

A LAND INFORMATION SYSTEM PLAN FOR WAUKESHA COUNTY: VOLUME 2, 1998-2003

Reviewed and Approved by the Following Committees and Boards:

January 21, 1998	Waukesha County GeoProcessing Committee
February 3, 1998	Waukesha County Land Use, Parks, and Environment Committee
February 4, 1998	Waukesha County Finance Committee
February 24, 1998	Waukesha County Board of Supervisors

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EXECUTIVE SUMMARY

On June 18, 1991, the Waukesha County Board of Supervisors adopted the report titled, A LAND INFORMATION SYSTEM PLAN FOR WAUKESHA COUNTY (hereto after referred to as the "Plan"). The Plan inventoried existing efforts related to all aspects of land information in Waukesha County and provided recommendations which were to be implemented during a five-year period (1991-1996) which would move Waukesha County toward the development of a county-wide, integrated land information system. Due to limited resources, the tasks set forth in the Plan will require until 1999 to be completed. This document presents a status report of the activities recommend in the Plan, recommends new activities which have a central goal the maintenance of all land related products which have been created, and provides for the integration of these products into land related activities. The final section of this document will identify the AFoundational Elements≡ of land information as developed by the Wisconsin Land Information Board and identify each recommended task which will facilitate the completion of each foundational element in Waukesha County.

GOALS AND OBJECTIVES

The Plan identified two goals and 5 specific objectives of the Waukesha County Land Information Program (WCLIP). Those goals and objectives have been reproduced here in *italics*.

- Goal 1.** *To implement over time in Waukesha County a parcel-based, multipurpose, multi-user automated mapping and land information system, such system following the National Research Council model and consisting of the following five basic elements:*
- a. *Geodetic reference framework.*
 - b. *Large-scale planimetric and topographic base maps.*
 - c. *Overlays, including cadastral boundaries and boundaries of various cultural and natural areas.*
 - d. *Identifiers, including parcel numbers and codes associated with various cultural and natural areas.*
 - e. *Nonspatial land information files, including cadastral parcel records and various cultural and natural resource data.*
- Goal 2.** *To reach agreement among Waukesha County, the local units of government in Waukesha County, and the various public and private utilities operation in Waukesha County on the design of a common automated mapping and land information system so as to ensure economy and efficiency in the development and use of that system and so as to ensure the ready exchange of data between the various users of the system.*
- Objective 1.** *To lay out a course of action that will continue to completion the current Waukesha County base mapping effort, focusing existing Waukesha County resources and those local government resources that become periodically available on completing the geodetic reference framework and large-scale planimetric and topographic base maps for the entire County.*

Objective 2. *To direct any available new revenues, particularly revenues from supplemental county recording and filing fees, toward completing the cadastral boundary overlay and attendant parcel numbers, and--to the extent fiscal resources may permit--selected planning-oriented cultural and natural area boundary overlays and attendant identifiers for the entire County.*

Objective 3. *To encourage local units of government in Waukesha County who desire to move at a more rapid pace toward establishing an automated mapping and land information system for local government use to commit additional fiscal resources toward that end; recommending, however, that such resources be expended for work efforts which meet the agreed-upon system development standards.*

Objective 4. *To facilitate applications by Waukesha County and by local units of government in Waukesha County for state grants in support of the development of the recommended automated mapping and land information system for Waukesha County.*

Objective 5. *To encourage partnership efforts between public sector governments and utilities and private sector utilities that will contribute toward the development of the recommended automated mapping and land information system for Waukesha County. (Plan, pages 31-32)*

Progress Report on Ongoing Activities

In order to achieve the approved goals and objectives, a series of recommendations were adopted as part of the 1991 Plan. Resource constraints have delayed actual completion of the Plan recommendations until about 1999. Those recommendations are reproduced here in *italics*. A summary of all activities which have been initiated or completed attendant to each recommendation is also presented to indicate the current status of the WCLIP.

1. *The completion of an additional 96 square miles of survey control and topographic mapping work in the western portion of Waukesha County given the current annual appropriation of \$150,000 from the county property tax levy. This would complete such control and topographic mapping work for about 41 percent of the 234 square miles still to be done. With the completion of this work, the total area covered within the County by survey control and topographic mapping would reach 443 square miles, or 76 percent of the total. At the present level of expenditure, a 15-year period would be required to complete the entire County, resulting in a completion date of 2005. If it were desired to accelerate the survey control and base mapping program and complete all such work by December 31, 1996, an annual appropriation of about \$366,000 would be required, or about \$216,000 more than at present. (Plan, page 61).*

As noted, this recommendation was to precisely place concrete monuments at each U.S. public land survey section and one-quarter section corner throughout the County which are tied to both vertical and horizontal control coordinate systems. The Plan, however, acknowledged the funding levels of the time and indicated that a 15-year period would be required to complete the entire survey control system. The County has taken a very active position in the completion of the county-wide survey system. On March 12, 1997, a contract was executed between Waukesha County and the Southeastern Wisconsin Regional Planning Commission (SEWRPC) governing the installation of 210 survey control monuments together with attendant horizontal and vertical control survey work. This contract represents the final work required to complete the entire survey control system in Waukesha County. This contract is expected to be completed by June, 1999. This accelerated pace was achieved under the direction of the Waukesha County Executive with the support of the Waukesha County Board of Supervisors which provided a majority of project funds from County tax levy. Some additional funding was received from local communities, retained fees, and Wisconsin Land Information Board (WLIB) grants.

