# Waupaca County

Wisconsin

**Five Year Plan for Land Records Modernization**

**Years 2010 through 2015**

**Adopted by Land Information Council: 9/17/2010**
**Revised: --**

**WAUPACA COUNTY**
**LAND RECORDS MODERNIZATION PLAN 2010-2015**

# Table of Contents

I. EXECUTIVE SUMMARY ..... 3
A. Identification and Contact Information ..... 3
B. Participants in the Planning Process ..... 3
C. Summary of the Plan ..... 4
D. County Website ..... 4
E. Municipal Websites ..... 4
II. LAND INFORMATION MODERNIZATION AND INTEGRATION PLAN ..... 4
A. Goals and Objectives ..... 4
B. Progress Report on Ongoing Activities ..... 7
C. New Initiatives ..... 8
Timeframe: 2010 ..... 8
Timeframe: 2011 ..... 9
Timeframe: 2012 ..... 9
Timeframe: 2013 ..... 10
Timeframe: 2014 ..... 10
Timeframe: 2015 ..... 11
D. Custodial Responsibilities ..... 12
County Treasurer ..... 12
Highway Department ..... 12
Land Conservation ..... 12
Property Listing/Survey/Land Information Office ..... 12
Register of Deeds ..... 13
Sheriff/Emergency Government ..... 13
Zoning ..... 13
E. Foundational Elements and Statewide Standards ..... 13
1. Geographic Reference Frameworks ..... 13
2. Orthoimagery and Georeferenced Image Base Data ..... 14
3. Elevation Data Products and Topographic Base Data ..... 15
4. Parcel Mapping ..... 15
5. Parcel Administration and Assessment Information ..... 16
6. Street/Road Centerlines, Address Ranges and Address Points ..... 17
7. Hydrography, Hydrology and Wetlands Mapping ..... 18

8. Soils Mapping, Land Cover and other Natural Resource Data .....19
9. Land Use Mapping.....19
10. Zoning Mapping.....19
11. Election and Administrative Boundary System .....20
12. Critical Infrastructure and Facilities Management.....21
13. Database Design and System Implementation(see Item II.A.2. above for description).....22
F. Public Access..... 23
G.Integration and Cooperation ..... 25
H. Communication, Education, Training and Facilitated Technical Assistance ..... 26
I. Administrative Standards Not Associated With Foundational Elements..... 27

# I. EXECUTIVE SUMMARY

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## C. Summary of the Plan

This plan describes Waupaca County's land records modernization goals and objectives for the next five years. The plan will be used to provide all interested parties with basic information on Waupaca County's efforts in regards to land records modernization.

Waupaca County has benefited in many areas of modernization from the Wisconsin Land Information Program. This plan lays out a strategy for the county to continue the progress initiated by the Wisconsin Land Records Modernization Program.

Over the next five years, the emphasis for land records will be the continued integregation of GIS data and tools into existing department workflows.

## D. County Website

Homepage: http://www.co.waupaca.wi.us
Land Information Page: http://public1.co.waupaca.wi.us/

## E. Municipal Websites

City of Waupaca: http://www.cityofwaupaca.org/
City of New London: http://www.newlondonwi.org/

# II. LAND INFORMATION MODERNIZATION AND INTEGRATION PLAN

## A. Goals and Objectives

**1. State the goals and objectives of the county relating to the horizontal and vertical integration of land information and systems among users of land information in**

**Wisconsin. Include a brief assessment of the internal and external customers' needs and priorities for land information and technology. Identify the timeline for meeting goals and objectives and *(where appropriate)* your measurement methodology for achieving them by addressing the following questions:**

Waupaca County's goals and objectives focus on data integration and sharing as well as user education and increased system documentation. Waupaca County recently has begun distributing its core GIS datasets over the internet as free downloadable ESRI file Geodatabases. The county plans to expand on this model to include open GIS data formats such as the shapefile or KML.

The county is in the process of identifying workflows that exist in each of its departments. Many of these workflows may benefit from access to GIS/Land records data. Once these areas are identified, a plan to address them will be developed. The county has established a GIS user group that applicable staff are encouraged to attend. The goal is to increase awareness and communication amongst the users of the county GIS/Land Records System (LRSYS). Specific user training needs may be identified through meetings of this group. The county Information Technology (IT) Department has established a training room in the lower level of the courthouse. This training room is available for use by all county staff. Beyond this, staff training needs may need to be addressed by attending outside instructor-lead courses.

Another critical goal is to improve on the existing system documentation. As the GIS/LRSYS becomes increasing complicated and comprehensive, detailed up-to- date documentation is critical for the ongoing health of the system. Good documentation also makes it easier for GIS/LRSYS users to access and utilize data. Improved documentation includes, but is not limited to, computer infrastructure diagrams, computer system procedures, data dictionaries, data models, database schema, GIS data maintenance procedures, complete FGDC compliant metadata, script locations and purposes.

The following are goals related to the horizontal and vertical integration of the Waupaca GIS/LRSYS among users of land information in Wisconsin.

1. Continue to educate county staff, other local government staff, citizens, and private organizations about the features and benefits of the Waupaca County GIS/LRSYS.
2. Continue to maintain and enhance the Waupaca County GIS/LRSYS. This includes developing new data and applications as well as acquiring data from outside sources.
3. Improve system documentation, including FDGC compliant metadata. Develop a streamlined way of viewing metadata over the internet.
4. Enhance and increase the efficiency of county department workflows by using GIS/LRSYS data and analysis capabilities. This may include developing web based applications for specific workflows.
5. Continue to improve access to land information for all stakeholders. This would include users at all levels of government, private enterprise, and members of the public. The internet provides the best medium to deliver

land information, which is what Waupaca County intends to focus on. Mobile applications are another emerging technology that we plan to support.

6. Continue and expand on the conversion of paper records to digital format. The main focus will be on Register of Deeds documents but this may also include records housed at the Highway Department or the Zoning Department.

**(a) What data or information does the county need that it currently uses or can acquire from other state or local sources?**

Floodplains from FEMA (acquired), Hydrography from the WIDNR (acquired), Land Use from East Central Regional Planning Commission (acquired but needs updating), Mining from East Central Regional Planning Commission (acquired), Road information from WIDOT (acquired), Sewer Service Areas from East Central Regional Planning Commission (acquired), SSURGO Soils from the NRCS (acquired), and Two-Acre Wetlands from the WIDNR (acquired). At this time there isn't any other data that the county needs to acquire from outside sources.

