLIS Data

65. We recommend that the system use the inclusive definition of land information described in Wis. Stat. Sec. 16.967(1) " . . . *any* physical, legal, economic or environmental information or *characteristics* concerning land, water, ground-water, subsurface resources, or air in this state."

66. We recommend that the use of the term *"any"* be expansive and not limited by the words that follow.

67. We recommend that the word *"characteristics"* be emphasized to highlight the notion that land information is any information that can be geographically referenced to areas, lines and points on the earth.

68. We recommend that the system be a distributed system to provide accessible to current and historical data through the use of appropriate standards for structure and content to allow effective use by a wide range of applications.

69. We recommend that each system data set have identified custodian(s).

70. We recommend that the system data structures and content will be designed to facilitate activities related to the comprehensive master plan definition found in the State Budget.

71. We recommend that the system data will be based on general structure and content standards to facilitate integration, exchange, and use and that local and specialized data be kept in forms most appropriate for immediate or primary use, with well-defined cross-walk methods or templates to facilitate application development, integration, exchange, and use.

72. We recommend that the system have documentation and indexing (metadata) suitable for producers and end users.

73. We recommend that the system and data be dynamic and implemented in phases in a way to allow it to evolve.

74. We recommend that the system support integrated and aggregated views of locally produced data, as needed to support regional and statewide analysis, planning and decision-making.

75. We recommend that the system include status tracking of data and projects and provide reporting capabilities.

76. We recommend that development and implementation of the system and its data will be integrated and coordinated with WLIP.

77. We recommend that the system will capitalize on existing land information investments made by WLIP, government agencies, the private sector, and others.

78. We recommend that the data structure and content standards will support temporal views.

79. We recommend that data be obtained from WISCLINC, as well as other local, regional, state and federal sources.

80. We recommend that the system should maximize the value of data collected by agencies for statutory purposes and to allow it to be used for land use planning.

81. We recommend that the system should provide compiled information such as transformed data, studies, and research reports.

Key Points- Preliminary Conceptual Design-WLIS Metadata Standards

82. We recommend that the draw from all eighteen existing data sets or activities and rely on their producers as participants and data contributors.

Key Points- Preliminary Conceptual Design-WLIS Organizational Requirements

83. We recommend that that the system should build on existing institutions while providing effective conduits for local ideas, beliefs, and expression of needs.

84. We conclude that primary authority for WLIS could be vested in the Land Information Board and the Land Council.

85. We recommend that an oversight group should be established to provide direction on issues affecting WLIS, particularly the development and enforcement of standards, data development priorities, data security, privacy, access, cost-recovery, node funding, incentives for participation, and so forth.

86. We recommend that specific people be assigned to be responsible for the day-to-day decisions and activities of the system.

87. We conclude that various degrees of private involvement could also be considered for day-to-day operations.

88. We conclude that final detailed design criteria should include specifications for evaluating which provides the most cost-effective and conducive environment for managing the system.

Appendix W –Written Public Comments

The labeling of each document and the numbering of the comments were added to the original documents and then used to facilitate cross-referencing and discussion by the WLIS Project Team. The labeling is left here so that the reader can more easily find the comments in Appendix X if so desired. If the original document had their comments already numbered those numbers were retained. The public comments total 7 documents.

DOCUMENT A

August 11, 2000

To: Mayor Timothy Hanna, Chairman
Wisconsin Land Council

From: Technical Work Group
Wisconsin Land Council
Loren Hoffmann, Chairman

Re: Review of the WLIS Project Team Report

Cc: Ted Koch, Chair, Wisconsin Land Information Board
Mike Blaska, Executive Director, WLC and WLIB

On July 19th, the Technical Work Group (TWG) met at the request of the Land Council for the purpose of reviewing the WLIS Project Team report entitled the "Final Report of the Wisconsin Land Information System Project Team". The work of this team was built on the earlier work of the TWG. The members of the TWG are listed in Appendix A of this report. This letter represents the consensus of the TWG membership.

The overall reaction of the group was very positive with respect to the work of the Team and the report. There is strong appreciation for the level of effort put forth by the Team. It is the feeling of the TWG that this report is consistent with the intent and scope of activity initially identified in the report of the TWG.

While wishing to express strong support for the report and the scope of activities identified in the report, we would also like to make the following comments and recommendations about the report. We reviewed the report by sections, using the Project Team's scope of work, as found on page 5 of the report, as a general outline for review. Our comments are therefore grouped by these same sections.

Outline the requirements of shareholders that will participate in the system.

1. We support the idea that participation needs to be maximized to strengthen WLIS.
2. Incentives for participation should be identified.
3. Additional work should be done to explain what capabilities and benefits the WLIS will provide. While some benefits are identified later, Section 4, pages 20 and 21, the desires of the stakeholders identified in the interviews can and should be represented more prominently as potential benefits.

4. A promotional team should be identified to assist developing and providing the information required to gain broad support for this effort. This could include informational documents developed for the Legislature and the general public and could highlight benefits from the proposed system.

5. The WLIS Users group could be established in advanced of funding . This group could offer both feedback on application priorities, as well as gain support for the WLIS system.

Develop and recommend a project scope.

6. The report fails to give enough credit to WISCLINC, a functioning web site of the WLIB, that already demonstrates some of the uses of metadata and some of the search functionality of the WLIS system.

7. While WLIS is presented as a new system, the WLIB already has statutory authority for the creation of a clearinghouse (WISCLINC) and to coordinate land information activities of state and local agencies, which conceptually is very similar to the early phases of the system proposed; the WLC has statutory responsibility for recommending a WLIS. This is offered to show that this is not such a large step for the WLC and WLIB to propose the creation of a WLIS, as presented in the Project Team report.

8. There was some concern that the development steps seemed to focus on data structure design prior to the identification of applications to be supported. This is the reverse of the normal development cycle, where the applications to be supported are identified first, then the underlying database is identified. However, this is consistent with data warehouse development practices.

Prepare a preliminary conceptual design for the system, including work plan and timeline.

9. Page 48 of the report discusses Stakeholder participation and the possible "creation of new bodies specifically focused on WLIS applications and operations." The group would like to offer the following suggestions related to theses groups:
    - WLIB should be recognized as the appropriate body to oversee technical and managerial aspects of WLIS operations; while WLC should be recognized as the appropriate body to guide the initial applications of WLIS.
    - The Participants Group identified in the report should be formed by WLIB, with appropriate representation of all organizations providing data, management and technical services for WLIS.
    - The Users Group identified in the report should be formed by WLC with appropriate representation of the broad range of organizations that may use WLIS.
    - The memorandum of understanding between the Council, Board, and OLIS would be an appropriate mechanism to handle the overall oversight of the WLIS.

Prepare cost estimates.

10. The cost estimates appear to be lower than likely costs for a system as specified.
11. On page 58, the requirements for a distributed node should be clearly identified, so that organizations potentially interested, could identify their costs for creating and maintaining a node. Clarification should be made to note that the node costs in the report are for the core node only, and not for a distributed node.
12. Much of the Mapping Services identified on page 59 could potentially be provided in Phase 1 by using off-the-shelf software products.

Prepare functional requirements, cost estimates and a timeline for the 1st biennial phase of the project.

Comments were all provided in sections above.

Other comments.

13. Next Steps.

There clearly was support for the need to build support for the WLIS project. Points relative to this are included above, and include such items as developing informational literature for the general public, potential stakeholders, and the state Legislature, and, have a promotional team identified.

There was support for the appointment of a Systems Manager. Many items were identified in the report that could be done between now and July 2001. Many more additional items were identified by the TWG and noted above. However, without a staff member assigned it is unclear what, if anything, can actually be moved forward during the next 12 months.

There was support expressed for a policy and governance group, and this is more fully covered in sections above. Additionally, there is clearly a need for standards if this system is to become a reality.

Appendix A

Technical Working Group
Wisconsin Land Council
July 19, 2000

Chair
Loren Hoffmann, Office of Land Information Services – loren.hoffmann@doa.state.wi.us

Damon Anderson, Wisconsin Land Information Association - danderson@co.ozaukee.wi.us

Michael Bohn, Natural Resources – bohnm@dnr.state.wi.us

Lynn Grube, Government Information Processing Association of Wisconsin - oneida@newnorth.net

* Bob Gurda, Wisconsin State Cartographer's Office - rfgurda@facstaff.wisc.edu

Fred Halfen, Ayres and Associates Inc. - halfen.f@ayres-msn.com

David Hart, UW Land Information and Computer Graphics Laboratory - dhart@macc.wisc.edu

* Chuck Kell, American Planning Association – Wisconsin Chapter – kellc@co.portage.wi.us

Ted Koch, State Cartographer - tkoch@facstaff.wisc.edu

Mike Koutnik, ESRI, Inc. - mkoutnik@esri.com

* Greg Landretti, Revenue - glandret@dor.state.wi.us

Jane Licht, Wisconsin Register of Deeds Association - licht@co.dane.wi.us

* Bill Malkasian, Wisconsin Realtors Association - wem@wra.org

* Tanace Matthiesen, Transportation – tanace.matthiesen@dot.state.wi.us

* William Mielke, Ruekert & Mielke, Inc. - wmielke@ruekert-mielke.com

Kent Pena, U.S. Natural Resources Conservation Service - kpena@wi.nrcs.usda.gov

David Schmidt, Winnebago County - DSchmidtJEFE@co.winnebago.wi.us

Jerry Sullivan, Office of Land Information Services – jerry.sullivan@doa.state.wi.us

Kathy Swingle, Burnett County - kswingle@win.bright.net

* James Vandenbrook, Agriculture Trade and Consumer Protection - vandejp@wheel.datcp.state.wi.us

Steve Ventura, UW System, Institute of Environmental Studies and Department of Soil Science - sventura@macc.wisc.edu

Mark Walter, Council of Regional Planning Commissions - mwalter@baylakerpc.org

OLIS Staff Resource

Sarah Kemp, Office of Land Information Services – sarah.kemp@doa.state.wi.us

* Indicates that the member was absent from the TWG meeting on July 19, 2000 when the group reviewed the WLIS Project Team report. Tanace Matthiesen was represented by Dennis Presser.

