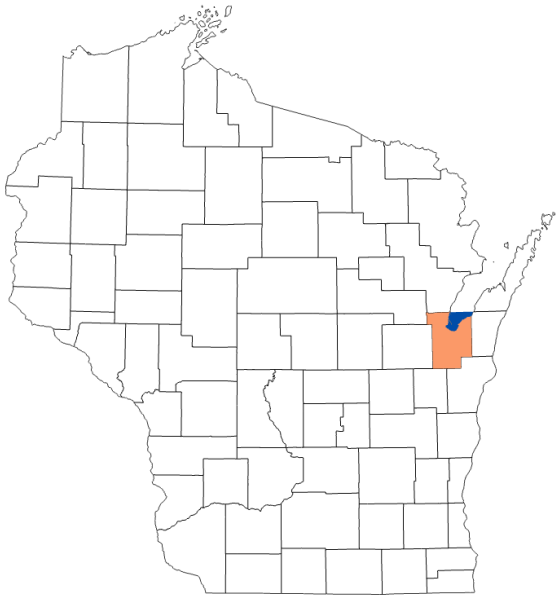
Brown County
Land Information Plan
2022-2024



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EXECUTIVE SUMMARY

About this Document. This plan was prepared by the Brown County Land Information Council. By statute, a 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. **The format and content of this document are based upon the Wisconsin Department of Administration (WiDOA) *Uniform Instructions for Preparing County Land Information Plans* dated March 2021.**

Once approved, this plan supersedes all previous Brown County Land Information Plans and sets the direction for land information program efforts for a time frame of 2022 – 2024.

Program Background. The Land Information Program is administered by the Wisconsin Department of Administration and funded by document recording fees collected at the county level. In 2020, Brown County brought in $41,000 in grants and retained a total of $410,200 in real estate recording fee revenues, along with other miscellaneous revenue. This plan lays out how funds from grants and retained fees will be prioritized. Because the county budget is determined with County Executive and County Board approval, this plan provides estimated figures that are subject to change and are designed to serve planning purposes only.

Land Information in Brown County. Land information and GIS are central to county operations. Many of Brown County's essential services rely on accurate and up-to-date land information. For example, 911 emergency response, resource conservation, infrastructure planning, economic development, regulatory inspection, and facility maintenance operations involve the storage of, access to, and analysis of various land records. Efficient access to information about addresses, buildings, property boundaries, roads, utilities, elevations, floodplains, districts, wards, zoning, land use, and other combinations of land information is important for various functions of county, state, and municipal governments. This information is very beneficial to private businesses and citizens as well. Every day, hundreds of people connect to Brown County's land records and GIS systems to gather data to help make decisions. The Brown County land information system integrates and enables efficient access to information that describes the physical characteristics of the land, as well as the property boundaries and rights attributable to land owners.

Mission of the Land Information Office. The overall mission of the Brown County Land Information Office (LIO) is to provide support for all county functions that rely on storing, sharing, analyzing, and depicting information and records related to land. Brown County also strives to meet the needs of municipal, state and federal governments as well as businesses and citizens by providing exceptional public access to these records via the Internet. Over the next three years, Brown County will leverage the new GIS Analyst position to expand upon the existing GIS as outlined in this plan.

Project Summary. A project summary is listed on the next few pages. The projects in this plan are based on a user needs assessment conducted by the GIS Coordinator/Land Information Officer in 2021. The remainder of this document provides more details on Brown County and the Wisconsin Land Information Program, summarizes land information projects, and reviews the county's status in completion and maintenance of the WLIP map data layers known as Foundational Elements.

PROJECT SUMMARY

The key projects planned for the next 3 years are described below. More detailed project information including business drivers, objectives, time frames, responsible parties, and budget can be found in Section 4 of this document.

Project 1: Fill the GIS Analyst position. This position (formerly GIS Technician) has not been filled since 2014. The LIO fund has been substantially rebuilt and is again sustainable as the recommendations of the 2015 LIO budget policy analysis and paper have been implemented. The GIS Analyst position is needed because so many of the county's important systems, including those outlined in this plan, rely heavily on GIS. There are many highly technical and time-consuming tasks that are currently handled by just one fulltime GIS position (GIS Coordinator). The GIS Analyst position will have the technical skills necessary to serve as backup and assist the GIS Coordinator with in-depth GIS operations and the implementation of this plan.

Project 2: Purchase additional GIS server disk space. GIS and related datasets continue to grow in number and volume. Brown County maintains historical GIS datasets such as aerial photos, parcels, and LiDAR on active servers so that land use changes through time can be analyzed. The purchase of additional robust server disk space is necessary in 2022 as more new datasets including aerial photos and LiDAR become available.

Project 3: Purchase additional GIS software licenses. Brown County is in need of additional Spatial Analyst and Image Analyst GIS software extensions to assist with GIS analysis and automated extraction of features from aerial imagery. Brown County also looks to expand the number of ArcGIS Online subscriptions to support cloud-based GIS and data collection in other departments.

Project 4: Expand GIS functionality across the county. Many county departments have expressed the need to expand GIS capabilities within their offices. This includes: The Parks department for utility locations and interactive mapping apps; The Sheriff's office for data access and mapping analysis; The Public Works/Highway department for right-of-way mapping, and the Zoning office for better land use/shoreland data management and inspection tracking. The Land & Water Conservation Department, Public Health Department, Public Safety & Communications Department and others continue to lean on GIS technology for daily activities as well. The addition of the GIS Analyst position would enable these projects to succeed.

Project 5: Continue remonumenting Public Land Survey System (PLSS) corners. Survey corner remonumentation is needed to ensure accuracy of all property corners. The PLSS is the foundation for all boundary determinations and property ownership, and this project will help reduce confusion about them. Also, this investment will help reduce costs for private surveys and lower costs overall when doing construction and other land-related projects in Brown County. Many corners west of the Fox River in the Williams Grant and Oneida Indian Reservation have not been located or monumented since the original surveys in the 1800s. This project is being partially funded by a Wisconsin Land Information Program grant.

Project 6: Enhance GIS data to support surface water drainage & hydrologic modeling and the "9 Key Element" Watershed improvement efforts. Software tools such as Erosion Vulnerability Modeling (EVAAL) and ArcHydro use GIS data including LiDAR topography, stream mapping, and culvert locations to model water flow across the surface and produce new GIS layers including detailed drainage patterns, flow accumulation maps, as well as catchment, basin and accurate watershed boundaries. This information can help with storm water planning, natural resource management, watershed planning, and water quality improvement efforts that are taking place across the county. The Land & Water Conservation Department also uses GIS datasets and tools to help make determinations on compliance with state conservation standards. The 2020 LiDAR project will produce a key input dataset for this project, as will culvert and other data collected using the GPS receiver purchased through WLIP grant funds in 2021.

Project 7: Produce aerial orthophotography in 2023. Aerial orthophotography is a key base map that helps us maintain all map layers and track land use changes across the county. Aerial photographs are frequently used by dispatch, municipalities, real estate developers, and many others. The last county flight was in 2020. A 2023 flight is warranted due to rapid growth and land developments that have been occurring within the county.

Project 8: Scan more documents and index using GIS. Currently, the GIS map is used to index about 50,000 land surveys, survey corner tie sheets, zoning permits, floodplain changes, and other land-related documents. Indexing these documents using geography and GIS makes these documents easily retrievable for both internal and external customers via online GIS applications. This system has proven successful for tracking site-specific documents. In the next three years, we plan to expand this system to include more zoning information and additional document types such as soil tests and environmentally sensitive area (ESA) amendments. GIS links to other document imaging systems such as the Register of Deeds Laredo and Tapestry systems will also be maintained.

Project 9: Maintain and enhance all Foundational Element GIS layers; Improve and expand ESA and county highway right of way map layers. Regular upkeep is needed on all of the land information "Foundational Elements" described in Section 2 of this plan. This is an important and significant effort. One particular GIS map layer that is in need of substantial updates is the Environmentally Sensitive Area (ESA) dataset. Field delineations done by surveyors, wetland specialists, etc should be tracked in GIS with document linkages included. The County Highway Right of Way map layer will also be enhanced in 2022.

Project 10: GPS / GIS Inventory of County Parks Utilities and Assets. Brown County Parks is looking to have more of their utilities and other assets accurately located using GPS and stored within a GIS database. This project can be undertaken using the new Trimble R2 GPS receiver and the addition of the GIS Analyst position.

Project 11: Continue to improve the county's online GIS services, maps & apps. The Land Information & Tax System Web Portal, BrownDog web map, Survey Index, REST endpoints, and other online GIS services are used extensively every day by hundreds of people. There are high expectations to keep these services running at all times, especially those that help run the 911 Computer Aided Dispatch system. These services require constant upkeep. Brown County needs to stay current on the technologies required to operate these systems. New information and functions should be added when there are opportunities to do so.

Project 12: Incorporate NENA NextGen 911 standards for datasets such as addresses, streets, and fire/police/EMS response areas. 911 systems across the country will be migrating to NextGen 911 (NG911) standards in the coming years. Brown County's GIS data meets standards for the county's new Flex CAD 911 system, but additional GIS work needs to be done to fit the NG911 standards entirely.

Project 13: Continued Training & Education of county staff. Training is very important to ensure people can effectively use the technology. The Land Information Program provides $1000 in training & education grants each year. The addition of the GIS Analyst position will help expand the in-house training capabilities.

Project 14: Restart the local GIS User Group. The goal is to restart the local GIS user group to include county, municipal, and private sector GIS managers and users. This group should meet on a quarterly basis to communicate and collaborate on projects, data, technology, and other aspects of GIS that are of interest to us all.

Project 15: Evaluate new software tools such as Pintegrity and the Parcel Fabric. New tools will be evaluated for their potential in streamlining work flows and making accurate, up-to-date information more easily available to all users of the data including the public. If we determine these tools to be useful, they would be purchased pending sufficient funding.

See Section 4 of this document for more details on these planned activities.

1 INTRODUCTION

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

The WLIP and the Land Information Plan Requirement

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

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

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

LAND INFORMATION

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

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

– Wis. Stats. section 59.72(1)(a)

Act 20 and the Statewide Parcel Map Initiative

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

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

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

WLIP Benchmarks

- 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

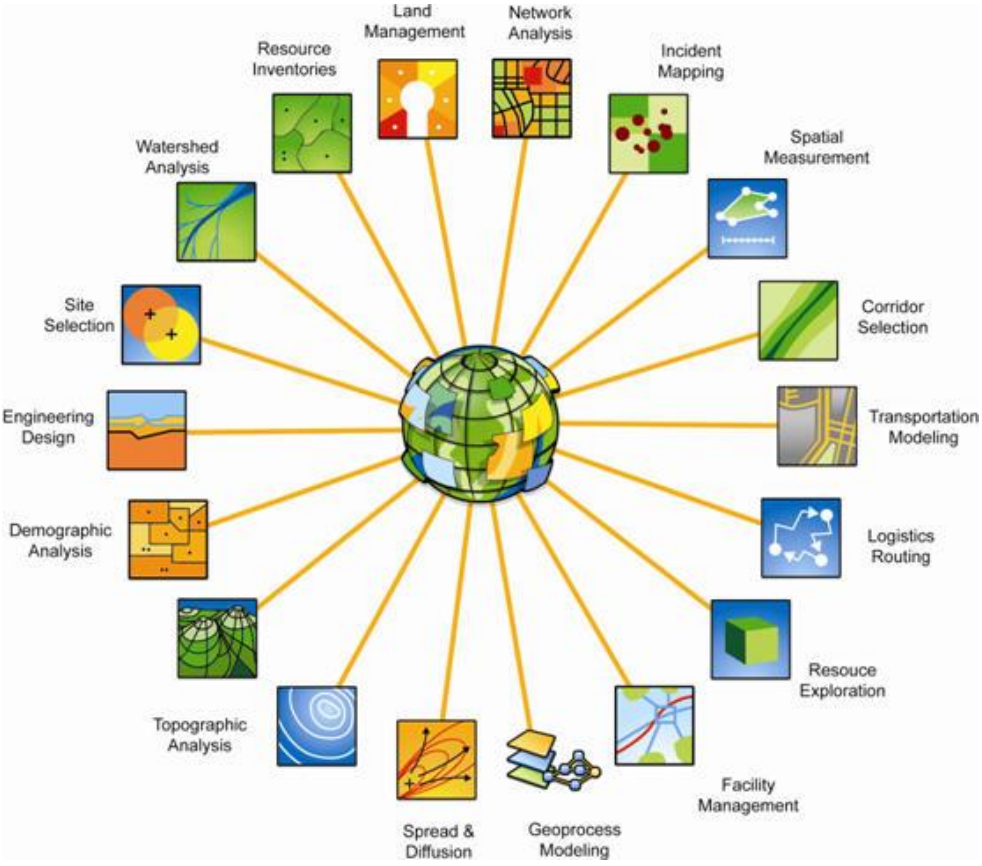
More information on how Brown County is meeting these benchmarks appears in the Foundational Elements section of this plan document.