**(b) What data or information does the county need that it does not have and are not easily acquired? What obstacles exist to acquiring this information?**

The County would like bedrock geology data, which is yet to be digitized for our County. We would also like private well data, which is considered sensitive information. We would also like to get archaeological sites, which is difficult to acquire due to cost.

**(c) How is or will the county ensure that county-maintained land information is, or can be made available in a standard industry format for use by others?**

We use the ESRI Geodatabase, which has become the standard in the GIS industry. ESRI is a member of the Open GIS Consortium and proposes to support all Open GIS data transfer and data share requirements. We also plan to provide our downloadable data in open formats such as the shapefile or KML.

**(d) How is or will the county ensure that the land information it has is geographically referenced for use by others?**

All spatial data stored in the county GIS/LRSYS is referenced to the Wisconsin Coordinate Reference System (WISCRS) for Waupaca County, which is a published coordinate system. Data referenced to this coordinate system is mathematically relatable to all commonly used coordinate systems such as State Plane, Geographic Coordinate Systems (NAD 83), etc.

**(e) How is or will the county ensure currency and continued maintenance of its digital land information?**

Waupaca County has a GIS staff of two full time employees to ensure continued maintenance of our digital land information. Waupaca County also periodically hires interns to assist with data maintenance. Waupaca County also strives to include its various departments in the data maintenance workflow to ensure accuracy and timely maintenance.

2. **Describe how the county's technology platform and environment and database design standards and practices (including metadata and other elements listed below in the "Database Design" section) supports the county's goals and objectives relating to modern and integrated land information and supports the countywide information technology vision, mission, goals and strategies.**

   Waupaca County currently has a mixed computing environment made up of an AS400 server, LINUX servers, UNIX servers, Windows servers, and Windows clients. The primary operating system is various versions of Microsoft Windows. The computer network was recently upgraded to gigabit speeds, greatly improving application performance. The GIS/LRSYS is running on a UNIX partition, hosted on the county IBM iSeries platform. The GIS/LRSYS data is stored in an Oracle 10g database, accessible to GIS clients via ArcSDE. The trend at the county, and at other organizations, is server consolidation and virtualization. The county has plans to migrate the existing GIS/LRSYS to a Windows environment running the latest version of SQL server. This environment is the industry standard, making it easier to communicate with peers on technical issues, as well as to ensure continued support from GIS software vendors. Migrating to a windows environment will increase integration between the GIS/LRSYS and existing county database applications.

   Improved database design and metadata is one of the counties goals. Metadata exists for all framework data layers but it could be improved. In regards to database design, a data dictionary exists but it needs to be streamlined.

## B. Progress Report on Ongoing Activities

**Please provide a description of the county's progress towards achieving the goals and objectives listed in the previous section ("Goals and Objectives"). Include a description of any significant changes in goals and objectives from those described in the county's previous plan.**

The majority of the county's goals and objectives from its previous plan have been achieved. Those goals and objectives that were ongoing in the first plan continue to be ongoing in this plan. In brief, the progress made since the first plan include:

- Continued updates to the parcel map layer.
- Development of addressed ranged road centerline data.
- Refinement of road centerline data by attributing road classifications.
- Greatly improving our internet mapping site utilizing the latest technology (Adobe Flex and Esri ArcGIS server).
- Continued distribution of GIS data on CD-ROM/DVD-ROM.

- Establishment of a web portal for downloading GIS data for free.
- Central web portal that providing access to GIS data, zoning information, document imaging, tax data, and survey documents is partially complete. The GIS data and tax data portion is complete.
- Continued scanning of survey documents as they are sent to the surveyor's office.
- Creating /migrating of GIS data to a centralized ArcSDE enterprise Geodatabase.
- Integrating the enterprise Geodatabase with parcel map production and web mapping
- Continued to establish Waupaca County coordinates on government corners and center of section corners. We are now trying to bid out entire townships at one time.
- Utilizing 2005 orthophotography to adjust core data layers like roads and structure points.
- Utilizing 2-ft contours for creating new mapping products like drainage basins.
- Developing political boundary layers such as alderperson districts, voting wards, supervisor districts, and school districts.
- Assisting the Highway Department with creating a point data layer for road signs. The point layer is linked to a road sign information database.
- Continued to refine and update our metadata.
- Developing a snowmobile route layer for our Parks Department.
- Starting the development of a sanitation data layer but it hasn't been completed.
- Continued assistance with the comprehensive planning process. This has including producing hundreds of maps and updating data layers created through the comprehensive planning process.
- Providing tools for the Sheriff's Department to create a traffic accident location data layer. This layer can be maintained using a web mapping application.

## C. New Initiatives

### 1. Proposed Projects

Timeframe: 2010

a) **Hydro Data Update** *[Staffing: 1 Intern, 2 FTE, Cost: Unknown]*
   i) Re-delineate water bodies
   ii) Integrate with WIDNR hydro
   iii) Code for shore land Zoning setbacks
b) **Radon Test Results Web Application** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Site to lookup radon test results throughout Waupaca County
   ii) Linked to a SQL database of radon test results
c) **County Conservation Easements** *[Staffing: 2 FTE, Cost: Unknown, Timeframe: 2010-2015]*
   i) Develop GIS tools to analyze land for eligibility under the County Conservation Easement program
   ii) Assist with map/data production for easement donations
d) **Car Accident Mapping** *[Staffing: 2 FTE,1 LTE Cost: unknown, Timeframe: ongoing]*
   i) Continue to input car crash locations
   ii) Analyze car locations for spatial patterns
e) **County GIS Users Group** *[Staffing: 2 FTE,1 LTE Cost: unknown, Timeframe: ongoing]*
   i) Establish a GIS users group for County staff

ii) Develop training/presentation materials

Timeframe: 2011

f) **Land Information GIS Server Database migration** *[Staffing: 2 FTE, Cost: $14,600]*
   i) Migrate current GIS database from Unix/Oracle to Windows/SQL Server
g) **Attribute road centerlines with speed limits** *[Staffing: 1 FTE, Cost: Unknown]*
   i) Adding speeds, one-way, overpass underpass will allow for running network analysis.
h) **Zoning Information Web Application** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Site to lookup zoning information for properties, linked to zoning database and GIS tax parcels

i) **Land Conservation Agriculture Inventory** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Land & Water Department to utilize GIS and data entry software to inventory farms for compliance issues
j) **Generate sets of Official Zoning Maps** *[Staffing: 2 FTE, Cost: Unknown]*
   i) County is implementing comprehensive plan
   ii) All new zoning for county, driven by local town plans
k) **Parcel base Zoning layer** *[Staffing: 2 FTE Cost: unknown, Timeframe: 2010-2011]*
   i) Develop a new zoning layer that is based on tax parcel data
   ii) New zoning is based on county comprehensive planning process and local town plans
l) **Land Conservation County Transect Analysis** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Analyze GIS crop type/cover type data collected through the annual county crop transect survey
m) **Sheriff's Department Spillman Upgrade** *[Staffing: 2 FTE Cost: unknown]*
   i) Modify ArcGIS server web mapping services to accommodate upgrade to Spillman Computer Aided Dispatch (CAD) software
n) **Develop Highway Driveway Access Permit Database** *[Staffing: 2 FTE Cost: unknown]*
   i) Create a database for storing County Highway Driveway access permits and corresponding GIS data layer
o) **Test/Establish City of Waupaca remote access to enterprise Geodatabase** ***[Staffing: 2 FTE Cost: none]***
   i) Establish an encrypted tunnel between City and County networks for access to GIS database.