DOCUMENT B

August 8, 2000

Ted Koch, Chair, Wisconsin Land Information Board (WLIB)

Tim Hanna, Chair, Wisconsin Land Council (WLC)

Office of Land Information Services

P O Box 1645

Madison WI 53701-1645

Dear Sirs:

The Wisconsin Land Information Association (WLIA) would like to thank you for the opportunity to review and comment on the Final Report of the Wisconsin Land Information System (WLIS) Project Team. We would like to compliment the Team on their timely completion of the project.

The WLIA Board of Directors met on July 21, 2000, to formulate the following comments for your consideration:

1. The WLIB should be recognized as the appropriate body to oversee the managerial and technical aspects of the WLIS operation.

2. The perception of neutrality in the operation of the WLIS is of utmost importance to the land information community, because of the wide variety of clients that will need to be served by the WLIS. In addition, we believe that all possible sites for housing the Core Data Services should be investigated, including specifically, but not exclusively: the University System, a quasi-governmental organization, the private sector, or state agencies.

3. The WLIB should be asked to form a WLIS Participants' Committee, with appropriate representation of all organizations providing data, management and technical services for WLIS (similar in makeup to the Technical Working Group (TWG)).

4. The WLC should be recognized as the appropriate body to guide the initial application of Land Use Planning within the WLIS.

5. The WLIB and the WLC should form a WLIS Users Committee, with appropriate representation of the broad range of organization that may use WLIS, not limited to planning related applications.

6. We believe that the existing Wisconsin Land Information Clearinghouse (WISCLINC) wisclinc.state.wi.us currently administered by the State Cartographer's Office should be recognized

as the foundation for Level I participation in WLIS as outlined in the section on Levels of Participation (Level I – Providing Information About Data, p.13) within the Project Narrative. WISCLINC's information and usefulness has been consistently expanded in quality and quantity over the past 5 years, by the efforts of the Wisconsin Land Information Program (WLIP) and the State Cartographer's Office, with start-up funding provided by the Federal Geographic Data Committee. WLIP resources supporting WISCLINC are scheduled to expire at the end of 2000, at least 8 months before the earliest WLIS funding could become operative. The WLIA believes that the WLIS must maximize the benefits of all previous investments in land information including WISCLINC and the formal metadata training received by more than 100 GIS/LIS practitioners across the state. WISCLINC can and should be continually funded and enhanced to accommodate the added features needed to serve level I participation in WLIS.

7. The concept of a WLIS is considered a modernization effort consistent with the goals and objectives of the WLIP. As such, we recommend that the WLIB identify a list of needs and associated costs for the successful development of a WLIS. It has been well documented that WLIP funding alone is not sufficient to address the original WLIP mission of modernizing local land records and land information systems. Thus, the integration of those systems and the distribution of that information need additional resources and funding. Start up revenue sources, including the possibility of appropriating WLIP funding, either in kind or monetary, to be used toward the planning and development of a WLIS prototype can be considered once costs have been identified. We would like to reiterate that the original TWG report, which was received by the WLC, included a list of possible funding sources for the WLIS. We recommend that this list of possible funding sources (included in the original report) be re-examined as potential solutions to the funding issue. This list of possible funding sources is attached.

8. The WLIA should be recognized as the premier land information body of expertise and should be used to serve as a conduit for furthering the participation in and broadening the usefulness of the WLIS into the future.

9. We have concerns regarding the lack of data security mechanisms within the system. There should be assurances of preserving the integrity of the data between its original source and the WLIS.

10. Specific guidelines must be developed regarding privacy issues, appropriate content for WLIS, the distribution and viewing of personally identifiable information, and the processes for protected individuals to request protection or restriction of information. On a similar note, explicit guidelines need to be developed regarding the timeliness and accuracy of the data, with disclaimers pointing users to the original source of the data for confirmation.

11. While reviewing the two illustrations of the levels of participation on pages 13 and 15, we encountered difficulty in interpreting the second chart dealing with Level II participation options. This would be best remedied by including the title "Level II Participation Options" on the chart.

12. Recognizing the disparity in sophistication of local land information systems throughout the state, the report should contain realistic examples of economic and technical benefits of the system; especially for the private sector. These examples would provide the incentive to local governments to broaden the scope of their activities to include the WLIS.

13. Discussion of the possible financial risks of the system (shown on page 23) must be clarified to avoid the potential interpretation that this section is discussing funding for the whole system. We agree there are risks involved with start up vs. operational funding, and there could be the perception that a local revenue stream is being displaced by WLIS. This needs to be clarified.

14. In addition to the previous point, we feel the issue of cost recovery should be examined as a separate item from the discussion of the risk factors.

Once again, on behalf of the Wisconsin Land Information Association and its Board of Directors, I would like to thank you for this opportunity to offer our thoughts on the Project Team's Final Report of the Wisconsin Land Information System. We are looking forward to the completion of a prototype and the prospect of an alliance with all who are working toward the successful launching of a Land Information System that will emphasize the leadership role Wisconsin has always held in Land Information Modernization.

Sincerely,

James M. Johnston

WLIA President-Elect

Attachment – Original TWG WLIS Funding Sources

(This is a copy of Page 4 of the original TWG report regarding the funding sources)

Recommendations

Budget

Although the amounts in the current Governor's budget proposal are sufficient to begin the planning and development of the WLIS, they are insufficient to complete the entire system outlined in this report. Additional sources of funding were identified at the request of the State Budget Office as possible funding sources which should be considered and evaluated such as *[no priority order is intended in the list below]:*

a. Building permit fee.
b. Real estate transfer fee.
c. Increase recording fee and tag increase for statewide initiatives.
d. Certified survey map fee [local level].
e. Plat review fee.
f. Condo review fee.
g. Digital plat submission fee.
h. Federal grants, e.g. National Resource Conservation Service, Federal Geographic Data Committee, Federal Emergency Management Agency, and Environmental Protection Agency.
i. State WATF grants.
j. WLIP funds for statewide initiatives.
k. "Match relief" funds from the State.
l. DOA assessment of other state agencies [current statutory authority].
m. Grant program applications.
n. Coastal management grants.
o. Private organizations to sponsor web pages.
p. Bonding, e.g. State of Iowa.
q. Master lease.
r. User fee.

DOCUMENT C

COUNTY OF DANE

Land Information Office

Dane County Land Information Office

MEMBERS	**Kevin Connors, Chair** Dane County Conservationist	**James Amundson** Dane County Treasurer	Bonnie Hammersley Manager, Information Management	**Jane Licht** Dane County Register of Deeds	**Jeanie Sieling** Director, Planning & Development
ADVISORS	**Kamran Mesbah** Environmental Engineer	**Ron Ripp** County Surveyor			
STAFF	**Diann Danielsen** LIO Manager	Steven Cripps Senior Land Information Analyst	**Tim Confare** Senior Land Information Analyst	**Frederic Iausly** Senior Land Information Analyst	

August 11, 2000

Tim Hanna, Chair, Wisconsin Land Council
Ted Koch, Chair, Wisconsin Land Information Board
Office of Land Information Services
17 S. Fairchild Street, 7th Floor
Madison WI 53703-3219

Dear Sirs,

The Dane County Land Information Office has reviewed the Technical Working Group (TWG) report, the WLIS Project Team report, and the comments of the Wisconsin Land Information Association (WLIA). We commend the WLIS Project Team for staying true to the guidance of TWG and the vision outlined for the Wisconsin Land Information System (WLIS). We endorse the comments of the WLIA on the Project Team report (see attached) and consider them to represent the views of the Dane County LIO, along with these additions:

1. County Land Information Offices have statutory responsibilities for local land information coordination and clearinghouse activities. Like WISCLINC, this is an example of where we should build upon existing resources and organizational structures to develop WLIS. LIOs should have a lead role as WLIS data producers, coordinators, and local nodes.

2. While the WLIS report contains transitory references to non-spatial land information, the emphasis is clearly GIS-centric (ex: the beginning project phases and expenditures are focused on enabling web mapping). Our experience in Dane County is that tabular and imaged document data is invaluable to land information users and can be an early and quick demonstration of success. The report should place more emphasis on these forms of land information and their early integration and implementation in WLIS.

3. In order to support the development and use of WLIS, there should be a clear emphasis and commitment to continuing county and municipal land information modernization efforts.

