Vernon County
Land Information Plan
2019-2021

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EXECUTIVE SUMMARY

About this Document. This document is a land information plan for Vernon County prepared by the Land Information Officer (LIO), county staff involved in managing & utilizing land information, and the Vernon 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, Vernon County was awarded $110,152 in WLIP grants (i.e. base budget, strategic initiative, and training/education) and retained a total of $40,848 in local register of deeds document recording fees for land information during the State's 2015 Fiscal Year (July 2015-June 2016). In 2018, Vernon County was awarded $109,112 in WLIP grants (i.e. base budget, strategic initiative, and training/education) and retained a total of $41,888 in local register of deeds document recording fees for land information during the State's 2017 Fiscal Year (July 2016-June 2017).

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 Vernon 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, emergency planning and response, and a host of other citizen services. The Vernon County land information system integrates and enables efficient access to information that describes the physical characteristics of land (e.g. property boundaries and rights attributable to landowners) providing a detailed representation of property ownership that is adequate for real property assessment/taxation and the administration of other governmental programs.

Mission of the Land Information Office. During this 3 year planning cycle, Vernon County's Land Information Office will strive to develop several interactive GIS based web map applications; achieve gains in governmental efficiencies by broadening the utilization of GIS by County Departments; make improvements in parcel mapping accuracy where new survey control has occurred; continue to develop, improve, and maintain several other GIS data sets; and provide a wealth of accurate and accessible land record data to meet the needs of citizens and businesses.

Land Information Office Projects. To realize this mission, in the next three years, the county land information office will focus on the following projects:

Vernon County Land Information Projects: 2019-2021	
Project #1	**2020 Orthoimagery Acquisition**
Project #2	**2020 3DEP LiDAR Acquisition**
Project #3	**Re-map City of Westby Parcels**
Project #4	**Develop GIS based Web and Mobile Map Applications**
Project #5	**Implement Land Conservation Project Tracking System**
Project #6	**Implement Sanitation & Zoning Permit System**
Project #7	**Perform Watershed Modeling**
Project #8	**Develop Disaster/Flood Damage Mapping**
Project #9	**Perform Culvert Inventory**
Project #10	**Convert Parcel Geodatabase to the ESRI Parcel Fabric**
Project #11	**Develop County Park/Forest Trails Data**
Project #12	**Scan Past Tax Roll Books & Make Available On-line**

The remainder of this document provides more details on Vernon County and the WLIP, describes current and future land information projects, and reviews the county's status on the 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. From 1989 to 1993, Vernon County was the sole county in the State of Wisconsin that chose not to participate in the WLIP. Because of this late start, as well as the comparatively lower WLIP funding available in the early years of the program, Vernon County was behind the majority of Wisconsin Counties in progress toward modernizing land information – in particular the initial develoment of parcel mapping. The county has had a steady commitment to PLSS remonumentation since 1996, and will be completing the initial county-wide remonumentation and parcel mapping efforts in early 2019. With WLIP funding Vernon County is well positioned to continue modernization of it's land information.

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)

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)

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 Vernon County is meeting these benchmarks appears in the Foundational Elements section of this plan document.

County Land Information System History and Context

Vernon County has steadily increased its utilization of GIS to upgrade and modernize land information since 1994. The Land Information Council has adopted an incremental approach to managing this process constrained only by the fiscal resources allocated to these efforts. The following is a highlighted history of land information milestones & events significant to Vernon County:

- **November 1993:** County Board approves participation in WLIP to modernize land records and begin retaining funds from recording fees.

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- **February 1994:** First meeting of department heads and interested Board members forming the Land Information Committee.
- **June 1994:** County departments return questionnaire on land records needs.
- **October 1994:** County Board approved Land Records Modernization Plan.
- **November 1994:** Land Information Committee agrees to join 7-County Digital Orthophotography Consortium to lower costs.

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- **May 15, 1995:** County participates in the 7-County Consortium to acquire 1 meter resolution digital orthophotography through Ayres Associates of Madison.
- **October 1995:** 7-County Consortium decides to use Intergraph Geographic Information System computer software.

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- **January 1996:** Training in use of Integraph software and digital orthophotography occurs.
- **March 1996:** A pilot project was established for the remonumentation of PLSS section corners for 4 sections in the Town of Christiana. Ayres Associates wins Wisconsin Association of Consulting Engineers award for the 7-County Consortium project that the county participated in.
- **October 1996:** Land Information Committee asks County Board for an annual budget of $25,000 to perform remonumentation of PLSS section corners in 1997. This is combined with $20,000 in WLIP retained fees from LIO budget.

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- **March 1997:** Local surveying firm, Lampman & Associates, performs the first County supported PLSS remonumentation project for land record modernization, kicking off the start of Vernon County's modern remonumentation effort.
- **September 1997:** The Register of Deed's Office begins document conversion and record modernization program.
- **December 1997:** A total of 72 PLSS section corners within the Towns of Bergen, Hillsboro, and Greenwood were remonumented. New brass monuments (i.e. Lunde monuments) were set, computer files updated and records of survey work properly filed.

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- **January 1998:** County receives grant funds for parcel mapping from the Wisconsin Land Information Board.

- **March 1998:** Vernon County received "People's Choice" award for a map that was entered in the poster contest at the annual Wisconsin Land Information Association (WLIA) Conference.
- **May 1998:** Ayres Associates was contracted with to continue work on PLSS remonumentation projects in the Towns of Bergen and Greenwood.
- **June 1998:** Over 200 individuals; Federal, State and local agencies; and private firms have used the aerial photography, terrain modeling, and interpretation services of the Land Information Office.

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- **1999:** Parcel mapping began with the use of student interns. The Town of Hillsboro was mapped and linked to an MS Access database. An assessment of County Department GIS needs was performed by Advanced Technology Solutions; The County moved from the Intergraph GIS platform to ESRI's ArcView 3.3 GIS platform; ArcView 3.3 was installed on many Land & Water Conservation Department computers and training was provided to LWCD staff.; a Part-time County Surveyor position was approved – 1917 was the last time Vernon County had an official County Surveyor; PLSS remonumentation was performed on a total of 98 corners on the perimeter of the Town of Kickapoo and along the Vernon/Crawford County Boundary under a cooperative project with Crawford County; drafted Updated Land Records Modernization Plan.

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- **2000:** County Board approved Updated Land Records Modernization Plan; Part-time County Surveyor was hired; contracted parcel mapping was performed by platbook.com for areas in the Town of Bergen and Town of Hillsboro; a PLSS remonumentation bounty program was started for the purpose of acquiring accurate section corner coordinates and up to date tie sheets from surveyors performing land surveys in areas missing PLSS corner information - reimbursing them for each corner remonumented.

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- **2001:** Continued PLSS remonumentation.

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- **2002:** Continued PLSS remonumentation.

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- **2003:** Computer workstations for GIS were placed in the Zoning and Treasurers Offices, a Fidlar & Chambers workstation was placed in the Treasurer's office, facilitating records imaging and data sharing with the Register of Deeds office, and computer workstations used for land information were networked; worked on a metadata project in cooperation with the State Cartographers Office; several county departments were informed about the potential use of GIS; ArcView training occurred; significant effort went into developing a County Land Division Ordinance that ultimately was not approved by the County Board; the hired County Surveyor was let go.

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- **2004:** Changed County Surveyor responsibilities to a contracted service; Vernon County led the effort toward the 2005 digital orthophotography multi-county consortium; contracted with MSA for a GIS needs assessment and GIS development plan; reviewed the need for improvement of addressing information and started working on a county-wide addressing ordinance; GCS tax/assessment/document indexing systems converted from DOS to a Windows platform; County Board approved Updated Land Record Modernization Plan to prepare for pending Public Service Commission's (PSC) Wireless 911 Grant; a total of **eight years of PLSS corner remonumentation had been performed**.

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- **2005:** ArcGIS 9.0 was installed in the Land Information Office on a new computer with increased capacity to handle the more sophisticated GIS software and volume of data; ArcGIS extensions - Publisher, 3D Analyst, and Spatial Analyst were acquired and implemented; 18" resolution digital orthophotography was acquired through a multi-county consortium contracted through Ayres Associates; the 2005 Land Record Modernization Plan was prepared and approved; a SNAP server for storage of duplicate copies of the optical document images in the Register of Deeds Office was purchased to replace the Jukebox platter system; The County was awarded a Wireless E911 Grant from the WI Public Service Commission; Applied Data Consultants (ADC) of Eau Claire, WI was contracted with to perform rural addressing and related emergency response data layer development,

and also to perform parcel mapping in the Towns of Christiana (including the City of Westby), Kickapoo (including the Village of Readstown), and Wheatland (including the Village of DeSoto); interested local municipalities were provided with ArcReader software and Published GIS data packages; **continued PLSS remonumentation**.

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- **2006:** A large format scanner was purchased and housed in Register of Deeds Office; the contract with ADC was amended to reflect reduced funding allowed for parcel mapping in PSC Wireless E911 Grant award; the WI Dept. of Transportation (WI DOT)/National Geodetic Survey (NGS) published the adjusted coordinate values for the WI DOT developed HARN geodetic control stations located in Vernon County; the Land Information Committee began to consider creation of a dedicated Land Information Officer position; work progressed on the implementation of a Phase II Wireless E911 response system; ADC completed parcel mapping for the Town of Christiana and City of Westby into ESRI Geodatabase format modeled on the ArcGIS Parcel Data Model (Von Meyer/ESRI, 2004); the contract with the County Surveyor was not renewed; continued to work on the development of an addressing ordinance; **continued PLSS remonumentation**.

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- **2007:** ADC completed rural addressing and related emergency response data layer development and provided a final report; the surveying firm Lampman & Associates was contracted with to review PLSS monument record forms (i.e. tie sheets) submitted under the County's PLSS Bounty program; the County's Dispatch Center implemented Phase I & Phase II wireless E911 response service using GIS based address and related emergency response data; a full-time GIS Coordinator/Planner position was approved; online parcel and real estate document tabular data access applications (i.e. PARCELdirect & RODdirect) from ME Data Solutions/ADC were implemented for public access; **continued PLSS remonumentation**.

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- **2008:** A GIS Coordinator/Planner was hired in January to provide technical support and mapping for the county and towns working on Comprehensive Plans and to continue to oversee and direct GIS development within the county; a license for ArcGIS Server at the workgroup and advanced function level was purchased with a WLIP Base Budget Grant which provided for more efficient parcel map development and use of the county's GIS data; additional ArcGIS licenses were acquired; Birrenkott Surveying was contracted with to review PLSS monument record forms (i.e. tie sheets) submitted under the County's PLSS Bounty program; parcel mapping was completed by ADC for the Towns of Kickapoo and Wheatland; a Certified Survey Map Review (CSM) Ordinance was adopted requiring the review of all CSMs performed in un-incorporated areas of the County for compliance with State surveying laws prior to being recorded with the Register of Deeds; the PLSS tie sheet review contract with Birrenkott was amended to include review of CSMs; a major flood event occurred within the County for the 2nd year in a row - GIS data and various maps that were produced assisted with many aspects of the response and damage assessment efforts; **continued PLSS remonumentation**.

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- **2009:** completed a county wide land use data layer; a WLIP Base Budget Grant was received to parcel map the Town of Coon; over 100 maps were prepared for several Towns working on comprehensive plans; each Town and all of the Fire Districts in Vernon County were provided large format base maps with rural address numbers and aerial photo backdrops; the Register of Deeds Office completed a project to have all of the documents on microfilm back scanned for inclusion in the imaging system; Vernon County was presented with a WLIA Local Government Achievement Award; GIS data was used to assist with an update to the County's Emergency Action Plan for the PL566 Dams; scanned County Surveyor files (e.g. plats of survey, PLSS tie sheets, government & old county surveyor notes, etc…) in .pdf format are made accessible to the public online; **continued PLSS remonumentation**.

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- **2010:** 12" resolution digital orthophotography was acquired through the Wisconsin Regional Planning Commission Orthophotography Consortium (WROC) contracted through Ayres Associates & Aerometric; because of 2007 & 2008 flooding events the County was awarded a Community Development Block Grant (CDBG) Grant for the acquisition of county-wide LiDAR to support the development of 2' contours needed to update FEMA FIRM floodplain mapping; the Vernon County

Land Information Committee was officially re-designated as the Vernon County Land Information Council with the addition of a surveyor, realtor, and the Real Property Lister as voting members to comply with WLIP statutory requirements; a project to index back scanned microfilm images was performed by the Register of Deeds Office; the completed draft 2010 Vernon County Land Record Modernization Plan and submitted to WI DOA for peer review; **continued PLSS remonumentation**.

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- **2011:** Using a GIS based application developed by the Wisconsin Legislative Technology Services Bureau the Land Information Office assisted the County board with County Supervisor Redistricting for the 2012 elections – significantly speeding up the process from ten years prior and demonstrating the power of GIS technology on something pertinent to all of the Supervisors; provided county GIS data to WI Government Accountability Board for retooling the Statewide Voter Registration System to a GIS based system; the 2010 Vernon County Land Record Modernization Plan was approved by the County Board; Council entered into a Memorandum of Understanding with the City of Hillsboro to perform parcel mapping for the City – the City contributed $7,000 towards the project; ArcGIS Terrain datasets were created from the LiDAR data for each watershed in Vernon County; planimetric 1:24,000 base maps showing address numbers were created and distributed to all Vernon County Towns; fire district maps were created and distributed to all Fire Districts present in Vernon County; ArcGIS Flexviewer based mapping websites were started to be developed for internal use and testing on the County intranet; **continued PLSS remonumentation**.

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- **2012:** Voter registration maps were created and provided to all Vernon County municipalities; the sunset clause was removed from the GIS Coordinator position making the position a Full-time County position that could be funded by property tax levy if necessary; Updated FEMA FIRM maps and data were completed by the division of the WI DNR that was contracted with by FEMA and delivered to the County; parcel mapping was completed for the City of Hillsboro; Council entered into a Memorandum of Understanding with the City of Viroqua to perform parcel mapping for the City – the City contributed $16,860 towards the project; school district maps were created and provided to both the Cashton and De Soto School Districts; summer intern started developing an updated county-wide hydrography GIS data set using the WI DNR's 1:24K hydro file geodatabase as a database template; **continued PLSS remonumentation**.

