GIS Needs Assessment

Lassen County Transportation Commission

Geographic Information System Services

GEOGRAPHIC TECHNOLOGIES GROUP®
Beyond Location Intelligence

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Introduction

The Lassen County Transportation Commission engaged Geographic Technologies Group® (GTG) to assist in assessing the GIS needs of the City of Susanville, the Lassen County Transportation Authority, and the Susanville Indian Rancheria (SIR) to collaboratively advance the GIS capabilities throughout the region. This comprehensive effort will effectively benefit the local partnerships, regional economic development, and transportation and multi-modal sustainability.

This document represents the results of one of three documents identified within the Phase I Scope of Work:

- **GIS Needs Assessment**
- Multi-Modal Needs Alignment Review
- GIS for Regional Initiatives Report

Methodology

GTG used its philosophy known as the Six Pillars of GIS Sustainability to determine the current status of each of the agencies GIS program and to prepare the recommendations provided in this and subsequent reports. These six pillars are (*see Appendix A for full descriptions*):

- GIS Governance
- Data and Databases
- Procedures, Workflows, and Integrations
- GIS Software
- Infrastructure
- GIS Training, Education, and Knowledge Transfer

The following sections discuss the agencies' existing GIS environment as it relates to the Six Pillars of GIS Sustainability. These pillars are the topic areas that must be planned for and work well to have an effective GIS program. Any pillar that is weak poses a risk to the stability of the GIS program.

City of Susanville

Stakeholder Overview

As Lassen County's seat and only incorporated city, Susanville is the economic and governmental hub of the county. As of 2021, Susanville's population is approximately 16,000, about 50% of the total population of Lassen County. The population of Susanville has shrunk in recent years, largely due to the closure of the California Correctional Center, and the City has faced challenges with staff and resident retention.

Susanville recently hired its first Economic Development Director and is working to attract developers by highlighting recreational tourism and the historic uptown business district. The City is also looking to attract a senior and retiree population. The Susanville Indian Rancheria is building a new healthcare facility, and the local college has expanded its nursing program to offer RN degrees in preparation.

Both the City and the Susanville Indian Rancheria were recently awarded a Complete Streets Safety Assessment Grant through UC Berkeley to identify and implement traffic safety solutions. The City also recently completed an update to the Land Use Element and Circulation Element of its General Plan, which provides the long-term framework for future growth and development. These updates highlight the City's efforts to shape its developmental blueprint and enhance transportation infrastructure.

Current Use of GIS

GIS is housed within the Public Works Department at the City and is used intermittently by several staff members. IT support is provided remotely by a third-party vendor, Computer Logistics, based in Redding, CA. The City has an ArcGIS Online account and four concurrent licenses for using ArcMap 10.8.2. The City does not currently use ArcGIS Pro.

GIS Data is largely stored as shapefiles on a Public Works file server and is not hosted on ArcGIS Online. Most datasets are over a decade old and are not being updated. There is minimal institutional knowledge of GIS layers and when they were last updated. This information is not formally documented in metadata or SOPs, leaving the City's knowledge of this data vulnerable to staff turnover and loss of institutional knowledge. There is also duplication of data layers maintained between the City and County (i.e., zoning and parcel

layers). A centralized regional data repository maintained by both organizations would provide efficiencies and improved use of data for government services.

Data is managed or obtained through multiple sources and falls under the following three categories:

- Utilities
  - Manholes, catch basins, culverts, dams, ditches, electric lines, poles, transformers, sewer ponds, storm drains, traffic lights
- Transportation
  - Bridge, centerlines, curb, dirt roads, driveways, guard rails, railroad, sidewalks
- Planning
  - Buildings, zoning, city parcels, Susanville area parcels, city boundary, prison boundary

When considering City resources to maintain the current GIS data, staff retention is an ongoing challenge for the City, making it difficult to allocate time and resources to update layers and datasets. Current GIS users have limited GIS skills and have not had resources allocated for GIS training, such as migrating GIS Desktop use from ArcMap to Pro.

