

Jefferson County – LiDAR Project Profile 2019

Why LiDAR now?

LiDAR technology has been used in Wisconsin since the early 2000's for high accuracy topographic mapping. Jefferson County did its last LiDAR project in 2012. The 2019 lidar projects will be the most accurate countywide datasets in Wisconsin due to improved technology and new specifications (0.3-foot vertical accuracy).

- Unique opportunity for funding new and update lidar projects
- Path is paved
- Recent and sustained success with federal partnerships
- Group of counties with high likelihood of success is formed
- Lidar will be 7 years old since last acquisition

Opportunity for federal funding

A group of counties in Wisconsin are planning to submit an application for 3DEP funding to help pay for lidar in 2019. This group is made up of counties that are flying lidar to achieve Quality Level 2 standards (2 ppsm) for the first time. The application for 2019 funding is built on the success of 3DEP funding that we won in 2015, 2016, 2017, and 2018 for Wisconsin county lidar projects.

The major improvements since 2010

- Point density improves from 1 ppsm to 2 ppsm
- Vertical accuracy improves from 19 cm to 10 cm RMSEz
- Data supports 1-ft contour interval

Data Deliverables

Base QL2 project datasets and reports:

- Raw swath point cloud, LAS format v1.4
- Base classified point cloud (does not include buildings or veg), LAS format
- Hydro flattening breaklines (100-ft streams and 2 acre ponds), ESRI shapefile format
- Bare earth DEM, 32-bit floating point grid
- Contours, auto-generated, ESRI shapefile format
- Vertical accuracy report (NVA and VVA)
- Tile schematic, ESRI shapefile format
- Data acquisition and processing QC reports

Recommended LiDAR enhancements to the base QL2 requirements:

- Improved hydro breaklines (20-ft and wider streams and 2 acre ponds)
- Improved 1-ft contours (topologically cleaned, all types)
- Automated classification of buildings and vegetation
- Bare earth dataset – class 2 points only

Additional Lidar Derivative datasets for consideration:

- 2D building outlines generated from building classified points
- Further improved hydro breaklines (8-ft and wider streams and 1-acre and larger ponds)
- Digital Surface Model (DSM) of first returns
- Intensity imagery raster
- Culvert collection and hydro-enforced DEM

Cost Breakdown – pursue 3DEP funding at 50% match

Jefferson County plus 100 meter buffer is approximately 589 square miles

Base Project to meet QL2 specifications: not-to-exceed \$132,525

Jefferson County share: \$66,262.50

USGS share: \$66,262.50

Recommended LiDAR enhancements to the base QL2 requirements: \$23,800

- Improved hydro breaklines (20-ft and wider streams and 2 acre ponds)
- Improved 1-ft contours (topologically cleaned, all types)
- Automated classification of buildings and vegetation
- Bare earth dataset – class 2 points only

Additional Lidar Derivative datasets:

- 2D building outlines, .shp format: \$10,500
- Further improved hydro breaklines (8-ft streams, 1-acre ponds): TBD based on need
- Digital surface model, .flt format: TBD based on need
- Intensity imagery, .tif format: TBD based on need
- *Culvert collection and hydro enforced DEM: TBD based on need

*Culvert collection option requires new lidar and aerial imagery for extraction of culvert lines.

Overall LiDAR project funding source breakdown:

Jefferson County

- Lidar Base Project: \$66,262.50
- Recommended Lidar Enhancements: \$23,800
- Additional Lidar Derivatives: To-be-determined at a later date

USGS

- 3DEP grant - \$66,262.50

Total project fees not-to-exceed: \$156,325

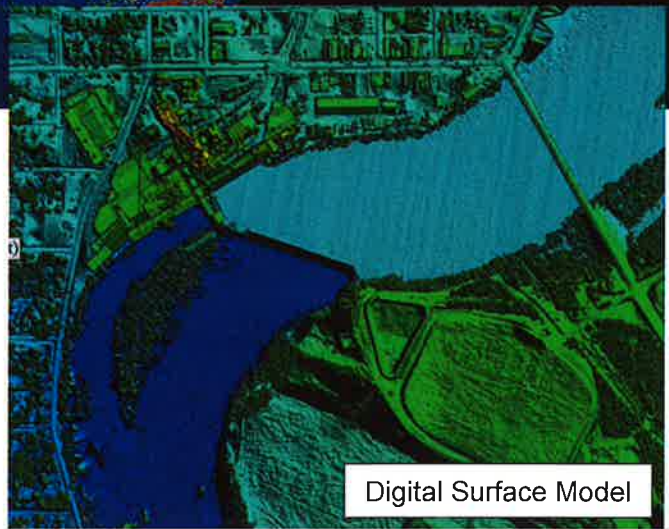
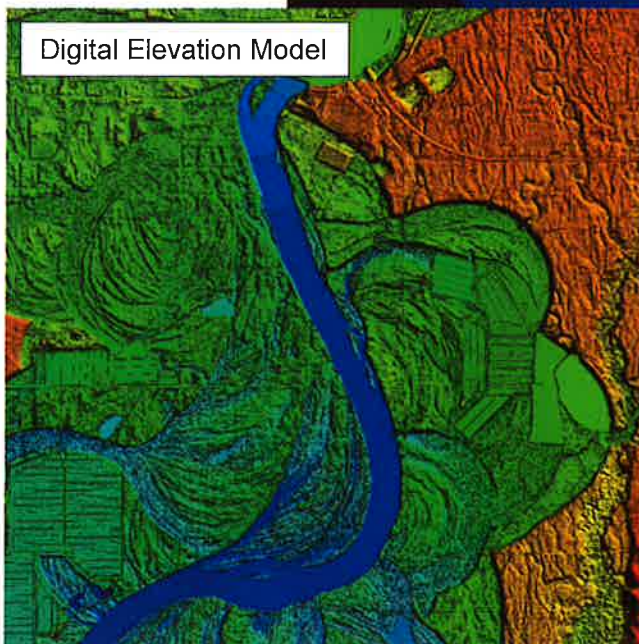
Contracting

The total project cost to the county is \$90,062.50 which includes the lidar base project and the recommended lidar enhancements. Additional lidar derivatives will increase the county project cost. If the grant application is successful, the county would contract with Ayres Associates for the full amount required to complete the project, which is \$156,325. The county would have a partnership agreement with WI DOA – WLIP for the USGS 3DEP match (\$66,262.50).

Timeline

The grant application will be submitted to USGS in October 2018. We will hear if the grant has been awarded in December 2018 or January of 2019. If successful, the next step is to move forward with contracting for the spring 2019 flight. The final datasets will be delivered by March of 2020 at the latest.

LiDAR Datasets



Jefferson County Land Information Plan 2019-2021

**Wisconsin Land Information Program
Wisconsin Department of Administration
101 East Wilson Street, 9th Floor
Madison, WI 53703
(608) 267-3369
www.doa.wi.gov/WLIP

Version: 2018-09-12

Approved/Adopted by Land Information Council on: 2018-00-00

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EXECUTIVE SUMMARY

About this Document. This document is a Land Information Plan for Jefferson County prepared by the Land Information Officer (LIO) and the Jefferson County Land Information Council. Under state statute 59.72(3)(b), a “**countywide plan for land records modernization**” is required for participation in the Wisconsin Land Information Program (WLIP). The purpose of this document is twofold: 1) to meet WLIP funding eligibility requirements necessary for receiving grants and retaining fees for land information, and 2) to plan for county land records modernization in order to improve the efficiency of government and provide improved government services to businesses and county residents.

WLIP Background. The WLIP, administered by the Wisconsin Department of Administration, is funded by document recording fees collected by Register of Deeds at the county-level. In 2017, Jefferson County was awarded \$51,000 in WLIP grants and retained a total of \$115,464 in local Register of Deeds document recording fees for land information.

This plan lays out how funds from grants and retained fees will be prioritized. However, as county budgets are determined on an annual basis with County Board approval, this plan provides estimated figures that are subject to change and are designed to serve planning purposes only.

Land Information in Jefferson County. Land information is central to county operations, as many essential services rely on accurate and up-to-date geospatial data and land records. A countywide Land Information System supports economic development, property ownership, property assessment, outdoor recreation, taxation, regulation, emergency planning and response, and a host of other citizen services. The Jefferson County Land Information system integrates and enables efficient access to information that describes the physical characteristics of land, as well as the property boundaries and rights attributable to landowners.

Three-Year Mission Statement. In the next three years, Jefferson County’s Land Information Office strives to facilitate gains in governmental efficiencies by broadening the utilization of GIS and other technologies across county government for improved responsiveness to meet the land records needs of county residents and businesses.

Land Information Office Projects. To realize this mission, in the next three years, the Jefferson County Land Information Office will focus on the following projects:

Jefferson County Land Information Projects: 2019-2021

Project #1	Rural Parcel Map Improvement
Project #2	Back indexing of documents in Register of Deeds
Project #3	Mobile GIS and Data Collection
Project #4	Develop Activity Focused GIS Websites
Project #5	Upgrade the digital elevation model with LIDAR technology
Project #6	Convert parcel map data to the ESRI Parcel Fabric Data Model
Project # 7	Update Land Use Inventory
Project # 8	Update County Terrain Model using LiDAR
Project # 9	Map County Park Assets for Facility Management
Project # 10	Mobile Reporting of Septic Tank Pumping Maintenance
Project # 11	Extract Building Footprints County-wide
Project # 12	Link Parcel Identification Number to Legal Description and Address in Register of Deed system.

The remainder of this document provides more details on Jefferson County and the WLIP, summarizes current and future land information projects, and reviews the county’s status in completion and maintenance of the map data layers known as Foundational Elements.