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- **2013:** Purchased a new GIS Server for improved implementation of ArcGIS Server and web map hosting; upgraded to ArcGIS Server Version 10.1; purchased a new computer for Public Access to Land Information in the Register of Deeds Office; started discussions regarding a County Surveyor position; summer interns started developing a private septic system GIS data set and continued work on the county-wide hydrography data set; implemented the County's first ArcGIS Flexviewer based interactive public mapping website and integration with web based GCS tax assessment & document information portal; **continued PLSS remonumentation**.

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- **2014:** School District maps were produced for the Westby and De Soto School Districts; upgraded to ArcGIS Server Version 10.2.2; parcel mapping was completed for the City of Viroqua; provided accurate Minor Civil Division and Ward information in GIS format to the WI Legislative Technology Services Bureau (LTSB) for inclusion in the US Census Bureau's Consolidated Boundary and Annexation Survey (BAS); **continued PLSS remonumentation**.

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- **2015:** Participated in WROC, acquiring County-wide 6" resolution digital orthophotography to be delivered in early 2016**;** County Board officially designated and contracted for a Part-time County Surveyor; LIO performed US Census Bureau's Consolidated BAS submittal; produced maps and GIS data for the County's updated Farmland Preservation Plan; summer intern completed county-wide hydrography data set; **continued PLSS remonumentation**.

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- **2016:** Hired a part-time GIS Technician which helped to accelerate the rate of parcel map development; mapped over 3,100 parcels; awarded FEMA Grant for a Hazard Mitigation Plan that included funding to complete parcel mapping; developed a county-wide Shoreland/Wetland Zoning

GIS data layer; purchased survey grade GPS equipment; **continued PLSS remonumentation – contracted for projects in Forest & Hillsboro**.

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- **2017:** Continued focus on parcel map development; Part-time GIS Technician position was move to Full-time; hired ProWest of Walker MN to perform parcel mapping for the villages in the County that still needed to be mapped; in-house mapped and revised over 4,800 parcels; developed GIS data layer of PL566 Dam Hydraulic Shadows for use by the Zoning and Land Conservation Departments; **continued PLSS remonumentation – contracted for projects in Harmony & Bergen**.

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- **2018:** Continued focus on parcel map development; in-house mapped and revised over 5,660 parcels; participated in US Census Bureau's LUCA program and added 1300 address records to their list; began development of web/mobile GIS map applications for use by the public and County staff; **completion of initial PLSS remonumentation effort – contracted for projects in Sterling & Genoa; starting to plan for on-going PLSS maintenance. County Board approved creation of a Full-time County Surveyor Position starting in 2019.**

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County Land Information Plan Process

County land 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 GIS Coordinator/LIO, the Vernon County Land Information Council, and others as listed below.

Vernon County Land Information Council and Plan Workgroup				
Name	**Title**	**Affiliation**	**Email**	**Phone**
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+ **Dave Williams**	Vice-Chair, LIC County Board Member	Vernon County Board	dloiwill@hotmail.com	608-606-3373
+ **Garrick Olerud**	County Board Member, Realtor Representative	Vernon County Board	garrick@cbrivervalley.com	608-632-1043
+ **David Eggen**	County Board Member	Vernon County Board	n/a	608-634-4056
+ **Mary Rae**	County Board Member	Vernon County Board	mary.rae@vernoncounty.org	507-358-6699
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+ **Ben Wojahn**	County Conservationist, Land Information Office Rep.	Vernon County Land & Water Consv. Dept.	bwojahn@vernoncounty.org	608-637-5482
+ **Bruce Olson**	Dispatch Sargent, Public Safety Officer	Vernon County Sheriff's Office	bolson@vernoncounty.org	608-637-5705
+ **Susan Burkhamer**	Zoning Administrator/ Sanitarian	Vernon County Zoning & Sanitation	sburkhamer@vernoncounty.org	608-637-5270
+ **Laurence Johns**	County Surveyor	Eagle Ridge Surveying	surveyor@vernoncounty.org	608-343-2097
+ **Hugh Harper**	Assessor	Public LIC Member	Hharper4@mwt.net	608-629-5432

+ 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.

FOUNDATIONAL ELEMENTS

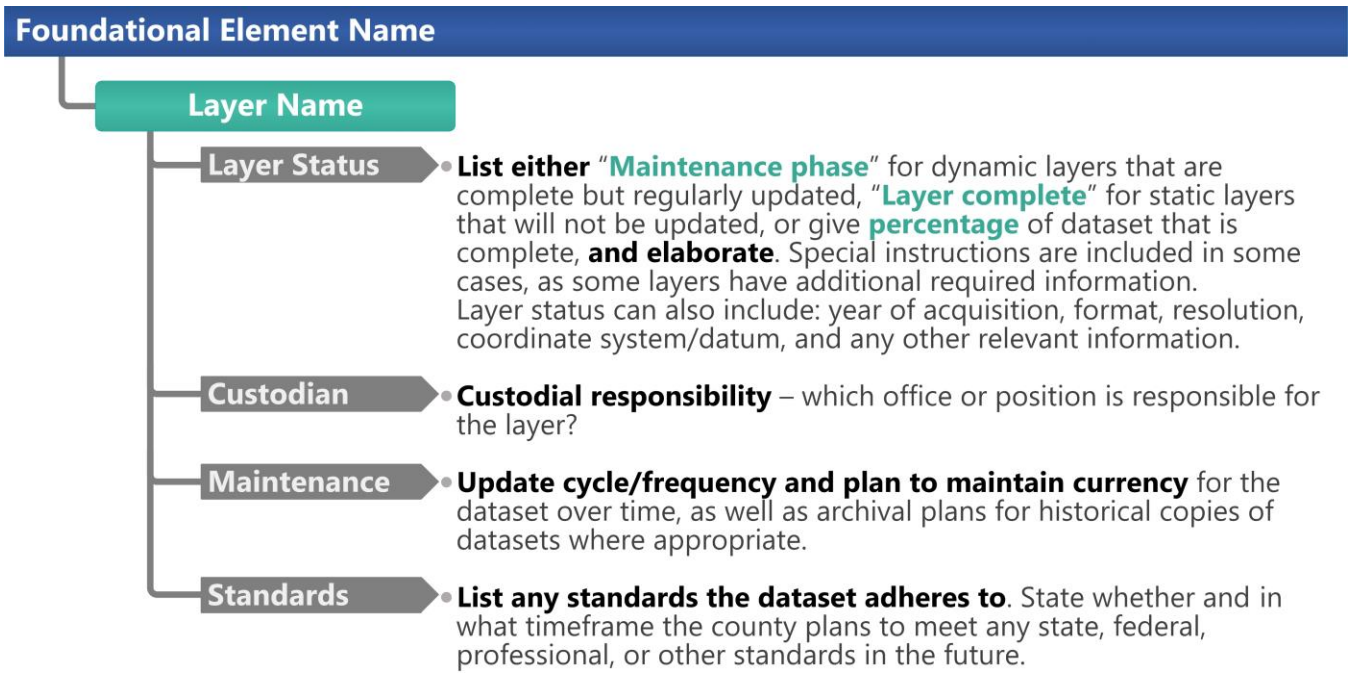
PLSS
Parcel Mapping
LiDAR and Other Elevation Data
Orthoimagery
Address Points and Street Centerlines
Land Use
Zoning
Administrative Boundaries
Other Layers

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.

The list of WLIP's Foundational Elements has evolved with each update of the county land information plan instructions. These items are a guideline of what Vernon County needs to address in our plan *at a minimum*. As the list of layers in this document is not exhaustive, we are able to insert additional layers for geospatial data categories that are of importance to our local business needs.

Foundational Element Subheadings

For each layer listed under a Foundational Element, this plan addresses: 1) Layer Status, 2) Custodian(s), 3) Maintenance plan, and 4) applicable Standards using the following format structure:



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	• Approx. 2860, not including the corners that were set during the original gov. survey that are now underwater or located on islands within Mississippi River. Vernon County also has many center of section corners that were set by County Surveyors in the late 1800's and early 1900's that are included in this count that were not set during the original gov. survey.
Number and percent of PLSS corners capable of being remonumented in your county that **have been remonumented**	• 2767 (97%)
Number and percent of remonumented PLSS corners with survey grade coordinates (see below for definition) • **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	• 2546 (89%)
Number and percent of survey grade PLSS corners integrated into county digital parcel layer	• 2546 (89%)
Number and percent of non-survey grade PLSS corners integrated into county digital parcel layer	• 314 (11%)
Tie sheets available online?	• Yes; we do not have a search tool for tie sheets; however they can be retrieved interactively from the PLSS corner points on our GIS web map site: http://www.vernoncounty.org/webgis/VCGISPublicWM2/ ; or from an online ftp site organized by Township & Range folders: http://www.vernoncounty.org/GIS/Directory/PLSSTieSheets/
Percentage of remonumented PLSS corners that have **tie sheets available online** (whether or not they have corresponding coordinate values)	• 100%
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	• 0%; but we have easily added a URL path for each of the required PLSS data submittals to the SCO; as of 2018 we maintain digital tie sheet files in .pdf format as attachments within our geodatabase, but could do either/both if needed
PLSS corners believed to be remonumented based on filed tie-sheets or surveys, but do not have coordinate values	• 177
Approximate number of PLSS corners believed to be lost or obliterated	• 0%
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)?	• Utilize a point identification system that has been used by Vernon County Surveyors all the way back into the mid-late 1800's; it consists of listing the Town, Range, Section, and Corner ID; a diagram of the numbering system can be found here: http://www.vernoncounty.org/GIS/Directory/CSMReviewOrdinancePLSSTieSheetInfoAndResources/Vernon%20Co%20PLSS%20Section%20Corner%20Numbering%20Schema.pdf • Have started to utilize the Romportl point numbering system (a.k.a. Wisconsin Corner point Identification System) in our geodatabase; we will be working to enter this number for all of our PLSS corners over the next year or two.
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 to the standard non-PLSS areas listed to the left. However we now have some land areas of the County that fell within the Mississippi River, during the Orig. Gov. Survey or any re-surveys that were performed thereafter. We also have areas

	within the larger River corridor that were land areas before the lock and dams were put in. These have been underwater for decades but were surveyed during the Orig. Gov. Survey. These are primarily located in the western parts of T13N R7W and T14N R7W. For the former, we are currently reviewing a situation where we now have land being occupied by private and public entities near Genoa that was within the Mississippi River when the original government survey was performed. This is an area was filled in between the railroad and the location of the former State Highway 35 prior to construction of the current State Highway location. For the latter, the Corp of Engineers is currently building several islands. When these island are complete and stable, some of the locations of the Orig. Gov. Survey corners may fall on land again. As these situations develop, the County will have to assess on a case by case basis if establishment of PLSS corners on any of these islands would be important or needed.
Total number of PLSS corners along each bordering county	• 30 shared with La Crosse County (35 on Orig. Gov. Survey) • 1 shared with La Crosse/Monroe • 59 shared with Monroe County • 1 shared with Monroe/Juneau • 11 shared with Juneau County • 1 shared with Juneau/Sauk • 11 shared with Sauk County • 1 shared with Sauk/Richland • 22 shared with Richland County, but there are also 31 Vernon County and 31 Richland County govt. "double corners" on E/W township line between the two counties; • 1 shared with Richland/Crawford • 53 corners & 1 meander corner shared with Crawford County.
Number and percent of PLSS corners remonumented along each county boundary	• 30 (100%) shared with La Crosse County • 1 (100%) shared with La Crosse/Monroe • 59 (100%) shared with Monroe County • 1 (100%) shared with Monroe/Juneau • 11 (100%) shared with Juneau County • 1 (100%) shared with Juneau/Sauk • 11 (100%) shared with Sauk County • 1 (100%) shared with Sauk/Richland • 22 (100%) shared with Richland County; 31 (100%) Vernon County only • 1 (100%) shared with Richland/Crawford • 54 (100%) shared with Crawford County
Number and percent of remonumented PLSS corners along each county boundary with survey grade coordinates	• 14 (47%) shared with La Crosse County • 1 (100%) shared with La Crosse/Monroe • 34 (58%) shared with Monroe County • 1 (100%) shared with Monroe/Juneau • 11 (100%) shared with Juneau County • 1 (100%) shared with Juneau/Sauk • 11 (100%) shared with Sauk County • 1 (100%) shared with Sauk/Richland • 22 (100%) shared with Richland County; 31 (100%) Vernon County • 1 (100%) shared with Richland/Crawford • 54 (100%) shared with Crawford County
In what ways does your county collaborate with or plan to collaborate with neighboring counties for PLSS updates on shared county borders?	• Vernon County through our County Surveyor has and will continue to collaborate with our neighboring counties to reconcile and confirm PLSS coordinates and ensure each county has current monument records for shared corners. We also plan to periodically exchange GIS corner datasets to help maintain spatial accuracy of county boundaries.

Custodian

- County Surveyor, Land Information Office

Maintenance

- Beginning in 2019, Vernon County will have a Full-time County Surveyor to oversee and manage the County's PLSS infrastructure and associated GIS data. Data will be maintained on an on-going basis. Our plan is to visit, inspect and maintain about 5% (140-150) of our PLSS corners per year so that every corner is reviewed at least once in a 20 year period. As needed due to road and other construction activities, as well as from reports of corner monument destruction or maintenance needs many corners will be visited on a more frequent basis. Our initial maintenance schedule will likely start with corners that were not remonumented during one of our remonumentation projects and that still need confirmation that their spatial location meets the Survey Grade standard.

Standards

- Statutory Standards for PLSS Corner Remonumentation
  - ✓ s. 59.74, Wis. Stats. Perpetuation of section corners, landmarks.
  - ✓ s. 60.84, Wis. Stats; ch, A-E 7.07. 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.