Circa 2017, the City partnered with Trillium to install GPS units on Lassen Rural Bus (LRB) service buses and develop interactive maps for riders to track buses within 3 seconds of accuracy. Riders can view routes, system alerts, or real-time status updates for free online or on mobile devices via the ETA SPOT app. Trillium continues to maintain bus routes and stop information for the city.

GIS Needs and Priorities

Susanville's highest GIS priority is developing complete GIS data and applications to facilitate economic development and population growth in the region. The City and Lassen County have been scrutinized in the past for not having an interactive zoning map available for developers but have been hesitant to release the current zoning layer online as it is not updated and is currently inaccurate. Transportation initiatives in the region will be critically important to these economic development goals. Several GIS data needs and GIS software solutions are listed below that were identified during the interview process with the City and will assist the City with achieving these priorities.

Data and Databases

- Updated zoning and general plan layers
- Updated parcel layer
- Bus stop and bike lane layers
- Updated road and sidewalk layers
- Recreational and historical amenity layers

Procedures, Workflow, and Integration

- Master Data List developed, documented, and distributed
- Data creation and maintenance standards and procedures
- Metadata standards and procedures

Software Solutions

- Economic Development Viewer with parcels, zoning, utilities, infrastructure, sites available for development, and public safety, such as fire hazard severity zones and fire responsibility areas.
- Public viewer application highlighting recreational amenities (e.g., parks, trails, and scenic overlooks) to facilitate public use and tourism.
- Public transportation application with roads, sidewalks, bike lanes, bus routes, and snowplow routes. Opportunity to integrate Trillium bus tracking.
- Story map to highlight tourism and development opportunities in the Uptown Business District.
- Open Data Hub to facilitate data sharing with partner organizations and the public.

Training, Education, and Knowledge Transfer

- Formal training plan to promote awareness of the benefits of GIS and how it can be applied to help meet strategic priorities.
- GIS software training developed and scheduled.
- Succession Planning – cross-training to create a depth of knowledge that will help reduce knowledge gaps if someone leaves the organization or is on extended leave.

Lassen Transit Service Agency (LTSA)

Stakeholder Overview

The Lassen County Transportation Commission (LCTC) was formed in 1971 in response to the Mills-Alquist-Deddeh Act, more commonly known as the Transportation Development Act, passed by the California Legislature. According to the California Department of Transportation (Caltrans), this legislation was passed "to improve existing public transportation services and encourage regional transportation coordination." It also provides funding for transit and non-transit purposes that follow regional transportation plans.

The LCTC is comprised of three members of the Susanville City Council and three members of the Lassen County Board of Supervisors. It supports Lassen County, the City of Susanville, and Susanville Indian Rancheria by providing strategic planning, grant planning, and transit funding for these local entities.

Under the jurisdiction of the LCTC, the Lassen Transit Service Agency (LTSA) provides public transportation services throughout Lassen County. The LTSA administers and operates the Lassen Rural Bus (LRB) public transportation services.

Current Use of GIS

GIS use within the LCTC is very minimal. Only a handful of staff use GIS, all on an individually sourced basis. There is no centralized GIS infrastructure or data within the Commission itself. Most data are downloaded from readily available sources such as Regional or State Open Data Portals. However, there is still uncertainty about where to find other supplemental data sets or whether the Commission can get access to data that would be valuable.