County Land Information System History and Context

Brown County's land records system dates back to the 1800s. At that time, Brown County's surveying and real estate recordkeeping systems were among the best in the world given the technology of the time. However, over the next 150+ years, the paper-based land records system grew unwieldy, outdated, and inefficient to use. By the 1970s, there were several initiatives to "modernize" land records at all levels of government through the use of computer technology. In 1978, the Wisconsin Department of Administration, in cooperation with the University of Wisconsin, inventoried and analyzed the impediments that limited the access and use of various public records. The inefficiencies of the paper-based system were shown to lead to higher costs to taxpayers. Pressure to modernize came from within government but also from the private sector, particularly real estate professionals, engineers, surveyors, and other businesses that rely on county land records. In 1985, Governor Earl created the Wisconsin Land Records Committee (WLRC) through Executive Order #79. The WLRC developed a conceptual model for a land records modernization program and reported this to the governor in 1987.

In 1989, the Wisconsin Land Information Program was officially created through legislation. Under this program, all 72 counties were to establish a local Land Information Office (LIO) as defined in statutes 59.72 and 59.43. The funding mechanism is based on real estate document recording fees collected in the county Register of Deeds office. The Brown County Board established an LIO in 1990 by resolution.

Since 1990, Brown County has succeeded in many land records modernization efforts including electronic real estate document management, digital parcel mapping, GIS implementation, and providing internet access to records. All of these efforts were guided by strategic planning efforts through the Brown County Land Information Office Committee (now called the Land Information Council) while being supported by County Executives and Boards. The success of the Land Information Program is significant and measurable. Today, accurate digital land records are more easily accessible than ever before and support a wide range of functions across the community as depicted on the graphic below.



By leveraging modern technology, the Land Information Program has vastly improved upon Wisconsin's rich tradition in openness in government by giving businesses and citizens the means to view open records from the comfort of their home or office using internet technology.

Users can run database queries on a centralized up-to-date computer database, thus shortening the time spent searching.

Today, many systems are highly dependent on land information and GIS is deeply integrated into these systems.

Figure 1: How GIS is used (credit: Esri)

County Land Information Plan Process

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

Plan Participants and Contact Information

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

According to s. 59.72(3m), Wis. Stats., the county land information council is to include:

- Register of Deeds
- Treasurer
- Real Property Lister or designee
- Member of the county board
- Representative of the land information office
- A realtor or member of the Realtors Association employed within the county
- A public safety or emergency communications representative employed within the county
- County surveyor or a registered professional land surveyor employed within the county
- Other members of the board or public that the board designates

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

This plan was prepared by the county LIO, the Brown County Land Information Council, and others as listed below.
* Land Information Council Members designated by asterisk and **bold font**

County Land Information Council and Plan Workgroup				
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2 FOUNDATIONAL ELEMENTS

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

FOUNDATIONAL ELEMENTS

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

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

Beyond Brown County's use for planning purposes, the "Foundational Elements" listed here are valuable to state agencies and others looking to see the status of common GIS layers used throughout the state. The layers listed in this section are those "key map layers" identified in the Wisconsin Land Information Program statutes and guidelines. This list is not a comprehensive list of all land information or GIS datasets available in Brown County. There are many other datasets that have been produced for various county and other local projects. This Foundational Elements listed below are focused on the key layers that were identified by the WLIP.

PLSS

Public Land Survey System Monuments

Layer Status

PLSS Layer Status	Status/Comments
Number of PLSS corners (selection, ¼, meander) **set in original government survey** that can be remonumented in your county	• 3036. This number had been higher in previous reports, however, it has been determined that some corners are not considered original.
Number and percent of PLSS corners capable of being remonumented in your county that **have been remonumented**	• 2355 (78%)
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	• 100% of the remonumented corners have survey grade coordinates.
Number and percent of survey grade PLSS corners integrated into county digital parcel layer	• 100% of the remonumented corners are integrated into the digital parcel layer.
Number and percent of non-survey grade PLSS corners integrated into county digital parcel layer	• n/a
Tie sheets available online?	• Yes Survey Index & Tie Sheet Viewer app (click here)
Percentage of remonumented PLSS corners that have **tie sheets available online** (whether or not they have corresponding coordinate values)	• 100% of the remonumented corners have tie sheets available on the above-noted Survey Index & Tie Sheet Viewer GIS app.
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	• 100%
PLSS corners believed to be remonumented based on filed tie-sheets or surveys, but do not have coordinate values	• 0 (none)
Approximate number of PLSS corners believed to be lost or obliterated	• 681
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)?	• Brown County uses a unique corner ID system. The above-mentioned Tie Sheet Viewer online GIS app shows corner names; If more information is needed, a grid map can be provided upon request.
Does the county contain any **non-PLSS areas** (e.g., river frontage long lots, French land claims, private claims, farm lots, French long lots, etc.) or any special situations regarding PLSS data for tribal lands?	• Yes. Private Claims, Indian Claims, Oneida Reservation Lots, Williams Grant, and the Fort Howard Military Reserve areas all use non-PLSS tract descriptions. The LIO web site includes a breakdown and map of each.
Total number of PLSS corners along each bordering county	• 243
Number and percent of PLSS corners remonumented along each county boundary	• 227 (93%). The corners not remonumented along the county boundary are mostly the 1/16th corners through the Oneida Indian Reservation.
Number and percent of remonumented PLSS corners along each county boundary with survey grade coordinates	• All of them (100%).
In what ways does your county collaborate with or plan to collaborate with neighboring counties for PLSS updates on shared county borders?	• The Brown County Surveyor contacts the adjacent counties if there are issues or questions. Updated tie sheets are sent after corner maintenance is completed.

Custodian

- Brown County Planning & Land Services Department / Surveyor's Office (County Surveyor)

Maintenance

- PLSS records are updated daily or as needed. Tie sheet PDFs include historical information.

Standards

- Statutory Standards for PLSS Corner Remonumentation

- s. 59.74, Wis. Stats. Perpetuation of section corners, landmarks.
- s. 60.84, Wis. Stats. Monuments.
- ch. A-E 7.08, Wis. Admin. Code, U.S. public land survey monument record.
- ch. A-E 7.06, Wis. Admin. Code, Measurements.
- s. 236.15, Wis. Stats. Surveying requirement.

- SURVEY GRADE standard from Wisconsin County Surveyor's Association:
  - **SURVEY GRADE** – coordinates collected under the direction of a Professional Land Surveyor, in a coordinate system allowed by 236.18(2), and obtained by means, methods and equipment capable of repeatable 2 centimeter or better precision
  - **SUB-METER** – point precision of 1 meter or better
  - **APPROXIMATE** – point precision within 5 meters or coordinates derived from public records or other relevant information
- Brown County uses the Survey Grade standard for all PLSS corner work.

Other Geodetic Control and Control Networks

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

Layer Status

- With assistance of the WiDOT, municipalities, and private companies, Brown County has developed and densified a HARN (High Accuracy Reference Network) using Federal Geodetic Control Subcommittee guidelines. National Geodetic Survey monuments are also present.

Custodian

- Brown County is not the custodian of the HARN or NGS monuments.

Maintenance

- Brown County is not responsible for the maintenance of the HARN or NGS monuments.

Standards

- Four Primary Stations (1 ppm), 36 Secondary (2 ppm) and over 50 Tertiary (10ppm) stations have been established in Brown County. A Vertical Geodetic Control Network is also in place, and it is based on the National Spatial Reference System. All 1st, 2nd, and 3rd order NGS monuments have been recovered; GPS coordinates and elevations have been captured on more than 170 of these.

Parcel Mapping

Parcel Geometries

Layer Status

- **Progress toward completion/maintenance phase:** County-wide parcel layer is 100% complete in Brown County, and all of the county's parcels are available in a digital CAD and GIS format. As of September 2021, there are 103,409 tax parcels in Brown County. Parcels boundary lines are drafted using coordinate geometry in AutoCAD as referenced to its source document, professionally analyzed, and precisely mapped into a geodetic controlled PLSS base. The parcel map layer is maintained using both AutoCAD and ArcGIS.
- **Projection and coordinate system:** Transverse Mercator, NAD 1983 HARN WISCRS: Brown County, Feet
- **Integration of tax data with parcel polygons:** Brown County has a parcel polygon GIS model that directly integrates tax/assessment data as parcel attributes. Over the last 3 years, Brown County changed tax systems from an AS/400 to a Windows-based tax system (GCS). As part of this project, new Python scripting was created to automate the process of linking and publishing parcel polygons with up-to-date tax records. These scripts are set up to run automatically each night to ensure all users have current information.
- **Online Parcel Viewer Software/App and Vendor name:** Brown County uses Esri's Web AppBuilder to publish parcels and other GIS data online. Brown County developed this and maintains it in-house. The flagship site is named "BrownDog" and is available by clicking here.

- **Unique URL path for each parcel record:** Yes. The URL is stable and is constructed in the following format:
  https://prod-landrecords.browncountywi.gov/GCSWebPortal/Search.aspx?ParcelNumber=**<<ParcelID>>**
  For example:
  https://prod-landrecords.browncountywi.gov/GCSWebPortal/Search.aspx?ParcelNumber=1-1841-A
  The information available through these unique URLs include parcel owner and address, tax and assessment data, legal description, basic parcel history, districts, some documents and links to the parcel map.

Custodian

- Brown County Planning & Land Services Department (Property Listing division)

Maintenance

- **Update Frequency/Cycle**. Parcel maps including polygons are updated daily as needed.
- The latest information is published online about 3 times per week.

Standards

- **Data Dictionary**:
- Detailed metadata is embedded in the GeoDatabase feature datasets. Additionally, a data dictionary is available in PDF format online. A data dictionary is available for each element/attribute name, and explanations of any county-specific notations for parcel attributes listed by s. 59.72(2)(a).
- Parcel mapping meets National Map Accuracy Standards for 1" = 50' scale or greater.
- Brown County meets the standards set forth by the statewide parcel mapping project;

Assessment/Tax Roll Data

Layer Status

- **Progress toward completion/maintenance phase:** N/A. Brown County maintains tax roll data throughout the year.
- **Tax Roll Software/App and Vendor name:** GCS Software (LandNav).
- **Municipal Notes:** N/A. Brown County does tax listing for the entire county.

Custodian

- Brown County Planning & Land Services; Brown County Treasurer

Maintenance

- **Maintenance of the Searchable Format standard:** To maintain the Searchable Format standard, the county uses GCS Software's exporting tool to produce a copy of the data in the Searchable Format standard.
- **Searchable Format Workflow:** The county uses an export tool provided by GCS Software to produce the Searchable Format attributes which are then joined (via ParcelID) to the tax parcel polygons. There has been additional formatting and human labor required to clean up errors reported by the statewide parcel formatting tools. As Brown County "settles in" with GCS software and data conversion wrinkles are ironed out, it is hoped less human labor is required to fix errors.