1 INTRODUCTION

In 1989, a public funding mechanism was created whereby a portion of county Register of Deeds document recording fees collected from real estate transactions would be devoted to land information through a new program called the Wisconsin Land Information Program (WLIP). The purpose of the Land Information Plan is to meet WLIP requirements and aid in county planning for land records modernization.

The WLIP and the Land Information Plan Requirement

In order to participate in the WLIP, counties must meet certain requirements:

- Update the County's Land Information Plan at least every three years
- Meet with the county Land Information Council to review expenditures, policies, and priorities of the land information office at least once per year
- Report on expenditure activities each year
- Submit detailed applications for WLIP grants
- Complete the annual WLIP survey
- Subscribe to DOA's land information listserv
- Coordinate the sharing of parcel/tax roll data with the Department of Administration in a searchable format determined by DOA under s. 59.72(2)(a)

LAND INFORMATION

Any physical, legal, economic or environmental information or characteristics concerning land, water, groundwater, subsurface resources or air in this state.

'Land information' includes information relating to topography, soil, soil erosion, geology, minerals, vegetation, land cover, wildlife, associated natural resources, land ownership, land use, land use controls and restrictions, jurisdictional boundaries, tax assessment, land value, land survey records and references, geodetic control networks, aerial photographs, maps, planimetric data, remote sensing data, historic and prehistoric sites and economic projections.

– Wis. Stats. section 59.72(1)(a)

Any grants received and fees retained for land information through the WLIP must be spent consistent with the county Land Information Plan.

Act 20 and the Statewide Parcel Map Initiative

A major development for the WLIP occurred in 2013 through the state budget bill, known as Act 20. It directed the Department of Administration (DOA) to create a statewide digital parcel map in coordination with counties.

Act 20 also provided more revenue for WLIP grants, specifically for the improvement of local parcel datasets. The WLIP is dedicated to helping counties meet the goals of Act 20 and has made funding available to counties in the form of Strategic Initiative grants to be prioritized for the purposes of parcel/tax roll dataset improvement.

For Strategic Initiative grant eligibility, counties are required to apply WLIP funding toward achieving certain statewide objectives, specified in the form of "benchmarks." Benchmarks for parcel data—standards or achievement levels on data quality or completeness—were determined through a participatory planning process. Current benchmarks are detailed in the WLIP grant application, as will be future benchmarks.

WLIP Benchmarks (For 2016-2018 Grant Years)

- Benchmark 1 & 2 – Parcel and Zoning Data Submission/Extended Parcel Attribute Set Submission
- Benchmark 3 – Completion of County Parcel Fabric
- Benchmark 4 – Completion and Integration of PLSS

More information on how Jefferson County is meeting these benchmarks appears in the Foundational Elements section of this plan document.

County Land Information System History and Context

The Jefferson County Board of Supervisors formed the Land Information Office by Resolution 90-22 on June 12, 1990. The statutory Land Information Office duties include coordinating land information projects, developing a County-wide Land Information Plan, and reviewing and recommending projects from local units of government for Wisconsin Land Information Board grants. Resolution 90-22 also established a Land Information Advisory Committee which up until recently guided the development and implementation of the County-wide Land Information System.

The 2009 Wisconsin Act 314 required counties to form a Land Information Council to remain eligible for participation in the Land Record Modernization Program. Pursuant to Wisconsin Statute 59.72 (3m) the County Board formed the Jefferson County Land Information Council with the adoption of Ordinance 2010-09 on July 13, 2010. The Land Information Council shall review the priorities, needs, policies, and expenditures of the Land Information Office and advise the County on matters affecting the Land Information Office.

The Land Information Council works in an advisory capacity to the Jefferson County Planning and Zoning Committee and the County Board of Supervisors. Land Information Office submits policies developed by the Council to the Planning and Zoning Committee and County Board for official action.

The Jefferson County Board of Supervisors first adopted a Land Information Plan in 1992. The County revised the plan in 2000, 2005, 2011 and 2016. The Land Information Council must approve final Land Information Plan and document that approval in the final submission of the plan to DOA. County board approval of plans is encouraged but not required.

Jefferson County has accomplished many of the goals and objectives outlined in 1992, 2000, 2005, 2011 and 2016 Land Information Plans. Notable projects completed included: County High Precision Geodetic Control Network, Digital Parcel Mapping, Digital Soils Survey, Digital Zoning Mapping, Digital Land Use Mapping, Zoning Permit Tracking, Document Imaging of Register of Deeds and many other land records, Public Access Interface to Geographic Information System (GIS) Layers. In most recent years, Light Detection and Ranging (LiDAR) Terrain Mapping, updates to Land Records Search and Interactive GIS websites. In the past 3 years, 8 modernization projects identified in the 2016 Land Information Plans were completed or nearly completed.

County Land Information Plan Process

County Plan Information Plans were initially updated every five years. However, as a result of Act 20, counties must update and submit their plans to DOA for approval every three years. The 2019-2021 plan, completed at the end of 2018, is the second post-Act 20 required update.

Plan Participants and Contact Information

Another requirement for participation in the WLIP is the county Land Information Council, established by legislation in 2010. The council is tasked with reviewing the priorities, needs, policies, and expenditures of a land information office and advising the county on matters affecting that office.

According to s. 59.72(3m), Wis. Stats., the county Land Information Council is to include:

- Register of Deeds
- Treasurer
- Real Property Lister or designee
- Member of the county board
- Representative of the land information office
- A realtor or member of the Realtors Association employed within the county

- A public safety or emergency communications representative employed within the county
- County surveyor or a registered professional land surveyor employed within the county
- Other members of the board or public that the board designates

The land information council must have a role in the development of the county land information plan, and DOA requires county Land Information Councils to approve final plans.

This plan was prepared by the county LIO, the Jefferson County Land Information Council, and others as listed below.

Jefferson County Land Information Council and Plan Workgroup				
Name	Title	Affiliation	Email	Phone
*Staci Hoffman	Register of Deeds	Jefferson County Register of Deeds Office	stacih@jeffersoncountywi.gov	920-674-7235
*John Jensen	Treasurer	Jefferson County Treasurer Office	johnj@jeffersoncountywi.gov	920-674-7250
*Tracy Saxby	Real Property Lister	Jefferson County Land Information Office	tracys@jeffersoncountywi.gov	920-674-7254
*Steve Nass	County Board Member	Jefferson County Board	steven@jeffersoncountywi.gov	920-648-8513
*Andy Erdman	Director/Land Information Officer	Jefferson County Land Information Office	andye@jeffersoncountywi.gov	920-674-7254
*Joanne Larson	Realtor Representative	Wayne Hayes Real Estate	waynehayesre@compufort.com	920-723-0199
*Todd Lindert	Communications Supervisor	Jefferson County Sheriff's Office	toddi@jeffersoncountywi.gov	920-674-7310
*Jim Morrow	County Surveyor	Jefferson County Land Information Office	jimm@jeffersoncountywi.gov	920-674-7254
*Matt Zangl	Director	Jefferson County Planning and Zoning Department	mattz@jeffersoncountywi.gov	920-674-7130
*Mark Watkins	Director	Jefferson County Land and Water Conservation Department	markw@jeffersoncountywi.gov	920-674-7110
*John Rageth	Information Technology Manager	Jefferson County Management Information Systems	johnr@jeffersoncountywi.gov	920-674-2303
Donna Haugom	Director	Jefferson County Emergency Management	donnah@jeffersoncountywi.gov	920-674-7450
Kathi Cauley	Director	Jefferson County Human Services	kathic@jeffersoncountywi.gov	920-674-3105
William Kern	Highway Commissioner	Jefferson County Highway Department	billk@jeffersoncountywi.gov	920-674-7390
Brian Udovich	Highway Operations Manager	Jefferson County Highway Department	brianu@jeffersoncountywi.gov	920-674-7390
Derek Anderson	GIS Engineering Technician	Jefferson County Highway Department	dereka@jeffersoncountywi.gov	920-674-7184
Joe Nehmer	Parks Director	Jefferson County Parks Department	joen@jeffersoncountywi.gov	920-674-7261
Mary Nimm	Program Assistant	Jefferson County Parks Department	maryn@jeffersoncountywi.gov	920-674-7452
Kevin Wiesmann	Parks Supervisor	Jefferson County Parks Department	kevinw@jeffersoncountywi.gov	920-674-7540
Roger Kylmanen	Fair Park Supervisor	Jefferson County Fair Park	rogerk@jeffersoncountywi.gov	920-674-7479
Gerald Kokkonen	GIS & Land Use Specialist,	Jefferson County Land and Water Conservation	geraldk@jeffersoncountywi.gov	920-674-7117

