SSA: Creating an Enterprise GIS Environment for the Town of La Plata, Maryland

The Town of La Plata, located outside of the District of Columbia in Southern Maryland, is home to close to 8,800 residents. Incorporated in 1888, the Town is roughly 7.5 square miles and serves as the County seat for Charles County Government. The Town is responsible for providing its constituents with a number of services including public safety, water distribution, wastewater collection, and stormwater management.

The Challenge

The Town is required to provide a variety of information to other governmental agencies for regulatory and permitting purposes. These include the Maryland Department of Planning (MDP), Maryland Department of the Environment (MDE), and the U.S. Environmental Protection Agency (EPA). Though the Town had the appropriate background information, they lacked the geospatial information required as part of these regulatory submittals. Specifically, the Town needed support with the mapping components required as part of their Comprehensive Plan submittal to MDP. Likewise, the Town's Public Works group relied heavily on institutional knowledge in the overall management of their infrastructure. To address these specific challenges, as well as introduce geospatial technologies into the management of local government, the Town contracted Spatial Systems Associates, Inc. (SSA) to help identify and implement the best geospatial practices to meet the Town's needs.

The Solution

To assist the Town in meeting its objectives, Spatial Systems Associates, Inc. (SSA) worked with Town personnel to understand their specific needs, pain points, and overall areas of focus. SSA worked to understand what was required as part of the various regulatory requirements and how frequently information was to be submitted. Following a review of the business processes of various departments within the Town, SSA was able to lay the necessary foundation for the Town's new enterprise GIS environment. SSA outlined attainable goals that could be met through the use of GIS tools and we determined point of access to the data—Web, Desktop, and Mobile.

This occurred as a phased approach over a number of years, addressing the highest priorities first. Paramount to this was establishing the ability to access and edit data via the web, as the Town did not want to develop an internal GIS resource, nor did they want to take on the management of the hardware/software needs. The web-based approach would provide the Town with real-time access as their data was being created, while not limiting them to viewing the data from a desktop.

The process started with the development of a Planning dataset that would be used to support their Comprehensive Plan, a time sensitive requirement, while establishing the base data for assessing and projecting both their current and future planning and development needs. By moving the management of this data into a GIS environment, the Town can now actively work with their zoning, land use, community facilities, and transportation data with the flexibility to analyze how potential changes will impact the Town and how development plans fit within the Town planning regulations.

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Following the successful development of the planning data, SSA assisted the Public Works Department in inventorying and vectorizing their utility infrastructure (wastewater, water, and stormwater). The Town had a mix of source documents that were maintained in a variety of forms. These included hard copy as-built and construction drawings stored at Town hall, CAD files, and GPS data. To provide a comprehensive archival of their source documents, it was important to move them to digital form and centralize the access to this information from a single location. The hard copy documents were scanned as high resolution (400 dots per inch) color and grayscale images (depending on the quality of the hard copy). Once all of the source document data was in digital form, SSA began the process of vectorizing the data within the enterprise geodatabase. The geodatabase design accounted for all information that could be found on the as-builts, ensuring the Town would have a high level of granularity. This included attribution of the resulting features with information on size, material, invert elevations, date of installation,

and other information gleaned from the as-built drawings. In addition, SSA "associated" the scanned as-built plans with relevant vector features so that, by selecting any particular feature, Town staff could identify and view all as-built drawings on which that feature is depicted. Further, a print capability was provided that allows Town staff to print all or a portion of the image to a hard-copy device should that be necessary. The geodatabase now includes representative feature classes that are identical to what is found on the as-builts and is used as the authoritative source.

As part of the conversion process, field verification and data collection was required to ensure GIS data accuracy. It was necessary to verify and capture this data to sub-foot quality (with post-processing). To accomplish this, SSA established a field collection process and trained Town staff to use the handheld GPS equipment, specifically the Trimble ProXH GeoExplorer with GPS Analyst post processing. Following the field verification effort, SSA ran the post-processing analysis and synchronized the data in the enterprise environment.

To provide the Town real time access to the data as it was being created as well as the associated source documents, SSA developed a number of ArcGIS for Server web applications. These applications are served from the Town's Amazon web instance and are centralized in a single gallery for the Town's use. These internet-based applications are available on both desktop and mobile devices providing the flexibility of access to data whenever web connectivity is available.

The Town has been dedicated to establishing a strong enterprise GIS environment that can provide critical assistance in management of the Town. Whether it be analysis of impervious surfaces for stormwater fees, water billing analysis, or town growth projects, GIS is now a beneficial resource to how the Town operates.