

KITTITAS COUNTY GIS

Kittitas County's comprehensive, long-range view of geographic
information management

*Strategic Plan
2016 - 2021*

Prepared by:
Jason Eklund, GIS Coordinator
Kittitas County Information Technology

Table of Contents

Acknowledgements.....	1
1.0 Executive Summary.....	2
2.0 Introduction.....	3
2.1 Background.....	4
3.0 Current Situation and Organizational Context.....	5
3.1 GIS Management and Program Status.....	5
3.2 Technical Resources and Staff.....	6
3.3 GIS Users.....	7
3.4 Stakeholders.....	8
4.0 Strategic Foundation.....	8
4.1 Mission.....	8
4.2 Vision for Geographic Information Management.....	9
4.3 Past Strategic Plans.....	9
4.4 Strengths, Weaknesses, Opportunities and Threats (SWOT).....	9
4.5 Business Drivers.....	11
4.6 Strategic Goals.....	12
4.7 Critical Success Factors.....	12
5.0 Strategic Initiatives.....	12
5.1 Objectives.....	12
Glossary of Terms.....	20
Appendix A.....	21
Appendix B.....	22

Acknowledgements

Thanks to our Information Technology team in providing editorial assistance, comments, and constructive criticism in the preparation of this plan.

Many thanks to all the departments who afforded me the time to meet and brainstorm all the objectives in this plan. I would also like to thank all the regular participants at the monthly GIS Users Group held here at the county for your ideas and patience as we continue to improve our GIS system.

1.0 Executive Summary

This strategic plan will:

- 1) Summarize where we currently are as an organization as it relates to geographic information management. Defining our current organizational status sets a baseline for planning.
- 2) Define a strategic foundation comprised of key pieces that provide a basis for action and create a picture of the end result to be achieved through this plan.
- 3) Establish strategic initiatives or objectives that elaborate on the high-level goals.

Some of the critical business functions that rely on our GIS program include:

- Emergency response navigation using the roads layer (Sherriff's Office and KITTCOM)
- Emergency management analysis – flood, earthquake, disaster assessment & response
- Addressing and access permits
- Permit review analysis, processing, tracking, and data mining for reports and documentation
- Parcel assessment and re-valuation
- Critical areas analysis for land use applications and proposal evaluation
- Growth management act assessment and planning - land use and zoning mapping

Prior to 2007, GIS resided in the Community Development Services Department. GIS had become increasingly useful, but as the demand for GIS analysis and mapping requests increased, the underlying infrastructure was not designed to support the growing need. Mapping requests and GIS services were performed by the GIS Manager, for all departments, and those tasks dominated their workload.

Since the reorganization of GIS in 2007, Information Technology has succeeded in overhauling its infrastructure to the point where it can successfully sustain our current growth as well as support other agencies' GIS database and licensing needs. Updated software, hardware and converting to an SDE geodatabase dramatically improved how our spatial information is accessed and manipulated. Kittitas County entered into a GIS support agreement with the City of Ellensburg in 2008 which includes hosting their enterprise geodatabase to share server licensing. Emergency backup and database redundancy is now handled by a mirrored GIS server housed at the City of Ellensburg. The infrastructure gap has been filled and GIS is operating at a sustainable level; however, there remain opportunities to increased GIS services to improve effectiveness and efficiencies of county staff, including mapping and GIS analysis. Jason Eklund is the county's GIS coordinator and supports 24 GIS users spread among 5 departments, four of which edit and update layers in the geodatabase.

The following strategic goals will be the focus for the GIS program over the next 5 years.

1. Refine GIS management philosophy.
2. Define standards for, and improve quality of, Framework data, and establish tools and procedures for perpetual data maintenance and appropriate access.
3. Improve county efficiencies through GIS integration.
4. Improve GIS services for internal staff and the public.
5. Expand support that is offered to regional GIS stakeholders.

6. Expand the awareness of GIS technology and integration of geographic information in departments and applications in which GIS use is not common but where substantial benefits may be achieved.

2.0 Introduction

A Geographic Information System (GIS) can be defined as “An integrated collection of computer software and data used to view and manage information about geographic places, analyze spatial relationships, and model spatial processes. A GIS provides a framework for gathering and organizing spatial data and related information so that it can be displayed and analyzed.

Enterprise GIS systems are integrated throughout an organization so that a large number of users can manage, share, and use spatial data and related information that is based on a common coordinate system to address a variety of needs, including data creation, modification, visualization, analysis, and dissemination.

Kittitas County currently employs an enterprise GIS system. In order to fully utilize this system and maximize our return on investment, a long-term strategic plan is needed. Here are some examples of critical business functions where GIS plays a major role.

- The roads layer, maintained by Public Works, is the primary source of information for emergency management software (Spillman) used by KITTCOM and first responders (e.g. Sheriff and other law enforcement, fire, and ambulance)
- Addressing and access permits determined by Public Works using the roads and parcel layers.
- The permit review process, completed by Community Development, uses our web mapping application (COMPAS) and about 15 GIS datasets to determine approval or denial.
- Organizational framework for land use documents and records management.
- Platform for the official zoning and land use maps
- Critical areas analysis for land use applications are completed using data in the GIS.
- Noxious Weed Board produces field maps for inspections and uses the parcel layer when determining ownership for notifications regarding weed infestation.
- The Assessor’s office maintains the parcel layer, used for assessment, re-valuation, and historical reference. This layer is critical as a base map for most departments using GIS.
- As a result of the Kittitas County Multi-jurisdictional Hazard Mitigation Plan (HMP), models will be generated using our GIS data to determine potential damage from fire, flood, earth quake, etc. to help determine future damage potential and vulnerability.

