MILWAUKEE COUNTY AUTOMATED MAPPING
AND LAND INFORMATION SYSTEM

Sixty-Seventh Steering Committee Meeting

AGENDA

DATE: Tuesday, July 11th 2006

TIME: 9:00 a.m.

PLACE: Milwaukee County City Campus
2711 W. Wells Street
Room 349
Milwaukee, Wisconsin

I. Roll Call

II. Special Order of Business

Introduction of William C. Shaw, MCAMLIS Project Manager

III. Meeting Minutes

Consideration of the minutes of the 66th Steering Committee meeting held February 7th, 2006.

IV. Reports

A. Report by MCAMLIS project staff on the status of street address and cadastral map maintenance.

B. Report by MCAMLIS project staff on the status of the Cadastral Database Migration project.

C. Report by MCAMLIS project staff on the status of the Milwaukee County Update to the 2005 Land Records Modernization Plan

D. Report by SEWRPC staff on the status of MCAMLIS Topographic Mapping project.

E. Report by SEWRPC staff on the status of SEWRPC Regional Water Study.

F. Report by SEWRPC staff on the status of MCAMLIS Flood Land Mapping project.

G. Report by WE Energies staff on the status of the Digger's Hotline prototype study.

H. Report by Milwaukee County DAS staff on MCAMLIS Budget (copy to be distributed at meeting).

I. Report by MCAMLIS Project Staff on the status of Wisconsin Land Information Program Year 2006 Grant Application – Training and Education Grant Award.

V. Old Business

A. Consideration of possible MCAMLIS funding for purchase of county-wide license of Pictometry's oblique aerial photography.

B. Consideration of Register of Deeds spending authorization request for conversion of microfiche images to digital format.

C. Consideration of Register of Deeds spending authorization request for Improvements to computerized system.

VI. New Business

A. Consideration of the next phase of the Geo Database Migration Project: Address and Street Centerline Integration leading to a Countywide Master Street and Address Guide (MSAG)

B. Consideration of partial MCAMLIS funding for a USGS proposed countywide 2007 ortho-photography

VII. Correspondence

VIII. Date, time, and place of next meeting

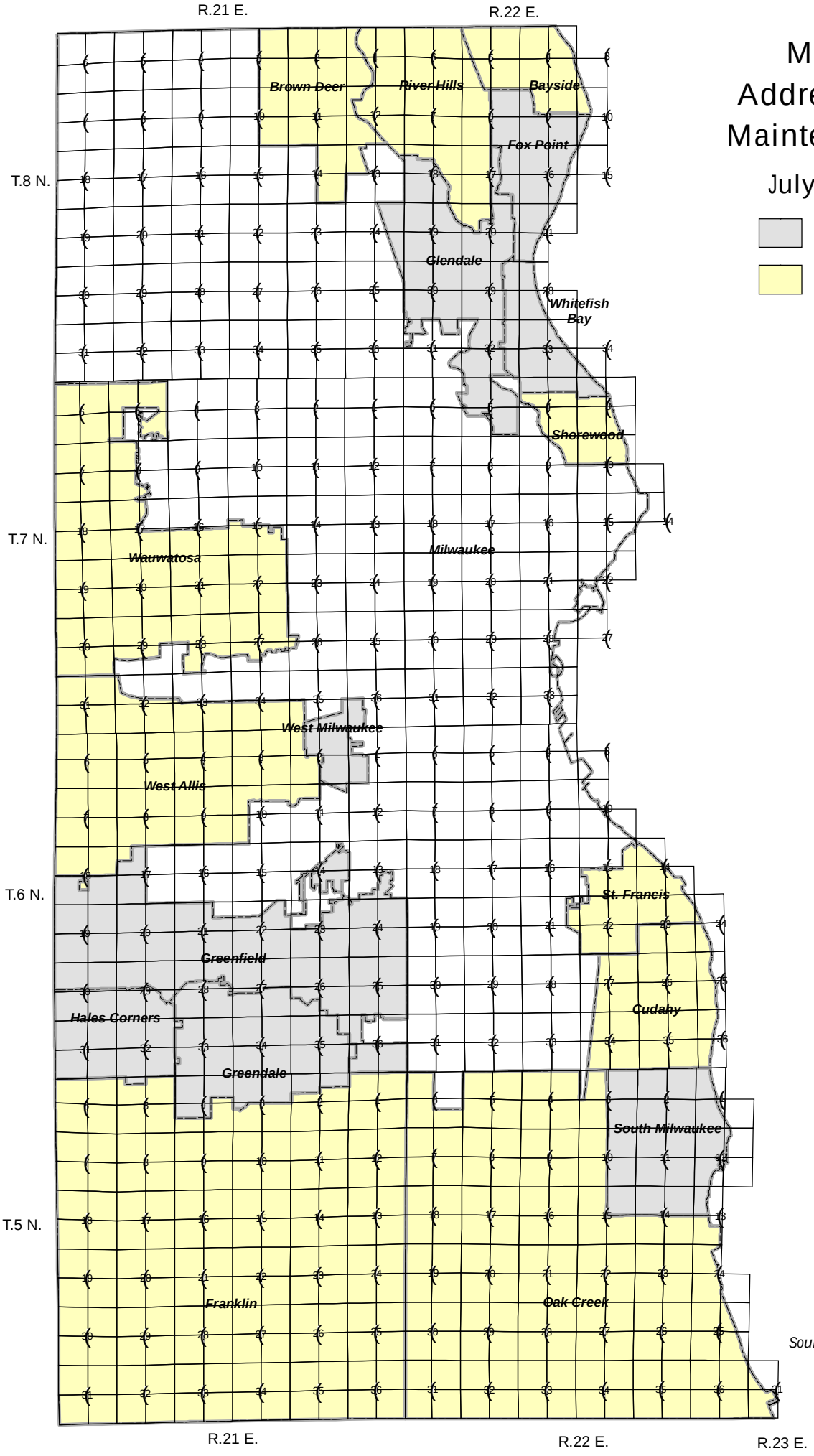
IX. Adjournment

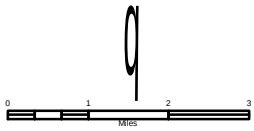
MCAMLIS
Address Database Maintenance Status

July 2006 Status

January 1, 2005

January 1, 2006

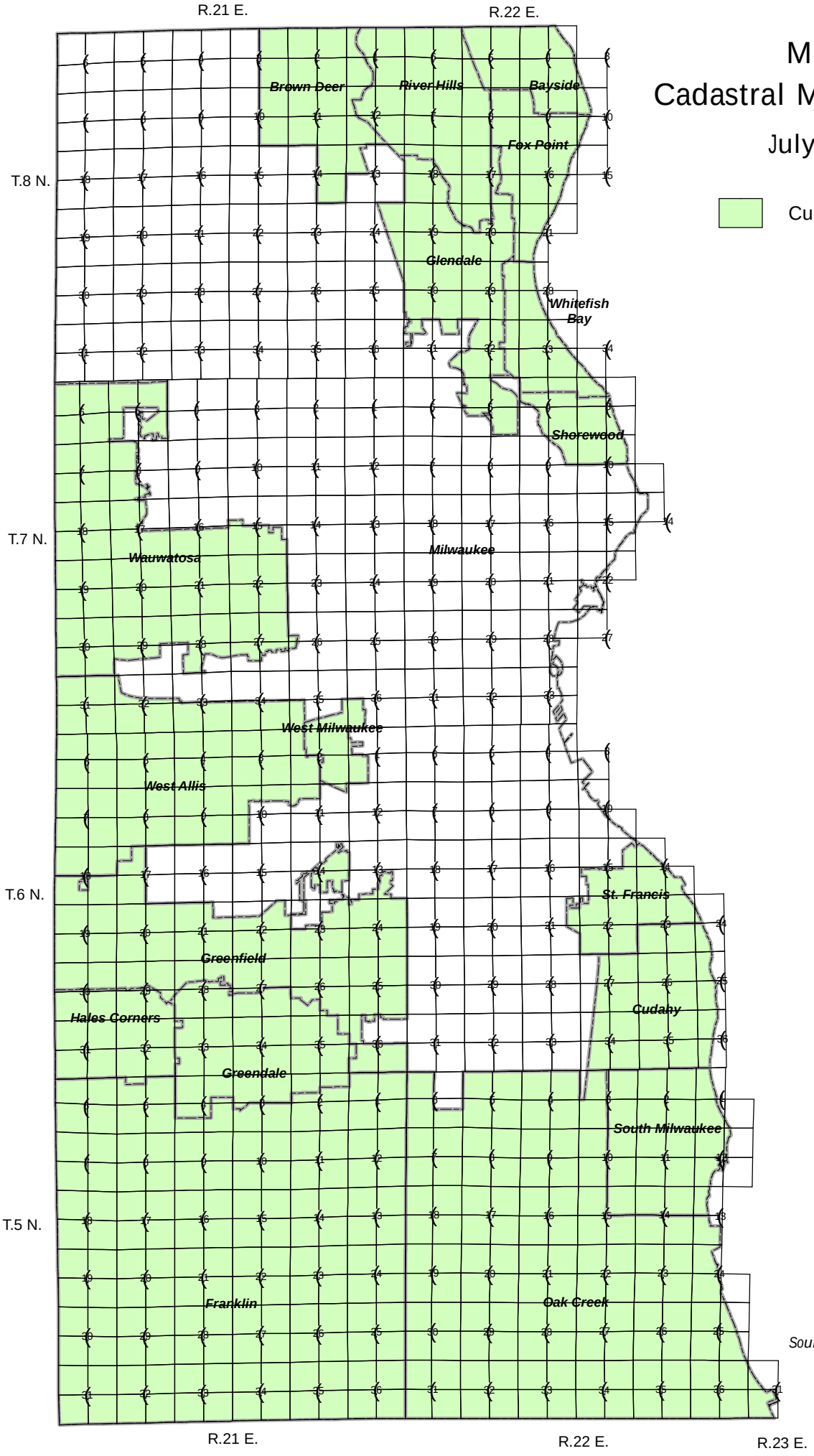


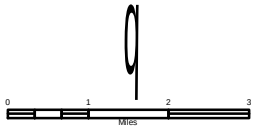


Source: MCAMLIS Project Manager

MCAMLIS
Cadastral Maintenance Status
July 2006 Status

Current as of May 1, 2006



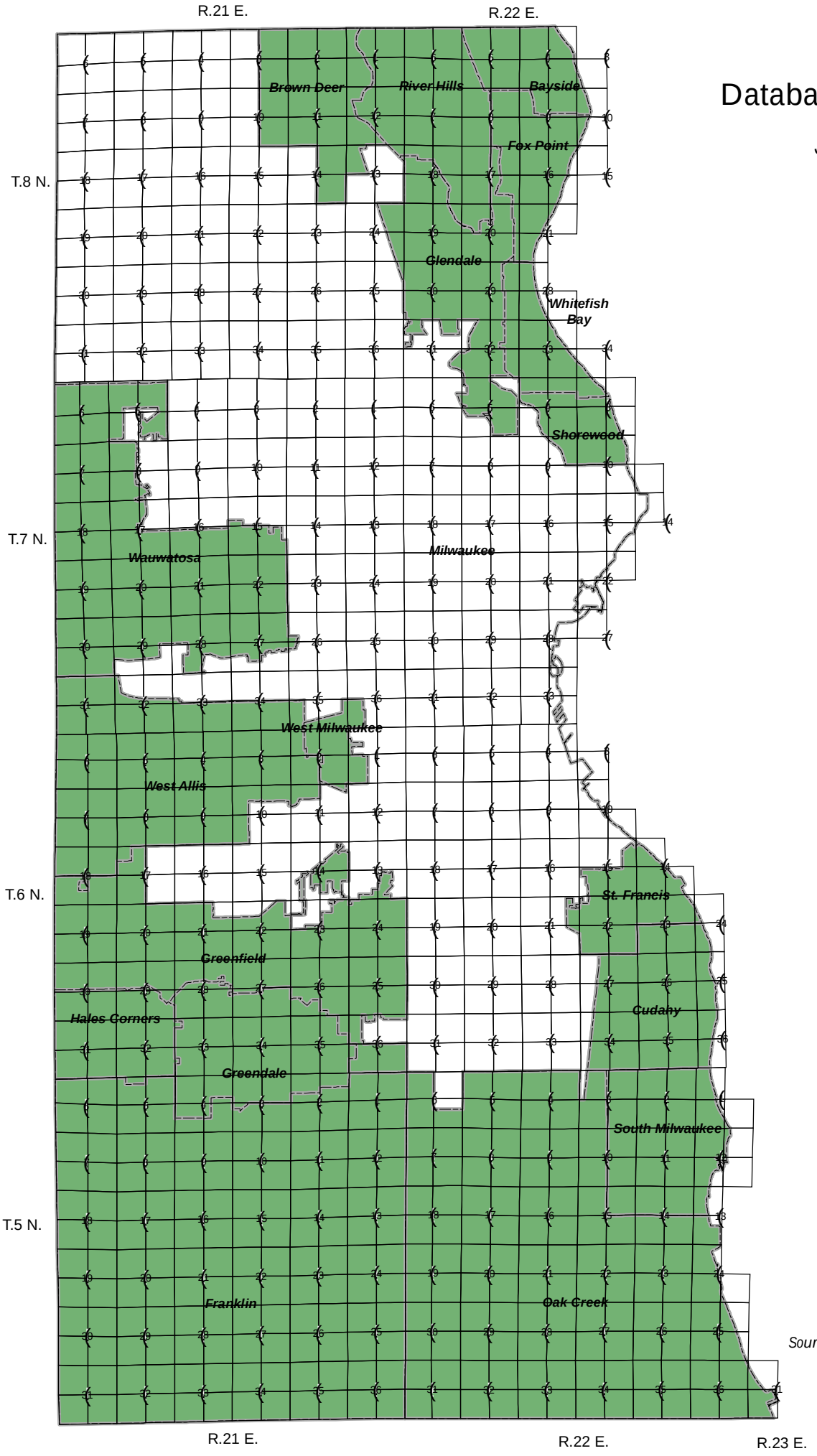


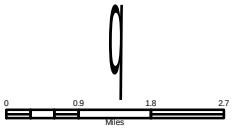
Source: MCAMLIS Project Manager

MCAMLIS
Database Migration Status

July 2006 Status

Complete





Source: MCAMLIS Project Manager

MILWAUKEE COUNTY

AUTOMATED MAPPING AND

LAND INFORMATION SYSTEM

c/o Department of
Transportation and Public Works
2711 West Wells Street, Room 427
Milwaukee, Wisconsin 53208-3509
Telephone (414) 278-2176

MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: William C. Shaw, MCAMLIS Project Manager

DATE: June 27, 2006

SUBJECT: Updated 2005 Land Information Plan

BACKGROUND

In July 2004, the MCAMLIS Steering Committee adopted an updated County Land Information Plan(LIP). The updated plan was prepared and submitted to the Wisconsin Land Information Board(WLIB) in accordance with the procedures in place at that time. In December 2004, "Uniform Instructions for Preparing County Land Information Plans" were published and adopted by the Wisconsin Land Information Board and although the Board was dissolved a short time later, the "Instructions" where made mandatory for all counties participating in the program. The resulting Land Information Plans continue to be administered by program staff at DOA where the Land Information Program responsibility resides today. In addition to conformance to recommended content and format, each county was to submit an updated plan through a peer review process for final consideration and approval by DOA. The process was to be concluded through 2005, resulting in all 72 counties being updated within the year.

It was recently discovered that the Milwaukee County LIP, submitted in July 2004, was not "grandfathered" into this process and as of today Milwaukee County's Land Information Plan has not been approved and is considered to be in draft form. This has consequences in that to be eligible to collect and retain recorded document fees each county by statute is required to provide DOA an updated Land Information Plan.

FISCAL CONSIDERATIONS

To participate in the Wisconsin Land Information Program, each county must establish a Land Information Office and prepare a Land Information Plan. With an approved plan, a county can retain $4 of the first-page recording fees generated in the Register of Deeds office. These retained funds are required by 59.72(5)(b)(3) of Wis. State Statute to fund the local land information program and must be solely used to implement activities identified in the Land Information Plan.

RECOMMENDATION

Staff recommends adoption of the 2005 Updated Land Information Plan as submitted herein for MCAMLIS Steering Committee approval.

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MILWAUKEE COUNTY

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MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: William C. Shaw, MCAMLIS Project Manager

DATE: June 29, 2006

SUBJECT: Land Information Plan 2005 Update: Notice of changes

BACKGROUND

The updated plan was prepared in accordance to the "Uniform Instructions for Preparing County Land Information Plans" dated December 2004 and describes general goals and objectives for the 2005-2009 time period. As such the format of previous plans has been modified to conform to these instructions along with some additions and editorial adjustments to the plan in an effort to assure relevance to today's MCAMLIS Program status and anticipated near-term changes over time.

This document is intended to provide the committee with the background necessary to determine the content changes from previous plans and aid in consideration of the Committee's approval process.

