Vernon County
Land Information Plan
2022-2024

CONTENTS

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. For 2022, Vernon County was awarded $41,440 in WLIP grants (i.e. base budget, strategic initiative, and training/education) and retained a total of $58,720 in local register of deeds document recording fees (i.e. WLIP Retained Fees) for land information (State fiscal year of July 2020 – June 2021). WLIP funding for Vernon County is anticipated to be fairly consistent in the foreseeable future. Vernon County is one of the 42 WI Counties that are eligible for a WLIP Base Budget (BB) Grant. The BB Grants ensure every eligible county has a minimum base of $100,000 per year to operate a Land Information Office. Also, every county is eligible to receive an annual WLIP Strategic Initiative (SI) Grant of $50,000 ($60,000 for 2022). The priorities required for the SI Grant are to apply these funds to 1.) completion of parcel map coverage; 2.) PLSS corner remonumentation; 3.) acquire orthoimagery; and 4.) acquire LiDAR. Over the 2019-2021 plan years, Vernon County has applied these SI Grant funds primarily to orthoimagery and LiDAR acquisition projects. Since the County has recently completed these SI Grant priority activities, over the 2022-2024 planning cycle, we will be able to apply the SI Grant funds to other land information activities identified in this plan.

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 continue to develop and maintain several interactive GIS based web map applications; will continue to work toward achieving gains in governmental efficiencies by broadening the utilization of GIS within County Departments; will make improvements in parcel mapping accuracy as new survey control becomes available; will continue to develop, improve, and maintain a spectrum of land information data to meet the needs of citizens, businesses, and units of government.

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: 2022-2024	
Project #1	Complete Implementation of the ESRI Parcel Fabric
Project #2	Flood Damage Tracking & Response System
Project #3	Implement a Culvert Inventory System
Project #4	Perform Watershed Modeling
Project #5	Land Conservation Project Tracking GIS Data Layers
Project #6	Completion of a POWTS Data Layer
Project #7	Perform NG911 Data Migration
Project #8	Continue to Develop GIS based Web and Mobile Map Applications

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 in 2019 completed the initial county-wide remonumentation and parcel mapping efforts. With WLIP funding Vernon County is well positioned to continue modernization of it's land information.

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—

> ## LAND INFORMATION
>
> Any physical, legal, economic or environmental information or characteristics concerning land, water, groundwater, subsurface resources or air in this state.
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> '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)*

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. It is anticipated that there will be little change to the WLIP Benchmarks for this planning cycle.

WLIP Benchmarks (For 2022-2024 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 Intergraph 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 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; LandNav/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) 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 LandNav/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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- **2019: Completed initial county-wide parcel map development** - a total of 4,939 parcels were mapped and/or updated including a focused project to update parcel mapping in the City of Westby which had been originally mapped without good ground control; **completed an update of the County's interactive GIS web map application** to replace the previous ESRI Flexviewer based app. The new app was created using ESRI's Web App Builder with several improvements over the previous site; the public GIS web map is widely used by the public and County staff; the **Full-time County Surveyor Position maintained over 100 PLSS Corners.**

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- **2020:** Participated in the **2020 WROC orthoimagery project** and acquired 6" resolution aerial imagery flown in late April; part of **2020 multi-county LiDAR project** partially funded through a USGS Grant**; Upgraded from ArcGIS Server Workgroup SQL Express License to ArcGIS Server Enterprise License;** the **County Surveyor maintained 146 PLSS Corners.**

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- **2021: Continued to revise, maintain, and improve parcel & addressing data (over 1660 parcels revised, 182 address points added)**; moved SQL Express based parcel database to PostgreSQL based parcel database; set-up of geodatabases for culverts and the Parcel Fabric; performed the technical mapping work for the County Supervisory District Redistricting process; the **County Surveyor maintained 53 PLSS Corners & observed 128 benchmarks for the upcoming 2022 national datum adjustment.**

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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 2022-2024 plan, completed at the end of 2021, is the third post-Act 20 required update.

County Land Information Plan Timeline
- DOA release of finalized instructions by March 31, 2021.
- April–September 2021: Counties work on land info plans.
- Draft plans due to DOA by September 30, 2021 (but sooner is advised).
- Final plans with county land information council approval due by December 31st, 2021.

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				
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+ Kay Stanek	County Board Member	Vernon County Board	kay.stanek@vernoncounty.org	608-489-3515
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+ Dan Kiedinger	Realtor Representative	Oakwood Realty	dan@oakwoodrealty.com	608-606-5344
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+ Land Information Council Members

2 FOUNDATIONAL ELEMENTS

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

In the past, Foundational Elements were selected by the former Wisconsin Land Information Board under the guiding idea that program success is dependent upon a focus for program activities. Thus, this plan places priority on certain elements, which must be addressed in order for a county land information plan to be approved. Beyond the county's use for planning purposes, Foundational Element information is of value to state agencies and the WLIP to understand progress in completion and maintenance of these key map data layers.
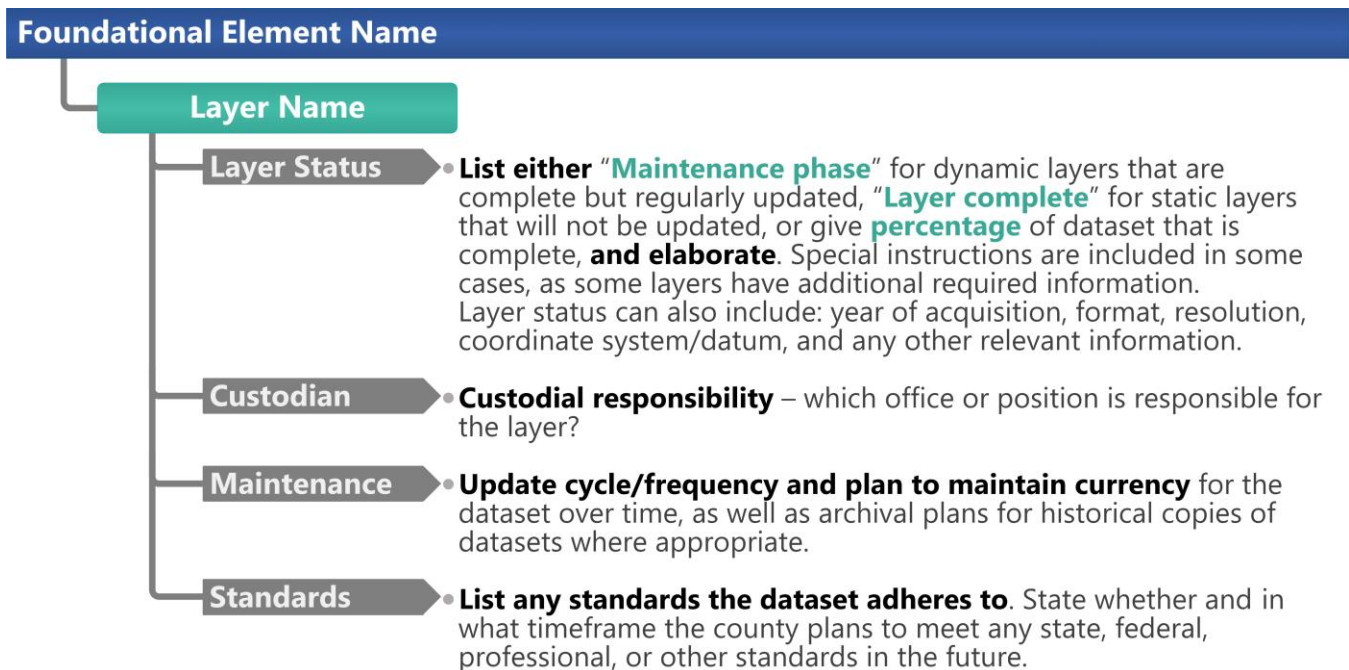
> **FOUNDATIONAL ELEMENTS**
>
> PLSS
> Parcel Mapping
> LiDAR and Other Elevation Data
> Orthoimagery
> Address Points and Street Centerlines
> Land Use
> Zoning
> Administrative Boundaries
> Other Layers

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:

Foundational Element Name

Layer Name

Layer Status • **List either** "**Maintenance phase**" for dynamic layers that are complete but regularly updated, "**Layer complete**" for static layers that will not be updated, or give **percentage** of dataset that is complete, **and elaborate**. Special instructions are included in some cases, as some layers have additional required information.
Layer status can also include: year of acquisition, format, resolution, coordinate system/datum, and any other relevant information.