Timeframe: 2012

p) **GIS Data Download/Inventory Portal** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Improve our current data download portal to include data in more formats, along with metadata.
q) **ArcGIS Server Migration** *[Staffing: 2 FTE, Cost: $14,000?]*
   i) Migrate to a new ArcGIS web mapping server
   ii) Investigate utilizing the Amazon EC2 ArcGIS server bundle
r) **Vehicle Routing** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Optimize bus routes for Waupaca County Industries
s) **Surveyor Office Database** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Database to store Survey control data
   ii) Web application to view survey control data and documents

t) **Crime Mapping** *[Staffing: 2 FTE,1 LTE Cost: unknown]*
   i) Create a crime location data layer
   ii) Analyze crime locations for spatial patterns
u) **Tax Database address modifications** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Develop nightly process to load GIS address data into tax database
   ii) If GIS doesn't have an address, then it would not be able to be added in Tax Database
v) **Highway Department Road Plans Layer** *[Staffing: 2 FTE Cost: unknown]*
   i) Develop a layer for Highway project locations
w) **Back Scanning of Register of Deeds Documents from 1970 to 1982** *[Staffing: 3 FTE Cost: unknown]*
   i) Scan documents into imaging and index them in Register of Deeds system
x) **Acquire 2010 Land Use from East Central Regional Planning** *[Staffing: 2 FTE Cost: unknown]*
   i) Have East Central RPC generate new Land Use data based on 2010 Orthophotography

Timeframe: 2013

y) **Obtain floor plans for public schools in the county, convert to GIS data** *[Staffing: 2 FTE, Cost: Unknown]*
   i) Could be used for response maps during emergency situations
z) **Emergency Management Critical Facilities Inventory Application** *[Staffing: 2 FTE Cost: unknown]*
   i) Link the current facility inventory to a GIS data layer
aa) **Highway Department Culvert Inventory Layer** *[Staffing: 3 FTE, 2 interns Cost: unknown, Timeframe: 2012]*
   i) Develop a County Highway road culvert layer and database application to maintain the culvert attributes

Timeframe: 2014

bb) **Possibly develop a internet mapping application for the City of Waupaca** *[Staffing: 2 FTE Cost: unknown, Timeframe: 2011]*
   i) Develop a internet mapping application for the City of Waupaca
cc) **Integrate 2010 Orthophotography into GIS/LRSYS** *[Staffing: 2 FTE Cost: unknown, Timeframe: 2010-2011]*
   i) Update data to reflect 2010 orthophotography
   ii) This may include adjusting/adding address points, adjusting roads, parcels etc
dd) **Develop large scale maps for all County Parks** *[Staffing: 2 FTE Cost: unknown, Timeframe: 2014]*
   i) Create publication quality detailed maps for each County park facility
ee) **Scan/index town road laying out orders located at the Highway Department** *[Staffing: 3 FTE Cost: unknown]*
   i) Highway Engineer has hard copies of the original township road laying out order, which give road right-of-way widths
   ii) Right-of-way widths are something that surveyors and property listing office using when mapping/surveying parcels

Timeframe: 2015

ff) **Integrate new Zoning database/permitting system with GIS** *[Staffing: 3 FTE Cost: unknown, Timeframe: 2011]*
   i) Link Zoning database applications to GIS/LRSYS

gg) **Create Waupaca County Bike Route Maps** *[Staffing: 2 FTE Cost: unknown, Timeframe: 2011]*
   i) Generate detailed bike route maps for areas throughout the county

hh) **Map locations of special needs populations for Department of Health and Human** Services *[Staffing: 2 FTE Cost: unknown]*

ii) **Create web based GIS editing applications for specific Departments** *[Staffing: 2 FTE Cost: unknown, Timeframe: ongoing]*
   i) Create applications that allow Department staff to edit GIS data, thus assisting with data maintenance

jj) **Develop mobile applications for County field staff** *[Staffing: 2 FTE Cost: unknown]*
   i) Develop applications to provide GIS data in the field on mobile devices (smart phones).

kk) **Attribute Road Centerlines with Weight Limits** *[Staffing: 2 FTE Cost: unknown]*
   i) Town road weight limits cause problems for local farmers
   ii) Generate maps of road weight limits

**2. Assistance Requested. Describe any initiatives the county would like the Department of Administration to assist with (such as adoption of policies, standards, coordination, integration efforts, user needs assessments, technical assistance, education, funding). The following questions must be addressed:**

**a. What is your county's plan to secure the technical assistance needed to carry out your Land Records Modernization/Integration Plan, including your plan to connect to the WLIP Internet Land Information Clearinghouse and Technical Assistance List Server Service?**

The county is connected to the Department of Administration Land Information List Server and will obtain technical assistance as needed from the private sector. We also plan to utilize training opportunities provided by the University of Wisconsin Stevens Point's GIS Center.

**b. What is your county's plan to locally finance the costs to continue previous investments in land records modernization/integration made in whole or in part with Land Information Program funding?**

The county has always budgeted for the land information program related activities within county department budgets. The county has formed several strategic partnerships to keep costs down and is continually alert to grant opportunities.

**c. What is your county's strategy for ensuring access to county land information, including publishing through a county website, FTP site, specialized online applications?**

We will continue to provide access to land information through our free data download page along with our web mapping applications.

**d. What is your county's plan to participate in a statewide GIS repository when one is made available?**

We would gladly include our data in a statewide GIS repository when one is made available.

**e. How does the county plan to maximize resources by utilizing competitive procurement processes (bid, RFP and justified sole-source) consistent with State of Wisconsin and local procurement rules?**

We will continue to adhere to county policy in regards to the bidding process. We have, and will continue to procure services through a RFP process.