NOTICE OF CHANGES

Pg#	Topic Heading	Subject Heading	Change	Comment
Blank	Plan Title Page	Update to Land Records Modernization Plan	2005, John La Fave, July 11, 2006, inserted MCAMLIS Project Manager contact information	The Last Plan update was 1999 and amended in 2003 and 2004
2	EXECUTIVE SUMMARY	Identification and Contact Information	Mr. John La Fave Milwaukee County Land Information Officer Electronic Mail Address: jlafave@milwcnty.com	
3		Participants in the Planning Process	(hereinafter referred to as the "plan"). This plan update, finalized in 2006, is intended to, expand, and extend the plan and subsequent updates…..	Actual revision date
3		Participants in the	Removed historical reference	This information was

Pg#	Topic Heading	Subject Heading	Change	Comment
		Planning Process	to "Advisory Committee" early formation and recommendations to proceed with specific foundational mapping processes and procedures	included in earlier plans and provided context for subsequent MCAMLIS Steering Committee span of control. Key elements of this text remain, referencing the original plan documentation and adoption by the County Board. If necessary this can be included in an appendix.
3,4		Participants in the Planning Process	MCAMLIS Steering Committee membership names, titles and organization	Updated to current membership
4		Summary of Plan and Status of Implementation	Substantially the same with expanded text building on past efforts and accomplishments	
4		Milwaukee County Land Information Website	Included reference to Milwaukee County RoD website	New entry noting that MCAMLIS data is not available through a public access website
4		Websites Serving Land Information For Municipalities within Milwaukee County	Listed 9 sites Milwaukee County and Regional websites providing public access to land information	New entries listing known sites providing public access to land information related to Milwaukee County
5	Land Information Plan	Goals and Objectives	Substantially removed language specific to methods used in compilation and maintenance of topographic and cadastral work products.	Reference to these methods, if necessary, can be placed in an appendix
5			Removed objective to complete City of Milwaukee cadastral mapping to MCAMLIS standards	This objective was completed as part of earlier work activities. Noted in accomplishments.
5		…..(1)	Substantially modified objective to better align with enhanced addressing initiatives incorporating MCAMLIS and City of Milwaukee address holdings	The original objective did not capture committee consensus (ref. MCAMLIS PROGRAM STRATEGIC ASSESSEMENT FOR

Pg#	Topic Heading	Subject Heading	Change	Comment
			as well as external stakeholders.	2003-2006, 5/2/2003). This is a newly expanded objective to establish a countywide address database serving multiple constituencies from an enterprise perspective
5		…..(5)	Replaced objective to singularly maintain structure addresses with more comprehensive goal of providing extensive web-based access and address maintenance capabilities. This broader objective includes site addressing i.e., structure address maintenance as well as internal address maintenance.	This objective provides for ongoing address maintenance and is paired with (1) above countywide Enterprise Address System integration
5			Removed, the objective relating to air navigation obstruction mapping in approach zones	Moved to accomplishment
5		…..(7)	Changed, 'may involve …..Internet System for retrieval of… to 'will involve Internet System for viewing and retrieval of…..	In consideration of the overwhelming need to take advantage of web-based content viewing and retrieval technologies
5,6		…..(9)	Minor change making Internet usage more prominent	In consideration of the overwhelming need to take advantage of web-based technology. This objective was approved by the committee (7/15/2003) as Amendment No. 1 to the 1999 Plan and inserted here.
6		…..(10)	Removed, specific reference to "Smart Growth"	The original text of this objective was approved by the committee (7/20/2004) as Amendment No. 2 to the

Pg#	Topic Heading	Subject Heading	Change	Comment
				1999 Plan
6,7	Progress Report on Ongoing Activities		Changed, Street address coding to individual buildings on parcels is available for 3 of the 18 suburban municipalities ….. to …. available for newer structures located within…	This acknowledges that building structure address maintenance is being established as structure addresses are changed over time.
7			Removed, earlier reference to the need to conduct a recompilation of City of Milwaukee quarter sections in preparation to bring City of Milwaukee Cadastral data within MCAMLIS standards	
7			Inserted, the accomplished work relating to City of Milwaukee cadastral data recompilation to MCAMLIS standards	
7			Inserted, the accomplished work relating to air navigation obstruction mapping within safety approach zones at Milwaukee County International Airport	
7			Inserted, the accomplished work relating to obtaining Federal Copyright of MCAMLIS digital topographic and cadastral data	
7			Inserted, accomplished work related to obtaining a permanent institutional structure for the MCAMLIS Program	
7	New Initiatives		Removed, the initiative relating to City of Milwaukee large-scale cadastral mapping recompilation to MCAMLIS standards	Moved to accomplishment
7			Removed, complete the assignment of street addresses to buildings	Replaced, with EAS initiative

Pg#	Topic Heading	Subject Heading	Change	Comment
			within the 18 suburban municipalities	
7,8		…..(1)	Inserted new EAS initiative	
9		…..(3)	Changed, update selected areas to update entire county	
9		…..(5)	Revised, site address maintenance to more clearly define this objective in terms of the EAS initiative	
10			Removed, the objective to obtain federal copyright for topographic and cadastral data files	This was completed and reinserted in accomplishment section
10			Removed, the objective to find a permanent MCAMLIS institutional structure	This was completed and reinserted in accomplishment section
10		….(7)	Changed, This may involve making information available though the internet……to ..This will involve…..through the Web-based Internet and Extranet Systems…..	In consideration of the overwhelming need to take advantage of web-based content viewing and retrieval technologies
10		….(7)	Inserted, example text to draw attention to coordinated and integrated products that will result from the County's EAS initiative	Master Address Street Guide (MSAG)will be the published version of the live Enterprise Address System
10,11		….(9)	Inserted slightly modified text reflecting current authorizing language specifying an initiative focused on utilizing the $1 portion of the $5 retained fee	This objective was approved by the committee (7/20/2004) as Amendment No. 2 to the 1999 Plan and inserted here.
11		…..(10)	Inserted generic text allowing for non-specific but beneficial projects deemed appropriate by the committee. These projects may be related to "Smart Growth" initiatives as may be required to be included in Milwaukee County's Comprehensive planning efforts.	This objective was originally included to be complimentary to the WLIP focus and specifically directed at "Smart Growth". The original text was approved by the committee (7/20/2004) as Amendment No. 2 to the 1999 Plan and inserted

Pg#	Topic Heading	Subject Heading	Change	Comment
				here.
12	Custodial Responsibilities		Inserted, language to identify Milwaukee County as having MCAMLIS data custodial and project management responsibility	
12,13	Foundational Elements and Statewide Standards	Communication, Educational Training, and Technical Assistance	Changed, text referring to Wisconsin land Information Program (Board)	
15		Geographic Reference Frameworks: Image Bases	Updated, references to ongoing Milwaukee County Ortho-photography program	
15		……Image Bases	Inserted, future consideration of alternative image technology e.g. Oblique, LIDAR	
15		Digital Elevation Models	Inserted, the availability of a Digital Elevation Model (DEM) for Milwaukee County	
16		Custodial Responsibilities and System Requirements	Updated, the role of Milwaukee County as assuming MCAMLIS data custodial responsibility	
16		Parcel Mapping	Updated, the Parcel Mapping percent complete	
17			Modified, text in final paragraph to reflect emphasis on address systems development initiatives	
18	Integration and Cooperation		Updated, staffing arrangements to include Milwaukee County MCAMLIS project management	
18,19	Administrative Standards not Associated with Foundational Elements		Reordered, understandings and agreement text to conform to the "Uniform instructions"	

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MILWAUKEE COUNTY

UPDATE TO LAND RECORDS MODERNIZATION PLAN: 2005

John L. La Fave
Milwaukee County Land Information Officer
And Register of Deeds

July 11, 2006

I. EXECUTIVE SUMMARY

A. Identification and Contact Information

Mr. John LaFave
Milwaukee County Land Information Officer
Milwaukee County Courthouse
901 N. 9th Street
Milwaukee, WI 53233
Telephone: 414-278-4011
Fax: 414-223-1257
Electronic Mail Address: jlafave@milwcnty.com

Mr. William Shaw
MCAMLIS Project Manager
Milwaukee County City Campus
2711 W. Wells Street
Milwaukee, WI 53208
Telephone: 414-278-2176
Fax: 414-223-1982
Electronic Mail Address: bill.shaw@milwcnty.com

B. Participants in the Planning Process

On February 15, 1990, the Milwaukee County Board of Supervisors adopted SEWRPC Community Assistance Planning Report No. 177, Feasibility Study for a Milwaukee County Automated Mapping and Land Information System, October 1989 (hereinafter referred to as the "plan"). This plan update, finalized in 2006, is intended to, expand, and extend the plan and subsequent updates. The original plan, which proposed the development of an automated mapping and land information system for Milwaukee County, was prepared by the staff of the Southeastern Wisconsin Regional Planning Commission (SEWRPC) under the direction of an Advisory Committee comprised of representatives of the City and County of Milwaukee, the 18 suburban cities and villages within Milwaukee County, the Milwaukee Metropolitan Sewerage District, the Wisconsin Energy Corporation (now doing business as We Energies), the Wisconsin Gas Company (now doing business as We Energies), and the Wisconsin Bell Telephone Company (now AT&T).

The Milwaukee County plan, as adopted by the County Board, is believed to be unique within Wisconsin in that it created a public-private partnership that would jointly fund and develop the automated mapping system. Accordingly, a cooperative agreement was executed in November 1990, establishing the Milwaukee County Automated Mapping and Land Information System, known by the acronym MCAMLIS. Milwaukee County, the Milwaukee Metropolitan Sewerage District, Wisconsin Bell Telephone Company, the Wisconsin Electric Power Company, and the Wisconsin Gas Company all executed the agreement. The agreement provided for the creation of a Steering Committee with representatives from the County and City of Milwaukee, the suburban cities and villages

within Milwaukee County, the Milwaukee Metropolitan Sewerage District, and the private utilities operating within the County.

The 2005 update of the Milwaukee County Land Records Modernization Plan was prepared under the direction of the MCAMLIS Steering Committee, whose membership includes the following:

Kurt W. Bauer, Chairman.....….....Milwaukee County Surveyor
John L. La Fave……....Register of Deeds and Land Information Officer
John M. Bennett ..... Engineer, City of Franklin
representing the 18 suburban communities
Kevin S. Anderson.....….....Design Area Manager, AT&T
Linda J. Seemeyer..... Director, Department Administration Services
George A. Torres.....Superintendent, Department of Transportation and Public Works
Nancy A. Olson.....….....Enterprise Information Manager, City of Milwaukee
Donald R. Nehmer, Jr.....……Capital Program Business Manager,
Milwaukee Metropolitan Sewerage District
John C. Place.....……....Manager, Maps & Records, We Energies
Donald L. Coe……Supervisor, Facilities Location, Customer Operations, We Energies

C. Summary of Plan and Status of Implementation

This update to the plan is intended to provide County and local officials, State agencies, private entities, and other interested parties with basic knowledge of Milwaukee County's continued efforts to modernize its land records system. Since adoption of the original plan in 1990, Milwaukee County has diligently pursued the creation of a parcel-based, multi-purpose, multi-user automated mapping base as the foundation for land information systems. The initial focus was on the establishment of a geodetic framework, the preparation of large-scale planimetric and topographic base maps, and the preparation of companion large-scale maps. This mapping effort was completed in or converted to digital form and has been integrated into a computerized data base now serving Milwaukee County. This update document summarily describes how Milwaukee County intends to continue to build on that data base over the next five years and to expand our cooperation with local units of government in the County and with participating utility organizations operating in Milwaukee County in pursuing important land records modernization initiatives.

D. Milwaukee County Land Information Website

Milwaukee County Register of Deeds
The Register of Deeds office provides for fee based internet access to recorded documents. Mapping information compiled in Milwaukee County is available through numerous municipal and regional websites but MCAMLIS data is not, as yet, available through a countywide land information public access website.

E. Websites Serving Land Information For Municipalities within Milwaukee County

City of Franklin
City of Cudahy

Village of Greendale
City of Greenfield
City of Milwaukee
City of Oak Creek
City of South Milwaukee
SEWRPC Map Server
City of West Allis

II. LAND INFORMATION PLAN

A. Goals and Objectives

The partially completed automated mapping and land information system for Milwaukee County has resulted in substantial improvements in both efficiency and effectiveness in the acquisition, conversion, storage, retrieval, and use of information about the land area which comprises Milwaukee County. Given the current status of the system, the goals and objectives for the continued development, enhancement, and use of the system are as follows:

1. Complete the development of an Enterprise Address System (EAS) capable of integrating process, data, technology and organizational components across Milwaukee County municipalities, law enforcement, emergency management and development interests. This goal strives to remedy current operational constraints while enhancing access to and usability of street name and address data countywide;
2. Maintain the completed horizontal and vertical survey control network including the monumentation of the U. S. Public Land Survey corners and the provision of State Plane Coordinates and elevations for those corners and ancillary monuments and benchmarks;
3. Maintain the topographic maps current; remapping areas of the County as may be required by changes in development;
4. Maintain the completed cadastral maps to reflect land subdivision plat, certified survey map and other land division activities which create new parcels or revise the boundaries and extent of existing parcels;
5. Automate the access to and maintenance of address information providing location-based, current, complete and standardized address information across the enterprise via web-based technologies;
6. Complete the mapping of the 100-year recurrence interval flood hazard areas within Milwaukee County, integrating the mapping into the automated land information system;
7. Ensure that the information assembled under the program is readily translatable and available for use by State, county, and municipal units and agencies of government and public utilities and by private entities, including, importantly, interested citizens. This will involve making the information available through the

Internet System for viewing and retrieval of base mapping and land and land-related information;

8. Develop and integrate carefully selected attribute data having broad utility, including current land use, zoning, flood hazard, wetland, and assessment data among others.

9. *Identify, initiate, and complete projects that will utilize the $1.00 of each $5.00 of the fees retained locally to develop and maintain land information on the Internet, including the county's land information relating to housing in a manner that would allow for greater public access.*

   More specifically the $1 fee will be segregated and designated as a "technology fund" for ongoing modernization efforts and technology improvements to the Milwaukee County Register of Deeds Office. The chosen projects will be expected to provide faster access to, and improved delivery of, data, images, and services both within the Office and to the public over the Internet and other electronic communication media as may be appropriate.

10. Where appropriate, identify, initiate, and complete projects proposed by Milwaukee County or its constituent municipalities which would prepare information and maps useful for meeting the needs of the County and its municipalities and contributing toward the implementation the Wisconsin Land Information Program.

B. Progress Report on Ongoing Activities

As already noted, work completed to date on the development of an automated mapping and land information system for Milwaukee County has included completion of the location and re-monumentation of all U S. Public Land Survey system corners within the County, including the centers of Sections; the determination of State Plane Coordinate values based upon the North American Datum of 1927 for the re-monumented U. S. Public Land Survey corners by high-order traverse and global positioning system surveys; the determination of the elevations of the monumented U. S. Public Land Survey corners and of ancillary monuments, the elevations being referred to the National Geodetic Vertical Datum of 1929; the completion of large scale topographic maps to National Map Accuracy Standards of the entire County; and the completion of matching cadastral maps for all of the 19 cities and villages located within Milwaukee County, an area of 242 square miles within Milwaukee County. The cadastral mapping has included the assignment of parcel identification numbers and supplementary street addresses to a significant number of buildings on parcels within the 18 suburban communities.

Products that have been developed to date include U. S. Public Land Survey corner dossier sheets for each re-monumented U. S. Public Land Survey corner within the County facilitating its use as a control survey station; control survey summary diagrams providing data on the State Plane Coordinates and elevations of all of the re-monumented U. S. Public Land Survey corners, and on the grid and ground lengths and bearings of the one-quarter section lines, the interior angles of the quarter sections, and the area of the quarter sections, together with such important

information applicable as the combination scale and sea level reduction factors and the mapping angle; hard copy topographic maps and digital topographic map files; and hard copy cadastral maps and digital cadastral map files. Street address coding to individual buildings on parcels is available for more recent construction located within the 18 suburban municipalities within Milwaukee County.

The large-scale cadastral mapping to MCAMLIS standards for that area of Milwaukee County within the City of Milwaukee. The MCAMLIS Steering Committee has contracted with the City of Milwaukee to oversee the completion by the City of the needed large-scale cadastral mapping to MCAMLIS standards. The work involved the recompilation--that is, the preparation of new--cadastral maps for 40 U. S. Public Land Survey system one-quarter sections. The existing cadastral maps for these sections were so deficient that the existing maps could not be adjusted by computer manipulation to fit the horizontal control survey network and ground truth presented by the now-existing topographic maps. In addition, the existing cadastral maps for the remainder of that area of Milwaukee County within the City of Milwaukee were adjusted by the City through computer manipulation utilizing an algorithm and program developed for this specific purpose. The newly compiled and computer-adjusted cadastral maps now meet MCAMLIS standards for such mapping at a scale of one inch equals 100 feet.

The mapping of obstructions to air navigation within the safety approach zones attendant to the existing and proposed runways at Milwaukee County General Mitchell International Airport. A contract and specifications for the mapping of obstructions to air navigation within the safety approach zones attendant to the existing and proposed runways at Milwaukee County General Mitchell International Airport were developed in cooperation with the Airport Manager and Airport Engineer.

Obtained Federal copyright registration for the completed automated topographic base and matching cadastral maps. The hard copy and digital topographic and cadastral maps produced under the MCAMLIS program have, in fact, been copyrighted. The copyright has been registered with the Federal government.

Perhaps the singularly most important initiative to be completed under the previous plan was to identify, establish, and make operational a permanent institutional structure for the management of the continuing automated mapping and land information system program, as of 2005, is now provided by the Milwaukee County Department of Transportation and Public Works.

C. New Initiatives

The work effort to be undertaken over the next five years under the MCAMLIS program will be designed to achieve the 10 goals and objectives heretofore listed. Each goal and objective lists the work proposed below.

1. A number of key goals or characteristics are identified for a County Enterprise Address System (EAS) initiative. These goals strive to remedy current operational and management constraints while also enhancing access to and usability of street name and address data countywide. They are listed below:

- **Enterprise Support**. The EAS will be designed, deployed, and operated to support all stakeholder interests including internal County department staff and information systems as well as those of external municipalities, public agency and private partners.
- **Automated.** The EAS will be automated in the sense that it offers stakeholders computerized access to digital street name and address data and automates the process of address data maintenance.
- **Current.** Address data made available through the EAS initiative will be current enough to support the time sensitive needs of internal and external users and their respective business information systems.
- **Complete and Standardized.** Street name and address data will be complete and standardized representing all jurisdictional areas of the County including external service areas.
- **Location-based.** All street name and address records in the EAS that represent a physical location inside or immediately outside Milwaukee County (e.g., extra service area) will be spatially-enabled.
- **Accessible.** The EAS will be accessible to all internal and external users and their information systems. This means it will provide various mechanisms for staff and public access and interfaces that facilitate data communication.

2. Maintain the completed horizontal and vertical survey control network including the monumentation of the U. S. Public Land Survey corners and the provision of State Plane Coordinates and elevations for those corners and ancillary monuments and benchmarks. Under a provision of the State statutes, the Southeastern Wisconsin Regional Planning Commission has, since 1984, served as the Milwaukee County Surveyor. The work entails the perpetuation of the corners of the U. S. Public Land Survey system which may have been subject to destruction, removal, or burial through construction or other activities, and the maintenance of records of the surveys required for such perpetuation. The work also entails the receipt, indexing, and filing of records of all land surveys completed within Milwaukee County. The records are indexed by U. S. Public Land Survey system one-quarter Section; name of property owner; and name of land surveyor. The records are essential to the compilation and updating of the cadastral maps as well as to the conduct of public works engineering and land surveys throughout the County. Perpetuation of the U. S. Public Land Survey corners within the County is essential to the maintenance of the horizontal and vertical control survey network required for the automated mapping and land information system. The perpetuation work entails the re-monumentation of approximately 24 corners per year and the preparation of the attendant dossier sheets and control survey summary diagrams. The corner perpetuation work is done both in response to requests generated by public works and private utility construction projects and, more systematically, by periodic maintenance of the corners and attendant control survey networks within the large subareas of the County within which the preparation of updated topographic maps is scheduled. The latter may involve between 50 and 100 corners per year.

3. Maintain the topographic maps current; remapping the entire County through the period 2005 to 2008. The large-scale topographic maps that comprise an integral part of the automated mapping and land information system for Milwaukee County have been, and will continue to be, periodically updated. The new maps will meet MCAMLIS standards and will be available in both hard copy and digital format.

4. Maintain the completed cadastral maps to reflect land subdivision plat, certified survey map and other land division activities which create new parcels or revise the boundaries and extent of existing parcels. A major initiative under the continuing MCAMLIS program will be the development of a procedure for efficiently and effectively updating the completed cadastral maps. All of the records required to readily update the cadastral maps are available from the land subdivision plats and certified survey maps recorded with the City of Milwaukee Assessors Office, the County Register of Deeds and the survey records filed with the Milwaukee County surveyor. The perpetuation of the U. S. Public Land Survey system within the County and the maintenance of the attendant control survey networks by the County surveyor ensure that all land subdivision plats, certified survey maps, and other land surveys are related to common points of beginning, to a common bearing base in the form of the State Plane Coordinate grid, and are adjusted to the ground lengths of the one-quarter section lines as determined by the horizontal control surveys. This permits the cadastral maps to be readily updated by the direct entry of the geometry provided by the land subdivision plats, certified survey maps, and other survey records.

5. Convert existing site addresses maintained as part of the county parcel mapping system into the Enterprise Address System (EAS). Update converted site addresses to reflect current conditions and to ensure consistency with street names and address ranges.

   Likewise, convert site addresses for the City of Milwaukee and incorporate these into the countywide, Enterprise Address System (EAS). Implement processes and tools (web-based) to automate the posting of City of Milwaukee and other municipalities site address updates into the countywide, Enterprise Address System.