4. As WLIS funding sources are identified and examined, consideration should be given to county governments' ability to use identified revenue sources for local purposes.

Thank you for the opportunity to review the WLIS Project Team Report and submit our comments. We look forward to participating in the statewide land information system!

Sincerely,

Kevin Connors, Chair, Dane County LIO Committee

cc: Charity Eleson, Dane County Legislative Lobbyist

DOCUMENT D

From: Bret Davies [juneaulo@mwt.net]
Sent: Friday, August 11, 2000 4:09 PM
To: loren.hoffmann@doa.state.wi.us
Subject: comments on report

Lori Scully and I have talked at lengths about the report and some of the concerns that we have are:

1. Who is going to be oversee WLIS? What is the organizational structure and how does it affect possible strategic grants for the counties? If this is a strategic initiative will it be funded by some of our retained fees? What role will the WLIB and WLIA have in this, and what if the county has no interest in participating?

2. What about WISLINC? There is no mention of this and it seems that the core information or structure is already in place.

I guess to sum it up, we think the idea is sound for a clearing house, but without knowing exactly how it will relate back to the counties and impact what we are trying to achieve, ie: funding, standards, timeframes, key players... we have a hard giving our endorsement to the report.

Bret A. Davies, LIO
Juneau County Land Information
220 East State Street
Mauston, WI 53948
608-847-9446
juneaulo@mwt.net

DOCUMENT E

From: Carroll & Ann Zillmer, Black River Falls, WI
Sent: Wednesday, August 09, 2000 5:16:24 AM
To: WLISTeam@doa.state.wi.us
Cc: sarah.kemp@doa.state.wi.us
Subject: WLIS FEEDBACK
Auto forwarded by a Rule

Since I am the utility representative on the Board, my questions seem to be more in that arena. Utilities are big users of public records in the Land Office and the Register of Deeds Office. As a records user in 34 counties in Wisconsin I have seen various systems of maps and record filing. Maps are nearly non-existent in some counties. What a great plan this is!!!

QUESTIONS:

1. Will a format document be available in electronic form, as well as paper for various agencies to use to send data to WLIS?

2. Will WLIS have an input office staff or will each County and entity input their own data? Private utilities will want to query or view public records first as they lay out cable routes and transmission routes needing:

   Section Map

   Current land deeds to prove ownership appropriate certified survey maps

   Later they will need to input to place their signed and notarized easement documents into the system. Will they be able to input their own information?

3. Would they need to purchase a NODE to do this? Could various utility companies share a NODE - Rent, Lease or Purchase? I see a great advantage to the companies as well as the Counties and States to have one record for all.

4. Would this system eliminate some business for Title Companies? How would private citizens access the system, or would it increase the business for Title Companies? Will this bring opposition from Title Companies, in your opinion?

5. Would current volumes and maps be accessible in the Court House yet, as they are today for viewing by private citizens?

6. How would updates be handled? How do we know the data is current; will each entry be dated?

7. Privacy is being studied; This is confusing because we are talking about public records, I think. If there is other data that is confidential could it be put on a secure layer and have a different access process? We are the Land Information Board, so I don't know what could be private or confidential in WLIS.

8. Milwaukee County data base--20 gigabytes, plus: It would be redundant to copy that to the WLIS system. Could we provide a link that would access their record as it is? Often in state government we read that issues apply to all "EXCEPT Milwaukee County".

DOCUMENT F

From: **Walbrun, Kassandra**
Sent: Thursday, August 10, 2000 12:51 PM
To: Hoffmann, Loren
Cc: Blaska, Michael; Sullivan, Jerry; Storm, Jeanne; Krauskopf, Tom
Subject: Error in WLIS report

Page 25 of the WLIS Project Team report:

There is a significant error in the WLIS report relating to the comprehensive planning legislation that I highly suggest be revised...

I offer suggested revisions in red underline and comments in blue.

1. The passage of the "Smart Growth" legislation requires ~~all~~ local units of government by the year 2010 to base all land use decisions such as zoning changes, annexations, and subdivision approvals, ect. on an adopted comprehensive plan according to statutory requirements found in s. 66.0295, Wis. Stats. ~~over 12,500 in population to develop and adopt comprehensive land use plans by the year 2010.~~ *(The population reference of 12,500 only relates to the adoption of model Traditional neighborhood development ordinances only by cities and villages which found in s. 66.034, Wis. Stats.)* This is a worthy ~~goal~~ effort *(not really a goal, its a requirement of law)* which should help guide future growth in Wisconsin's communities. These comprehensive plans are required to be updated at the minimum every ten years. *(This is an important aspect of the legislation especially in justifying a WLIS development)* Completion of a comprehensive plan requires a vast array of land record information e.g., existing land uses ~~cover~~, *(This is the actual statutory reference....)* soil survey, census information and transportation analysis. For local units of governments to gather or access the necessary land record information to complete a comprehensive plan per state statute, a vehicle such as a WLIS is needed. A WLIS will allow all units of government to access land record information to complete and update their comprehensive plans and to make informed land use decisions.

Please let me know if you need further clarification or additional info...

Kassandra Walbrun, AICP
Program and Planning Analyst
Office of Land Information Services
17 S. Fairchild Street, 7th floor
Madison, WI 53703-3219

phone: 608.264.6116
fax: 608.266.5519
e-mail: kassandra.walbrun@doa.state.wi.us

DOCUMENT G

August 9, 2000

To: WLIS Project Team Report Feedback

From: Dr. D. David Moyer,
National Geodetic Survey State Advisor, and
Advisory Member of Wisconsin Land Information Board

Bernard J. Niemann, Jr.,
Professor, Land Information & Computer Graphics Facility, and Urban & Regional Planning

Subject: Review of Final Report of the Wisconsin land Information System (WLIS) Project Team

We appreciate the opportunity to comment on the above report. The system proposed is very important, and critical in providing the maximum long run benefits of the Wisconsin Land Information Program (WLIP).

Our comments are divided into two parts:

A. **Suggestions for clarification and modification,** based on our understanding of the report. These comments are contained in **Section A.**

B. More substantive comments, primarily related to the **economic, applications, and communication aspects of the proposed WLIS system**. These comments are contained in **Section B.**

A. General Comments

In general, the WLIS Project Team is very well done, especially given the time available to complete the task. We would note the following comments:

1. Page 1, paragraph 3: Given WLIS is seen as multipurpose, we suggest changing the last sentence to read, "These themes . . . support **a variety of** decision-making actions."

2. Page 2, paragraph 7: In the sentence regarding the relative cost of WLIS versus "what has been spent on land information in Wisconsin to date", We suggest that a more meaningful comparison is WLIS cost vis-a-vis the on-going costs that are incurred to support the current existing (historically analog) land information system in Wisconsin (i.e., hundreds of millions of dollars per year. See Larson Report).

3. Page 7, Stakeholders and Stakeholder input: We suggest the addition of references, and possible material from the **Wisconsin Land Records Committee** reports, that provide substantive material regarding who the stakeholders are and the uses they have for land information.

4. Page 7, paragraph 2: The report states that it (i.e., the WLIS Project Team) "4. Actively seek input from several members of the Land Council and Land Information Board." Our review of "Appendix I. Functional Requirements Analysis Data Sheets" suggests that technically as an actual Board member only one member of the WLC Council was interviewed (i.e., W. Mielke) and only one member of the WLIP Board (i.e., N, Neher). Also, in review of their responses, they seemed to be commenting in the context of their actual day-to-day responsibilities and not from the perspective of their Board responsibilities. Was that the intent? If so, we don't think it can be said that the Board and Council interests or needs have necessarily been addressed.

5. Page 8, paragraph 5, item 5: Even though WLIS is seen as a state system there could be other existing data sets from other sources that would be of importance (i.e., NRCS STATSCO, SURGO Soil data, U.S. Commerce Census Data, etc.). We recommend including the following change, "A platform supporting . . . views of state, locally provided data and **other sources such as federal sources**."

6. Page 8, paragraph 5, item 9: The numbering scheme suggests a rank order (e.g., item 1 is more important than item 9). Plus there is an apples and oranges issue. Items 2-8 are technical requirements. Items 1 and 9 are how the WLIS will be hopefully used (i.e., . . . public using WLIS to support land management decision-making activities . . ." We suggest two requirements categories be developed (i.e., Category 1: Functional requirements, items 2-8. Category 2: Application requirements, items 1 and 9).

7. Page 11, paragraph 4: The idea that the development of capabilities for the general public in the first phase of the WLIS was felt to be **subordinate** may be logical from a technical perspective but not very strategic from the public's or legislative perspective. We believe some parallel strategy would be more prudent. Proceed with the technical underpinnings but early on put up data sets of broad public interest (e.g., WISLAND, 2000 Census, City of Madison data sets) and immediately adopt user friendly access tools (e.g., ArcExplorer).

8. Page 11, paragraph 5, item 6: Along the same line of thinking as the above, we suggest, add to "Item 6. Will **quickly support simple planning and analysis applications** (e.g., a wizard which can help locate prime farm soils) and will eventually support other land information applications . . ." We believe that WLIS must be seen as "useful" almost immediately.