2. Over the six-year period 1991 through 1996, the supplemental recording and filing fees in Waukesha County are expected to total about \$1.3 million. All of this money would be required to complete conventional cadastral maps in the eastern one-half of the County, to convert to digital form the planimetric features of those topographic maps within the eastern one-half of the County that were not digitally compiled, and to convert to digital form cadastral map data within the eastern one-half of the County. With the completion of this work, an automated base map would be in place for the 290-square-mile eastern one-half of the County; ready for linkage to both graphic and nongraphic element data files by Waukesha County or any other user. This work effort would not include, however, the conversion to digital form of the hypsometric features for those portions of eastern Waukesha County where topographic maps were originally obtained in a conventional form. The latter would entail an additional cost of \$350,000 (Plan, page 61-62).

The second major recommendation encompasses two major elements of the Waukesha County Land Information system. The first of these recommended elements is the preparation of cadastral base maps for the eastern one-half of the County. This goal was again exceeded through the use of additional Waukesha County supplemental recording fees, WLIB Grants, and the financial participation of selected local units of government. To date, cadastral mapping is either in progress or has been completed for twelve survey townships containing approximately 117,000 tax parcels, or about 88 percent of all tax parcels in Waukesha County (see Appendix 2). Contracts have been executed to complete cadastral mapping in an additional three survey Townships. The combination of completed and contracted work will result in the completion of cadastral base maps for the eastern three-fourths of the County. (Special Note: One of the areas currently under contract includes the Village of Menomonee Falls, which had created digital cadastral maps prior to adoption of the Waukesha County Plan and as such were not completed to the adopted County specifications. The current contract is to recompile the cadastral maps in the Village in compliance with established County specifications.)

The second element of the second recommendation concerns the creation of digital topographic and planimetric base maps based on the remonumented survey control. Creation of these maps has been included in the projects which complete the remonumentation and survey control

system for defined areas. Therefore, the creation of the remaining digital topographic and planimetric base maps is included in the remonumentation contracts and will be completed for the entire County by June 1999.

It is recommended that the Waukesha County Monumenting Committee be dissolved and that the development of the geodetic reference framework, the preparation of the large-scale topographic maps, and all other work necessary to complete an automated mapping base for Waukesha County be directed by the Waukesha County GeoProcessing Committee. That Committee should also sponsor four technical studies needed to provided (sic) additional guidance in the development of the land information system for the County. These studies are:

- 1. A study to develop detailed specifications and standards for the digital conversion of data.*
- 2. A study to identify and address issues attendant to data custody, control, and maintenance.*
- 3. A study to identify the GeoProcessing hardware and software requirements for Waukesha County as a unit of government.*
- 4. A study to determine how the existing Waukesha County parcel numbering system can best be adapted to meet the unique parcel identification numbering system promulgated by the Wisconsin Land Information Board.*

All four studies should be the responsibility of the Waukesha County Register of Deeds and should be done cooperatively with the municipalities. The GeoProcessing Committee recommends that Waukesha County create and fill the position of Land Information System Coordinator, placing that position under the direction of the Register of Deeds.(Plan, page 62).

In accordance with a portion of this recommendation, the Waukesha County Monumenting Committee was disbanded and all duties regarding the geodetic reference framework, the preparation of the large-scale topographic maps, and all other work necessary to complete an automated mapping base for Waukesha County have been assumed by the Waukesha County GeoProcessing Committee (see Appendix 3).

Waukesha County contracted with the SEWRPC to prepare a set of detailed specifications and standards for the digital conversion of analog map data. The SEWRPC has compiled the mapping rules which comprise the specification and has published the rules in the Cadastral Mapping Guide, July, 1997.

Data custody, control, and maintenance is of central importance to the data integrity of the WCLIP. Waukesha County has proposed a "Data Stewardship" program which formally assigns the responsibility for data maintenance. A detailed discussion of the concepts contained in the "Waukesha County Master Data Sharing Agreement" is contained in the "Custodial Responsibilities" section of this report.

In February, 1996, the "Situation Assessment Report for the Waukesha County Register of Deeds Office" was completed. That report analyzed the tasks being completed in the Register of Deeds office and presented recommendations regarding enhancements to the Land Records System database and the integration of the database with a proposed imaging and Geographic Information System (GIS). The findings of that report, together with the external needs assessment referenced in Table 1 were used to complete a Request for Proposal for a GIS. As a result of the responses to the Request for Proposal and subsequent product demonstrations,

Waukesha County selected an Intergraph GIS to be used for graphic element creation , update, and maintenance.

In 1995, a Waukesha County Parcel Identification Number (PIN) Task Force was formed to review the tax parcel number system used in the County, and compare the system with the WLIB adopted standards. It was determined that the existing County system could be adapted to comply to the WLIB standard through the use of a correspondence table. Such a system would allow for integration of existing county data with other systems in the State, but would not impact the local systems currently in use. It was further determined that the task of developing the required conversion tables could best be developed with the GIS. Following those determinations, the Task Force was adjourned until the capabilities of the GIS were fully implemented and applied to developing a revised PIN system.

Lastly, Waukesha County developed and filled the staff position of Land Information System Coordinator within the Register of Deeds Office in 1994 to perform the duties set forth in the Plan.

NEEDS ASSESSMENT

In 1995, Waukesha County completed a Land Information Needs Assessment which included individual County Government Departments as well as all local communities in the County. This analysis is the basis for defining the Goals and Objectives of the WCLIP. Table 1 identifies each County Department included in the Needs Assessment along with a brief description of a Department activity which could be enhanced through the use of a modern Land Information System or Geographic Information System.