6. Complete the mapping of the 100-year recurrence interval flood hazard areas within Milwaukee County, integrating the mapping into the automated land information system. A major work effort will entail the completion of the mapping of the 100-year recurrence interval flood hazard areas within Milwaukee County integrating the mapping into the automated land information system. The Regional Planning Commission has completed comprehensive watershed plans for the five watersheds which lie partly or wholly within Milwaukee County. These plans provide data on the flood flows and stages of all of the major streams and water courses within Milwaukee County. The data are based upon hydrologic and hydraulic simulation modeling and consider both existing and planned land use development patterns within the watersheds. These watershed plans, however, have been developed over a period of time extending from 1966 through 1987. Therefore, the proposed mapping will require that the watershed plan data be

updated as may be necessary to reflect changes in the existing and planned land use patterns, in the hydrologic capacity of the stream channels, and in the attendant stream flows and stages. Stage data for the 100 year recurrence interval flood compiled from the watershed planning work--those data being based upon the vertical datum utilized in the MCAMLIS program--can then be readily transferred to the large-scale topographic maps and digitally integrated into the cadastral maps, thus providing flood hazard data by parcel. This work, because of its magnitude and complexity, and the need to have the flood flow and stage data approved by the Wisconsin Department of Natural Resources and the Federal Emergency Management Agency, will have to be scheduled over a three to five year period.

7. Ensure that the information assembled under the program is readily translatable and available for use by State, county, and municipal units and agencies of government and public utilities and by private entities, including, importantly, interested citizens. This will involve making the information available through Web-based Internet and Extranet Systems for the retrieval of base mapping and land and land-related information. An example of an undertaking in this area will be the development and coordination of an integrated Milwaukee County Master Street Address Guide (MSAG) as a tangible outcome of our EAS objective. An effort will be made to ensure that the information assembled under the program is readily translatable and widely available for use over the internet. Special care will be undertaken to ensure the widest access and publication of the data while maintaining the strict integrity of the data copyright interests.

8. Develop and integrate carefully selected attribute data having broad utility, including current land use, zoning, flood hazard, wetland, and assessment data among others. An initiative to be undertaken will include the development and integration of carefully selected attribute data having broad utility. Such data could include current land use, zoning, soils and soil boring, flood hazard, wetland, and tax assessment data, among others. It could also include the integration of aerial orthophotography taken periodically by the Southeastern Wisconsin Regional Planning Commission into the land information system. The types of attribute data to be developed and integrated would be selected and scheduled in priority order by the MCAMLIS Steering Committee. It should be noted, in this respect, that soils data would probably not be considered for such integration since much of the County is covered by soils that have been disturbed and for which, therefore, no detailed operational soil survey data and meaningful interpretative information are available.

Identify, initiate, and complete projects that will utilize the $1.00 of each $5.00 of the fees retained locally to develop and maintain land information on the Internet, including the county's land information relating to housing in a manner that would allow for greater public access.

9. The Milwaukee County Land Information Officer, who is also the Milwaukee County Register of Deeds, has developed, and will continue to update and expand a list of projects in keeping with the spirit and requirements of s.66.1001(2)(b) of the *Wisconsin Statutes* for the development and maintenance of a computerized

indexing of the County's land information records relating to housing in a manner that would allow for greater public access. Such projects may include the acquisition of specialized computer hardware to accomplish the digital conversion of oversized maps and records and the modernization of both the hardware and software currently utilized by the Register of Deeds Office to carry out the optical imaging of land records related documents. Additional projects, such as the automation of tax lien records and the recording of mortgage satisfactions and similar types of documents that would serve to automate existing hardcopy County records related to housing identified under the "Guidelines for the Use of the Additional $1.00 Retained by the County" as promulgated by the Office of Land Information Services, Wisconsin Department of Administration, may also be undertaken as determined to be appropriate and useful.

Additional efforts will be undertaken to streamline the flow of materials through the Register of Deeds Office including both efforts to achieve faster throughput of material and through "redesign" of processes to provide for better integration of material handling and information handling tasks. Efforts will also be directed toward investigating intergovernmental cooperation initiatives e.g. Diggers Hotline, as an example in providing better overall service to the taxpayers and citizens and to the private companies that depend upon access to the records under the responsible jurisdiction of the Register of Deeds.

10. Where appropriate, identify, initiate, and complete projects proposed by Milwaukee County or its constituent municipalities which would prepare information and maps useful for meeting the needs of the County and its municipalities and contributing toward the implementation the Wisconsin Land Information Program.

D. Custodial Responsibilities

As already noted, the Southeastern Wisconsin Regional Planning Commission was originally given the custodial responsibilities for the Milwaukee County automated mapping and land information system. Although this assignment of custodial responsibility was envisioned in the original plan to be temporary, the Commission has, until January 2005, fulfilled the responsibility at the specific request of the Milwaukee County Board of Supervisors and the County Executive since adoption of the initial plan in 1990.

As of January 2005 Milwaukee County Government has assumed the MCAMLIS custodial responsibilities on a permanent basis and now provides for MCAMLIS data distribution and MCAMLIS Project Management.

In considering a reassignment of custodial responsibilities, the Milwaukee County surveyor responsibilities remains with the Regional Planning Commission. These responsibilities include the perpetuation of the U. S. Public Land Survey system within the County; the maintenance of the related horizontal and vertical control survey networks; and the recording and indexing of land surveys conducted within the County. In addition, responsibilities for periodically obtaining orthophotography remain with the Regional Planning Commission as an integral part of its overall comprehensive regional planning program.

All other custodial functions, however, including maintenance of the cadastral maps; the street address coding; the development and integration of additional attribute data; and efforts to ensure that information assembled under the program is readily translatable and available for use now rest with Milwaukee County Government.

E. Foundational Elements and Statewide Standards

1. Communication, Educational Training, and Technical Assistance

Using Internet system technology, the Milwaukee County Land Information Officer will subscribe to, and participate in the Wisconsin clearinghouse and technical assistance list service maintained by the Wisconsin Land Information Program.

As access to the MCAMLIS data is provided through web-based services, provisions will be made with an educational agency, such as Milwaukee Area Technical College for training of potential users. Alternatively, MCAMLIS may develop Internet access to educational materials in order to further facilitate the publics knowledge about and use of the MCAMLIS data.

2. Geographic Reference Frameworks

- Integration of U. S. Public Land Survey and State Plane Coordinate Systems

As already noted, the densification of the National Geodetic Survey control network within the County was completed by MCAMLIS early in its history. Indeed, much of this work was completed before the formation of the creation of the Wisconsin Land Information Program.

The horizontal control survey network within Milwaukee County consists of 1,065 U. S. Public Land Survey corners, including the centers of the sections, thus placing a monumented control survey section of known position on both the U. S. Public Land Survey system and State Plane Coordinate system, and of known elevation, at approximately one-half mile intervals throughout the County. Substantial concrete monuments with brass caps mark the corner locations. The brass caps are inscribed with the corner notation--U. S. Public Land Survey system quarter-section, township and range. The monuments placed are referenced by ties to at least four witness marks and a control survey station recovery form or dossier sheet--is provided for each corner. The dossier sheet provided for each corner includes a sketch showing the monument erected in relation to the salient features of the immediate vicinity, all witness monuments set together with ties, the State Plane Coordinates of the corner, its U. S. Public Land Survey system identification, the elevation of the monument, the location and elevation of one or more reference benchmarks, and a certificate prepared and executed by the County Surveyor setting forth the history of the location and monumentation of the corner.

The U. S. Public Land Survey corners have been placed on the State Plane Coordinate system by high-order traverse and global position system surveys. The coordinates are expressed in terms of the Wisconsin Plane Coordinate System, South Zone, North American Datum of 1927. The densified survey

control network was connected to and integrated with all of the monumented stations of the national control survey network, as established by the U. S. Coast and Geodetic Survey--the predecessor agency to the National Geodetic Survey and by the U. S. Lake Survey of the U. S. Army Corps of Engineers. The horizontal control surveys meet or exceed the specifications for Third-Order, Class I, accuracy standards as established by the National Geodetic Survey.

Elevations were established for all of the monumented U. S. Public Land Survey system corners and for ancillary reference benchmarks. The vertical control survey network so created was based upon the National Geodetic Vertical Datum, 1929 adjustment. All level surveys conducted met or exceeded the specifications for Second-Order, Class II, accuracy standards as established by the National Geodetic Survey.

As part of the precise leveling operations, equations were established which permit the elevations referenced to the National Geodetic Vertical Datum to be converted to City of Milwaukee Datum and to the International Great Lakes Datum.

The specifications governing the creation of geodetic reference framework within the County required the preparation of control survey summary diagrams showing the exact grid and ground lengths and grid bearings of the exterior boundaries of each U. S. Public Land Survey quarter-section; the area of each quarter section; all monuments erected; the number of degrees, minutes and seconds on the interior angles of each quarter-section; the State Plane Coordinates of all quarter-section corners, together with their Public Land Survey system identification; the benchmark elevations of all monuments set; and the basic National Geodetic Survey control stations utilized to integrate the Public Land Survey system corners into the horizontal geodetic control system, together with the coordinates of the national stations. The angle between geodetic and grid bearing is noted on each diagram as is the applicable combination sea level and scale reduction factor.

The Regional Planning Commission has developed algorithms which can be used to convert the control station coordinates from the North American Datum of 1927 to the North American Datum of 1983, 1991 adjustment; and the benchmark elevations from the National Geodetic Vertical Datum of 1929 to the National Geodetic Vertical Datum of 1988. The conversion algorithms maintain the underlying accuracies and precisions of the horizontal and vertical control networks.

- <u>Topographic Base Maps</u>

  Also as already noted, the MCAMLIS program is in the process of completing the preparation of one inch equals 100 feet scale, 2 foot contour interval topographic maps for all of the 242 square miles of land area within Milwaukee County. These maps were prepared to National Map accuracy standards and are available in both hard copy and digital format. The topographic maps accurately record the basic geography of the area mapped.

In addition to showing the usual contour information, spot elevations, planimetric and hypsometric detail, and State Plane Coordinate system grid ticks, the maps show in their correct position and orientation, all U. S. Public Land Survey quarter section lines and corners established in the control surveys used as a framework for the mapping. A combination sea level and scale reduction factor, and the angle between geodetic and grid bearing are noted on each map sheet, as is the equation between any local datum and the National Geodetic Vertical Datum.

- Quadrangle Boundaries
  Since the topographic maps prepared under the MCAMLIS program are superior to the U. S. Geological Survey quadrangle maps for county, municipal and utility planning, engineering, and land information system applications, the MCAMLIS program does not intend to prepare digital map representations of the quadrangle map boundaries.

- Image Bases
  The MCAMLIS program does not intend to acquire digital raster graphics files prepared from U. S. Geological Survey. Larger scale and higher resolution digital raster images are available under the MCAMLIS program.

  The MCAMLIS program has available to it in both hard copy and digital format the aerial orthophotography completed by the Southeastern Wisconsin Regional Planning Commission initially in the spring of 1995 and has been obtained every five years thereafter. The most recent orthophotography, obtained in 2005 is available in color and compiled for use at a scale of one inch equals 100 feet with a 6" pixel resolution. and meets National Mapping Accuracy Standards at that scale.

  The MCAMLIS program does not intend to acquire digital orthoquad image datum available from the Federal government. These images are available at map scales to small to be useful within urban and urbanizing areas such as Milwaukee County. The digital aerial orthophotography available to the MCAMLIS program is in every way superior and more suitable to the needs of the greater Milwaukee area.

  The MCAMLIS program does not intend to acquire digital line graph files prepared from U. S. Geologic Survey quadrangle maps. The MCAMLIS topographic maps provide the larger map scales and higher resolutions needed within urban and urbanizing areas such as Milwaukee County.

  The MCAMLIS program does not intend to acquire satellite imaging available either from the Federal government or from Russian sources. The large-scale hard copy and digital aerial orthophotography available to the MCAMLIS program is superior to satellite imagery for all purposes within Milwaukee County.

  The MCAMLIS program may consider acquiring and/or cost sharing programs e.g., to obtain high resolution oblique or LIDAR photo-imagery. Applications and use of this type of imagery are considered useful for

purposes of planning, in-office field inspection and change detection. Further investigation of this will be undertaken as need and interest is brought to the attention of the MCAMLIS Steering Committee.

- Digital Terrain Models
  The MCAMLIS program will acquire and distribute a digital terrain model (DTM) that can be used to assist in the development of triangulated irregular networks used in contour mapping. The 2005 through 2008 topographic mapping update program is expected to provide this data to the MCAMLIS Steering Committee.

- Adherence to Standards
  The Wisconsin Land Information Program has prepared specifications and guidelines for the densification of the Wisconsin High Accuracy Reference Network (HARN) using global position system technology. This standard is not relevant to the MCAMLIS program, which has completed densification of the survey control network within the County. The MCAMLIS program, as already noted, utilizes, and intends to continue to utilize, the North American Datum of 1927 as the basis for horizontal survey control. No benefit cost studies have been undertaken that would indicate that the use of either the North American Datum of 1983, or the North American Datum of 1983 as modified by the 1991 Wisconsin High Accuracy Reference Network would provide any tangible benefits. In this respect, it should be noted that the Federal government is already considering the promulgation of a new North American Datum for scientific and military applications. A more rational national and State policy would be to follow British practice and maintain a stable geodetic datum for civil applications, while changing and refining datums as necessary for military and scientific applications.

  The perpetuation of the U. S. Public Land Survey system under the MCAMLIS program meets or exceeds good professional standards for land surveying and provision of related documentation.

- Custodial Responsibilities and System Requirements
  As already noted, Milwaukee County Government as of 2005 is responsible for the custody of the MCAMLIS system data and for the distribution of these data to users.

  MCAMLIS will continue to work with the Commission and the County Surveyor, to perpetuate the U. S. Public Land Survey system within the County and maintain the attendant control survey network. Under contract to the MCAMLIS Steering Committee, the Commission will be used to maintain the topographic base maps current. The designation of areas to be remapped will be determined by the MCAMLIS Steering Committee, acting in response to requests from local municipalities, the Milwaukee Metropolitan Sewerage District, and the County.

3. Parcel Mapping

Also as already noted, hard copy and digital cadastral--real property boundary line--maps have been completed under the MCAMLIS program for all of Milwaukee County. The completed maps thus cover 100 percent of the total area of the County. The cadastral maps have been prepared as companion overlays to the topographic base maps, are at a scale of one inch equals 100 feet, are referenced to both the U. S. Public Land Survey and State Plane Coordinate systems, and are based on a common geodetic control survey network, all as heretofore described. The cadastral maps meet accuracy standards long promulgated by the Regional Planning Commission for use within the Southeastern Wisconsin planning region. Those standards predate the creation of the Wisconsin Land Information Program and have proven by use over a period of almost four decades to be sound.

The cadastral maps are topologically structured and all ownership parcels are recognizable as closed polygons by the associated computer software programs. The cadastral maps identify in their proper location, orientation, and extent, all public street and alley rights-of-way, railway rights-of-way, major cross country utility easements, and major sanitary sewer and storm water drainage easements. The cadastral maps contain parcel identification numbers that provide the linkage to associated non-graphic attribute data. The parcel identification scheme is compliant with Wisconsin Land Information Program standards.

Also as already noted, the maintenance of the cadastral maps current is a major initiative proposed under this updated land records modernization plan.

Also as already noted, street addresses are being assigned to major buildings located on individual parcels and the completion and maintenance of these among other major address coding initiatives being proposed under this updated Land Records Modernization Plan.

4. Parcel Administration

Milwaukee County intends to integrate its land ownership registration records including its tract index and tax assessment data into the MCAMLIS land information system. The Milwaukee County Register of Deed's office has installed optical imaging equipment for the storage, retrieval, and indexing of real estate documents. The Milwaukee County Register of Deeds acts as the County Land Information Officer.

5. Public Access

All of the data assembled to date under the MCAMLIS program is available for use under policies established by the MCAMLIS Steering Committee. As already noted, expansion of opportunities for public access is another initiative proposed under the updated Land Records Modernization Plan.

6. Additional Attribute Data: Zoning, Soils, Wetlands, Administrative Boundaries, Address by Block Face

It is the intent of the MCAMLIS program, as heretofore indicated in this plan, to compile additional attribute data and link such data to the geographic

locations identified by the parcel identifiers. Such data will include existing land use, zoning, flood hazard, wetlands, and tax assessment data. Soils will not be included for the reasons heretofore given.

The MCAMLIS cadastral maps capture County and minor civil division boundaries and are amenable to the ready addition of special purpose boundaries, such as utility districts, legislative districts, zoning districts, tax increment financing districts, school districts, watersheds and sub-watersheds, and similar geographic units. The cadastral maps permit the establishment of a complete system of public street and highway centerlines within the County and the identification of street addresses by block faces.

F. Integration and Cooperation

The MCAMLIS program seeks to achieve cooperation between the various levels, units and agencies of government and private utilities operating within Milwaukee County. Indeed, the MCAMLIS program is founded in a formal cooperative arrangement between the County, the Milwaukee Metropolitan Sewerage District, and the three private utilities operating within the County. That arrangement is expanded through the medium of the MCAMLIS Steering Committee to include the City of Milwaukee and the 18 suburban units of government within Milwaukee County. Milwaukee County staffs the MCAMLIS Steering Committee. This arrangement ensures the use of sound and mutually acceptable technical standards and procedures in the MCAMLIS program, the dissemination of MCAMLIS data to municipal and utility users, and the scheduling of work elements in accordance with the perceived needs of the County agencies, Milwaukee Metropolitan Sewerage District, City of Milwaukee, and the suburban cities and villages within the County.

The past and present institutional structure has worked well in the creation of the foundational elements for the Milwaukee County automated mapping and land information system, and in the initial use of MCAMLIS data over a period of more than a decade.

G. Technical Standards Not Directly Associated with Foundational Elements

The MCAMLIS Steering Committee has been responsible for the review of all technical standards, including those associated with the foundational elements.

Technical standards not directly associated with such elements have included data distribution and interchange, metadata standards, control procedures and optical imaging of public records, among other standards.

Administrative Standards not Associated with Foundational Elements

This plan is intended to represent an agreement between the MCAMLIS program and the Wisconsin Land Information Program administered by Wisconsin State Department of Administration (DOA). The agreement is intended to the extent practicable to further the objectives of the Wisconsin land Information Program as embodied in the enabling State legislation. In order for the plan to be accepted by DOA, the DOA and the MCAMLIS Steering Committee hereby agree and consent as follows:

1. Milwaukee County and the MCAMLIS Steering Committee agree to observe and follow the Wisconsin Statutes relating to the Wisconsin Land Information Program and other relevant programs;
2. Milwaukee County and the MCAMLIS Steering Committee agree to permit the Wisconsin Department of Administration access to the books, records, and products for inspection and audit, including unannounced inspections and audits by DOA;
3. Milwaukee County and the MCAMLIS Steering Committee agree to complete a WLIP Survey as may be conducted from time to time;
4. Milwaukee County and the MCAMLIS Steering Committee agree to update this plan every 5 years and in the interim if the plan should change;
5. Milwaukee County and the MCAMLIS Steering Committee understand that the Wisconsin Department of Administration agrees to provide assistance to the county including an on-line Technical Assistance Service;
6. Milwaukee County and the MCAMLIS Steering Committee understand that the Wisconsin Department of Administration intends to distribute an inventory of land information and land information systems throughout the State;
7. Milwaukee County and the MCAMLIS Steering Committee understand that the development of this plan and its implementation will convey certain benefits on the County and on local governments within the County, including continued eligibility for program funding through grants administration by the Wisconsin Department of Administration. Milwaukee County, and the MCAMLIS Steering Committee further understand that a peer review process will be used to assess plan acceptability;
8. Milwaukee County and the MCAMLIS Steering Committee understand that the Wisconsin Department of Administration hereby agrees to review funding requests and to provide guidance to the County and local governments within the County with respect to the development of such requests;
9. Milwaukee County and the MCAMLIS Steering Committee understand that the Wisconsin Department of Administration hereby agrees to make available an annual report regarding the status of the Wisconsin land information program and related activities.