**3. Problems Encountered. Describe any projects or activities your county would like to undertake that has not been stated above. Please describe obstacles that have prevented your county from proceeding, such as staff, funding, coordination problems, etc. Please be specific.**

The key to successful completion of the activities outlined in this plan is funding and staffing. It is crucial that the retained fee revenues remain free of limitations on their use in regards to land records modernization.

The current grant process has also helped to provide an additional funding source without having to go through the competitive grant process; however currently there isn't any more grant money available. In the future this may make it difficult for the Land Records Department to undertake new projects that require large amounts of capital.

## D. Custodial Responsibilities.

Waupaca County's land information records are grouped by the departments where they are located with the source of custodial authority as listed below.

The County will consider any request for custodial responsibility and will evaluate each request based on available and required resources.

### County Treasurer
Maintain tax financial information for all tax parcels (59.25)

### Highway Department
File right-of-way plats and construction plans (internal policy)

### Land Conservation
File soils maps and tables.
Create and maintain Agricultural plans (internal policy)

### Property Listing/Survey/Land Information Office
Maintain description and ownership information of all real property parcels (70.09)

Assign parcel numbers according to county geo coding system compatible with state prescribed numbering system.
Maintain information on school and other special district codes (70.09)
Maintain information on PLSS section corners including tie and section summary sheets (59.45)
Maintain information on Waupaca County HARN densification (59.45)
Maintain files of private survey maps (59.45)
Maintain files on field notes and other survey source documents (59.45)
Maintain the Waupaca County index parcel maps, consisting of parcel boundaries, forest program lands, road network, residual map information, PLSS index, and planimetric base layers for the entire county. (70.09, internal policy)
Maintain storage of digital orthophotos taken in 1994, 2000, 2005 and 2010.
Maintain tax rates and special assessments information (70.09)

### Register of Deeds

Record deeds, mortgages, plat maps, certified survey maps, and other related documents (59.43)
Scan above-mentioned documents into County imaging system as received and filed (59.43)
Maintain tract index of real property (59.43)

### Sheriff/Emergency Government

Maintain E911 related layers (internal policy)
Maintain master street address guide (internal policy)
Maintain emergency service network data, maps and layers (internal policy)

### Zoning

Maintain zoning maps for unincorporated areas (59.69)
Maintain private sanitary system site plans (59.69)
Maintain permit database (internal policy)
File wetlands and FEMA maps (internal policy)

## E. Foundational Elements and Statewide Standards

### 1. Geographic Reference Frameworks

**A. Geodetic control networks**

Waupaca County has participated in the densification of the High Accuracy Reference Network through the WLIB grant awarded to ECWRPC. We have nine main stations in the County, 2 first order and 7 second order stations. All the stations have azimuth stations. The stations are setup in approximately an eight-mile grid throughout the county.

**B. Public Land Survey System**

The county has completed the monumentation of all government section corners, we are actively maintaining these corners. We have established coordinates on the PLSS corners using a combination of conventional survey techniques and GPS technology. All GPS coordinates meet or exceed FGDC Third order, class I accuracy standard. Coordinates are maintained in the Waupaca County Coordinate system, which is mathematically relatable to the NAD 83(91). We plan to continue work on establishing center of section corners as budget allows. The county maintains the custodial responsibility for the PLSS.

**Confirm your adherence to standards**

- Standards for Geodetic Reference Systems (FGDC standards and specifications, Wisc. Stats. Chapter 236.18; **WLIB Specifications and Guidelines to Support Densification of the Wisc. High Accuracy Reference Network (HARN) Using Global Positioning System (GPS) Technology - June, 1995).**
  Waupaca County's Geodetic Reference Network is Blue Booked. b. Standards for Public Land Survey System Corners

- **Corner Remonumentation (Sec. 59.63(1); Sec. 60.84 (3)(c) Wisc. Stats).**
  Waupaca County adheres to the statutes.

- **Remonumentation Records (Wisc. Stats. (Sec. 59.635(2)(b) and Wis. Admin. Code AE 7.08(2).**
  Waupaca County adheres to the Administrative Code.

- **Coordinate Values (FGDC Third Order Class 1).** Yes on all GPS coordinates.
  Minimum Standards for the Establishment of Coordinates on Public Land Survey Corners as published by the Wisconsin County Surveyors Association.

- **Standards for Geographic Control Data (FGDC Third Order Class III for Horizontal Coordinate Values and Third Order for Elevation Values).**
  We make every attempt to obtain quality information in our vertical work.

  **We plan to maintain custodial responsibility.**

## 2. Orthoimagery and Georeferenced Image Base Data

**A. Photogrammetric base maps**
See next item..

**B. Digital orthophotography**
Waupaca County has obtained digital orthophotography taken in 1994, 2000, and 2005 from flights funded by the County Land Information Office. These photos were used to create photogrammetric base maps for the county and as reference data when creating/updating existing data (structure points, parcels etc). The county will soon receive new orthophotography taken in the year 2010. Waupaca County plans to acquire new digital orthophotography every five years.

**C. Digital raster graphics**
We have obtained DRG's of USGS 1:24,000 topographic maps.

**D. Satellite Imagery**
Waupaca County has no satellite imagery.

**E. Oblique aerial imagery**
Waupaca County has no oblique aerial imagery.

**F. Historical aerial imagery**
Historical aerial imagery is housed at the County Land and Water Conservation Department and at the Zoning Department. The following years are available in

hardcopy only: 1957 (L&W), 1964 (L&W), 1967 (L&W), 1971 (L&W), 1973 (Zoning), 1979 (Zoning), 1981 (L&W), 1992 (L&W), and 1993 (L&W).

**We plan to maintain custodial responsibility of the layers listed above.**

## 3. Elevation Data Products and Topographic Base Data

**A. Digital Elevation models (DEM)**
Waupaca County has a digital elevation model (DEM) generated from 2005 LiDAR project. This includes the bare earth model and the point cloud.

**B. Digital terrain models (DTM)**
Waupaca County has a digital terrain model (DTM) generated from 2005 LiDAR project. This includes the bare earth model and the point cloud.

**C. Triangulated irregular network (TIN)**
Waupaca County has generated an Esri terrain dataset from 2005 LiDAR project. This includes the bare earth model and the point cloud.

**D. Contours**
Waupaca County has two-foot contours generated from the 2005 LiDAR project.

**E. LiDAR Data**
Waupaca County has LiDAR data collected in 2005 that is capable of supporting the generation of two-foot contours that meet or exceeds FEMA map accuracy standards for two-foot contours.