In this context, strategic planning indicates a comprehensive, long-range view of information management that will provide focus and direction for the more detailed tactical planning that must occur on a routine basis within all departments comprising the GIS community in Kittitas County.

The Strategic Plan has the following key purposes:

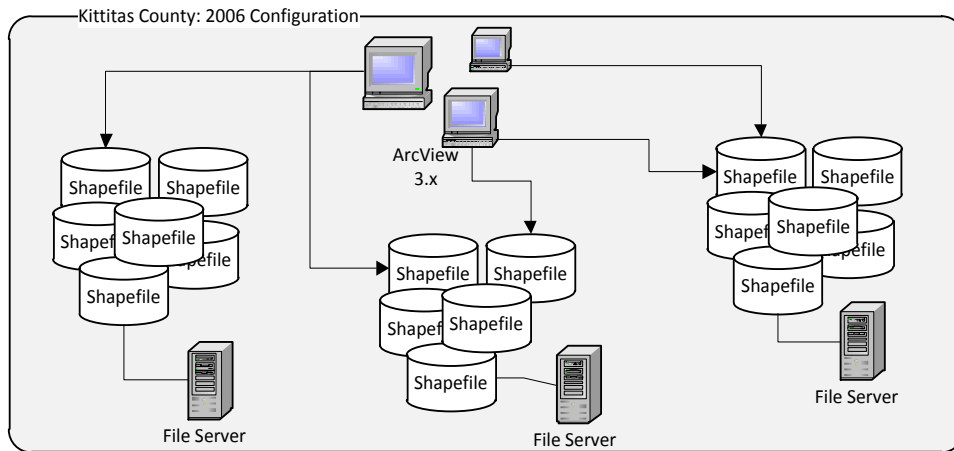
- To give long-term direction and foundation for Geographic Information Management (GIM) for Kittitas County.
- To define and support an organizational environment for accomplishing GIM goals.
- To promote GIM programs and initiatives.
- To provide a work agenda and a context for more detailed tactical plans and programs for making progress on specific work elements.
- To provide a vision and overarching strategy within which all geographic information stakeholders can develop strategies and tactics for improved collaboration and coordination.
- To aid financial planning for current and future needs

Strategic planning for management of geographic information should be a continuing process. The strategic planning process should be:

- A dynamic guide for detailed planning of individual elements of the plan.
- A central mechanism for coordinating and integrating elements of geographic information and technology development through the County without loss of planning perspective.
- The major instrument for meeting inevitably changing circumstances without loss of momentum or overall direction.

2.1 Background

In January 2007 Kittitas County reorganized GIS as a central service in the Information Technology Department. Prior to that move, GIS had been primarily functioning from within the Community Development Services Department (CDS). It was evident that while the GIS system had supported County business requirements at a basic level, the system was noticeably falling behind the technology curve. GIS processes and software that had been in use for years were in danger of becoming obsolete within the industry and no longer supported by software vendors. GIS datasets designed for single-use access were being used by multiple departments simultaneously, causing frequent data corruption. In addition, most County departments had relied on a single GIS Analyst to fulfill their requests for maps, analysis and other geographic information. It became obvious that more resources and updated GIS technology were needed in order to sufficiently support the County's various business requirements and workflows.



Concurrent with the reorganization, the GIS Manager in CDS resigned and a new GIS Analyst was hired to begin work on the County’s GIS infrastructure. Areas focused on during this process included software updates, data cataloging and software license consolidation.

3.0 Current Situation and Organizational Context

3.1 GIS Management and Program Status

Information Technology succeeded in building an enterprise SDE database while maintaining a distributed editing user base. Software, hardware and the SDE database dramatically improved how our spatial information was accessed and manipulated. The new platform gives us hourly database backups and better control over data access. Updated software licensing has allowed us to enter into an agreement with the City of Ellensburg to share GIS licensing and hardware resources. A redundant failover server resides at City Hall.

The GIS page on the public website now features downloadable GIS data and metadata available in both shapefile and file Geodatabase format, which was not previously available. Our interactive web mapping application (COMPAS) allows the public to obtain parcel information, locate various districts, buffer parcels and export mailing labels which has decreased office calls to both CDS and the Assessor’s office. The GIS page averages over 1350 page views per month.

Our County does not have a separate GIS department to maintain all the spatial data that we create; that responsibility lays within each department. The GIS Analyst has been tasked with centralizing the database and writing software extensions to support the departments’ maintenance of their data. All the software customizations are on a “per request” basis. A GIS Users Group was formed in 2007 and meets monthly, allowing GIS representatives from each department an opportunity to bring their ideas and concerns to the GIS management.

Prior to the reorganization of GIS in Information Technology, the GIS Manager stationed in Community Development performed mapping services for all departments, as well as the public as a free service. As a result, mapping requests dominated their workload and the core infrastructure began to stagnate. Two years ago, the county decided to discontinue accepting public mapping requests due to a lack of resources, restricting GIS mapping services for internal use only.

Today, internal mapping requests are routed to CDS due to their GIS staff and large format plotter capable of producing high quality maps. .