JLL/wcs
5/18/06
1999 Update - LRMP

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MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: June 30, 2006

SUBJECT: STATUS REPORT NO. 4 ON REGIONAL WATER SUPPLY PLAN

This memorandum sets forth the progress made on the regional water supply planning program from January 1, 2006 through June 30, 2006. The preparation of the regional water supply plan represents the third, and final, element of the SEWRPC regional water supply planning program. The first two elements, comprising the development of basic groundwater inventories and the development of a groundwater simulation model for the Southeastern Wisconsin Region, were completed over the past several years. These first two elements involved interagency partnership programs with the U.S. Geological Survey, the Wisconsin Geological and Natural History Survey, the University of Wisconsin-Milwaukee, the Wisconsin Department of Natural Resources, and many of the water supply utilities serving the Region. The third, and final, step in the planning program, the preparation of the water supply plan, was initiated January of 2005.

Progress on the water supply plan has been focused on the completion of water supply system inventories, the preparation of the state-of-the-art water supply practices report, and the development of conceptual alternatives. On a separate parallel track, work has been completed on the new regional land use plan for 2035 which will serve as a basis for the development of the regional water supply plan. The 2035 land use plan, which is separately funded, was finalized during June 2006.

Progress on the water supply plan is summarized in the attached Exhibit 1 and in the following paragraphs.

STUDY ORGANIZATION

As previously reported, a cooperative staffing arrangement is being used, involving the Southeastern Wisconsin Regional Planning Commission (SEWRPC) staff, consulting engineering and legal firms, and the groundwater technical staffs of the Wisconsin Geological and Natural History Survey (WGNHS), the U.S. Geological Survey (USGS), and the University of Wisconsin-Milwaukee. The contractual arrangements were previously completed through agreements with groundwater technical staffs of the State and Federal agencies concerned, and with a consulting engineering firm for carrying out portions of the work. During this reporting period, the agreement with a legal firm for a review of water supply laws was completed.

ADVISORY COMMITTEE

The Regional Water Supply Planning Advisory Committee met on January 18, April 6, May 17, and June 7, 2006, to review the description of the existing water supply conditions in the Region, as documented in the preliminary draft of Chapter III of the planning report. The Committee also reviewed recommended revisions and approved the introduction and description of the surface water technologies, groundwater withdrawal and treatment technologies, and groundwater treatment technologies, as documented in Chapters I, III, IV, and VI of the state-of-the art water supply practices report.

BASIC STUDY AREA INVENTORIES

Work was completed on the inventory of water supply utility facilities, water use, and related information. That inventory is currently being documented in a planning report chapter. Work was also continued by the engineering consultant on the inventories needed to document the state-of-the-art of water supply management.

PLAN REPORT PREPARATION

A portion of Chapter III, "Existing Water Supply Conditions of the Region," including sections on the history of water supply systems, inventory procedures, and sources of supply, of SEWRPC Planning Report No. 52, *A Regional Water Supply Plan for Southeastern Wisconsin*, was prepared, reviewed by the Regional Water Supply Planning Advisory Committee, and revised to address the Committee review comments. As previously reported, Chapter I, "Introduction and Background," Chapter II, "Description of the Study Area," and Chapter V, "Planning Objectives, Principles, and Standards," have also been finalized. Chapter I, "Introduction," Chapter III, "Surface Water Treatment Technologies," Chapter IV, "Groundwater Withdrawal and Treatment Technologies," of SEWRPC Technical Report No. 43, *State-of-the-Art of Water Supply Practices*, were prepared and reviewed by the plan Advisory Committee and revised to reflect Committee review comments.

OTHER ACTIVITIES

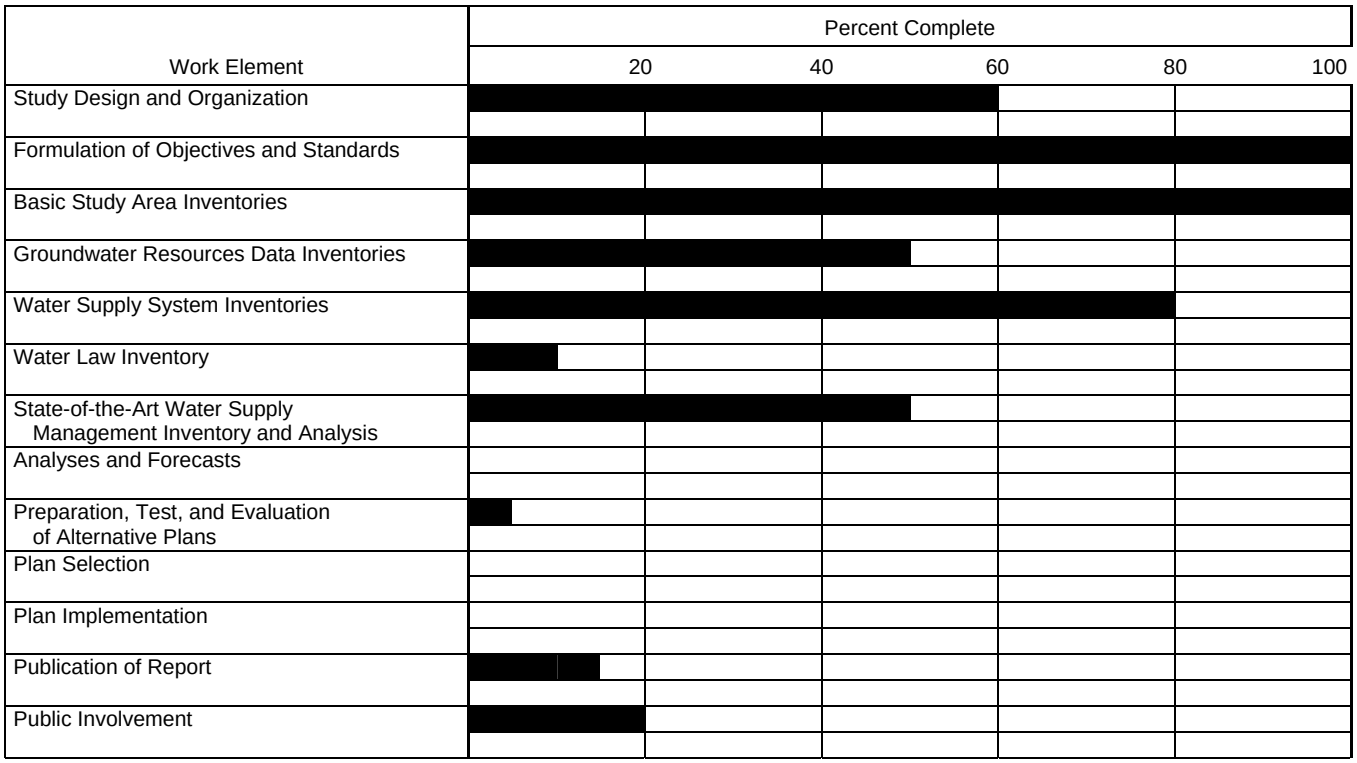
The Commission water supply planning web site has been maintained. Eight presentations on the planning program were made to various local government committees and interested citizen groups. The Advisory Committee meeting minutes and report chapters are being placed on that site. The site also includes related presentations, reports, and other pertinent information.

* * *

MCAMLIS RWSP STATUS REPORT NO. 4.DOC
310-1001
KWB/RPB/pk

Exhibit 1

STATUS OF REGIONAL WATER SUPPLY PLAN: June 30, 2006



MCAMLIS RWSP STATUS REPORT NO. 4.DOC
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06/26/06

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MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: June 30, 2006

SUBJECT: STATUS REPORT NO. 14 ON PHASE I OF THE MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT

This memorandum sets forth the progress made on Phase I of the Milwaukee County Floodland Mapping project from January 1, 2006 through June 30, 2006. That project phase includes all streams that are to be studied in the County, with the exception of those in the Root River watershed. This status report addresses project progress in the following three major areas:

- Data Acquisition
- Hydrologic and Hydraulic Modeling
- Floodland Map Preparation

Overall, the Phase I portion of the project is about 88 percent complete. Progress is summarized in the attached Exhibit 1 and is graphically summarized on the map attached hereto as Exhibit 2.

DATA ACQUISITION

During the period of January 1, 2006, through June 30, 2006, the following data acquisition activities were carried out:

- As indicated by Exhibit 1, data acquisition activities are substantially completed. When additional data needs are identified as work proceeds, the acquisition of the data is coordinated with the Milwaukee Metropolitan Sewerage District (MMSD), the Wisconsin Department of Natural Resources (WDNR), the Wisconsin Department of Transportation (WisDOT), and the pertinent communities.

HYDROLOGIC AND HYDRAULIC MODELING

During the reporting period, progress on hydrologic and hydraulic modeling for Phase I of the project included the following:

Milwaukee River Watershed

- Continued review and revision of the USEPA HSPF continuous simulation hydrologic model developed for the Menomonee River watershed model under Phases 1 and 2 of the MMSD water-

course system management plan, and revised under the ongoing Regional Water Quality Management Plan Update/MMSD 2020 Facilities Planning Program. The review and revision are for the purpose of verifying the model calibration and validation according to WDNR and Federal Emergency Management Agency criteria, so the model can be used in the MCAMLIS/MMSD/ SEWRPC floodplain mapping program.

Fish Creek Subwatershed

- The final hydrologic model of the Fish Creek subwatershed and a preliminary hydraulic model of Fish Creek were completed.

FLOODLAND MAP PREPARATION

Milwaukee River Watershed

- Work continued on refining preliminary draft floodplain boundaries along Brown Deer Park Creek for the 10-, 50-, 100-, and 500-year floods.

- Work was completed on the delineation of preliminary floodplain boundaries along Beaver Creek for the 10-, 50-, 100-, and 500-year floods.

PROPOSED SCHEDULE FOR COMPLETION OF PHASE I

The following factors have affected, and continue to affect, the schedule for completion of Phases I and II of this project:

- As maps have been completed, certain communities have requested that the Commission staff assist them in preparing detailed floodplain study submittals to the Wisconsin Department of Natural Resources (WDNR) and the Federal Emergency Management Agency (FEMA). Submittal of study information for agency approval is an important component of the floodland management process and it is the logical next step in the process of local adoption of the updated floodplains/floodways for zoning and Federal approval for flood insurance.

  The MCAMLIS/ MMSD mapping project scope of work was developed based on an assumption that such adoption activities would take place after, not during, the MCAMLIS/MMSD project. Such submittals have been prepared for the Oak Creek watershed, at the request of the City of Oak Creek; the Lincoln Creek subwatershed, at the request of the City of Milwaukee; and the entire City of Brookfield. The Brookfield submittal was for stream reaches outside of the boundaries of the Milwaukee County mapping project, but it included Underwood Creek which flows through multiple communities and is also being addressed under the Milwaukee County project. Each of those submittals required a substantial commitment of staff time, and, because of specific deadlines set by the requesting communities, the Lincoln Creek and Brookfield submittals in 2004 required diverting four engineers from other projects for substantial periods of time. The new FEMA digital flood insurance rate map for Lincoln Creek, which is based on the study submittal described above and which reflects the MMSD stream restoration and flood control project, has now been issued, eliminating the Federal flood insurance requirement for about 2,000 properties.

- Because of other regional planning projects and longstanding commitments to provide review services for county and local governments, it has been necessary to assign engineering staff to those projects, reducing their availability for work on the floodplain mapping project. Such projects include the regional water quality management plan update (RWQMPU), analyses and evaluation

of the MMSD Milwaukee County Grounds detention basin project as requested by Milwaukee County, hydraulic and scour analyses for new bridge designs which are done for the City of Milwaukee, and stormwater and/or floodland management reviews that are done for Kenosha, Racine, and Waukesha Counties.

Some of the hydrologic model development work being done under the regional water quality management plan update will be utilized in the floodland project. However, significant reallocation of SEWRPC engineering staff from other projects to the regional water quality management plan update began in the fourth quarter of 2003 and continues to the present. That reallocation, coupled with the loss of two engineering staff positions based on budget considerations has significantly affected the SEWRPC staff's ability to maintain the level of staffing on the MCAMLIS project which is necessary to meet the previously-envisioned project schedule.

- From 2001 through 2004, the SEWRPC staff coordinated with WDNR and FEMA to obtain consensus on acceptable criteria for continuous simulation hydrologic studies, such as those being used for many of the streams in the MCAMLIS/MMSD floodland mapping project area. That coordination has now reached a successful resolution, with agreement by WDNR, FEMA, and the SEWRPC staff on a sound set of guidelines. The SEWRPC staff was reluctant to expend MCAMLIS/MMSD floodplain mapping project resources on studies using continuous simulation hydrology until the technical criteria issues were resolved. Thus, for much of the four-year coordination period, specific work on continuous simulation hydrology was suspended. That suspension, coupled with the long time required to obtain agreement resulted in delay of the MCAMLIS/MMSD project.

- The main basis for Phases I and II of the floodplain mapping project is the hydrologic and hydraulic models that were developed by the MMSD and their consultants under Phases 1 and 2 of their watercourse system planning program. The MMSD models were developed for systems planning purposes and they are adequate for such purposes; however, they were not intended to be directly applicable for local zoning and Federal flood insurance purposes. The Commission staff has reviewed those models in detail and in many cases, we have found it necessary to obtain considerable additional information on hydraulic structures and to make significant, appropriate revisions to both the hydrologic and hydraulic models to bring them to Commission standards and the standards required for WDNR and FEMA approval.

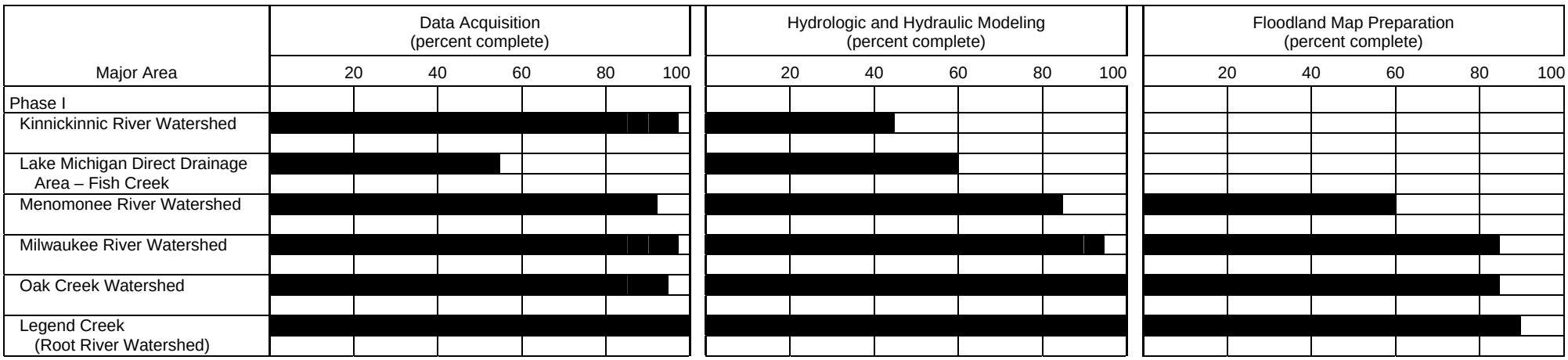
In revising the schedule for completion of Phases I and II of the MCAMLIS/MMSD floodland mapping project, consideration was given to additional committed, or ongoing, projects, including a Milwaukee River main stem watercourse system planning project which is to be done for MMSD from mid-2006 through mid-2007. That project is an outgrowth of the MCAMLIS/MMSD floodland mapping project in that the hydraulic model developed under the MCAMLIS/MMSD project makes the Milwaukee River project possible.

Given the foregoing, and taking into account new staffing levels, it is now proposed to complete Phase I of the floodplain mapping, including all studied streams in the Kinnickinnic, Menomonee, and Milwaukee River watersheds, by December 31, 2007.

* * *

Exhibit 1

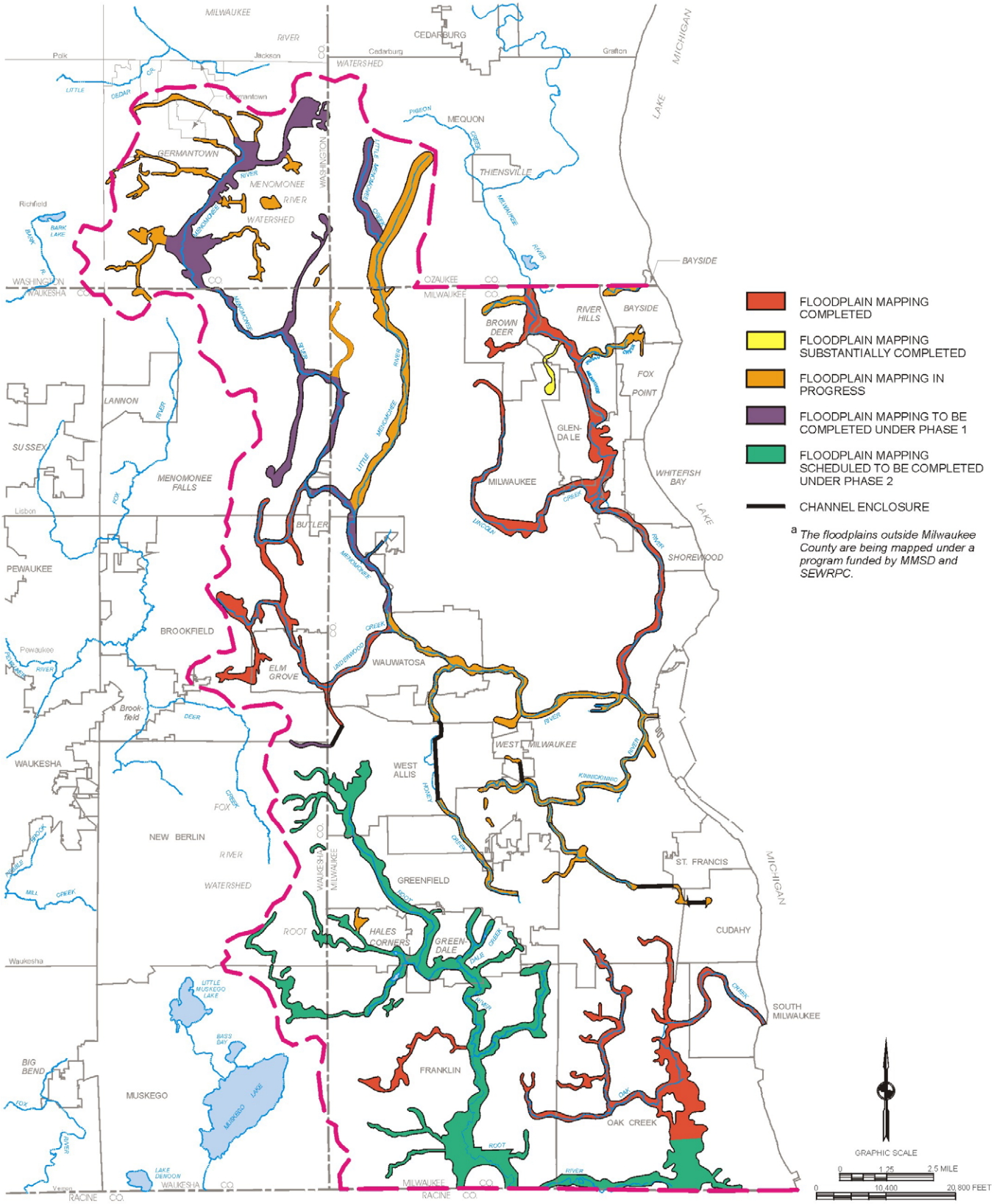
STATUS OF MCAMLIS PHASE I MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT: JUNE 30, 2006



MCAMLIS PH I MILW CTY FLPL STATUS RPT 14.DOC
PCE/KWB/MGH/pk
06/30/06

Exhibit 2

STATUS OF FLOODPLAIN MAPPING IN MILWAUKEE COUNTY AND IN MENOMONEE AND ROOT RIVER WATERSHEDS OUTSIDE MILWAUKEE COUNTY:[a] JUNE 30, 2006



[a] *The floodplains outside Milwaukee County are being mapped under a program funded by MMSD and SEWRPC.*

Source: SEWRPC.