Planning and Grant Applications

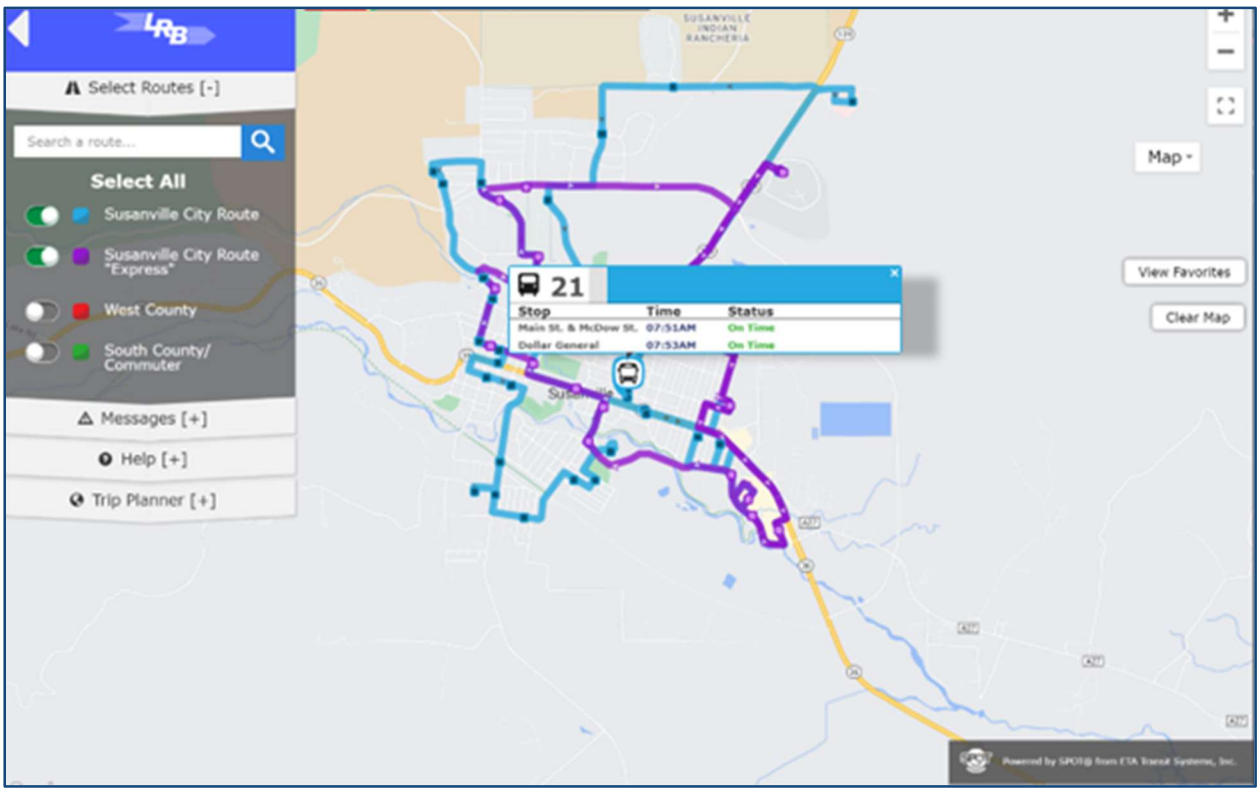
The use of GIS within the Planning Department is limited to spatial analysis that assists the Commission with completing grant applications that focus on strategic planning, bike path rehabilitation, and general beautification. To qualify for many grants, applicants must provide locally representative data of different socioeconomic demographics such as population and median income, and report local environmental factors such as air quality and healthy place indices.

All GIS analysis within planning takes place using either QGIS or ArcGIS Pro. All GIS software licensing is provided via the consulting agency employees running the analysis. Most of this work is done using manual data creation and parsing.

Public Transit

Under the jurisdiction of the LCTC, the Lassen Transit Service Agency (LTSA) provides public transportation services throughout Lassen County. The LTSA administers and operates the Lassen Rural Bus (LRB) public transportation services. The LRB provides transportation services that include the following routes:

- City of Susanville – provides service within the City of Susanville Monday through Saturdays
- Susanville City "Express" – provides service within the City with limited hours Monday through Friday
- West County Route – provides service between Susanville and Chester three times a day Monday through Friday, and twice on Saturday.
- South County Route – provides service in the Honey Lake region (Susanville to Herlong) Monday through Friday
- Eagle Lake Route – provides service in the Eagle Lake region (Susanville to Stone's Landing) via reservation only on Saturdays Memorial Day through the last Saturday in September



The LRB currently uses a GIS-centric application called SPOT, which is a Transit Asset Management Software created by ETA Transit. The solution has a public-facing site that shows bus routes, stops, and locations of buses when AVL technology is incorporated. On the administrative side, it allows for reporting of data points collected by drivers such as ridership, on-time performance, bicycle use, and wheelchair use by passengers.