**F. IFSAR Data**
Waupaca County does not have IFSAR data.

**We plan to maintain custodial responsibility of the layers listed above.**

## 4. Parcel Mapping

**A. The preparation of parcel property maps that refer boundaries to the public land survey system and are suitable for use by local governmental units for accurate land title boundary line or land survey line information.**
Parcel mapping is the top priority in our land records activities. We currently have converted our existing paper maps to digital form. The digital maps are index parcel maps. All parcel maps are referenced to the lines of the PLSS and are suitable for planning purposes. In many situations these maps are suitable to assist with land title boundary or survey line determination. Our parcel maps are not intended to be a substitute for a certified land survey (CSM) or to ensure title to property. Included in the metadata is information that directs users to the source documents. As these parcel maps are maintained we strive to use COGO techniques so that more accurate survey details are available in the database.

**B. The preparation of property maps that do not refer to boundaries to the public land survey system but are suitable for use by local governmental units for planning purposes.**
Our property maps refer boundaries to the public land survey system. See item A above.

C. **Coordinate System used**
Our parcel data is referenced to Wisconsin Coordinate Reference System (WISCRS) for Waupaca County.

Topology: Our parcel boundary lines and polygons have Geodatabase topology setup.

**Parcel ID:** The present county parcel identification number does not fully conform to the WLIB parcel numbering system. The parcel mapping database is designed so the PIN can be generated to comply with the WLIB requirement and will be populated automatically based on the current county number. The PIN is an attribute in our GIS parcel data. A major revision to the AS/400 based applications used by the treasurer's office, register of deeds, and zoning office has created links to the parcel identification number. Through the use of these links the GIS system can access all of the important data tables stored in the AS/400.

Parcel geometry is archived every year, along with real estate file (owner name, legal description, etc).

**Confirm your adherence to standards**

- **FGDC's Cadastral Standards**
  Waupaca County adheres to the FGDC cadastral standard

- **The WLIA's Parcel Geo-locator Standard**
  Waupaca County adheres to the WLIA's parcel geo-locator standard

- **Local Government standards compliance**
  We have developed our own standard, which is currently under revision.

- **The WLIA's Digital Parcel Mapping Standard**
  Waupaca County adheres to the WLIA's Digital Parcel Mapping Standard

**We plan to maintain custodial responsibility.**

## 5. Parcel Administration and Assessment Information

A. **The design, development and implementation of a land information system that contains and integrates, at a minimum, property and ownership records with boundary information, including a parcel identifier referenced to the U.S. public land survey.**
Waupaca County's database supports integration of digital parcel maps with property and ownership information by linking data through key fields (PIN).

B. **Activities associated with modernizing the use of parcel level information once created from and in support of parcel maps.**
By linking our GIS parcel layer (via PIN) to our AS/400 database system we can pull in tax data, site addresses, owner name and address, description/deed of record, document imaging, real estate transactions, tax exempt status, zip codes, assessment class, public lands and evidence of title.

**Confirm your adherence to standards where applicable**

- **FGDC's Cadastral Standards**
  Waupaca County adheres to the FGDC cadastral standard

- **The WLIA's Digital Parcel Mapping Standard**
  Waupaca County adheres to the WLIA's Digital Parcel Mapping Standard

- **Local government standards compliance**
  We have developed our own standard, which is currently under revision.

**We plan to maintain custodial responsibility.**

## 6. Street/Road Centerlines, Address Ranges and Address Points

**A. Transportation Network (streets, roads, highways, railroads)**
We have mapped public and private streets and highways to a high level of accuracy (1:1200). We plan to maintain the existing planimetric road data layer that was created in our parcel conversion. This data layer includes centerlines of all named public and private roads in the county segmented by intersections and address grid lines.

**B. Rights of way**
In our parcel conversion we buffered a right of way based on available documents such as highway right of way plats, CMS's etc. We plan to refine this right of way information as new survey work is done.

**C. Centerlines**
See item A. above.

**D. Address ranges**
Our centerline data is fully populated with address ranges. When possible, the address ranges are based on the county address grid system. The address ranges are adjusted to match current address points for areas that don't conform to the county address grid system.

**E. Site Address Database**
The AS/400 Real Estate database has site address data. We have recently added the ability for the Real Estate database to store many addresses on one parcel. We have reconciled the GIS address data with the Real Estate database to ensure logical consistency. When addresses are added to the Real Estate System they are checked to make sure that they are in the GIS. The Land Information Office assigns new rural addresses throughout the county.

**F. Address point, structure and/or driveway**
Address/structure points exist for all addressed structures located within the county. Address data in unincorporated areas is based off of field observations, address forms, and various county records. Address points within incorporated areas are based off of data in the Real Estate system. Driveway locations are generated using heads up digitizing of aerial photography.

**G. Road Names**
Road names are stored as an attribute of our road centerline data. Road name conflicts have been reconciled throughout the years using various resources, including WIDOT data, surveys, town/city records, and field verification.

**H. Functional Class**
Our road centerline data is attributed with functional class data. Our schema doesn't conform to traditional standards and it may need to be adjusted.

**I. Places/Landmarks**
Common place names are stored as an attribute of our address/structure point data. We intend in the future to attribute the address points with a common use classification (restaurant, motel, gas station etc).

**J. Integration with the County's/City Master Street Address Guide (MSAG)**
New addresses are integrated into the MSAG. We intend to verify complete integration with the MSAG.

**K. Ability to support emergency planning, routing, response and mapping**
Our road centerline data can support emergency planning, routing, response and mapping.

**L. Ability to support Wireless 911**
Our road centerline data can support Wireless 911.

**We plan to maintain custodial responsibility of all street/address data for Waupaca County.**

**Confirm your adherence to standards**

- **Local government compliant:** yes.
- **US Postal Addressing Standards Publication 28:** no

## 7. Hydrography, Hydrology and Wetlands Mapping

**A. Hydrography**
Original hydrography data was generated from aerial photography captured in 1994, which was a high water year. We have since started a project to redelineate hydrography geometry based on 2005 and 2010 aerial photography. The new hydro data will be used to regenerate Zoning shoreland setback boundaries. This data is also being integrated with the Wisconsin DNR hydro data via related attributes. **We plan to maintain custodial responsibility.**

**B. Watersheds**
We are utilizing watershed boundaries from the WI DNR. At times we are delineating micro-watersheds using two-foot contour data.

**C. Hydrogeology**
The county currently has no data related to hydrogeology.

**D. Impacts on the environment (e.g. groundwater contamination, storm water)**
The county currently has no data. We defer to the Wisconsin DNR for groundwater contamination issues.