Custodian • **Custodial responsibility** – which office or position is responsible for the layer?

Maintenance • **Update cycle/frequency and plan to maintain currency** for the dataset over time, as well as archival plans for historical copies of datasets where appropriate.

Standards • **List any standards the dataset adheres to**. State whether and in what timeframe the county plans to meet any state, federal, professional, or other standards in the future.

PLSS

Public Land Survey System Monuments

Layer Status

PLSS Layer Status	
	Status/Comments
Number of PLSS corners (section, ¼, meander) **set in original government survey** that can be remonumented in your county	• Approx. 2827, 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 of PLSS corners capable of being remonumented in your county that **have been remonumented**	• 2671 (94.5%)
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	• 2652 (94%)
Number survey grade PLSS corners integrated into county digital parcel layer	• 2652 (94%)
Number of non-survey grade PLSS corners integrated into county digital parcel layer	• 156 (5.5%)
Tie sheets available online?	• Yes; but 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: https://apps.vernoncounty.org/vcgis/apps/webappviewer/index.html?id=7731a7d9254c4ed6afb750763659914a ; or from an online ftp site organized by Township & Range folders: https://apps.vernoncounty.org/GIS/Directory/PLSS%20Tie%20Sheets/
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 can easily add a URL path for each PLSS corner if needed, and have done so for PLSS data submittals to the WLIP/SCO; as of 2021 we maintain digital tie sheet files in .pdf format as **GDB 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	• 156
Approximate number of PLSS corners believed to be lost or obliterated	• 0%; (see Status/Comments 2 rows down regarding PLSS Corners flooded within the Mississippi River)
Which system(s) for **corner point identification/ numbering** does the county employ (e.g., the Romportl point numbering system known as Wisconsin Corner Point Identification System, the BLM Point ID Standard, or other corner point ID system)?	• The Romportl point numbering system (a.k.a. Wisconsin Corner point Identification System) is the primary PLSS Corner number we maintain in our geodatabase. • We are still maintaining a local point identification number 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: Vernon Co PLSS Section Corner Numbering Schema.pdf • When we move to the ESRI Parcel Fabric, we will probably retire the local number since the surveyors are now familiar with the Romportl numbering system.
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	• No non-PLSS areas as listed to the left. However, we now have some land areas of the County that originally fell within

regarding PLSS data for tribal lands?	the Mississippi River, during the Orig. Gov. Survey and/or any re-surveys that were performed thereafter and therefore were not included in these surveys. We are currently reviewing a situation where we now have land being occupied by private and public entities in the Village of Genoa that was within the Mississippi River when the original government survey was performed. This is an area that was filled in between the railroad and the location of the former State Highway 35 prior to construction of the current State Highway location. We also have an island that we believe to be part of WI and Vernon County that was not officially included as part of the Orig. Gov. Survey for WI or MN. These two situations will require the US Dept. of Interior to authorize a Gov. Resurvey. 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. The Corp of Engineers is currently building several islands. When these islands 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 of PLSS corners remonumented along each county boundary	• 33 (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 of remonumented PLSS corners along each county boundary with survey grade coordinates	• 28 (85%) 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 • 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

Custodian
- County Surveyor, Land Information Office

Maintenance
- Beginning in 2019, Vernon County established 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 has started 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 GPS observation of coordinates for the remaining corners that need to meet the Survey Grade standard. Our goal is to have all PLSS corners in Vernon County meet the Survey Grade standard by the end of 2023.

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 completed and in a data maintenance stage.

Custodian
- Land Information Office, County Surveyor.

Maintenance
- These data layers are typically maintained as parcel geometries and PLSS corners are edited within a given area. All are maintained within the parcel geodatabase. The spatial accuracy of these data layers is continually improved as more accurate PLSS corner, surveys, and parcel boundary information becomes available.

Standards
- Currently implementing the core features of the PLSS Framework layers of the ESRI/Von Meyer ArcGIS Land Parcel Data Model. During this 3 year plan cycle, plan to implement the ESRI Parcel Fabric which will incorporate/support these data layers.

Wisconsin Height Modernization Program Geodetic Control Network (i.e. HARN)

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:** In Vernon County, 100% of the county's parcels are available in a commonly-used digital GIS format.
- **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 <u>not</u> have a parcel polygon model that directly integrates tax/assessment data as parcel attributes. However, approximately 4-5 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:** Vernon County does plan to implement the ESRI Parcel Fabric Data Model.
- **Online Parcel Viewer Software/App and Vendor name:** In-house using the ESRI Web AppBuilder for ArcGIS. Our GIS parcel viewer uses unique URLs to connect and retrieve parcel records via the LandNav/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 LandNav/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; LandNav/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**.**

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 LandNav/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 LandNav/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 **minimal 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 LandNav/GCS software that we use complies with this format standard.

Non-Assessment/Tax Information Tied to Parcels
POWTS - Private on-site water treatment system permits

- The Zoning & Sanitation Office has maintained an MS Access database of permits for systems installed in the County for several years. This data can be linked/joined to the parcel polygons via the PIN. A polygon data layer of POWTS locations was started to be developed by the LIO several years ago utilizing summer GIS interns. 3-4 of 21 towns had been completed. During the previous plan cycle no additional development was performed on this data. After stumbling with the GCS "Permit" application (i.e. toolbox) for a couple of years, the County is now working with Transcendent Technologies (TTECH) to convert the data into the TTECH Permitting Solution and integrating it with the GCS Property Assessment data system. This conversion/implementation is planned to be completed in 2022.

Custodian

- Zoning & Sanitation, Land Information.

Maintenance

- The Zoning & Sanitation Office will maintain the permitting information in the TTECH Permitting data system. When time permits, the Land Information Office will assist the Zoning & Sanitation Office to complete a GIS data layer of the POWTS polygons and will assist with maintenance of the GIS data (see Project #6, Page 48).

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 Zoning & Sanitation 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 into the TTECH Permitting Solution and will be integrated with the GCS Property Assessment data system. This conversion/implementation is planned to be completed in 2022.

Custodian

- Zoning & Sanitation.

Maintenance

- The Zoning & Sanitation Office will maintain the permitting information in the TTECH Permitting 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:** LandNav/GCS Document Indexing – from vendor LandNav/GCS. Complete back to 1930 (Deeds) and 1948 (Mortgages).
- **Tract Index:** LandNav/GCS Document Indexing – from vendor LandNav/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 the LandNav/GCS Web Portal – from vendor LandNav/GCS Software.

Custodian
- Register of Deeds Office

Maintenance
- Document records are maintained on a daily basis as they are recorded. Back indexing of the computerized Grantor/Grantee Index is worked on 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 2020 by Ayres as part of the multi-county WI WROC – 3DEP LiDAR QL2 project. Consists of separate LAS files for bare earth and non-bare earth point cloud data.
- **Accuracy:** The ground to LiDAR DEM model tested vertical accuracy was 0.204 feet (0.104 feet RMSEz) for nonvegetated areas at the 95% confidence level. The ground to LiDAR DEM model tested vertical accuracy was 0.437 feet (0.271 feet RMSEz) Forest land cover type, and 0.446 feet (0.104 feet RMSEz) Tall Weeds land cover type for vegetated areas at the 95% confidence level.
- **Post spacing:** 2.3 feet.
- **Next planned acquisition year:** possibly 2030.