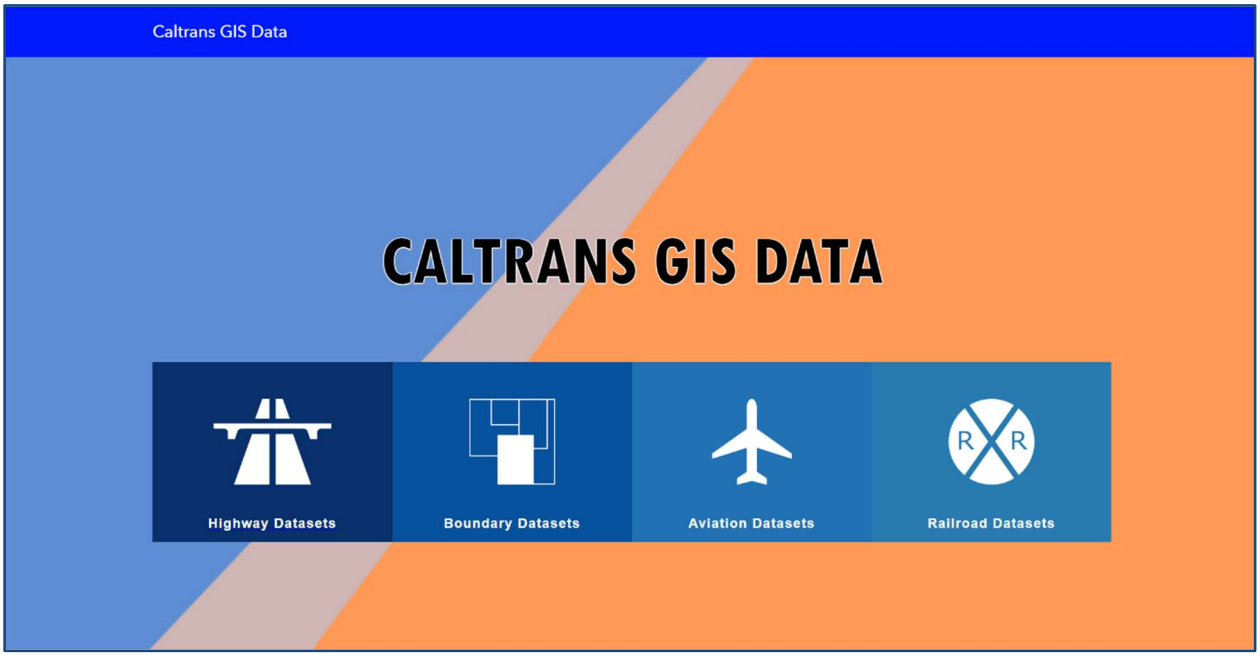
While reports can be created and data can be exported, most of the analysis done on ridership data occurs using manual processes in multiple Excel Spreadsheets.