The primary challenge of a decentralized system is that each department that has identified a need for GIS has had to develop competencies within their own staff. Those that have not identified sufficient need must find staff outside their department to do their GIS work and there have been situations where clients get the run-around to find someone responsible and capable of handling their request. That issue aside, our current program structure has been successful in that it ensures the experts and parties responsible for the information are designing workflows and inputting data that meet critical business functions.

To date, efforts have been focused on revamping our infrastructure and making software current with the latest technology. This plan has helped to establish a more proactive GIS management approach in order to maintain increasing demands on the GIS system. This plan was also the tipping point in getting our GIS program to its next level of maturity.

3.2 Technical Resources and Staff

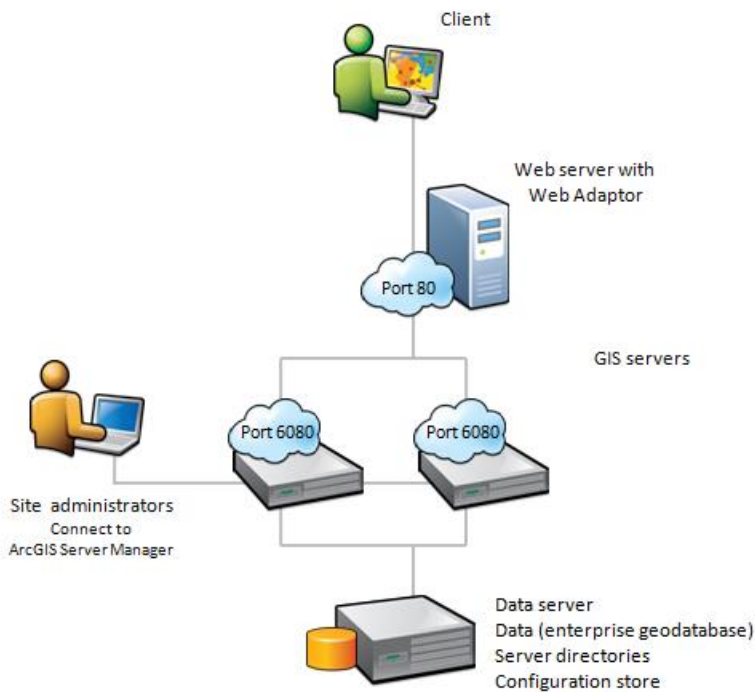
3.2.1 Data

All spatial data, mostly shapefiles, have been consolidated into an enterprise SDE database. The GIS Coordinator designs and builds new spatial layers as the need arises, creates the backup strategy, performs routine maintenance, and controls the security over the SDE database. A list of GIS data layers can be found on our intranet (CAMAS) at <http://camas-net/committees/GIS/gis-data-layers.aspx>

A number of maintenance routines, in the form of C# console applications, automate nightly maintenance tasks. For more detailed information about the maintenance applications see Appendix A.

3.2.2 Applications and Hardware

Kittitas County has entered into an inter-governmental cooperative agreement for GIS services and as a result, a mirrored SQL Server is located at the City of Ellensburg, providing redundancy for both agencies' SDE geodatabases. This contract is a direct result of the success we have achieved in revamping our infrastructure. The following schematic details our current hardware/software configuration.



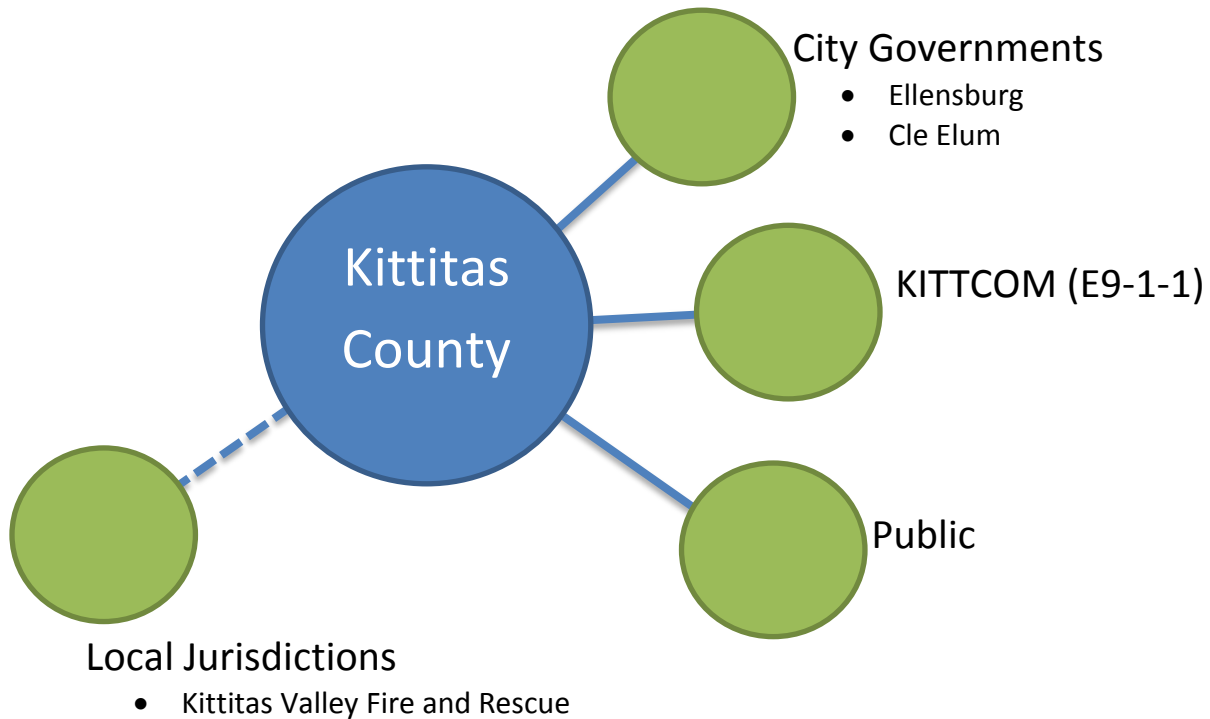
3.2.3 GIS Editor and Management Staff

Jason Eklund is the only GIS management staff member for Kittitas County. There are five staff members among Public Works, Community Development, and the Assessor’s office that edit and maintain data in the enterprise geodatabase.