Vernon County adheres to and follows the above statutory standards, and the County Surveyor reviews surveys and PLSS monument records recorded and filed with the County for compliance with these standards.

- 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

Through the County's PLSS maintenance schedule over the next several years Vernon County will complete determination of Survey Grade coordinates for the remaining corners that need to meet this standard. Our goal is to have all PLSS corners in Vernon County meet the Survey Grade standard by the end of 2021.

Public Land Survey System Framework Layers

i.e., PLSS lines, quarter-quarter & govt. lot polygons, quarter polygons, section polygons

Layer Status

- These data layers are in development and are considered part of the parcel mapping development process. These data layers are typically completed prior to proceding with mapping of parcel geometries in any given area. All are maintained within the parcel geodatabase.

Custodian

- Land Information Office, County Surveyor.

Maintenance

- These data layer are maintained as part of the PLSS corner and parcel mapping development/maintenance process. The spatial accuracy of these data layers is continually improved as more accurate PLSS corner and parcel boundary information is available.

Standards

- Implementing the core features of the PLSS Framework layers of the ESRI/Von Meyer ArcGIS Land Parcel Data Model.

Wisconsin Height Modernization Program Geodetic Control Network

Layer Status

- The passive network (WI-HMP) and active network (WISCORS) components of the WI-Height Modernization Program are published and operational in Vernon County. For more information

refer to the related links provided on the Wisconsin State Cartographers web page of information for professional land surveyors, https://www.sco.wisc.edu/surveying/. This network is a primary foundational infrastructure that professional land surveys use in conjunction with survey grade GPS equipment to determine coordinates and measurements for the PLSS corners in Vernon County and across the State.

Custodian

- The primary custodian of the WI-Height Modernization Program is the Wisconsin Department of Transportation (WI-DOT). Contact: Call toll free (866) 568-2852 or email geodetic@dot.wi.gov

Maintenance

- While the WI-DOT has the primary responsibility for maintaining the components of the WI-HMP in Vernon County and across the State, Vernon County will cooperate with and provide limited assistance in helping to maintain this network. Vernon County staff will work to educate others on the importance of maintaining this network and will be local observers who can report potentially endangered WI-HMP geodetic survey control stations.

Standards

- Links to information on applicable standards can be found here: https://www.sco.wisc.edu/surveying/geodetic-standards-networks/. Contact the WI-DOT for additional information on standards concerning specific components of the WI-HMP.

Parcel Mapping

Parcel Geometries

Layer Status

- **Progress toward completion/maintenance phase:** As of 12/10/2018, Vernon County has 30,405 parcels (approx. 89%) of 34,054 active tax parcels in the tax assessment roll mapped into an ESRI SQL Express versioned geodatabase format. Expect to complete digital parcel development and enter maintenance phase in first half of 2019.
- **Projection and coordinate system:** All data is maintained and stored in the WISCRS (Wisconsin Coordinate Reference Systems) – Vernon County (ESRI ref name: NAD_1983_HARN_WISCRS_Vernon_County_Feet coordinate system, WKID: 103462) which uses a Lambert Conformal Conic projection.
- **Integration of tax data with parcel polygons:** Vernon County does not have a parcel polygon model that directly integrates tax/assessment data as parcel attributes. Approximately 4 times per year a data file is exported from our tax assessment database and joined to our parcel polygons for consumption via our on-line mapping website and for inclusion with shapefile/geodatabase parcel data exports provided to those who request our parcel data.
- **ESRI Parcel Fabric/LGIM Data Model:** Vernon County does plan to implement the ESRI Parcel Fabric Data Model in the future, but does not currently have any plans to implement ESRI's Local Government Information Model. After doing some pilot testing with data delivered in the Parcel Fabric Data Model for some of our villages, talking with a couple of colleagues that have been using the Fabric for a couple of years, and considering Geodatabase size implications which may require us to update to an SQL Enterprise license with a significant annual software maintenance cost increase, we have decided to wait to implement until sometime after ESRI has the Fabric running stable within the ArcGIS Pro environment. That may be toward the end of this plan cycle, but more likely will be during the next plan cycle (see https://community.esri.com/docs/DOC-11989-arcgis-pro-roadmap-june-2018 for additional info on the development of parcel management tools in ArcGIS Pro). At that time we will evaluate if there are any components of ESRI's Local Government Information Model that would be beneficial to us.
- **Online Parcel Viewer Software/App and Vendor name:** Custom; built in-house using the ESRI Flexviewer Template and Adobe Flashbuilder to modify for County needs. Plan to upgrade in-house using ESRI Web AppBuilder for ArcGIS during plan cycle. Our GIS parcel viewer uses unique URLs to connect and retrieve parcel records via the GCS web portal application (i.e. tax, assessment, document information) and vice versa.

- **Unique URL path for each parcel record:** Yes; URL is stable and can be exported. Information that can be viewed using the URL through the GCS web portal includes the following:
    - ✓ Current & Former Owners
    - ✓ Property & Tax Billing Addresses
    - ✓ Brief Legal Description
    - ✓ PLSS/Plat/Block/Condo Tract
    - ✓ Municipality
    - ✓ Taxing Districts (i.e. Local, State, County, K-12 school, Tech College)
    - ✓ Parcel Record Creation & Historical Dates
    - ✓ Total Acres
    - ✓ Assessment Valuation Classes & Class Acreage Breakdown
    - ✓ Estimated Fair Market Value
    - ✓ Assessment Ratio
    - ✓ Property Taxes & Payments
    - ✓ List of Documents Associated with Parcel & Options to Purchase them On-line
    - ✓ Document Information (i.e. recording date & time, type, fee, grantor(s)/grantee(s), tract information)

Custodian

- Land Information Office, Real Property Lister

Maintenance

- **Update Frequency/Cycle**: Parcel polygons are updated on a constant basis as parcel splits and surveys are recorded.

Standards

- **Data Dictionary**: No plans to create at this time; GCS provides a file layout document that adequately describes the standard parcel information contained in the Tax & Property Assessment data systems; information on additional attributes present in the spatial data layer should be available in the GIS dataset's metadata when that is fully completed.
- Implementing the ESRI/Von Meyer ArcGIS Land Parcel Data Model.
- Plan to implement the ESRI Parcel Fabric Data Model during the plan cycle if and when the Parcel Fabric Data Model becomes available in ArcGIS Pro**.**

Assessment/Tax Roll Data

Layer Status

- **Progress toward completion/maintenance phase:** NA (This is not applicable, since assessment/tax roll data is not a GIS data layer and is updated throughout the year).
- **Tax Roll Software/App and Vendor name:** Property Assessment & Tax Billing Module – from vendor GCS Software
- **Municipal Notes:** NA

Custodian

- Treasurer's Office. The County Treasurer is responsible for maintaining the tax collection data and the Real Property Lister is responsible for maintaining the assessment data.

Maintenance

- **Maintenance of the Searchable Format standard:** To maintain the Searchable Format standard, the County will ensure that the standardized and complete tax parcel data attributes that are required for the Searchable Format are entered when new parcel records are created and as existing parcel records are maintained within our GCS based data system.
- **Searchable Format Workflow:** The County maintains parcel/tax roll data in the Searchable Format or close enough to the Searchable Format that **little to no human labor is required** for the annual submission of parcel/tax roll data to DOA when using the Python based tools that have been developed/provided by the SCO to assist with the data submittal.

Standards

- Wisconsin Department of Revenue Property Assessment Manual and attendant DOR standards. Vernon County follows these standards.
- DOR XML format standard requested by DOR for assessment/tax roll data. The XML export through the GCS software that we use complies with this format standard. However, we will still be cleaning up content standardization over the next year or so.

Non-Assessment/Tax Information Tied to Parcels

POWTS - Private on-site water treatment system permits

Layer Status

- The Sanitation & Zoning Office has maintained an MS Access database of permits for systems installed in the County for several years. For areas with completed parcel mapping this data can be linked/joined to the parcel polygons via the PIN. A polygon data layer of POWTS locations has started to be developed by the LIO primarily utilizing summer GIS interns. To date 3+ of 21 towns have been completed. This permit data is being converted into the GCS Permitting application that is integrated with the GCS Property Assessment data system. This conversion is scheduled to be completed by March of 2019.

Custodian

- Sanitation & Zoning, Land Information.

Maintenance

- The Sanitation & Zoning Office will maintain the permitting information in the GCS data system. When time permits the Land Information Office will work to complete a GIS data layer of the POWTS polygons and will assist the Sanitation & Zoning Office with maintenance of the GIS data.

Standards

- Vernon County, Wisconsin – Code of Ordinances / Chapter 70 – Utilities / ARTICLE II. - PRIVATE ONSITE WASTEWATER SYSTEMS.
- Wis. Stats. § 145.04, 145.19, 145.20, & 145.245.

Non-Assessment/Tax Information Tied to Parcels

Zoning Permits

Layer Status

- The Sanitation & Zoning Office has maintained an MS Access database of floodplain/shoreland/wetland zoning permits issued in the County for several years. This data is being converted into the GCS Permitting application that is integrated with the GCS Property Assessment data system. This conversion is scheduled to be completed by the Fall of 2019.

Custodian

- Sanitation & Zoning.

Maintenance

- The Sanitation & Zoning Office will maintain the permitting information in the GCS data system.

Standards

- Vernon County, Wisconsin – Code of Ordinances / Chapter 26 - FLOOD ZONING
- Wis. Stats. § 87.30

ROD Real Estate Document Indexing and Imaging

Layer Status

- **Grantor/Grantee Index:** GCS Document Indexing – from vendor GCS. Complete back to 1937 (Deeds) and 1948 (Mortgages).

- **Tract Index:** GCS Document Indexing – from vendor GCS. Complete back to June 1993. It is PLSS based and any Real Estate document that is recorded is entered into the computerized Tract Index. The manual tract indexes for documents recorded prior to June 1993 are scanned and available in pdf format on the Vernon County Website. There are no formal plans to enter the tract information for these older documents into the computerized indexing system.
- **Imaging:** Digitech Systems PaperVision – supported by vendor Imagetek. All of the recorded Real Estate documents have either been scanned or converted to a digital format from microfilm. New recorded documents are entered into the system daily.
- **ROD Software/App and Vendor Name:** Documents available on-line through GCS Web Portal – from vendor GCS Software.

Custodian

- Register of Deeds Office

Maintenance

- Document records are maintained on a daily basis as they are recorded. We also continue to work on the back indexing of the computerized Grantor/Grantee Index as time permits.

Standards

- s. 59.43, Wis. Stats. Register of deeds; duties, fees, deputies. Vernon County adheres to these standards.
- ch. 706, Wis. Stats. Conveyances of real property; Recording; Titles. Vernon County adheres to these standards.

LiDAR and Other Elevation Data

LiDAR

Layer Status

- **Most recent acquisition year:** Vernon County has a county-wide LiDAR data set that was acquired in 2010 by Ayres. Consists of separate LAS files for bare earth and non-bare earth point cloud data.
- **Accuracy:** The ground to LiDAR model tested vertical accuracy was 0.586 feet (0.299 feet RMSEz) at the 95% confidence level.
- **Post spacing:** 3.5 to 4 feet.
- **Next planned acquisition year:** Pending significant outside funding, plan to participate in 2020 3DEP Grant.

Custodian

- Land Information Office

Maintenance

- No specific plan to update or re-acquire new LiDAR data for Vernon County on any regular schedule. Will consider participating in consortium based LiDAR acquisition projects on approximately a 10 year cycle if significant outside funding is available. May acquire for site specific acquisitions (e.g. construction areas, sub-watersheds) if local needs justify the acquisition.

Standards

- Exceeds FEMA/FGDC's NSSDA vertical accuracy standard of 1.2 feet (0.6 feet RMSEz) at the 95% confidence level for 2 foot contours.

LiDAR Derivatives

Bare-Earth Elevation Contours

Layer Status

- Ayres produced 2' contours that were delivered with the LiDAR data in 2010. They are tiled by PLSS section and in shapefile and .dwg formats. From our ESRI terrain data set we can generate and/or render contour lines at various intervals as needed.

Custodian

- Land Information Office

Maintenance

- No plan to edit/maintain the original contour files. Our long term plan is to maintain the terrain data set and create contours as needed from that data layer.

Standards

- Exceeds FEMA/FGDC's NSSDA vertical accuracy standard of 1.2 feet (0.6 feet RMSEz) at the 95% confidence level for 2 foot contours. The actual ground to LiDAR surface model tested vertical accuracy was 0.586 feet (0.299 feet RMSEz) at the 95% confidence level.

LiDAR Derivatives

Bare-Earth Digital Terrain Model (DTM)

Layer Status

- An ESRI based terrain data set is complete. It is spatially organized/tiled by watersheds within Vernon County and was developed from the 2010 acquired LiDAR bare earth point data. A new terrain data set may be developed to include updated surface information, improve display characteristics (resolution scales), and to create one full spatial tile covering all of the watershed areas flowing into Vernon County and covering the first sub-watershed basin of all of the watershed areas flowing out of Vernon County into neighboring counties. During the LiDAR acquisition period in the spring of 2010, the Mississippi River water level was very high and many of the islands within this area were not detected because they were underwater. A set of LAS files for the Mississippi River corridor were obtained from the U.S.G.S. Upper Midwest Environmental Science Center that can be used to improve the terrain data for the area within the river to show the islands present at that time. Also since the 2010 LiDAR acquisition, major construction occurred on US Highway 14/61 between the City of Westby and City of Viroqua changing the highway from 2 lanes to 4 lanes. An x, y, z elevation data file of as-built points for the entire highway construction area was obtained from the WI-DOT and has been used to update the terrain.

Custodian

- Land Information Office

Maintenance

- Maintenance will be performed as updated surface information meeting accuracy requirements becomes available. When updated elevation information for site specific areas is available and/or obtained the terrain can easily be updated using ArcGIS 3D Analyst tools.