9. Page 12, paragraph 1: The last sentence suggests that "many federal agencies **could** provide data in forms and formats useful to WLIS in its early stages". Later, on page 26 in key point 18, the wording is "Federal agencies **should** provide data" (emphasis added). We suggest this two be made consistent (i.e., either could or should).

Again, we also suggest that greater consideration be given to cooperative efforts with Federal agencies, not only in the "early stages" of WLIS (page 12), but also on an on-going basis. There are many instances where land data can be cooperatively developed and shared among local, state, and Federal agencies (e.g., geodetic, floodplain, wetland data sets)

10. Page 12-18: It would be helpful to modify the tables and figures to make the distinction between "levels" and "options" more readily apparent.

11. Page 13, paragraph 3: Assumptions about sources of data for WLIS needs to be codified into a new table (i.e., Potential Data Sources for WLIS) so the issue such as ". . . all agencies that receive funding from the Wisconsin Land Information Program are required . . ." doesn't get lost. Yes, it is essential that many WLIS data sets need to be up-to-date. Access to transactional data sets collected and maintained by local units of government is essential.

12. Page 15, diagram: Again, some federal data sets will be quite useful. Add "Data from Providers **federal**, state . . ."

13. Page 18, paragraph 2: We suggest the statement ". . . WLIS will be open to anyone . . . developing applications . . . will be a **low priority** . . . because the direct benefits are not compelling" may be to the contrary. Some selected and limited set of applications for WLIS could deliver a range of benefits, both direct (i.e., reduction in planning preparation costs, which is now beginning to happen. Winnebago County's request for a smart growth transportation grant was much lower than other similar requests due to the availability and of access to existing digital data.) to indirect benefits (e.g., actual change in a proposed land use plan due to better wetland information). Again, as the saying goes, "All investments in technology, data, etc. are costs, benefits only begin to accrue when technology is used." (Tomlinson, 1998).

14. Page 21, paragraph 1, item 5: We all inherently hope that "Better, more informed decision-making" will occur when high quality data is available. First, "better" is a tricky word. According to the dictionary, "better" means "To advance or make safer the conditions or circumstances" of planning. Is that what was intended? Also, in item 5, the assertion that the "greater level of detail and accuracy" results in more informed decisions can be questioned. There are other critical factors that impact the

usefulness of data such as completeness, timeliness, etc. Also, there is the "forest from the trees" problem. The level of detail needed is a function of the application and use of the data. We suggest the following change: "The general availability . . . of high quality data . . . for decision makers . . ." (strike "that have a greater level of detail and accuracy").

15. Page 20, paragraph 2: The Wisconsin Land Information Board is the logical and most qualified organization to oversee the maintenance of the WLIS system, WLIS data, and metadata standards.

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17. Page 22, paragraph 6, item 3: We disagree with the conclusion that "The absence of a cost recovery pass-through . . . to recover the cost of production . . ." is a constraint. We have discovered as part of a contract with the U.S. Army Corps of Engineers along the coast of Lake Michigan, supports the opposite conclusion. Cost recovery, copy right, etc. actually inhibits use. Thereby, the stream of application benefits is inhibited due to less use of the data.

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19. Page 28, item 51: See item 11 above.

20. Page 29, item 75: See item 12 above.

21. Page 30, item 90: See item 14 above.

22. Page 39, key point 10: Meaning of this conclusion is not clear, since WLIS is part of overall WLIP (e.g., WLIS data is WLIP data).

23. Page 43, paragraph 2: The discussion of Census data and span of years for which Census data will be available to support comprehensive land use planning is not clear. (e.g., 1970 to 2010 is 40 years, not 30)

24. Page 44, paragraph 1 (and Appendix P): Not clear why ownership parcels not mentioned, since control of parcels by owners is the key in developing and implementing a successful, comprehensive land use plan.

25. Page 44, paragraph 1: The WLIB, the state, and NRCS are jointly funding and implementing a state-wide modern soil survey including orthoimagery. This could be an opportunity. Why not anticipate this activity now underway and build some initial common applications for WLIS related to access to soils orthoimagery and soil use attribute sets? Those counties, jurisdictions with other data sets such as parcels could further expand applications.

26. Page 44, paragraph 1, line 6: typo -- add "be" at end of line.

27. Page 44, paragraph 4, line 9: typo -- theses = these

28. Page 47, paragraph 5: In this paragraph authority for the development of WLIS and the responsibility for the development of applications are discussed. We agree the WLIB is most suited to help orchestrate the “technical and land information policy matters.” The WLC has recently been given new implementation responsibilities for smart growth. In respect to “how WLIS is deployed and used” we suggest a jointly administered effort between the WLC and WLIB. WLC provides its planning application expertise, WLIB provides its broader understanding of applications (e.g., 911, emergency management, forestry management, floodplain/storm water management, local governmental land records modernization, school district planning and bus routing, etc.).

29. Page 49-50: Text and figure are inconsistent as to whether a "Committee" or "Group" of WLIS Participants.

30. Page 51-52, paragraph 1 and item Post Phase 1-3rd year: The proposed WLIS timeline is respectably cautious but again not sufficiently sensitive to the need to deliver benefits meaning applications. We suggest two time lines in parallel be included, one for technical matters and one for applications. We also suggest that separate budgets be prepared for each.

31. Page 55, item 48: We suggest that the Wisconsin Department of Revenue (DOR) chair a workgroup to draft a core standard for a land information theme and assume custodianship for that theme in contrast to yet creating another version of a land use theme.

32. Page 59, paragraph 1: We concur that “It is essential that the WLIS become a viable entity as soon after implementation as possible.” We also agree that “The adoption of the comprehensive land use planning legislation lends urgency to the early establishment of the WLIS.” And we concur that adequate funding . . . is critical to long term success.” Again for the record, we strongly recommend that an applications effort(s) begin in parallel with the technical development and that a separate budget be provided for the applications track.

33. Page 59, paragraph 3, last two lines: Suggest rewording to indicate that WLIS will have many more capabilities than data retrieval and map printing.

34. Page 62-63: Not clear why year one and year two items in text are not equal to data in table. (text is $673,500 for year 1 and $620,000 for year 2.)

35. Page 64, paragraph 1: Probably more importantly, Wisconsin has been, and is, viewed by others outside the State, as **the** leader in LIS development. Three other states have now emulated the Wisconsin funding structure for modernizing all or some portions of their local land records systems. These are: Oregon; Illinois; and Michigan.

36. The Key Points listings in general: We found these to be somewhat confusing, since conclusions and recommendations are mixed together. Also, the total of 196 key points tends to be overwhelming. We suggest that recommendations be given more prominence and listed in a consecutive number set. The conclusions could be given less prominence, since they are the basis for recommendations.

B. Comments on the Economic Aspects of the Proposed WLIS System

While the WLIS Project Team Report is generally very well done, we feel the section dealing with costs of WLIS needs substantial strengthening in a number of respects.

For instance, economic benefits of WLIS were not mentioned in the report. Information on benefits is needed to provide a balance and a benchmark by which expected cost data can be compared to expected benefit data. Second, some of the cost data that are included in the report needs to be expanded and clarified. This is especially true as to the cost of the core node and each the distributed nodes.

Also, most of the material in Section 6 (pages 22-24) on Constraints and Risks is related to economics of WLIS. Therefore, we suggest that most of the material in Sections 4 and 6 be revised and rolled into a new section called **Economics of the Proposed WLIS System**. These materials could be organized as follows.

1. Introduction

In this section, provide the context in which the economics of WLIS will be discussed. In particular, we suggest the inclusion of cost information such as the 1978 Larsen report regarding the annual costs for land information in Wisconsin, as well as the investments in the WLIP program over the last 9 years (e.g., from the WLIP annual survey reports).

2. Estimated Costs of the Proposed WLIS System

This section could include much of the information from pages 58, 62, and 63. We suggest that it be emphasized that the costs outlined in the table on page 62 are for the core node only. We suggest taking a second look at proposed staff costs, and increasing them, since we believe they are too

conservative. Also, costs should be added for any space requirements, in order to provide a complete picture of system costs.

A second part of this section should be devoted to costs for distributed nodes. We have two suggestions as to this part: first provide costs on a per node basis, and second, separate the costs into fixed and variable costs, so that the variable cost of adding additional nodes will be clear (and that overhead or fixed costs such as for staff decease per node as more nodes are added to the system).

3. Source of Funds to Support WLIS

We suggest adding this part, to give balance to the report, and to indicate that a number of possible sources of economic support for WLIS have been considered. This should include the full list of options outlined in the TWG report sent **to** WLC (this section was deleted by WLC, since they felt it was outside the scope of their charge). However, these revenue sources would seem especially germane here and should be included. Emphasis should probably be given to such things as GPR funding, provision of direct staff support by several departments with major land data responsibilities, and other in-kind support.

4. Benefits of WLIS Implementation and Operation

This section could draw on the material contained in the draft WLIS report in Section 4 (Benefits), and Section 6 (Constraints and Risks). Among the points we suggest be given emphasis are the following:

a. Benefits can be separated into **direct and in-direct** benefits, and that very often the latter are the most important.

b. **Cost avoidance** is often a major benefit (here can tie in substantial on-going, annual cost of Wisconsin land records system (i.e., Larsen study and subsequent estimates of impact of inflation on these findings.)

c. **Efficiency** portion of benefits (e.g., to local and state users of WLIS in sharing data with others.)

d. **Effectiveness** benefits from more data, more widely available, leading to more uses, and better decisions as a result of their use, are generally a much larger, more important component of benefits, as compared to efficiency.