SOUTHEASTERN WISCONSIN REGIONAL PLANNING COMMISSION
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MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: SEWRPC Staff

DATE: June 30, 2006

SUBJECT: STATUS REPORT NO. 6 ON PHASE II OF THE MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT

This memorandum sets forth the progress made on Phase II of the Milwaukee County Floodland Mapping project from January 1, 2006, through June 30, 2006. That project phase includes the streams that are to be studied in the County in the Root River watershed except for Legend Creek, which was studied under Phase I. In general, status reports will address project progress in the following three major areas and they will also identify major issues that have arisen.

- Data Acquisition
- Hydrologic and Hydraulic Modeling
- Floodland Map Preparation

The modeling and map preparation stages of the project have not yet begun. Overall, the Phase II portion of the project is about 7 percent complete. Progress is summarized in the attached Exhibits 1 and 2.

DATA ACQUISITION

During the period of January 1, 2006, through June 30, 2006, the following data acquisition activities were carried out:

- As indicated by Exhibit 1, data acquisition activities are substantially completed. When additional data needs are identified as work proceeds, the acquisition of the data is coordinated with the Milwaukee Metropolitan Sewerage District (MMSD), the Wisconsin Department of Natural Resources (WDNR), the Wisconsin Department of Transportation (WisDOT), and the pertinent communities.
- Obtained field survey data for hydraulic structures along the North Branch of Whitnall Park Creek from the Village of Hales Corners.

HYDROLOGIC AND HYDRAULIC MODELING

During the reporting period, progress on hydrologic and hydraulic modeling for Phase I of the project included the following:

- The hydraulic model of the North Branch Whitnall Park Creek was completed.

FLOODLAND MAP PREPARATION

- Work was completed on delineating the preliminary 100-year recurrence interval floodplain and floodway boundaries along the North Branch of Whitnall Park Creek.

PROPOSED SCHEDULE FOR COMPLETION OF PHASE II

The following factors have affected, and are continuing to affect, the schedule for completion of Phases I and II of this project:

- As maps have been completed, certain communities have requested that the Commission staff assist them in preparing detailed floodplain study submittals to the Wisconsin Department of Natural Resources (WDNR) and the Federal Emergency Management Agency (FEMA). Submittal of study information for agency approval is an important component of the floodland management process and it is the logical next step in the process of local adoption of the updated floodplains/floodways for zoning and Federal approval for flood insurance.

  The MCAMLIS/MMSD mapping project scope of work was developed based on an assumption that such adoption activities would take place after, not during, the MCAMLIS/MMSD project. Such submittals have been prepared for the Oak Creek watershed, at the request of the City of Oak Creek; the Lincoln Creek subwatershed, at the request of the City of Milwaukee; and the entire City of Brookfield. The Brookfield submittal was for stream reaches outside of the boundaries of the Milwaukee County mapping project, but it included Underwood Creek which flows through multiple communities and is also being addressed under the Milwaukee County project. Each of those submittals required a substantial commitment of staff time, and, because of specific deadlines set by the requesting communities, the Lincoln Creek and Brookfield submittals in 2004 required diverting four engineers from other projects for substantial periods of time. The new FEMA digital flood insurance rate map for Lincoln Creek, which is based on the study submittal described above and which reflects the MMSD stream restoration and flood control project, has now been issued, eliminating the Federal flood insurance requirement for about 2,000 properties.

- Because of other important new regional planning projects and longstanding commitments to provide review services for county and local governments, it has been necessary to assign engineering staff to those projects, reducing their availability for work on the floodplain mapping project. Such projects include the regional water quality management plan update (RWQMPU), analyses and evaluation of the MMSD Milwaukee County Grounds detention basin project as requested by Milwaukee County, hydraulic and scour analyses for new bridge designs which are done for the City of Milwaukee, and stormwater and/or floodland management reviews that are done for Kenosha, Racine, and Waukesha Counties.

  Some of the hydrologic model development work being done under the RWQMPU will be utilized in the floodland project. However, significant reallocation of SEWRPC engineering staff from other

projects to the RWQMPU began in the fourth quarter of 2003 and continues to the present. That reallocation, coupled with the loss of two engineering staff positions based on budget considerations has significantly affected the SEWRPC staff's ability to maintain the level of staffing on the MCAMLIS project which is necessary to meet the previously-envisioned project schedule.

- From 2001 through 2004, the SEWRPC staff coordinated with WDNR and FEMA to obtain consensus on acceptable criteria for continuous simulation hydrologic studies, such as those being used for many of the streams in the MCAMLIS/MMSD floodland mapping project area. That coordination has now reached a successful resolution, with agreement by WDNR, FEMA, and the SEWRPC staff on a sound set of guidelines. The SEWRPC staff was reluctant to expend MCAMLIS/MMSD floodplain mapping project resources on studies using continuous simulation hydrology until the technical criteria issues were resolved. Thus, for much of the four-year coordination period, specific work on continuous simulation hydrology was suspended. That suspension, coupled with the long time required to obtain agreement resulted in delay of the MCAMLIS/MMSD project.

- The main basis for Phases I and II of the floodplain mapping project is the hydrologic and hydraulic models that were developed by the MMSD and their consultants under Phases 1 and 2 of their watercourse system planning program. The MMSD models were developed for systems planning purposes and they are adequate for such purposes; however, they were not intended to be directly applicable for local zoning and Federal flood insurance purposes. The Commission staff has reviewed those models in detail and in many cases, we have found it necessary to obtain considerable additional information on hydraulic structures and to make significant, appropriate revisions to both the hydrologic and hydraulic models to bring them to Commission standards and the standards required for WDNR and FEMA approval.

In revising the schedule for completion of Phases I and II of the MCAMLIS/MMSD floodland mapping project, consideration was given to additional committed, or ongoing, projects, including a Milwaukee River main stem watercourse system planning project which is to be done for MMSD from mid-2006 through mid-2007. That project is an outgrowth of the MCAMLIS/MMSD floodland mapping project in that the hydraulic model developed under the MCAMLIS/MMSD project makes the Milwaukee River project possible.

Given the foregoing, and taking into account new staffing levels, it is now proposed to commence additional work on Phase II of the floodplain mapping immediately after completion of Phase I on December 31, 2007 and to complete Phase II work by June 31, 2009.

* * *

MCAMLIS PH II MILW CTY FLPL STATUS RPT 6.DOC
PCE/KWB/MGH/pk

Exhibit 1

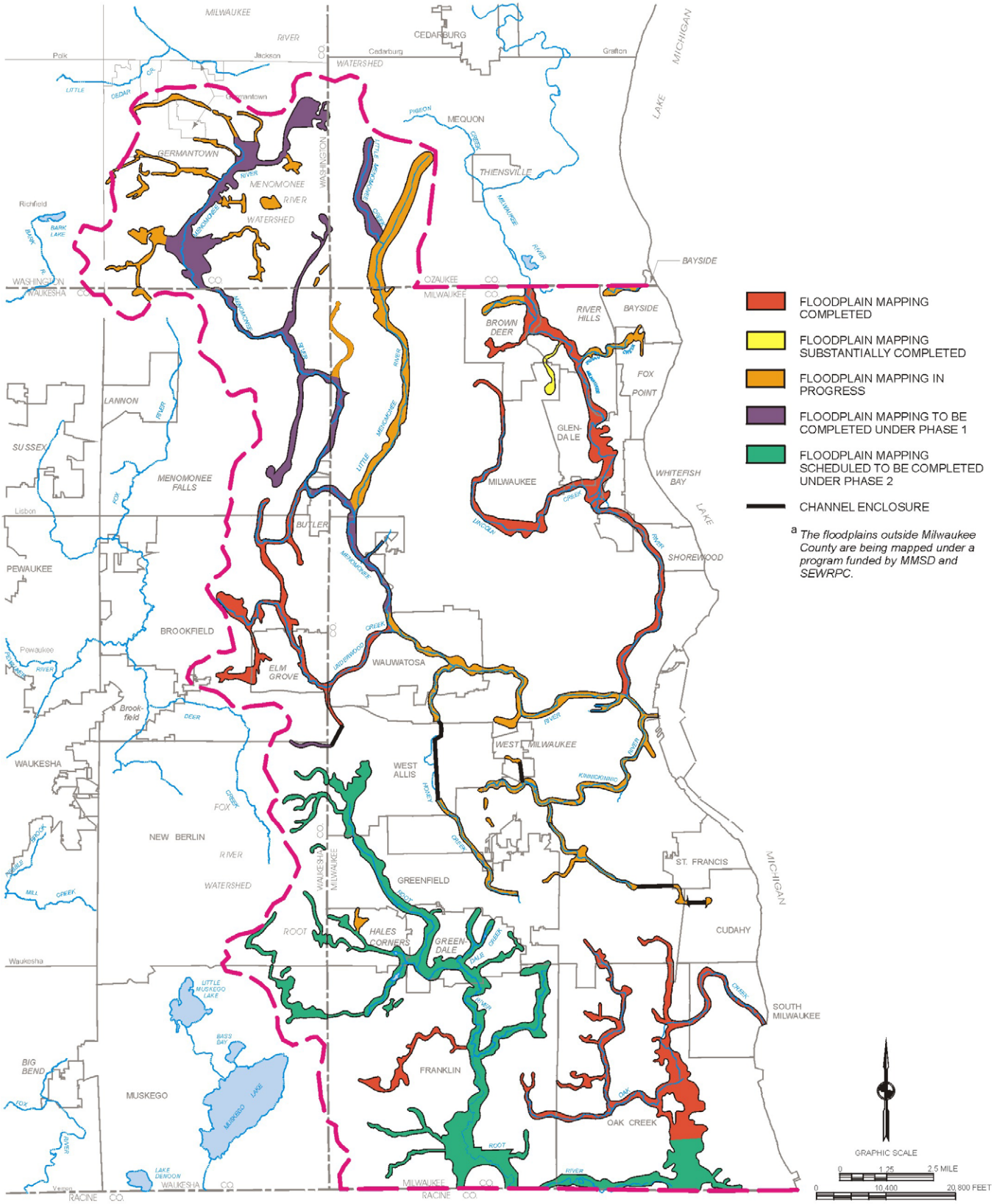
STATUS OF MCAMLIS PHASE II MILWAUKEE COUNTY FLOODLAND MAPPING PROJECT: JUNE 30, 2006

Major Area	Data Acquisition (percent complete)					Hydrologic and Hydraulic Modeling (percent complete)					Floodland Map Preparation (percent complete)				
	20	40	60	80	100	20	40	60	80	100	20	40	60	80	100
Phase II															
Lake Michigan Coastal Flooding Areas						NA	NA	NA	NA	NA					
Root River Watershed															

MCAMLIS PH II MILW CTY FLPL STATUS RPT 6.DOC
PCE/MGH/KWB/pk
06/30/06

Exhibit 2

STATUS OF FLOODPLAIN MAPPING IN MILWAUKEE COUNTY AND IN MENOMONEE AND ROOT RIVER WATERSHEDS OUTSIDE MILWAUKEE COUNTY:[a] JUNE 30, 2006



[a] *The floodplains outside Milwaukee County are being mapped under a program funded by MMSD and SEWRPC.*

Source: SEWRPC.

Diggers Hotline Prototype Project
Second Draft

July 11, 2006

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Introduction

The Milwaukee County Automated Mapping and Land Information System (MCAMLIS) Steering Committee met on February 7th, 2006 to discuss the first draft of the Diggers Hotline Prototype Report. The report was the result of the Steering Committee approving Diggers Hotline to proceed with an investigation to integrate the MCAMLIS database into the Diggers Hotline land information system and produce a tested set of specifications and a recommended process to facilitate the timely inclusion and integration of new land subdivision plats and certified survey maps.

The initial investigation was completed in January, 2006, and the results were set forth in a draft report presented to the MCAMLIS Steering Committee at the February 7, 2006 meeting. The Steering Committee reviewed the report and after considerable discussion, offered several recommendations concerning the routing of approved land information to MCAMLIS and the forwarding of that information to Diggers Hotline.

The purpose of this report is to summarize several of the key findings of the initial investigation that were included in the first draft report and to address the recommendations from the Steering Committee members at the February 7th meeting. The expectation is that the summary and adoption of the Steering Committee's recommendations will provide a viable strategy and solution for integrating the Diggers Hotline database with the MCAMLIS land information and an acceptable process for the Milwaukee County Geographic Information Technician to forward updates to Diggers Hotline in a timely fashion.

Key Findings, February 7th Draft Report

Data Requirements, Diggers Hotline:

From the initial interviews with Diggers Hotline personnel, it was determined that the data requirements for processing call center locate requests were very basic. Diggers Hotline processes a locate request by querying their land information system by entering a municipality name, street name, (street centerline segments defined by intersection node points or beginning and ending locations) and finally, if available, address ranges or house numbers.

An important finding and one that simplified the solution for Diggers Hotline was the fact that there is no network connectivity or intelligent tie between street segments in the Diggers database. In other words, each street segment from intersection to intersection is an entity of its own.

This is important to the project because the current database structure will allow for the MCAMLIS data to be merged with the Diggers land information system without concern for street segment alignment. Stated another way, this means that there will be no need to make rigorous ties between bordering streets in bordering counties or joining streets when adding new information within Milwaukee County.

Utility Data Requirements:

From the interviews with We-Energies and AT&T it was found that the utilities require significantly more land information than Diggers Hotline and the intelligent relationships of different items of land information are more sophisticated. Currently, the utilities take whatever information is provided from surveyors or developers and digitize that information into the specific format required for use in their software platform. Conversion rules are used to create the database structure and data field associations.

Consequently, geo-referenced raster images such as layered Portable Document Format (PDF) files would have little value except as a source document to use for digitizing and future reference. It should be noted that there was an expectation from an earlier investigation that PDF files could be used to facilitate the timely distribution of new land information.

As a result, the proprietary PDF software that was expected to be used for the development of a solution for improving the routing of new land information was not applicable for this project. It was determined that the layered PDF file software would have other value and would serve as a future source of reference information for We-Energies and AT&T in facility expansion project work, however, this potential application and solution fell outside the scope of this project.

Data Translation:

With a clear understanding for the Diggers Hotline data requirements a translator was produced to integrate the MCAMLIS database with the Diggers Hotline land information system. Two principal objectives were met with the prototyped development of a translator.

First, the prototype translator demonstrated the ability to take the MCAMLIS dataset containing centerlines with address range information and integrate that information with the Diggers Hotline MapInfo software platform.

Second, the prototype demonstrated the ability to integrate the MCAMLIS data with the Diggers Hotline system by designing a repeatable, automated process.

The translator successfully converted existing MCAMLIS and City of Milwaukee shape files to the Diggers Hotline MapInfo format. The translator also converted information from new subdivision plats provided by the City of Franklin. The prototype study was successful in producing a tested set of specifications and a recommended process to facilitate the timely inclusion of new land subdivision plats and certified survey map data into the Diggers Hotline MapInfo system.

Steering Committee Meeting Discussion and Recommendations

Approved Plats and Recorded Plats:

Timeliness of information for Diggers Hotline was discussed and determined to be the most critical issue that needed to be resolved. The MCAMLIS Steering Committee engaged in a significant amount of discussion concerning the acceptability of adding approved plats to the Diggers Hotline database or waiting for the final recording of the plat before entering into the mapping system. A Steering Committee member commented that there could be a 6 month difference between the time that a plat is approved and the time that plat is actually recorded. That delay in time is precisely what has been causing Diggers Hotline all the difficulty in handling locate requests.

Committee members also cautioned other members not to confuse approved plats with preliminary plats. It was felt that preliminary platting information would risk too many opportunities for changes until final approval is finally given. Preliminary plats were, at best, an incomplete version of the "final" or approved plats. Approved plats on the other hand, have met with municipal approval and represent the "final" plat version prior to recording. They are timely and are sufficiently complete for Diggers Hotline purposes.

The City of Franklin for example, enters new plats into their GIS as soon as approval is given. It goes into the system at that time because that information is needed for issuing permits. Permits are not issued until the approved plat is in the Franklin GIS system.

Update Process:

The Steering Committee meeting generated a significant amount of discussion concerning the most reasonable and timely way to update the Diggers Hotline database. From the initial interviews with surveyors it was first thought that a standard could be established that all developers could comply with and that electronic formatted files could be sent by the communities in Milwaukee County to Diggers Hotline for their database.

From comments offered by the Steering Committee members, it was decided that it would be extremely difficult and unlikely that all developers would be positioned to comply with a standard and provide the data in a format established by the Diggers Prototype. There was also discussion that some platting information could still be in paper format.

Committee Members agreed that there would be resistance from the developers (even the developers with the necessary technology) to comply with a standard. Additionally, submitting all of the approved land information to Diggers Hotline in an electronic format might be even more unrealistic.

It was suggested by the Steering Committee that the report include a recommendation that would have the communities route all approved subdivision plats and certified survey maps (in formats currently acceptable to the communities) to the MCAMLIS Geographic Information Technician (GIT) as soon as official approval is given by the community. The GIT would then create an electronic file from those sources of information and in the prescribed format established as a result of the pilot investigation. The GIT would then route those electronic files to Diggers Hotline for their processing. While the majority of all surveyors already produce electronic files, having the information directed through MCAMLIS would allow for the information to be put into a standard format for Diggers.

City of Milwaukee personnel were requested to consider a similar process and did in fact agree to that process later in the study. *The major benefit according to the Committee would be the fact that this process would provide for the data immediately after approvals are given and the data uniformity issue would be resolved.*

City of Milwaukee

A follow-up meeting was held with the City of Milwaukee personnel to determine whether the suggested process of routing approved plats or certified survey maps to the County could be replicated at the City. City of Milwaukee representatives indicated that there would not be a problem for the City to temporarily send approved platting information or certified survey mapping information to the MCAMLIS GIT for processing in the same fashion as the other 18 communities in Milwaukee County. When more resources were available it was expected that the portion of work for the City of Milwaukee could be handled by City personnel.

Testing the Process

Verifying Recommendations:

Using the formats established during the initial prototype study and tested with Diggers Hotline, two additional test files were produced for the purpose of this evaluation by the MCAMLIS Geographic Information Technician. One file was created from a plat that was submitted previously by the City of Franklin and a second file was created from a plat that was currently being recorded for the Village of Brown Deer.

The test files were evaluated and it was determined that producing the data files for Diggers Hotline in the prescribed format could be done without adding an undo amount of work for the GIT.

For the purpose of the study, VELOCITIE Integration Inc. evaluated the new information submitted by the GIT and added that land data into the original pilot file developed as part of the draft report dated February 7th, 2006. The two test files submitted by the MCAMLIS GIT were submitted in AutoCAD format. The spatial coincidence indicated that there would be no problem with integrating the additions to the Diggers Hotline database.

As noted in Appendix "A", the first addition shown in *Sample 3*. illustrates the Deer Brook Estates subdivision in Brown Deer after the translation into the MapInfo format. The green lines represent the new subdivision centerlines and the gray lines represent the data from the existing MCAMLIS database. The data is spatially coincident and meets the requirements for Diggers Hotline.