Table 1

Department	Generalized Application	Description or Specific Application
Sheriff	Emergency Routing Service Routing Special Areas Demographic analysis	Emergency Dispatch for County Sheriff personnel Process document serving Emergency response areas for police, Fire, and rescue General
Park & Land Use, Planning Division	Special Areas Demographic analysis Cadastral Maps Natural resources Public infrastructure Private infrastructure	Zoning and Shoreland areas, street maps General Permit tracking Wetlands and floodplains for regulatory review Park land development tracking Private wells, septic systems, and holding tanks
Park & Land Use, Land Conservation Division	Special Areas Cadastral Maps Natural	Tract & farm field inventory Erosion risk areas Lands in managed farm tax program Environmental Corridors and Natural Areas Parcel ownership Wetlands, contours
Airport	Special Areas Public infrastructure	Building height limitation Noise Contours Airport land development plan
Transportation	Service Routing Special Areas Demographic analysis Cadastral Maps Natural resources Public infrastructure	Road maintenance Right of Way plats Construction project areas General Construction notification Wetland mitigation, drainage plans Roads, culverts, and signs inventory
Community Development Block Grant	Special Mapping Special Areas Demographic analysis	Project locations Statistical information presentation Project areas General
Park & Land Use, Environmental Health Division	Service Routing Address location Cadastral Maps Private infrastructure	Humane Animal Specialist Program monitoring General Wells, septic systems, and holding tanks
Register of	Special Areas	Subdivision plats, CSM, taxing districts

Deeds	Cadastral Maps	General
Aging	Service Routing Special Areas Address Location Demographic analysis	Nutrition Program for the Elderly, Rideline Fixed route transit corridors Nutrition program and Rideline General
Health and Human Services	Emergency Routing Service Routing Address Location Demographic analysis	Child abuse response Food pantry volunteer program workers Service provision General
Emergency Government	Emergency Routing Special Mapping Special Areas Address Location Demographic analysis	Disaster planning Incident reporting, Special needs facilities Emergency management plan maps Potential hazard maps HAZMAT inventory General
Library System	Special Areas Address Location	Federated system Affiliated areas User definitions
Treasurer	Service Routing Special Areas Address Location	Sending people to review county owned land Supervisory districts Delinquent tax parcels
County Clerk	Special Areas	Election Districts Minor Civil Division
County Board	Special Areas	Redistricting

In addition to the information received from county departments, each local community was surveyed to determine their requirements pertaining to a County wide Land Information System.

While the responses were varied, seven common themes and concerns were developed which could be applied to the majority of local communities. These themes are as follows:

Theme 1:

Elimination of duplication of effort by using materials prepared by others. In particular, the following datasets were identified as needing to be shared: Orthophotography, Soils Maps, Floodplain area maps, Topographic maps, Environmental Corridor maps, and Natural Areas maps.

Theme 2:

Provide access to areas adjacent to borders for use in review of annexations, zoning proposals, and emergency planning.

Theme 3:

Achieve timely access to parcel information such as Owner name, Owner mailing address, Parcel situs address, and assessed value.

Theme 4:

Provide a uniform topographic and cadastral base map for the mapping of utility and infrastructure systems.

Theme 5:

Clearly define responsibility for map creation and maintenance operations, emphasizing synchronization of local and County wide efforts.

Theme 6:

Establish a County Digital Exchange Standard to better facilitate data conversion, data marketability, and quality control.

Theme 7:

Provide common Census data and other demographic analysis and mapping capabilities.

New Initiatives

A review of the needs assessment indicated that the initial goals of the WCLIP are still sound and required for the continued development of a Land Information System in Waukesha County.

The analysis of the information provided by the needs assessment indicates that three new objectives should be added to the existing goals and that two new goals should be added in order to advance the land information program. The following objectives will be added to those originally listed in the Plan:

Additional Objectives:

1. Develop a comprehensive update and maintenance program for every component of the Land Information System. Such a program should address the requirements for physical observation and repair, as needed, of all field placed survey monuments, as well as topographic and planimetric base maps, cadastral maps, and orthophotography. Funding for the update program should be provided by the WCLIP or through partnerships which have been created to provide for such updating.
2. Install a Geographic Information System (GIS) to manage digital land information. Such a system should be integrated into the workflow of county departments to meet the requirements identified in the needs assessment. Selected data analysis, using the GIS, will be provided to local units of government based on a mutually agreeable cooperative agreement.
3. Develop standards for digital file integration. This effort will require continued technology research to develop faster and more efficient file transfer/conversion processes. A Waukesha County Data Layer Standards work group should be created and required to monitor the standardization of map data layer names and content for approval by the GeoProcessing Committee.

Additional Goals:

1. Enhance land records information through the development of imaging capabilities, integrating such capabilities with other systems such as the Grantor/Grantee and Tract Index, Tax system, and the GIS.
2. Develop a county-wide, efficient communication system for the transfer of digital map data, land information, imaged records, and other shared information. This system need not be limited to governmental units, but may include public, semi-private, and private (including residential) users of land information.

Custodial Responsibilities

The Waukesha County GeoProcessing Committee approved the Master Data Sharing Agreement on March 3, 1997, which identifies the data sets which will be managed by the WCLIP and governs how these data sets will be maintained and distributed. Key components of the Master Data Sharing Agreement are presented in this section, and the entire document has been included in Appendix 1 of this Plan Update.

There are currently four types of information which are to be managed by the WCLIP and which have been identified as Acore products:≡ the geodetic control system, planimetric and topographic base maps, cadastral base maps, and Orthophotography. As established in the original Plan, these products have been determined to be vital to the physical and economic development of Waukesha County and therefore, appropriately, the responsibility of Waukesha County.

The first of these core products includes the county geodetic control system. As stated earlier, the entire system is scheduled to be completed in 1999 and will include the placement of concrete monuments at each US Public Land Survey Section and One-quarter section location. Each monument will be tied to horizontal and vertical control coordinates.