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 Vertical Accuracy Specifications per USGS QL2 level specs:
    LAS: NVA equates to 10 cm RMSEz, or 19.6 cm (0.64 ft) at the 95% confidence level.
    DEM: NVA equates to 10 cm RMSEz, or 19.6 cm (0.64 ft) at the 95% confidence level.
        VVA equates to 29.4 cm (0.96 ft) at the 95th percentile.

LiDAR Derivatives

Bare-Earth Elevation Contours
Layer Status
- Ayres produced 1' contours that were delivered with the 2020 QL2 LiDAR data. They are tiled by 4500' x 4500' square tiles in shapefile format.

Custodian
- Land Information Office

Maintenance

- No plan to edit/maintain the delivered 1' contour tiled files. The tiled files will eventually be assembled into a geodatabase feature class for a variety of mapping needs and display. We also can create/render contours at various intervals as needed from the delivered county-wide DEM if needed.

Standards

- (see Standards given above for LiDAR)

LiDAR Derivatives
Bare-Earth Digital Elevation Model (DEM)
Layer Status

- Ayres produced raster DEMs that were delivered with the 2020 QL2 LiDAR data. Raster tiles 4500' x 4500' square in .tif format, as well as a county-wide composite DEM in .tif format were provided.

Custodian

- Land Information Office

Maintenance

- N/A.

Standards

- (see Standards given above for LiDAR)

LiDAR Derivatives
Digital Surface Model (DSM)
Layer Status

- Ayres produced raster DSMs that were delivered with the 2020 QL2 LiDAR data. Raster tiles 4500' x 4500' square in .tif format, as well as a county-wide composite DEM in .tif format were provided.

Custodian

- Land Information Office

Maintenance

- N/A.

Standards

- (see Standards given above for LiDAR)

LiDAR Derivatives
Hydro-Enforced DEMs
Layer Status

- Currently have no Hydro-Enforced DEM data. If awarded the FEMA BRIC Grant we will aqcuire a Hydro-Enforced DEM for the Coon Creek, and the West Fork of the Kickapoo watersheds for watershed modeling work being performed as part of the FEMA BRIC Grant project. (see Project #2, Page 44)

Custodian

- Land Information Office

Maintenance

- N/A.

Standards

- (see Standards given above for LiDAR)
- Vendor specifications of 2-foot pixel resolution suitable for hydro modeling and land conservation planning

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:** 2020
- **Resolution:** 6"
- **Contractor's standard:** Aerial imagery was collected to produce 4-band orthoimagery, having 6" ground pixel resolution meeting or exceeding 1.4 feet RMSE National Standard for Spatial Data Accuracy (NSSDA) horizontal accuracy standards.
- Vernon County was a participant in WROC 2020. A county-wide mosaic in MrSID format, and 1 PLSS Section tiles in both GeoTIFF and MrSID formats of the imagery were delivered in 2021.
- **Next planned acquisition year:** 2025

Custodian

- Land Information Office.

Maintenance

- N/A

Standards

- See contractor's standard above; 6" resolution; natural color; acquired in April of 2020 under leaf-off, snowless, and cloud free conditions.

Historic Orthoimagery

2015 WROC

Layer Status

- Vernon County was a participant in WROC 2015. A county-wide mosaic in MrSID format, and 1 PLSS Section tiles in both GeoTIFF and MrSID formats of the imagery were delivered in 2016.

Custodian

- Land Information Office.

Maintenance

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

Standards

- 6" resolution; natural color; acquired in March - April of 2015 under leaf-off, snowless, and cloud free conditions. 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.

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 maintenance 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.
- As the implementation of NG9-1-1 progresses over the next couple of years, Vernon County will migrate this data to the Wisconsin GIS NG9-1-1 Data Standard.

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

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 Zoning & Sanitation 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 ***Central Square*** Computer Aided Dispatch (CAD) system used by the County.
- Wisconsin GIS NG9-1-1 Data Standard (Site/Structure Address Point).

Structure Point Data

Layer Status

- The structure point layer is complete and in an on-going maintenance stage county-wide. Data is maintained within an ESRI geodatabase format.
- As the implementation of NG9-1-1 progresses over the next couple of years, Vernon County will migrate this data to the Wisconsin GIS NG9-1-1 Data Standard.

Custodian

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

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

- We have a building footprint data set that was acquired from a Microsoft Open Data source in late 2019. A shapefile was created, but it has not been updated since. When we have time we will update this data layer using our 2020 LiDAR data. Points classified as buildings will be extracted from the LAS files and converted to polygons using ArcGIS Pro. At that time we will determine if this should be made part of our parcel geodatabase or if it would be more applicable to be stored in the pending NG9-1-1 geodatabase.

Custodian

- Land Information Office, Zoning & Sanitation.

Maintenance

- As needed and/or as time permits.

Standards

- No formal standards implemented.

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.
- As the implementation of NG9-1-1 progresses over the next couple of years, Vernon County will migrate this data to the Wisconsin GIS NG9-1-1 Data Standard.

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 ***Central Square*** Computer Aided Dispatch (CAD) system used by the County.
- Wisconsin GIS NG9-1-1 Data Standard (Site/Structure Address Point).

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. Data is considered complete with the exception of areas needing revisions and/or additional research.

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

Recreational Trails

Layer Status
- A trail data layer is complete for all of the County Parks & Forests. 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 Land Information Office will also work with other entities within the county to develop and include trails they manage for inclusion in the county-wide layer. Recreational trails are considered an important auxillary data layer that is included in the County's computer aided dispatch system for emergency response and rescue.

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

Maintenance
- Trails are updated as needed and as time permits.

Standards
- No formal standards implemented; output in shapefile format is required for inclusion in the *Central Square* Computer Aided Dispatch (CAD) system used by the County.

Trails

Snowmobile Trails

Layer Status
- Complete.

Custodian
- Land Information Office; Land & Water Conservation Department Parks Director.

Maintenance
- The trails are set-up and maintained by local snowmobile clubs. Annually the local clubs provide us with updates on trail locations.

Standards
- No formal standards implemented; output in shapefile format is required for inclusion in the *Central Square* 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 may need significant revisions in more developing areas around the cities and villages to be useful for local planning efforts and site specific application. When Vernon County does update this data layer, additional resources such as the Wiscland 2 Land Cover Data, published in 2016, and the 2020 DOP imagery will be used.

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. This may be an easier data layer to maintain if it is made part of the parcel maintenance workflow. However, given current workloads and staffing levels, continual maintenance of this data layer is not feasible at this time.

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 will be periodically re-assessed.

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
- Zoning & Sanitation; 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.
- **Letters of Map Amendments (LOMAs):** The county currently has very few LOMAs on file. When we start getting more of these in we will establish a point feature class to maintain this information in and include a link to the scanned FEMA letter document for each LOMA and make it available on the Public GIS web map.
- **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 released 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
- Zoning & Sanitation; 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 2021, the Towns of Christiana, Coon, Harmony, Stark, and Viroqua 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 parcel mapping 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** following the 2010 Census 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. As of the writing of this plan document, the Redistricting process following the 2020 Census is in progress; once complete the new **County Supervisor Districts**, **Voting Wards**, and **City Aldermanic Districts** will be maintained within the parcel geodatabase.