Standards

- Wisconsin Department of Revenue Property Assessment Manual and attendant DOR standards
- DOR XML format standard requested by DOR for assessment/tax roll data can be achieved with the GCS export tools.

Non-Assessment/Tax Information Tied to Parcels

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

Layer Status

- Brown County ties the following datasets to parcels via GIS and/or Parcel ID:
  - Shoreland Permits
  - POWTS (Private Onsite Waste Treatment Systems)
  - Agricultural field units
  - Non-metallic mining sites
  - Surveys (link to survey index)

- Real estate documents (via Tapestry)
- Municipal information (zoning, web sites, administrators)
- Google Street View imagery

Custodians

- Brown County Planning & Land Services / Zoning Division
- Brown County Land & Water Conservation Department

Maintenance

- As Needed

Standards

- Mapping tied to parcels generally follows the same accuracy standards as the parcel dataset (NMAS 1" = 50').

ROD Real Estate Document Indexing and Imaging

Layer Status

- **Grantor/Grantee Index:** Digitized grantor/grantee index back to November 1965. All images have been scanned. The Register of Deeds is indexed back to November 1965 and is indexing more images daily. Images not currently indexed are available upon request.
- **Tract Index:** Official Tract Index is Private Claim and PLSS based – digitized January 1, 1989. Prior to January 1, 1989 paper based Tract Index available in the Register of Deeds Office. 75 years after Official Tract Index started another tract index system was created in Brown County called Abstract Listing. Like the official Tract Index, it is Private Claim and PLSS based. Tracts were merged on June 1, 1995 and Abstract Listing books closed. All paper Abstract books were digitized and imported into Register of Deeds Tract Index system for searching on November 21, 2006.
- **Imaging:** TIFF images for documents from November 1965 forward are linked to index and available online through subscription service. TIFF images are in production and will be linked to Grantor/Grantee index and document number. Images prior to indexing are on microfiche and available in the Register of Deeds office only.
- **ROD Software/App and Vendor Name:** Laredo/Tapestry from Fidlar Technologies.
- **Survey Index:** The Brown County GIS system includes a map layer depicting the area boundaries of all plats, certified survey maps, plat of surveys, transportation plats, and miscellaneous surveys. The GIS layer includes attributes that allow for map searches and the attributes include surveyor name, date of survey, and linkage to scanned survey image.
- **CSM Index:** The Register of Deeds is currently putting in a searchable CSM index. This index is currently searchable back to May 2015.

Custodian

- County Register of Deeds

Maintenance

- Daily updates. Off-site data replication (Index and Images). Remote searchers access replicated database

Standards

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

LiDAR and Other Elevation Data

LiDAR

Layer Status

- **Most recent acquisition year:** 2020.

- **Accuracy:** As of the time of writing of this plan (Sept 2021), the full 2020 dataset has not yet been delivered. However, the Brown County Surveyor checked the accuracy of the pilot area (NE part of the city of Green Bay) by making GNSS observations on 20 photo-identifiable points on pavement. These observations showed an RMSE of 0.073(z) feet for an NSSDA accuracy of 0.144 feet (z).
- **Post spacing:** Approximately 1.15 feet (QL1)
- **Contractor's standard.:** This project is a FEMA/USGS project, but Brown County and local partners added local funds to bring this from a QL2 product to QL1. The documented 2020 lidar accuracy requirements are for QL1 data (8 pts/m^2) with a vertical accuracy of 10 cm ($RMSE_z$), an aggregate nominal pulse spacing (ANPS) of 0.35 m and aggregate nominal pulse density (ANPD) of 8 pts/sq meter.
- **Next planned acquisition year:** 2030.

Custodian

- Brown County Planning & Land Services Department / Land Information Office.

Maintenance

- These data are housed on the internal GIS server and, like the 2010 LiDAR dataset, will be made available through the LIO Data Downloads web site. USGS will offer downloads through their National Map portal as well.

Standards

- The 2020 dataset is to meet standards for 1-foot contour mapping. The pilot dataset showed very promising results in meeting this standard.

LiDAR Derivatives

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

Layer Status

The 2010 LiDAR dataset has been used to create many derivative products including:

- Hydro-flattened DEM (per FEMA standards for flood mapping)
- Terrain model
- Two-foot contours in GeoDatabase, shapefile, and AutoCAD DWG formats
- **Online viewing**: Many web applications include these data layers including the Multi-Purpose GIS app
- **Downloading data** is possible from the LIO web site (various formats)

The 2020 LiDAR dataset will include the following deliverables and derivatives**:**

- Hydro-flattened DEM
- Bare-earth and classified point clouds
- DSM (Digital Surface Model) dataset
- Buildings to class 6 of the classified point cloud and 2D building footprints
- 1-foot contours, machine generated (shapefile and DWG formats)
- Hillshade dataset

Custodian

- Brown County Planning & Land Services Department / Land Information Office.

Maintenance

- These data are maintained on the internal GIS server and made available through the LIO Data Downloads page.

Standards

- USGS LiDAR Guidelines and Base Specification v 2.1

Other Types of Elevation Data

Layer Status

- In addition to the 2010 and 2020 LiDAR datasets & derivatives, Brown County has two-foot contour data from April 2000. This was based on aerial photography and produced using photogrammetric mapping techniques. The 2000 dataset does not cover the entire county.

Custodian

- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- All previous elevation datasets are maintained on the county's internal GIS server

Standards

- This dataset was found to have inaccuracies, and although the contractor re-mapped parts of it, this dataset has not been deemed to meet the two-foot accuracy standards in all areas.

Orthoimagery

Orthoimagery

Layer Status

- **Most recent acquisition year:** 2020
- **Resolution:** 6 inches
- **Online viewing**: Orthoimagery can be viewed on the BrownDog GIS app
- **Downloading data** is possible via the LIO web site (TIF or SID formats)
- **Next planned acquisition year:** 2023

Custodian

- Brown County Land Planning & Land Services Department / Land Information Office

Maintenance

- All imagery is maintained on the GIS server and made available to internal and public users.
- This dataset is available for download as TIF and SID format on the Brown County Land Information web site.
- Brown County plans to produce high-resolution photos every 3 years pending sufficient budget.

Standards

- Orthoimagery from 2000, 2005, 2010, 2014, 2017, and 2020 were completed with a 6" ground resolution and tested to ensure they meet National Map Accuracy Standards (NMAS) for 1" = 100' mapping (NSSDA Accuracy is 1.73' or better).

Historic Orthoimagery

Layer Status

- Brown County has contracted to produce historic orthoimagery for several years including 1938, 1960, 1978, 1990 and 1992 (in addition to the imagery from 2000, 2005, 2010, 2014, and 2017). The high-resolution color 1990 layer is the most recent to be converted to GIS format.
- **Online viewing**: Historic orthoimagery can be viewed on the BrownDog GIS app
- **Downloading data** is possible for some datasets via the LIO web site (TIF or SID formats)

Custodian

- Brown County Planning & Land Services Department/ Land Information Office

Maintenance

- All historic imagery is maintained on the GIS server where it can easily be called up to serve as a historic base map to view land use changes over time. Historic images can be viewed and compared as overlays using the Brown County Land Information web apps including the BrownDog.

Standards

- The older aerial orthophotos have inconsistent mapping accuracy across the image, but generally the historic images meet National Map Accuracy Standards for 1" = 200' mapping for the older images (1938, 1960, 1978, and 1992) and 1" = 100' for the images from 2000 and after.

Other Types of Imagery

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

Layer Status

- Brown County has not contracted for oblique imagery, but both oblique and street view imagery has been produced by Google and Microsoft for most of the county and is accessible through web links on the county's GIS.
- The 2014, 2017, and 2020 TIF images include a 4th band (near infrared).

Custodian

- Brown County Planning & Land Services Department: Land Information Office (LIO)

Maintenance

- Future flights will include the near infrared band because this is useful for certain activities such as wetland delineation.

Standards

- Accuracy and other standards vary for each dataset but generally meet NMAS for 1" = 100' mapping

Address Points and Street Centerlines

Address Point Data

Layer Status

- 100% complete.

Custodians

- Brown County Municipalities (assign address numbers)
- Brown County Planning & Land Services Department / Planning Division
- Brown County Planning & Land Services Department / Property Listing Division
- Brown County Planning & Land Services Department / Land Information Office
- Brown County Public Safety Communications Department (assign 911 attributes)

Maintenance

- Address points are updated daily or as needed by Planning & Land Services Staff and by Public Safety Communications staff using a versioned SDE GeoDatabase and ArcGIS Desktop.

Standards

- Address points are placed on buildings for residences and near entrances of larger commercial and retail buildings using aerial orthophotos having National Map Accuracy Standards (NMAS) for 1" = 100' mapping.

Building Footprints

Layer Status

- About 90% complete. Brown County has compiled building footprints from various sources (municipal projects, GitHub, etc) into the county GIS database. Source is noted in each footprint attribute.
- **Online viewing**: Building footprints can be viewed online with the BrownDog GIS app.

Custodian

- Planning & Land Services Department, municipalities, others.

Maintenance

- Updated based on new aerial photography, LiDAR, and as needed or as time permits.

Standards

- The goal is for all buildings to meet National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Other Types of Address Information

e.g., Address Ranges

Layer Status

- Address ranges on street centerlines are 100% complete

Custodian

- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- Address ranges on street centerlines are updated by Planning & Land Services staff as needed

Standards

- Street Centerlines meet National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Street Centerlines

Layer Status

- Street centerlines are mapped countywide. Each segment includes about 30 attributes that support the Brown County 911 system, Metropolitan Planning Organization (MPO), and Public Works/Highway.
- Streets include annotation. Mile markers are mapped on all freeways.
- Driveways began being incorporated into the Brown County transportation GIS dataset starting in 2020, primarily as needed for routing emergency response vehicles more accurately within the Motorola/Spillman Flex system which uses the transportation network for closest unit dispatch and quickest route driving directions. At this time, only the longer driveways or driveways that affect emergency response are included (this is perhaps only 30% or so of all driveways in the county).
- A "Flex Intersection" point layer is also maintained by Brown County. This is to give 911 dispatchers more options and flexibility when geolocating intersections or unique aspects of them.
- **Online viewing**: Street centerlines can be viewed online with the BrownDog GIS app

Custodian

- Brown County Planning & Land Services Department / Planning Division
- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- Street Centerlines are updated by Planning & Land Services staff as needed using a versioned SDE GeoDatabase and ArcGIS Desktop

Standards

- Street Centerline database schema is similar to that used by other counties and Esri. The centerline mapping meets National Map Accuracy Standards (NMAS) for 1" = 100' mapping
- Presently, the centerline standards meet the requirements of the county 911 system (Motorola/Spillman Flex) but consideration is being given to expand these to the new statewide standards for NG911.

Rights of Way

Layer Status

- Complete; in maintenance phase, updated as needed. This data is maintained as lines within our CAD parcel dataset as well as our GIS parcel line feature class. Lines have layer codes that allow users to filter the right of way lines from the rest of the parcel line work.
- In 2022, the LIO will be working with the County Public Works/Highway department to expand county road right of way mapping and GIS database attribute linkages.
- **Online viewing**: Road and railroad right of ways can be viewed online with the BrownDog GIS app

Custodian

- Brown County Planning & Land Services Department / Property Listing Division maintains this data in AutoCAD and also using a versioned SDE GeoDatabase and ArcMap

Maintenance

- Brown County Planning & Land Services staff update this layer as needed.

Standards

- Horizontal accuracy standard: Meets National Map Accuracy Standards (NMAS) for 1" = 50' mapping.