The second file shown in *Sample 4,* illustrates the Prairie Grass Reserve in the City of Franklin. The same subdivision was also provided by the City of Franklin as part of the original test. The new file had virtually identical geometry and meets the requirements for Diggers Hotline.

Summary

With the approval by the MCAMLIS Steering Committee of the Diggers Hotline Prototype Report and Recommendation, discussions will continue with the Diggers Hotline Board of Directors to implement the process. The recommendation would be for every community to immediately route, upon approval, any certified survey maps and subdivision plats to the Milwaukee County Geographic Information Technician (GIT). The MCAMLIS GIT would create a data file in the prescribed format established during the prototype and send that information to Diggers Hotline for entry into their system.

With the cooperation of Diggers Hotline, the Contractor will contact all communities in Milwaukee County to have them agree to the routing of the approved land information. It will be important to remember that adopting and agreeing to this procedure will benefit the constituents of every community and lessen the likelihood of damage to infrastructure. In cooperation with Diggers Hotline, the expectation is that all communities will cooperate in this most important initiative.

Appendix "A"

MCAMLIS to Diggers Hotline Data Transformation

This document summarizes a data translation prototype performed by VELOCITIE Integration, Inc. for HRG Technology Group, LLC. There were two main objectives of the translation prototype. First, deliver a prototype dataset containing centerlines with address range information compatible with the Diggers Hotline MapInfo format. Second, demonstrate the ability to integrate the MCAMLIS data with the Diggers Hotline system by designing a repeatable, automated process.

1.1 Prototype Data

HRG provided several sample data sets that were used to define the source and target formats. The focus area defined for the project was approximately 2 square miles in the City of Franklin.

Each of the pertinent data sets is described in the next sections.

1.1.1 Diggers Hotline Land Information System

The target data format was defined by a data sample in MapInfo TAB format. The file that was used to define the target schema was 032105.City.of.Franklin.01.TAB. This file was analyzed to determine the output specification for the prototype data. The only features contained in the sample MapInfo data were street centerlines. The coordinate system extracted from the MapInfo sample data was Lat Long for MapInfo type 0 Datum, World Geodetic System of 1984.

The attribute schema extracted from the sample data is summarized in the table below.

Column Name	Format	Comments
Street	Char (65)	The full street name
Troncon_ID	Char (12)	Unknown (blank in sample), was left blank in prototype.
City_ID	Char (15)	Unknown (blank in sample), was filled with the city name in the prototype.
FromLeft	Decimal (8, 0)	The starting left address for the segment
ToLeft	Decimal (8, 0)	The ending left address for the segment

Column Name	Format	Comments
FromRight	Decimal (8, 0)	The starting right address for the segment
ToRight	Decimal (8, 0)	The ending right address for the segment
DebutX	Decimal (12, 6)	The x coordinate of the first point of the segment
DebutY	Decimal (12, 6)	The y coordinate of the first point of the segment
FinX	Decimal (12, 6)	The x coordinate of the last point of the segment
FinY	Decimal (12, 6)	The y coordinate of the last point of the segment
Av_lot	Char (1)	Unknown, left blank in the prototype
Ar_lot	Char (1)	Unknown, left blank in the prototype
Grid1	Char (65)	Unknown, left blank in the prototype
Grid2	Char (65)	Unknown, left blank in the prototype
Grid3	Char (65)	Unknown, left blank in the prototype
Other1	Char (65)	Unknown, left blank in the prototype
Other2	Char (65)	Unknown, left blank in the prototype
Other3	Char (65)	Unknown, left blank in the prototype
Other4	Char (65)	Unknown, left blank in the prototype
Other5	Char (65)	Unknown, left blank in the prototype

1.1.2 MCAMLIS Centerline data

The Street Centerline component of the MCAMLIS database was used as the source for the prototype. Shapefiles were delivered to VELOCITIE on 11/16/2005. The source data was in NAD 27, Wisconsin State Plane South (FIPS 4803) with units in Feet. An Access database called ADDRESS2000.mdb was also used as an input to the process. The Centerlines table in the database contains the address range and other attributes for the MCAMLIS centerlines.

The source data schemas are described below:

Street Shapefile

Column Name	Format	Comments
CLINEID	Char (32)	The street ID (used to link to Access table)

Centerline Table

Column Name	Format	Comments
CLINEID	Char (32)	The street ID (used to link to street segments)
DIR	Char (2)	The street direction (prefix) used to make the full street name
STREET	Char (30)	The street name used to make the full street name
STTYPE	Char (4)	The street type used to make the full street name
PDIR	Char (2)	The street direction (suffix) used to make the full street name
LOW	Char (5)	The low address of the segment (not used in the prototype)
HIGH	Char (5)	The high address of the segment (not used in the prototype)
LEFTFR	Char (5)	The starting left address for the segment
LEFTTO	Char (5)	The ending left address for the segment
RIGHTFR	Char (5)	The starting right address for the segment
RIGHTTO	Char (5)	The ending right address for the segment
MUNI	Char (21)	The municipality name, used to fill City_ID in the prototype

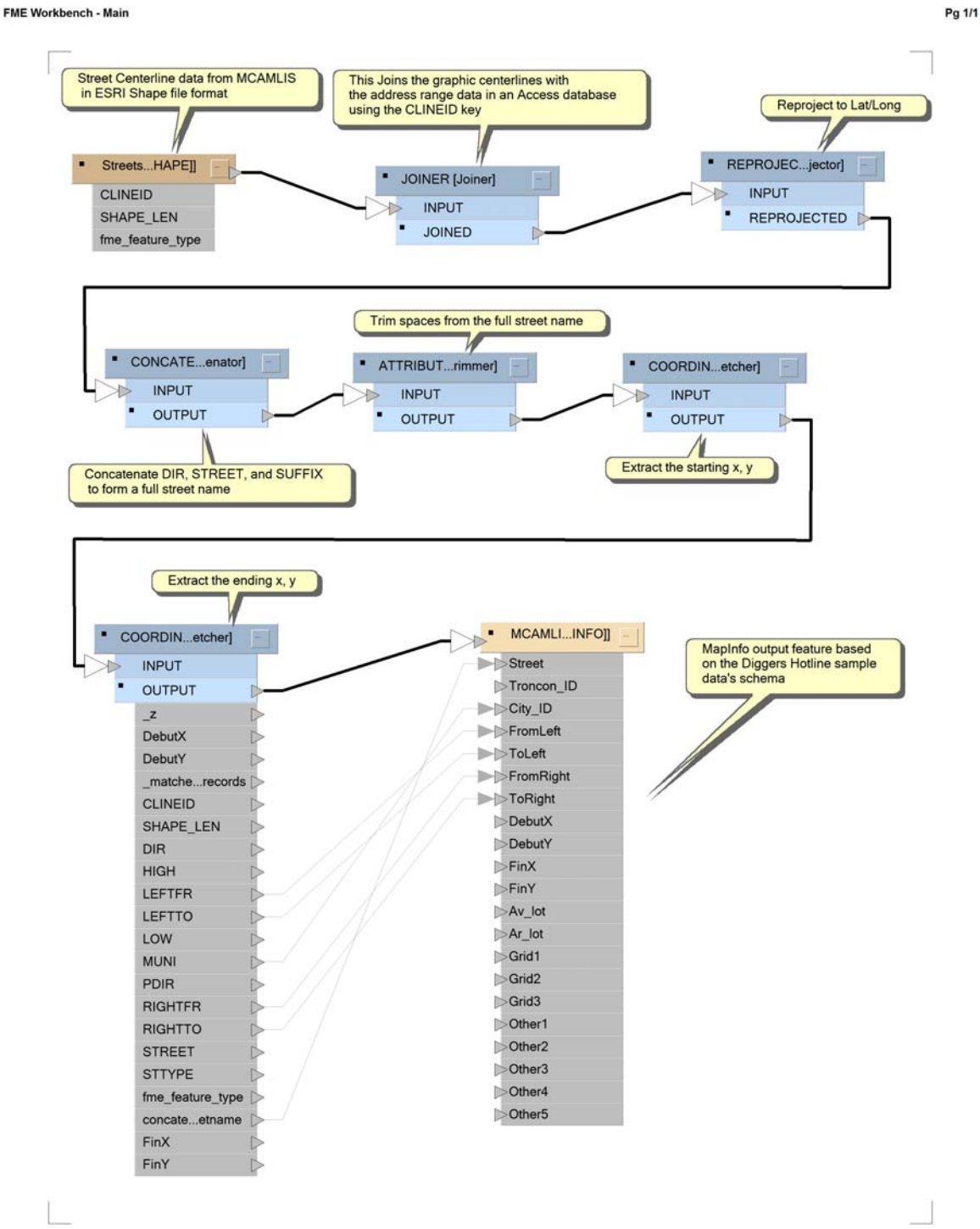
1.1.3 New Subdivision Updates

After the initial prototype was demonstrated, additional data was provided that represents new subdivisions. The subdivisions were Deer Brook Estates in Brown Deer and Prairie Grass Reserve in Franklin. Deer Brook Estates was provided in ESRI Shapefile format and Prairie Grass Reserve in AutoCAD (dwg). These were also translated using the same process that is described in the following section.

1.2 Data Transformation Process

The MCAMLIS data was transformed into the Diggers Hotline format using Safe Software's FME product. An FME workspace was created and configured to create the appropriate MapInfo data set from the MCAMLIS input data.

A process flow is shown below, which is the actual FME workspace that was used to transform the data. Following the diagram is a description of each step in the process. Each process description relates to a box on the diagram, starting in the upper left and proceeding in the direction of the arrows.



1.2.1 MCAMLIS Input data

The process begins with the input shapefile from MCAMLIS. The only meaningful attribute is the CLINEID.

1.2.2 Joiner Factory

The "Joiner Factory" is an FME configured function which joins all of the attributes from the Access database table to the centerline features in the shapefile.

1.2.3 Reprojection

The next FME Factory reprojects the data from NAD27 State Plane coordinates to the Lat/Long WGS84 system used by Diggers Hotline.

1.2.4 Concatenate Street Name Parts

The MCAMLIS source data stores street names in distinct parts. These attributes are DIR, STREET, STTYPE, and PDIR. The MapInfo data only contains Street as a single attribute. Therefore, this function concatenates the MCAMLIS street name components into a single string.

1.2.5 Trim Street Name

After the component attributes are concatenated together, the street name may contain leading or trailing spaces as a result of the concatenation. This function trims the spaces from the name.

1.2.6 Coordinate Extractor

The MapInfo data stores the starting and finishing x, y coordinates as attributes. This factory extracts the first x, y coordinate from the centerline and stores the values in attributes named DebutX and DebutY.

1.2.7 Coordinate Extractor (End)

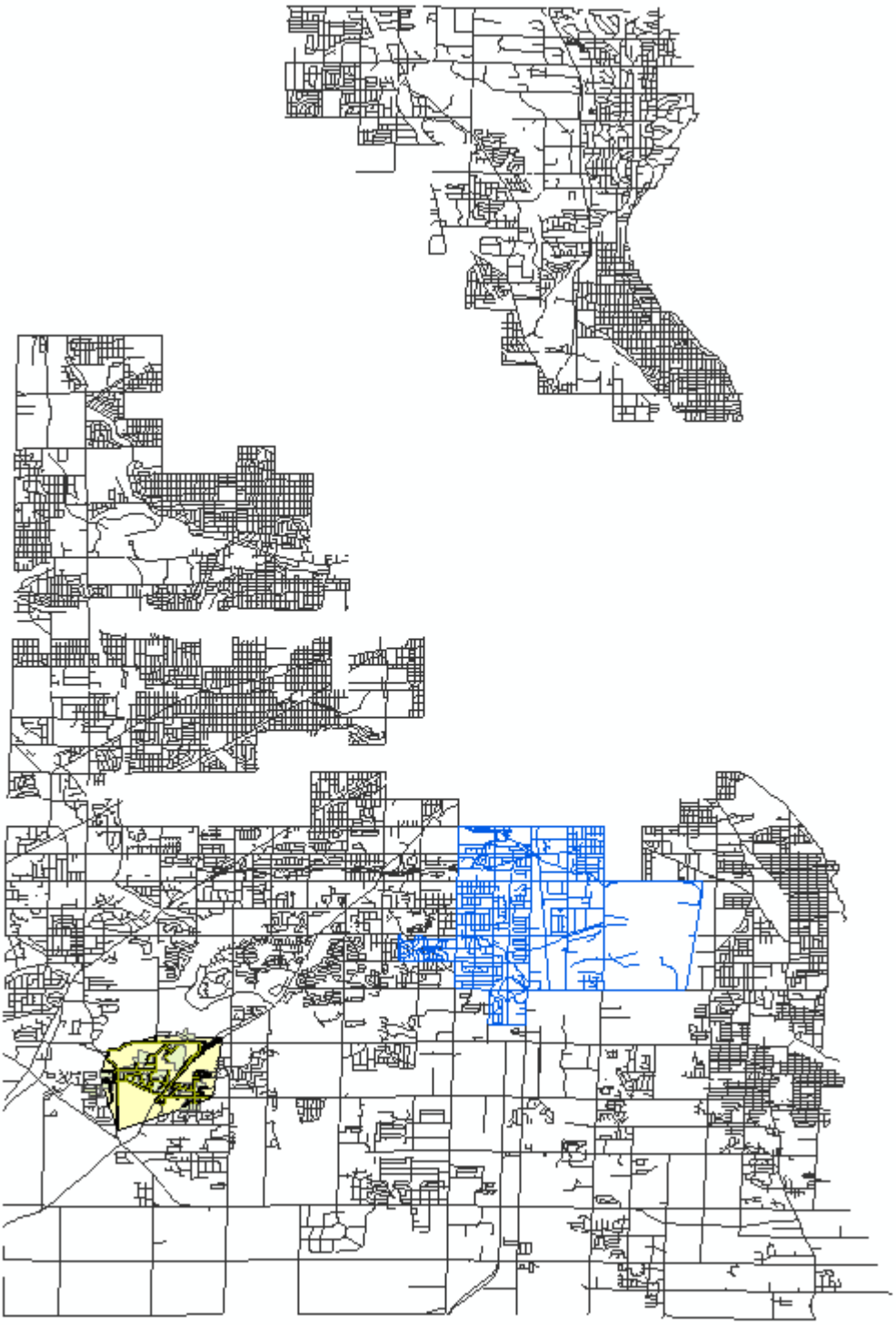
This factory is similar to the one above, except the endpoints are extracted into FinX and FinY attributes.

1.2.8 MapInfo Output Data

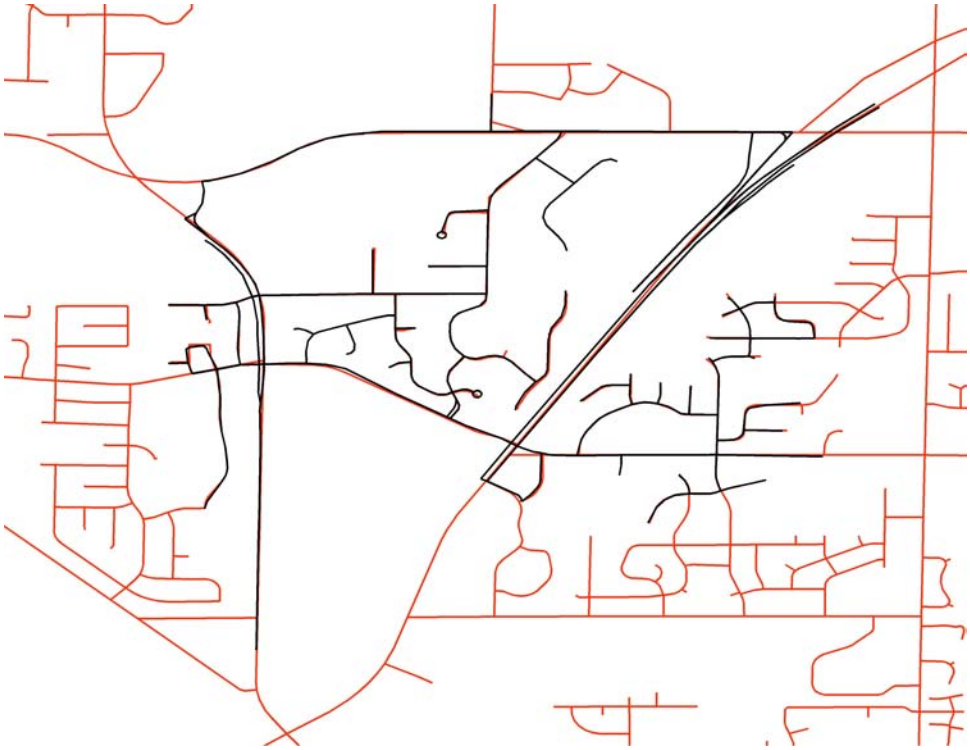
The final box on the diagram represents the resulting MapInfo dataset.

1.3 Results and Observations

The sample Diggers Hotline data (in MapInfo format) covers a relatively small area. Because the sample data set is small, the results of examining the data differences are inconclusive.

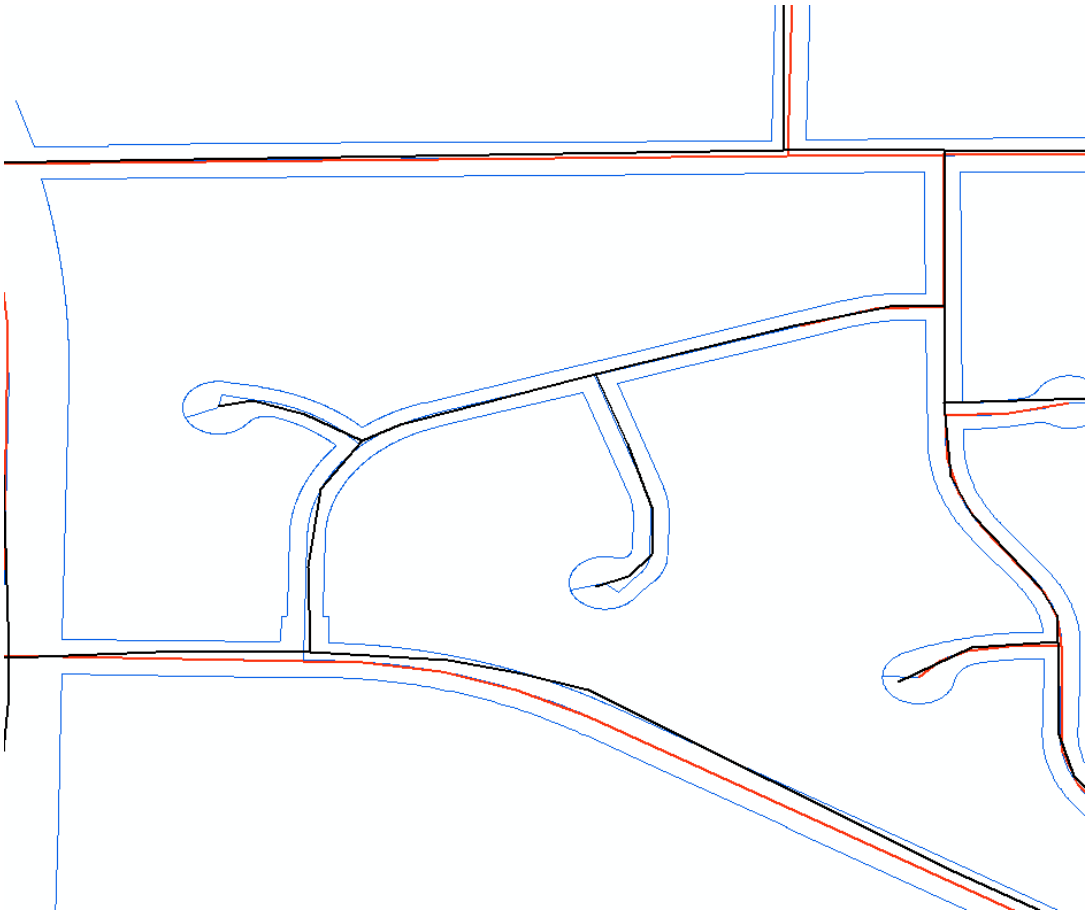


The graphic above is an overview of Milwaukee County with the MCAMLIS centerline data shown as grey lines. The blue lines are centerlines from the City of Milwaukee. The highlighted area is the area covered by the Diggers Hotline sample data.