3.3 GIS Users

Information Technology supports 24 users spread out among 5 departments. We maintain a central license manager, allowing us an easy way to share licenses across departments. Because we have more installations of ArcGIS Desktop than we have licenses, we have created a list to help prioritize usage. see Appendix B for this list.

3.4 Stakeholders



4.0 Strategic Foundation

4.1 Mission

The Mission of Information Technology, of which GIS is a part:

To support the business needs of Kittitas County by providing appropriate technology tools, solutions, and assistance

- through an excellent customer service experience;
- by adopting their requests as our own;
- to complete resolution;
- through active teamwork;
- in a fiscally responsible manner;
- securely;
- with creativity, respect, expertise, and professionalism;
- communicating effectively at the appropriate comfort level with our customers;
- While designing, maintaining, and supporting all county information technology infrastructure.

4.2 Vision for Geographic Information Management

- Encourage and support the contributions of everyone in the Kittitas County Geographic Information Community.
- Leverage the human, technical, and information resources of the Geographic Information Community to accomplish measurable countywide and local objectives and to solve real problems.
- Expand the scope and range of GIS analytical and organizational capabilities.
- Provide an organized framework to enable data integration and sharing of both spatial and non-spatial applications and information.
- Be the model for County Government GIS.

4.3 Past Strategic Plans

In August of 2006 a strategic plan was proposed by our GIS software vendor, Environmental Systems Research Institute (ESRI) to help improve the infrastructure of the GIS program. The summary of that plan included the following

- Hire a GIS Coordinator who will reside in the Information Technology Department
- In order to fulfill the vision of a more productive and efficient GIS, additional GIS support staff will be needed along with software upgrades and training for support staff and users.
- Meetings were conducted with various departments and agencies expressed the following common needs:
 - Interdepartmental access to data stored in a central location
 - Tighter integration between various systems (e.g. – TerraScan, permitting, etc.) and GIS
 - More staffing to support GIS needs
 - More user training
- 1st year
 - Migrate to the ArcGIS platform and move data into an SDE enterprise geodatabase
 - User training
- 2nd year and beyond
 - Allocate funding for ongoing software maintenance.
 - Ongoing training
 - Ongoing Geodatabase development

4.4 Strengths, Weaknesses, Opportunities and Threats (SWOT)

A SWOT analysis helps identify internal and external conditions and forces that may help, support, harm, or present obstacles to an objective or situation. This SWOT relates to the current GIS structure at Kittitas County:

4.4.1 Strengths

- GIS structured within the Information Technology department with strong application, hardware and software support.

- GIS infrastructure that has the capacity to serve as a GIS repository and source of technical support for local agencies. Currently we have inter-local agreements with the City of Ellensburg, City of Cle Elum and KITTCOM (E9-1-1)
- In-house GIS knowledge and development skills
- Using industry standard GIS technologies
- Testing additional ESRI software through their BETA testing program
- Quality hardware, software, and peripherals.
- Highly qualified and capable personnel building and maintaining systems and data.
- High usage/adoption of COMPAS
- Low resistance to sharing data and skills in all departments as well as other agencies
- Efficient use of current licensing

4.4.2 Weaknesses

- Lack of GIS presence in some departments for maintaining their owned GIS layers in SDE (Auditor, Public Health).
- No designated GIS staff person to fulfill internal mapping requests.
- No clearly defined method for routing and updating boundary changes since the Boundary Review Board (BRB) was dissolved.
- IT has not aggressively pursued how GIS can aid non-GIS based operations (Sheriff, Prosecutor)
- Standard operating procedures for data collection and maintenance.

4.4.3 Opportunities

- Unified approach to GIS program development
- More GIS efficiencies realized from a more structured approach to GIS program management
- Strong GIS leadership
- Pursue Outside funding sources (grants)
- External partner participation on projects that benefit multiple stakeholders
- Aid GIS program development for City of Kittitas and Kittitas Valley Fire and Rescue
- Continued growth of GIS program for City of Cle Elum.
- Mapping services provided to the public for a fee
- Expanded functionality and education to other departments and the public

4.4.4 Threats

- GIS is not a central department, creating a perception there is a lack of leadership or utility function only.
- Maintaining senior management support
 - New Information Technology Department Director recruited outside the county
- Designing data standards that meet the needs of all agencies and departments
 - The threat lies in not being able to find a standard that meets everyone's needs
- If mapping requests were brought into IT for all departments, other vital GIS program elements could get neglected, similar to our situation before 2007.

- Mapping requests of Community Development Services (from external departments) can take substantial resources away from processing land use applications.
- Pace of technology changes.

4.5 Business Drivers

The following business drivers define the types of benefits that can be realized from GIS and document the expected value of the tangible and intangible results of the implementation effort.