* Land Information Council Members designated by the plus symbol

2 FOUNDATIONAL ELEMENTS

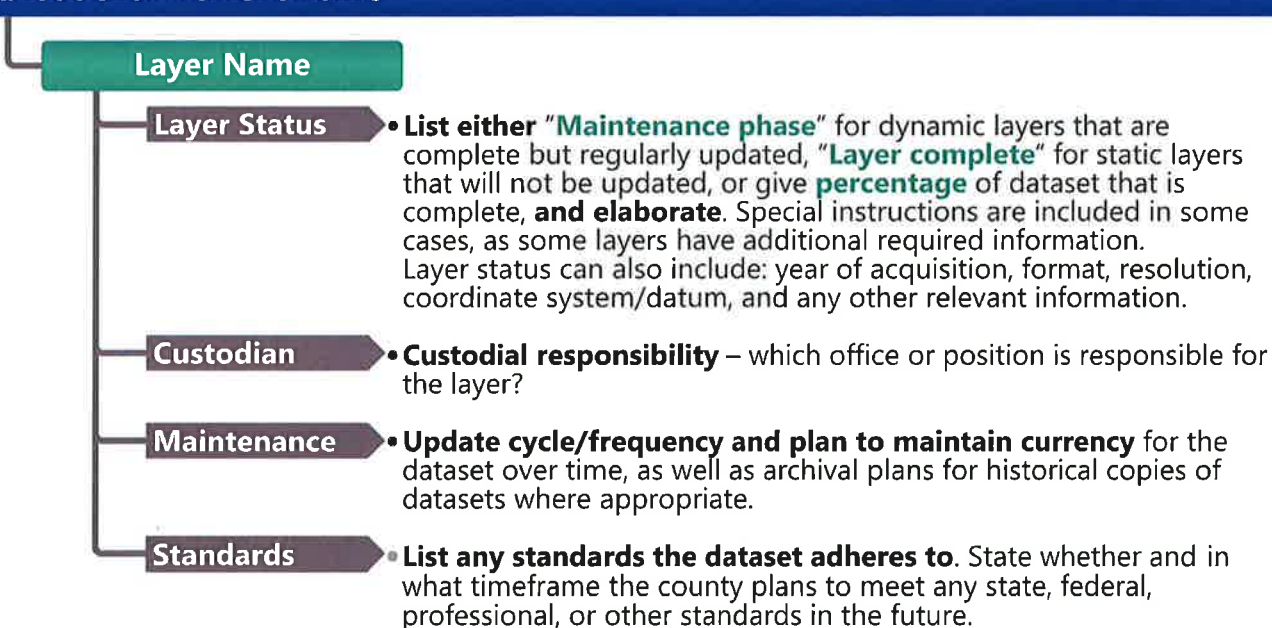
Counties must have a land information plan that addresses development of specific datasets or map layer groupings historically referred to as the WLIP Foundational Elements. Foundational Elements incorporate nationally-recognized "Framework Data" elements, the major map data themes that serve as the backbone required to conduct most mapping and geospatial analysis.

In the past, Foundational Elements were selected by the former Wisconsin Land Information Board under the guiding idea that program success is dependent upon a focus for program activities. Thus, this plan places priority on certain elements, which must be addressed in order for a County Land Information plan to be approved. Beyond the county's use for planning purposes, Foundational Element information is of value to state agencies and the WLIP to understand progress in completion and maintenance of these key map data layers.

FOUNDATIONAL ELEMENTS

PLSS
Parcel Mapping
LiDAR and Other Elevation Data
Orthoimagery
Address Points and Street Centerlines
Land Use
Zoning
Administrative Boundaries
Other Layers

Foundational Element Name



PLSS

Public Land Survey System Monuments

Layer Status

PLSS Layer Status	Status/Comments
Number of PLSS corners (selection, ¼, meander) set in original government survey that can be remonumented in your county	Approximately 2,100 Many of the meander corners are permanently inundated by surface water or otherwise inaccessible.
Number and percent of PLSS corners capable of being remonumented in your county that have been remonumented	1912 or 91%
Number and percent of remonumented PLSS corners with survey grade coordinates (see below for definition) <ul style="list-style-type: none"> SURVEY GRADE – coordinates collected under the direction of a Professional Land Surveyor, in a coordinate system allowed by 236.18(2), and obtained by means, methods and equipment capable of repeatable 2 centimeter or better precision SUB-METER – point precision of 1 meter or better APPROXIMATE – point precision within 5 meters or coordinates derived from public records or other relevant information 	Approximately 1015 - 53%
Number and percent of survey grade PLSS corners integrated into county digital parcel layer	Approximately 1015 - 53%
Number and percent of non-survey grade PLSS corners integrated into county digital parcel layer	Approximately 897 - 47%
Tie sheets available online?	Yes
Percentage of remonumented PLSS corners that have tie sheets available online (whether or not they have corresponding coordinate values)	91%
Percentage of remonumented PLSS corners that have tie sheets available online (whether or not they have corresponding coordinate values) and a corresponding URL path/hyperlink value in the PLSS geodatabase	91%
PLSS corners believed to be remonumented based on filed tie-sheets or surveys, but do not have coordinate values	0
Approximate number of PLSS corners believed to be lost or obliterated	189
Which system(s) for corner point identification/ numbering does the county employ (e.g., the Romportl point numbering system known as Wisconsin Corner Point Identification System, the BLM Point ID Standard, or other corner point ID system)?	The county uses a corner numbering system that is based on the rural address system grid. The system increases from the lowest number of 101 at the southeast corner of the county to the northwest corner of the county numbered 9797. Each section corner has a unique number.
Does the county contain any non-PLSS areas (e.g., river frontage long lots, French land claims, private claims, farm lots, French long lots, etc.) or any special situations regarding PLSS data for tribal lands?	No
Total number of PLSS corners along each bordering county	220
Number and percent of PLSS corners remonumented along each county boundary	220
Number and percent of remonumented PLSS corners along each county boundary with survey grade coordinates	Approximately 115 - 52%
In what ways does your county collaborate with or plan to collaborate with neighboring counties for PLSS updates on shared county borders?	Jefferson County has collaborated with all adjoining counties to maintain PLSS corners and will do so in the future

Custodian

- Jefferson County employs a full time Professional Land Surveyor to maintain the PLSS system monuments and records

Maintenance

- The goal of the County Surveyor is to perform maintenance on 100 PLSS corner monuments a year and add survey grade coordinates where needed.

Standards

- Statutory Standards for PLSS Corner Remonumentation.
- s. 59.74, Wis. Stats. Perpetuation of section corners, landmarks.
- s. 60.84, Wis. Stats. Monuments.
- ch. A-E 7.08, Wis. Admin. Code, U.S. public land survey monument record.
- ch. A-E 7.06, Wis. Admin. Code, Measurements.
- s. 236.15, Wis. Stats. Surveying requirement.
- SURVEY GRADE standard from Wisconsin County Surveyor's Association:
- **SURVEY GRADE** – coordinates collected under the direction of a Professional Land Surveyor, in a coordinate system allowed by 236.18(2), and obtained by means, methods and equipment capable of repeatable 2 centimeter or better precision
- **SUB-METER** – point precision of 1 meter or better
- **APPROXIMATE** – point precision within 5 meters or coordinates derived from public records or other relevant information

Other Geodetic Control and Control Networks

e.g., HARN, Height Mod., etc.

Layer Status

- The Jefferson County installed a High Precision Geodetic Control Network in 1993 as a tri-county project with Dodge and Rock Counties under the guidance of the Wisconsin Department of Transportation (WDOT). The countywide network consists of 47 stations and 47 azimuth stations. Digital data is reported in State Plane Coordinate System, NAD83(91). WDOT conducted a Height Modernization Project adding vertical orthometric height data to about half of these stations in 2003 stations. Additional vertical control monuments were installed along level lines throughout the county.

Custodian

- WDOT has assumed custodial responsibility for the maintenance of the 47 original network stations set in 1993 in addition to the WHMP vertical stations added in 2003. The county assumes custodial responsibility for the 47 azimuth stations.

Maintenance

- The County Surveyor performs brush cutting and signage when using control stations.

Standards

- Jefferson County adheres to Standards for Geodetic Reference Systems (FGDC/FGCC standards and specifications) and Wisconsin Statutes Chapter 236.18.

Parcel Mapping

Parcel Geometries

Layer Status

- The digital parcel maps are referenced to the PLSS and are suitable for assisting with land title boundary or survey line determination. However, the parcel maps are not a substitute for a legal land survey or a guarantee of title. Two conversion methodologies were used to develop the digital parcel maps from 1990 to 1995. Coordinate Geometry (COGO) input of surveys and subdivisions plats to construct the parcel boundaries over planimetric base maps was used in the Cities and Villages areas. Hand drawn maps were by digitizing and rectifying to the Public Land Survey Corner control for the rural areas. The parcel maps are compliant with WLIA Digital Parcel Mapping Standards. A parcel map improvement project to improve the accuracy of the rural parcel maps using surveys and PLSS coordinates should be completed in 2019.
- The parcel map data is stored and maintained in an ESRI Enterprise Geodatabase in State Plane Coordinate System, South Zone, NAD 83(91) projection.
- Parcel polygons are linked to the IBM db2 property ownership, assessment and tax database through a parcel number based on PLSS Township, Range, Section and 16th Section.

- ESRI Web App Builder for ArcGIS was implemented to provide access to parcel data. Symbiont Inc. implemented the site and did some customization of tools that are not yet available in the standard toolset for Web App Builder.
- Jefferson County is planning migration to the ESRI Parcel Fabric Data Model, and/or ESRI's Local Government Information Model in 2019 or 2020.

Parcel data can be accessed through the Land Records Search website. Property can be looked up by parcel number or address on the following site.

<https://jeffersoncountyapps.jeffersoncountywi.gov/jclrs/LIO/parcelResults.php>

Custodian

- The Jefferson County Land Information Office is the legal custodian of the parcel data.

Maintenance

- Parcel mapping updates done by the Cartographer on a weekly basis for new lots and other property changes recorded in the Register of Deeds Office.

Standards and Documentation

- Metadata for the spatial components of the parcel mapping have been compiled in Federal Geographic Data Committee (FGDC) compliant format.
- A Data Dictionary for all attributes linked to the Property Ownership, Assessment and Tax system data have a dictionary in human-readable form for all information required by s. 59.72(2)(a).

Assessment/Tax Roll Data

Layer Status

- Jefferson County maintains a custom Property Ownership, Assessment and Tax Roll data on a IBM DB2 database. The County purchased programs developed by Marathon County in 1995. Management Information System Analysts have made numerous custom up-grades and changes required by state law to these programs over the past 23 years.

Custodian

- Land Information Office and County Treasurer.
- The Land Information Office Real Property Lister (RPL) and Administrative Assistant maintain the property ownership and upload the assessment data from local assessors on a daily basis. Special assessments, charges and taxes are computed in the fall of each year from levy from information supplied by local clerks and treasurers.