Custodian

- Land Information Office

- Maintenance for all of these layers occurs every redistricting cycle. Wards and Aldermanic Districts 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

Emergency Service Boundary – Law/Fire/EMS
Layer Status

- **Law Enforcement:** Complete; migration to WI GIS NG9-1-1 Data Standard **not complete**
- **Fire:** Complete; migration to WI GIS NG9-1-1 Data Standard **not complete**
- **EMS (First Responders, JAWs, Ambulance):** Complete; migration to WI GIS NG9-1-1 Data Standard **not complete**

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 a geodatabase.
- As the implementation of NG9-1-1 progresses over the next couple of years, Vernon County will migrate this data to the Wisconsin GIS NG9-1-1 Data Standard.

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 ***Central Square*** Computer Aided Dispatch (CAD) system used by the County.
- Wisconsin GIS NG9-1-1 Data Standard (Emergency Service Boundary).

Public Safety Answering Points (PSAP) Boundary
Layer Status

- **PSAP Boundary:** our PSAP boundary is the same as the county boundary defined by our Minor Civil Division (MCD) data layer; this boundary will be implemented/transferred into our Wisconsin GIS NG9-1-1 geodatabase when that is set-up and populated.

Custodian

- Dispatch Office; Land Information Office

Maintenance

- The spatial accuracy of the county boundary is periodically improved as more accurate PLSS corner, MCD, and parcel boundary information becomes available. This data layer (i.e. MCD) is currently maintained within the parcel geodatabase.
- As the implementation of NG9-1-1 progresses over the next couple of years, Vernon County will migrate this data to the Wisconsin GIS NG9-1-1 Data Standard.

- Local standards implemented - key attributes and topological structure are maintained for internal use and for what is required to implement this data in the ***Central Square*** Computer Aided Dispatch (CAD) system used by the County.
- Wisconsin GIS NG9-1-1 Data Standard (PSAP Boundary).

Provisioning Boundary

Layer Status

- **Provisioning Boundary:** our Provisioning Boundary is the same as the county boundary defined by our Minor Civil Division (MCD) data layer; this boundary will be implemented/transferred into our Wisconsin GIS NG9-1-1 geodatabase when that is set-up and populated.

Custodian

- Dispatch Office; Land Information Office

Maintenance

- The spatial accuracy of the county boundary is periodically improved as more accurate PLSS corner, MCD, and parcel boundary information becomes available. This data layer (i.e. MCD) is currently maintained within the parcel geodatabase.
- As the implementation of NG9-1-1 progresses over the next couple of years, Vernon County will migrate this data to the Wisconsin GIS NG9-1-1 Data Standard.

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 ***Central Square*** Computer Aided Dispatch (CAD) system used by the County.

Other Public Safety
e.g., Healthcare Facilities
Layer Status

- Not developed; will need to talk with Health Dept and Emergency Management to develop a plan for this data layer during this or a future plan cycle.

Custodian

- Public Health Dept; Land Information Office; Emergency Management

Maintenance

- TBD.

Standards

- TBD.

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; this consists of approximately 1,200 acres that are located within and are part of the Kickpoo Valley Reserve**.

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 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 case by case basis when & where a need for a given spatial update becomes necessary. 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 update this data layer as future digital orthophotography projects are 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; Zoning & Sanitation.

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

- 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
- As of the fall of 2021 this data layer has just been started to be developed. See Project #3, Page 46.

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 and/or implement a system where the local units of government can update information about culverts they install.

Standards
- To be determined.

Other/Miscellaneous

Non-Metallic Mining

Layer Status
- This layer is partially complete. All mine/quarry areas are in separate shapefiles and updated annually. 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 a connection or interaction with Vernon County Land Information. The first one is specific to parcel and related data management and the second one is intended to emphasize the broad range of users that rely on land information produced by the County.

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.

State
- DOR – Equalized assessment values, Property tax credits
- DNR – Managed Forest Lands Values
- Provides valuations for Manufacturing properties assessed by the State to the RPL

Register of Deeds (ROD)
- Record real estate docs
- Code document information
- Maintain grantor/grantee and tract indices
- Scans docs to PaperVision document imaging system
- Submits real estate transfer returns to the State

Municipalities/ Local Assessors
- Update property values and submit to RPL
- Some assessors generate notices of assessment
- Conduct Board of Reviews
- Assist with verification of property addresses & work with Dispatch Office to assign new addresses
- Collect 1st half property tax payments

Real Property Lister (RPL)
- Create new parcel records in tax database
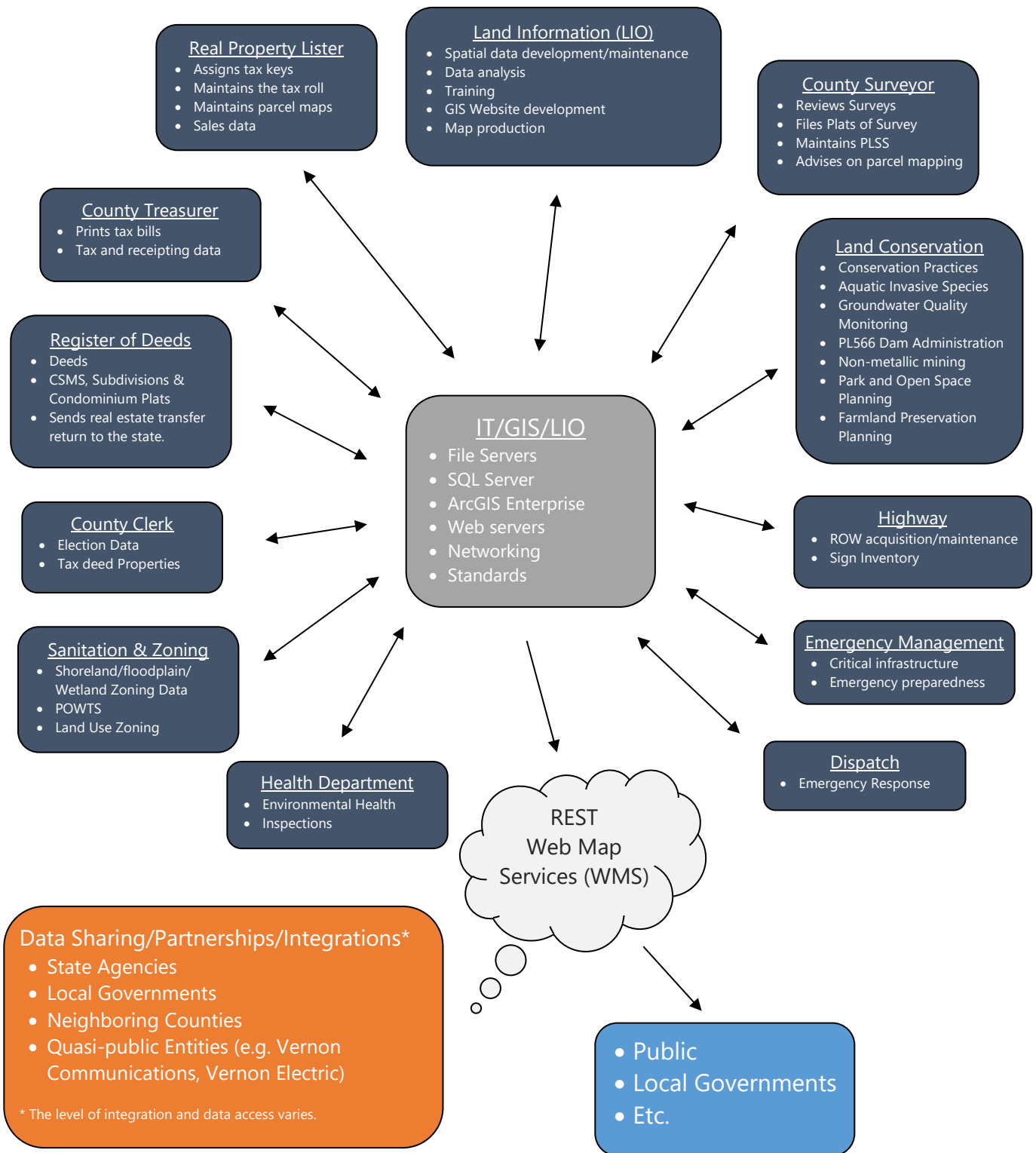- Assign unique parcel ID
- Provide assessment work rolls to assessors
- Import valuation data from assessors
- Generate notices of assessment for most assessors
- Finalize tax assessment roll
- Maintain property addresses within tax assessment data system
- Performs parcel mapping with *ArcGIS*
- Assists with filing of surveys in County Surveyor files
- Responds to public & private sector inquiries regarding parcels and parcel issues