Standards

- The original LiDAR data was ground tested and shown to meet the above FEMA/ FGDC's NSSDA vertical standards for 2' contour development. The full resolution of the terrain data set should logically also meet this standard. Any new elevation data incorporated into the terrain data set will need to be from a source that will meet or exceed the original FEMA standard.

Other Types of Elevation Data – Not Applicable

Layer Status

- At this time Vernon County has no plans to acquire or maintain other types of elevation data.

Orthoimagery

Orthoimagery

Layer Status

- **Most recent acquisition year:** 2015
- **Resolution:** 6"
- **Contractor's standard:** Aerial imagery was collected to support 0.5 foot ground sample distance (GSD) orthoimagery to meet ASPRS Class II horizontal accuracy specifications at 1" =

100' map scale. The horizontal accuracy meets or exceeds 2.0 feet RMSE using the National Standard for Spatial Data Accuracy (NSSDA) standards.
- **Next planned acquisition year:** 2020
- **WROC participation in 2020:** Confirmed participating in WROC 2020

Custodian
- Land Information Office.

Maintenance
- N/A

Standards
- See contractor's standard above; 6" resolution; natural color; acquired in March - April of 2015 under leaf-off, snowless, and cloud free conditions.

Historic Orthoimagery

2010 WROC

Layer Status
- Vernon County was a participant in WROC 2010. A county-wide mosaic in MrSID format, and 4 section tiles in GeoTIFF and MrSID formats of the imagery were delivered in early 2011.

Custodian
- Land Information Office.

Maintenance
- N/A; archived data incorporated into GIS datasets to provide historical view.

Standards
- 12" resolution; natural color; acquired in April of 2010 under leaf-off, snowless, and cloud free conditions.

2005

Layer Status
- Vernon County acquired orthoimagery in 2005 as part of a multi-county consortium. A county-wide mosaic in MrSID format, and ¼ township tiles in GeoTIFF and MrSID formats of the imagery were delivered in early 2006.

Custodian
- Land Information Office.

Maintenance
- N/A; archived data incorporated into GIS datasets to provide historical view.

Standards
- 18" resolution; black & white; acquired in April of 2005 under leaf-off, snowless, and cloud free conditions.

1995

Layer Status
- Vernon County acquired orthoimagery in 1995 as part of the Southwestern Wisconsin Seven-County Digital Ortho Consortium project, which included Vernon, Grant, Iowa, Lafayette, Green, Dane, and Columbia counties.. A county-wide mosaic in MrSID format, and ¼ township tiles in GeoTIFF and MrSID formats of the imagery were delivered in early 1996.**

Custodian
- Land Information Office.

Maintenance
- N/A; archived data incorporated into GIS datasets to provide historical view.

Standards

- 1 m resolution; black & white; acquired May 15, 1995 under leaf-off, snowless, and cloud free conditions.

Other Types of Imagery – Not Applicable

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

Layer Status

- At this time Vernon County has no plans to acquire or maintain other types of imagery.

Address Points and Street Centerlines

Address Point Data

Layer Status

- The address point layer is complete and in an on-going maintenace stage county-wide. Data is maintained within an ESRI geodatabase format. Address points are maintained where a driveway or private road intersects a public road. In some cases address points are also maintained where driveways intersect a private road. In these cases there are enough structures/residential lots (typically 3 or more) along the given private road to justify naming it and assigning an address range to it for emergency response purposes.

Custodian

- Dispatch Office, Land Information Office, Real Property Lister, and Sanitation & Zoning.

Maintenance

- The Dispatch Office of the Vernon County Sheriff's Office administers the County Addressing Ordinance and works with all of the local municipalities in the County to assign and maintain addresses. The Dispatch Office is also the primary custodian of the address points in the County GIS. The Land Information Office assists the Dispatch Office with maintenance of the address point data. Address points are located/positioned using recreational grade GPS equipment and orthoimagery resources. The Real Property Lister and the Sanitation & Zoning Department help to identify address ommissions and location errors while working with their respective data systems and doing their day to day jobs. The Land Information Office and Real Property Lister identify, verify, and reconcile property addresses in the tax assessment data system while performing parcel mapping. Address points were originally placed as part of an E911 addressing project in 2006-2007 using the 2005 orthoimagery. When this project was undertaken, there were a significant number of existing structures that were were not visible on the 2005 imagery because they had been built after the acquisition date. Therefore, some of the original address points were mistakenly placed on incorrect nearby structures that were visible in the imagery. These point placements are corrected as they are identified.

Standards

- Vernon County follows the US Postal Standard, http://pe.usps.gov/text/pub28/welcome.htm; Local standards implemented - key attributes and topological structure are maintained for internal use and for what is required to implement this data in the Sungard OSSI based Computer Aided Dispatch (CAD) system used by the County.

Structure Point Data

Layer Status

- The structure point layer is complete and in an on-going maintenace stage county-wide. Data is maintained within an ESRI geodatabase format.

Custodian

- Dispatch Office, Land Information Office, Real Property Lister, and Sanitation & Zoning.

Maintenance

- (see Maintenance under the Address Point Data Layer above)

Standards

- (see Standards under the Address Point Data Layer above)

Building Footprints – Currently Not Applicable

Layer Status

- N/A; at this time Vernon County has not determined a need to develop or maintain building footprints.

Other Types of Address Information

e.g., Address Ranges

Layer Status

- N/A; Address ranges are maintained on the Street Centerlines layer.

Street Centerlines

Layer Status

- The street centerline layer is complete and in an on-going maintenance stage county-wide. Data is maintained within an ESRI geodatabase format.

Custodian

- Land Information Office; Dispatch Office

Maintenance

- The Dispatch Office of the Vernon County Sheriff's Office administers the County Addressing Ordinance and works with all of the local municipalities in the County to maintain information regarding public and private roads. The Land Information Office works with the Dispatch Office as needed to add/delete/update road centerlines and populate address range and other road attributes.

Standards

- Local standards implemented - key attributes and topological structure are maintained for internal use and for what is required to implement this data in the Sungard OSSI based Computer Aided Dispatch (CAD) system used by the County.

Rights of Way

Layer Status

- Public road right-of-ways are maintained within the parcel geodatabase. A coded boundary line type is used to distinguish/separate out right-of-way lines. Completed as parcel mapping work progresses. Expected to complete in first half of 2019.

Custodian

- Land Information Office; Real Property Lister

Maintenance

- Road right-of-way widths and locations are mapped during the parcel mapping process. A variety of sources are used to determine how right-of-ways should be mapped. These sources of right-of-way information vary in quality and reliability. Modern highway plats/plans and land surveys usually provide accurate and reliable information for right-of-way mapping. Information regarding town roads is often conflicting between sources or non-existent. Over time we will need to verify, research, and reconcile mapped road right-of-way locations.

Standards

- No formal standards implemented.

Trails

e.g., Recreational Trails

Layer Status

- In development.

Custodian

- Land Information Office; Land & Water Conservation Department; and other public agencies responsible for managing recreational trails.

Maintenance

- The long range plan is to have all public based recreation trails mapped using GPS and/or our LiDAR based surface data. Recreational trails are considered an important auxillary data layer that should be included in the County's computer aided dispatch system for emergency response and rescue. Recreation trails from the Kickapoo Reserve are currently provided to the County on an as needed basis (e.g. new/updated trail locations etc…). The county will be performing the data development for the County Parks & Forests. Duck Egg County Park has been completed and will be maintained on an as needed basis. Trails within the other county parks & forests will be mapped as time permits. The Land Information Office will also work with other managing agencies to develop and include trail mapping produced by them for inclusion in the county-wide layer.

Standards

- No formal standards implemented; output in shapefile format is required for inclusion in the Sungard OSSI based Computer Aided Dispatch (CAD) system used by the County.

Land Use

Current Land Use

Layer Status

- Vernon County had completed a county-wide existing land use GIS data layer in 2010. This was developed using FSA agricultural field data, the 2005 county black and white leaf-off digital orthophotography, 2008 NAIP color digital orthophotography, information from the tax assessment roll, and parcel mapping that had been completed at the time of development. It is no longer considered current and likely will need significant revision to be useful for local planning efforts and site specific application. Vernon County may consider updating this data layer using the Wiscland 2 Land Cover Data published in 2016 and other relevant sources if it is determined that there is a need to update it. If updated it will likely not be until after 2020 DOP imagery is delivered.

Custodian

- Land Information Office; possibly Real Property Lister.

Maintenance

- Following the completion of an update of land use mapping this should become a routinely maintained data layer. The general plan would be to update the existing land use layer on a continual basis using aerial/satellite imagery and other resources (e.g. highway construction plans, farm plans, subdivision plats & land surveys, assessment & zoning changes etc…) that would help indicate that a land use change has occurred in any given area.

Standards

- No formal standards implemented.

Future Land Use – Not Applicable

Layer Status

- N/A; Vernon County has not passed a comprehensive plan, and therefore, has no reason to develop a meaningful future land use data layer. Also the minimal amount of comprehensive

planning that has been undertaken by local units of government within Vernon County does not warrant that the County spend any time and resources compiling or maintaining a data layer from a patchwork of local government future land use maps at this time. The need for this data layer may be re-assessed in the future.

Zoning

County General Zoning

Layer Status

- Not administered by county.

Shoreland Zoning

Layer Status

- The County does maintain a GIS representation of County Shoreland Zoning boundaries. This data layer is basically complete. It consists of one set of polygons representing the shoreland protection area buffers of 300' for navigable streams/river and 1000' for lakes/bodies of water and/or the landward side of the County's floodplain zoning area if it is greater than the protection area buffers. It also includes any WI DNR wetland polygons which fall within or are connected to the above described shoreland protection areas (the County has a copy of the WI DNR wetlands GIS data published in 2014). See the layer status for Floodplain Zoning later in this document for specific information on the FEMA FIRM and PL566 Dam Breach Route data layers. A second set of polygons representing the shoreland protection area buffers of 300' for intermittent streams/water courses has also been developed. This second set of polygons indicates areas where the County's Shoreland Zoning may be applicable pending a determination of navigability.

Custodian

- Sanitation & Zoning; and Land Information Office.

Maintenance

- The FEMA FIRM and PL566 Dam Breach Route data layers used for administering the County Shoreland Zoning Ordinance are maintained as static base data sets and will only be updated as new or improved information is obtained or developed. The shoreland protection area buffers will be maintained over time as the hydrography data that is maintained by the County is also updated and as determinations on navigability are made in consultation with the WI DNR for individual streams and water courses. The shoreland protection areas from streams/water cources that are determined to be non-navigable will be removed from the data as necessary.

Standards

- Vernon County, Wisconsin – Code of Ordinances / Chapter 50 - SHORELAND PROTECTION ORDINANCE.
- Wis. Stats. § 59.692 & 281.31.
- FEMA FIRM/LiDAR Data Exceeds FEMA/FGDC's NSSDA vertical accuracy standard of 1.2 feet (0.6 feet RMSEz) at the 95% confidence level for 2 foot contours. The actual ground to LiDAR model tested vertical accuracy was 0.586 feet (0.299 feet RMSEz) at the 95% confidence level.
- Any PL566 breach route updates will be performed using an approved HEC-RAS or equivalent hydraulic modeling process for a dam breach.
- WLIP Act 20 zoning data submittal standards.

Farmland Preservation Zoning

Layer Status

- Not administered by county, but see the section titled **Municipal Zoning Information Maintained by the County – Farmland Preservation Zoning (Towns)** on page 27.

Floodplain Zoning

Layer Status

- The County does maintain a GIS representation of floodplain zoning boundaries.
- The County's floodplain zoning GIS data is not the same as/identical to the FEMA map. Vernon County's Floodplain Zoning data consists of a combination of the 2012 FEMA FIRM (DFIRM) Flood Areas and the breach route & flood pool boundaries associated with the PL566 Dams present within the County. The FEMA FIRM data was completed in 2012 by the WI DNR using the 2010 acquired LiDAR data and is a very significant spatial improvement over prior FEMA FIRM information.
- **PL-566 (PL-566 Watershed Program) Breach Routes**: In the previous County Land Information Plan, Vernon County indicated that a qualified engineering firm would be hired to perform new PL566 breach route analyses using a HEC-RAS based hydraulic modeling process. This turned out to be cost prohibitive for the County during that time frame. Consulting with WI DNR and NRCS Engineers, the County's PL566 Dam Administrator determined that the County should continue to use the information from the dam breach analyses performed in the mid 1990's by Ayres & Associates for the 22 PL566 dams located within the County. This information has been and is the current authoritative data used by the County for administering the Floodplain Ordinance since the mid 1990's. However, no spatially accurate GIS/map representation of this information had been developed. In 2012, Ayres was hired to develop a spatial representation of the Runge Hollow Dam hydraulic shadow using the mid 1990's breach analysis information. In 2016, the County release an RFP to have a spatial data layer for the remaining 21 dams developed using the maximum water surface elevation information from the Ayres modeling results. Only one response to the RFP was received which also was cost prohibitive to the County at that time. To create a spatial data layer representing the mid 1990's analyses results, the GIS Coordinator utilized GIS based tools available in the ArcHydro Toolbox for ArcGIS version 10.3.x and using a terrain surface developed from the 2010 LiDAR data. The resulting spatial data was reviewed by the County's Dam Adminstrator and found to adequately reflect the administrative maximum water surface elevations being interpreted from the 1990's based analyses as applied to the 2010 LiDAR based surface model. This data is being used as our current authoritive data layer for administrating the County's Floodplain Zoning Ordinance. However, after some additional review of the mid 1990's dam breach analyses, it was determined that Ayres had used 20' USGS contour data for many of the cross sections used in the analyses modeling process. The end result of this is that predicted/modeled maximum water surface elevation values in these analyses were based on either narrower or wider valley shapes than the actual real world valley shapes that are present. Applying these maximum water surface elevation modeling results to the more accurate 2010 LiDAR surface data may not accurately reflect the anticipated flooding under an actual dam breach situation. Given the age of the mid 1990's breach analyses and it's shortcomings, the anticipated increase in frequency of 100 year flooding events, and the improved surface elevation data that is available or that can be obtained, the breach analyses for the 22 PL566 dams should be updated to reflect more current and actual surface conditions. Any new analyses should be performed after a new LiDAR data set is acquired. Vernon County will need significant state, federal, or other outside funding sources to acquire updated PL566 Dam breach modeling.