This graphic shows some additional detail of the sample area. The Diggers Hotline sample is shown in black, and the MCAMLIS centerlines are red. In general the spatial coincidence of the two data sets is compatible.

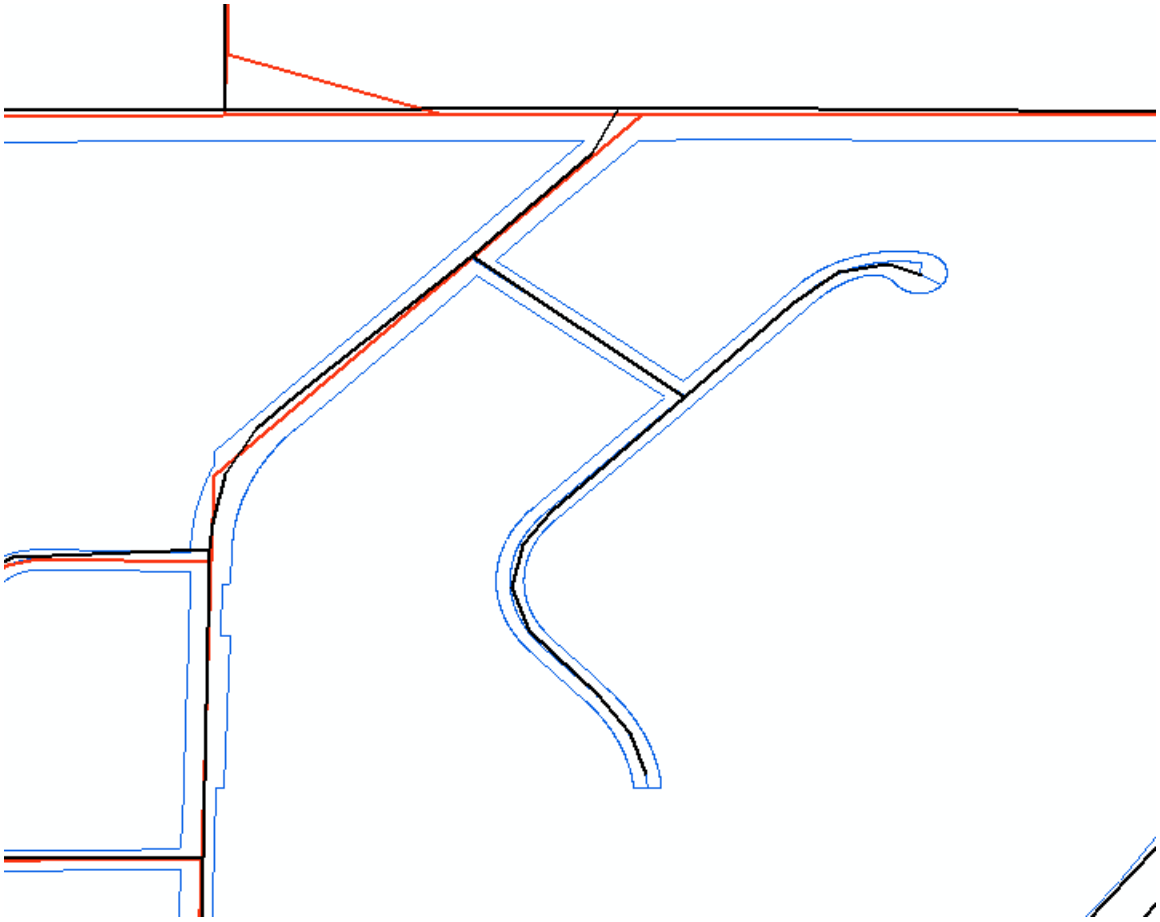
It was observed that there are some cases of centerlines in the Diggers Hotline data that do not appear in MCAMLIS.



Sample 1.

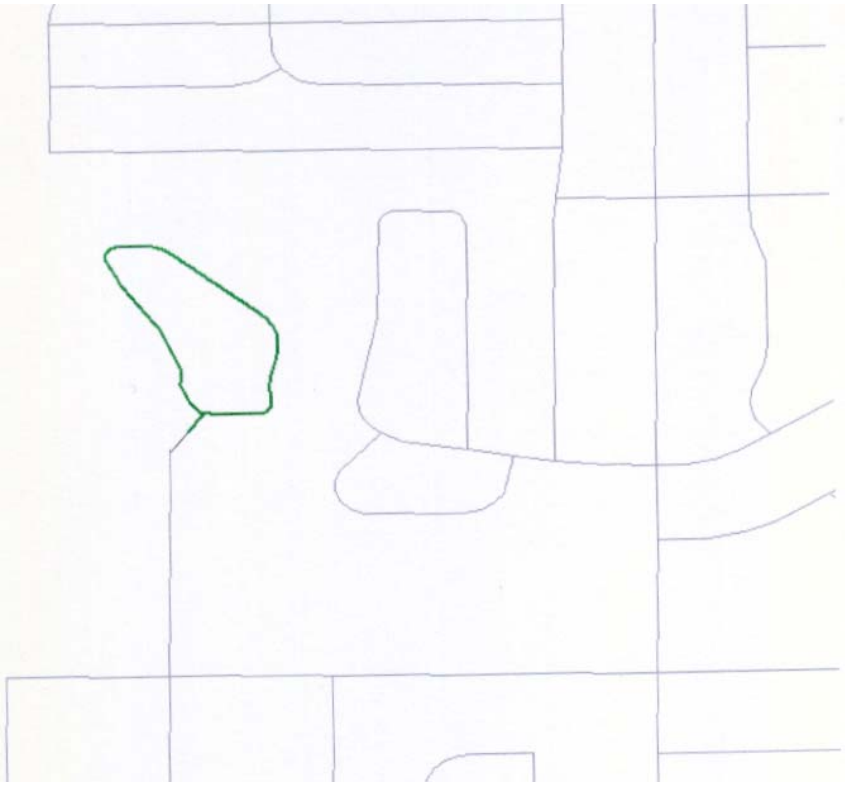
The first sample area is shown as *Sample 1*. The red lines are the MCAMLIS centerlines. The Black lines are the Diggers Hotline MapInfo centerlines. The blue lines are from the MCAMLIS right-of-way data and are show as reference although the right of way data was not translated.

In this area, the street (W ST STEPHANS DR) appears in the MapInfo data along with two Cul de Sacs (S BARBIAN CT and S JOSHUA CT) but these streets were not in MCAMLIS as centerlines. The Right of Ways were in MCAMLIS and geographically located very close to the Diggers Hotline centerlines. A small centerline segment can be seen in the MCAMLIS data at the east end of the street, which was identified as ST STEPHENS DR in the MCAMLIS Centerline table.



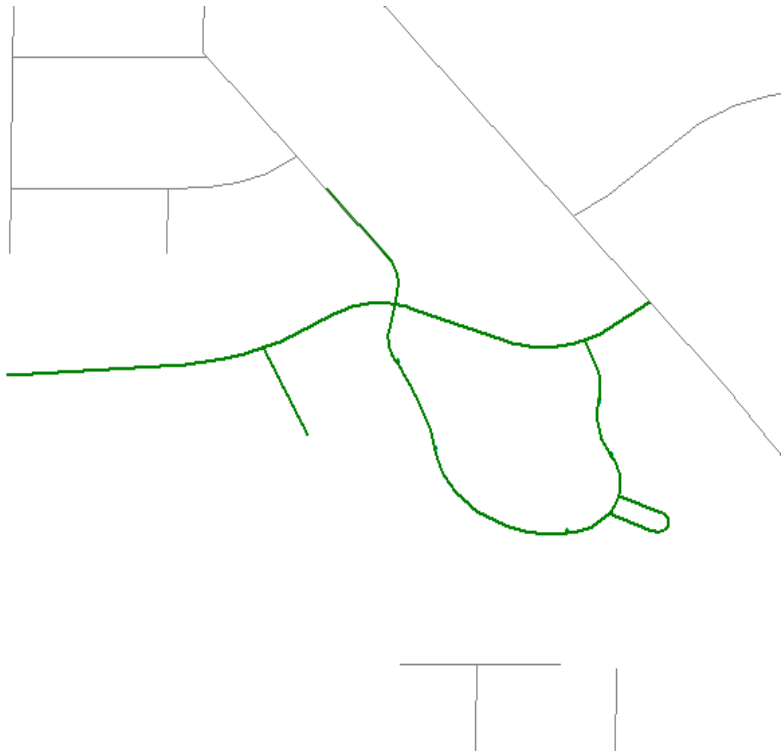
Sample 2.

The next sample area is shown as *Sample 2.* This shows a similar situation where Right of Way lines appear in MCAMLIS without centerlines. These streets were W STONE HEDGE DR and S CAMBRIDGE DR. The streets were in the Diggers Hotline sample but not in MCAMLIS as centerlines (but the Right of Ways did appear).



Sample 3.

The next sample area is shown as *Sample 3*. This shows the Deer Brook Estates subdivision in Brown Deer after the translation. The green lines are the new subdivision centerlines and the gray lines are from the existing MCAMLIS data. The data appears to be spatially coincident and sufficient for Diggers Hotline use.



Sample 4.

The next sample area is shown as *Sample 4.* This is Prairie Grass Reserve in Franklin. The same subdivision was also provided by the City of Franklin and the two have virtually identical geometry. This was provided in AutoCAD format and is sufficient for integration to Diggers Hotline.

2 Data Update Specifications

This section proposes a means for automating the updates to the Diggers Hotline land information database immediately upon approval of new subdivision plats, certified survey maps, etc. This includes establishing a set of electronic data specifications to which land surveyors, employed by land owners and developers, can comply with when submitting development plans for community approval. The proposed specifications include file format, geo-reference requirements, and feature and attribute data requirements for centerline and address data to be merged into the Diggers Hotline GIS.

The process used to verify that the data being added does not duplicate or overlap existing data and the quality control steps to verify the accuracy of the submitted data is not covered by this proposal. Also, edge matching the new data submittals to existing data is not defined. These processes are inherently interactive, and automation of these tasks is generally not feasible.

2.1 File Format

The basic requirements for the file format are an established, stable, published file format that can store geographic data. Attribute support and a reference to a coordinate system are also required. The ESRI shapefile format is well known and meets all of these requirements. Also, the prototype Diggers Hotline transformation from MCAMLIS data has already demonstrated the ability to read data in shapefile format using a standard software package. Details regarding the shapefile format can be found at:
http://www.esri.com/library/whitepapers/pdfs/shapefile.pdf

2.2 Geo-Reference Information

The data transformation process is capable of extracting the coordinate system from the shapefile and projecting it to the Diggers Hotline specification. However, some coordinate systems are can cause projection problems so the recommended approach is to use a standard. One of the most universal formats is the system already being used in the Diggers Hotline Database. The Open GIS Consortium (OGC) Well Known Text description of this system is as follows:

OGC Well Known Text: GEOGCS["Lat Long for MAPINFO type 0 Datum",DATUM["MAPINFO",SPHEROID["World Geodetic System of 1984",6378137,298.257223563]],PRIMEM["Greenwich",0],UNIT["degree",0.017453292519943 3]]

2.3 Feature Attribute Specifications

The only feature used in this update process is the Street Centerline (linear) feature. The attributes required to update the Diggers Hotline database essentially mirror the attributes that were used to transform the MCAMLIS data. They are as follows:

Column Name	Format	Comments
STREET	Char (30)	The full street name
LEFTFR	Char (5)	The starting left address for the segment
LEFTTO	Char (5)	The ending left address for the segment
RIGHTFR	Char (5)	The starting right address for the segment
RIGHTTO	Char (5)	The ending right address for the segment
MUNI	Char (21)	The municipality name

Wisconsin Land Information Program
Grants-In-Aid to Local Governmental Units

Year 2006-Cycle Grant Application
Pursuant to Chapter Adm 47, Wisconsin Administrative Code

Grant Applications Accepted:
March 1, 2006 – June 1, 2006

Mail Your Application, Including Required Signature To:

Michael Friis, Leader
Resource Policy Team
Division of Intergovernmental Relations
Wisconsin Department of Administration
101 E. Wilson Street, 10th Floor
Madison, WI 53702-0001

OR

E-mail Your Application To: Michael.Friis@wisconsin.gov

If you have questions about anything contained in this application packet, please email or call Michael Friis at (608) 267-7982

General Information

Please complete this application form in order to receive a Wisconsin Land Information Program (WLIP) 2006. This year, like last year, the WLIP will award training and education grants award.

This packet contains application forms for the Training and Education Awards.

Training and Education Awards
All county land information offices are eligible for training and education awards. Wisconsin Statute Section 16.967(7)(b) authorizes up to a $300 annual grant "for the training and education of county employees for the design, development and implementation of a land information system." These funds can be used for staff to participate in workshops and courses provided by institutions of higher education, professional land information organizations or land information system vendors.

Note: In 2005, the Wisconsin Land Information Board communicated with all Wisconsin Land Information Offices and requested updates of their land information plan for approval through the Wisconsin Land Information Board developed peer review process coordinated by the Wisconsin Land Information Officers Network. *No grant applications will be approved without a completed and approved Land Information Plan.*

Grant Application Submittal and Deadline:
All applications must be submitted in hardcopy form **and** via email. Applications must have a U.S. Postal Service postmark of **June 1, 2006** or earlier. Completed applications, including the required signature, should be mailed to:

Michael Friis, Resource Policy Team Leader
Division of Intergovernmental Relations
Wisconsin Department of Administration
101 E. Wilson Street, 10th Floor
Madison, WI 53702-0001

Emailed to michael.friis@wisconsin.gov

Signature and Project Timeline:
The Land Information Officer's signature is required on this application.

Upon project approval, funds for all grants will be disbursed in their entirety.

Year 2006 grant projects must be completed by June 30, 2007.

For DOA Use - Date of Receipt

WLIP Year 2006 Grant Application

Training and Education Grant Award

1. **Applicant County: MILWUAKEE**

2. **Land Information Officer:**

Name: _John L. La Fave_____ Title: __Milwaukee County Register of Deeds_____
Office: _____
Mailing Address: __901 N 9th St., Room 103_____
City: ___Milwaukee_____ State: WI Zip: 53233-_ _ _ _
Telephone Number: (414)278-4009 E-Mail Address: __Jlafave@Milwcnty.Com_____

3. **Funding Amount**

Available: $300.00 **Requested: $300.00**

4. **Provide a brief description of intended expenditures for the Training and Education Grant:**
The proceeds of this grant will be used to offset registration, fees and travel expenses associated with attendance at the 2007 Annual Wisconsin Land Information Association Conference.

5. **Date of County land information plan approval by the Wisconsin Land Information Officer Network's peer review process:**

Refer to s. Adm 47.06(3) *Day/Month/Year* ____/____/____ **(plan approval and review is in-progress)**

6. **Statement and Signature of Land Information Officer:**

As the Land Information Officer for Milwaukee County, I am authorized to submit this application, as an eligible applicant, on the authority of the county board. I understand that application authority shall be obtained by specific action of the county board, and that the WLIP may request evidence of such authority. Project work shall meet all standards and conditions as set forth by the relevant Wisconsin State Statutes, Wisconsin Administrative Code, or policy adopted by the Wisconsin Department of Administration. To the best of my knowledge, the information contained in this application is accurate and complete. I understand that grant projects must be completed by June 30, 2007.

Signature: John La Fave _____ *Date:* 6 / 15 / 06
Day/Month/Year

MILWAUKEE COUNTY

AUTOMATED MAPPING AND

LAND INFORMATION SYSTEM

c/o Department of
Transportation and Public Works
2711 West Wells Street, Room 427
Milwaukee, Wisconsin 53208-3509
Telephone (414) 278-2176

MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: William C. Shaw, MCAMLIS Project Manager

DATE: June 29, 2006

SUBJECT: Geo Database Migration Project: Address and Street Centerline Integration leading to a Countywide Master Street and Address Guide (MSAG)

BACKGROUND

In its meeting held on October 8, 2002, the MCAMLIS Steering Committee approved a report prepared by Spatial Data Systems Inc., assessing the accuracy and currency of the City of Milwaukee address database and the steps that would need to be taken to render that database compatible with the MCAMLIS street address database. An estimated cost of $149,000 was provided by Spatial data Systems, Inc., for this undertaking.

Subsequently, MCAMLIS Staff in a report to the Committee dated May 19, 2003, provided an assessment of the WORK EFFORT REQUIRED FOR THE COMPLETION OF A MCAMLIS STREET ADDRESS DATABASE. This assessment outlined an approach and refined the estimated resources required to be $142,000.

At it's meeting held on November 18, 2003, the MCAMLIS Steering Committee tabled consideration of this project, along with two related matters, until such time as the, then pending, County Geodatabase needs assessment was complete. The MCAMLIS Steering Committee has not taken this matter up directly since it was tabled.

During the intervening period, a seamless Geodatabase format has been implemented and two of the three sister projects i.e.; creation of a seamless cadastral map environment and implementation of a transactional cadastral map maintenance capability, have been put in-place for the suburban Milwaukee County communities . At it's February 7, 2006, meeting the MCAMLIS Steering Committee approved a joint City of Milwaukee and MCAMLIS solution to provide for resources required to maintain the current MCAMLIS cadastral data maintenance in concert with the City of Milwaukee.

This action now provides an opportunity to finally fully integrate the MCAMLIS Address and Street Centerline with that of the City of Milwaukee and to provide for a countywide address database which was envisioned by the Committee, in 1996, when the Committee authorized SEWRPC to proceed in establishing the current MCAMLIS address database.

It also affords us an opportunity to re-consider the earlier proposals in light of improvements in technology and to a great extent, recent demands placed on the importance of this data for critical management of county assets and it's role in providing for public safety, among others. In this regard, it is appropriate to re-calibrate our overall objectives and to declare our vision and the action steps required to attain them.

VISION

It is clear that many County and municipal operations and services use addresses as a form of identification and location. Given this, it makes sense that street name and address data be standardized and managed across County government and in concert with external business partners to more efficiently and effectively deliver government

services. When address location is expressed and maintained in different ways without a common framework, decision making is impeded as integration of background information becomes limited or impossible. Addresses more than any other location referencing feature, can be a powerful integrating factor that permits local governments to relate complementary information. As such, it requires enterprise thinking to serve cross-departmental and jurisdictional (regional) needs.

As such, the solution also seems evident – an enterprise approach to this key information element is needed. An enterprise approach takes into account how creation, management, and use of address data effects the whole organization, not just individual agencies. It establishes a coordinated framework, an 'Enterprise Address System (EAS)', which includes key process, data, technology, and organization components. Only when all of these components are acknowledged can the system truly respond to agency-wide and partner needs.