Land Information Office (LIO)
- Perform parcel mapping
- Administer and perform routine maintenance for the SQL parcel geodatabase
- Perform administration and mapping of PLSS framework data for support of parcel mapping
- Perform address & structure point maintenance
- Perform shoreland zoning map development and maintenance
- Post parcel, PLSS, address, and zoning information to public GIS mapping website(s)
- Submit parcel polygons/tax roll data/zoning information to DOA
- Responds to public & private sector inquiries regarding parcels and parcel issues
- Develops internet/mobile web maps & map applications

County Surveyor (LIO)
- Administration of PLSS data & county remonumentation program
- Reviews PLSS tie sheets, CSMs, and other surveys performed within the county
- Provides oversight and consultation on PLSS & surveys in support of cadastral parcel mapping
- Performs field remonumentation and PLSS corner maintenance work
- Responds to public & private sector inquiries regarding PLSS & survey issues

Treasurer
- Prints and mails property owner tax bills using GCS Software
- Collects 2nd half property tax payments
- Administers Tax Deeds
- Maintains Lottery Credits

Sanitation & Zoning Administrator
- Administers county floodplain zoning
- Administers county shoreland & wetland zoning
- Administers Private Septic System Permitting
- Daily parcel data user for administration of the above
- Assists with verification of parcel property addresses & location of GIS address points

Dispatch Office
- Administers County Addressing Ordinance
- Performs address & structure point maintenance with *ArcGIS*
- Assists with verification of parcel property addresses

DOA
Assembles Statewide Parcel Layer from Data

Tax Bills

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Current Land Information System
Diagram of County Land Information System

Real Property Lister
- Assigns tax keys
- Maintains the tax roll
- Maintains parcel maps
- Sales data

Land Information (LIO)
- Spatial data development/maintenance
- Data analysis
- Training
- GIS Website development
- Map production

County Surveyor
- Reviews Surveys
- Files Plats of Survey
- Maintains PLSS
- Advises on parcel mapping

County Treasurer
- Prints tax bills
- Tax and receipting data

Land Conservation
- Conservation Practices
- Aquatic Invasive Species
- Groundwater Quality Monitoring
- PL566 Dam Administration
- Non-metallic mining
- Park and Open Space Planning
- Farmland Preservation Planning

Register of Deeds
- Deeds
- CSMS, Subdivisions & Condominium Plats
- Sends real estate transfer return to the state.

IT/GIS/LIO
- File Servers
- SQL Server
- ArcGIS Enterprise
- Web servers
- Networking
- Standards

Highway
- ROW acquisition/maintenance
- Sign Inventory

County Clerk
- Election Data
- Tax deed Properties

Emergency Management
- Critical infrastructure
- Emergency preparedness

Sanitation & Zoning
- Shoreland/floodplain/ Wetland Zoning Data
- POWTS
- Land Use Zoning

Dispatch
- Emergency Response

Health Department
- Environmental Health
- Inspections

REST Web Map Services (WMS)

Data Sharing/Partnerships/Integrations*
- State Agencies
- Local Governments
- Neighboring Counties
- Quasi-public Entities (e.g. Vernon Communications, Vernon Electric)

* The level of integration and data access varies.

- Public
- Local Governments
- Etc.

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 ethernet connections.   There are approximately 300 workstations including laptops, desktops and tablets being used daily.   Several servers are utilized to implement our ArcGIS Enterprise environment. GIS data is backed up to an offsite cloud location on a regularly scheduled basis.
- Other hardware used within County related to managing Land Information include: a large format scanner, several color copier/printer/scanners, 1 large format plotter, several handheld GPS units, and 2 survey grade GPS units.

Software

- Operating systems include current versions of Windows Server for servers and Windows 10 for desktops, laptops, and tablets.
- 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 10.8.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 10.9.x by the end of 2022. As of the end of 2021, 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 Enterprise license (PostgreSQL), 3 single use Spatial Analyst extensions, 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 Zoning & Sanitation Department. Many individuals within county departments also regularly utilize ArcGIS Web AppBuilder based interactive mapping site for basic GIS, map, and land information data needs.
- Starting in 2022 we will start to make a focused transition to ArcGIS Pro.
- AutoCAD Civil 3D (County Surveyor).
- Adobe Acrobat Pro for manipulating scanned .pdf documents.
- LandNav/GCS Software for Property Assessment (Treasurer's Office), Tax Collection (Treasurer's Office), Document Indexing (Register of Deed's Office).
- Transcendent Technologies for Zoning & Sanitation Permits (Zoning & Sanitation).
- (TDB – Project Tracking System) (Land Conservation).
- Digitech PaperVision for managing document images (Register of Deed's Office).
- **Central Square** 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 data services are incorporated in our interactive public facing GIS web map application that provides parcel and other foundational land information. We have Portal for ArcGIS and host and develop our web map applications in-house using ArcGIS Web AppBuilder. We may implement a combination of hosting web maps/apps on ArcGIS Portal and via ArcGIS On-line as appropriate and if needed.
- The LandNav/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
https://apps.vernoncounty.org/vcgis/apps/webappviewer/index.html?id=7731a7d9254c4ed6afb750763659914a	N/A; on request GIS data is placed on an FTP site or Dropbox site for download.	https://apps.vernoncounty.org/GCSWebPortal/	https://apps.vernoncounty.org/GCSWebPortal/

Vernon County maintains and hosts web sites providing public access to land information and related land survey information. On the County webserver, the county is utilizing ESRI, LandNav/GCS, and FTP based applications to host and serve land information to the public over the internet. On the main County web page there is a quick link to "Land Information & GIS Maps" that directs the user to a disclaimer subpage with additional links to the specific application pages.

The Land Information & GIS Maps link, **https://www.vernoncounty.org/departments/land_and_water_conservation/land_information_office/interactive_gis_map.php**, provides the user with the option of going to either the interactive ArcGIS Web AppBuilder based GIS map site or the LandNav/GCS based tabular parcel/document web portal first. Once a user has accessed a parcel record in either system, they can interactively launch the other application to obtain more information. For example, if a user searches for and retrieves a parcel record in the LandNav/GCS based web portal, a link/button becomes available that when clicked will launch the interactive GIS map and automatically zoom to the given parcel record location on the map. Likewise, if the user starts in the interactive GIS map and selects a mapped parcel polygon, a pop-up displays with a "More info" hyperlink, launching the LandNav/GCS web portal application and automatically retrieves the parcel record and associated detail information. The LandNav/GCS web portal application also allows the user to independently search for and purchase real-estate and non-real-estate documents on-line.

County Surveyor Files can be accessed from this page, **https://www.vernoncounty.org/departments/land_and_water_conservation/county_surveyor/on-line_surveyor_files.php**. There is a "Folder Directory" link, https://apps.vernoncounty.org/GIS/Directory/, that allows the user to access 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.