The second core product consists of the 1 inch equals 200 feet and in selected areas 1 inch equals 100 feet scale planimetric and topographic base maps. During the development of the WCLIP, these base maps were developed in various formats. Currently, these base maps exist in one of these three formats. The first format exists in areas where the analog base maps were completed prior to the initiation of the WCLIP. In these areas, beside the original analog maps, digital data sets containing the geodetic control information and selected planimetric information have been completed. The second format is used in areas where the base maps were completed subsequent to the institution of the WCLIP. In these areas, the complete base maps were created and exist in digital form. The third format was developed by the City of Waukesha where the entire base map, created as analog, has been converted to digital format using imaging and Vectorization technology.

The third core product consists of a set of 1 inch equals 200 feet and in selected areas 1 inch equals 100 feet scale cadastral maps showing tax parcel ownership boundaries. This map set is currently being developed but will not be completed until the completion of both the geodetic

control system and planimetric and topographic base maps.

The fourth core product consists of a set of 1 inch equals 400 feet orthophotography for the entire County. These photos were flown in 1995 under a project administered by the SEWRPC. Waukesha County has purchased a complete set of photos for the County from the SEWRPC.

As stated earlier, Waukesha County will assume responsibility for the creation, maintenance, and distribution of all core products. In fulfilling this responsibility, the County may designate a local unit of government or county department to function as a Data Steward.≡ The responsibility of the Data Steward will be to maintain a core product for a defined area. The Data Steward will agree to meet all established County standards and requirements regarding the maintenance activities, including mapping standards, timeliness of delivery, and quality control. In return, the County may reimburse the Data Steward for all agreed upon work related to core product maintenance.

Within the planning period of this Plan Update, the Waukesha County GeoProcessing Committee may choose to include other data sets as core products and identify the product Data Steward. In order to be included as a core product, the following criteria would need to be met: 1) County-wide coverage, 2) usefulness beyond a single unit of government or department, 3) no current, reliable source of support, 4) consistency with the goals and objectives of the Waukesha County Land Information program, and 5) consistency with the goals and objectives of the Wisconsin Land Information program

Foundational Elements and State-Wide Standards.

The goals and objectives of the WLIP as set forth in the original Plan and enhanced in this Plan Update will be achieved through the successful implementation of various processes. These processes may include such tasks as completing the study of an issue, developing and instituting County-wide standards, developing procedures and funding methods for ongoing maintenance, and forging new partnerships with public and private data developers and users. Each required process will be presented in this section as a key feature of a Foundational Element.≡ Foundational Elements are specific subsets of land information activities which have been defined by the WLIP as vital to the development of a land information system. Unless otherwise noted, it is assumed that each key feature will be completed within the 5 year planning horizon of this Plan Update. It is envisioned that the activities of the listed key features will be funded by supplemental recording fees collected by the Register of Deeds Office as authorized under Wisconsin Statute 59.43(2) and by funds received through the Wisconsin Land Information Board grant-in-aid program, and that these revenues will be used to fund direct procurement, County staff and contractors as required to complete the plan activities. In some cases, additional revenues from user fees, local contributions, and direct county tax levy support may be required. These sources will be only used when authorized by the Waukesha County Board through the normal cost-justification procedures within the budgeting process. Waukesha County may choose to financially participate in projects proposed by local units of Government or accelerate planned projects if the Waukesha County GeoProcessing Committee deems them to be in the best interest of the County. Funding priorities for the acceleration of such projects will be set according to the following priority guidelines:

1. Local unit of government(s) providing 50 percent or more of project funding.
2. Local unit of government(s) providing less than 50 percent of project funding.
3. No local unit of government funding, but project deemed to be in best interest of Waukesha County

In addition, Waukesha County will assume custodial responsibility for all products generated by each key feature activity unless otherwise noted.

Foundational Element 1: Communication, Education, Training and Technical Assistance

Key Feature 1: Wisconsin Land Information Technical Assistance List Server

Waukesha County staff will subscribe to, and participate with, the Wisconsin Land Information Technical Assistance List Server.

Key Feature 2: Waukesha County Land Information Data Clearinghouse

Waukesha County staff will inventory digital land information available from local units of governments, other county departments, and the Waukesha County Land Information Office. This inventoried information, including metadata, associated costs, and point of contact will be published in a directory at least yearly. This published directory will be provided to the WLIB, and interested public and private data users.

Key Feature 3: County-Wide communication system development

The creation of a county-wide communication system will be investigated. A work group will be created to determine potential users of such a communication system, types of data to be transmitted, and current and future technology trends. This key feature will require a significant amount of study and cooperation to complete. While it is envisioned that the work group study can be completed during the next 5 years, the actual implementation of such a system will continue beyond the 5 year planning horizon and will require significant shared financial resources above those which can be provided from the County funding sources identified above.

Key Feature 4: Integration of Internet technologies into the Land Information System

The potential for integration of internet technologies into the Land Information System will be constantly monitored. Providing access to such land information as geodetic control documentation, digital maps, and imaged documents will be reviewed, taking into account advancing technology and statutory requirements.

Key Feature 5: Training

An ongoing training program will be promoted through the Land Information Office. Training activities will include training on new versions of installed software systems, on-site consultant training and demonstration of new process technology, and State and National users group conferences. In addition, the WCLIP will sponsor training and educational sessions for local area data users as appropriate.

Foundation Element 2: Geographic Reference Framework

Key Feature 1: Survey Monumentation Maintenance

A program will be established to provide for a Registered Land Surveyor to visit and inspect survey monuments. The Surveyor will note the condition of each visited monument, repair any damaged monuments, and replace, or contract for the replacement of, all missing monuments. In addition, the surveyor will insure that all

monuments comply with state statutes regarding documentation and that all horizontal and vertical control coordinates comply with Wisconsin Land Board recommendations. The Surveyor should visit, at a minimum, all survey monuments in a single survey township each year, progressing in a systematic manner across the County. This procedure will result in the review of each survey monument in the County during a 16 year cycle.