Standards

- s70.09 Wis. Stats. Official real property lister; forms for officers
- s. 73.03(2a), Wis. Stats. Department of Revenue (DOR) – Powers and duties defined.
- Wisconsin Department of Revenue Property Assessment Manual and attendant DOR standards
- s. 59.72(2)(a), Wis. Stats. Act 20 attributes are present in this data.
- s. 59.72(2)(a), Wis. Stats. Select fields are downloaded from the Property Ownership, Assessment and Tax Roll data to the GIS.
- DOR XML format standard requested by DOR for assessment/tax roll data

Maintenance

- Maintenance of the Searchable Format standard: To maintain the Searchable Format standard, the County has developed a software program to export and convert fields from the assessment and tax database into a table that can be joined to the parcel mapping polygons.
- Searchable Format Workflow: The searchable format conversion program is run when all of the land splits, combinations and deletions have been completed by the Real Property Lister.

Non-Assessment/Tax Information Tied to Parcels

e.g., Permits, Easements, Non-Metallic Mining, Brownfields, Restrictive Covenants

Layer Status

- The County Planning and Zoning Department maintains an IBM DB2 database on Private Onsite Waste Systems, Land Use Permits, Rezoning, Variance, Conditional Use and Violation based on parcels in the Property Ownership, Assessment and Tax system. Scanned Images of these records are also stored in the County's FileDirector Document Imaging System. These records all have the potential to link to the parcel geodatabase via the parcel identification number.

Custodian

- The Planning and Zoning Department is the legal custodian of these records.

Maintenance

- The databases are updated after the process for the issuance has been completed and the file is complete

Standards

- Standard database maintenance procedures.

ROD Real Estate Document Indexing and Imaging

Layer Status

- **Grantor/Grantee Index.** Recorded Document reference information is stored in Fidar's Laredo system beginning with data from January of 1987. Scanned and indexed Grantee/Grantor books used before 1987 dating back to 1838 are stored in the FileDirector Document Imaging System.
- **Tract Index.** The Jefferson County Tract Index is based on the Public Land Survey System 16th section, government lot or recorded subdivision plat or certified survey map lot and block. The Tract Index started in 2009 currently contains document information back to 2005. The tract includes legal descriptions and is parcel PIN-based for documents from 1997 to current. Documents previous to 1997 are based on legal description only; Fidar does offer a program that will create the pin number for documents previous to the 1997 parcel ordinance based on the legal description for a fee that will be requested in the next Land Records Modernization budget. All documents with a legal description are included in the tract index.
- **Imaging.** Recorded documents are stored in the Fidar Avid Imaging System. All recorded documents dating back to 1838 (the first recordings) are contained in the imaging system. They are searchable by document number or volume and page where early recordings did not use document numbers, tract and parcel identification numbers where applicable.
- **ROD Recorded Documents Software/App and Vendor name.** Jefferson County utilizes Fidar Technologies software:
 - AVID – county recording software
 - Laredo – subscription based software provides index and images
 - Tapestry – online single access software
 - Monarch – subscription based software provides electronic data, used by title plants and the county to transfer data to the land information system

Custodian

- County Register of Deeds

Maintenance

- The Register of Deeds office scans indexes and receives paper and electronic recorded documents daily. All images are backed up monthly onto a portable hard drive.

Standards

- s. 59.43, Wis. Stats. Register of Deeds; duties, fees, deputies.
- ch. 706, Wis. Stats. Conveyances of real property; Recording; Titles.

LiDAR and Other Elevation Data

LiDAR

Layer Status

- Most recent acquisition year: 2012
- **Accuracy:** Survey grade elevations were taken in the project area in five different types of land cover. These elevations were compared with the LiDAR terrain elevation. Root Mean Square Error (RMSE) results: Overall - 0.4824.
- **Post spacing:** The horizontal spacing is a minimum of 1 point per square meter.
- **Contractor's standard, etc.:** The dataset was developed to generate contours meeting the National Map Accuracy Standards for the scale 1:600. Test points will fall on the correct side of the contours developed from this DTM for ninety percent of all points.
- **Next planned acquisition year:** 2019 or 2020 dependent on funding.

Custodian

- Jefferson County

Maintenance

- Future acquisition

Standards

- ASPRS class II Standards.

LiDAR Derivatives

e.g., Bare-Earth Digital Terrain Model (DTM), Bare-Earth Elevation Contours, Bare-Earth Digital Elevation Model (DEM), Digital Surface Model (DSM), etc.

Layer Status

- Digital elevation model from 2012 LiDAR project
- 2 foot contours from 2012 LiDAR project
- Bare earth points from 2012 LiDAR project
- Full LiDAR point cloud from 2012 LiDAR project

Custodian

- Jefferson County

Maintenance

- Update frequency 7 to 10 years

Standards

- The project was undertaken to create a digital terrain model of Jefferson County capable of mapping 2 foot contour intervals

Other Types of Elevation Data

Layer Status

- 2004 LiDAR for the north half of the county
- 2005 for the south half of the county along with 2 foot contours and Triangular Irregular Network (TIN)

Custodian

- Land Information Office

Maintenance

- Update frequency 8 to 10 years

Standards

- The project was undertaken to create a digital terrain model of Jefferson County capable of mapping 2 foot contour intervals

Orthoimagery

Orthoimagery

Layer Status

- Most recent acquisition year: 2015
- **Resolution:** 6 inch pixel
- Next planned acquisition year: 2020
- WROC participation in 2020: Unsure about participation

Custodian

- Land Information Office

Maintenance

- Update Frequency 4 to 5 years

Standards

- American Society for Photogrammetry and Remote Sensing Accuracy Standards (ASPRS) for Class 1, large scale maps at 1" = 100'.

Historic Orthoimagery

Layer Status

- 2018 Color 6 inch pixel developed areas and 9 inch pixel rural areas
- 2015 Color 6 inch pixel
- 2010 Color 1 foot pixel,
- 2005 Black and White 6 inch pixel for South half of County
- 2005 Black and White 6 inch pixel for North half of County,
- 2000 Black and White 1 foot pixel
- 1996 Black and White 1 foot pixel

Custodian

- Land Information Office

Maintenance

- Static

Standards

- 1996, 2000 and 2010 - ASPRS standards for 1 inch = 200 feet mapping scale.
- 2004, 2005 and 2015 ASPRS for Class 1, large scale maps at 1 inch = 100 feet
- 2018 Not certified

Other Types of Imagery

e.g., Oblique Imagery, Satellite Imagery, Infra-red, etc.

Layer Status

- April 2088 Oblique Pictometry 625 community (9 inch pixel) and sectors county-wide and 114 neighborhood (6 Inch pixel) sectors in developed areas of the county.
- April 2008 Oblique Pictometry 625 community (12 inch pixel) and sectors county-wide and 107 neighborhood (5 Inch pixel) sectors in developed areas of the county.

Custodian

- Land Informaiton Office

Maintenance

- 5 to 10 year intervals

Standards

- Proprietary - Pictometry International Incorporated

Address Points and Street Centerlines

Address Point Data

Layer Status

- An address point layer for each principal structure is in the enterprise geodatabase. The address points are joined to the address database maintain in the Property Ownership, Assessment and Tax system by parcel identification number and suffix to accommodate parcels with multiple addresses.

Custodian

- Land Information Office

Maintenance

- Weekly

Standards

- US Postal Addressing Standards Publication 28

Building Footprints

Layer Status

- Building Footprints were compiled in 1994 for cities of Fort Atkinson, Jefferson, Lake Mills, and Waterloo and the Villages of Johnson Creek, Palmyra and Sullivan.

Custodian

- Land Information Office

Maintenance

- Next LiDAR extraction from point cloud

Standards

- Manual of Photogrammetry 4th Addition as published by the American Society of Photogrammetry and Remote Sensing Horizontal plus or minus 2.5 feet

Other Types of Address Information

e.g., Address Ranges

Layer Status

- Address points for Modular Home Park Units

Custodian

- Land Information Office

Maintenance

- Minimal Changes

Standards

- US Postal Addressing Standards Publication 28

Street Centerlines

Layer Status

- Street Centerlines for all public roads and private roads with addressing such as modular home parks

Custodian

- Land Information Office

Maintenance

- As needed

Standards

- US Postal Addressing Standards Publication 28

Rights of Way

Layer Status

- Ingress and egress right of ways are contained in the parcel database

Custodian

- Land Information Office

Maintenance

- As need

Standards

- Alignment with parcel geometries

Trails

e.g., Recreational Trails

Layer Status

- Off Road Bike and Pedestrian Trails and suggested on road bike routes

Custodian

- Land Information Office

Maintenance

- As needed

Standards

- Sufficient spatial accuracy for general guide maps and brochures purposes

Land Use

Current Land Use

Layer Status

- 2008 Land Use Inventory for 16 Townships in Jefferson County

Custodian

- Land Information Office

Maintenance

- Update Frequency is 8 to 10 years as needed for general planning purposes in conjunction with updated orthoimagery. Update of the Land Use Inventory will begin in 2018.