We also suggest several examples of benefits that have flowed from the WLIP be included for each of the above types of benefits, indicating that such benefits are typically substantial in amount, and often not expected, based on pre-installation analysis. (Published Bulletins from the Land and Computer Graphics Facility at the University of Wisconsin-Madison that document these benefits could be included by reference or in an additional appendix.)

Again, we feel the report is generally well done and the WLIS concept well thought out. Our main concern is with the economic section. Strengthening this section will help assure actual WLIS costs well be close to those projected in the report, and that the benefits of WLIS will be expected and documented. Such documentation will in turn help assure the continued support for the WLIP and the WLIS component thereof, a LIS that will do much to provide the long range land information needs of all sectors of Wisconsin's growing, dynamic economy.

C. Comments on the Applications Aspects of the Proposed WLIS System

While again the WILS Project Team Report is comprehensive, thoughtful and generally well done, we understand that the team was asked to primarily focus on the technical aspects of WLIS. But, as we pointed out throughout our responses, the support and development of applications for WLIS are equally important. Every cent of development is simply a cost. Benefits from WLIS only begin to accrue when applications can be addressed. So in summary we strongly recommend the following:

1. Establish an applications development manager day 1.
2. Select/create 3-5 potential diverse applications for WLIS within six months.
3. Create a separate budget item for applications development for WILS.

D. Comments on the Report in respect to Education and Outreach

As it stands, the report is for those heavily involved in the actual design and implementation of information systems and their requisite data requirements. For legislative and public consumption (advocators) something much more communicative is in order. We suggest that OLIS be asked to enlist professional assistance to prepare such materials. We would be most willing to review these items as may be appropriate

Appendix X – Project Team Response to Written Public Comments

A total of 7 written public comments were received related to the WLIS Project Team's report. These comments are found in their entirety in Appendix W of the report.

The public comments received during the 30-day comment period of the Final Report by WLIS Project Team were arranged, by the team, into one of four categories. These categories are:

1. **Governance/Policy** – these comments raise issues which were viewed as either governance or policy items which would more appropriately be addressed by the Wisconsin Land Information Board and the Wisconsin Land Council.
2. **Technical** – these are changes that resulted in changes to the actual report itself, as the changes were grammatical corrections, or corrections of fact, without changing the content or intent of the report itself.
3. **No Action** – these are reflective comments on the report, but for which it was felt no specific action was required at this time.
4. **Potential Change** – these comments would require changes to the report and were reviewed for possible action. The action taken by the Team were categorized into four options:
    - Disagreement with the comment, and the Team chose not to alter the report.
    - Agreement with the comment, but the Team felt that the change would be "substantial" and thus did not make the requested change.
    - Agreement with the requested change, but the Team felt that the issues were in fact already addressed within the report.
    - Agreement, and we made the change.

Within each of the four categories, the comments are grouped, based on the documents from which it was received; the lettering of the documents and the numbering of the comments were added to the original document, and then used to facilitate cross-referencing and discussion by the group. They are left here so that the reader can more easily find the comment in the original document if so desired. If the original document had their comments already numbered, the numbering scheme was retained.

Governance/Policy Issues

The WLIS Project Team identified the following issues as Governance and Policy issues. The Team felt that these issues are the responsibility of the Wisconsin Land Council and the Wisconsin Land Information Board. However, the Team would like to assist the council and board in any way that they deem appropriate.

Document A TWG Review

4. A promotional team should be identified to assist developing and providing the information required gaining broad support for this effort. This could include informational documents developed for the Legislature and the general public and could highlight benefits from the proposed system.

5. The WLIS Users group could be established in advanced of funding. This group could offer both feedback on application priorities, as well as gain support for the WLIS system.

6. While WLIS is presented as a new system, the WLIB already has statutory authority for the creation of a clearinghouse (WISCLINC) and to coordinate land information activities of state and local agencies, which conceptually is very similar to the early phases of the system proposed; the WLC has statutory responsibility for recommending a WLIS. This is offered to show that this is not such a large step for the WLC and WLIB to propose the creation of a WLIS, as presented in the Project Team report.

9. Page 48 of the report discusses Stakeholder participation and the possible "creation of new bodies specifically focused on WLIS applications and operations." The group would like to offer the following suggestions related to theses groups:
    - WLIB should be recognized as the appropriate body to oversee technical and managerial aspects of WLIS operations; while WLC should be recognized as the appropriate body to guide the initial applications of WLIS.
    - The Participants Group identified in the report should be formed by WLIB, with appropriate representation of all organizations providing data, management and technical services for WLIS.
    - The Users Group identified in the report should be formed by WLC with appropriate representation of the broad range of organizations that may use WLIS.
    - The memorandum of understanding between the Council, Board, and OLIS would be an appropriate mechanism to handle the overall oversight of the WLIS.

Document B WLIA Review

1. The WLIB should be recognized as the appropriate body to oversee the managerial and technical aspects of the WLIS operation.

2. The perception of neutrality in the operation of the WLIS is of utmost importance to the land information community, because of the wide variety of clients that will need to be served by the WLIS. In addition, we believe that all possible sites for housing the Core Data Services should be investigated, including specifically, but not exclusively: the University System, a quasi-governmental organization, the private sector, or state agencies.

3. The WLIB should be asked to form a WLIS Participants' Committee, with appropriate representation of all organizations providing data, management and technical services for WLIS (similar in makeup to the Technical Working Group (TWG)).

4. The WLC should be recognized as the appropriate body to guide the initial application of Land Use Planning within the WLIS.

5. The WLIB and the WLC should form a WLIS Users Committee, with appropriate representation of the broad range of organization that may use WLIS, not limited to planning related applications.

6. We believe that the existing Wisconsin Land Information Clearinghouse (WISCLINC) wisclinc.state.wi.us currently administered by the State Cartographer's Office should be recognized as the foundation for Level I participation in WLIS as outlined in the section on Levels of Participation (Level I – Providing Information About Data, p.13) within the Project Narrative. WISCLINC's information and usefulness has been consistently expanded in quality and quantity over the past 5 years, by the efforts of the Wisconsin Land Information Program (WLIP) and the State Cartographer's Office, with start-up funding provided by the Federal Geographic Data Committee. WLIP resources supporting WISCLINC are scheduled to expire at the end of 2000, at least 8 months before the earliest WLIS funding could become operative. The WLIA believes that the WLIS must maximize the benefits of all previous investments in land information including WISCLINC and the formal metadata training received by more than 100 GIS/LIS practitioners across the state. WISCLINC can and should be continually funded and enhanced to accommodate the added features needed to serve level I participation in WLIS.

7. The concept of a WLIS is considered a modernization effort consistent with the goals and objectives of the WLIP. As such, we recommend that the WLIB identify a list of needs and associated costs for the successful development of a WLIS. It has been well documented that WLIP funding alone is not sufficient to address the original WLIP mission of modernizing local land records and land information systems. Thus, the integration of those systems and the distribution of that information need additional resources and funding. Start up revenue sources, including the possibility of appropriating WLIP funding, either in kind or monetary, to be used toward the planning and development of a WLIS prototype can be considered once costs have been identified. We would like to reiterate that the original TWG report, which was received by the WLC, included a list of possible funding sources for the WLIS. We recommend that this list of possible funding sources (included in

the original report) be re-examined as potential solutions to the funding issue. This list of possible funding sources is attached.

8. The WLIA should be recognized as the premier land information body of expertise and should be used to serve as a conduit for furthering the participation in and broadening the usefulness of the WLIS into the future.

Document C Dane County

1. County Land Information Offices have statutory responsibilities for local land information coordination and clearinghouse activities. Like WISCLINC, this is an example of where we should build upon existing resources and organizational structures to develop WLIS. LIOs should have a lead role as WLIS data producers, coordinators, and local nodes.

2. As WLIS funding sources are identified and examined, consideration should be given to county governments' ability to use identified revenue sources for local purposes.

3. In order to support the development and use of WLIS, there should be a clear emphasis and commitment to continuing county and municipal land information modernization efforts.

Document D Juneau County

1. Who is going to be oversee WLIS? What is the organizational structure and how does it affect possible strategic grants for the counties? If this is a strategic initiative will it be funded by some of our retained fees? What role will the WLIB and WLIA have in this, and what if the county has no interest in participating?

Document E Zillmer email

None

Document F OLIS report

None

Document G Niemann/Moyer Review

A15. Page 20, paragraph 2: The Wisconsin Land Information Board is the logical and most qualified organization to oversee the maintenance of the WLIS system, WLIS data, and metadata standards.

A16. Page 21, (5 Assumptions 2.): Both the WLIA and the WLIB currently have procedures and committees in place to develop, review, and adopt standards. Use of these existing efforts, or rolling them into a new one, would be helpful in speeding up the standards adaptation and adoption process.