Trails & Sidewalks

e.g., Recreational Trails

Layer Status

- Almost 100% complete. Brown County Planning & Land Services Department / Planning Division has mapped all known sidewalks in the county as well as all major trails.
- Bicycle Facilities are inventoried and mapped using GIS
- Trail mile markers are maintained on the major trails including the Fox River State Trail, East River Trail, and UWGB arboretum trails. This is done primarily for 911 dispatch response.
- **Online viewing**: These can be viewed online with the BrownDog GIS app

Custodian

- Brown County Planning & Land Services Department / Planning Division

Maintenance

- Updated as needed, usually in conjunction with new aerial orthophotography.

Standards

- Mapping meets National Map Accuracy Standards (NMAS) for 1" = 100' maps

Land Use

Current Land Use

Layer Status

- Brown County's last full land use inventory was completed in 2020. Aerial orthophotography is used to update land use.

Custodian

- Brown County Planning & Land Services Department / Planning Division.

Maintenance

- Updated as needed, usually in conjunction with new aerial photography or when Brown County is updating land use plans.

Standards

- Land Use is coded based on the Bay-Lake Regional Planning Commission classification system
- Land use mapping meets National Map Accuracy Standards (NMAS) for 1" = 100' maps

Future Land Use

Layer Status

- This layer was last updated in 2021 as part of the county comprehensive plan update and sewage plan update.

Custodian

- Brown County Planning & Land Services Department / Planning Division

Maintenance

- Updated as needed.

Standards

- s. 66.1001, Wis. Stats. Comprehensive planning.

Zoning

County General Zoning

Layer Status

- Not administered by Brown County.

Shoreland Zoning

Layer Status

- Complete; in maintenance phase, updated as needed.
- **Online viewing**: Shoreland Zoning layer can be viewed online with the BrownDog GIS app

Custodians

- Brown County Planning & Land Services Department / Zoning Division
- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- This data layer is updated as needed. Changes can occur with new navigability determinations, FEMA flood map revisions, and DNR wetland changes. Data managed using a versioned SDE GeoDatabase and ArcGIS Desktop.

Standards

- Wisconsin NR115 and NR116 and Chapters 22 and 23 of the Brown County Code

Farmland Preservation Zoning

Layer Status

- The County maintains a GIS representation of county farmland preservation boundaries.
- **Year of certification:** 2017

Custodians

- Brown County Planning & Land Services Department
- Brown County Land & Water Conservation Department

Maintenance

- Map layers are updated as needed.

Standards

- Wisconsin Working Lands Initiative (Wis. Statutes chapter 91).

Floodplain Zoning and Environmentally Sensitive Areas (ESAs)

Layer Status

- The County maintains a GIS representation of floodplain zoning boundaries.
- The county's floodplain zoning GIS data is not the same as/identical to the FEMA map, the one difference being we include polygon outlines showing LOMA/R (Letter of Map Amendment/Revision).
- Limited Boundary Adjustment/Fill in Flood Fringe; Letters of Map Change
- Brown County also maintains a layer depicting Environmentally Sensitive Areas, defined as buffers around floodplains, streams, wetlands, and includes natural steep slope areas.

Custodians

- Brown County Planning & Land Services Department / Zoning Division
- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- Letters of Map Change are maintained in the GIS database and the area affected is shown on the BrownDog online GIS map.

Standards

- Chapters 22 and 23 of the Brown County Code

Airport Protection

Layer Status

- The County does maintain a GIS representation of airport protection zoning boundaries
- **Airport protection zoning map depicts:** Height limitation restrictions and general zoning overlay for airport protection.
- **Online viewing**: Airport zoning can be viewed online with the BrownDog GIS app

Custodians

- Austin Straubel International Airport
- Brown County Planning & Land Services staff assists with the mapping/GIS components.

Maintenance

- This dataset is updated as needed.

Standards

- Brown County Zoning Ch. 24 Ordinance

Municipal Zoning Information Maintained by the County

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

Layer Status

- Brown County has assisted many of the smaller towns with zoning map production in GIS format. We have also received copies of municipal zoning from other municipalities for use within certain projects; However, as we are not often privy to changes, the county's zoning map cannot be relied on as current.
- The LIO indexed all municipal zoning web pages and maps within ArcGIS Online: http://browncounty.maps.arcgis.com/home/search.html?q=zoning&t=content&content=all

Custodian

- Brown County Municipalities

Maintenance

- Brown County will maintain municipal zoning data if provided by the municipality or if the county has agreed to assist the municipality with zoning map updates.

Standards

- Mapping accuracy standards: Zoning is usually based on parcel mapping, 1" = 50' NMAS.

Administrative Boundaries

Civil Division Boundaries

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

Layer Status

- 100% complete

Custodians

- Brown County Planning & Land Services Department / Property Listing Division
- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- Updated as needed

Standards

- Mapping meets National Map Accuracy Standards (NMAS) for 1" = 50' mapping

School Districts

Layer Status

- **Progress toward completion/maintenance phase:** School Districts are mapped; 100% complete.
- **Relation to parcels:** Parcel attributes include a school district code
  - **Attributes linked to parcels:** School District ID
- **Online viewing**: School Districts can be viewed online with the BrownDog GIS app

Custodians

- Brown County Planning & Land Services Department / Property Listing Division
- Brown County Planning & Land Services Department / Land Information Office

Maintenance

- Updated as needed

Standards

- Map layer meets National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Election Boundaries

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

Layer Status

- Wards and County Supervisor Districts are mapped as a GIS layer (100% complete) and will be re-done with the currently-underway redistricting efforts.
- **Online viewing**: Districts & Wards can be viewed online with the BrownDog GIS app

Custodian

- Brown County Clerk's Office
- Planning & Land Services Department

Maintenance

- Updates are made to boundaries during the Redistricting process.
- Annexations can trigger other changes to wards and districts; the district changes are gathered from resolutions filed in the County Clerk's office and updated on the GIS map using a versioned SDE GeoDatabase and ArcGIS Desktop.

Standards

- National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Utility Districts

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

Layer Status

- Sanitary Districts and Sewer Service Area boundaries are mapped in GIS format (100% complete).
- **Online viewing**: Sanitary Districts and Sewer Service Areas (SSAs) can be viewed online with the BrownDog GIS app

Custodian

- Brown County Planning & Land Services Department.

Maintenance

- Updated as needed.

Standards

- National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Emergency Services Boundaries – Law/Fire/EMS

Layer Status

- Fire Districts: 100% complete
- Fire Stations: 100% complete
- Law Enforcment Districts & beats: 100% complete.
- EMS and First Responder boundaries: 100% complete
- **Online viewing**: Public Safety layers can be viewed online with the BrownDog GIS app

Custodians

- Brown County Planning & Land Services Department / Land Information Office
- Brown County Public Safety Communications Department

Maintenance

- Updated as needed

Standards

- Map layer: National Map Accuracy Standards (NMAS) for 1" = 100' mapping
- Attribute schema: Motorola/Spillman "Flex" Computer Aided Dispatch software
- Brown County will incorporate additional Wisconsin NG911 Data Standards as needed

Public Safety Answering Points (PSAP) Boundary

Layer Status

- 100% complete; This is coincident with the county boundary and includes waters of the lower Bay (Lake Michigan) offshore from Kewaunee County as well, as described in the original Brown County boundary definition statutes.
- Brown County Planning & Land Services Department / Land Information Office
- Brown County Public Safety Communications Department

Maintenance

- Updated as needed

Standards

- Map layer: National Map Accuracy Standards (NMAS) for 1" = 100' mapping
- Attribute schema: Motorola/Spillman "Flex" Computer Aided Dispatch software
- Brown County will incorporate additional Wisconsin NG911 Data Standards as needed

Provisioning Boundary

Layer Status

- Same as PSAP boundary, but a new layer with required attributes will be created as per NG911 requirements and standards.
- Brown County Planning & Land Services Department / Land Information Office
- Brown County Public Safety Communications Department

Maintenance

- Updated as needed

Standards

- Map layer: National Map Accuracy Standards (NMAS) for 1" = 100' mapping
- Brown County will incorporate additional Wisconsin NG911 Data Standards.

Other Public Safety

Layer Status

- Brown County maintains the following additional GIS datasets for use by Public Safety and Emergency Management:
  - Critical Facilities (health care and day care facilities, designated shelters, schools, bridges, etc). Many of these are maintained within the address points layer but tagged with database attributes to indicate facility type and to allow queries as needed. Many street name and common name aliases are also maintained for 911 dispatch purposes.
  - Outdoor Warning Siren locations and 'sound sheds'
  - Rural Fire Water Fill Sites
  - Military Reference Grid System
- Brown County Planning & Land Services Department / Land Information Office
- Brown County Public Safety Communications Department

Maintenance

- Updated as needed

Standards

- Map layer: National Map Accuracy Standards (NMAS) for 1" = 100' mapping
- Brown County will incorporate additional Wisconsin NG911 Data Standards as they are defined.

Lake Districts

Layer Status

- Brown County does not have any Lake Districts

Custodian

- n/a

Maintenance

- n/a

Standards

- n/a

Native American Lands

Layer Status

- 100% complete. Brown County maintains a GIS layer for the Oneida Reservation and we also track land put into Trust. Oneida "Fee Land" (parcels owned by the Oneidas but still taxed) are also tracked.
- Many tribal parcels are also part of the Law Zone and used for 911 dispatch for tribal police response.

Custodian

- Brown County Planning & Land Services Department / Property Listing Division

Maintenance

- Parcels in trust are updated at least annually.

Standards

- National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Other Administrative Districts

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

Layer Status

- **Business & Industrial Parks:** A GIS layer is complete, and this layer contains attributes and drives an online interactive app that allow a prospective business to discover community contact phone numbers

and emails, transportation facilities, and demographic profile detailing important statistics for the areas nearby.

- **Tax Incremental Districts (TID or TIF):** In recent years, Brown County has been maintaining a GIS map layer showing TID boundaries, with linkages to both state and county TID information systems.
- **Urbanized Area boundaries and MPO Plan Boundaries:** The Metropolitan Planning Organization (MPO) "Urbanized Area" boundaries are tracked through each decade and mapped as a GIS layer.
- **Park boundaries:** A GIS layer depicting parks is 100% complete, and this contains many attributes describing amenities within each park.
- **ZIP code boundaries:** A GIS layer is complete although the Post Office does change these boundaries from time to time and the county's version may not be completely up-to-date.
- **Census boundaries:** Brown County incorporates census tract and block boundaries into our local GIS system. Population data and other data are often drawn from these layers and analyzed with GIS for various projects.
- **Extraterritorial Areas:** Brown County maintains a map layer to show extraterritorial zoning jurisdictions (unincorporated areas within 3 miles of the corporate limits of a first, second, or third class city or 1-1/2 miles of a fourth class city or village.
- **Survey Index polygons**: Brown County tracks the location and extent of all surveys (plats, CSMs, plat of surveys, transportation surveys, and other misc surveys) using GIS polygons that contain various database attributes such as survey type, date, surveyor name, link to scanned survey image, etc.
- Quite a few other map layers have been developed over the years so this is not an all-inclusive list.

Custodian

- Brown County Planning & Land Services Department

Maintenance

- Updated as needed

Standards

- National Map Accuracy Standards (NMAS) for 1" = 100' mapping

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

- Brown County maintains a hydrography map layer based on high-resolution digital orthophotography and LiDAR. The hydrography layer includes attributes that closely match those of the USGS and Wisconsin DNR. For example, the county's hydro layer links to the DNR's Surface Water Data Viewer when possible.
- Additionally, the 2010 LiDAR data have been processed using the ArcHydro tools to produce GIS layers depicting more detailed drainage and flow accumulation layers, along with revised basin and watershed boundaries. However, this project is incomplete due to a lack of a complete culvert inventory and outdated LiDAR. It is a goal to update the drainage mapping layer in the next three years using new culvert data and the 2020 LiDAR dataset.

Custodian

- Brown County Planning & Land Services Department
- Brown County Land & Water Conservation Department

Maintenance

- Updated as needed, primarily after new aerial orthophotography and/or LiDAR is acquired.