**E. Wetlands mapping activities**
In 2008 the county received two-acre digital wetland mapping data from the Wisconsin DNR. We have since incorporated this newer data into our various maps. We are currently integrating the new wetland data into our shoreland zoning setback layer and new zoning districts layer.

**Confirm your adherence to standards where applicable**
Two –acre wetland data adheres to Wisconsin DNR Wetlands Map (S. 23.32, Wis. Stats.)

## 8. Soils Mapping, Land Cover and other Natural Resource Data

**A. Soils mapping activities**
Continue to regularly obtain SSURGO soils from NRCS.

**B. Land Cover**
Obtained WISCLAND data from WDNR.

**C. Forests**
Maintain a forest programs layer as part of parcel maintenance. The forest programs layer includes Managed Forest Law (MFL) Open/Closed.

**D. Geology**
The county currently has no data. This is one area we would like to obtain data but it doesn't exist in a digital format for Waupaca County.

**E. Non-metallic mining**
Continue to obtain non-metallic mining data from East Central Regional Planning Commission on an annual basis.

**F. Endangered resources**
Continue to obtain data from WIDNR as needed.

**G. Impacts on the environment (e.g. air emissions, soil contaminants, coastal stability)**
Continue to obtain data from WIDNR as needed.

## 9. Land Use Mapping

**A. Mapping of existing land use**
Waupaca County will continue to provide the digital data we have available and ortho photos to the towns and/or their consultants for development of land use plans in exchange for a copy of their final plan. Most towns have been using East Central Wisconsin Regional Planning Commission's (RPC) modified Standard Industrial Code classification system. We plan to have East Central RPC update existing land use to match 2010 orthophotography.

**B. Mapping of planned land use**
Planned/Preferred land use was generated for each local municipality through the comprehensive planning process. As townships amend local comprehensive plans the subsequent preferred land use data will also be updated.
**We plan to maintain custodial responsibility.**

**Confirm your adherence to standards**
- **Local government compliant:** yes.

## 10. Zoning Mapping

**A. Zoning Districts**
Currently our zoning districts are going through a major revision. The County is in the midst of adopting new zoning districts and official zoning maps one township at a time. Each local township has the ability to tailor the base county zoning code to their local comprehensive plan. The new Zoning districts are generated based on old zoning districts, comprehensive planning preferred land use, and local decisions. All of the 22 townships have to adopt the new zoning maps by June/July of 2011. The new zoning districts will be completely parcel based. The parcel number and subsequent zoning code is being stored in a database which can be maintained by zoning staff. GIS maps are generated by linking parcel geometry to zoning code database via the parcel PIN.
**We plan to maintain custodial responsibility.**

**B. Shorelands**
Waupaca County has developed and adopted a shoreland zoning ordinance (May 20, 1997). Our current shoreland data needs to be refined. Originally shoreland setback boundaries were generated from outdated hydrograhy data. We are currently redelineating hydro data, which will then be used to generate new shoreland boundaries. **We plan to maintain custodial responsibility.**

**C. Floodplains and floodways**
FEMA/WIDNR recently completed remapping all floodplains in Waupaca County using the counties LiDAR elevation data. The new maps and data was delivered and accepted in January of 2010.

**D. Environmental corridors**
The county currently has no data.

**E. Burial Sites**
Obtain data from Wisconsin State Historical Society as needed.

**F. Archeological Sites**
Obtain data from Wisconsin State Historical Society as needed.

**G. Historic/cultural Sites**
Obtain data from Wisconsin State Historical Society as needed.

**Confirm your adherence to standards**

- **Zoning Mapping Standards (Local Government Compliant):** We have recently increased staff to enforce zoning regulations and are presently rewriting our ordinances to better deal with manufactured homes, junkyards, non-metallic mining, and communication towers.

- **DNR Floodplain Zoning NR 115/117**: Waupaca County has adopted a floodplain ordinance.

## 11. Election and Administrative Boundary System

**A. Election (voting district)boundaries, precincts, wards, supervisory, voting places**
We will continue to maintain election boundaries, precincts, wards, supervisory and voting places layers. **We plan to maintain custodial responsibility.**

**B. Legislative Districts**
We will obtain this data from the State of Wisconsin as necessary.

**C. Utility Districts**
Sanitary districts are maintained as special district codes in the Real Estate database. We join the real estate data to the parcels layer to generate sanitary district boundaries. We would like to map out the legally described boundaries to see if they match what is stored in the tax database. **We plan to maintain custodial responsibility.**

**D. School Districts**
School district codes are maintained for every parcel in the Real Estate database. We join the real estate data to the parcels layer to generate school district boundary maps. We have sent these maps on to the individual school districts for their review. Through this process several errors were noticed and corrected. **We plan to maintain custodial responsibility.**

**E. Tax incremental financing districts (TIF)**

TIF districts are maintained as special district codes in the Real Estate database. We join the real estate data to the parcels layer to generate TIF district boundaries. **We plan to maintain custodial responsibility.**

**F. Agency administrative districts and Zip Codes**
We have obtained Census Zip Code tabulated Areas (ZCTA) and then adjusted them slightly based on tax bill mailing addresses.

**G. Census Geographies**
We obtain census geographies from the U.S. Census Bureau.

**H. Civil Division Boundaries (Towns, City, Villages, etc)**
The civil boundaries within Waupaca County were constructed using our parcel data, PLSS data and annexation documents. We continue to maintain minor civil divisions as annexations occur. **We plan to maintain custodial responsibility.**

**I. Native American Lands**
There are no Native American lands located within the County.

**J. County Boundaries**
We obtained the Wisconsin County Boundaries layer from the WIDNR.

**K. State Outline**
We obtained the Wisconsin County Boundaries layer from the WIDNR.

**L. Lake Districts**
Lake districts are maintained as special district codes in the Real Estate database. We join the real estate data to the parcels layer to generate sanitary district boundaries. We would like to map out the legally described boundaries to see if they match what is stored in the tax database. **We plan to maintain custodial responsibility.**

**Confirm your adherence to standards**

- **Local government compliant**: yes.

## 12. Critical Infrastructure and Facilities Management

**A. Emergency service districts**
Data was created by joining police/fire/EMS districts into one ESN layer. **We plan to maintain custodial responsibility.**

**B. 911 call center service areas and center locations**
This data layer doesn't yet exist but we plan on creating it. **We plan to maintain custodial responsibility.**

**C. Fire/Police Districts**
This data layer was created using various records from the county communications center and Emergency Management. **We plan to maintain custodial responsibility.**

**D. Fire/Police Stations**
This data layer was created using various records from the county communications center and Emergency Management. **We plan to maintain custodial responsibility.**

**E. Hospitals and healthcare facilities**
This data layer was created using various records from the county Emergency Management agency. **We plan to maintain custodial responsibility.**

**F. Government facilities**
This data layer was created using various records from the county Emergency Management agency. **We plan to maintain custodial responsibility.**

**G. Utilities**

Data was gathered from various utilities that provide service within the county. Some of the utility companies declined to provide data, which we would eventually like to collect.