Custodian

- Sanitation & Zoning; Land & Water Conservation Department (PL566 Dams Administrator); and Land Information Office.

Maintenance

- All of the data layers used for administering the County Floodplain Zoning Ordinance are maintained as static base data sets and will only be updated as new or improved information is obtained or developed.

Standards

- Vernon County, Wisconsin – Code of Ordinances / Chapter 26 - FLOOD ZONING.
- Wis. Stats. § 87.30.
- FEMA FIRM/LIDAR Data Exceeds FEMA/FGDC's NSSDA vertical accuracy standard of 1.2 feet (0.6 feet RMSEz) at the 95% confidence level for 2 foot contours. The actual ground to LiDAR model tested vertical accuracy was 0.586 feet (0.299 feet RMSEz) at the 95% confidence level.
- Any PL566 breach route updates will be performed using an approved HEC-RAS or equivalent hydraulic modeling process for a dam breach.
- WLIP Act 20 zoning data submittal standards.

Airport Protection

Layer Status

- Not administered by county.

Municipal Zoning Information Maintained by the County

Farmland Preservation Zoning (Towns)

Layer Status

- As of the end of 2018, the Towns of Christiana, Coon, Harmony, and Stark have adopted Farmland Preservation Zoning Ordinances. The County has digitized this information and maintains it for these Towns within the County's parcel geodatabase.

Custodian

- Land Information Office; Land & Water Conservation Department; and Towns that have adopted Farmland Preservation Zoning Ordinances.

Maintenance

- As areas are rezoned by the Towns and as additional Towns adopt Farmland Preservation Zoning, the zoning maps and GIS data will be maintained by the County and submitted to DATCP annually or as required for certification compliance.

Standards

- The County complies with standards for maps and GIS data submitals to DATCP as required by Wis. Stats. § 91.38(d) for assisting the Towns in complying with Farmland Preservation Zoning certification and reporting of rezoning actions.

Administrative Boundaries

Civil Division Boundaries

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

Layer Status

- The minor civil division (MCD) data layer is complete and maintained within the parcel geodatabase.

Custodian

- Land Information Office

Maintenance

- The data layer is maintained as part of the PLSS corner and parcel mapping development/maintenance process and as annexations occur. Spatial accuracy of boundaries is continually improved as more accurate PLSS corner and parcel boundary information is available.

Standards

- ESRI/Von Meyer ArcGIS Land Parcel Data Model.

School Districts

Layer Status

- **Progress toward completion/maintenance phase:** The K-12 School District data layer is complete and maintained within the parcel geodatabase.
- **Relation to parcels:** There is a school district code maintained within the tax assessment database on each parcel record. When parcel mapping is complete and fully reconciled with a parcel record for every parcel polygon, an accurate school district data layer will be able to be generated at any time after linking the assessment database to the parcel polygons.
  - ✓ **Attributes linked to parcels:** District Code/Name

Custodian

- Land Information Office; Real Property Lister

Maintenance

- The data layer is generally maintained as part of the PLSS corner and parcel mapping development/maintenance process. Spatial accuracy of boundaries is periodically improved as more accurate PLSS corner and parcel boundary information is available. We will work with WI DPI and area school districts to reconcile any descrepancies of School District Boundaries as needed.

Standards

- No formal standards implemented.

Election Boundaries

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

Layer Status

- Spatial polygons for **County Supervisor Districts**, **Voting Wards**, and **City Aldermanic Districts** are complete and maintained within the parcel geodatabase. This information is submitted to the WI Legislative Technology Services Bureau (LTSB) for the US Census Bureau's Consolidated BAS (Boundary & Annexation Survey) as required by WI state statutes.

Custodian

- Land Information Office

Maintenance

- Maintenance for all of these layers occurs every redistricting cycle. Wards and Aldermanic Districs are also maintained as annexations are reported to the County. Spatial accuracy of boundaries is continually improved as more accurate PLSS corner, MCD, and parcel boundary information becomes available.

Standards

- Legislative Technical Services Bureau (LTSB)/WLIP required attributes; no other formal standards have been implemented.

Utility Districts – Not Applicable

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

Layer Status

- N/A

Public Safety

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

Layer Status

- Public safety polygon data layers are complete and maintained for **Fire**, **First Responder**, **JAWs**, **Law Enforcement**, and **Ambulance** districts.

Custodian

- Dispatch Office; Land Information Office; Local Public Safety Agencies

Maintenance

- These data layers are updated as needed when County is notified of contract changes with service providers. Also, the spatial accuracy of boundaries are periodically improved as more accurate PLSS corner, MCD, and parcel boundary information becomes available. These data layers are maintained within an ESRI versioned SQL Express geodatabase.

Standards

- Local standards implemented - key attributes and topological structure are maintained for internal use and for what is required to implement this data in the Sungard OSSI based Computer Aided Dispatch (CAD) system used by the County.

Lake Districts – Not Applicable

Layer Status

- N/A; Vernon County does not have any lake districts.

Native American Lands – Not Applicable

Layer Status

- N/A; Vernon County does not maintain a seperate data layer of Native American lands. **Native American owned lands are included within the parcel geometry layer**.

Other Administrative Districts

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

Layer Status

- A polygon layer for boundaries of the Vernon County Forests & Parks is complete. Data is maintained within an ESRI geodatabase format.

Custodian

- Land Information Office, Land & Water Conservation Department (Forest Administrator, Parks Administrator).

Maintenance

- The data layer is generally maintained on an as needed basis. Spatial accuracy of boundaries is periodically improved as more accurate PLSS corner and parcel boundary information is available.

Standards

- No formal standards implemented.

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

- With the exception of the area within the Mississippi River corridor that is south of the Village of Genoa, Vernon County has completed a hydrography data layer adjusted to the 2010 digital orthos and LiDAR surface data. The WI DNR 24K Hydro Geodatabase from 2012 was used as a base to start from and to transfer existing attributes for bank lines, flowlines, and junction points.

Custodian

- Land Information Office.

Maintenance

- Maintenance will be performed on a area by area basis when & where a need for a given spatial update becomes apparent. The area within the Mississippi River cooridor that is south of the Village of Genoa will be updated when time allows. Given the extremely dymanic nature of the river and stream courses in the County due to flooding events we may only decide to have this data layer updated as part of each future digital orthophotography project that is performed.

Standards

- Attempted to partially maintain WI DNR 24K Hydro Geodatabase attributes and logical consistency of features. However, a thorough review and attribute update would be required by the WI DNR before inclusion in a statewide hydro data layer.

Cell Phone Towers

Layer Status

- This data layer has not been fully developed. Information for tower locations is available and Vernon County plans to eventually develop a point data layer for this information as time allows.

Custodian

- Dispatch Office; Land Information Office; Sanitation & Zoning.

Maintenance

- Maintence of this data layer will be ongoing as needed. New locations will be added as new towers are permitted and built.

Standards

- No formal standards implemented.

Bridges

Layer Status

- Vernon County has a completed point data layer for bridges within the county.

Custodian

- Land Information Office, Highway Department.

Maintenance

- As needed updated data is obtained from the WI DOT.

Standards

- No formal standards implemented.

Culverts

Layer Status

- This data layer has not been developed. This is a data layer that the county would like to develop as time permits after the primary parcel data development is completed.

Custodian

- Land Information Office, Land & Water Conservation Department, Highway Department, local units of government

Maintenance

- When this data layer is developed, the county will have to work with the local units of government to implement a plan for notification of culvert replacements. When new culverts are installed the county will plan to collect the necessary information on the new culvert and update the data layer.

Standards

- To be determined.

Other

Non-Metallic Mining

Layer Status

- This layer is partially complete. All mine/quarry areas are in separate shapefiles and updated annually. At some time in the future as time permits, the separate shapefiles will be combined into a central data layer and probably stored in a geodatabase format.

Custodian

- Land & Water Conservation Department (Non-Metallic Mines Administrator).

Maintenance

- The long term plan is that once all of the mine/quarry areas are in one cental data layer, they will be maintained on an as needed basis as the areas are inspected and boundary expansion is tracked annually.

Standards

- To be determined.

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 basic general 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.

To achieve a high level of integration and ensure the long term viability of the County's Land Information System, it is critical for the County's IT Department to be involved with several aspects of system planning, implementation, and maintenance. GIS and Land Information systems are heavily dependent on computer hardware, software, and network environments. The County's IT Department has provided a significant amount of assistance over the past several years and the Land Information Office will continue to work with them on a regular basis to implement and continually improve land information related systems and services for use by internal and external users.

Over time as technology continues to evolve and as the use of GIS technology expands both internally within the County and throughout the State and Nation, we will need to continue to develop, update, and maintain the county land information system to provide the type of quality information and services that citizens have come to expect in a modern world.

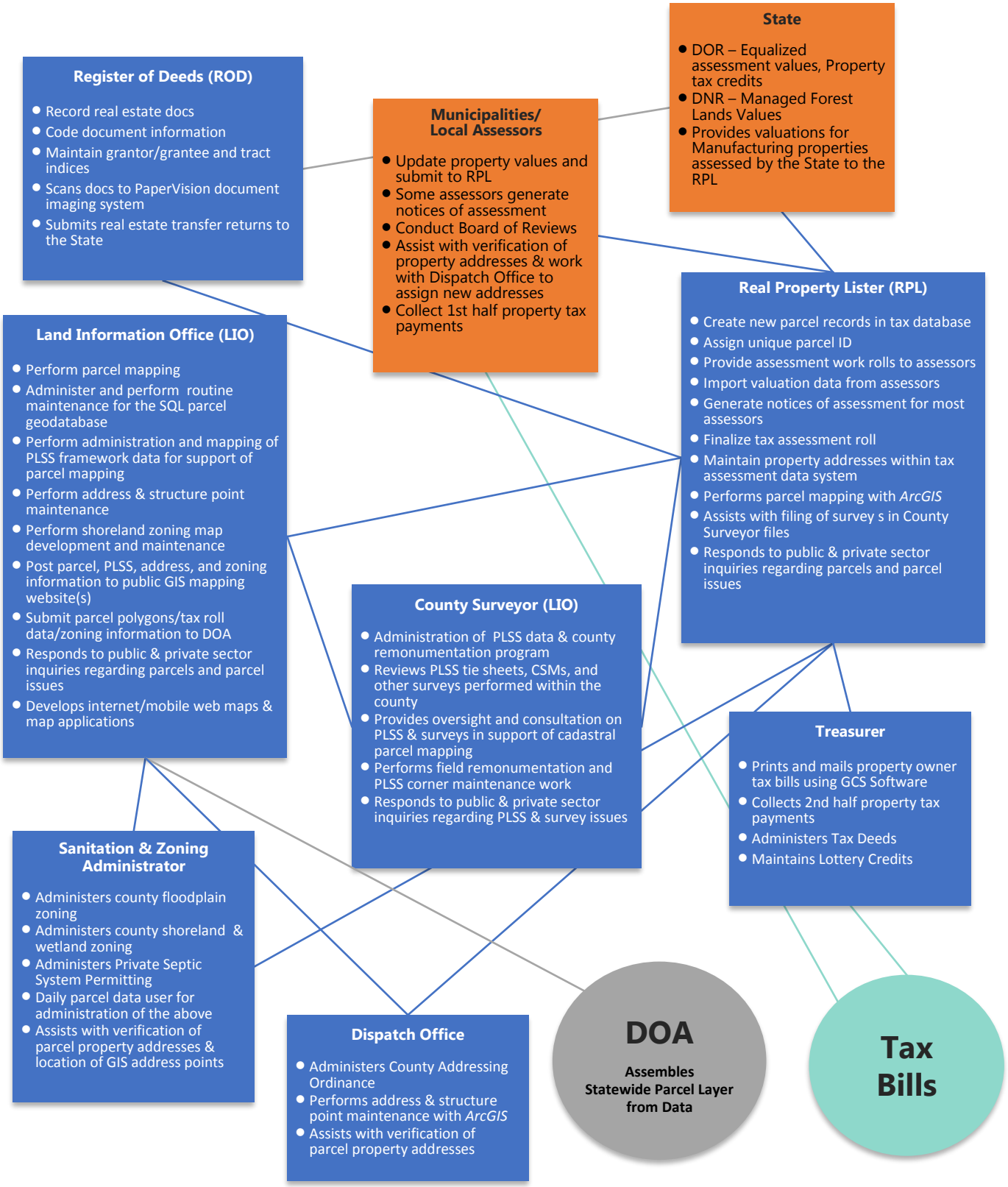
A robust and easy to use land information system has far reaching direct and indirect benefits. It can support economic development, it can be used to promote tourism, it increases productivity for a wide range of program administration & other daily tasks, it provides improved information for decision making, and it increases the availability (e.g. shareable on a 24/7 basis) of a large amount of information that previously was difficult to obtain and compile in a meaningful & useful way.

The following diagrams help to convey a picture of the broad range of entities having some type connection or interaction with Vernon County's Land Information.