An education program will be established regarding the protection of monuments and filing monument condition reports. Section 59.74 of the Wisconsin State Statutes requires that no survey landmark or monument be destroyed, removed or covered such that the landmark or monument is inaccessible for use. This section needs to be stressed and enforced, with all violators actively prosecuted. In addition, local units of government should insert language in contracts and developers=s agreements requiring that all survey landmarks and monuments, damaged during construction, must be repaired.

Key Feature 2: Topographic and planimetric base mapping series

Topographic and planimetric base maps have been an integral component of developing the geodetic control system in Waukesha County. Creation of these base maps began prior to the inception of the WCLIP. These maps currently exist in various formats and represent different time periods. A work group will be formed to inventory all existing topographic and planimetric maps, inventory all users of these maps, review the existing Waukesha County mapping standard based on user needs, review current and future technology for map compilation, and recommend a plan to the GeoProcessing Committee for the updating and standardization of the maps. In addition, the work group will review and recommend potential users who may share the cost of the map update and revision.

Key Feature 3: Orthophotography support

Orthophotography is a relatively new component of the WCLIP. A parallel study to address the same concerns listed for topographic and planimetric base maps as those concerns relate to orthophotography, should be completed, potentially by the same work group. The work group will also review and recommend potential users who may share the cost of the map update and revision.

Foundation Element 3: Parcel Mapping

Key Feature 1: Completion of County-wide Cadastral Maps

Complete a set of county-wide cadastral maps for all areas of Waukesha County. These maps will be prepared at a scale of at least 1 inch equals 200 feet , or in selected areas 1 inch equals 100 feet, and according to mapping specifications set forth in the original Plan and in subsequent adopted mapping specifications.

Key Feature 2: Maintenance of County-wide Cadastral Maps

The County will establish a procedure to maintain and update the county-wide cadastral Maps. This procedure will insure that all changes to the existing maps, including those changes resulting from subdivision plats, certified survey maps, and annexations, will be displayed on the cadastral maps in a manner consistent with all adopted mapping specifications. The County may complete this mapping work using county staff, outside contract vendors, or data stewards as defined in the Master Data Sharing Agreement.

Key Feature 3: Establishment of data layering standards

Standardization of all information contained within each layer of digital maps, and individual fields of data files is key to the successful development and implementation of a data exchange process. The Waukesha County GeoProcessing Committee will establish a Data Layer Standards work group to perform ongoing review of proposed data layer content and names. The workgroup will in turn recommend a standardized layer name list to the GeoProcessing Committee for approval as necessary.

Key Feature 4: Establishment of standards for the digital submission of Certified Survey Maps and Subdivision Plats.

At the direction of the Waukesha County GeoProcessing Committee, a workgroup will prepare standards for the digital submission of Certified Survey Maps (CSM's) and Subdivision Plats to regulatory authorities. These standards, which will be prepared as a template, will be approved by the GeoProcessing Committee and implemented by local units of government. These standards will facilitate the update of the digital cadastral base maps and assist in the regulatory review process.

Key Feature 5: Metadata

Waukesha County will incorporate the FGDC's Cadastral Standards for the National Spatial Data Infrastructure. This standard will be instituted in phases as data sets are completed. The County currently has established a 10 field metadata standard for all new cadastral mapping and existing cadastral map updates. Included in this information are the following data items:

1. Date of Parcel Mapping/Update
2. Update method
3. Document number, volume/real number, page/image number
4. Date of Document
5. Original tax key number
6. Other tax key numbers affected by converted parcel
7. Comments regarding specific information , problems, or resolutions encountered
8. Department/Consultant/Agency completing mapping
9. Initials of mapping technician

10. Qualitative value (1,2, or 3) representing parcel documentation
 - A1" = No problems encountered
 - A2" = Additional information required to confidently determine parcel boundary
 - A3" = Documents relating to parcel are in conflict. a gap or overlap may be present at boundary

Key Feature 6: WLIB Parcel Identification Numbering System

The WLIB Parcel Identification Numbering System will be incorporated into the Waukesha County Land Information System through database manipulation and programming.

Foundation Element 4: Parcel Administration

Key Feature 1: Waukesha County Grantor/Grantee and Tract Index and Tax File modernization

The Waukesha County Grantor/Grantee and Tract Index and Tax Files will be modified to integrate with the digital parcel maps. This integration will allow the retrieval of all land record documents and tax information based on digital map display and query.

Key Feature 2: Development of a Waukesha County Land Records Imaging system.

Waukesha County will implement a new document imaging system to enhance the retrieval of all land records. The imaging system will be integrated with the modified Grantor/Grantee and Tract Index and digital parcel maps. The integration process will require associating each imaged land record document with a tax parcel identifying number as appropriate.

Foundation Element 5: Public Access

Key Feature 1: Enhanced Public Access

Efforts will be made through the modifications of the Waukesha County Grantor/Grantee and Tract Index, tax file, document imaging, and GIS to allow faster, easier, and more efficient public access to land records. The new systems will not only increase efficiency, but better address security and right-to-privacy issues.

Foundation Element 6: Zoning Mapping

Key Feature 1: Zoning Maps

New digital zoning district maps will be created incorporating information from the topographic base maps, cadastral maps, and orthophotography. The zoning maps may be created for the entire area of Waukesha County.

Foundation Element 7: Soils Mapping

Key Feature 1: Soils Mapping

Existing soils maps, which have been converted to digital form by the SEWRPC will be reviewed in light of Natural Resource Conservation Service regulatory

requirements. Potential revisions, enhancements, corrections, and/or recompilation will be completed, based on cooperative arrangements between Federal, State, Regional, and County agencies which have expressed an interest in the soils data.