A28. Page 47, paragraph 5: In this paragraph authority for the development of WLIS and the responsibility for the development of applications are discussed. We agree the WLIB is most suited to help orchestrate the "technical and land information policy matters." The WLC has recently been given new implementation responsibilities for smart growth. In respect to "how WLIS is deployed and used" we suggest a jointly administered effort between the WLC and WLIB. WLC provides its planning application expertise, WLIB provides its broader understanding of applications (e.g., 911, emergency management, forestry management, floodplain/storm water management, local governmental land records modernization, school district planning and bus routing, etc.).

A31. Page 55, item 48: We suggest that the Wisconsin Department of Revenue (DOR) chair a workgroup to draft a core standard for a land information theme and assume custodianship for that theme in contrast to yet creating another version of a land use theme.

B3. Source of Funds to Support WLIS

We suggest adding this part, to give balance to the report, and to indicate that a number of possible sources of economic support for WLIS have been considered. This should include the full list of options outlined in the TWG report sent **to** WLC (this section was deleted by WLC, since they felt it was outside the scope of their charge). However, these revenue sources would seem especially germane here and should be included. Emphasis should probably be given to such things as GPR funding, provision of direct staff support by several departments with major land data responsibilities, and other in-kind support.

C1. Establish an applications development manager day 1.

No Action Items

The following issues were identified by the WLIS Project Team as being no action items. Many of these comments were statements made by the reviewer in which no reply was necessary.

Document A TWG Review

1. We support the idea that participation needs to be maximized to strengthen WLIS.

13. Next Steps.

There clearly was support for the need to build support for the WLIS project. Points relative to this are included above, and include such items as developing informational literature for the general public, potential stakeholders, and the state Legislature, and, have a promotional team identified.

There was support for the appointment of a Systems Manager. Many items were identified in the report that could be done between now and July 2001. Many more additional items were identified by the TWG and noted above. However, without a staff member assigned it is unclear what, if anything, can actually be moved forward during the next 12 months.

There was support expressed for a policy and governance group, and this is more fully covered in sections above. Additionally, there is clearly a need for standards if this system is to become a reality.

Document B WLIA Review

Once again, on behalf of the Wisconsin Land Information Association and its Board of Directors, I would like to thank you for this opportunity to offer our thoughts on the Project Team's Final Report of the Wisconsin Land Information System. We are looking forward to the completion of a prototype and the prospect of an alliance with all who are working toward the successful launching of a Land Information System that will emphasize the leadership role Wisconsin has always held in Land Information Modernization.

Document C Dane County

None

Document D Juneau County

None

Document E Zillmer email

The Team feels that the following eight comments are important to note and should be considered during the development of the system.

1. Will a format document be available in electronic form, as well as paper for various agencies to use to send data to WLIS?

2. Will WLIS have an input office staff or will each County and entity input their own data? Private utilities will want to query or view public records first as they lay out cable routes and transmission routes needing: Section Map Current land deeds to prove ownership appropriate certified survey mapsLater they will need to input to place their signed and notarized easement documents into the system. Will they be able to input their own information?
3. Would they need to purchase a NODE to do this? Could various utility companies share a NODE - Rent, Lease or Purchase? I see a great advantage to the companies as well as the Counties and States to have one record for all.

4. Would this system eliminate some business for Title Companies? How would private citizens access the system, or would it increase the business for Title Companies? Will this bring opposition from Title Companies, in your opinion?

5. Would current volumes and maps be accessible in the Court House yet, as they are today for viewing by private citizens?

6. How would updates be handled? How do we know the data is current; will each entry be dated?

7. Privacy is being studied; This is confusing because we are talking about public records, I think. If there is other data that is confidential could it be put on a secure layer and have a different access process? We are the Land Information Board, so I don't know what could be private or confidential in WLIS.

8. Milwaukee County data base--20 gigabytes, plus: It would be redundant to copy that to the WLIS system. Could we provide a link that would access their record as it is? Often in state government we read that issues apply to all "EXCEPT Milwaukee County".

Document F OLIS report

None

Document G Niemann/Moyer Review

A14. Page 21, paragraph 1, item 5: We all inherently hope that "Better, more informed decision-making" will occur when high quality data is available. First, "better" is a tricky word. According to the dictionary, "better" means "To advance or make safer the conditions or circumstances" of planning. Is that what was intended? Also, in item 5, the assertion that the "greater level of detail and accuracy" results in more informed decisions can be questioned. There are other critical factors that impact the usefulness of data such as completeness, timeliness, etc. Also, there is the "forest from the trees" problem. The level of detail needed is a function of the application and use of the data. We suggest the following change: "The general availability . . . of high quality data . . . for decision makers . . ." (strike "that have a greater level of detail and accuracy").

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A36. The Key Points listings in general: We found these to be somewhat confusing, since conclusions and recommendations are mixed together. Also, the total of 196 key points tends to be overwhelming. We suggest that recommendations be given more prominence and listed in a consecutive number set. The conclusions could be given less prominence, since they are the basis for recommendations.

Technical/Grammatical Changes

The WLIS Project Team identified the following comments as technical/grammatical changes. These changes have been made to the text of the report and can be found in the revision copy of the report.

Document A TWG Review

None

Document B WLIA Review

11. While reviewing the two illustrations of the levels of participation on pages 13 and 15, we encountered difficulty in interpreting the second chart dealing with Level II participation options. This would be best remedied by including the title "Level II Participation Options" on the chart.

The Team has provided significant changes to this section. See the revised report for the revisions done here.

Document C Dane County

None

Document D Juneau County

None

Document E Zillmer email

None

Document F OLIS report

1. The passage of the "Smart Growth" legislation requires ~~all~~ local units of government by the year 2010 to base all land use decisions such as zoning changes, annexations, and subdivision approvals, ect. on an adopted comprehensive plan according to statutory requirements found in s. 66.0295, Wis. Stats. ~~over 12,500 in population to develop and adopt comprehensive land use plans by the year 2010.~~ *(The population reference of 12,500 only relates to the adoption of model traditional neighborhood development ordinances only by cities and villages which found in s. 66.034, Wis. Stats.)* This is a worthy ~~goal~~ effort *(not really a goal, its a requirement of law)* which should help guide future growth in Wisconsin's communities. These comprehensive plans are required to be updated at the minimum every ten years.

(This is an important aspect of the legislation especially in justifying a WLIS development) Completion of a comprehensive plan requires a vast array of land record information e.g., existing land uses ~~cover~~, *(This is the actual statutory reference....)* soil survey, census information and transportation analysis. For local units of governments to gather or access the necessary land record information to complete a comprehensive plan per state statute, a vehicle such as a WLIS is needed. A WLIS will allow all units of government to access land record information to complete and update their comprehensive plans and to make informed land use decisions.

Document G Niemann/Moyer Review

A1. Page 1, paragraph 3: Given WLIS is seen as multipurpose, we suggest changing the last sentence to read, "These themes . . . support **a variety of** decision-making actions."

A4. Page 7, paragraph 2: The report states that it (i.e., the WLIS Project Team) "4. Actively seek input from several members of the Land Council and Land Information Board." Our review of "Appendix I. Functional Requirements Analysis Data Sheets" suggests that technically as an actual Board member only one member of the WLC Council was interviewed (i.e., W. Mielke) and only one member of the WLIP Board (i.e., N, Neher). Also, in review of their responses, they seemed to be commenting in the context of their actual day-to-day responsibilities and not from the perspective of their Board responsibilities. Was that the intent? If so, we don't think it can be said that the Board and Council interests or needs have necessarily been addressed.

A5. Page 8, paragraph 5, item 5: Even though WLIS is seen as a state system there could be other existing data sets from other sources that would be of importance (i.e., NRCS STATSCO, SURGO Soil data, U.S. Commerce Census Data, etc.). We recommend including the following change, "A platform supporting . . . views of state, locally provided data and **other sources such as federal sources**."

A9. Page 12, paragraph 1: The last sentence suggests that "many federal agencies **could** provide data in forms and formats useful to WLIS in its early stages". Later, on page 26 in key point 18, the wording is "Federal agencies **should** provide data" (emphasis added). We suggest this two be made consistent (i.e., either could or should).

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A12. Page 15, diagram: Again, some federal data sets will be quite useful. Add "Data from Providers **federal**, state . . ."

A13. Page 18, paragraph 2: We suggest the statement ". . . WLIS will be open to anyone . . . developing applications . . . will be a **low priority** . . . because the direct benefits are not compelling" may be to the contrary. Some selected and limited set of applications for WLIS could deliver a range of benefits, both

direct (i.e., reduction in planning preparation costs, which is now beginning to happen. Winnebago County's request for a smart growth transportation grant was much lower than other similar requests due to the availability and of access to existing digital data.) to indirect benefits (e.g., actual change in a proposed land use plan due to better wetland information). Again, as the saying goes, "All investments in technology, data, etc. are costs, benefits only begin to accrue when technology is used." (Tomlinson, 1998).

A23. Page 43, paragraph 2: The discussion of Census data and span of years for which Census data will be available to support comprehensive land use planning is not clear. (e.g., 1970 to 2010 is 40 years, not 30)

A26. Page 44, paragraph 1, line 6: typo -- add "be" at end of line.

A27. Page 44, paragraph 4, line 9: typo -- theses = these

A29. Page 49-50: Text and figure are inconsistent as to whether a "Committee" or "Group" of WLIS Participants.