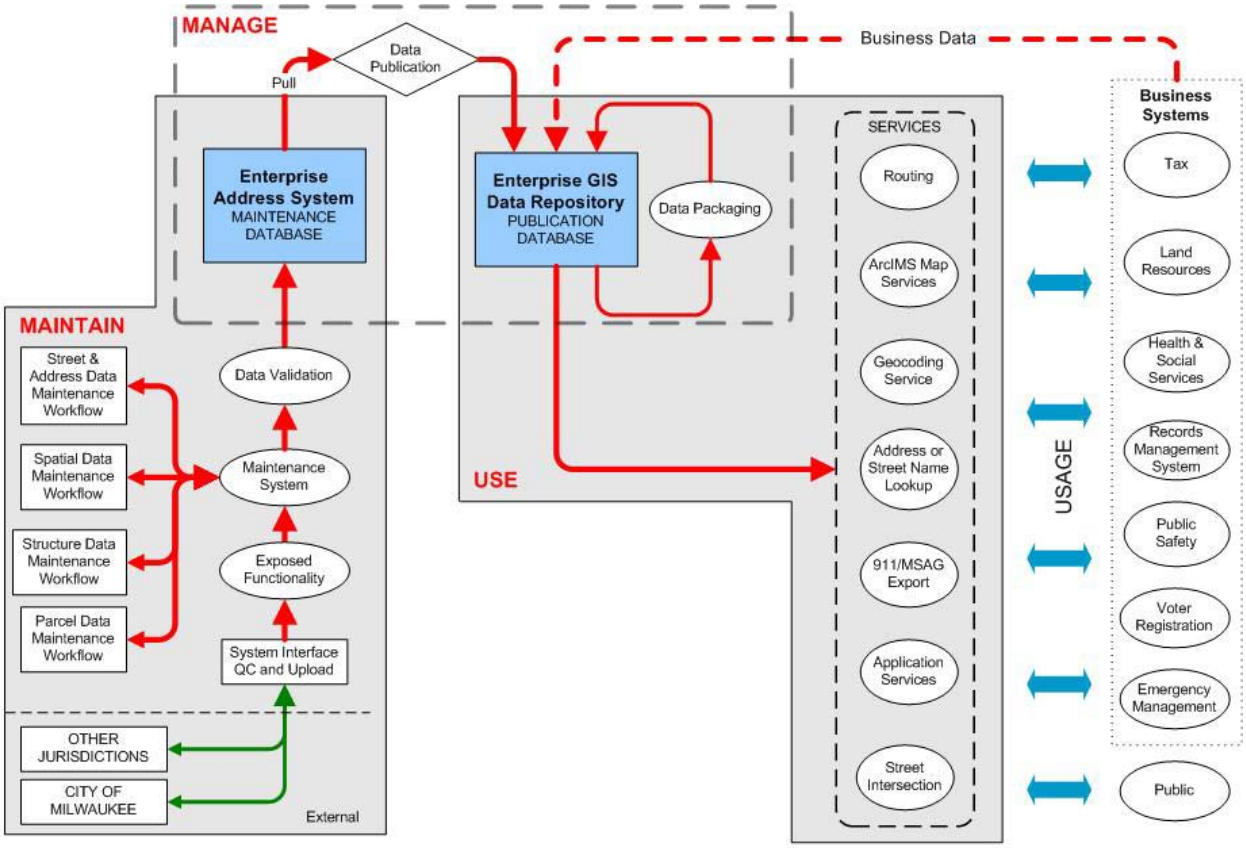
A number of key goals or characteristics are identified for a County enterprise address system. These goals strive to remedy current operational and management constraints while also enhancing access to and usability of street name and address data countywide. They are listed below with additional description provided later in this section:

1. **Enterprise Support.** The new system should be designed, deployed, and operated to support all stakeholder interests including internal County department staff and information systems as well as those of external public agency and private partners.
2. **Automated.** The system should be automated in the sense that it offers stakeholders computerized access to digital street name and address data and automates the process of address data maintenance.
3. **Current.** Address data made available through a new system should be current enough to support the time sensitive needs of internal and external users and their respective business information systems.
4. **Complete and Standardized.** Street name and address data should be complete and standardized representing all jurisdictional areas of the County including external service areas.
5. **Location-based.** All street name and address records in the new system that represent a physical location inside or immediately outside Milwaukee County (e.g., extra service area) should be spatially-enabled.
6. **Accessible.** Finally, the enterprise address system should be accessible to all internal and external users and their information systems. This means it needs to provide various mechanisms for staff and public access and interfaces that facilitate data communication.

The figure below depicts a conceptual architecture for an enterprise County address system that meets the abovementioned goals. It provides for a single, definitive source of GIS-based addresses across the County and facilitates better maintenance, publication, and use of address and related data through standard user applications and system services. It serves as the master source of normalized and standardized address formats to which all agency staff can refer when entering addresses into their respective databases.

This covers different types of addresses including those created as part of the land development process (parcel addresses), for facility asset tracking and management, and for mailing purposes, etc. It also can support sub-unit address types related to multi-unit residential, commercial, and industrial use facilities. Finally, the envisioned system includes mechanisms for departments and municipal partners to submit new or updated address information, so that the "enterprise" address database is as current as possible. Conversely, this also includes the ability to view, extract, and convert address data for use by other systems such as 911.

Figure: Conceptual Architecture for a MCAMLIS Countywide Enterprise Address System (EAS)



The benefits to the County and its partners in pursuing an enterprise approach to address data maintenance, management, and use are significant. Noteworthy benefits include:

- ✓ Reduced cost through less duplication of address data maintenance and management, more efficient staff processes, and better quality information
- ✓ Better and more reliable decisions based on better quality and current address data and data that is formatted to meet specific decision-making needs
- ✓ Improved coordination and execution of citizen services across partner jurisdictions through use of a common address system framework
- ✓ Minimized liability in dispatching emergency services through use of accurate address locations

REQUIRED ACTION STEPS

Earlier GIS planning work completed by MCAMLIS and the County to support it's migration to an ArcGIS technology environment, identified a number of discrete projects to advance creation of a County enterprise address system. These projects, along with a number of other needed initiatives are listed below:

1. Migrate existing MCAMLIS digital street centerline database into ArcGIS Geodatabase format. Update the migrated Geodatabase to include missing and vacated street segments, proper street name assignments, and actual/theoretical address ranges as well as additional attribution needed for 911 MSAG update support.

2. Convert existing City of Milwaukee street centerline and address range data layers into an ArcGIS format and integrate with the countywide street centerline Geodatabase. Implement processes and tools to automate the posting of City of Milwaukee street updates into the countywide street centerline Geodatabase.
3. Convert existing site addresses maintained as part of the County parcel mapping system into the migrated digital street centerline Geodatabase to establish an overall, Enterprise Address Geodatabase. Update converted site addresses to reflect current conditions and to ensure consistency with street names and address ranges.
4. Create site addresses for the City of Milwaukee and incorporate into the countywide, Enterprise Address Geodatabase. Implement processes and tools to automate the posting of City of Milwaukee site address updates into the countywide, Enterprise Address Geodatabase.
5. Create web-based user application that allows County and municipal partner staff and the public to browse, query, and report on countywide street and address information in a spatial format.
6. Create standard web services or equivalent data access application that allows County and municipal partner information systems (e.g., 911/CAD, Permitting, etc.) to directly lookup and validate official street name and address information.

ESTIMATED COST

The total cost for the project, as described herein, is estimated to be $272,000. This cost is comprised of the following components:

1.	Migrate and update the current MCAMLIS street centerline data to ArcGIS GeoDatabase format.	$16,500
2.	Migrate and update the City of Milwaukee street centerline data to ArcGIS GeoDatabase format:	$16,500
3.	Convert existing MCAMLIS site (Structure) addresses to the Enterprise Address Geodatabase :	$35,000
4.	Create site addresses for the City of Milwaukee addresses to the Enterprise Address GeoDatabase:	$74,000
5.	Create web-based user application that allows County and municipal partner staff to browse, query, report and update on countywide street and address information in a spatial format.	$65,000
6.	Create standard web services or equivalent data access application that allows County and municipal partner information systems (e.g., 911/CAD, Permitting, etc.) to directly lookup and validate street name and address information	$65,000
		$272,000

FISCAL CONSIDERATIONS

Adequate funds are available to commit to this project.
There is an unreferenced 2005 year-end MCAMLIS balance of over $400,000
MCAMLIS 2006 revenues are approaching budgeted expectations

RECOMMENDATION

Based upon staff assessment the following recommendations are made to the Steering Committee:

- It is recommended that the Steering Committee authorize the initiation of the project described herein with the exception of **required Action Step 6**. This step will be included as part of a proposed project establishing a Countywide MCAMLIS Land Information Access Website. The steps 1-5 can be carried out independent of the web-enabling software and hardware components and easily align their deliverables within the original scope and intent of prior project estimates that have been reviewed by the MCAMLIS Steering Committee.
- It is recommended that the Steering Committee authorize the expenditure of $207,000 from MCAMLIS funds to carry out the project.

- It is recommended that the project staff be directed to secure the execution of Professional Services Contract(s) in accordance with Milwaukee County Procurement Policies and Procedures as may be required to complete this work.

* * * * *

MILWAUKEE COUNTY

AUTOMATED MAPPING AND

LAND INFORMATION SYSTEM

c/o Department of
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2711 West Wells Street, Room 427
Milwaukee, Wisconsin 53208-3509
Telephone (414) 278-2176

MEMORANDUM

TO: MCAMLIS Steering Committee

FROM: William C. Shaw, MCAMLIS Project Manager

DATE: June 29, 2006

SUBJECT: USGS proposed 2007 Ortho-photography

BACKGROUND

The National Geospatial – Intelligence Agency (NGA) in cooperation with USGS has proposed conducting a 2007 Ortho-photo project that includes major portions of Milwaukee, Waukesha, Ozaukee and a small area along the southern edge of Washington and Jefferson counties. Homeland Security has provided $155,250 do this work and has requested that USGS coordinate the project details with local county agencies.

The USGS is using SEWRPC as it's lead agency to help coordinate further project area adjustment and cost sharing arrangements as may be involved if local agencies determine to make changes to the proposed project boundaries.

Upon review of the proposed project boundaries (Exhibit - Domestic Preparedness Urban Area in Southeastern Wisconsin Region) by the LIO representatives from four of the five counties, it was determined that a coverage area that included all of the NGA area but was instead based on whole counties would be a more useable product.

Thus SEWRPC staff obtained a firm cost for the project based on whole county boundaries for three of the four original counties (Exhibit – Potential 2007 Ortho-photography Project in Southeastern Wisconsin). Washington/Jefferson County elected not to participate further in the cost sharing arrangement.

FISCAL CONSIDERATIONS

For the remaining three counties, the additional area to be collected beyond the USGS footprint is about 262 square miles. The additional cost to be shared is $40,610; therefore the per unit cost for this area is $155 per square mile.

	Area outside of USGS footprint	Additional cost @ $155 per sq. mi.
Milwaukee	26 sq. mi.	$4,030
Ozaukee	154 sq. mi.	$23,870
Waukesha	82 sq. mi.	$12,710
Totals	262 sq. mi.	$40,610

RECOMMENDATION

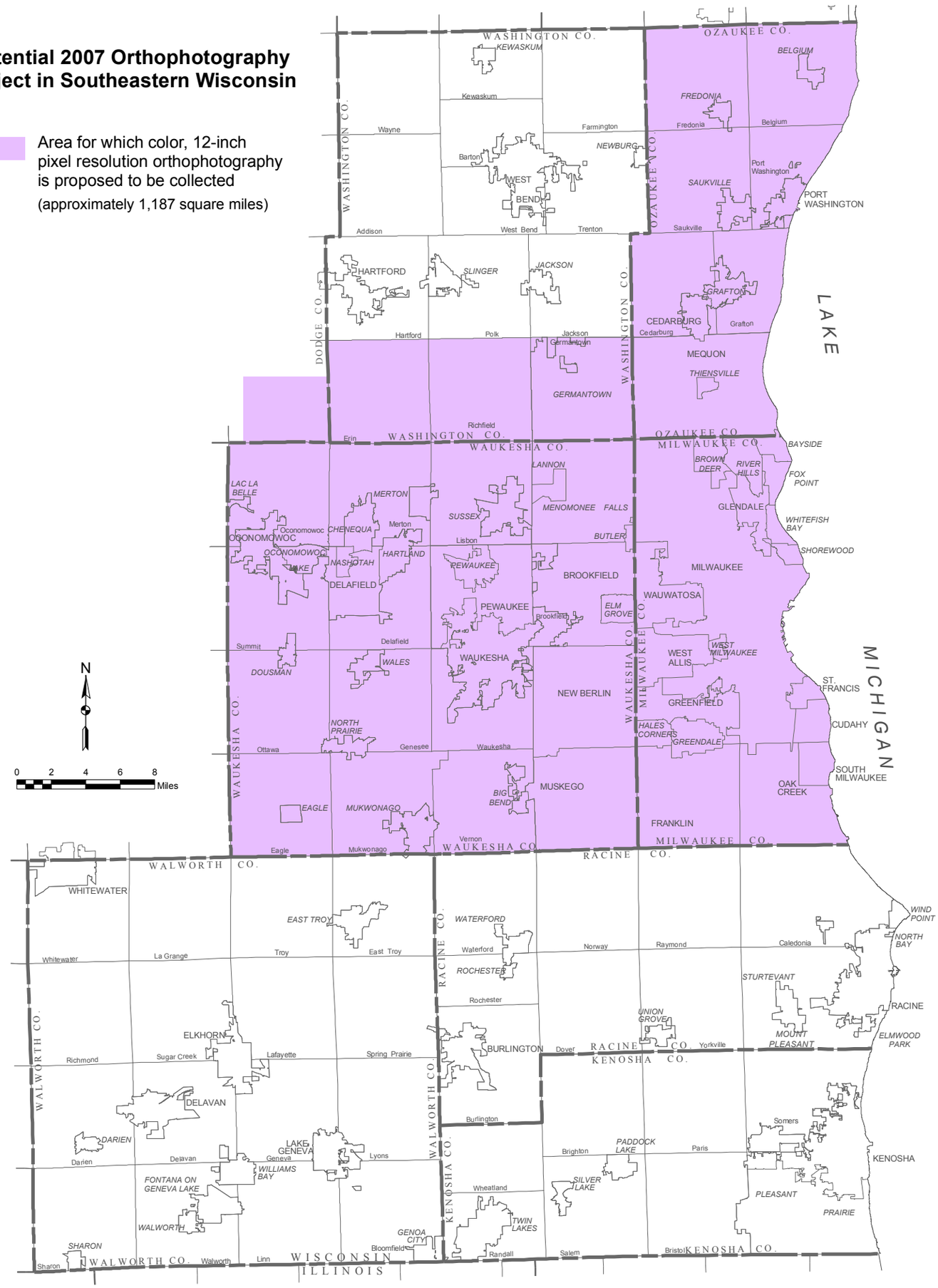
Although earlier discussion of this project with selected members of the committee did not support the necessity of contributing to this project, the final cost proposal presented here when weighed against other factors represents an exceptional value to Milwaukee County and to the MCAMLIS project. Without a doubt, more frequent Ortho-photography coverage has become a major tool for use in managing existing and planning for future public and private assets on the ground. As a tool for mapping, it is undeniably a factor in providing accuracy and ultimately in driving down cost.

Therefore, I recommend that the committee approve funding $4,030 for Milwaukee County's portion of this project.

* * * * *

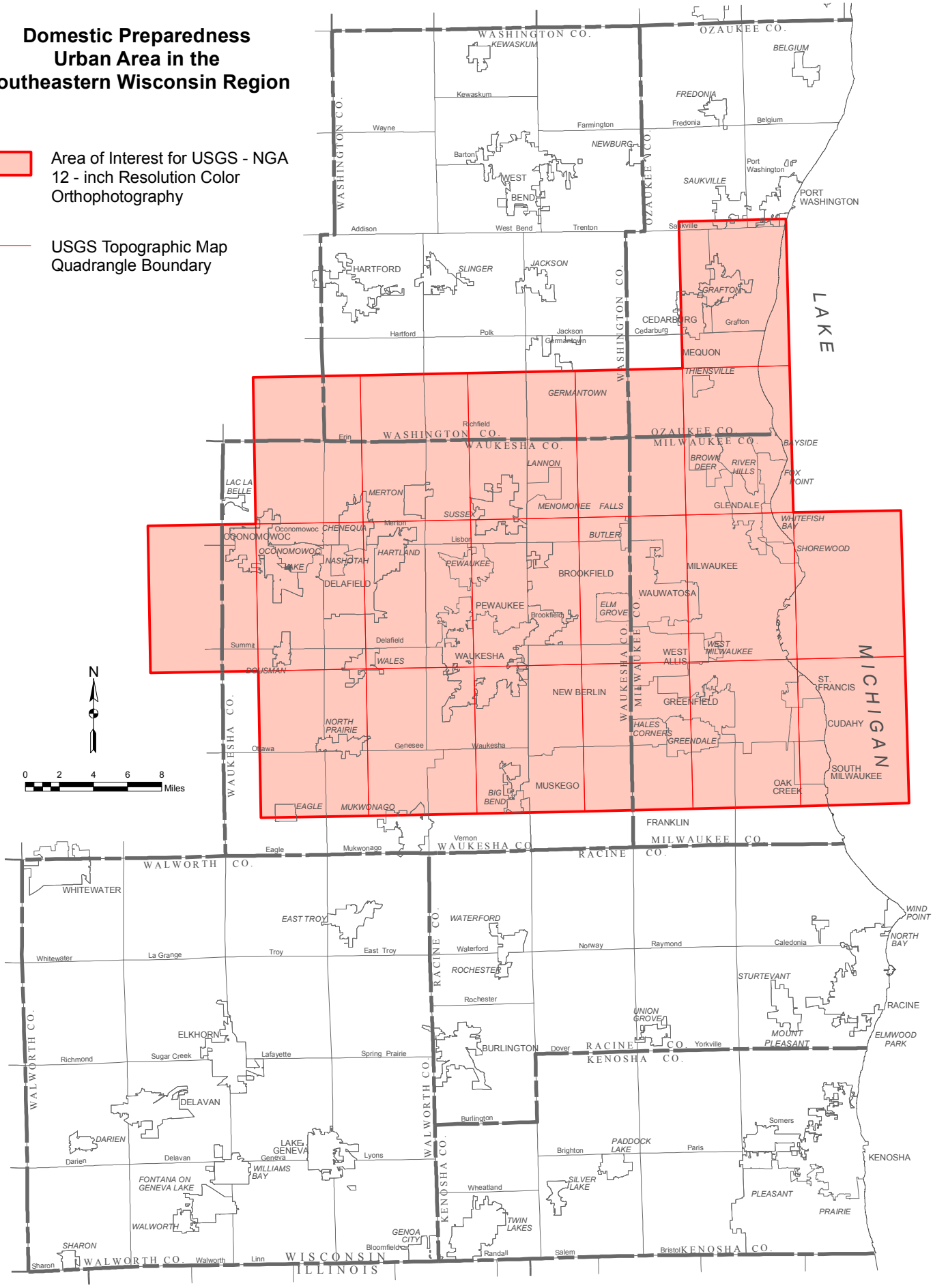
Potential 2007 Orthophotography Project in Southeastern Wisconsin

Area for which color, 12-inch pixel resolution orthophotography is proposed to be collected (approximately 1,187 square miles)



Map Document: (O:\Orthophoto_Statusmaps\2007OrthophotoStatusMaps\2007OrthoProjectArea.mxd)
5/16/2006 -- 1:57:49 PM lepidolite lilac

Domestic Preparedness Urban Area in the Southeastern Wisconsin Region

Area of Interest for USGS - NGA 12 - inch Resolution Color Orthophotography

USGS Topographic Map Quadrangle Boundary