Foundation Element 8: Wetlands Mapping

Key Feature 1: Wetlands Mapping

Existing digital wetlands mapping prepared by the SEWRPC will be converted to allow for use on various computing platforms.

Foundation Element 9: Institutional Arrangements and Integration

Key Feature 1: Institutional Arrangements and Integration

Formal agreements will be sought between Waukesha County and other Federal, State,

Regional, and local government; local special-use districts; utility districts; and educational institutions as appropriate. All such agreements will be based on the terms set forth in the Master Data Sharing Agreement.

Foundation Element 10: Reconciled Election and Administrative Boundary System

Key Feature 1: Special Area Mapping

Special areas, including minor civil division boundaries, utility districts, legislative districts, election districts, drainage districts, lake management districts, school districts, other districts with taxing authority, and other special area districts will be mapped incorporating features from the existing digital base maps.

Foundation Element 11: Reconciled Street Address and Street Network System

Key Feature 1: Addressing

Street center line and associated street address maps will be prepared. These maps will require special research and coding in order to accommodate the grid addresses which occur in parts of Waukesha County.

Foundation Element 12: Land Use Mapping

Key Feature 1: Land Use Mapping

Existing digital land use mapping will be converted to allow for use on various computing platforms.

Foundation Element 13: Natural Resource Mapping

Key Feature 1: Natural Resource Mapping

Existing digital environmental corridor mapping will be converted to allow for use on various computing platforms.

Foundation Element 14: Data Base Design

Key Feature 1: Data Base Modification

Waukesha County will modify the Land Records Grantor/Grantee index and Tax files to allow integration with the GIS and Document Imaging systems. This process will involve the creation database correspondence tables to facilitate the integration process. The proposed data model used in this revision was presented in the ASituation Assessment Report for the Waukesha County Register of Deeds Office, February 23, 1996.

INTEGRATION AND COOPERATION

Integration and cooperation is the hallmark of the Waukesha County Land Information Program. Over the years, various public and private agencies have been involved in developing automated mapping and land records systems throughout the County. These agencies have included local municipalities, county departments, the Southeastern Wisconsin Regional Planning Commission, State agencies and Boards, and public and private utility companies. It is the desire of the WCLIP to leverage this previous work and create a fully integrated system. It is thereby necessary to review all previous work in light of adopted County standards to determine which products can be directly integrated, which can be integrated with modification,

and which do not meet minimum, contemporary standards, and therefore can not be used. This review and integration will be an ongoing project and will be directed by the concepts set forth in the Master Data Sharing Agreement.

ADMINISTRATIVE STANDARDS NOT ASSOCIATED WITH THE FOUNDATIONAL ELEMENTS

Waukesha County accepts that the plans represent an agreement between the County and the Wisconsin Land Information Board. This agreement is intended to effectuate the objectives of the Program as embodied in the enabling legislation. Waukesha County hereby agrees to the following provisions:

1. The County agrees to observe and follow the statutes relating to the Wisconsin Land Information Program and other relevant statutes.
2. The County agrees to permit the Wisconsin Land Information Board access to books, records and projects for inspection and audit including unannounced audits by the Board.
3. The County agrees to provide an Annual Status Report of Plan progress and keep the Plan up to date. The report will be administered electronically.
4. The Board agrees to facilitate technical assistance to the County including an on-line Technical Assistance Service.
5. The Board agrees to maintain and distribute an inventory of land information and information systems for the state. This will be provided through an electronic Clearinghouse.
6. Development and implementation of an acceptable plan confers certain benefits on local government within a County, including continued eligibility for Program funding. a self-approving peer review process will be used to assess Plan acceptability by the land information community.
7. The Board agrees to review funding requests and to provide guidance to local government with respect to the development of such requests.
8. The Board agrees to make available electronically an Annual Report regarding the status of the Wisconsin Land Information Program and the activities of the Board.

Appendix 1

Waukesha County Land Information Program Master Data Sharing Agreement

Purpose: Provide for the Sharing of Land Information in Waukesha County

- I. Data sets which will be managed by the Waukesha County Land Information Program(WCLIP) and therefore are included in this agreement. These products will comprise the ACore Products.≡
 - a. Geodetic Control
 - 1. Complete system of concrete monuments placed on each US Public Land Survey (USPLSS) section and quarter section corner.
 - 2. Complete set of Survey Tie Sheets and Control Survey Summary Diagrams which allow for the identification of each monument.
 - 3. Data regarding the vertical and horizontal control coordinates of each monument will be collected in accordance with the recommendations of the Waukesha County Land Information Plan Update. Currently, all vertical control to be based upon National Geodetic Vertical Datum, 1929 Adjustment (NGVD-29) and all horizontal control to be based upon the Wisconsin Coordinate System, South Zone, (NAD-27).
 - B. Large-Scale Planimetric and Topographic Base Maps-Analog
 - 1. Complete set of analog base maps at a scale of at least 1 inch equals 200' feet.
 - a. Geodetic control information displayed
 - (1) Section and quarter section lines with distance and bearing.
 - (2) USPLSS section and quarter section points with coordinates.
 - b. Hypsometry-contour lines having a vertical interval of two feet.
 - c. Planimetric detail.
 - (1) Pavements, curbs, walks, trails, railways, power lines, buildings, fences, wooded areas, dams, piers, dock walls, culverts and bridges, retaining walls, airport runways and taxiways, and other identifiable salient features.
 - d. Hydrographic features
 - (1) Marshes, lakes, streams, watercourses, and drainage ditches.
 - 2. All analog large-scale planimetric and topographic base maps will be maintained only in areas where digital maps are not available and only until such time as each is replaced with a digital map file.
 - C. Large-Scale Planimetric and Topographic Base Maps-Digital
 - 1. Complete set of digital base maps. Specifications and features should match analog base maps
 - a. Where no analog base maps exist, digital maps will be created.
 - b. Where analog base maps existed prior to the initiation of the Waukesha County Land Information program, the analog information will be converted to digital form. Hypsometric information may not be converted due to budget constraints.