**H. Parks & Recreation Trails**

This data layer was created using various records and field work. Park boundaries are based on parcel data and trails were created using various methods. The trails data needs to be cleaned up and reorganized as some information is out-of-date. **We plan to maintain custodial responsibility.**

**I. Transit systems**

This data doesn't yet exist.

**J. Bridges, culverts, traffic road signs**

Bridge and culvert data doesn't yet exist but we plan to build a culvert inventory for County Highways. Traffic road sign data layer exists for County Highways. **We plan to maintain custodial responsibility.**

**K. Airports and airfields**

This data layer was created using list/location of FAA registered airfields. Airfield features were then digitized using aerial photography. **We plan to maintain custodial responsibility.**

**L. Harbors**

No harbors located within county.

**M. Boat landings**

This data layer was creating using information provided by the County Parks Department as well as township records. **We plan to maintain custodial responsibility.**

**N. Hazardous materials sites; LUST (Leaking Underground Storage Tank) etc.**

We plan on obtaining this data from the WIDNR.

**O. Landfills**

We plan on creating this layer using records from the WIDNR.

13. Database Design and System Implementation(see Item II.A.2. above for description)

**A. Design evaluation**

Design of existing and new databases is closely reviewed by the County staff and/or County GIS database development consultants. Pilot projects are undertaken to determine functionality and refine the final design.

**B. Project approach**

When undertaking large projects we always meet to plan and track project progress.

**C. Timeline**

The timeline for development and implementation is dictated by funding and staff level.

**D. Metadata policies**

We are in the process of developing FDGC compliant metadata for all of the data layers stored in our enterprise Geodatabase. Our core datasets all have metadata (centerlines, PLSS, water, structure points, parcels etc).

**E. Security/Privacy polices**

We follow policies set by the County Information System Department.

**F. Implementation and maintenance strategy**

We will continue to allocate the necessary funds to maintain two full-time GIS staff to maintain the data and GIS/LRSYS. We are currently implementing web-based GIS tools to allow other departments to be a part of the data maintenance process.

**G. Data quality management**

We currently address quality issues as they are brought to our attention. In the future we may need to develop data quality control procedures.

**H. Needs assessment**

The original Waupaca County Land Records Modernization Plan included a detailed assessment of used needs and priorities. The original assessment is still valid with the exception of issues related to rapidly changing technology advances and cost of implementation. We plan to meet with individual departments to conduct a GIS needs assessment.

**I. Data structure and format (e.g. topology)**

Our core datasets have topological relationships setup (parcels, centerlines, driveways, administrative districts etc).

**J. GIS data models (database & workflows)**

We have documents outlining the GIS database structure and important workflows. These documents can become out-of-date rather quickly and we would like to make more of an effort to keep them current.

**K. Data dictionary**

We had a complete data dictionary for all of our datasets in the coverage format. We have since migrated all of our data to an Enterprise Geodatabase (2005). We have started a comprehensive data dictionary that covers all data store in our Enterprise Geodatabase but it is not complete. We have been researching various tools and methods to simplify the creation of said data dictionary.

**L. Coding schema**

The County uses existing standardized coding schemes whenever possible.

**M. Transaction management**

We track changes in our core datasets using date/time fields. We also attribute the name of the individual that performed the edit.

**N. Organization information flows**

Work is ongoing in assessing and improving workflow within and between departments.

**O. Data conversion**

When we perform a data conversion process we make sure to document the work flow.

**P. Ability to integrate with other database and information systems (vertical and horizontal)**

The County identifies key fields or data attributes needed to support sharing of data sets and incorporates them in our data bases whenever practical to promote integration.

**Confirm your adherence to standards**

- **GIS Data Exchange Between Wisconsin Public Agencies, WLIA, 1996**: yes

## F. Public Access

**A. Use of technology to facilitate efficient access (e.g. Internet, query systems, DVD/CD)**

The County currently has public access computer terminals available to the public for searching tabular data, document imaging, and GIS query capabilities. We plan to continue to add additional terminals in the coming years and upgrade existing terminals. Waupaca County has developed a revised GIS web site using ESRI ArcGIS Server and Adobe Flex software. We have recently added a free data download portal to provide access to our GIS data. We intend to expand the available data layers and data formats. We currently publish CD-ROM/DVD-ROM of our mapping and applicable databases every year for use by surveyors, assessors, and the general public. Assessment database information and imaging files are routinely available to realtors, title companies, and others in a digital format. Waupaca County also provides a proxy server service to give access to the AS/400 database over the internet. The Register of Deeds provides access to document images using LandShark software created by Trimin Government Solutions.

**B. Use of 3rd party technology for access (e.g. GIO Repository, Google, offsite hosting)**
We would be happy to provide our data to the GIO repository once it is complete. We have also discussed providing our data to Google since it's used by so many.

**C. Data sharing policies (copyright, licensing, fees etc)**
We have a written formal data sharing agreement for data distribution. Online users must also accept this agreement in order to download our GIS data. We do charge $50 for a CD-ROM worth of data and $100 for a DVD-ROM; however our core data layers are available as a free download.

**D. Open access to data in existing format**
If there is a request for information in digital form, every attempt is made to provide it in a useable format.

**E. Subscription-based or public-facing web services**
We have subscription-based and public-facing web applications/services. Our public-facing applications/services don't display or allow search for property owner names.

**F. Optional production of customized data on cost-recovery or other basis**
We do provide custom queries, mailing lists, and maps at a rate of $15 per ½ hour with a minimum charge of ½ hour.

**G. Internet accessibility (ADA compliance, security)**
Our internet GIS applications are not ADA compliant. We plan to investigate this further to determine what would be involved to make them compliant.

**H. System security**
We follow security guidelines outlined by the County Information Systems Department. The GIS database server and AS/400 computers have built in security and are managed by a system administrator. Waupaca County's Information Systems Department maintains a backup security plan for our AS/400 and imaging system. The Land Information office is responsible for the backup of the GIS system.