Current Land Information System

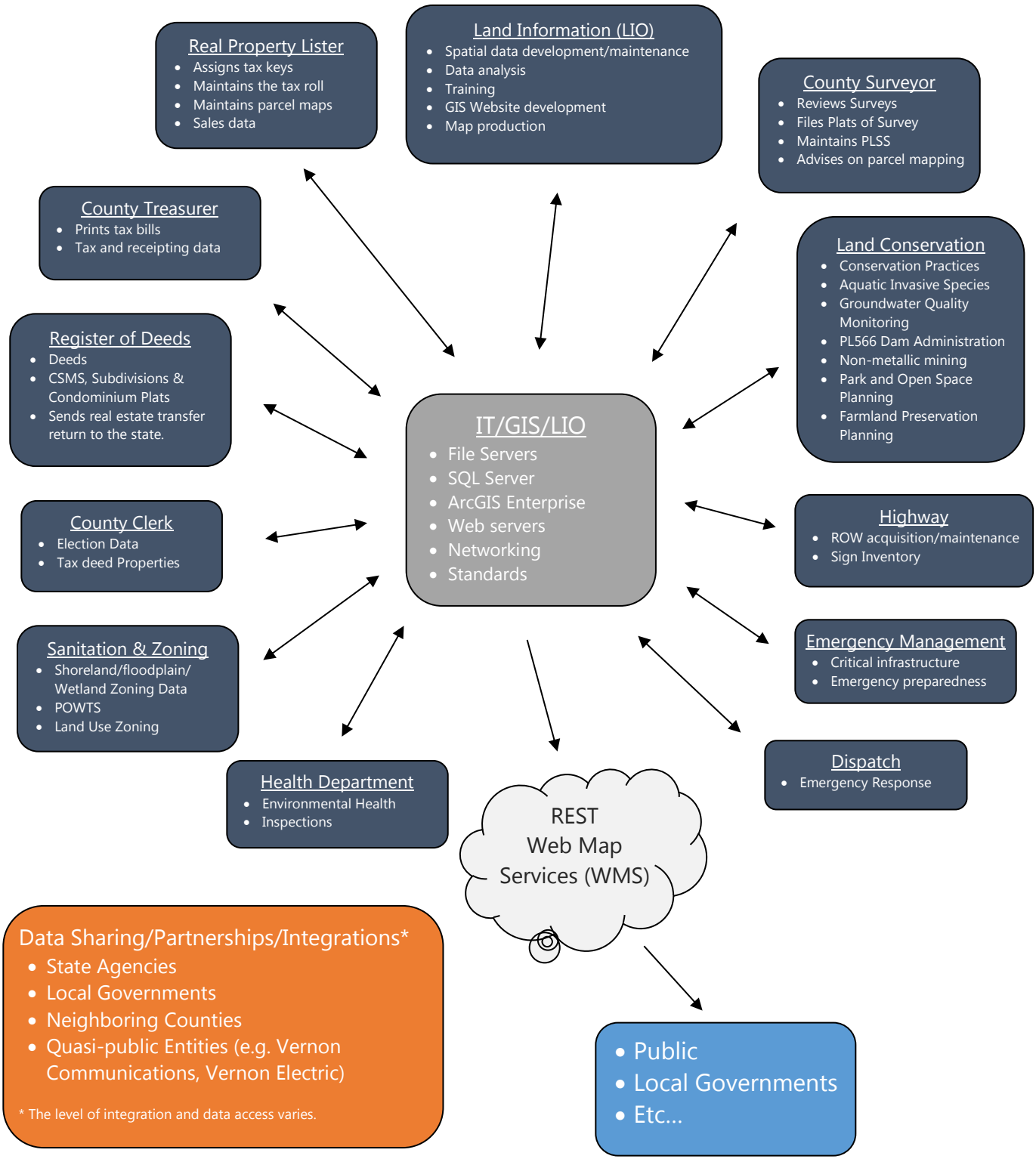
County Parcel Data Workflow Diagram

This is a general diagram that depicts the main participants, office/entity interaction, and the outlined processes that are involved with the management of tax parcels, property addresses, and zoning information in Vernon County. There are many details that can not be included in a one page diagram, but it should provide the reader with a general understanding of the interaction and cooperation that occurs to maintain this information in Vernon County.



Current Land Information System

Diagram of County Land Information System



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 Vernon County computer network spans seven separate building locations connected by a metro-ethernet connection. It sits behind a Fortigate firewall and consists of 23 physical servers and roughly 300 workstations including laptops, desktops and tablets. There are four SQL servers, four file servers, a mail server, web server, and ftp server to name a few. GIS data is backed up to the cloud on a regularly scheduled basis.
- Other hardware used within County for Land Information includes: 1 large and several small format scanners, several color copiers & printers, 2 large format plotters, several handheld GPS units, and 2 survey grade GPS units.

Software

- Operating systems include Windows Server 2008, Server 2012, Server 2016, Windows 7, Windows 8, and Windows 10.
- Vernon County utilizes ArcGIS software for development, maintenance, and publishing of GIS data. As of the date of this plan Vernon County is implementing version 10.5.x and have all licenses under annual support & maintenance and plan to continue to implement version upgrades within 6 months to a year after they become available. We will likely move all County ArcGIS users to version 10.6.x in early 2019. As of the end of 2018, Vernon County has 2 concurrent use ArcGIS Standard licenses, 1 concurrent use 3D Analyst extension, 3 single use ArcGIS Standard licenses, 7 single use ArcGIS Basic licenses, an ArcGIS Server Advanced Workgroup Enterprise (SQL Express) license, 3 single use Spatial Analyst extension, and 3 single use 3D Analyst extensions. These licenses are primarily used by the Land and Water Conservation Department (LWCD), Land Information Office, and Real Property Lister. Other departments/offices that have access to and regularly use ArcGIS include the Dispatch Center in the Sheriff's Department and the Sanitation & Zoning Department. Many individuals within county departments also regularly utilize the current ArcGIS Flexviewer based interactive mapping website for basic GIS and map data needs.
- Plan to purchase a license of AutoCAD for County Surveyor.
- Adobe Acrobat Pro for manipulating scanned pdf documents.
- GCS Software for Property Assessment (Treasurer's Office), Tax Collection (Treasurer's Office), Document Indexing (Register of Deed's Office), and Permits/Tracking (Sanitation & Zoning; Land Conservation).
- Digitech PaperVision for managing document images (Register of Deed's Office).
- OSSI Computer Aided Dispatch (CAD) system which utilizes GIS based map data for emergency response and dispatch (Sheriff's Office – Dispatch Center).

Website Development/Hosting

- ArcGIS Server is used to publish map and image services. These are consumed by our in-house developed ArcGIS Flexviewer based interactive GIS web map. We have Portal for ArcGIS installed and have started working on some test web map/app development. In 2019 we will be updating our public web map and creating additional web maps and apps using ArcGIS Web AppBuilder. We may implement a combination of hosting web maps/apps on ArcGIS Portal and via ArcGIS On-line as we move forward.
- The GCS Web Portal, hosted by the County, provides property tax, property assessment, real estate document information, and a means to purchase digital copies of the documents via the internet.

Metadata and Data Dictionary Practices

Metadata Creation

- **Metadata creation and maintenance process:** Vernon County has still not been very diligent in producing and maintaining metadata for the GIS data layers that are developed and maintained by the County. We have started to enter some basic metadata for our parcel data, but need to complete a significant amount more to comply with the minimum FGDC Content Standard. Most of our time over the past several years has been spent trying to complete parcel mapping and other data development/maintenance responsibilities. During this planning horizon we need to establish a regular metadata maintenance process and make it a routine part of our data maintenance procedures.

Metadata Software

- **Metadata software:** ArcCatalog
  - ✓ The software does generate metadata consistent with the FGDC Content Standard for Digital Geospatial Metadata, and ISO geographic metadata standards 19139/19115.
- **Metadata fields manually populated:** N/A.

Metadata Policy

- **Metadata Policy:** At this time no minimum metadata maintenance policy has been implemented.

Municipal Data Integration Process

- The County develops and maintains parcel mapping and related data for all of the municipalities within the County. No integration has been needed. Of note, the Cities of Viroqua and Hillsboro are utilizing ArcGIS Server based public utility information systems hosted by contractors. These systems are using a published/hosted map service from the County to provide current parcel information to their system users.

Public Access and Website Information

Public Access and Website Information (URLs)

Public Access and Website Information			
GIS Web mapping Application(s) Link - URL	**GIS Download Link - URL**	**Real Property Lister Link - URL**	**Register of Deeds Link - URL**
http://www.vernoncounty.org/LIR.htm	N/A; on request GIS data is placed on a County FTP site for download.	http://www.vernoncounty.org/LIR.htm	http://www.vernoncounty.org/LIR.htm

Vernon County maintains and hosts three web sites providing public access to land information and related land survey information. On the County webserver, the county is utilizing ESRI, GCS, and ftp based applications to host and serve land information to the public over the internet. On the main County web page two links are provided to subpages with disclaimers that direct the user to the specific application pages.

The link for Land Information Resources, http://www.vernoncounty.org/LIR.htm, gives the user the option of going to either the interactive ESRI Flexviewer based GIS map site or the GCS based tabular parcel/document web portal first. Once a user has accessed a parcel record in either system they can interactively lauch the other application to obtain more information. For example, if a user searches for and retrieves a parcel record in the GCS based web portal, a link/button becomes available that when clicked will lauch the Flexviewer based GIS map and automatically zoom to the given parcel records location on the map (note: if the particular parcel has not been mapped yet, the map application will only display the whole county extent and not zoom in). Likewise, if the user starts in the Flexviewer based GIS map first and selects a mapped parcel polygon, a pop-up will display with a hyperlinked parcel number that when clicked will lauch the GCS web portal application and automatically retrieve the parcel record and associated detail information. The GCS web portal application also allows the user to independently search for and purchase real-estate and non-real-estate documents on-line.

While it is not a GIS data download site, the link to the County Surveyor Files, http://www.vernoncounty.org/GIS/index.htm, allows the user to access a link to ftp based directories and sub-folders containing pdf files for old county surveyor records, PLSS tie sheets, plats of surveys, copies of original government PLSS plats, 1896 & 1931 plat books, and a variety of other land survey related information. These ftp directories and sub-folders are not searchable and must be browsed through by the user. However they are logically organized according to the subject material.

Details about the County's plans to update public access and websites during this plan cycle are provided in Section 4 Current & Future Projects. Specifically Project #4 on page 45.

Data Sharing

Data Availability to Public

Data Sharing Policy

- Vernon County provides all publicly available land information in GIS format that it develops and maintains to the public for costs consistent with time and material charges in compliance with the intent of the Wisconsin Open Records Law.

Data Sharing Restrictions and Government-to-Government Data Sharing

Data Sharing Restrictions

- Vernon County has no restrictions on data distribution, search, download, or data privacy policies for publicly available land information in GIS format that it shares with the public and/or private sector. Vernon County utilizes disclaimers that indicate that the end user of the data is responsible for determining fitness for use of any distributed/shared data. The general disclaimer can be found here: http://www.vernoncounty.org/LIR.htm.

Government-to-Government Data Sharing

- In the spirit of the WLIP, Vernon County readily shares all publicly available land information and GIS data that it develops and maintains with other government entities and has no formal policies in place pertaining to other government entities regarding data distribution, search, download, or data privacy.

Training and Education

- At this time Vernon County does not have a formal strategy for training and education concerning the development and use of the County's land information system. The GIS Coordinator and GIS Technician provide individual and small group training to county staff on an as needed basis for a variety of technical GIS development and map production tasks. The Real Property Lister and several Land & Water Conservation Staff members have proficient GIS technical skills and a fair amount of "peer to peer" type training/education occurs on a regular basis as specific needs arise. The GIS Coordinator and GIS Technician regularly attend WLIA conferences, workshops, and meetings to acquire some on-going training and education. However, given the limited budget & time resources available, most training and education for the GIS Coordinator and other land information related staff has occurred through self-training opportunities and sharing amongst colleagues. During this planning cycle the GIS Coordinator and LIO staff will conduct regularly scheduled GIS/land information user meetings to provide more frequent training and education to a broader range of land information users within the county and will likely develop a more formalized training & education strategy concerning the County's land information system and long term needs. Many of the County staff that regularly use the GIS mapping/tax parcel/document websites are able to assist the public with using these applications as requested.

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.

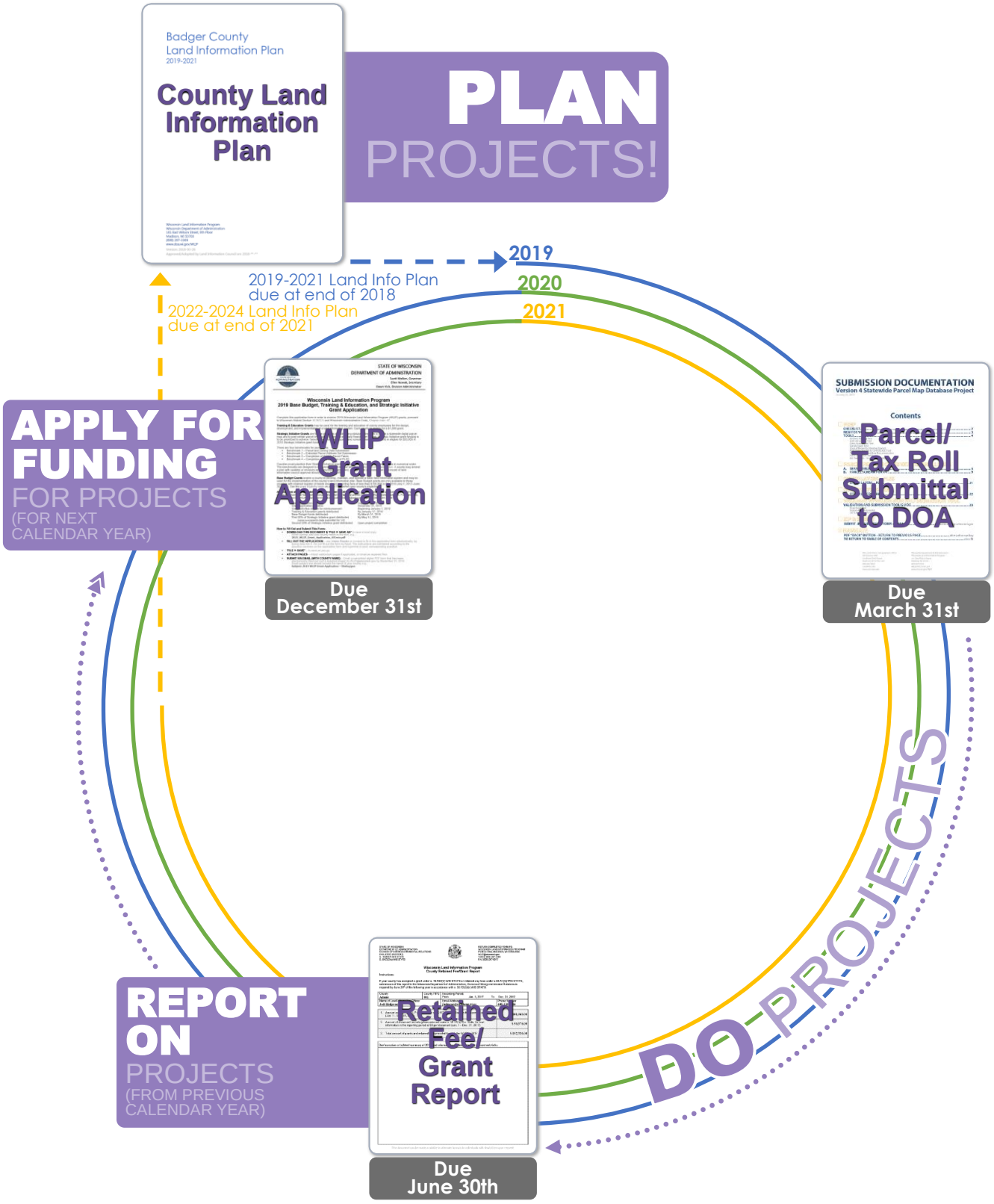


Figure 1. The WLIP Land Information Plan/Grant Project Cycle

Project Plan to Maintain Searchable Format (Benchmarks 1 & 2)