Standards

- Mapping: National Map Accuracy Standards (NMAS) for 1" = 100' mapping

- Attribute schema: USGS and Wisconsin DNR.

Cell Phone Towers

Layer Status

- Brown County no longer maintains cell towers as a GIS layer, except when towers are given a unique address then will include them in our address point data coded with usage = Tower.

Custodian

- n/a

Maintenance

- n/a

Standards

- n/a

Bridges and Culverts

Layer Status

- Bridges on county and state highways have been inventoried as a GIS layer by Brown County Public Works and others.
- Culverts are approximately 50% mapped, mostly east of the Fox River. Culvert inventories from various municipalities and those collected by Brown County Land & Water Conservation Department have been merged into a countywide layer. Culverts are a critical component of hydrologic modeling, and it is a goal to complete culvert mapping countywide using new LiDAR, aerial photos, and field GPS locates where needed.

Custodians

- Brown County Public Works Department
- Municipalities within Brown County
- Brown County Land & Water Conservation Department
- Brown County Planning & Land Services Department

Maintenance

- Will be updated as needed.

Standards

- National Map Accuracy Standards (NMAS) for 1" = 100' mapping

Other

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

Layer Status

- Railroads and spurs are 100% complete as a GIS map layer
- Port facilities are complete as a GIS map layer.
- Non-metallic mines are tracked in GIS.
- Agricultural fields are mapped as a GIS layer
- Snowmobile trails are maintained as a GIS layer and are available for viewing online

Custodian

- Brown County Planning & Land Services Department
- Brown County Land & Water Conservation Department
- Brown County Parks Department

Maintenance

- Each layer is updated as needed or as time permits.

Standards

- Standards may vary for each layer, but generally the mapped information is based on parcels and/or high-resolution aerial photography which meet National Map Accuracy Standards (NMAS) for 1" = 100' mapping.

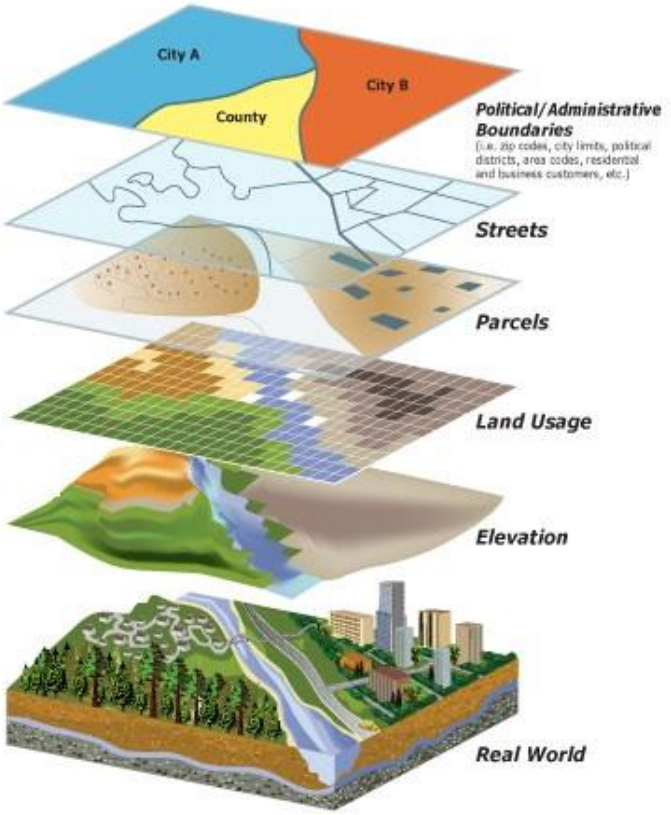

Figure 2. Conceptual diagram of GIS map layers. Image courtesy of Esri

3 LAND INFORMATION SYSTEM

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

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

- The design, development, and implementation of a land information system that contains and integrates, at a minimum, property and ownership records with boundary information, including a parcel identifier referenced to the U.S. public land survey; tax and assessment information; soil surveys, if available; wetlands identified by the department of natural resources; a modern geodetic reference system; current zoning restrictions; and restrictive covenants.

This chapter describes the design of the county land information system, with focus on how data related to land features and data describing land rights are integrated and made publicly available.

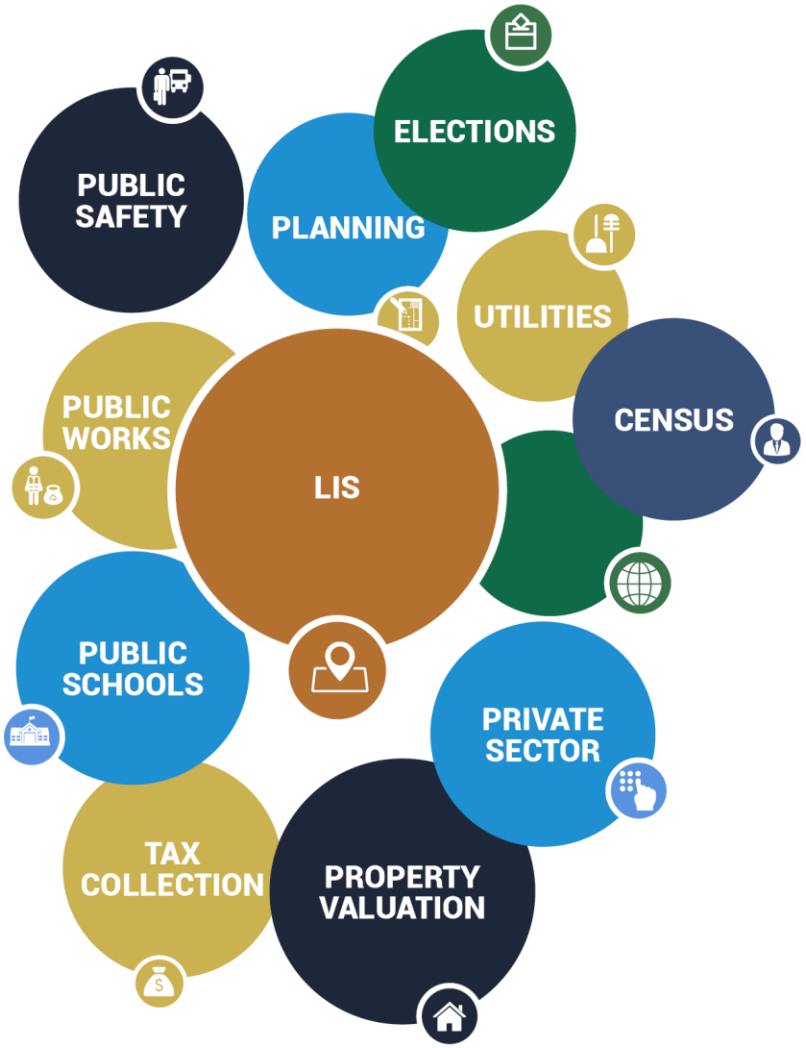

Figure 3: A Land Information System concept diagram *(courtesy of Geospatial World)*

Current Land Information System

Brown County Land Information / GIS user summary with example services

Land Information System / GIS Customers

Land Information services provided to **internal** departments

Land Information Office / GIS

Public Safety & Communications	Provide E-911 Computer Aided Dispatch Data & Support: The LIO maintains addresses, streets, response agency GIS data layers and sends these to 911 monthly ("Geo" refreshes). Also support Advanced Tactical Mapping and incident mapping.
Sheriff	LIO provides GIS data on addresses, streets, etc for use in records management and mapping
Emergency Management	Provide GIS tools, support, and data layers for emergency operations and analysis hazardous storage sites, critical infrastructure, emergency shelters, evacuation routes, Emergency Operation Center support, vulnerability zones , maps
Highway	Provide support for road projects. GIS layers like elevation mapping and aerial photography helps with planning, preliminary road engineering, cut & fill analysis, stormwater management, permit location, and many other aspects of highway maintenance
Planning	Provide GIS tools to reduce staff time in research, communicate effectively, perform "what ifs". Planning staff utilizes GIS frequently throughout the day to look up information on properties such as land ownership, land use, environmental data, transportation information
Property Listing	The Property Listing office provides the foundational base for the GIS and the LIO works very closely with them. The LIO provides GIS training, tools and database administration for parcel mapping and integrates assessment, land ownership, and tax data with the mapping.
Zoning	Provide GIS data layers to support statutory program administration Sanitary, Nonmetallic Mining, Floodplain Ordinance Administration necessitates constant use of GIS to gather information on any particular property. GIS helps save a lot of staff
Register of Deeds	Provide GIS tools to help ROD staff with tract indexing, property lookup, customer assistance and other ROD functions.
District Attorney	Provide maps for court displays. The LIO routinely produces large custom maps for the district attorney and other lawyers to help analyze crime scenes and assist juries with visualizing them.
Land Conservation	Provide GIS tools and maintain data layers. The LIO assists with Agricultural field "Best Management Practices" permits,, manure storage and spreading maps, water flow modeling, invasive species mapping, and geologic mapping
Clerk	LIO maintains maps for Supervisory Districts and Voting Wards. Provide Reapportionment services and ad hoc requests.
Treasurer	Provide GIS tools for Treasurer staff. Facilitate the Property Search web site. Produce the County Plat Book. Link tax records to parcel mapping.
Health Dept	Provide GIS web site to enable efficient lookup of addresses & businesses in conjunction with inspection zones, restaurants, wells, and beach monitoring
Facilities & Parks	Create and maintain park maps, trail maps. Assist with park plans and facility inventory.
Airport	Create & maintain airport zoning GIS layer. Assist with locating and reporting map coordinates and elevations for the FAA.
Port	Create and maintain port facility maps. Assist with bathymetric (water depth) maps, dredge estimation for the Fox River and Bay of Green Bay shipping channel.
Administration	The LIO provides ad hoc maps and analysis to support various tasks and projects as requested by the county's Executive, Administration, Information Services, and other administrators.

Continued on the next page: LIO services provided to external customers
(business, citizens and other units of government)

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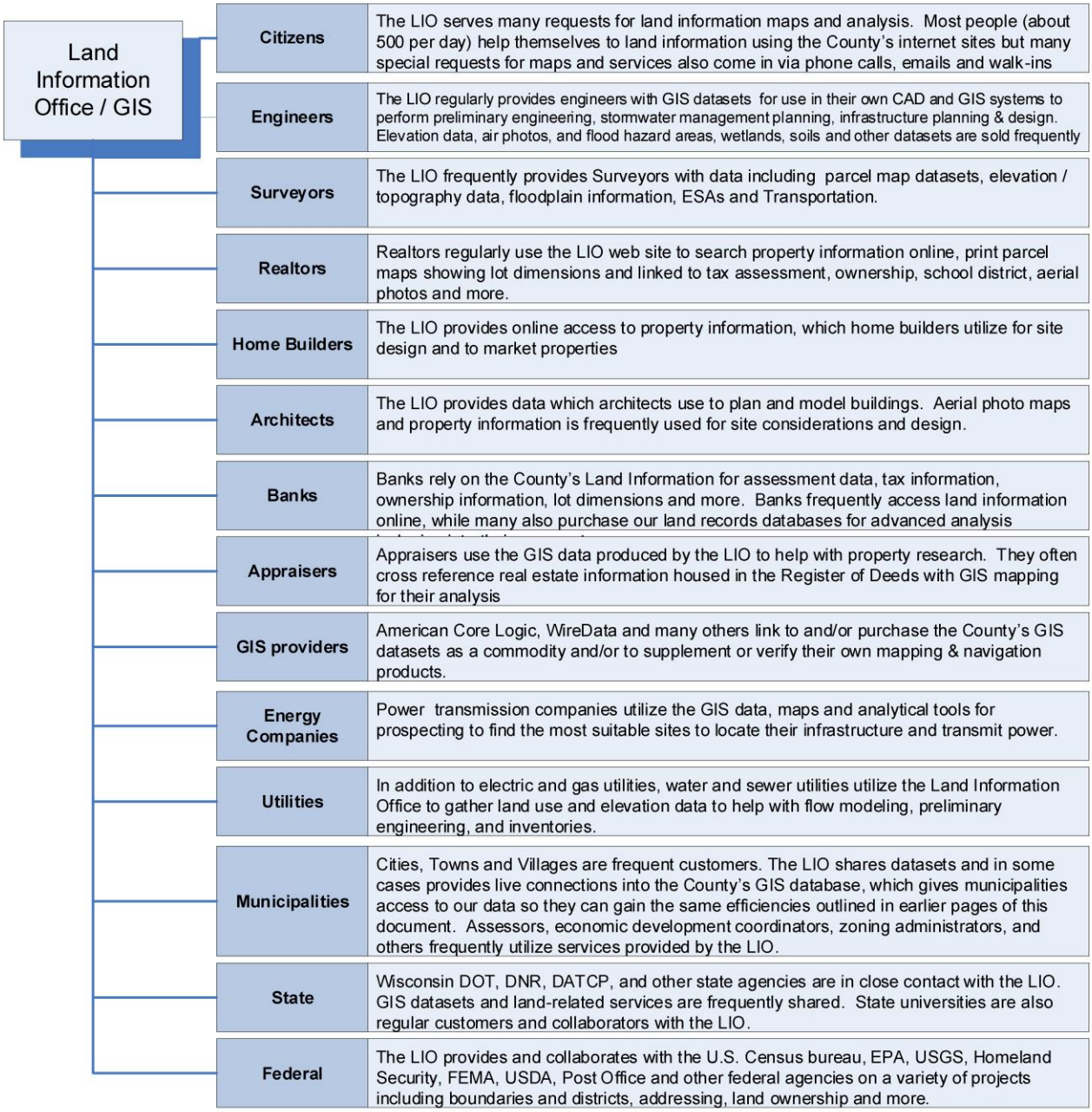
Continued