**I. Privacy policies**
The Waupaca County Board of Supervisors passed a Land Records Access Ordinance (County Ordinances, Chapter 15) on June 18, 2002 to stop land owner names from being accessible (visible/searchable) over an anonymous internet connection. Waupaca County adheres to the Wisconsin Open Records Law and complies with State statutes for access to restricted records. We will be monitoring the industry and public concerns related to privacy and distribution of data.

**J. Use of $1 fee designate for land information and housing data Sec. 59.72 (5)(b)3.**
The $1 fee is used to fund a web server, maintained by the Land Information Office. The web server distributes data to the County website for public access. The server provides

access to the following, free of charge; detailed assessment data if provided by the local assessor along with sales history and a public version of our ArcGIS server mapping application.

**Confirm your adherence to standards**

- **GIS Data Exchange Between Wisconsin Public Agencies, WLIA, 1996**: yes
- **State Open Records Law and Federal Freedom of Information Act**: yes and yes

## G. Integration and Cooperation

**Wisconsin Administrative Code, Chapter Adm. 47 defines *integration* as the coordination of land records modernization to ensure that land information can be shared, distributed and used within and between government at all levels, the private sector and citizens. *Cooperation* is defined as the explicit relationships within and between public agencies, and between public entities and private entities to share land information or collaboratively pursue land records modernization. These cooperative relationships may be formal or informal, a single instance of exchange or an ongoing association.**

**A. Formal data sharing agreements (memorandums of understanding, etc).**
The County has a memorandum of understanding with the City of Waupaca for use of the County GIS. The County also has informal data sharing agreements with municipalities and consultants working for local units of government within the county. We will continue these arrangements and pursue others as opportunities arise. The County encourages others to use our digital data by setting a nominal cost or no cost. We encourage cost-free exchanges of information that will enhance our system. Currently the City of New London is in the process of converting from CAD utility data to GIS. We have a data sharing agreement setup through this process.

**B. Formal or informal data maintenance agreements between departments/agencies**
We have informal data maintenance agreements with most County departments as well as with the Natural Resource Conservation Service (NRCS) with regards to CREP mapping.

**C. Cooperative arrangements**
We have a cooperative agreement established with East Central RPC.

**D. Consortia (e.g. inter-county, regional)**
Waupaca County took part in the Wisconsin Regional Orthophotography Consortium (WROC) in 2005 and 2010. We intend to continue participating in future WROC projects.

**E. Collaborative arrangements (e.g. sharing of: local/state staff and budgets; technical assistance; peer review; collegial plan preparation; common help desks; bartering and mentoring etc)**
We have an informal collaborative arrangement with the University of Wisconsin Stevens Point to utilize student interns that are currently enrolled at the University.

**F. Statutory relationships among counties and state agencies**
No relationships that we are currently aware of.

**1. What integrative/cooperative relationships would your county like to develop?**
The county has a goal to further their relationship with all our municipalities. We would also like to continue and expand cooperative projects with DNR and DOT in areas such as surveying and adding vertical control. Waupaca County would like to develop integrative/cooperative

relationships with public and private entities interested in obtaining information we currently possess in exchange for other data or funding. We are currently in the process of expanding the relationship between the City of Waupaca and the County Land Information Office. We are trying to establish a connection that would allow for city staff to view/edit County GIS data without the need to pass files back and forth.

**2. What potential partners and mutual projects does your county plan to pursue?**
Waupaca County will seek to develop joint efforts with our municipalities, neighboring counties, state, regional and feral agencies, utilities and the private and public sectors.

**3. What data would be shared and used in both of the above?**
Any digital data created or obtained by the County would be made available for sharing and exchange with any of the potential partners listed above. The horizontal ground network PLSS coordinate data, base map information, or any data set which would enhance registration of data layers, and tax listing database would be made available as part of any cooperative efforts referenced above.

**4. How does your county allow for participation and coordinate funding allocations so that all departments benefit from the land information program?**
Multi-departmental projects are coordinated through the Land Information Office. The Land Information Office has an unwritten agreement to provide data and services to all county departments. In the past, departments have contributed funds to mutually beneficial land information projects. We have also engaged all departments in the Land Records plan update process. We plan to establish a County GIS users group, which should help funnel project ideas from various departments back to the Land Information program.

**5. How does your county allow for participation so that municipalities and other agencies in the region benefit from the land information program?**
The Land Information Office provides data (digital or hardcopy) to all municipalities free of charge. If a request initially comes from a municipality, we provide data at no cost to third parties hired by said municipality. The County has an unwritten data sharing agreements with all local municipalities. The County also shares data, at no cost, with its Regional Planning Commission, local University, and surrounding Counties.

## H. Communication, Education, Training and Facilitated Technical Assistance

A. **Documentation of county data, models and processes**
   Metadata exists for all core datasets and major workflows and processes are documented.
B. **Resources available**
   Currently the Land Information Office will provide technical assistance to all departments developing and maintaining land information. The Land Information Office will inform departments needing additional training and education of meetings and training opportunities as appropriate. Additionally, the Land Information Office will utilize LIO training funds to keep staff up to date on changes in GIS technology.
C. **Identification of customer needs**
   We plan on developing needs assessment meetings and/or surveys.
D. **Coordination of education/training with agencies, associations and educational institutions**

We plan to send staff to training at the UW Stevens Points newly created GIS center.

E. **Use of technology to facilitate education and training**
We have discussed plans to record screen casts of various training exercises for our users to watch.

F. **Use of, or plan to participate in, clearinghouse/repository and land information technical assistance listserv**
Waupaca County land information staff is subscribed to technical assistance listserv and we plan to and do participate in the clearinghouse/repository.

G. **Use of land information officer and training funds**
Currently the funds are used for WLIA membership and annual conference registration.

**Confirm your adherence to standards where applicable.**
Waupaca County land information staff is subscribed to the land info technical assistance email listserv.

## I. Administrative Standards Not Associated With Foundational Elements

Plan represents an agreement between Waupaca County (the County) and the Wisconsin Department of Administration (DOA). This agreement is intended to effectuate the objectives of the Wisconsin Land Information Program as embodied in the enabling legislation. In order for the Plan to be acceptable to the DOA, the DOA and Waupaca County agree and consent as follows below.

1. The county agrees to observe and follow the statutes relating to the Wisconsin Land Information Program and other relevant statutes.

2. The county agrees to permit the Wisconsin Department of Administration access to books, records and projects for inspection and audit.

3. The county agrees to complete the GIS Inventory Survey (survey required annually by WLIP).

4. The county agrees to update the plan every 5 years and in the interim if the plan should change.

5. Development and implementation of an acceptable plan confers certain benefits on local government within a county, including continued eligibility for Program funding. A peer review process will be used to assess plan acceptability by the land information community.