Project Title: Project Plan to Maintain Searchable Format (Benchmarks 1 & 2)

Project Description/Goal

How Searchable Format Will Be Maintained

- Vernon County currently utilizes the following process to prepare the Searchable Format:
    1. Export tax parcel record attribute data from the GCS data system
    2. Load resulting attribute data into an MS Access data base and perform any necessary data formatting/scrubbing & export into dbf file
    3. Join dbf attribute file to a staging copy of the Searchable Format Data Template
    4. Apply appropriate SCO developed Python Script tools to a staging copy of the Searchable Format Data Template to validate and perform required standardization
    5. Correct any data errors in the GCS Property Assessment data system
    6. Repeat steps 1 thru 5 as needed
    7. Load final validated data into the Searchable Format Data Template and submit to DOA
- Sometime during this planning cycle we either plan to create custom Python Scripts building on the SCO developed scripts and using some data views established for the live GCS SQL database to create the required Searchable Format output; or we will obtain the GCS tool that produces the Searchable Format. However, we will not purchase the GCS tool until it has been updated and satisfactorily outputs/exports all of the Searchable Format attributes from the Tax & Assessment Data system using the content standards that are required.
- Vernon County will continue to update and submit Shoreland & Wetland Zoning and Floodplain Zoning data meeting the WLIP attribute standards.
- Even though we do not administer Farmland Preservation Zoning, we will also continue to update and submit this data.

Business Drivers

- The Project Plan to Maintain Searchable Format for Benchmarks 1 & 2 is a requirement for those counties who utilize Strategic Initiative funds for parcel/tax roll formatting to prepare the data submission to DOA.
- Preparing the Searchable Format data for submittal helps the County maintain consistent standardized information within the GCS Tax and Property Assessment data systems and helps trap data entry errors.
- Floodplain Zoning and the Shoreland & Wetland Zoning areas are important areas for landowners and potential property buyers to be aware of when planning for agricultural operations, building structures, and considering other land use options.
- These zoning data layers when used in conjunction with parcel and other foundational data will also greatly assist the Zoning Office in working with landowners during permitting processes; and will also be beneficial to Land Conservation when working with landowners on conservation projects.

Objectives/Measure of Success

- The objective is to continue to meet the Searchable Format for Benchmarks 1 & 2 (Parcel and Zoning Data Submission, Extended Parcel Attribute Set Submission).

Project Timeframes

Timeline – Project Plan to Maintain Searchable Format

Milestone	Duration	Date
Prepare & validate data	2-3 weeks*	March 1-31, 2019
Prep of zoning data	1 week	March 1-31, 2019
Submit data to DOA	–	Annually by March 31

* Note: The 2-3 weeks needed to prepare the Searchable Format has been due to correcting and standardizing the data maintained in the GCS data system as information for the new mapped parcels is run through the data validation process. After our parcel map coverage is complete and we have corrected all of the existing data errors in the GCS Property Assessment data system this process should only take a couple of days to complete.

Responsible Parties

- Land Information Office; Real Property Lister; Sanitation & Zoning

Estimated Budget Information

- If we continue to just use the SCO provided tools for data validation and formatting: in 2019 estimate about 160 hours of staff time to prepare and submit the required data; and estimate 16-20 hours of staff time annually thereafter. Funding Source: WLIP.
- If we implement the GCS Searchable Format data extraction tool, $3,500 for one time purchase plus any staff time needed for data clean-up and standardization. Funding Source: WLIP.

Project Plan for Parcel Completion (Benchmark 3)

Project Title: Project Plan for Parcel Completion (Benchmark 3)

Project Description/Goal

Current status of parcel data

- **Current status of parcel data in the county:** Anticipate completion in 1st quarter of 2019.
- **Tally of the total number of parcels in digital format:** As of 12/10/2018 there are 30,405.
- **Estimated number of parcels yet to be digitized**: 3,649.

Goals

- **Number of parcels to be added for the grant project period(s):** N/A see budget info below.

Planned approach

- At the end of 2018, we have completed the last of our PLSS remonumentation efforts and are entering a PLSS maintenance phase beginning in 2019. Parcel mapping for the remaining areas of the Town of Sterling, Town of Genoa will be mapped in-house; and the mapping of the Village of Stoddard and Village of Genoa by our vendor should be completed in the 1st quarter of 2019.

Business Drivers

- The Project Plan for Parcel Completion is a requirement for those counties who utilize Strategic Initiative funds for work related to digital parcel map completion.
- Parcels have always been the most important, most widely used land information, and the base for many other important Foundational Elements (e.g. Minor Civil Divisions & legislative/voting districts, school districts, taxing districts, zoning districts, etc…).
- The Real Property Lister and County Treasurer need accurate parcel mapping for maintaining the tax assessment roll and managing the property tax collection process.
- Local and state assessors need accurate parcel mapping to perform equitable property assessments.
- The Zoning and Sanitation Office needs accurate parcel mapping to efficiently manage the County Ordinances they are charged to administer.
- Local and state transportation officials need accurate parcels for planning and conducting transportation development projects.
- Emergency response officials need accurate parcel mapping for performing disaster relief assessment and reporting.
- Real estate professionals and appraisers need accurate parcel mapping for providing quality service to their clients.
- Accurate parcel mapping is used by utilities to provide service to customers and maintain their distribution infrastructure.
- Parcels are a required component in the administration of the Farmland Preservation program at the local, county, and state level.

- Accurate parcel mapping assists professional land surveyors when they conduct research of property records for performing accurate land surveys.
- Accurate parcel mapping significantly assists a wide range of natural resource management professionals at all levels of government with the performance of their day-to-day jobs and with the programs they administer that involve management of the land and protection of the environment.
- Land owners use accurate parcel mapping with other map data layers to make informed property management decisions.
- Prospective land purchasers use accurate parcel mapping for making informed buying decisions.
- School Districts need accurate parcel mapping for understanding and tracking their district boundaries.
- Etc…

Objectives/Measure of Success

- The objective is to meet Benchmark 3 (Completion of County Parcel Fabric) for the March 31 data submittal deadline.

Project Timeframes

- Planned completion in the 1st quarter of 2019.

Responsible Parties

- Land Information Office, Real Property Lister, Vendor – Pro West

Estimated Budget Information

- Not utilizing WLIP funds to complete. A FEMA Grant is funding our parcel completion, but this section is being included to clearly explain that we will be spending time working on this effort in 2019. Funding Source: FEMA Grant - PDMC-PL-05-WI-2016-005.

Project #1: 2020 Orthoimagery Acquisition

Project Description/Goal

- Obtain county-wide, leaf-off, 4-band orthoimagery, with 6" ground pixel resolution meeting or exceeding 1.4 feet RMSE horizontal accuracy acquired in Spring 2020.
- **Land Info Spending Category:** Orthoimagery.

Business Drivers

- Detailed and accurate aerial imagery is an important and widely used GIS data layer by everyone.
- It is used to determine current ground condition and the measurement of ground features.
- Orthoimagery is the base from which other data like surface water, road centerlines, and address points are digitized and maintained.
- Current imagery is important for parcel maintenance, assessment, zoning, permitting, planning, land conservation, forest management, law enforcement, emergency response, economic development and many other county programs.
- Citizens commonly use it for property management, acreage determinations, real estate sales, and recreation.
- Continual changes in land use requires periodic updates; since 2005 Vernon County has acquired orthoimagery on a 5 year cycle.
- Provides a historical record of land use changes.
- Participating in the WROC 2020 acquisition program provides an economy of scale and group pricing opportunity.

Objectives/Measure of Success

- Receipt of orthoimagery meeting all project specifications.
- Image(s) & related deliverables made readily available to a broad spectrum of users.

Project Timeframes

Timeline – Project #1 2020 Orthophotography Acquisition		
Milestone	**Duration**	**Date**
Ortho Flight	–	March-April, 2020
Final Deliverables		Est. Dec 2020/Jan 2021

Responsible Parties

- Ayres Associates, Land Information Office.

Estimated Budget Information

- Not-to-exceed $65,280. Funding Source: WLIP Strategic Grant funds over two grant cycles.

Project #2: 2020 3DEP LiDAR Acquisition

Project Description/Goal

- Participate in multi-county LiDAR acquisition project planned for Spring 2020.
- **Land Info Spending Category:** LiDAR.

Business Drivers

- Significant changes in landscape across the county due to flood events, gully washouts/landslides, road & bridge construction/repairs, rural & urban construction/development, damage to PL566 dams, new trail construction/logging skid trails, non-metallic mining activities, continual changes to farm fields & practices, and island creation activities in the Mississippi River.
- The 2010 LiDAR does not meet current national & industry standards; statistically supports 2' contours.
- The 2020 3DEP LiDAR will have double the point density and be twice as accurate; statistically will support 1' contours.
- The existing hydraulic shadows for many of the PL566 Dams appear to be outdated and are based on a less accurate surface data model and they should be updated; new LiDAR data should be acquired before any new dam breach hydraulic analysis is performed; the higher level of accuracy under the 3DEP data standard should reduce or eliminate expensive field work making the analysis process cheaper than it would be without having updated data.
- Any future efforts to update Flood Insurance Rate Maps (FIRMs) should also be performed only with an updated LiDAR data set.
- LiDAR based data is important to the Land Conservation Department for the planning and design of conservation & farm practices, planning for timber harvests & skid trail layout, recreation trail development and maintenance (e.g. County park trails & snowmobile trails), watershed runoff & erosion analysis/modeling, administration & maintenance of the PL566 dams, and administration of non-metallic mining to name a few.
- LiDAR based data can be used by the Highway Department for road construction planning/maintenance, sizing of culverts, and slope determination.
- LiDAR data supports conservation practices & programs administered through FSA, NRCS, DATCP, FEMA, DNR & many other public and private entities involved with land management and planning.
- Engineering firms working with the cities and villages within the County also utilize LiDAR data for planning and design of a variety of construction/development projects they are hired to perform.
- LiDAR based data assists with parcel mapping when legal description boundaries refer to such things as ditches/dry runs, old railroad grades, ridge tops, and abandoned old town road beds that are not visible on an aerial photo.
- 2020 is Vernon County's window of opportunity for taking advantage of the desired 10 year update cycle and USGS 3DEP grant program which provides up to a 50% project cost share.

Objectives/Measure of Success

- Receipt of LiDAR data & associated deliverables meeting all project specifications.

- Data & deliverables made readily available to a broad spectrum of users.

Project Timeframes

Timeline – Project #2 2020 3DEP LiDAR Acquisition		
Milestone	**Duration**	**Date**
Project Start	–	January, 2020
Flight Date	2-4 weeks	March-May 2020
Processing of Data	10 months	June 2020 – Feb 2021
Delivery of Data		Est. March 2021
Data Review/Completion	Approx. 2 months	May 2021

Responsible Parties

- Ayres Associates, Land Information Office, other potential contributing partners.

Estimated Budget Information

- County/contributing partner net share of project cost would be $91,000 to $110,000 depending on optional deliverables. Vernon County will likely need significant outside funding from potential contributing partners in order to participate in this project in 2020. Funding Sources: WLIP, other grants, possible Federal and State partners, possible County & local partners.

Project #3: Re-map City of Westby Parcels

Project Description/Goal

- When the City of Westby was originally mapped by the vendor in 2006, the County did not have the best survey control in the area to map to the spatial accuracy standard that we do now. Therefore, the parcels in some areas of the City are not accurately positioned in relation to features visible on the orthoimagery. There are mapped parcel lines appearing to go through houses on the DOP, when in fact the actual property lines do not. Since the original mapping there has been many new surveys completed in these areas, and the WI DOT has had a Transportation Plat prepared and recorded for State Highway 14 going through the City. We need to re-map much of Westby using the new surveys/Transportation Plat/ground control to achieve the current expected level of spatial accuracy for our parcel map data.
- **Land Info Spending Category:** Digital Parcel Mapping

Business Drivers

- See business drivers listed under the Project Section Titled: **Project Plan for Parcel Completion (Benchmark 3)** on page 41.

Objectives/Measure of Success

- Completion of updated spatially accurate parcel mapping for the City of Westby.

Project Timeframes

- During 1st Quarter of 2019.

Responsible Parties

- Land Information Office.

Estimated Budget Information

- Approximately 512 hours of in-house staff time; estimate $20,480. Funding Source: WLIP.