During this plan cycle, we will likely set up a GIS data sharing and download site(s) through ArcGIS Hub included with our ArcGIS Online account or through a similar application.

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: **https://www.vernoncounty.org/departments/land_and_water_conservation/land_information_office/interactive_gis_map.php**.

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.

- We also are participating in an informal SW WI regional GIS users group that recently has formed to share a variety of GIS related training and education topics. Vernon County hosted the first meeting of this group in Viroqua on October 8, 2021.

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.
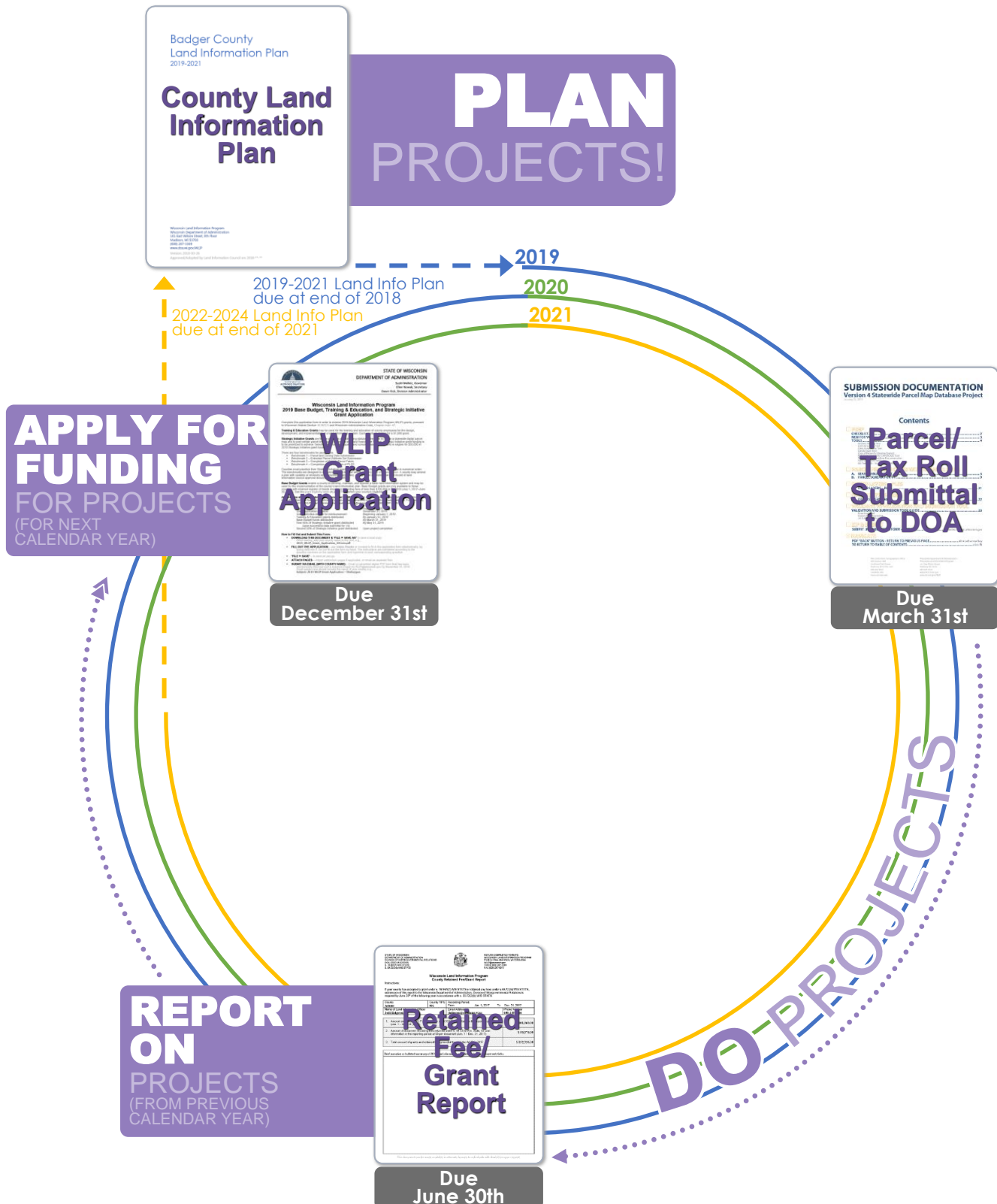

Figure 1. The WLIP Land Information Plan/Grant Project Cycle

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

- During the previous V1-V7 parcel data submittals, data maintained within the LandNav/GCS Property Assessment data system has been standardized and cleaned-up. We will continue to maintain standardized data to support an efficient process for providing the WLIP required Searchable Format.
- Vernon County utilizes the following process to prepare the Searchable Format:
    1. Export tax parcel attribute data from the LandNav/GCS data system using the Generic Data Dump application provided as part of the core Property Assessment module
    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 the staging copy of the Searchable Format Data Template to validate and perform required standardization
    5. Correct any data errors in the LandNav/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
- This process works pretty well for us. However, if the optional LandNav/GCS data export tool is ever updated to satisfactorily produce the output for the Searchable Format attributes from the Property Assessment & Tax Collection Data system, we may consider purchasing it. As of the last review of this tool, it did not produce enough of the final data standardization to save time using the SCO developed Python Script validation tools.
- Vernon County will continue to update and submit Shoreland & Wetland Zoning and Floodplain Zoning data meeting the WLIP attribute standards; as well as the other pertinent extended data sets that are requested as part of the parcel data submittal process.
- Even though the County does not administer Farmland Preservation Zoning, we will continue to update and submit this data on behalf of the towns that have adopted Farmland Preservation Zoning if required.

(Note: LandNav/GCS could update several things on their end that would make the parcel data submission more efficient. Some examples include: export the property address zip code in their Generic Data Dump; improve their WLIP data export tool to output all of the tax and assessment parcel attributes in the Searchable Format; allow for Street Type fields to hold values that meet the full text Searchable Format requirements instead of just the abbreviations; etc.)

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 LandNav/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	1 week	March 1-31, 2022 thru 2024
Prep of zoning data	2 days	March 1-31, 2022 thru 2024
Submit data to DOA	–	Annually by March 31

Responsible Parties

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

Estimated Budget Information

- Plan to continue to use the SCO provided tools for data validation and formatting: for 2022 estimate about 40 hours of LIO staff time (approx. $1,750) to prepare and submit the required data; estimate 20-40 hours of staff time annually thereafter. Funding Source: WLIP.

Project #1: Complete Implementation of 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 need to undertake a staged approach to our data conversion due to various factors. The primary reason is that we have a mix of PLSS corner coordinates in NAD83, NAD83(91), NAD83(97), and NAD83(2011) datums that are all entered into a NAD83(91) datum-based coordinate system. The general conversion process consists of standardizing all of the PLSS corner point coordinates to the NAD83(2011) datum; importing them into the Parcel Fabric as control points; loading surveys and plats; loading parcel geometries; and then using Parcel Fabric adjustment tools to synchronize all of the parcel related geometries.
- **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 within the Parcel Fabric data structure.
- 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 significant 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 in ArcGIS Pro.

Project Timeframes

- Project was started in 2021. Anticipate it will be completed by the end of 2022.

Responsible Parties

- Land Information Office, Real Property Lister.

## Estimated Budget Information

- To be determined.