4.5.1 Cost Savings

Defines a reduction in current expenses such as contract costs and salaries

- Coordination with other local agencies for sharing enterprise licensing and hardware costs
- Labor savings associated with creating, compiling and transforming project data
- Aiding land use development
- Providing a framework to catalogue land use documentation dramatically reducing processing times for public disclosure requests.
- Field data collection and processing eliminates redundant data entry.

4.5.2 Cost Avoidance

Reducing or eliminating costs that would be incurred without the use of GIS technology

- Reduced risk of lawsuits and land use appeals by having more accurate information
 - NavMan tracking on snowplows
 - Higher quality analysis for land use applications
- Reduce project startup costs
- Emergency management processes and practices reduce the risk to life and property
- Ability to leverage skills, training, and learning curves across multiple departments and local agencies
- Decreased downtime for critical workflows
 - Stable GIS database with hourly backups and a redundant failover server at City Hall.

4.5.3 Opportunities for Enhancement of County's Image

Benefits not easy to quantify, yet have a positive impact on our operations, social conditions, and quality of service

- Enhanced ability to provide high quality maps and data for public records requests
- Compliance with government regulations, requirements, and best practices
- Increase data accuracy confidence levels for internal staff and the public

4.5.4 Operational Efficiency Gains

Expected gains in current personnel efficiency and productivity allowing work to be accomplished in less time and with less expense

- Eliminate duplication of effort by bridging workflows that involve multiple systems and data stores within departments.
- Improve coordination of workflows between departments by centralizing data access.
- Custom application utilities that replace workflows involving multiple steps

4.6 Strategic Goals

The following high-level goals have been identified by Information Technology to implement Kittitas County's GIS vision and achieve its mission (in order of importance).

1. Refine GIS management philosophy.
2. Define standards for, and improve quality of, Framework data, and establish tools and procedures for perpetual data maintenance and appropriate access.
3. Improve county efficiencies through GIS integration.
4. Improve GIS services for internal staff and the public.
5. Expand support that is offered to regional GIS stakeholders.
6. Expand the awareness of GIS technology and integration of geographic information in departments and applications in which GIS use is not common but where substantial benefits may be achieved.

4.7 Critical Success Factors

The following list represents technical, organizational, or financial variables and requirements that have a major influence on the acceptance and accomplishment of the plan.

- Agreement and support of current stakeholder groups, and the ability to attract additional stakeholders.
- One or more "champions" (senior elected official or department head) aware of and involved in the GIS program.
- Sustainable funding sources to meet GIS program objectives outlined in this plan.
- Policies, procedures, and workflows support effective data stewardship.
- Appropriate and reliable data discovery and access are sustained.
- Clearly defined work plans and practices for monitoring performance are in place.

5.0 Strategic Initiatives

5.1 Objectives

To accomplish its goals, Kittitas County has established objectives that:

- Are clear, concise and attainable
- Are measureable
- Have a target year for completion
- Include responsibility for taking action

The following objectives support the strategic goals defined in section 4.6 and position GIS to be effective over the next 5 year period. Lead departments for each objective are indicated with the department abbreviation in parentheses.

Goal 1: Refine GIS Management Philosophy

1.1 Continued Proactive GIS management (IT, 2016)

Take a more planned oriented, pro-active approach to managing the county-wide GIS program. This includes annual revision of this document and active involvement with each department to improve existing workflows using our GIS system.

COMPLETED - GIS Analyst position title changed to GIS Coordinator (IT, 2012)

Change the GIS Analyst position title in Information Technology to GIS Coordinator as this better defines the job tasks currently performed and reflects the top-down structured approach to our GIS program.

Goal 2: Define standards for, and improve quality of, Framework data, and establish tools and procedures for perpetual data maintenance and appropriate access

2.1 Data Accuracy Standards and Metadata (IT, 2016)

Establish data accuracy/collection standards for data created by Kittitas County. Existing GIS datasets need to have metadata on how it was created, who created it and at what accuracy. Future datasets will be built based upon established data accuracy and collection standards and will not be published without minimal metadata. Metadata on datasets will be done in two phases:

Phase 1: COMPLETED (2013) - Establish metadata for all datasets that Kittitas County maintains.

Phase 2: Establish field data collection standards that encompass hardware, software and acceptable accuracy.

Phase 3: Establish metadata for 3rd party data.

2.2 Parcel Layer Accuracy (AS, None Planned)

The parcel layer is relied upon more than any other layer in our GIS system, and critical to all other GIS operations. On-the-ground accuracy needs to be improved as it serves as a base layer for all other administrative GIS datasets. Once the parcel layer is in the parcel fabric data model, accuracy will be improved each time the layer is edited. Desired accuracy level will be determined when our data accuracy standards are created.

2.3 Point of Entry/Access Addressing Database (IT, 2016)

Build a new point-of-entry addressing database to be used as the standard for Kittitas County, KITTCOM, the City of Ellensburg, first responders, and all other local jurisdictions. This is a requirement of KITTCOM by the National Emergency Numbering Association (NENA) for their new next generation E9-1-1 system.

Update: This dataset is complete and about 80% verified.

2.4 Correct District Boundary Layers (AS, Not Scheduled)

District boundaries have known errors and most have not been updated with annexation changes. This information needs to be corrected using information from the district and Auditor's office. District layers of priority include Fire Districts and School Districts.