D. Cadastral Maps-digital

1. Complete set of digital base maps at a scale of at least 1 inch equals 200 feet, displaying geodetic and cadastral information. The digital information at the County will be stored as a series of layers within an Intergraph Geographic Information System(GIS), the system selected for use by the WCLIP. The following table lists the information which will be maintained. Layering conventions and names will be completed in accordance with Waukesha County Bridge Task Force recommendations.

Minimum Required Cadastral Map Information ¹

Feature Name/Description	Feature Type
USPLSS monument Location	Point
Other USPLSS point location	Point
USPLSS section line	Line
USPLSS quarter-section line	Line
Street and road right-of-way line	Line
Railroad right-of-way line	Line
Common street and road and railroad right-of-way line	Line
Road right-of-way centerline	Line
Railroad right-of-way centerline	Line
Cul-de-sac radius	Line
Current Property boundary line	Line
Original platted property boundary lines-cannot be reconstructed because of changed conditions	Line
Property boundary line extending into right-of-way	Line
Public Land Survey System Line	Line
Property division line of record under same ownership	Line
Property division line extending into right-of-way	Line
All edges shown as lines comprising the area of a single tax key number	Line
Unique tax key ID number for an area	Text ²
Gap of at least 2.5 feet occurring between properties	Area

Overlapping property area	Area
Undedicated area of CSM	Area
Easement boundary line	Line
Subdivision boundary line	Line
Certified survey map boundary line	Line
Condominium boundary line	Line
Civil division boundary line	Line
Vinculum--AHook≡ connection of common ownership properties which area is broken by other features	Line
Dimension arrow as line	Line
Identification arrow	Line
Point of tangency tic mark	Line
Note or annotation arrow	Line
Interior SPCS grid tic, grid tics appear at 1,000 foot intervals as >crosses= within the geographic extent of the mapped area on 1 inch = 200 feet scale maps (500 foot intervals should be shown when applicable.)	Point

¹ These layers must be maintained in this manner if the feature is present. Additional information may be maintained, but needs to comply with Waukesha County Bridge Task Force and Layer Name Standards Task Force recommendations.

² May be stored as an attribute depending upon system format.

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2. All text associated with the features identified in the above table will be included in the drawing.

E. Other products

1. Products which are produced by other agencies, may be acquired by the WCLIP, designated as a Acore≡ product, and therefore come under the terms of this agreement. Such products may be aerial photography, satellite imagery, soils maps, zoning maps, or wetland maps. All partners will be notified whenever a new Acore≡ product is available.
2. Other agencies may produce APeripheral Products≡ which may be included in the WLIP. The County will not maintain or fund these products, but may prepare product standards and promote the use of such products.

II. Waukesha County Land Information Program Funding Mechanism

- a. The WCLIP will be funded using retained recording fees which are generated in accordance with Wis State Statute 16.967. In addition, the County will pursue all available grants to aid in funding the program. If the retained fees and awarded grants are not sufficient to fund the activities required of the WCLIP as set forth in this section, this agreement will need to be revised as necessary.
- B. The WCLIP will fund the completion of the Geodetic Control system in Waukesha County. This work includes the relocation and replacement of monumentation at each USPLSS section and quarter section corner where a new monument has not been placed, as well as obtaining monumentation documentation such as reference tie sheets and control survey summary diagrams.
- C. The WCLIP will be responsible for maintenance activities associated with the Geodetic Control system. Local units of government are requested to make every effort to monitor development within their area for possible damage to survey monumentation, investigate any damage to survey monuments, and actively pursue reimbursement from the parties responsible for any such damage, for all costs associated with reestablishing the monumentation.
- D. The WCLIP will fund the creation of the digital large-scale planimetric and topographic base mapping where such maps have not yet been created. This mapping work will be carried out concurrent with establishment of the geodetic control system.
- E. The WCLIP at this time can not commit to updating the large-scale planimetric and topographic base mapping, both analog and digital, completed to date. a review of all existing maps and anticipated needs will need to be completed to determine the most efficient maintenance program for these maps.
- F. The WCLIP will fund all costs associated with updating the cadastral base map information defined in Section I.D. 1 above, to reflect all documents pertaining to the displayed information, which have been recorded in the Waukesha County Register of Deeds office subsequent to the creation or last update of the maps. This mapping may be carried out by Waukesha County staff, a vendor under contract to the County, or a local unit of government acting as a Data Steward (defined later). The WCLIP will pay for the collection and reproduction of all recorded land information required for the completion of the updating procedure. The County will not pay for hardware or software systems purchased by vendors or local units of government which will be used to conduct the updating activities.
- G. The WCLIP will pay all costs associated with format translation of all updated digital data received from Data Stewards.
- H. Waukesha County may choose to financially participate in projects proposed by local units of Government if the Waukesha County GeoProcessing Committee deems them to be in the best interest of the County. Funding priorities for such projects will be set according to the following guidelines:
 1. Local unit of government(s) providing 50 percent or more of project funding.
 2. Local unit of government(s) providing less than 50 percent of project funding.
 3. No local unit of government funding, but project deemed to be in best interest of Waukesha County.