A34. Page 62-63: Not clear why year one and year two items in text are not equal to data in table. (text is $673,500 for year 1 and $620,000 for year 2.)

Potential Changes

The WLIS Project Team identified the following comments as potential changes. The Team has replied to each of these comments. Their reply had been italicized following each comment.

Document A TWG Review

2. Incentives for participation should be identified.

The Team recognizes the importance of incentives and providing grants for participation is just one example of an incentive. This comment has also been addressed within the revised benefits section.

3. Additional work should be done to explain what capabilities and benefits the WLIS will provide. While some benefits are identified later, Section 4, pages 20 and 21, the desires of the stakeholders identified in the interviews can and should be represented more prominently as potential benefits.

This comment has been addressed within the revised benefits section.

6. The report fails to give enough credit to WISCLINC, a functioning web site of the WLIB, that already demonstrates some of the uses of metadata and some of the search functionality of the WLIS system.

> 2. The Team acknowledges WISCLINC and feels that some of the components (such as data development and training) that have already been taken in the development of WISCLINC are a good start for WLIS. Although WISCLINC is a good framework for the development of the WLIS, the Team feels that technically the WLIS cannot be directly built from WISCLINC.

7. There was some concern that the development steps seemed to focus on data structure design prior to the identification of applications to be supported. This is the reverse of the normal development cycle, where the applications to be supported are identified first, then the underlying database is identified. However, this is consistent with data warehouse development practices.

The Team consciously took the approach that the early development of WLIS is the building of a data warehouse. Early application will be at the user level, and the level of application development will multiply due to the availability of data.

10. The cost estimates appear to be lower than likely costs for a system as specified.

The Team feels that they have provided the best cost estimates in a highly cost variable industry.

11. On page 58, the requirements for a distributed node should be clearly identified, so that organizations potentially interested, could identify their costs for creating and maintaining a node. Clarification should be made to note that the node costs in the report are for the core node only, and not for a distributed node.

The distributed node costs are similar to the core node costs if the distributed node is not building on existing infrastructure. Technical changes have been made to the revised report. See the revised report for this change.

12. Much of the Mapping Services identified on page 59 could potentially be provided in Phase 1 by using off-the-shelf software products.

The Team agrees with this comment and feels that they adequately addressed this on page 59.

Document B WLIA Review

9. We have concerns regarding the lack of data security mechanisms within the system. There should be assurances of preserving the integrity of the data between its original source and the WLIS.

The Team recognizes this issue as a policy issue. Data security can be addressed at a technical level if policy has been determined.

10. Specific guidelines must be developed regarding privacy issues, appropriate content for WLIS, the distribution and viewing of personally identifiable information, and the processes for protected individuals to request protection or restriction of information. On a similar note, explicit guidelines need to be developed regarding the timeliness and accuracy of the data, with disclaimers pointing users to the original source of the data for confirmation.

The Team recognizes this issue as a policy and legislative issue. Privacy can be addressed at a technical level if policy has been determined.

12. Recognizing the disparity in sophistication of local land information systems throughout the state, the report should contain realistic examples of economic and technical benefits of the system; especially for the private sector. These examples would provide the incentive to local governments to broaden the scope of their activities to include the WLIS.

This comment has been addressed within the revised benefits section.

13. Discussion of the possible financial risks of the system (shown on page 23) must be clarified to avoid the potential interpretation that this section is discussing funding for the whole system. We agree there are risks involved with start up vs. operational funding, and there could be the perception that a local revenue stream is being displaced by WLIS. This needs to be clarified.

The Team identified the funding of the system as a potential risk, but the Team felt that it was not in their purview to determine how the system will be funded.

14. In addition to the previous point, we feel the issue of cost recovery should be examined as a separate item from the discussion of the risk factors.

The Team identified cost recovery as a potential risk, and the Team agrees that cost recovery is an important policy issue to be examined.

Document C Dane County

2. While the WLIS report contains transitory references to non-spatial land information, the emphasis is clearly GIS-centric (ex: the beginning project phases and expenditures are focused on enabling web mapping). Our experience in Dane County is that tabular and imaged document data is invaluable to land information users and can be an early and quick demonstration of success. The report should place more emphasis on these forms of land information and their early integration and implementation in WLIS.

The Team feels it addressed the varying types of data in the Standard WLIS Data section of the report. The Team agrees with the importance of providing tabular and imaged documents through WLIS.

Document D Juneau County

2. What about WISLINC? There is no mention of this and it seems that the core information or structure is already in place.

The Team acknowledges WISCLINC and feels that some of the components (such as data development and training) that have already been taken in the development of WISCLINC are a good start for WLIS. Although WISCLINC is a good framework for the development of the WLIS, the Team feels that technically the WLIS cannot be directly built from WISCLINC.

Document E Zillmer email

None

Document F OLIS report

None

Document G Niemann/Moyer Review

A2. Page 2, paragraph 7: In the sentence regarding the relative cost of WLIS versus "what has been spent on land information in Wisconsin to date", We suggest that a more meaningful comparison is WLIS cost vis-a-vis the on-going costs that are incurred to support the current existing (historically analog) land information system in Wisconsin (i.e., hundreds of millions of dollars per year. See Larson Report).

The Team feels that this level of detail does not belong in the Executive Summary. The Team acknowledges that the costs spent on land information within the State have been extensive.

A3. Page 7, Stakeholders and Stakeholder input: We suggest the addition of references, and possible material from the **Wisconsin Land Records Committee** reports, that provide substantive material regarding who the stakeholders are and the uses they have for land information.

The list of stakeholders developed by the Team was not an all inclusive list.

A6. Page 8, paragraph 5, item 9: The numbering scheme suggests a rank order (e.g., item 1 is more important than item 9). Plus there is an apples and oranges issue. Items 2-8 are technical requirements. Items 1 and 9 are how the WLIS will be hopefully used (i.e., . . . public using WLIS to support land management decision-making activities . . ." We suggest two requirements categories be developed (i.e., Category 1: Functional requirements, items 2-8. Category 2: Application requirements, items 1 and 9).

The Team did prioritize this list within the report.

A7. Page 11, paragraph 4: The idea that the development of capabilities for the general public in the first phase of the WLIS was felt to be **subordinate** may be logical from a technical perspective but not very strategic from the public's or legislative perspective. We believe some parallel strategy would be more prudent. Proceed with the technical underpinnings but early on put up data sets of broad public interest (e.g., WISLAND, 2000 Census, City of Madison data sets) and immediately adopt user friendly access tools (e.g., ArcExplorer).

This comment has been addressed within the revised benefits section.

A8. Page 11, paragraph 5, item 6: Along the same line of thinking as the above, we suggest, add to "Item 6. Will **quickly support simple planning and analysis applications** (e.g., a wizard which can help locate prime farm soils) and will eventually support other land information applications . . ." We believe that WLIS must be seen as "useful" almost immediately.

This comment has been addressed within the revised benefits section.

A11. Page 13, paragraph 3: Assumptions about sources of data for WLIS needs to be codified into a new table (i.e., Potential Data Sources for WLIS) so the issue such as ". . . all agencies that receive funding from the Wisconsin Land Information Program are required . . ." doesn't get lost. Yes, it is essential that many WLIS data sets need to be up-to-date. Access to transactional data sets collected and maintained by local units of government is essential.

The Team identified that this comment would result in a substantial change to the report. The Team concurs with the issues that are being addressed in this comment but does not feel that a new table needs to be created.

A24. Page 44, paragraph 1 (and Appendix P): Not clear why ownership parcels not mentioned, since control of parcels by owners is the key in developing and implementing a successful, comprehensive land use plan.

The Team feels that parcels should not be added to the proposed statewide comprehensive planning data list in Appendix P as parcel data is recognized in the 1998 WLIP Survey Summary table (pages 41-43).

A30. Page 51-52, paragraph 1 and item Post Phase 1-3rd year: The proposed WLIS timeline is respectably cautious but again not sufficiently sensitive to the need to deliver benefits meaning applications. We suggest two time lines in parallel be included, one for technical matters and one for applications. We also suggest that separate budgets be prepared for each.

The Team identified that this comment would result in a substantial change to the report. The Team did not address this comment because the Council and Board asked that the Team not make any substantial changes to the report.

A32. Page 59, paragraph 1: We concur that "It is essential that the WLIS become a viable entity as soon after implementation as possible." We also agree that "The adoption of the comprehensive land use planning legislation lends urgency to the early establishment of the WLIS." And we concur that adequate funding . . . is critical to long term success." Again for the record, we strongly recommend that an applications effort(s) begin in parallel with the technical development and that a separate budget be provided for the applications track.

The Team identified that this comment would result in a substantial change to the report. The Team did not address this comment because the Council and Board asked that the Team not make any substantial changes to the report.

B1. Introduction

In this section, provide the context in which the economics of WLIS will be discussed. In particular, we suggest the inclusion of cost information such as the 1978 Larsen report regarding the annual costs for land information in Wisconsin, as well as the investments in the WLIP program over the last 9 years (e.g., from the WLIP annual survey reports).

The Team identified that this comment would result in a substantial change to the report. The Team did not address this comment because the Council and Board asked that the Team not make any substantial changes to the report.