Caltrans Data and Maps

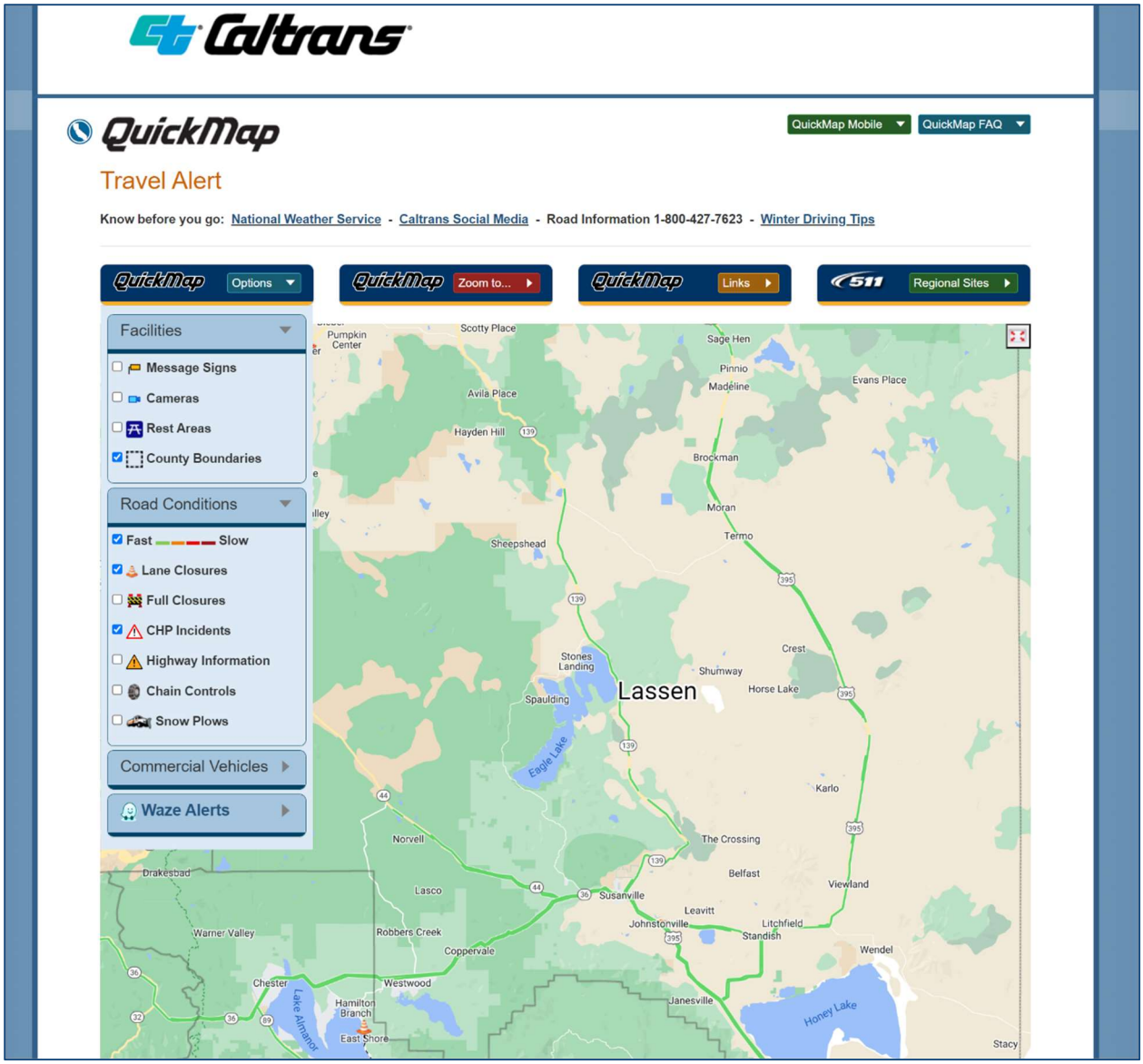
Caltrans provides a variety of web-based GIS tools and data for public consumption. Caltrans data is served up through their Caltrans GIS Data Portal as well as the California Open Data portal. The LCTC has expressed an interest or need in the following datasets available:

- Traffic Volume and Average Annual Daily Traffic (AADT)
- Transit Routes
- State Highway Bridges
- National Highway System

- California Rail Network and Rail Stations
- Emergency Road Closures
- Crash Data



Caltrans also provides a public-facing "QuickMap" that allows users to overlay travel-related data such as lane closures, highway patrol incidents, and snowplow locations. Data from this application is integrated into the SPOT application so that bus drivers and riders can see this data overlayed with their existing bus routes.



GIS Needs and Priorities

Governance

- The LCTC has no staff specialized in GIS. It relies on consulting staff to fill these needs.

Data and Databases

- A centralized GIS data hub containing frequently used/acquired data layers
- Dataset Needs include:

- Flood Plain Maps
- Wildfire Hazard Maps
- Evacuation Routes
- Active Transportation Facilities (bicycle/pedestrian facilities)
    - Bike Trails
- Bridge locations and condition ratings
- Land Ownership data
- Parcel Boundaries
- Right of Way Boundaries
- Off-Highway Vehicle Routes
- Development Projects
- Bus Routes
- Bus Stops
- Ridership Data
- Weight Restrictions for Roads
- Road Closures
- Forest Service Layers

Procedures, Workflow, and Integration

- Documentation of existing GIS analysis workflows to potentially support future automation.
- Integration with local community data to identify regional road projects, closures, etc.
- Integration with CalTrans data to reduce manual duplication of datasets.
- Integrate GIS with ETASpot

Software Solutions

- Ability to view transit data such as bus routes & stops throughout the region.
- Application showing active transportation facilities such as sidewalks, bike paths, bike routes, crosswalks, etc. within the region.
- Application focused on trailheads and trails.
- Use of Story Maps and Public Applications to communicate aspects of the Regional Transportation Plan and the Active Transportation Plan.
- Ability to view existing and planned transportation projects.