Project #2: Flood Damage Tracking & Response System - BRIC

Project Description/Goal

- Vernon County has consistently experienced several significant flood events over the past 14 years. Every indication is that these will continue to occur on a regular basis. **Our goal is to develop and maintain GIS data that allows us to track the locations of both public and private flood damage that occurred from 2007 and into the future**. A geodatabase structure has been established to maintain the needed information. In 2020, the Land Information Office set up and configured applications with the ArcGIS Web App Builder for entering public assistance (i.e. public infrastructure) and individual assistance (i.e. individual & business property owners) damage information. In 2020 and 2021, public assistance related flood damage location data was entered into the system for the 2018 flood event. In January of 2021, Vernon County applied for a FEMA Building Resilient Infrastructure and Communities (BRIC) Grant through Wisconsin Emergency Management (WEM). An outline of highlighted project tasks associated with the BRIC Grant are as follows:
    - ✓ Enter historical individual and public assistance damage data back to the 2007 event
    - ✓ Develop a Land Use/Crop Rotation data layer that can be used in watershed modeling
    - ✓ Obtain a Hydro-Enforced DEM for the Coon Creek & West Fork Kickapoo watersheds
    - ✓ Create PA & IA Geoforms for self-reporting of damage
    - ✓ Create and implement Survey123 based mobile data collection apps for County staff and local government officials to collect/inspect flood damage
    - ✓ Implement ArcGIS Mission for real-time flood event mission support
    - ✓ Develop a PL566 Dam inspection database and mobile inspection apps
    - ✓ Perform Agriculture Conservation Planning Framework (ACPF) modeling in four HUC-12 watersheds (see Project #4)
    - ✓ Provide training on use of tools and data maintenance
    - ✓ Conduct watershed education outreach & mitigation planning
    - ✓ Integrate FEMA's Significant Damage Estimate (SDE) Tool

- Projects 2, 3 & 4 are mutually beneficial and tied to each other.
- **Land Info Spending Category:** Other (GIS Data & System Development).
- See system diagram below.

GIS Based Disaster Damage Tracking System – Vernon County, WI
Overview Diagram of System Components – Doug Avoles, GIS Coordinator, 7/14/20
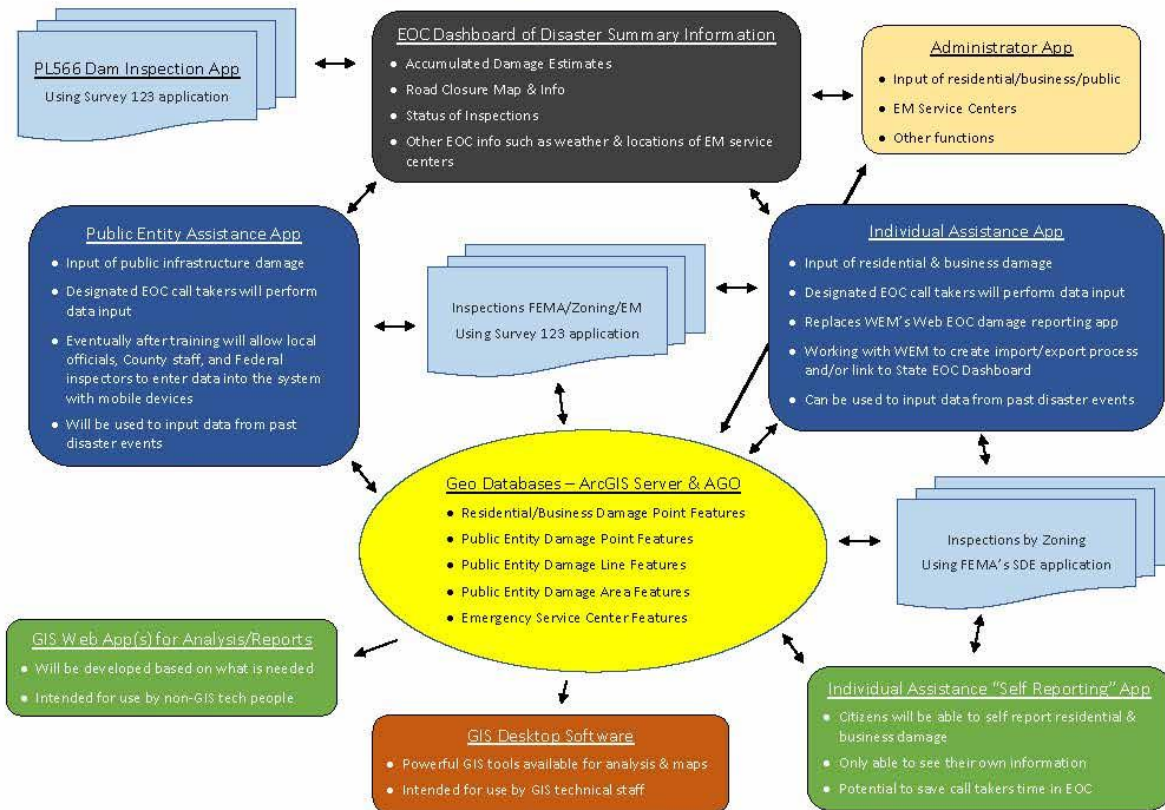
Business Drivers

- 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.
- A successfully implemented data system will improve flood response efforts and support mitigation planning efforts aimed at reducing negative impacts of significant flood events.

Objectives/Measure of Success

- Completion of a GIS data set consisting of flood damage locations and associated data for the Vernon County flood events that resulted in federal disaster declarations from 2007-2019, that will support an increased eligibility for funding for mitigation projects from a broad spectrum of state, federal, and possibly private sources.
- Implementation of an efficient GIS based data entry system that will improve the data entry process for flood damage information, which was not available/possible during past disaster events.
- Implementation of mobile based apps and critical mission technology that will allow for more "real-time" views and communication during a flood disaster situation.
- Increased community involvement, better planning, and the implementation of viable mitigation projects that reduce the negative impacts of flood events.

Project Timeframes

- Multi-year project starting in 2022; anticipate that this project will take at least 2 years to complete. Dependent on BRIC Grant timelines.

Responsible Parties

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

Estimated Budget Information

- Funding Sources: FEMA BRIC Grant, $232,739.41 total proposed grant budget with a required $58,354.05 county match; WLIP funds for LIO staff time are eligible to be used for match; (as of plan submittal we have not received info from WEM/FEMA on the grant award).

Project #3: Implement a Culvert Inventory System

Project Description/Goal

- This project consists of creating a web map/mobile app to collect and maintain culvert location information, pictures, and other necessary attributes, etc. A culvert geodatabase template was acquired from the WI DOT that will be used for storing the desired culvert information. 2020 acquired orthoimagery and LiDAR data will be used to perform a preliminary locate of possible culvert locations. A standardized Survey123 inventory form will be created for use on spatial aware mobile devices to collect and enter detailed culvert data. Survey grade GPS equipment will be used when practical and necessary to obtain elevations of culvert inlets and outlets. The initial project will be conducted within the 4 HUC-12 watersheds that are determined to be the priority areas for conducting the watershed modeling in Project #4.
- Projects 2, 3 & 4 are mutually beneficial and tied 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 budgeting & planning for culvert and road maintenance, and would help provide cost estimates of damage caused by a flood event.

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

- Project was started in the summer of 2021 and is expected to continue throughout the 2022-2024 planning cycle. It will likely require additional time extending into the next plan cycle to complete an entire county-wide inventory.

Responsible Parties

- Will need to be a cooperative team effort led by the Land & Water Conservation Department, Land Information Office, and Highway Department. We also plan to enlist the help of the towns (i.e. Town Patrolmen) and municipalities where possible to assist with inventorying culverts along town roads and city/village streets.

Estimated Budget Information ,

- To be determined and documented after performing a pilot project in 2022.

Project #4: Perform Watershed Modeling - BRIC

Project Description/Goal

- This project will focus on identifying high priority areas to target for conservation and flood mitigation practices. Watershed modeling tools such as the DNR's Erosion Vulnerability Assessment for Agricultural Lands (EVAAL) and the Agriculture Conservation Planning Framework (ACPF) built on ArcGIS Tools will be used to accomplish this. The initial modeling will be performed for 4 priority HUC-12 watersheds to be identified within the Coon Creek & West Fork Kickapoo watersheds.
- Projects 2, 3 & 4 are mutually beneficial and tied 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.
- Due to 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

- Throughout 2023; the timeline will depend on award of BRIC Grant and when grant activities are allowed to start.