2.6 Survey Control Network (PW, 2016)

Build a county-wide survey control network that can be used to accurately register other datasets for improving spatial accuracy. An intern can use the mobile LIDAR dataset to identify road intersection pins.

COMPLETED - Consolidate and Organize LIDAR Data (PW, 2015)

Combine all the LIDAR data we have into a single raster mosaic dataset. This will help to discover any needed gaps in our coverage.

2.8 GPS Drain Fields and Septic Areas (PH, Not Scheduled)

This information would be useful when making land use and building permit management decisions.

2.9 Septic Database Conversion (PH, 2016)

Convert the Environmental Health septic database, currently in Access, into our SDE database and link to a points layer for septic locations.

COMPLETED - Accessible Food Layer (PH, 2013)

Create a new GIS feature class layer that represents restaurants, health food stores, community gardens, convenience stores, etc. This layer can be used as another Social Determinate of Health.

COMPLETED - Complete Wells Database (PH, 2013)

Supplement gaps in the current wells dataset by collecting all missing wells in the county via GPS and build a database which links each well to the parcels they serve.

COMPLETED - Old Solid Waste Facilities Feature Class (PH, 2013)

Create a new GIS feature class layer that represents old solid waste facilities. This information is valuable when studying social determinates of health

COMPLETED - School Board Director Districts Feature Class (AU, 2013)

Create a new GIS feature class layer which represents school board director district boundaries.

COMPLETED - Parcel Fabric data model (AS, 2013)

In ArcGIS 10.0 there are new tools available for the maintenance of parcel data that can only be used if the parcels are contained in a parcel fabric. We will migrate the current parcel data model to take advantage of these tools and ensure we are staying current with the latest industry standards.

COMPLETED - Commissioner District and Voter Precinct Changes (AU, 2012)

Specific boundary changes have been proposed and approved by the Board of County Commissioners as a result of the 2010 census population numbers. The layers in our SDE database cannot be modified until the resolution has been signed. Once completed, database changes will be published.

Goal 3: Improve county efficiencies through GIS integration

3.1 Improve Floodplain Management Response (PW)

When a flood event occurs, have more efficient tools in place for information gathering and reporting to FEMA. Create floodplain management visualization tools for CDS when working directly with clients who want to build near a floodplain.

- Integrate Operations and Planning feature datasets within our SDE database. These are specific feature classes designed by ESRI, to help gather information about dynamic emergency incidents.
- **COMPLETED - Establish a standard mobile field collection solution (2015).** *A Windows WPF application has been built to run on a Windows tablet for mobile field collection of emergency events, both fire and flood. Collector for ArcGIS on the Windows platform is now in beta and will be tested.*
- **COMPLETED - Collector for ArcGIS and Operations Dashboard (2013):** *A proof of concept project has been built for field collection of flood data with real-time monitoring of the event by administrative staff.*

3.2 Integrate Eagle Recorder into GIS System (IT)

Develop a more integrated system between the Eagle Recorder database in the Auditor’s office and our GIS system. Specifically this would entail the scanned maps that are in this system and not all the other recorded documentation. This is a licensed database that is fairly protected by its vendor (Tyler) and could pose some unforeseen challenges that will not be discovered until we start this project.

3.3 NavMan Snow Plow Data Capture (PW, On-Hold)

Store Public Works snow plow sensor data, captured by the NavMan GPS system, to our Enterprise SDE database. The ability to track not only location information but sensor data to determine plowed and sanded roads for specific periods of time, will mitigate potential lawsuit liability.

3.4 Integrate Noxious Weed database into the GIS system (NW, 2016)

The master Weed database which tracks all current and historical information is updated annually and not accessible through the GIS. By integrating this information with our GIS database, inspectors will

have access to historical information through the mapping interface and have the ability to update the system throughout the year.

Phase 1: COMPLETED (2012) - Import the Excel data into a standalone SDE table in SQL Server and tie the information to the tax parcels.

Phase 2: COMPLETED (2012) - Build an ArcMap utility that will allow the inspectors to add new records to this table and lookup historical information for a given parcel.

Phase 3: Have NW staff using EPIC exclusively for inspection update and research throughout the year, eliminating the need for separate Excel spreadsheets.

Phase 4 (Optional): Enable the mobile editing capabilities of EPIC by purchasing the Esri standard license for the Runtime SDK for .NET.

3.5 Link SDE Database to CAD (PW)

Make the GIS system accessible for road crew running CAD applications in Public Works. There are many GIS resources and data that can be utilized by the Public Works CAD programs to increase efficiencies (e.g., the SDE database). This needs to be investigated further to establish a target date.

COMPLETED - Land Use Application SDE Feature Class (CDS, 2015)

Streamline the land use application mapping process and increase transparency with the public by building a new feature class for the SDE database that will contain all land use applications that can be tracked through COMPAS.

3.7 Proximity Search Tools (PR)

Develop tools that will allow the Prosecutor's office to leverage GIS capabilities in the form of proximity searches. Often times the Prosecutor's need the ability to run a proximity search for traffic accidents in relation to specific mile posts, drug deals in relation to schools, or determine distance to a building point of access.

3.8 Cross-Departmental TerraScan Update (AS)

Establish a workflow that would share situs address, building permit and zoning information from source Public Works and CDS data with the TerraScan (T2) database. Public Works determines situs address information and CDS maintains the building permit and zoning information. To eliminate duplication of effort and possible data entry error for the Assessor's office, this information should be used as source data to update the Assessor's T2 database. T2 has yet to be implemented, so there may be some unforeseen issues with this objective.