- Internal Dashboards for Commission members to use for ad-hoc reporting and to review summarized metrics.
- Internal Dashboard for Transit Ridership analysis
- Public Facing Trip Planner to allow citizens to plan bus route trips or routes between bike trails and bus routes.

IT Infrastructure

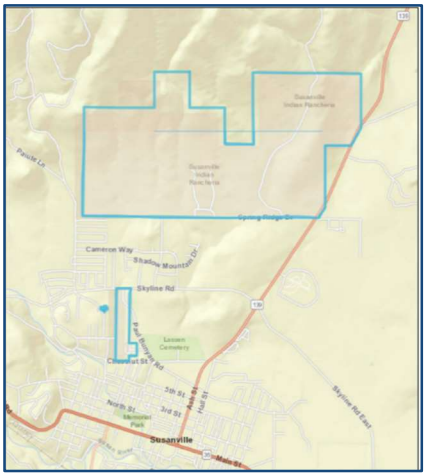
- There is no GIS Infrastructure owned by the Commission.
- ArcGIS Online should be leveraged to host and centralize frequently needed GIS data layers.
- Implementing Web-based GIS solutions will be beneficial to allow for more efficient access to data and analysis.

Training, Education, and Knowledge Transfer

- Training plan to ensure staff can leverage the GIS applications to increase efficiencies and improve decision-making.

Susanville Indian Rancheria (SIR)

Stakeholder Overview



Located in Lassen County, Northern California, the Susanville Indian Rancheria (SIR) is a federally recognized tribe, with a total land base of 1,689 acres, a combination of trust and fee status (including 40 non-contiguous acres). The land is separated into the upper and lower Rancheria, the lower being the primary land base and residing within the city limits of Susanville.

The Rancheria serves as the headquarters and community space for its tribal members. SIR focuses on several initiatives including economic development, cultural preservation, and health services for

tribal members. It is governed by a General Council (all tribal members aged 18 and over); however, the day-to-day business of the Rancheria is delegated to a seven-member council, the Tribal Business Council.

SIR's governing body consists of numerous Departments to assist with tribal affairs and support its residents including Education, Human Resources, Natural Resources, Emergency Services, Housing Authority, and Public Works. The Public Works Department is combined with Facilities and is responsible for the upkeep of all buildings and grounds. The water system within the lower Rancheria is part of the City of Susanville's infrastructure, whereas the upper Rancheria's water supply is purchased from the City but maintained by SIR. Additionally, a new Health Clinic is under construction within the city limits of Susanville to serve the local community with enhanced medical care.

As mentioned above, SIR, along with the City of Susanville recently won a Complete Streets Safety Assessment Grant through UC Berkeley to identify and implement traffic safety solutions. In 2023, SIR published its Tribal Transportation Safety Assessment final report, documenting existing multi-modal conditions and safety issues, as well as suggested improvements. At the time of this writing, SIR's Public Works Director was also in the process of completing an update to its Transportation Plan.

Current Use of GIS

SIR has been a long-time user of GIS. However, its use has been intermittent and plagued with staff turnover and lack of training. Currently, the primary GIS users reside within the Natural Resources Department. Yet, there is some interest within the Public Works Department to use GIS for utilities and facility maintenance.

Within the Natural Resources Department, there are two primary users and one technician. The two main personnel, the Director and the Coordinator, are responsible for multiple duties, which do not permit them to solely focus on the use of GIS, data creation, maintenance, analysis, or creation of maps. Additionally, there are nine staff members that comprise the field crew for maintenance and inspections.