Standards

- American Planning Association Land Based Classification Standard

Future Land Use

Layer Status

- Urban Service Areas, Limited Urban Service Area, 15 Year Growth Areas and Farmland Preservation Areas

Custodian

- Land Information Office

Maintenance

- Updates with the Comprehensive and Farmland Preservation Plans

Standards

- s. 66.1001, Wis. Stats. Comprehensive planning.
- Land Use and Farmland Preservation Plan

Zoning

County General Zoning

Layer Status

- The County does maintain a GIS representation of county general zoning boundaries - all 16 Towns

Custodian

- Planning and Zoning Department

Maintenance

- Daily – by and large county re-zonings take effect when the Certified Survey Map is recorded in the Register of Deeds

Standards

- Jefferson County Zoning Ordinance No. 11

Shoreland Zoning

Layer Status

- The County does maintain a GIS representation of county shoreland zoning boundaries

Farmland Preservation Zoning

Layer Status

- The County does maintain a GIS representation of County Farmland Preservation Zoning boundaries
- Year of certification:

Custodian

- Planning and Zoning Department

Maintenance

- Weekly

Standards

- Farmland Preservation Plan

Floodplain Zoning

Layer Status

- The County does maintain GIS representation of floodplain zoning boundaries.
- The County's Floodplain Zoning GIS data is the same as/identical to the FEMA map 2015
- Limited Boundary Adjustment/Fill in Flood Fringe 2015
- Letters of Maps Amendments
- Flood Insurance Study Reach Elevations 2015
- Flood Storage Areas 2015

Custodian

- FEMA and Planning and Zoning

Maintenance

- DNR, FEMA and when LOMAs are received from FEMA

Standards

- FEMA Floodplain Mapping Standards

Airport Protection

Layer Status

- None mapped

Municipal Zoning Information Maintained by the County

e.g., Town, City and Village, Shoreland, Floodplain, Airport Protection, Extra-Territorial, Temporary Zoning for Annexed Territory, and/or Zoning Pursuant to a Cooperative Plan

Layer Status

- Municipal Zoning is maintained for the Villages of Johnson Creek, Palmyra and Sullivan

Custodian

- Village

Maintenance

- Yearly or when new maps are needed

Standards

- Municipal Ordinance

Administrative Boundaries

Civil Division Boundaries

e.g., Towns, City, Villages, etc.

Layer Status

- Municipal Boundaries county-wide

Custodian

- Land Information Office

Maintenance

- Updated when annexations or detachments are recorded

Standards

- Spatial alignment to parcel layer

School Districts

Layer Status

- Progress toward completion/maintenance phase: Complete
- Relation to parcels: Spatial
- Attributes linked to parcels: Boundaries only

Custodian

- Land Information Office

Maintenance

- Boundary changes are updated when notified by the Wisconsin Department of Public Instruction

Standards

- Spatial alignment to parcel layer

Election Boundaries

e.g., Voting Districts, Precincts, Wards, Polling Places, etc.

Layer Status

- Voting Wards - complete
- Supervisory District Boundaries - complete

Custodian

- Land Information Office

Maintenance

- Adjustments to when annexations and detachments are recorded

Standards

- Spatial alignment to parcel layer

Utility Districts

e.g., Water, Sanitary, Electric, etc.

Layer Status

- Sanitary Districts Complete

Custodian

- Land Information Office

Maintenance

- As changes are recorded

Standards

- Spatial alignment to parcel layer

Public Safety

e.g., Fire/Police Districts, Emergency Service Districts, 911 Call Center Service Areas, Public Safety Answering Points, Healthcare Facilities

Layer Status

- Fire, EMS and Police Districts – complete
- Police and Fire Stations - Complete

Custodian

- Land Information Office

Maintenance

- Updates as notified by Municipalities

Standards

- Spatial alignment with parcel data

Lake Districts

Layer Status

- Lake Districts - Complete

Custodian

- Land Information Office

Maintenance

- As amendments are recorded

Standards

- Spatial alignment with parcel data

Native American Lands

Layer Status

- none

Other Administrative Districts

e.g., County Forest Land, Parks/Open Space, etc.

Layer Status

- Light Districts - Complete

Custodian

- Land Information Office

Maintenance

- Static

Standards

- Alignment with parcel data

Other Layers

Hydrography Maintained by County or Value-Added

e.g., Hydrography maintained separately from DNR or value-added, such as adjusted to orthos

Layer Status

- Hydrography - extracted surface water break lines from 2004/2005 LiDAR project

Custodian

- Land Information Office

Maintenance

- Static

Standards

- National Map Accuracy Standards for the scale 1:600

Cell Phone Towers

Layer Status

- Cell towers - complete

Custodian

- Land Information Office

Maintenance

- As notified by Planning and Zoning

Standards

- General location based on orthoimagery

Bridges and Culverts

Layer Status

- County Highway – Complete
- County Highway - Bridges

Custodian

- Highway Department

Maintenance

- Updated during inspections

Standards

- Standard database procedures, sub-meter positional accuracy

Land Information – Other Layers

e.g., Pipelines, Railroads, Non-Metallic Mining, Sinkholes, Manure Storage Facilities, etc.

Land Information - Layer Status

- Railroads are mapped in the parcel layer and in a separate standalone feature class

Custodian

- Land Information Office

Maintenance

- Updates as tracks are changes

Standards

- Spatial alignment to parcel data

Highway Department - Other Layers

Layer Status – Facilities on County Trunk Highways

- Maintenance Sections,
- Signs
- Invasive Species Spraying
- Beam Guard
- Road Centerlines
- Pavement Age & PASER Rating
- Segment ID
- Pavement & Shoulder Width
- Advisory Curves
- Speed Limits
- Passing zones
- Utility Permits
- Driveway/Work in Right-of-way Permits
- Retaining Walls

Custodian

- County Highway Department

Maintenance

- Features are updated after reconstruction or maintenance
- Invasive Species, signs, culverts, advisory Curves, beam guard, passing zones, retaining walls, pavement, shoulder width and speed limits are updated with mobile data collection

Standards

- Standard database procedures, sub-meter positional accuracy for most features

3 LAND INFORMATION SYSTEM

The WLIP seeks to enable Land Information Systems that are both modernized and integrated. Integration entails the coordination of land records to ensure that land information can be shared, distributed, and used within and between government at all levels, the private sector, and citizens.

One integration requirement is listed under s. 16.967(7)(a)(1), Wis. Stats., which states that counties may apply for grants for:

- 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; tax and assessment information; soil surveys, if available; wetlands identified by the department of natural resources; a modern geodetic reference system; current zoning restrictions; and restrictive covenants.

This chapter describes the design of the County Land Information System, with focus on how data related to land features and data describing land rights are integrated and made publicly available.

Current Land Information System

Diagram of County Land Information System

The following entities have major roles in the use and management of land information:

- Residents and Businesses
- Management Information Systems
- Land Information Office
- Register of Deeds
- County Treasurer
- Sheriff/Emergency Management
- Planning and Zoning
- Municipalities
- Local Assessors