Land Information Office services provided to **external** customers



Citizens	The LIO serves many requests for land information maps and analysis. Most people (about 500 per day) help themselves to land information using the County's internet sites but many special requests for maps and services also come in via phone calls, emails and walk-ins
Engineers	The LIO regularly provides engineers with GIS datasets for use in their own CAD and GIS systems to perform preliminary engineering, stormwater management planning, infrastructure planning & design. Elevation data, air photos, and flood hazard areas, wetlands, soils and other datasets are sold frequently
Surveyors	The LIO frequently provides Surveyors with data including parcel map datasets, elevation / topography data, floodplain information, ESAs and Transportation.
Realtors	Realtors regularly use the LIO web site to search property information online, print parcel maps showing lot dimensions and linked to tax assessment, ownership, school district, aerial photos and more.
Home Builders	The LIO provides online access to property information, which home builders utilize for site design and to market properties
Architects	The LIO provides data which architects use to plan and model buildings. Aerial photo maps and property information is frequently used for site considerations and design.
Banks	Banks rely on the County's Land Information for assessment data, tax information, ownership information, lot dimensions and more. Banks frequently access land information online, while many also purchase our land records databases for advanced analysis
Appraisers	Appraisers use the GIS data produced by the LIO to help with property research. They often cross reference real estate information housed in the Register of Deeds with GIS mapping for their analysis
GIS providers	American Core Logic, WireData and many others link to and/or purchase the County's GIS datasets as a commodity and/or to supplement or verify their own mapping & navigation products.
Energy Companies	Power transmission companies utilize the GIS data, maps and analytical tools for prospecting to find the most suitable sites to locate their infrastructure and transmit power.
Utilities	In addition to electric and gas utilities, water and sewer utilities utilize the Land Information Office to gather land use and elevation data to help with flow modeling, preliminary engineering, and inventories.
Municipalities	Cities, Towns and Villages are frequent customers. The LIO shares datasets and in some cases provides live connections into the County's GIS database, which gives municipalities access to our data so they can gain the same efficiencies outlined in earlier pages of this document. Assessors, economic development coordinators, zoning administrators, and others frequently utilize services provided by the LIO.
State	Wisconsin DOT, DNR, DATCP, and other state agencies are in close contact with the LIO. GIS datasets and land-related services are frequently shared. State universities are also regular customers and collaborators with the LIO.
Federal	The LIO provides and collaborates with the U.S. Census bureau, EPA, USGS, Homeland Security, FEMA, USDA, Post Office and other federal agencies on a variety of projects including boundaries and districts, addressing, land ownership and more.

How do external customers access and acquire Land Information?

- The Land Info sites online have had over 1.3 million visitors in recent years.
- The LIO also offers an internet downloads, where the more technical customers can download GIS datasets for use in their own GIS/CAD systems for advanced design and analysis
- Some external customers such as the larger municipalities directly access the County's GIS database via computer networking facilitated by the Information Services department.
- Visitors to our office can use GIS terminals and many do purchase printed copies or CDs

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

- Multiple servers host land information in Brown County including:
  - Servers hosting the Register of Deeds data
  - Servers hosting the Land Records / Tax system
  - Servers hosting GIS include:
    - A GIS File Server
    - A GIS database server
    - Two GIS application servers (load balanced, active-active) that run ArcGIS Server and drive the web applications
    - Two GIS application servers for Public Safety / 911 (load balanced, active-active) that run the ArcGIS Server and support the Public Safety Communications GIS
    - A web server that hosts and distributes scanned PDF documents linked to GIS (surveys, tie sheets, permits, field notes, photos, etc) as well as downloadable GIS data files.

Software

- Fidlar software (Register of Deeds)
- GCS Software (Land Information / Tax Assessment)
- Esri ArcGIS Server (ArcSDE SQL database and web REST services)
- Esri ArcGIS Online
- Esri ArcGIS Desktop (ArcMap and ArcGIS Pro)
  - Brown County currently uses ArcGIS Pro in some areas such as the Planning office, but ArcMap is still used in other divisions.
  - Brown County plans to switch to ArcGIS Pro within the next 3-4 years. Before this can be done, the parcel work flow needs to be redone and tested to ensure no "coordinate drift" or inaccuracy is introduced into our parcel map while using ArcGIS Pro for editing.
- AutoDesk / AutoCAD Map

Website Development/Hosting

- Brown County hosts and publishes most of our web services, although some of the non-critical GIS layers are hosted by Esri in the cloud (ArcGIS Online hosted services).
- ArcGIS Online and the Web Appbuilder are used for web app publishing

Metadata and Data Dictionary Practices

Metadata Creation

- **Metadata creation and maintenance process:** Brown County uses ArcCatalog to develop and create geospatial metadata. Most of this metadata is available online through web services, and it is "embedded" in the enterprise GeoDatabase so that it is easily available.

Metadata Software

- **Metadata software:** Esri ArcGIS Desktop / ArcCatalog
  - The software does generate metadata consistent with the FGDC Content Standard for Digital Geospatial Metadata, and ISO geographic metadata standard 19115.
- **Metadata fields manually populated:** ArcCatalog handles most of this, but Brown County will populate metadata fields in the 200 or so GIS layers we maintain as needed.

Metadata Policy

- **Metadata Policy:** No formal metadata policy, although this should be a goal in the future.

Municipal Data Integration Process

- Municipal assessors upload and download county assessment data on an annual basis using tools provided by GCS.
- Municipalities assign addresses and provide address data to Property Listing staff to ensure that the data is entered in our Land Records / Tax Assessment system and the GIS map.
- The Land Information Office provides land records and GIS data to other municipalities in the following ways:
  - Publishing regular updates of all GIS datasets to the LIO Downloads web site
  - Emailing land records exports to town clerks each month
  - Providing REST service endpoints used by many municipalities within their GIS applications

Public Access and Website Information

Public Access and Website Information (URLs)

Public Access and Website Information

GIS Webmapping Application(s) Link - URL	GIS Download Link - URL	Real Property Lister Link - URL	Register of Deeds Link - URL
https://www.browncountywi.gov/departments/planning-and-land-services/land-information-office/	https://www.browncountywi.gov/departments/planning-and-land-services/land-information-office/data-downloads/	https://www.browncountywi.gov/departments/planning-and-land-services/property-listing/	https://www.browncountywi.gov/departments/register-of-deeds/

Single Landing Page/Portal for All Land Records Data

URL
https://www.browncountywi.gov/departments/planning-and-land-services/land-information-office/

Web Services/REST End Points

URL
https://gis.co.brown.wi.us/arcgis/rest/services

Municipal Website Information

Municipal Website	Municipal Website URL
Brown County municipal zoning sites are indexed here	https://www.browncountywi.gov/departments/planning-and-land-services/land-information-office/zoning-maps/

Data Sharing

Data Availability to Public

Data Sharing Policy

- No formal policy exists in document form, although the Land Information Council has provided guidance over the years, particularly with regard to land owner names and privacy. Brown County shares nearly all of its data with the public online or as requested.

Open Records Compliance

- Brown County makes every effort to comply with Wisconsin's Open Records Law. Almost all land information is available to the public via the Internet.

Data Sharing Restrictions and Government-to-Government Data Sharing

Data Sharing Restrictions

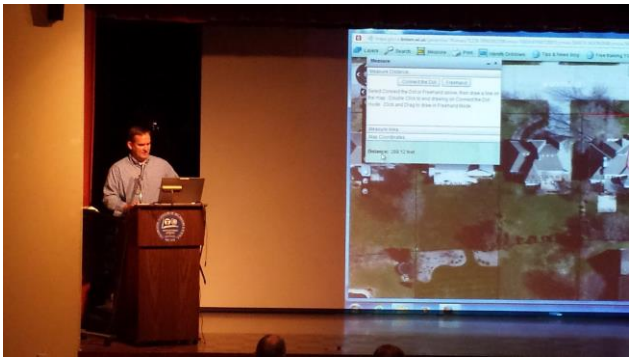
- Brown County's Land Records Search and GIS mapping sites are free and can be used without restriction.
- Individuals can keep their name confidential in the property search and in data downloads files by contacting Property Listing.
- Data Downloads include parcel information (with owner names) inside Microsoft Access and Excel files as well as GIS files. These files can be downloaded free of charge.

Government-to-Government Data Sharing

- Brown County routinely shares data with local, state, federal, and tribal governments as well as utilities.

Training and Education

- Brown County utilizes Land Information Program Training & Education Grants, along with other funds when budgeting allows, to send staff to conferences and other training opportunities. Internal User Group meetings have also been held. Often, 1-on-1 training is most effective when working with software tools for specific tasks.
- We also put on training seminars as time permits (illustrated below).



Photos from the Brown County "Land Information Day" held at the Neville Public Museum auditorium in November 2015. About 60 people attended and received training on the use of the county's online GIS mapping and the software provided by the Register of Deeds office.

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.

This chapter lists the current and future land information projects Brown County is currently undertaking or intends to pursue over the 3-year planning horizon of this document.

For each project, the following are identified:

- Project Description/Goal
- Business Drivers
- Objectives/Measure of Success
- Project Timeframes
- Responsible Parties
- Estimated Budget Information

The WLIP allows this plan to be amended in the future should other significant projects arise.

Project #1: Fill the GIS Analyst position

Project Description/Goal

- Hiring the GIS Analyst (formerly GIS Technician) position is vital to ensure the future success of the county land information system and the enaction of this plan.
- Land Info Spending Categories: Administrative Activities and Management, Other

Business Drivers

- Many people continue to rely on Brown County's GIS services across the county for vital services including 911 dispatch. As these systems have grown, so has the volume and complexity of the GIS hardware, software, and databases. Currently, the GIS Coordinator is the only full-time GIS person on staff at Brown County. The GIS Analyst position would be supervised by the GIS Coordinator and would provide direct assistance for GIS support across the county, including advanced and in-depth aspects of the system. All departments are affected.

Objectives/Measure of Success

- As of the writing of this plan (September 2021), Brown County HR, administration, and County Executive have approved this addition to the Table of Organization and the Land Information 2022 budget. The next step is to obtain County Board approval in the upcoming October and November budget meetings.