SIR currently accesses Esri software through the Bureau of Indian Affairs (BIA), https://www.bia.gov/bia/ots/dris/bogs. The BIA provides Geospatial Support to assist Tribal governments in managing their cultural and natural resources through software, training, and technical support. Licensing is provided at no cost under an Enterprise License

Agreement with Esri (currently valid through January 2029) and provides, but is not limited to, the following:

- ArcGIS core software and limited extensions
  - ArcGIS Pro with Extensions
    - 3D Analyst, Geostatistical Analyst, Network Analyst, Spatial Analyst, and Publisher
  - ArcGIS Enterprise
  - Portal for ArcGIS
  - GeoEvent Server
  - Image Server
  - ArcGIS Monitor
  - Software for Developers
- Esri e-Learning courses and workshops
- Esri specialty products
- Technical Support

Within the Rancheria, the Natural Resources Department is envisioned to be the primary user of GIS. The Public Works Department was previously set up with GIS software but did not use it. In large, the Rancheria is not taking advantage of the software and capabilities available to them. A large part of this is due to understaffing, emphasizing the need for at least one additional Analyst that can focus on the GIS needs for SIR.

SIR has its own servers for managing data. However, the majority of available GIS data is obsolete, dating from around 2003/2004 and tapering off in 2013. Due to staff/coordinator turnover, there is a lack of institutional knowledge of GIS layers and staff cannot currently rely on this information. Additionally, field collection and accessing accurate data in the field is something that has plagued the staff, the lack of mobility. There is a need for data collection and field mapping to assist with utility management within the Rancheria's boundaries.

GIS Needs and Priorities

Due to the lack of resources within SIR, the Rancheria is reliant on the City of Susanville and Lassen County to assist them with accurate and relevant GIS data and solutions. Its highest GIS priority is providing a means to better manage their local and cultural resources and foster an environment that promotes accessible resources for the tribe. These resources include, but are not limited to, finding the safest means to travel to facilities such as

hospital/medical facilities, places of employment, educational facilities, and other tribal facilities within the city limits. Transportation, as well as additional GIS initiatives in the region, are crucial for the well-being and development of the reservation, especially for those in the Upper Rancheria. The Susanville Indian Rancheria identified several GIS needs, that, with the assistance of the City and County will help towards achieving these goals.

Governance

- Develop SLAs with the City and the County for data sharing
- Formalize and document GIS data create and maintenance responsibilities and procedures
- Implement guidelines to receive data that is easily consumable from other resources (external rest services)
- Continue to research and apply for grant funding for GIS initiatives to assist in data collection, creation, and solutions
- Data retention and update policies to avoid stagnant data
- Hold quarterly or biannual GIS meetings, inviting the other Departments and staff, to promote the current use and benefits of GIS and assist in obtaining buy-in and growth in GIS usage/training
- Hire additional technical staff to assist in the day-to-day data creation/maintenance and engage the BIA for their training

Data and Databases

- Land Assignments – the tribe owns land inside and out of the Susanville city limits
- Updated parcel layer
    - Assist with identifying land to construct:
        - New homes
        - Hospitals
        - Fire stations
        - New Environment/Government offices
- Bus stops and bike lanes
- Updated roads, sidewalks, and trails
- Sensitive data (internal only)

  - Cemetery delineations
  - Sacred Sites
  - Archaeological Sites
  - Allotment Sites
- Underground infrastructure
  - Utilities - Mains, connections, meters
  - Power poles – 2017 requirement to GPS power poles on tribal lands
  - Fire Hydrants - 2017 requirement to GPS power poles on tribal lands

Procedures, Workflow, and Integration

- Review current and outdated data and develop a Master Data Needs List to direct GIS data development in the future
- Data creation and maintenance standards and procedures
- Field data collection workflows for asset management and maintenance
- Metadata standards and procedures
- Incorporate GIS into outreach programs

Software Solutions

- Public transportation application with roads, sidewalks, trails, bike lanes, and bus routes to provide efficient methods for users to get to community facilities
- Public engagement application focused on interpretive walking paths that includes lookups for traditional plants, medicines, and foods around the new Environmental building on the Rancheria
- Public application to exploit recreational tourism in the region and provide ways visitors can engage with the community
- Story map to highlight the history of the Rancheria and it anthropological tribes associated with SIR
- Open Data Hub to facilitate data sharing with partner organizations and the public.