Project #4: Develop GIS based Web and Mobile Map Applications

Project Description/Goal

- During this plan cycle, Vernon County will develop several public facing and internal web map applications using Web AppBuilder for ArcGIS. These applications will be available for use through internet browsers and via mobile devices. Some of these applications will be designed to allow for update and maintenance of GIS data sets. Planned focused applications include but are not limited to:
    - ✓ General public land information (replaces existing GIS web map)
    - ✓ Land surveying
    - ✓ County Parks & Recreation
    - ✓ Emergency response & damage inspection
    - ✓ Sanitation & Zoning
    - ✓ Road signs maintained by County
- **Land Info Spending Category:** Website Development/Hosting Services.

Business Drivers

- Our existing public facing interactive GIS web map application is nearing technological obsolescence and is not functional for mobile devices; need to update to current industry standards.
- These types of web/mobile applications will be heavily used by government/professional/public clients to spatially locate and retrieve County maintained land information through 24/7 online access.
- The use of mobile/field web map applications to update & maintain GIS data is increasingly being implemented to improve the efficiency of a wide variety of day to day tasks.
- Providing fast & easy access to accurate and abundant land information is one of the pinnacles envisioned by the Wisconsin Land Information Program.

Objectives/Measure of Success

- Completion of the functional web/mobile applications listed.

Project Timeframes

- 2019-2021

Responsible Parties

- Land Information Office & the departments that will be implementing each application.

Estimated Budget Information

- Not sure until we get into it, but estimate roughly 820 hours of in-house staff time to complete applications listed; estimate $32,800. Funding Source: WLIP.

Project #5: Implement Land Conservation Project Tracking System

Project Description/Goal

- The focus of this project is to develop/configure applications within the GCS Permit Tracking module to allow the County Land & Water Conservation Department to more effectively administer several of their programs. These applications will be used to track landowner participation and eligibility for the Wisconsin Farmland Preservation Program; to track compliance with the State's agricultural performance standards and prohibitions; to assist with the administration of non-metallic mining; to track landowners who have purchased trees from the Department at annual tree sales; to monitor invasive species reporting/follow-up; and to track a variety of other projects/contracts performed by the Department.
- **Land Info Spending Category:** Other (Project tracking system set-up).

Business Drivers

- County tracking of the eligibility for Farmland Preservation Program tax certificates and monitoring of compliance with NR 151 agricultural performance standards is required by DATCP.
- A well maintained & organized project tracking data system will provide more accurate information and will allow the Department to provide a higher level of service to the landowners participating in these programs.

Objectives/Measure of Success

- Completion of core data content necessary to implement a functional project tracking system.
- Productivity/efficiency gains for a variety of administrative tasks required for Land & Water Conservation Department managed programs through auto-completion of paperwork & forms and the streamlining of required reporting to State and Federal entities.
- Streamlined information retrieval for assisting and following-up with landowners participating in programs.

Project Timeframes

- GCS will be configuring the data system template and providing training by mid-2019.
- Anticipate performing initial data entry throughout 2019 to reach an operational & maintenance stage.

Responsible Parties

- GCS (vendor), Land & Water Conservation Department, Land Information Office.

Estimated Budget Information

- GCS software module purchase, data conversion, and training $23,000 for Land Conservation's portion of cost. Funding Source: County Ho-Chunk Allocation; WLIP for any LIO staff time.

Project #6: Implement Sanitation & Zoning Permit System

Project Description/Goal

- This project consists of converting MS Access databases for sanitation and zoning permits issued by the County for POWTS, shoreland protection areas, and floodplain areas into the GCS Permit module of the GCS data system suite used by the county and stored in an MS SQL database. In addition to the conversion process it involves system configuration, data standardization, set-up of forms & reports, and training provided to county staff.
- **Land Info Spending Category:** Other (Permits tied to Parcels).

Business Drivers

- Tracking and maintaining sanitation and zoning permits that are tied to parcels in an integrated system is critical to the efficient administration of these permits.
- System will allow information to be readily available to internal and external users through the GCS web portal when viewing parcel record.
- Once in the GCS data system, permit records will be easily linked to GIS based parcel map information.

Objectives/Measure of Success

- Delivery/conversion/and data entry completion necessary to implement a zoning/sanitation permit system integrated with the existing GCS tax parcel records data systems.
- Productivity/efficiency gains for the administrative tasks associated with zoning/sanitation permits.

Project Timeframes

- Throughout 2019; anticipate initial data conversion and set-up to be completed by the end of 2019.

Responsible Parties

- GCS (vendor), Sanitation & Zoning, Land Information Office.

Estimated Budget Information

- GCS software module purchase, data conversion, and training $5,000 for Sanitation & Zoning's portion of cost. Funding Source: County Ho-Chunk Allocation; WLIP for any LIO staff time.

Project #7: Perform Watershed Modeling

Project Description/Goal

- This project will focus on identifying high priority areas for additional conservation and flood mitigation practices. Watershed modelling tools such as the DNR's Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) and ArcGIS ArcHydro Tools will be used to accomplish this.
- Projects 7, 8 & 9 are independent but are mutually beneficial to each other.
- **Land Info Spending Category:** Other (GIS Data Development)

Business Drivers

- Combining information, including drainage area, concentrated flow, highest rate of erosion, land use & land cover data, and greatest public and private funds going to past repairs, will allow Vernon County Land & Water, Emergency Management, Land Information, Highway Department, Resources and Community Development, Tourism, and others to make wise and effective flood reduction investments.
- With limited funding, identifying areas of high priority is important to achieve the "biggest bang for the buck".
- Availability of Federal & State funding distributed to the County for conservation & mitigation programs will be increasingly tied to areas where a clear need has been demonstrated and where these efforts will achieve significant positive results.

Objectives/Measure of Success

- Identifying the areas of highest conservation/flood control priority in the County.
- Ultimately achieving a significant reduction in flooding, erosion, nutrient runoff, and damage to private property & public infrastructure.

Project Timeframes

- 2019-2021

Responsible Parties

- Land & Water Conservation Department, Land Information Office, possibly outside contractor(s).

Estimated Budget Information

- To be determined. Funding Sources: County Ho-Chunk Allocation; WLIP for any LIO staff time, other grants, possible Federal and State partners, possible County & local partners.

Project #8: Develop Disaster/Flood Damage Mapping

Project Description/Goal

- Vernon County has consistently experienced significant flood events. Our goal is to develop and maintain GIS data that allows us to track the locations of both public and private flood damages that occurred from 2007 up to the present. The project will consist of creating a geodatabase structure for the data, acquiring available GIS data from Wisconsin Emergency Management (WEM)/FEMA/or other sources, and manually adding any additional pertinent local information. A second goal of the project is to develop/implement a web/mobile based application(s) for updating and managing this information.
- Projects 7, 8 & 9 are independent but are mutually beneficial to each other.
- **Land Info Spending Category:** Other (GIS Data Development).

Business Drivers

- Funding sources from FEMA, EPA, Army Corps of Engineers, NRCS, and WI DNR have indicated that the County would be more likely to qualify for funding from their various programs if we had better documentation of damages over time and could demonstrate repetitive losses.
- An improved system for managing this information will help to speed up the process of determining damage estimates for emergency declarations.

Objectives/Measure of Success

- Completion of a GIS data set going back to the 2007 flood event that will support an increased eligibility for funding from a broad spectrum of state, federal, and possibly private sources.
- Implementation of an efficient GIS based data entry system that will allow for the entry of new information in a more timely fashion than what has been possible during past disaster events.

Project Timeframes

- Anticipate a multi-year project starting in 2019.

Responsible Parties

- Land & Water Conservation Department, Land Information Office, Emergency Management, Highway Department, Resources and Community Development, WEM, FEMA?

Estimated Budget Information

- To be determined. Funding Sources: County Ho-Chunk Allocation; WLIP for any LIO staff time, other grants, possible Federal and State partners, possible County & local partners.

Project #9: Perform Culvert Inventory

Project Description/Goal

- This project will consist of creating a web map/mobile app to collect/maintain culvert location information, pictures, and other necessary attributes, etc… A geodatabase will be developed for storing the desired information & a standardized inventory form will be created for use on spatial aware mobile devices to collect and enter data. Survey grade GPS equipment will be used when practical and needed to obtain heights of culvert inlets and outlets. The initial project will be conducted within one or two watersheds determined to be the first priority areas for performing watershed modeling.
- Projects 7, 8 & 9 are independent but are mutually beneficial to each other
- **Land Info Spending Category:** Other (GIS Data Development).

Business Drivers

- Information about the location and size of culverts is important for performing accurate water flow and watershed analysis
- Culverts are an important component of road construction/maintenance and help to minimize road washouts and the damming of flood waters behind road beds.
- A comprehensive inventory that includes cost information would facilitate budget planning for maintenance and estimations of damage assessment after

Objectives/Measure of Success

- Completion of a county-wide culvert inventory system that allows for the efficient maintenance and administration of culvert information that can also be used for a variety of detailed watershed analysis and road construction/maintenance planning.

Project Timeframes

- Throughout 2019-2021 and probably continuing for several years into the next plan cycle to complete an entire county-wide inventory.

Responsible Parties

- Will need to be a cooperative team effort lead by the Land & Water Conservation Department, Land Information Office, and Highway Department. We also will probably need to enlist the towns (i.e. Town Patrolmen) to assist with inventorying the culverts along town roads.

Estimated Budget Information

- To be determined.

Project #10: Convert Parcel Geodatabase to the ESRI Parcel Fabric

Project Description/Goal

- This project consists of converting the county GIS parcel data to ESRI's parcel fabric data model. The parcel fabric is an industry standard state of the art data model and associated editing tools within ArcGIS that allows for more efficient parcel editing workflows and rich tracking of parcel related attributes. We do not plan to start this project until the Parcel Fabric is fully operational within ArcGIS Pro, which appears to be scheduled to be available in the next release or two according to ESRI's September 2018 ArcGIS Pro Roadmap listing, https://community.esri.com/docs/DOC-12346-arcgis-pro-roadmap-september-2018.
- **Land Info Spending Category:** Digital Parcel Mapping

Business Drivers

- Advantages of using the ESRI Parcel Fabric data model include the use of specialized ArcGIS tools that have been developed by ESRI to make parcel maintenance more efficient.
- Allows for the maintenance/storage of more document record information (e.g. survey and deed calls) within the parcel geodatabase.
- Provides an option to use a more automated adjustment of parcel geometries as additional survey information becomes available and is added to the Fabric (e.g. potential to save time on re-mapping work).
- Allows for the reporting of statistical accuracies related to surveyed lot corner locations.

Objectives/Measure of Success

- Completion of the conversion of the existing County parcel data set into the ESRI Parcel Fabric data model and becoming proficient in maintaining the data within the Fabric structure.

Project Timeframes

- Anticipate working on this throughout 2020 or 2021 depending on the availability and stability of the Parcel Fabric management tools in ArcGIS Pro.

Responsible Parties

- Land Information Office, Real Property Lister.

Estimated Budget Information

- To be determined.

Project #11: Develop County Park/Forest Trails Data

Project Description/Goal

- The focus of this project is to develop accurate trail data for the County Parks & Forests. The project will utilizing both LiDAR based terrain data and field GPS data collection. The project will also involve the creation of a geodatabase with trail attribute information that supports all of the business needs listed below.
- **Land Info Spending Category:** Other (GIS Data Development)

Business Drivers

- Accurate trail information supports public recreational use of the County Parks/Forests.
- Accurate trail information supports the administration of trail & other maintenance work within the County Parks/Forests.

- Accurate trail information facilitates emergency response incidences within the County Parks/Forest.
- Accurate trail information for the County Parks/Forests will help to promote tourism in Vernon County.

Objectives/Measure of Success

- The full completion of an accurate GIS based trail data layer fully attribute to support all required business needs.

Project Timeframes

- Throughout 2019.

Responsible Parties

- Land & Water Conservation Department, Land Information Office.

Estimated Budget Information

- Approximately 3 weeks (120 hours) of Land Information Staff Time; which equates to approximately $4,000 to $4,500.

Project #12: Scan Past Tax Roll Books & Make Available On-line

Project Description/Goal

- The focus of this project is to create pdf files for the tax roll books going back to 1994. The printed books for 1994 to 1999 are bound by municipality and in secure storage. These older books will be scanned in-house. The books for 2000 and later can be send to pdf files directly from the GCS Property Assessment & Taxation System.
- **Land Info Spending Category:** Other Parcel Work

Business Drivers

- This information is needed and requested by several real estate related professionals and the general public on a regular basis; having it available on-line will make the information available 24/7 and will reduce the time spent by staff preparing and sending it out.

Objectives/Measure of Success

- Complete scanning of the 1994 - 1999 printed tax roll books into pdf files.
- Generate pdfs of year 2000 and later tax rolls directly from the GCS data system.
- Make copies of pdf files available on-line.

Project Timeframes

- During 2019 as staff time permits.

Responsible Parties

- Treasurer's Office, Real Property Lister, Land Information Office, IT Department.

Estimated Budget Information

- Estimate that it will take approximately 100 hours to scan the 1994-1999 printed books; and it will take approximately 20 hours to run the 2000 and later books through the GCS program. 120 total hours of staff time would equate to roughly $3,000 to $3,600.

Ongoing Costs Not Associated with a Specific Project

Annual Software Licensing and Support (i.e. ESRI; GCS Web Portal)

The licensing and support costs for the ESRI software that the county maintains will be approximately $13,000 per year. The licensing for the web portal application from GCS that the county maintains to provide tabular parcel and document information to the public over the internet is approximately $2,000 per year. These costs are funded 100% by WLIP funds.

Land Information Office Positions

The salary, retirement benefits, and health insurance costs for the GIS Coordinator and the GIS Technician total approximately $130,000 per year. At this time these position are 100% funded by WLIP funds and will likely continue to be funded with WLIP funds indefinitely. From year to year, various combinations of retained fees, base budget projects, and strategic initiative grant projects will be allocated to cover the cost for these positions. In addition to working on several of the focused projects identified in this plan, these positions will also continue to assist with the on-going maintenance of all of the County's GIS data sets. This also consists of approximately 320 hours per year of time needed for the base operation of the Land Information Office for activities such as Land Information Council meetings, GIS software installation & support, WLIP related duties, budgeting, GIS database maintenance, land information project planning & consultation, and other necessary office tasks.