B2. Estimated Costs of the Proposed WLIS System

This section could include much of the information from pages 58, 62, and 63. We suggest that it be emphasized that the costs outlined in the table on page 62 are for the core node only. We suggest taking a second look at proposed staff costs, and increasing them, since we believe they are too conservative. Also, costs should be added for any space requirements, in order to provide a complete picture of system costs.

A second part of this section should be devoted to costs for distributed nodes. We have two suggestions as to this part: first provide costs on a per node basis, and second, separate the costs into fixed and variable costs, so that the variable cost of adding additional nodes will be clear (and that overhead or fixed costs such as for staff decease per node as more nodes are added to the system).

The Team identified that this comment would result in a substantial change to the report. The Team did not address this comment because the Council and Board asked that the Team not make any substantial changes to the report.

B4. Benefits of WLIS Implementation and Operation

This section could draw on the material contained in the draft WLIS report in Section 4 (Benefits), and Section 6 (Constraints and Risks). Among the points we suggest be given emphasis are the following:

a. Benefits can be separated into **direct and in-direct** benefits, and that very often the latter are the most important.

b. **Cost avoidance** is often a major benefit (here can tie in substantial on-going, annual cost of Wisconsin land records system (i.e., Larsen study and subsequent estimates of impact of inflation on these findings.)

c. **Efficiency** portion of benefits (e.g., to local and state users of WLIS in sharing data with others.)

d. **Effectiveness** benefits from more data, more widely available, leading to more uses, and better decisions as a result of their use, are generally a much larger, more important component of benefits, as compared to efficiency.

We also suggest several examples of benefits that have flowed from the WLIP be included for each of the above types of benefits, indicating that such benefits are typically substantial in amount, and often not expected, based on pre-installation analysis. (Published Bulletins from the Land and Computer Graphics Facility at the University of Wisconsin-Madison that document these benefits could be included by reference or in an additional appendix.)

Again, we feel the report is generally well done and the WLIS concept well thought out. Our main concern is with the economic section. Strengthening this section will help assure actual WLIS costs well be close to those projected in the report, and that the benefits of WLIS will be expected and documented. Such documentation will in turn help assure the continued support for the WLIP and the WLIS component thereof, a LIS that will do much to provide the long range land information needs of all sectors of Wisconsin's growing, dynamic economy.

The Team identified that this comment would result in a substantial change to the report. The team did address some of these issues in the revised benefits section.

C2. Select/create 3-5 potential diverse applications for WLIS within six months.

The Team identified that this comment would result in a substantial change to the report. The team did address some of these issues in the revised benefits section.

C3. Create a separate budget item for applications development for WILS.

The Team identified that this comment would result in a substantial change to the report. The Team did not address this comment because the Council and Board asked that the Team not make any substantial changes to the report.

A

ArcExplorer –ESRI software that is used for a variety of display, query, and data retrieval applications and supports a wide variety of standard data sources. It can be used on its own with local data sets or as a client to Internet data and map servers.

ArcView - An ESRI GIS package primarily for viewing and analysis.

archive - Data that is an older version of the current data.

ASCS - Agriculture Stabilization and Conservation Service

AutoCAD - software that is a customizable environment, database, and tool set for 2D and 3D design and drafting.

C

CAD- Computer Assisted Drafting

clearinghouse -

conversion of datum/projection - converting GIS coordinates between commonly used map projections and datums into WLIS standard projections and datum.

coordinates - Numbers that identify imaginary points on a reference system. Coordinates describe position in two or three dimensions.

coordinate system-A reference device used to determine distance and direction in relative terms with respect to their location. The geographical coordinate system uses latitude and longitude to locate points on the earth; most other coordinate systems use regularly spaced grids which are placed on artificially derived planes.

crosswalk - developed by core WLIS support staff to map the relationships between a given dataset and the theme standard.

D

datum - A point of reference used to measure locations on the surface of the earth.

densification - a geodetic activity that establishes control points for a better control network.

digital elevation model (DEM) - A digital file usually containing elevations regularly spaced at surface coordinates over an area. Specialized computer software can interpret this data and create a 3-dimensional rendering of the surface, or analyze the terrain in various ways.

digital orthophoto - An image derived by geometrically correcting a scanned aerial photograph so that it is positionally accurate like a planimetric map

disk operating system (DOS)-The name of a number of operating systems which include facilities for storing files on disk. Such a system must handle physical disk I/O, the mapping of file names to disk addresses and protection of files from unauthorized access (in a multi-user system). More developed versions include Windows OS add ons which enabled multi tasking.

digital raster graphic (DRG) - A scanned topographical map produced by the USGS.

DNR - (Wisconsin) Department of Natural Resources

DOA - (Wisconsin) Department of Administration

DOR - (Wisconsin) Department of Revenue - Analyzes soil maps to determine worth of land for tax purposes.

DOT - (Wisconsin) Department of Transportation

F

File Transfer Protocol(FTP)- Method of transferring digital files over the Internet.

format conversion - converting data between software packages in use throughout the system into WLIS standard formats.

foundational elements - The Wisconsin Land Information Board has developed a specific and critical subset of land information called Foundational Elements and includes fifteen land information elements.

framework - Created by the system application developers, this identifies where and how information about theme data tables, identifiers, theme core tables are stored in variables, and how those components can be used by user application developers.

G

geodetic control- a network of carefully measured points that can be used as a reference for other surveys or to establish or measure accuracy in map making. Horizontal control and vertical control networks are typically separate because the former is based on an ellipsoid model of the earth, while the latter is based on a geoid model.

Geographic Information System (GIS) - A analysis and problem solving tool for asking and answering questions relating to spatial phenomenon. Its function is facilitated by computer hardware, GIS software, and the technical expertise of the people involved.

H

HTML - Hyper Text Markup Language; method of placing coding or tags within a text file for designing web pages for the Internet World-Wide Web.

J

Joint Photographic Experts Group (JPEG) is a compressed image format used on the WWW.

L

Land Information Offices (LIO) - To facilitate its participation in the WLIB's (Wisconsin Land Information Board) program, each county designates a person to be its Land Information Office contact.

Land Information System (LIS) - A GIS specially designed with land information in mind. Land rights, ownership, boundaries, utility, landcover, and zoning data are common layers and attributes in a Land Information System.

(LU/LC) Land Use/Land Cover a categorization scheme developed by the USGS to standardize interpretation from aerial photography, one that mixes land use and land cover categories.

M

mapping - interactively retrieving, symbolizing, and displaying spatial data.

metadata - data about data: a term for documentation covering the who, what, when, why, where, and how associated with a unit of information.

N

(NAD 27) North American Datum of 1927 - A geodetic reference for horizontal positions, established in 1927 and based on the Clark ellipsoid of 1866.

(NAD 83) North American Datum of 1983 - a geodetic reference for horizontal positions established in 1983 and based on the GRS 80 ellipsoid.

NASA - National Aeronautics and Space Administration

NRCS - Natural Resources Conservation Service

O

orthophoto - An aerial photo that has been corrected to eliminate tangential distortion and recreate the ground geometry to how it would appear from directly above each and every point. Such photographs that have been seamed and then connected through an orthophoto process of differential rectification are called digital orthophoto's (DOP's).

P

PDF - Portable Document Format

planimetric - A type of map that only shows horizontal features on a plane surface, without elevation contours to depict the terrain.

(PLSS) United States Public Land Survey System - Inaugurated by the Northwest Ordinance of 1785, and designed to facilitate the transfer of federal lands to private citizens, this system is the basis for the rectangular grid of 6x6 mile townships, subdivided down to 1/4 sections (each nominally 160 acres) over most of Wisconsin.

Q

query processing - translating information from users about location, data type, content or keyword references into data searches.

R

raster - a grid structure holding data or image values

RPC - Regional Planning Commission

S

smart growth area - An area that will enable the development and redevelopment of lands with existing infrastructure and municipal, state and utility services, where practicable, or that will encourage efficient development patterns that are both contiguous to existing development and at densities which have relatively low municipal, state governmental and utility costs.

spatial data - Any information about the location and shape of, and relationships among, geographic features.

T

(TIFF) Tagged Interlaced File Format - A 24-bit (16 million colors) graphics file format.

(TIGER) Topologically Integrated Geographic Encoding and Referencing- US Census' spatial database.

thematic – as in a thematic map depicting selected kinds of information relating to one or more specific themes.

theme - a commonly-accepted element of land information, can be a layer in a GIS, or could be represented some other way. Most of the WLIP foundational elements could be considered themes.

topography - the shape of a surface, typically the earth's land surface, and often depicted by contour lines

V

vector - a value with a direction vector data structure - a common way for CAD or GIS software to encode geographic features as points, lines, or areas

W

WISCLAND - Wisconsin Initiative for Statewide Cooperation on Landscape Analysis and Data - a group of over two dozen organizations working together to build and use GIS data layers.

WISCLINC - Wisconsin Land Information Clearinghouse

WISCON - Windows software that converts values amongst all commonly used coordinate systems in Wisconsin available for sale from the SCO.

WLC - Wisconsin Land Council

WLIA - Wisconsin Land Information Association

WLIB - Wisconsin Land Information Board

WLIP - Wisconsin Land Information Program

X

XML - Extensible Markup Language