III. Participants

- a. Potential Agreement Participants
 1. Waukesha County
 2. Local Units of Government
 3. SEWRPC
 4. Utilities/PSC
 5. State Departments e.g. DNR, WiDOT
 6. Surveyors/Engineering Companies
 7. Title Companies
- B. Types of Participants
 1. Data Users-Noncontributing
 - a. ATake $\cong$ data from the WCLIP on a regular basis.
 - b. Pay fee for all data acquisition. Such a fee will be in addition to taxes and other user fees paid to the County.
 - c. Executed agreement exists stipulating compliance with data access and use policies. Agreement may or may not include stipulations regarding access and use of Waukesha County GIS Lab.
 - d. Clientele or short term and one-time data users will not be required to execute an agreement to formally become a member of the WCLIP. These users will be allowed access to the information under the conditions established by State Statute, Waukesha County Board directives, and Register of Deeds Office policy.
 2. Data Users-Contributing
 - a. ATake $\cong$ data from the WCLIP on a regular basis.
 - b. User has contributed, or is contributing, to the creation and/or maintenance of data. Contributions may include direct financial support, in-kind service, or provision of materials. The value of these contributions will be acknowledged and included in the calculations for any fees to be charged for the acquisition of WCLIP data which may not have received support from the data user.
 - c. Executed agreement exists stipulating compliance with data access and use policies. Agreement may or may not include stipulations regarding access and use of Waukesha County GIS Lab.
 3. Data Steward
 - a. Create and/or update all the cadastral data information identified as a ACore Product $\cong$ in section I.D. 1 above. An executed agreement will be prepared to identify information to be maintained, mapping accuracy, metadata requirements, conformance to mapping and delivery standards, quality control, delivery schedule data format, and amount of County reimbursement for completed work. Security measures will be instituted to insure that data received from a Data Steward does not adversely affect the existing County database. These requirements will be detailed in a cadastral mapping procedure manual to be maintained by the WCLIP.
 - b. Create and maintain data which will be identified as APeripheral Products $\cong$ of the WCLIP
 - (1) Conform to Waukesha County data layer name standards.
 - (2) Data sets may be analog or digital.
 - (3) Provide description of data sets to be included in AWaukesha County Data Clearinghouse Directory. $\cong$

- (4) The WCLIP will not provide funding for these activities unless the Waukesha County GeoProcessing Committee directs such support.
 - c. Core product data sets which are maintained by a Data Steward with the WCLIP providing financial support, will become the property of both Waukesha County and the Data Steward, with both entities having full and unrestricted use of the data set.
- 4. Waukesha County as Clearinghouse
 - a. Manage the data identified as WCLIP Core Products
 - (1) Accept digital information from Data Stewards.
 - (2) Provide research information to Data Stewards.
 - (3) Publish the A Waukesha County Data Clearinghouse Directory≡ which lists both core products and peripheral products together with appropriate metadata to identify such items as contact person, information format, scale, etc.
 - (4) Facilitate standards and documentation, including the cadastral mapping procedure manual .
 - (5) Provide for digital data format translation of data received from Data Stewards.
 - (6) Provide for creation and update of WCLIP core products where other Data Steward has not been identified.
- 5. Complimentary Data Users
 - a. Special groups which request the use of Waukesha County Land Information data sets for educational or humanitarian purposes.
 - b. Complimentary status approval by the Waukesha County GeoProcessing Committee .

IV. Access Policy

- A. All Data Users, Data Stewards, and Complimentary Data Users will have full access to the core products of the WCLIP.
- B. Noncontributing Data Users will have full access to the core products of the WCLIP and **will** be required to pay all reproduction and digital data format translation costs.
- C. Contributing Data Users will have full access to the core products of the WCLIP and **may** be required to pay some or all reproduction and data format translation costs based on level of funding contributions.
- D. Data Stewards will have full access to the core products of the WCLIP and **may** be required to pay some or all reproduction and digital data format translation costs of core products for which they are not the designated Data Steward based on level of funding contributions.
- E. Complimentary Data Users will have full access to the core products of the WCLIP and **may** be required to pay some or all of the reproduction and digital data format translation costs.
- F. All data access policies and fees will conform to current State Statutes regarding AOpen Records.≡
- G. Access to APeripheral Products≡ will be in accordance with the policies of the listed Data Steward.

V. Permitted Uses of Data Sets

- a. Use of the WCLIP Core Products by a WCLIP participants will be unrestricted.

VI. Liability

- a. a Liability Disclaimer will be provided with all WCLIP data.

Approved with Revisions by GeoProcessing Committee February 12, 1997
Revisions entered March 3, 1997

geoproc/approved/datashar.pa

Appendix 2
Completion Status of Digital Cadastral Mapping in Waukesha County:
October, 1997

Appendix 3

Waukesha County GeoProcessing Committee

Carol A. Wilson.....	Supervisor, 2nd District
Chairman	
Kenneth C. Hahn.....	Supervisor, 32nd District
Secretary	
Richard Bolte.....	County Highway Commissioner
	Waukesha County
Harlan Clinkenbeard.....	Administrator/Planner
	Town of Pewaukee
Curt Dawkins.....	Supervisor of Mapping
	Wisconsin Electric, Gas Operations
Paul A. Feller.....	Director of Public Works
	City of Waukesha
Michael Hasslinger.....	Register of Deeds
	Waukesha County
Mark Lake.....	Assistant Director of Planning
	City of New Berlin
Al Moehr.....	Ameritech
Reinhard B. Meihsner.....	Manager, AM/FM/GIS Services
	Wisconsin Gas Company
Jerome A. Schulz.....	Manager, Information Systems Division
	Waukesha County
Raymond Seppanen.....	Director, Information Services
	City of Brookfield
Dale R. Shaver.....	Land Conservation Manager
	Waukesha County
Bill Shaw.....	Wisconsin Electric Power Company
John C. Toshner.....	Director, Parks & Land Use Department
	Waukesha County
Albert Walker.....	Superintendent of Development
	Village of Menomonee Falls

Appendix 4
Waukesha County Board of Supervisors Adoption Ordinance