Project Timeframes

- If approved, by the County Board in fall 2021, the goal is to hire the GIS Analyst in early 2022.

Responsible Parties

- Brown County Board, Executive, HR, Planning Director, and GIS Coordinator / Land Information Officer.

Estimated Budget Information

- See table at the end of this chapter.

Project #2: Purchase additional GIS server space

Project Description/Goal

- GIS and related datasets continue to grow in number and volume. Brown County maintains historical GIS datasets such as aerial photos, parcels, and LiDAR on active servers so that land use changes through time can be analyzed. The purchase of additional robust server disk space is necessary in 2022 as more new datasets including aerial photos and LiDAR become available.
- Land Info Spending Category: Hardware

Business Drivers

- The existing GIS server space is limited, and room is needed for additional aerial photos, LiDAR, and other large new datasets. All departments that use GIS are affected.

Objectives/Measure of Success

- Measures of success include funding approvals (end of 2021 and early 2022); coordination of technical staff to purchase and install hardware (early 2022). Ideally this server upgrade would be completed by the 2nd quarter of 2022 and would serve the county for years to come.

Project Timeframes

- If the proposed 2022 LIO budget is approved by the county board in fall 2021, we would work with county IT in early 2022 to make this purchase and install the disks in 2022.

Responsible Parties

- Grant funding approval would come from the Wi Dept of Administration and county board; Technical work to be completed by Brown County IT with oversight by the GIS/LIO Coordinator.

Estimated Budget Information

- See table at the end of this chapter.

Project #3: Purchase additional GIS software licenses

Project Description/Goal

- Brown County is in need of an additional Spatial Analyst software extension license to assist with various GIS projects. Also, an Image Analyst license would help automate and speed up the extraction of features from aerial imagery. Further, the county would benefit from an expanded number of ArcGIS Online subscriptions to support cloud-based GIS projects and data collection.
- Land Info Spending Category: Software

Business Drivers

- Departments affected include Planning & Land Services and Land & Water Conservation. Currently there is a limited number of these software licenses available on a shared license server, and users are blocked from access of these licenses if another user is already logged in to the software license.

Objectives/Measure of Success

- All users needing GIS software licenses will have access to them as needed.

Project Timeframes

- 2022-2023

Responsible Parties

- Brown County Planning & Land Services

Estimated Budget Information

- See table at the end of this chapter.

Project #4: Expand GIS functionality across the county

Project Description/Goal

- Many county departments have expressed the need to utilize or expand GIS capabilities within their offices. This includes:
  - The parks department for utility locates and interactive public parks mapping apps;
  - The sheriff's office for data access, Computer Aided Dispatch integration with GIS and mapping analysis;
  - The highway department for improved right-of-way mapping;
  - The zoning office for better land use/shoreland data management and inspection tracking.
- Land Info Spending Category: Other; Administrative Activities and Management

Business Drivers

- The offices listed above are working with new requirements and expectations that involve the use of GIS and related location-technologies and databases.

Objectives/Measure of Success

- Brown County plans to implement this project (and it's sub-projects) incrementally over the next 3 years. The addition of the GIS Analyst position will be a critical factor in this project's success.

Project Timeframes

- 2022-2024

Responsible Parties

- Brown County Planning & Land Services, Sheriff, Parks, and Public Works/Highway.

Estimated Budget Information

- See table at the end of this chapter.

Project #5: Continue remonumenting PLSS corners

Project Description/Goal

- The goal of this project is to ensure accurate property boundaries and GIS mapping across the county. This is achieved through active PLSS (**Public Land Survey System)** corner monumentation and maintenance. The PLSS is the foundation for all boundary determinations and property ownership and is the cornerstone of the GIS system.
- **Land Info Spending Category**: PLSS

Business Drivers

- This framework data has always been a basic function of local government as it is the basis for property ownership and other boundary determinations.
- All foundational elements will benefit from a more accurate and complete PLSS framework.
- The Project Plan for PLSS is a requirement for those counties who utilize Strategic Initiative funds for work related to PLSS completion and integration.

Objectives/Measure of Success

- The objectives of this project are as follows:

- To reach satisfactory completion of the PLSS network.
- To have Survey Grade (2cm or better) coordinates on all corners
- To post all corner information (including tie sheets) to Brown County's Survey Index & Tie Sheet Viewer GIS app for use by private surveyors and land owners.
- To increase the accuracy of boundary surveys done by all surveyors working in Brown County.

Project Timeframes

- Corner remonumentation is an ongoing project as road construction and other projects necessitate monument maintenance.

Responsible Parties

- County Surveyor (Brown County Planning & Land Services Department)
- Survey Crew Chief (Brown County Planning & Land Services Department)
  - The GIS Coordinator also provides assistance with GIS integration, database design

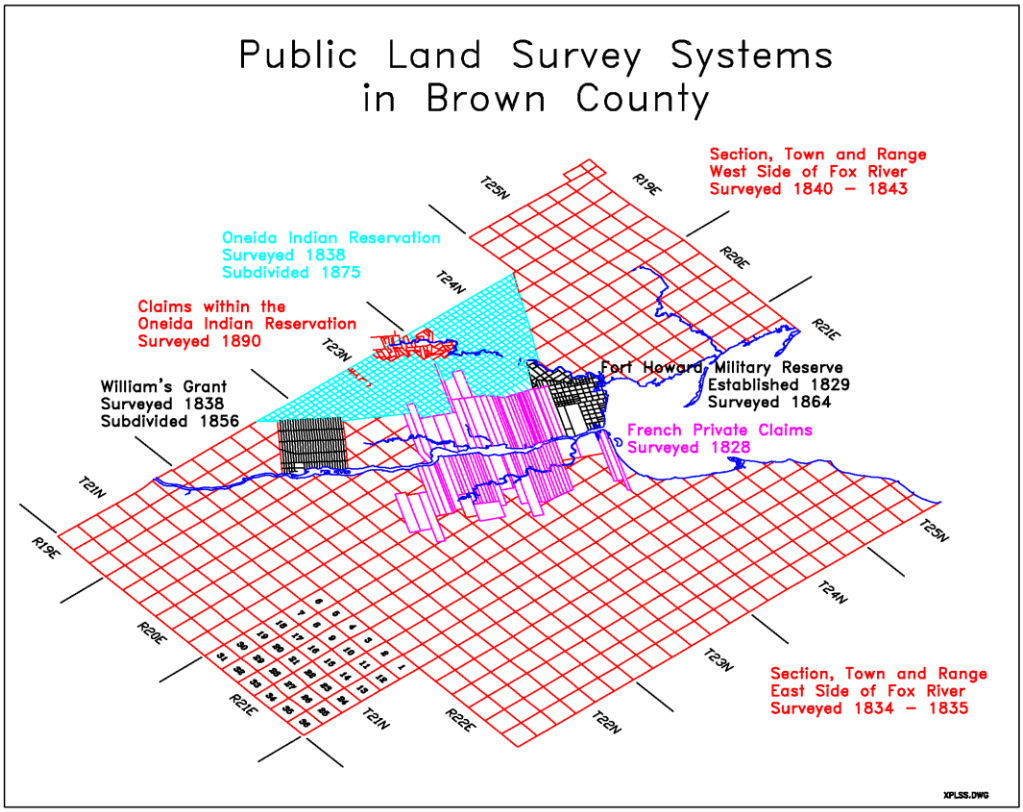
Estimated Budget Information

- See table at the end of this chapter.

There are six different Public Land Survey Systems in use within Brown County:

1) French Private Claims
2) Fort Howard Military Reserve
3) Williams Grant
4) Claims within the Oneida Reservation
5) Oneida Reservation
6) Section, Town and Range rectangular system.

These systems stem from the area's long and unique history as one of the oldest settlements in Wisconsin.



Project #6: Enhance GIS data to support surface water hydrologic modeling

Project Description/Goal

- GIS software tools such as Erosion Vulnerability Modeling (EVAAL) and ArcHydro use input GIS data including LiDAR topography, stream mapping, and culvert locations to model water flow across the surface and produce new GIS layers including detailed drainage patterns, flow accumulation maps, as well as catchment, basin and accurate watershed boundaries. This information can help with storm water planning, natural resource management, watershed planning, and water quality improvement efforts taking place across the county. Brown County Land & Water Conservation Department also uses these GIS datasets and tools to help make determinations on compliance with state conservation standards.
- Land Info Spending Categories: LiDAR, Other

Business Drivers

- Water quality improvement efforts ongoing by numerous organizations.

Objectives/Measure of Success

- The first measure of success is ability of the Land Information Office to provide access to accurate GIS datasets such as LiDAR, aerial photos, hydrography, etc to various agencies via FTP or other means; Another objective is to utilize ArcHydro analysis tools to provide accurate drainange models, flow accumulation map layers, and accurate catchment, basin, and watershed boundary layers.

Project Timeframes

- It is anticipated the 2020 Lidar dataset will be delivered by the vendor/USGS by early 2022. This is when the responsible parties can begin working with the data to derive the new map layers, datasets, and analytical outputs listed above.

Responsible Parties

- Brown County Planning & Land Services; Brown County Land & Water Conservation Department.

Estimated Budget Information

- See table at the end of this chapter.

Project #7: Produce aerial orthophotography in 2023

Project Description/Goal

- Brown County has had a goal to obtain new aerial orthophotography every 3 years or so, with the most recent flights in 2014, 2017, and 2020. A 2023 flight is warranted due to rapid growth and land developments occurring across the county.
- Land Info Spending Category: Orthoimagery

Business Drivers

- Rapid population growth, urbanization, and land use change.

Objectives/Measure of Success

- The county will begin soliciting proposals or bids in late 2022 or early 2023. Flights typically occur in April or early May after snow melt but before full leaf-on conditions.

Project Timeframes

- RFB/P solicitation in late 2022 or early 2023; Flight in Spring 2023; Delivery by late summer 2023 and QC checks in late 2023. In recent years, photos are typically distributed to all users and published to online sites within 4 months of the flight/data acquisition.

Responsible Parties

- Brown County GIS Coordinator; Land Information Office

Estimated Budget Information

- See table at the end of this chapter.

Project #8: Continue scanning surveys, permits: other documents; Index them using GIS

Project Description/Goal

- Currently, the GIS system is used to index over 60,000 land surveys, survey corner tie sheets, shoreland permits, POWTS records, floodplain changes, navigability determinations, ESA amendments, and other scanned documents. Indexing these documents using geography and GIS makes these documents easily retrievable for both internal and external customers via online GIS applications. This system has proven successful for tracking site-specific documents. Over the next 3 years, Brown County will continue to scan documents and link/index/georeferenced them using GIS. All scans will continue to be made available to the public via the online GIS applications.
- Land Info Spending Categories: PLSS, Website Development, Other

Business Drivers

- Over the last 8 years, the Planning & Land Services department has greatly improved public access to surveys, permits, and other documents using this system. Expectations are high among surveyors and other real estate professionals to keep this system going and to expand the offerings.

Objectives/Measure of Success

- The objective is to have all surveys, zoning permits, and other site-specific documents held by the Planning and Land Services Department to be scanned and indexed in this way.

Project Timeframes

- Over 60,000 documents are scanned and indexed in this manner, but many more shoreland and POWTS records have yet to be scanned and indexed. This activity will continue over the next 3 years.

Responsible Parties

- Planning and Land Services Department, particularly the Survey and Zoning divisions within it.

Estimated Budget Information

- See table at the end of this chapter.