The Following task has been superseded by a tablet application that is being developed for Windows 8.1

Smartphone Mobile Editing of Restaurant Inspections (PH, 2013)

Create a new points layer of food establishments and build an ArcGIS Online application that will allow inspectors to enter food inspections on their smartphone or tablet in the field.

COMPLETED - 3.10 Wells Database Editing Application (PH, 2014)

Build a web application that will allow Public Health staff to edit the wells point layer and related B Systems and connected parcel records table. The application will use the ArcGIS JavaScript API to push edits through a REST endpoint.

COMPLETED - 3.11 Automate Cache Update Process for COMPAS (IT, 2014)

Build an automated way to update the COMPAS base map cache by analyzing which parcels have changed since the last cache and only caching those areas. Use the new tools included with ArcGIS 10.2.

Goal 4: Improve GIS services both internally and to the public

4.1 Annexation Update and Routing (IT, Not Scheduled)

Create a process for routing annexation changes to the proper departments and establish a workflow for updating the affected GIS layers. There is no clearly defined process for incorporating annexation changes to the GIS layers.

4.2 Crime Maps (SH, Not Scheduled)

Either through the new maps portal, or on the upgraded COMPAS web mapping application, make crime maps available for the public, similar to Crimereports.com. Note: this feature is dependent upon the new upgrade to Spillman called "Geobase" at KITTCOM.

4.3 Critical Structures Info for Spillman (SH)

With the new version of Spillman and its ability to consume ArcGIS Server resources, investigate integrating critical structure layers with the Spillman mobile application used by the Sherriff cars. This would give officers real-time information about ownership and where structures are located.

4.4 Smart Phone App to Report Hazards (SH)

Build a JavaScript webmap that will run on an iPhone/Android device that will allow officers to report hazards in the field, rather than calling Public Works or KITTCOM.

4.5 Smart Phone Application to Report Flood Damage (PW)

Build a JavaScript webmap that will run on an iPhone/Android device that will allow the public to enter flood information directly to our central SDE database using their smart phone.

COMPLETED - Precinct Maps for Public Download (AU, 2014)

Make voter precinct information and maps more accessible on our website. Precinct lines change infrequently, so create static PDF downloadable maps for the public to access. These maps will be hosted on the public maps portal site.

4.7 Enterprise SDE Database with Redundant Failover for KITTCOM (IT, Not Scheduled)

Build a new enterprise SDE database that our e-9-1-1 call center (KITTCOM) will use for their GIS database, housed at the County. We would then create a failover SQL Server by setting up a database mirror to a server at their office.

COMPLETED - Migrate GIS Infrastructure to new Virtual Server Environment (IT, 2013)

During the conversion of all our servers to the new virtual environment, establish a new ArcGIS Server 10.2 “site”, consisting of multiple servers to distribute requests issued to the GIS web services. During the conversion, migrate and upgrade the SDE database to SQL Server 2008 R2 (x64).

COMPLETED - Public Maps Portal (IT, 2013)

Create a destination portal webpage for published map outputs. This page will be a modified version of the public maps portal template made available by ESRI. This portal would allow each department to publish projects and maps for interactive use by the public.

COMPLETED - Upgrade COMPAS to JavaScript API (IT, 2013)

Transition the COMPAS web mapping application to ESRI’s JavaScript API framework. ESRI is ceasing future development of the Web ADF and advises that web mapping applications built on this platform be moved to one of their Application Programming Interfaces (API’s) as soon as possible. We are choosing JavaScript over Silverlight or Flex.

COMPLETED - ArcGIS 10.0 Upgrade (IT, 2012)

Currently we have mixed desktop versions of 9.3.1 sp1 and 10.0. Not having all client desktops running version 10.0 prevents us from upgrading our central SDE database to version 10.0. Upgrading ArcSDE to version will allow us to leverage new capabilities that can streamline workflows across County departments.

Goal 5: Expand support that is offered to regional GIS stakeholders

5.1 City of Cle Elum GIS Integration (IT, On-Going)

The City of Cle Elum now has a new enterprise SDE database, hosted by Kittitas County. This database now contains a zoning layer, built by City staff, using a feature service published by the county and edited using ArcGIS Online.

5.2 City of Kittitas GIS Integration (IT, Not Started)

Explore the City of Kittitas’ GIS situation for integration and support opportunities.

5.3 Kittitas Valley Fire and Rescue GIS Integration (IT, Not Started)

Extend GIS support to Kittitas Valley Fire and Rescue.

5.4 CWU Internship Program (IT)

Develop an ongoing CWU internship or other cooperative arrangements with CWU staff and students.

Update: CDS has been using interns to complete a lot of GIS data entry throughout the 2015 year.

Goal 6: Expand the awareness of the GIS technology and integration of geographic information in departments and applications in which GIS use is not common but where substantial benefits may be achieved

6.1 GIS Users Group (IT, On-going)

Staff involved in the use and maintenance of GIS data attend a monthly meeting, chaired by the GIS Coordinator, to cover GIS topics and issues that affect each department.

6.1 Department Visits (IT, On-going)

Schedule visits with departments to learn critical business workflows on an annual basis.

6.2 Job Shadow (IT, On-going)

In order to discover where efficiencies through GIS processes can be realized, the GIS Coordinator will job shadow employees to better understand their work processes.