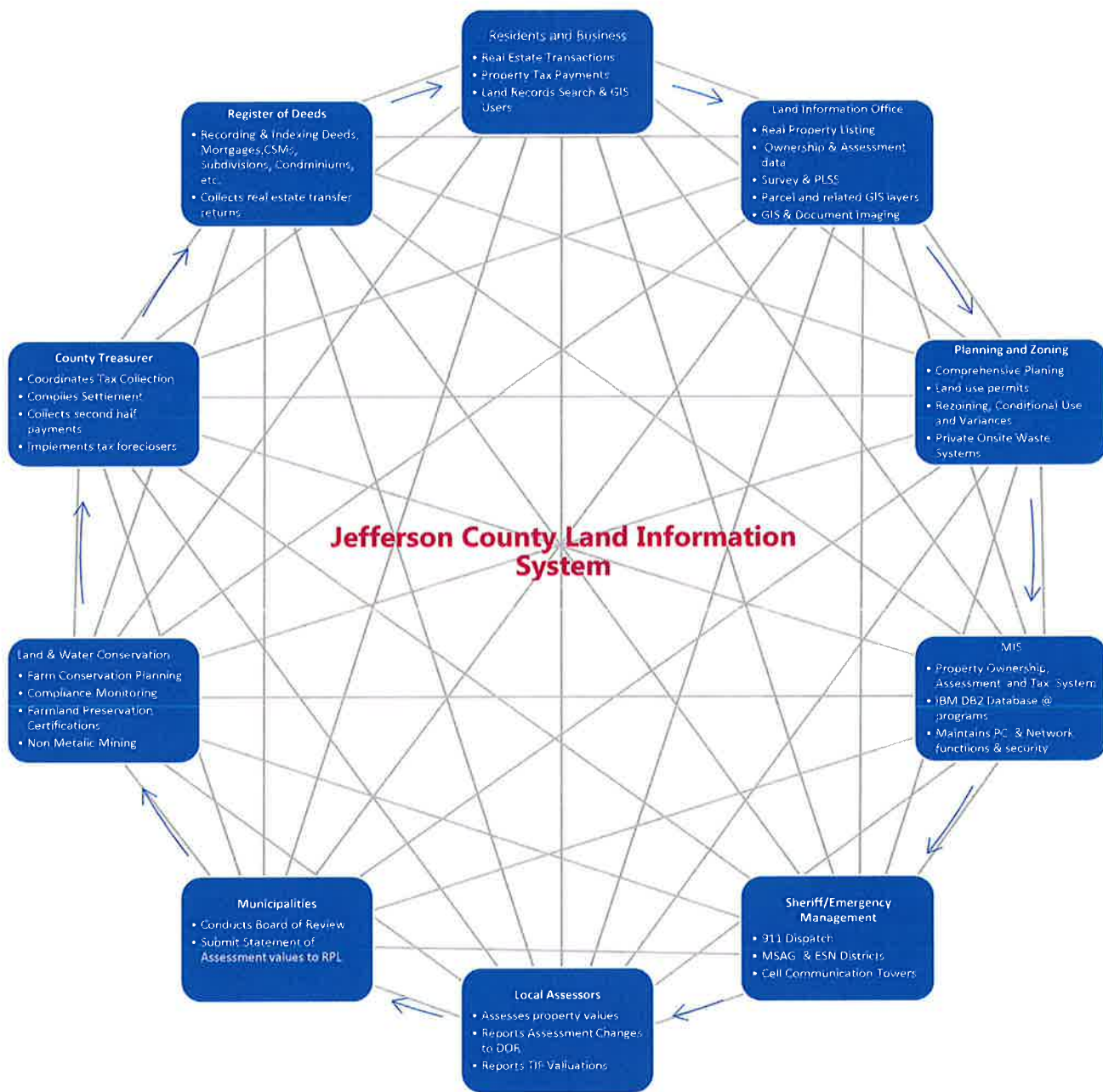


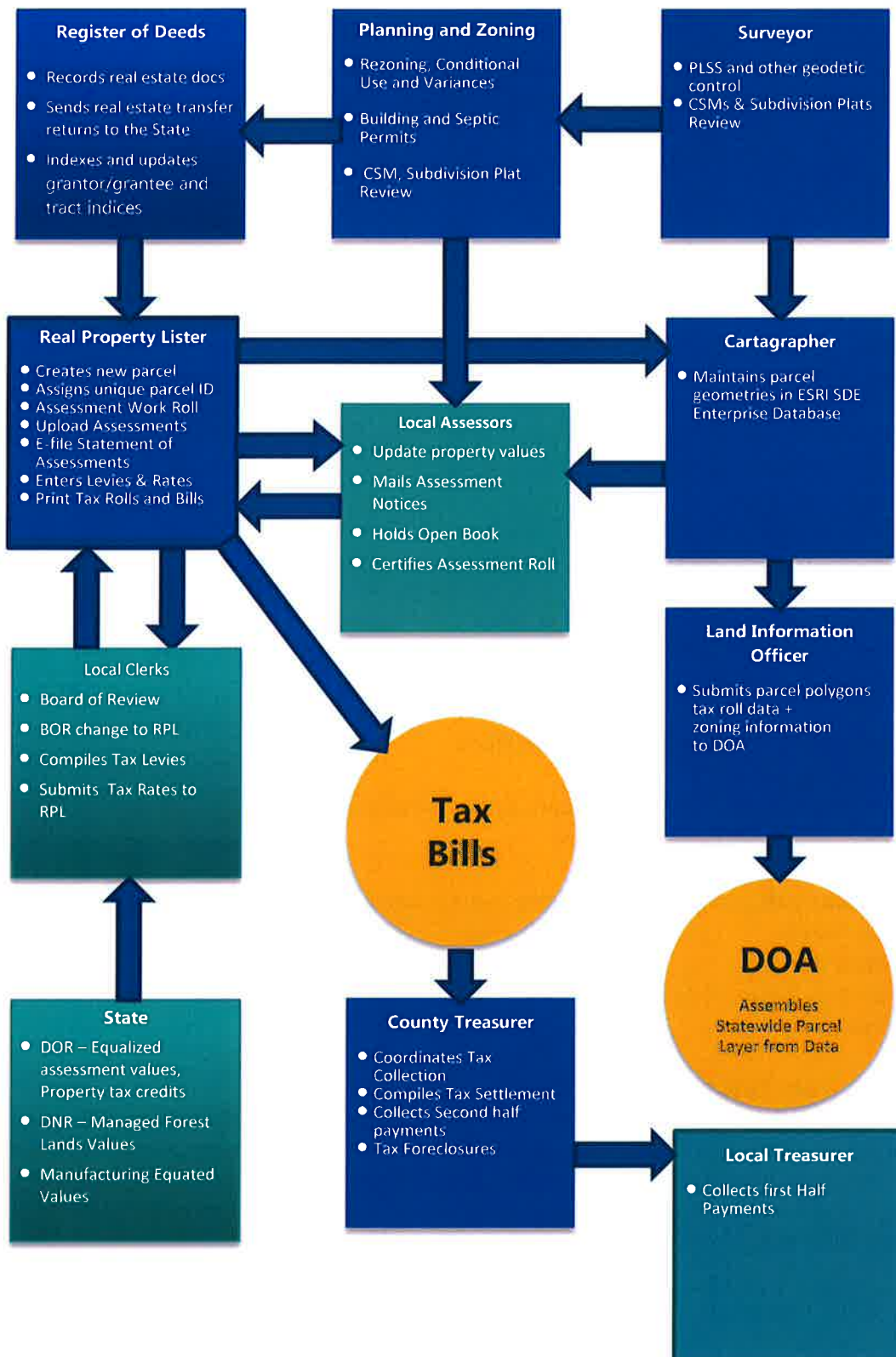
Figure 1. Jefferson County Land Information System

County Parcel Data Workflow Diagram

The workflow diagram for GIS parcel and property assessment and tax workflow depicts:

- Major components of parcel data, referenced by s. 59.72(2)(a), including:
- parcel polygons, 2) tax roll data, and 3) zoning information
- Integration of parcel polygons with other data/attributes, if applicable
- Departments/offices/staff involved with the creation and maintenance of parcel data

Figure 2. GIS Parcel and Property Assessment and Tax Workflow



Technology Architecture and Database Design

This section refers to the hardware, software, and systems that the county uses to develop and operate computer systems and communication networks for the transmission of land information data.

Hardware

- The County Management Information Systems (MIS) Department maintains HP servers running in a virtual windows environment process GIS, Fidar Register of Deeds, FileDirector and public access websites. IBMi hardware is used to process property assessment, tax and land use permitting programs. A Nimble storage area network (SAN) is used to store data in multiple locations. Unitrends backup hardware is utilized as a strategy for continuity of operations. All major county facilities are connected through a fiber optics network. A large format scanner/copier/printer is located in the Land Information office. Two mid-size plotters are located in Land and Water Conservation.

Software

- ESRI Desktop, ArcGIS Server, ArcGIS Web App Builder, ArcGIS online software and SQL databases are the main software components county GIS systems. Fidar Technologies software AVID, Laredo and Tapestry are used in the Register of Deeds Office. FileDirector software is used for storage of larger volume document outside of the Register of Deeds recorded documents.

Website Development/Hosting

- The Land Records Search site for general public access to property ownership, assessment, permits, petitions, and taxes was developed by MIS Systems Analysts and is hosted by the county.
- The county GIS site was developed in ArcGIS Web App Builder by a contracting with Symbiont as GIS consultant out of West Allis Wisconsin. The website is hosted and maintained by the county GIS staff.

Metadata and Data Dictionary Practices

Metadata Creation

- **Metadata creation and maintenance process:** Metadata has been compiled on most major layers and is updated as time allows.

Metadata Software

- **Metadata software:** Metadata for map layers is created with ArcCatalog and stored within the geodatabase

Metadata Policy

- **Metadata Policy:** Metadata has been compiled on most major layers and is updated as time allows.

Municipal Data Integration Process

- Local assessors submit assessed values for uploading to the IBM DB2 database for municipality. Assessors provide summaries for review and verification of the upload process. Tax bill information is exported to local Treasurer for first half collection. First half payments are uploaded to the county system for settlement and collection of second half payment. The City of Watertown is the only municipality that collects all payments through the end of July.

Public Access and Website Information

Public Access and Website Information (URLs)

Public Access and Website Information

GIS Webmapping Application(s)

Link - URL

<https://jeffarcgis.jeffersoncountywi.gov/apps/PublicGISmr/>

GIS Download Link - URL

No download site available. Data requests can be made to the Land Information Office

Real Property Lister Link - URL

https://jeffersoncountyapps.jeffersoncountywi.gov/jclrs/LIO/LIO_Search.php

Register of Deeds Link - URL

<https://tapestry.fidlar.com/Tapestry2/>

Single Landing Page/Portal for All Land Records Data

URL

http://www.jeffersoncountywi.gov/departments/land_information/land_records_online.php

Data Sharing

Data Availability to Public

Data Sharing Policy

- The Land Information Office has a fee schedule for making copies of GIS data and other custom services.

Open Records Compliance

- The fee and service charges are consistent with the Wisconsin's Open Records Law

Data Sharing Restrictions and Government-to-Government Data Sharing

Data Sharing Restrictions

- Jefferson County does not restrict use or license data provided under the fee schedule

Government-to-Government Data Sharing

- Jefferson County has a standing policy of sharing data with other government entities and some non-profits at no charge. Parties receiving this data are required to implement a data sharing agreement that puts some restrictions on the redistribution of data provided under fee waivers.

Training and Education

- Jefferson County is a group member of the Wisconsin Land Information Association and sends three to five staff to the annual conference each year. County Departments are active members of educational organizations such as Land Information Officers Network, Register of Deed Association, County Code Administrators, Wisconsin Real Property Lister Association, County Land Water Conservationist Association and County Treasurer Association.

4 CURRENT & FUTURE PROJECTS

This chapter lists the current and future Land Information Projects the county is currently undertaking or intends to pursue over its planning horizon. A project is defined as a temporary effort that is carefully planned to achieve a particular aim. Projects can be thought of as the *means* to achieving the County's mission for its Land Information System.