Responsible Parties

- Land & Water Conservation Department, Land Information Office.

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 #5: Land Conservation Project Tracking GIS Data Layers

Project Description/Goal

- This project will involve compiling several GIS data layer supporting programs administered by the Land & Water Conservation Department (LWCD).
- The following are the data layers that are planned to be developed:
  - ✓ Farmland Preservation Certification
  - ✓ Nutrient Management
  - ✓ NR151 Compliance
  - ✓ Non-Metallic Mining
  - ✓ Invasive Species
- The Land Information Office will set up Geodatabases pertaining to each data layer, assist with data development, and train LWCD staff to create and maintain these GIS data layers. The intent will be to eventually integrate them with a project tracking system (yet to be determined) that the Land & Water Conservation Department would like to implement.
- **Land Info Spending Category:** Other (GIS Data Development)

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 including these GIS data layers 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 GIS data content that can be integrated with a functional project tracking system that will facilitate administration of programs, improve reporting to State and Federal agencies, allow for spatial based analysis with other GIS data, and help enhance communication with landowners participating in programs.

Project Timeframes

- Anticipate working on the stated data layers throughout 2022-2024 as time permits.

Responsible Parties

- Land & Water Conservation Department, Land Information Office.

Estimated Budget Information

- LWCD funding for staff time; WLIP for LIO staff time.

Project #6: Completion of a POWTS Data Layer

Project Description/Goal

- Several years ago, the Land Information Office started the development of a GIS data layer for private on-site waste water treatment systems (POWTS). A couple of summer GIS interns were able to complete POWTS mapping for approximately 4 towns. Minimal work has been performed on this data layer over the last several years. In 2021, the Zoning & Sanitation Department was given approval to purchase the Transcendent Technologies (TTECH) Permitting System.
- The Land Information Office will refine the existing geodatabase (i.e. remove attributes from the GIS data that will now be maintained in the TTECH system), will update the POWTS mapping in the 4 towns that have already had some data development, will train the Zoning & Sanitation staff to map locations of existing/new POWTS so they can maintain the GIS information with minimal assistance from the LIO, and will work with TTECH to provide integrated links between the GIS data and POWTS permit records in the permitting system.
- **Land Info Spending Category:** Other (GIS Data Development)

Business Drivers

- Will help facilitate planning for septic system replacement areas and ensure areas of adequate space.
- Will help facilitate planning for any future development that may occur around existing septic system locations and prevent accidental development over or too close to a system.
- Will help to ensure that systems stay with structure during parcel splits, and are not installed on the wrong parcel.
- Will help to ensure that other contractors (e.g. utility companies, construction, etc.) do not inadvertently encroach the system area.
- Will help new owners and contractors (e.g. plumbers/pumpers/home inspectors/etc.) locate the system; facilitates proper maintenance and inspection.

Objectives/Measure of Success

- Completion of a POWTS data layer that can be integrated with the Transcendent Technologies Permitting System.

Project Timeframes

- Anticipate working on the POWTS data layer throughout 2022-2024 as time permits.

Responsible Parties
- Zoning & Sanitation, Land Information Office.

Estimated Budget Information
- Zoning & Sanitation staff time; WLIP for LIO staff time.

Project #7: Perform NG911 Data Migration

Project Description/Goal
- This project will consist of migrating all of the County's existing and required address and 911 support data to a standardized geodatabase required for the upcoming Next Generation 911 (NG911) System that will be implemented by the State of WI. The WI Dept. of Military Affairs (DMA) - Office of Emergency Communications has contracted with Geo-Comm, Inc. to develop a geodatabase template based on the Wisconsin NG911 datastandards/schema, similar to the NENA GIS geodatabase: https://www.nena.org/page/NG911GISDataModel that will be provided to all WI Counties.
- In 2020, WI Counties submitted examples of their existing address and 911 GIS data to the State in support of DMA's NG911 GAP Analysis project. County data was analyzed by Geo-Comm, Inc. who provided a report to each county indicating the suitability/completeness/accuracy of the existing GIS data for migration into the NG911 database standards and outlined steps needed to fully comply with the data standards. In general, the report indicates that our existing 911 GIS data has a 90%+ accuracy for migrating into the NG911 standard. Work will still need to be performed to correct the deficiencies and ensure the data fully meets the NG911 standard. As this project progresses, a workflow will be refined by the Land Information Office and Dispatch to complete the project.
- **Land Info Spending Category:** Other (GIS Data Development)

Business Drivers (from National 911 Program website https://www.911.gov/)
- The success and reliability of 911 will be greatly improved with the implementation of NG911, as it will enhance emergency number services to create a faster, more resilient system that allows voice, photos, videos and text messages to flow seamlessly from the public to the 911 network.
- NG911 will also improve the PSAP (public-safety answering point) ability to help manage call overload, natural disasters, and transferring of 911 calls and proper jurisdictional responses based on location tracking.

Objectives/Measure of Success
- Successful completion of the migration, update, and reconciliation of existing address and 911 data into the geodatabase template developed by Geo-Comm.
- Ability to implement NG911 in Vernon County.

Project Timeframes
- Exact timeframe to be determined by State directives and County timeframe; work on this project will occur during the 2022-2024 plan cycle probably starting in early 2022 after the standardized geodatabase template is available; some activities related to this effort are already in process.

Responsible Parties
- Land Information Office, Dispatch; DMA; Geo-Comm, Inc.

Estimated Budget Information
- To be determined. Likely to be partially funded from State of WI sources (e.g. WEM, WLIP, PSC, ?)

Project #8: GIS based Web and Mobile Map Applications

Project Description/Goal
- During the previous plan cycle, Vernon County has developed public facing and internal web map applications using Web AppBuilder for ArcGIS. These include:

- ✓ Public Land Information – includes tax parcel, address, roads, PLSS, surveys, flood plain zoning, elevation & contours, aerial imagery
- ✓ Fishing Easements
- ✓ Snowmobile Trails
- ✓ Flood Damage Data Collection
- ✓ Road Closure
- ✓ Road Sign Inventory
- During the plan cycle, several of these will be revised and enhanced with additional features/tools. We also plan to create additional focused apps (e.g. surveyors, zoning, recreation, etc.).
- **Land Info Spending Category:** Website Development/Hosting Services.

Business Drivers
- GIS based web/mobile applications are heavily used by government/professional/public clients to spatially locate and retrieve County maintained land information through 24/7 online access.
- Mobile/field-based web map applications are increasingly being implemented to improve the efficiency of a wide variety of day to day tasks to update & maintain GIS data.
- 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
- Throughout 2022-2024 as time permits.

Responsible Parties
- Land Information Office & departments that will be using each application.

Estimated Budget Information
- LIO staff time. Funding Source: WLIP funds.

Ongoing Costs Not Associated with a Specific Project

Annual Software Licensing and Support (i.e. ESRI; LandNav/GCS Web Portal)
The current licensing and support costs for the ESRI software that the county maintains is approximately $16,100 per year. The licensing for the web portal application from LandNav/GCS that the county maintains to provide tabular parcel and document information to the public over the internet is approximately $3,000 per year. In Vernon County these costs are currently 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 $155,918 per year (based on 2022 budget figures). With the exception of 2021 (i.e. $56,894 of general property taxes was allocated), these positions have been 100% funded by WLIP funds and will likely continue to be funded with WLIP funds indefinitely if feasible. 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.

■   ■   ■