COMPLETED - Map Social Determinants of Health (PH, 2012)

Be more proactive with the Public Health Department in using GIS to explore social determinants of health by geocoding and integrating electronic health record systems. Our Public Health Department has received a grant, awarded by the CDC, to study social determinates to health. Information Technology will be creating the maps and performing the GIS analysis for this project which will be published by the National Association of City and County Health Officials and represents a huge impact on public health for the next few years.

Glossary of Terms

GIS Terminology

- **ESRI** – Environmental Systems Research Institute. This is the primary GIS software vendor for Kittitas County and the company that supplies us with the ArcGIS platform (Desktop and Server).
- **ArcReader** - a free desktop mapping application that allows users to view, explore, and print maps and globes. Anyone with ArcReader can view high-quality interactive maps authored by a high-level ArcGIS for Desktop product and published with the ArcGIS Publisher extension.
- **ArcSDE** – Also known as SDE or Spatial Database Engine. Technology for managing geographic information in a relational database management system (RDBMS). ArcSDE is part of the ArcGIS platform, and is the data server between ArcGIS and relational databases. It is used to enable geographic information to be shared by many users across a network and to scale in size from personal, to workgroup, to enterprise use.
- **Collector for ArcGIS** – Works directly with our ArcGIS Online subscription to Capture, update, and report spatial and tabular information directly from your Android or Apple device.
- **Operations Dashboard** - Operations Dashboard app for ArcGIS is a Windows-based app that provides a common operating picture for monitoring, tracking, and reporting an event (or system of events) across a group of people within your organization. This works in-conjunction with the Collector for ArcGIS and displays the data collected.
- **LIDAR** – Light Detection and Ranging is an optical remote sensing technology that can measure the distance to, or other properties of, a target by illuminating the target with light, often using pulses from a laser. In a GIS application, elevation data and 3D surfaces can be constructed from LIDAR images.
- **Shapefile** - A vector data storage format for storing the location, shape, and attributes of geographic features. A shapefile is stored in a set of related files and contains one feature class. This is the most universal form of GIS file formats, compatible with many platforms.
- **Geodatabase** - A database or file structure used primarily to store, query, and manipulate spatial data. Geodatabases store geometry, a spatial reference system, attributes, and behavioral rules for data. Various types of geographic datasets can be collected within a geodatabase, including feature classes, attribute tables, raster datasets, network datasets, topologies, and many others. Geodatabases can be stored in relational database management systems, or in a system of files, such as a file geodatabase.
- **Parcel Fabric** - A parcel fabric stores a continuous surface of connected parcels or parcel network. Parcels in a fabric are defined by polygon features, line features, and point features. Polygons are defined by a series of boundary lines that store dimensions as attributes in the lines table. Dimensions on parcel lines should ideally match recorded dimensions on the record or survey or plan.
- **Topology** - In geodatabases, the arrangement that constrains how point, line, and polygon features share geometry. Topology defines and enforces data integrity rules.

Appendix A

Maintenance Applications

Log files are generated for each maintenance routine and are checked frequently to ensure proper maintenance of the system.

Nightly

- File Geodatabase Export for ArcReader
 - Exports a File Geodatabase nightly from the SDE database so that the Appraisers can bring current GIS data in the field for use in ArcReader.
- COMPAS table maintenance
 - Builds a new COMPAS reporting feature class which includes all the information found from the “results” popup containing “Ownership”, “Districts” and “Critical Areas” information. With this new feature class, no spatial queries need to be run over the web, making COMPAS queries that much faster.
- Parcel Publishing
 - Parcels are exported from the parcel fabric in SDE and merged with the ownership data from TerraScan to create a published feature class that can be downloaded by the public and used by County staff for analysis.
- SDE maintenance
 - Pulls the TerraScan ownership tables into SDE for direct use in the GIS system.
- TerraScan ownership tables exported to CSV files to make available for public download through the maps portal.
- ~~Download NavMan vehicle activity to SDE tables for historical archiving. (Postponed)~~

Weekly

- ~~Export County maintained data to shapefiles and zip for download on the public maps portal.~~
This process has been superseded by the Open Data website which allows live downloads of data in 3 different formats directly from our SDE database via feature services.

Appendix B

ArcGIS License Allotment for each Department

<i>Department</i>	<i>License Level</i>	<i>License Type</i>	<i>User Name</i>
Public Works			
Public Works	Advanced	Concurrent	Christina Wollman
Public Works	Basic	Single-Use	Kelly Bacon
Public Works	Basic	Single-Use	Front Counter
Public Works	Basic	Single-Use	Maria Fischer
Public Works	Basic	Concurrent	Shared
Assessors			
Assessors	Advanced	Concurrent	Christy Garcia
Assessors	Basic	Concurrent	Shared
CDS			
CDS	Advanced	Concurrent	Jeff Watson
CDS	Basic	Single-Use	Lindsey Ozbolt
CDS	Basic	Single-Use	Kaycee Hathaway
CDS	Basic	Single-Use	Permit Tech
CDS	Basic	Single-Use	Permit Tech
CDS	Basic	Single-Use	Permit Tech
CDS	Basic	Single-Use	Intern
CDS	Basic	Single-Use	Intern
CDS	Basic	Single-Use	Intern
CDS	Basic	Single-Use	Doc
CDS	Basic	Single-Use	Lisa Iammarino
Public Health			
Public Health	Basic	Single-Use	Erin Moore
Noxious Weed			
Noxious Weed	Standard	Concurrent	Marc Eylar
Noxious Weed	Basic	Single-Use	Todd Davis