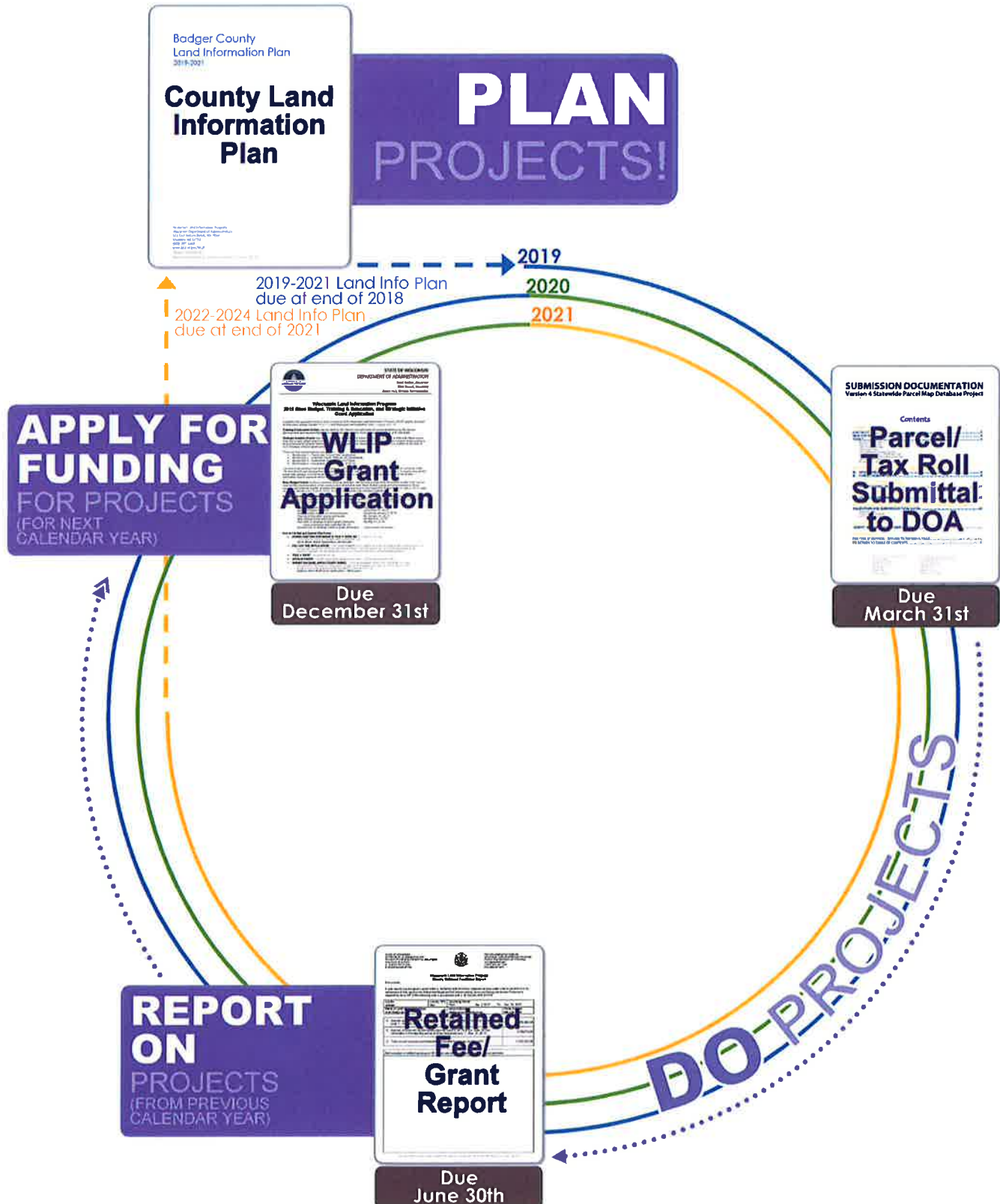


Figure 3. The WLIP Land Information Plan/Grant Project Cycle

Project #1: Rural Parcel Map Improvement

Project Description/Goal

- Use new property surveys subdivision plats and deed information to improve the spatial accuracy of rural parcel mapping and related map layers. Three consecutive strategic initiative grants have funded contracting.
- Land Info Spending Category: Parcel Mapping

Business Drivers

- Improved spatial accuracy of rural parcel maps will provide clearer picture of property ownership

Objectives/Measure of Success

- Current maps sometimes cause some false impressions of property boundaries for some public users with limited knowledge of their accuracy. A successful project provides more accurate information for assessors and end users. New survey and lots will be easier to add in more accurately mapped areas.

Project Timeframes

- 2019

Responsible Parties

- Land Information Office

Estimated Budget Information

- \$20,000 Budgeted for 2019 Contract - completion 1900 remaining parcels to be done in-house

Project #2: Back indexing of documents in Register of Deeds

Project Description/Goal

- Back index recorded documents in grantor/grantee and tract index back to 1955. The computer grantor/grantee index has data going back to 1987. The Register of Deeds Office has been tract indexing prior years as time allows and have completed back to 2005.
- Land Info Spending Category: Other Parcel Work

Business Drivers

- Title searches are required to go back 30 or 60 years in some cases
Searches through manual indexes are time consuming

Objectives/Measure of Success

- Complete Indexing of recorded documents back 1955

Project Timeframes

- 2018, 2019 and beyond

Responsible Parties

- Indexing Vendor and Register of Deeds; currently contracted with On Q Solutions to back index an additional 230,000 documents. The Register of Deeds staff is working on back indexing the miscellaneous and right of way books to assist in finding easements.
- Estimated Budget Information

Estimated Budget Information

- \$114,841 to index 229682 documents at \$0.50 each – dependent on other project demands

Project #3: Develop Activity Focused GIS Websites

Project Description/Goal

- Develop activity focused GIS websites to provide easily accessible information such as outdoor recreation, land and water conservation. These more focused GIS Websites would contain

concentrated subject matter that brings information to the end user in a way that is designed to display needs based information

- **Land Info Spending Category:** Website Development/Hosting Services

Business Drivers

- Provides for a better experience in parks, trails and outdoor recreation. Data is coalesced into a platform where end users can easily find what they need. Affords the opportunity to deliver additional information that may not be noticed in the general GIS Public Viewer

Objectives/Measure of Success

- Deliver information that is fast easy to use and mobile

Project Timeframes

- 2019

Responsible Parties

- Land Information, Parks and Land and Water Conservation Departments.

Estimated Budget Information

- \$0 – In-house GIS technicians current software

Project #4: Mobile GIS and Data Collection

Project Description/Goal

- Expand Utilization of mobile GPS/GIS technology to access, collect and maintain land information during field operations. Eliminate duplication by updating databases directly from the field with phones or tablets. Currently information for many field inspections are handwritten and entered on return to the office. This technology would be used by Planning and Zoning for documenting inspections of private onsite waste treatment systems and investigations of ordinance violations, Land and Water Conservation for compliance inspections on farms and mines and Parks Department for facility management in parks and flood mitigation properties.
- **Land Info Spending Category:** Hardware and Software

Business Drivers

- Mobile access will reduce time needed for printing and organizing maps and documents. Database updates from the field will eliminate the need for some manual forms (less paper).

Objectives/Measure of Success

- Reduced hand written data collection and improved access to records. Reduced preparation time for field operations

Project Timeframes

- 2020

Responsible Parties

- Land Information, Land and Water Conservation, Planning and Zoning, Parks Departments

Estimated Budget Information

- \$3,000 in software licensing and \$1,500 in mobile devices

Project #5: GIS Analysis of Human Services Client and Incident locations

Project Description/Goal

- Implement GIS analysis to improve county resource planning and deployment of county operations. Human Services Department Clients or Incidents will be geocoded to create a spatial location for analysis
- **Land Info Spending Category:** Other Customer Based GIS analysis

Business Drivers

- The geocoded data will provide a better awareness of the distribution of clients and other incidents. Improve management of recourses by proximity grouping field service assignments

Objectives/Measure of Success

- Human Service Department managers gain a better understanding of client and incident distribution resulting in improved management and deployment of community services

Project Timeframes

- 2019

Responsible Parties

- Human Services, MIS and Land Information

Estimated Budget Information

- \$0 – In-house GIS technicians, analysts, software and hardware.

Project #6: Convert Parcel Map Data to ESRI Parcel Fabric Data Model

Project Description/Goal

- Convert parcel map data to ESRI Parcel Fabric Data Model

Business Drivers

- The ESRI Parcel Fabric Data Model will increase efficiencies in parcel data maintenance and store archival parcel data for looking backward in time at parcel divisions, combination and annexations.

Objectives/Measure of Success

- Decrease time needed for parcel maintenance and preservation of historical parcel data.

Project Timeframes

- 2019

Responsible Parties

- Land Information Office

Estimated Budget Information

- Consultant assistance with conversion \$22,000

Project #7: Update Land Use Inventory

Project Description/Goal

- Update the 2008 Land Use Inventory using 2018 oblique imagery and orthoimagery

Business Drivers

- Determine land use changes and patterns for update of County Comprehensive Land Use and Farmland Preservation Plan

Objectives/Measure of Success

- Compare land use classification to 2018 orthoimagery create new updated inventory

Project Timeframes

- 2019

Responsible Parties

- Planning and Zoning Department and Land Information Office

Estimated Budget Information

- \$4,400 contract with UW Whitewater Geography Department

Project #8: Update County Terrain Model with LiDAR

Project Description/Goal

- LiDAR flight and data processing to update the 2012 digital terrain model
- **Land Info Spending Category:** LiDAR

Business Drivers

- The County digital terrain model is used for numerous land information related functions including storm water management, flood mitigation, land development and land use planning, permitting and many others. Developing a terrain model that support mapping 1 foot interval contours would improve accuracy of operations that rely on this data. Higher density LiDAR will allow building outline extraction based point classification.

Objectives/Measure of Success

- Increased Point density from 1 point per meter to 2 points per meter. The increase in density will provide for creating 1 foot contours and building footprint extraction.

Project Timeframes

- 2019-2021 dependent on grant funding

Responsible Parties

- Land Information Office

Estimated Budget Information

- 3DEP USGS Grant \$67,000, grant match for base product \$67,000 and base product enhancements to contours and hydro break lines \$24,000 contracted costs

Project #9: Map County Park Assets for Facility Management

Project Description/Goal

- Map county park facilities including shelters, paved and unpaved trails, bike route signs, kiosks, park signage, benches and managed plantings. Categorize facility condition, projected life cycle or maintenance schedule. Develop a mobile based system for facility inspections and work order assignments. Develop a system to analyze future park facility maintenance and planning.
- Land Info Spending Category: Park Facility Management

Business Drivers

- Jefferson County partners and donors have made significant investment in parks facilities. A GIS park facility inventory would facilitate paperless system for assignment of work order, facility inspections and future maintenance or replacement needs.