Project #9: Enhance all Foundational Element GIS layers, ESA & R/W map layers

Project Description/Goal

- Regular upkeep is needed on all land information "Foundational Elements" described in Section 2 of this plan. One particular GIS map layer that is in need of significant work is the Environmentally Sensitive Area (ESA) dataset. The ESAs in Brown County are defined as various buffer (setback) distances from wetlands, streams (navigable and non-navigable), shores, and also steep slopes. As we re-work the hydrography and steep slope map layers using the new 2020 LiDAR dataset, the ESAs will subsequently need to be re-delineated. Also, further field delineations done by surveyors, wetland specialists, etc should also be tracked in GIS with document linkages included. Another GIS layer that will be expanded and enhanced in 2022 is the County Highway Right of Way layer.
- Land Info Spending Categories: PLSS, Other Parcel Work, Address Points, Street Centerlines, Other

Business Drivers

- There are many business drivers behind this project including 911 emergency response, resource conservation, infrastructure planning, economic development, facility maintenance, and regulatory

inspection. Departments involved include Planning & Land Services, Public Works/Highway, Land & Water Conservation Department.

Objectives/Measure of Success

- Success is completing the scanning and indexing of all surveys, permits, and other important documents.

Project Timeframes

- This will be an ongoing activity over the next 3 years.

Responsible Parties

- Planning & Land Services Department.

Estimated Budget Information

- See table at the end of this chapter.

Project #10: GPS / GIS Inventory of County Parks utilities and assets

Project Description/Goal

- Brown County Parks needs more of their utilities and other assets accurately located using GPS and stored within a GIS database. This project can be undertaken using the new Trimble R2 GPS receiver and the addition of the GIS Analyst position.
- Land Info Spending Category: Other

Business Drivers

- The Parks Department requested this project.

Objectives/Measure of Success

- Accurately locating and building GIS data layers for all parks utilities and assets.

Project Timeframes

- It is unlikely that all utilities and assets will be located with GPS within two years, but completion might be possible by 2023.

Responsible Parties

- Brown County Parks; Brown County Planning & Land Services.

Estimated Budget Information

- See table at the end of this chapter.

Project #11: Continue to improve online GIS services, maps and apps

Project Description/Goal

- Online web site and GIS mapping apps require regular updates and improvements to stay functional and up-to-date. This project will involve maintaining and updating technology as needed or as new components become available from software vendors such as Esri and GCS. Brown County will evaluate the Esri Portal and build that system to support data sharing between county departments, local municipalities, and others.
- Land Info Spending Categories: Website Development

Business Drivers

- The PALS department provides many online GIS apps including the flagship BrownDog mapping app, the online Survey Index, Property Search web portal, and much more. These sites are used by hundreds of visitors each day, and many people have become reliant on them.

Objectives/Measure of Success

- Build the Esri Portal infrastructure
- Sites remain functional 24/7/365

Project Timeframes

- Portal is new for Brown County; Improvements of our online GIS is an ongoing project.

Responsible Parties

- Brown County Planning & Land Services Department (PALS); Brown County IT

Estimated Budget Information

- See table at the end of this chapter.

Project #12: Incorporate NENA NextGen 911 standards for GIS datasets

Project Description/Goal

- Next Generation 911 (NG911) is a nationwide, standards-based emergency communications infrastructure that is intended to enhance communications between a 911 caller and a 911 dispatch center, and to responders in the field. This system leverages GIS data and technology. Brown County will work to make it's GIS data compatible and compliant with the NENA (National Emergency Number Association) standards, and provide data to agencies as needed.
- Land Info Spending Categories: Address Points, Street Centerlines, and Other

Business Drivers

- Next Generation 911 initiative across the US and Canada.

Objectives/Measure of Success

- Brown County will be successful in this project when it can provide GIS datasets that fit the national model.

Project Timeframes

- Brown County will run data through GeoComm's GIS Data Hub by March 2022. This will ensure the county's data meets the standards required for NG911. By the end of 2023, Brown County will be able to regularly provide GIS datasets that are fully NG911 compliant.

Responsible Parties

- Brown County Planning & Land Services (PALS) Department; Brown County Public Safety Communications

Estimated Budget Information

- See table at the end of this chapter.

Project #13: Continue Training & Education

Project Description/Goal

- As technology continues to change and evolve, and new people join Brown County, it is imperative that Brown County provides adequate training for it's staff.
- Land Info Spending Category: Training & Education

Business Drivers

- End users expect that Brown County stays current with technology.

Objectives/Measure of Success

- The objectives are to stay current with technology and to ensure staff can attend conferences such as WLIA and other training sessions as needed.

Project Timeframes

- This is an ongoing project. It's likely staff will attend at least two conferences or training sessions per year.

Responsible Parties

- Brown County Planning & Land Services (PALS) Department.

Estimated Budget Information

- See table at the end of this chapter.

Project #14: Restart the local GIS User Group

Project Description/Goal

- It is a goal to once again hold regular meetings among local GIS staff (county, municipal, and others) at least 3-4 times per year. These meetings have, in the past, proven to be an effective way to discuss and plan for joint projects.
- Land Info Spending Category: Training & Education

Business Drivers

- GIS projects and technology often span multiple agencies including local municipalities. There is a need for greater collaboration, as many municipal systems are linked into the county GIS.

Objectives/Measure of Success

- The objective is to meet on a regular basis (3-4 times per year) virtually and/or in person.

Project Timeframes

- GIS personnel would meet regularly over the next 3 years.

Responsible Parties

- GIS staff from Brown County, local municipalities, and other agencies are invited to join.

Estimated Budget Information

- See table at the end of this chapter.

Project #15: Evaluate Pintegrity and Parcel Fabric software

Project Description/Goal

- Brown county plans to evaluate new software including the Fidlar Pintegrity and Esri Parcel Fabric tools.
- Land Info Spending Category: Software

Business Drivers

- Improving efficiencies and accuracy in day-to-day work flows.

Objectives/Measure of Success

- Improved speed, accuracy, and functionality of land records .

Project Timeframes

- The evaluations will take place in 2022. Purchase and implementation in 2023 pending successful testing and sufficient funding.

Responsible Parties

- Brown County Register of Deeds, Property Listing, and LIO/GIS.

Estimated Budget Information

- See table at the end of this chapter.

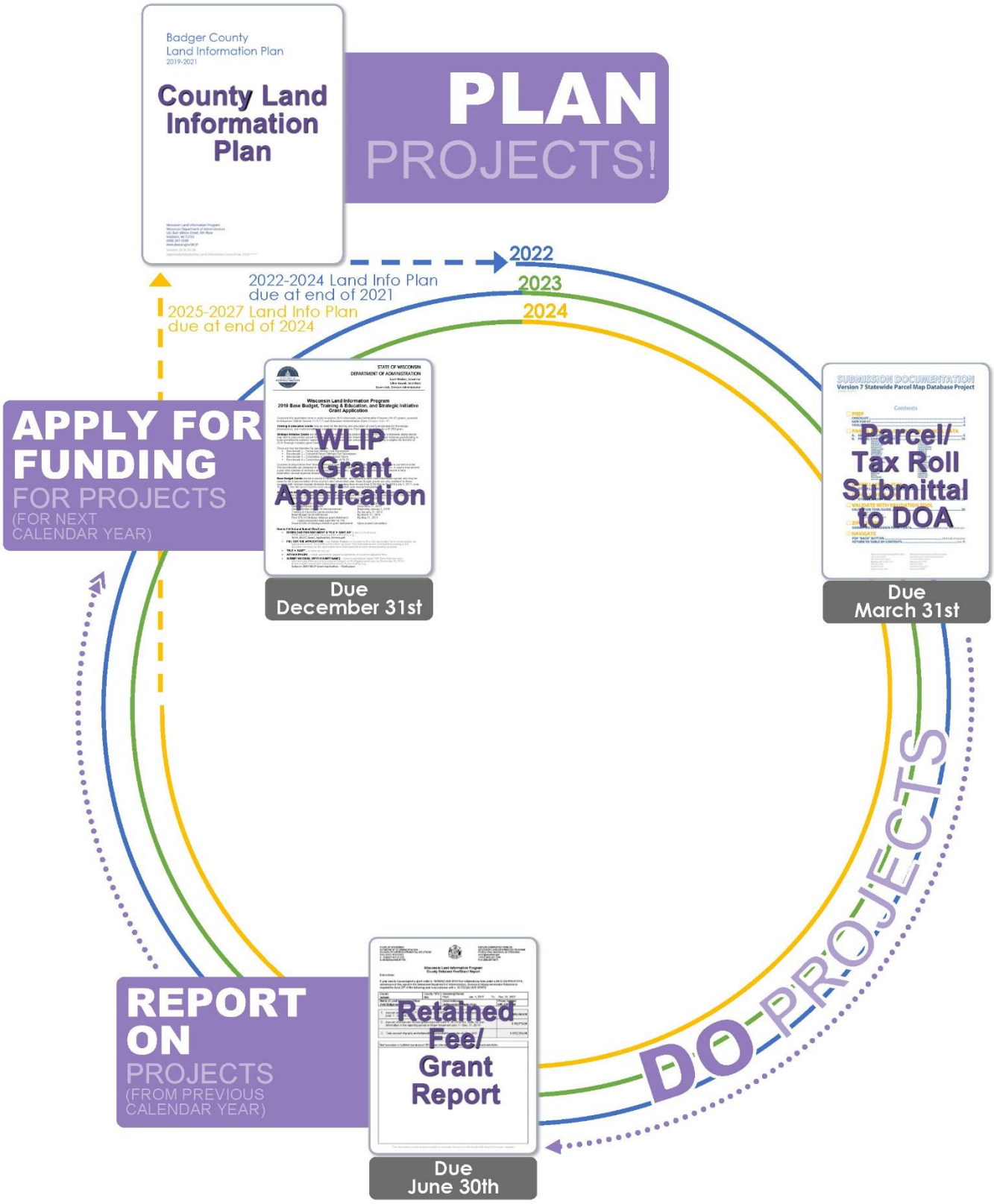
Estimated Budget Information (All Projects)

Estimated Budget Information

Project Title	Items	Unit Cost/Cost	Land Info Plan Citations Page # or section ref.	Project Total
1) Fill GIS Analyst position	GIS technician position	$29.38 hourly	Page 34	$61,110 annually
	No fringe estimated			
				183,331
2) Purchase GIS server disk space	High-Quality server disk	27,200 (2022)	Page 35	–
				27,200
3) Purchase GIS software licenses	Spatial Analyst	$2500 (2023)	Page 35	–
	ArcGIS Online	$2500 (2022-23)		–
				5,000
4) Expand GIS functionality:	Parks Utility GPS	$5000 (2022)	Page 36	5000
	Cty Hwy Right of Way	$25,000 (2022)	Page 36	25,000
	Zoning	TBD (2022-24)		
	Sheriff	TBD (2022-2024)		
				30,000
5) PLSS Corner Remonumentation	County Surveyor	$7,000 annually	Page 36	21,000
	Survey Crew Chief	$20,200 annually		60,600
				81,600
6) Hydrologic Modeling	GIS Coordinator	2% of $74,235 * 3	Page 38	4455
	GIS Analyst	2% of $61,110 * 3		3666
				8121
7) Aerial orthophotography	Contracted service	$50,000	Page 38	50,000
				50,000
8) Scan/ Index permits & surveys	Est. PALS Staff time	Est. $5000 over 3 yrs	Page 39	
				5000
9) GIS data improvements	20% of GIS staff time	$27,000 annually	Page 39	81,000
				81,000
10) GPS/GIS Inventory of Parks	8% of GIS Analyst		Page 40	
				5000
11) GIS map & app improvements	10% of GIS staff time	$13,500 annually	Page 40	40500
				40,500
12) NextGen 911 work	7% of GIS staff time	9870 in 2022 or 2023	Page 41	
				9870
13) Training & Education	Conferences, Training	$4000 annually for all staff, *3	Page 41	12000
				12000
14) GIS User Group		Small fiscal impact	Page 41-42	
15) Pintegrity and Parcel Fabric		To Be Determine	Page 42	To Be Determined
			GRAND TOTAL ESTIMATE FOR ELEMENTS IN THIS PLAN	**528,622**

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

Where noted "GIS staff time" includes the GIS Coordinator and GIS Analyst combined annual salaries.



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