IT Infrastructure

- Security policies and implementation to protect sensitive tribal data

- Continue to update infrastructure as needed and seek out grant funding for software, hardware, etc.

Training, Education, and Knowledge Transfer

- Develop a formal training plan for each of the departments and promote the use of GIS and its benefits in supporting the tribe
- Continue to take advantage of the BIA and its GIS training opportunities for tribal members
- Develop a succession plan by providing cross-training to create a depth of knowledge that will help reduce knowledge gaps upon staff turnover
- Develop relationships and work with other tribes to identify ways they are using GIS that may benefit SIR

Appendix A

The following is a detailed explanation of the Six Pillars of GIS Sustainability including the key measurable components of each pillar.

1. **GIS Governance** – An organization's governance of GIS is a critical indicator of its long-term success with GIS, which is why GIS Governance is the foremost pillar of GIS sustainability. Generally, governance refers to how an organization manages its GIS initiative. Indicators of good GIS governance include the existence of a GIS strategic plan, a GIS-specific vision statement, GIS goals and objectives, a formalized GIS hierarchy and clear GIS responsibilities, a GIS Steering Committee and end-user groups, GIS-specific job classifications and job descriptions that include GIS skills, coordinated GIS project management, GIS policies and mandates, a GIS budget, a GIS work plan, and key performance indicators for tracking these GIS metrics in governance and the other five pillars.

2. **GIS Digital Data and Databases** – This is arguably the most important pillar of GIS sustainability, as it is widely understood that poor data quality yields uninformed decision-making. Performing a digital data assessment, maintaining a master data list, documenting metadata, ensuring the accuracy of critical enterprise-wide data layers, providing department-specific data layers, following specific data creation procedures, setting data standards, using mobile collection tools, and assigning data stewards/custodians are all steps to ensuring that an organization is keeping this pillar in good health.

3. **Procedures, Workflow, Integration**, **and Interoperability** – While procedures and workflows make any GIS program run more efficiently, the most critical element of this pillar is the integration and interoperability component, which analyzes the level to which GIS is integrated with other business systems. In local government, integration and interoperability with GIS is critical so that information from other business systems, such as Parcels and Property Assessment, Asset Management, Work Order, Computerized Maintenance Management, Enterprise Resource Planning, Document Management, and Public Safety solutions are all accessible from within a GIS interface.

4. **GIS Software Solutions** – As the name implies, this pillar examines the GIS tools that have been made available to end-users by an organization as well as the platform on

which they run. This includes analyzing GIS licensing, levels of GIS customization, how accessible the software products are, internal and public-facing GIS solutions, story maps, mobile GIS applications, portals, dashboards, analysis tools, and any software extensions or add-ons in use.

5. **IT Infrastructure and System Architecture Design** – The Information Technology (IT) and GIS Infrastructure that an organization maintains are another key piece to enduring GIS success. It is important that all of the behind-the-scenes components are accounted and planned for. This includes developing and maintaining a strategic plan within IT for technology advancements, creating a GIS architectural design, providing adequate data storage, instituting hardware replacement timelines, providing GIS training to IT personnel, ensuring 24/7 availability of GIS, taking GIS back-ups, providing adequate data storage, setting hardware standards, and implementing development and staging zones for GIS software.

6. **GIS Training, Education, and Knowledge Transfer** – This final pillar of GIS sustainability embodies the 'sustainability' aspect of GIS implementation. One of the greatest threats to long-term GIS success is the loss of funding due to a lack of understanding of the benefits of technology. Another threat is the loss of institutional knowledge upon the departure of key staff. Therefore, it is very important for organizations to make a concerted effort to analyze the Return on Investment of GIS technology and promote successes with GIS to organizational leaders. For GIS to become intertwined with all the organization's activity, it is crucial to develop formal training plans, educate staff on GIS use, create succession plans for various staffing levels, and implement knowledge transfer techniques such as workshops, seminars, conferences, and lunch-and-learns.