Objectives/Measure of Success

- Map and categorize all county park facilities

Project Timeframes

- 2019 - 2021

Responsible Parties

- Parks Department and Land Information Office

Estimated Budget Information

- \$6,000 part time of summer help salary

Project #10: Mobile Reporting of Septic Tank Pumping Maintenance

Project Description/Goal

- Develop a system for septic tank pumping service providers to report pumping maintenance to the county through a mobile device that is uploaded to the county GIS and IBMi DB2 database.
- **Land Info Spending Category:** Mobile Reporting of Septic Tank Pumping Maintenance

Business Drivers

- A mobile reporting system would eliminate the need for septic tank pumping service providers to fill out paper forms and mail to Planning and Zoning Department. The system would also save staff time for entering report data database that is used to track septic tank pumping compliance.

Objectives/Measure of Success

- Elimination of paper forms and database entry by Planning and Zoning Staff

Project Timeframes

- 2019

Responsible Parties

- Planning and Zoning Department and Land Information

Estimated Budget Information

- \$3,000 in software licensing – In-house technicians, software and hardware

Project #11: Extract Building Footprints County-wide

Project Description/Goal

- Update building footprints for based on new LiDAR point cloud.
- **Land Info Spending Category:** Other Build footprints mapping

Business Drivers

- Mapping building footprints county-wide would support a number of county and municipal functions. Building footprints would greatly enhance GIS user experience in being able to visualize where structures and without reference to aerial imagery. Building footprints would also create a historical snapshot of the presence and size structures on the landscape.

Objectives/Measure of Success

- Collect building footprints county-wide using LiDAR point classifications

Project Timeframes

- 2020 dependent on LiDAR Update Project

Responsible Parties

- Land Information Office

Estimated Budget Information

- \$11,000 Contracted costs

Project # 12: Link Parcel Identification Number to Legal Description and Address in Register of Deed system

Project Description/Goal

- Implement Fidar Pintegrity to link Parcel Identification Number to legal description and address in Register of Deeds system

Business Drivers

- Increase searching capabilities

Objectives/Measure of Success

- Provide more concise searches by Parcel Identification Number or address in Register of Deeds system

Project Timeframes

- 2020 or 2021

Responsible Parties

- Register of Deeds and Land Information Office

Estimated Budget Information

- \$14,000 Fidar Technologies implementation

Completed Projects 2016 - 2018

- GIS Public Viewer Upgrade for Mobile Users
- Historical Parcel Map Scanning
- Expand Storage Space Land Information Data
- Implement latest GIS and SQL Server software versions
- Mobile GIS and Data Collection – partially completed
- Scan Highway Construction Plans
- GIS Structures Footprint Layer in Floodplain
- Scan Damage Assessment Records
- Implement an Unmanned Aircraft Systems Program
- Integrate Pictometry image data into internal ArcGIS server application
- Scan Drainage District records for active and inactive drains for permanent records retention
- Complete layer for all permanent agriculture or conservation easements
- Develop a Traffic Code GIS speed limits and for no passing zones on county highways

Estimated Budget Information (All Projects)

Estimated Budget Information

Project Title	Item	Unit Cost/Cost	Land Info Plan	Project Total
			Citations Page # or section ref.	
1) Rural Parcel Map Improvement	2161 parcels remapped	\$9.25		\$20,000
2) Back indexing of documents in Register of Deeds	Index 229,682 documents	\$50		\$114,841
3) Develop Activity Focused GIS Websites	In-house GIS technicians	\$0		\$0
4) Mobile GIS and Data Collection	6 Arcgis Online level 2 licenses	\$500		\$6,000
	6 Tablets	\$300		\$800
5) GIS Analysis of Human Services Client and Incident locations	In-house GIS technicians, analysts, software and hardware	\$0		\$0
6) Convert Parcel Map Data to ESRI Parcel Fabric Data Model	Consultant Costs	\$22,000		\$22,000
7) Update Land Use Inventory	Contract with UW Whitewater Geography Department	\$44,00		\$4,400
8) Update County Terrain Model with LiDAR	Consultant Contract	\$158,000		\$158,000
9) Map County Park Assets for Facility Management	Part time of summer help salary			\$6,000
10) Mobile Reporting of Septic Tank Pumping Maintenance	5 Arcgis Online licenses	\$500		\$2500
11) Extract Building Footprints County-wide	Consultant Costs	\$14,000		\$11,000
12) Link Parcel Identification Number to Legal Description in Register of Deed system.	Fildar Pintegrity implementation	\$14,000		\$14,000
GRAND TOTAL				\$359,541

Note. These estimates are provided for planning purposes only. Budget is subject to change.

Ongoing Costs Not Associated with a Specific Project

- The proposed 2019 Land information training and education budget is \$4,700
- The Proposed 2019 land information allocation for FileDirector Document Imaging Software and hardware support is \$13,100
- The Proposed 2019 Annual Support for ESRI GIS software is \$19,600
- Miscellaneous office supplies, printing and postage \$400
- Total Estimated ongoing costs \$37,800 for 2019

Other Long Term Projects Identified by County Departments

Economic Development Consortium

- Collaborate with the cities and villages to make Zoning Map and Ordinance information easily accessible in a consistent manner throughout the county

Emergency Management

- Develop an interactive web portal for maintaining and displaying the geospatial information in the All Hazards Mitigation Plan and computation of population estimates for hazardous materials (HAZMAT) site planning
- Develop a GIS road closer application to track and alert 911 dispatch, emergency responders and the general public of closers and alternative routes. Utilize recently completed inundation mapping for some areas along Lake Koshkonong and the Rock River
- Develop flood inundation mapping based on stream gauge on Crawfish River near Milford
- Develop GIS projects, routines and recourses that provide Emergency Operations Center (EOC) personnel with geospatial information that provides a clear situational awareness
- Implement routines for integrating critical and special facilities GIS data in the Computer-Aided Management of Emergency Operations (CAMEO) program, Aerial Locations of Hazardous Atmospheres (ALOHA) program and the All Hazards Mitigation Plan
- Create a GIS layer for major pipelines in the county
- Implement an interactive system for updating the flood hazard cost estimates in the All Hazards Mitigation Plan by integrating previous damage assessment data with the 2015 Flood Insurance Rate Maps (FIRM) and the upcoming floodplain restudy of the Rock River

Fair Park

- Scan and Index Fair Park Architectural and Development Plans

Department: Highway

- Develop a GIS inventory of storm water, curb and gutter and lighting facilities
- Implement GIS traffic safety analysis that incorporates the state accident database with the accident GIS layer.
- Incorporate town road record index maps into GIS mapping system with road segment links to town road resolution documents
- Develop GIS traffic studies and functional classifications layer
- Develop a rustic roads GIS layer

Human Services

- Create a Group Housing And Adult Day Care Facilities GIS layer.
- Implement an automated GIS application for routing and scheduling of the volunteer driver program. The program coordinates the transportation needs of elderly/disabled people with about 15 volunteer drivers, part time staff drivers and the veterans van. All drivers have variable availability and home locations

Land and Water Conservation

- Scan and rectify historical aerial photographs for GIS overlay
- Update non-metallic mining portion of the property assessment and tax system to facilitate data input, permit tracking and data distribution
- Implement program oriented web mapping services for distribution of Land and Water Conservation Program data to internal and external customers
- Integrate National Agriculture Statistics land cover layer into GIS holdings for crop change monitoring
- Correlate surface water data for rivers, lakes, streams, ponds and ditches to the terrain model to identify drainage patterns and watershed boundaries
- Develop metadata for all county-wide map layers maintained for Land and Water Conservation purposes
- Develop an aquatic invasive species inventory GIS layer and distribute this data on a web mapping application
- Reformat/update current NR 151 tracking database to include interface development and Farmland Preservation attributes
- Develop high priority conservation areas by utilizing an updated LiDAR dataset, USDA HUC-12 sub-watersheds and available processing tools
- Attain local geologic data pertaining to areas of thin soils and exposed bed rock for localized nutrient management restrictions
- Create baseline aerial photography utilizing UAV technology of all current NR 135 permitted sites and update over time as needed
- Add to baseline documentation aerial photography utilizing UAV technology of all Conservation Easements where the County is a named holder or responsible for annual monitoring
- Format and Incorporate UAV gathered data with appropriate web map enabled data

Land Information Office

- Develop a dashboard web page to incorporate Land Record Search, document imaging and GIS capabilities into one web browser application

Management Information Systems

- Move appropriate GIS data to cloud based storage

Parks

- Implement biking and water trail suitability assessment system for roadways and waterways designated for biking and paddling

- Use GIS modeling capabilities to develop a Land Evaluation and Site Assessment (LESA) system to locate and assess potential sites for land and river based parks, natural areas, and land or water trail linkages for outdoor recreation

Planning and Zoning Department

- Create a City and Village Master Plan GIS layer for land use assessments.
- Develop a flood damage assessment application to integrate GIS, property assessment, Survey and FEMA assessment data from past and future flood events to evaluate substantial flood damage. Facilitate sharing of damage assessment data for ongoing mitigation efforts. Scan and link previous flood damage assessment paper records to damage assessment system.
- Develop database and GIS application for rezoning, conditional use and variance petitions to streamline workflows of applications, map compilation and finding of the facts to minimize duplication of data entry
- Implement workflow processing for appropriate land records processes that require actions by several county staff and or departments such as land divisions approval, intensive agricultural permits, non-metallic mining and shore land permitting
- Develop a GPS and GIS application to map new and replacement private sanitary sewage system components during the inspection process

Register of Deeds

- Develop a Tract Index GIS layer to be linked to the tract index and other search programs for quick access to parcel maps and other geospatial data

Sheriff's Department

- Integrate state accident database with accident mapping GIS layer for geospatial analysis
- Develop crime-mapping analysis that utilizes the Sheriff Department records system databases

County Treasurer

- Implement remote posting and collection system for taxes collected by local treasurers to improve the accuracy and timeliness of county tax payment records during first payment collection process

