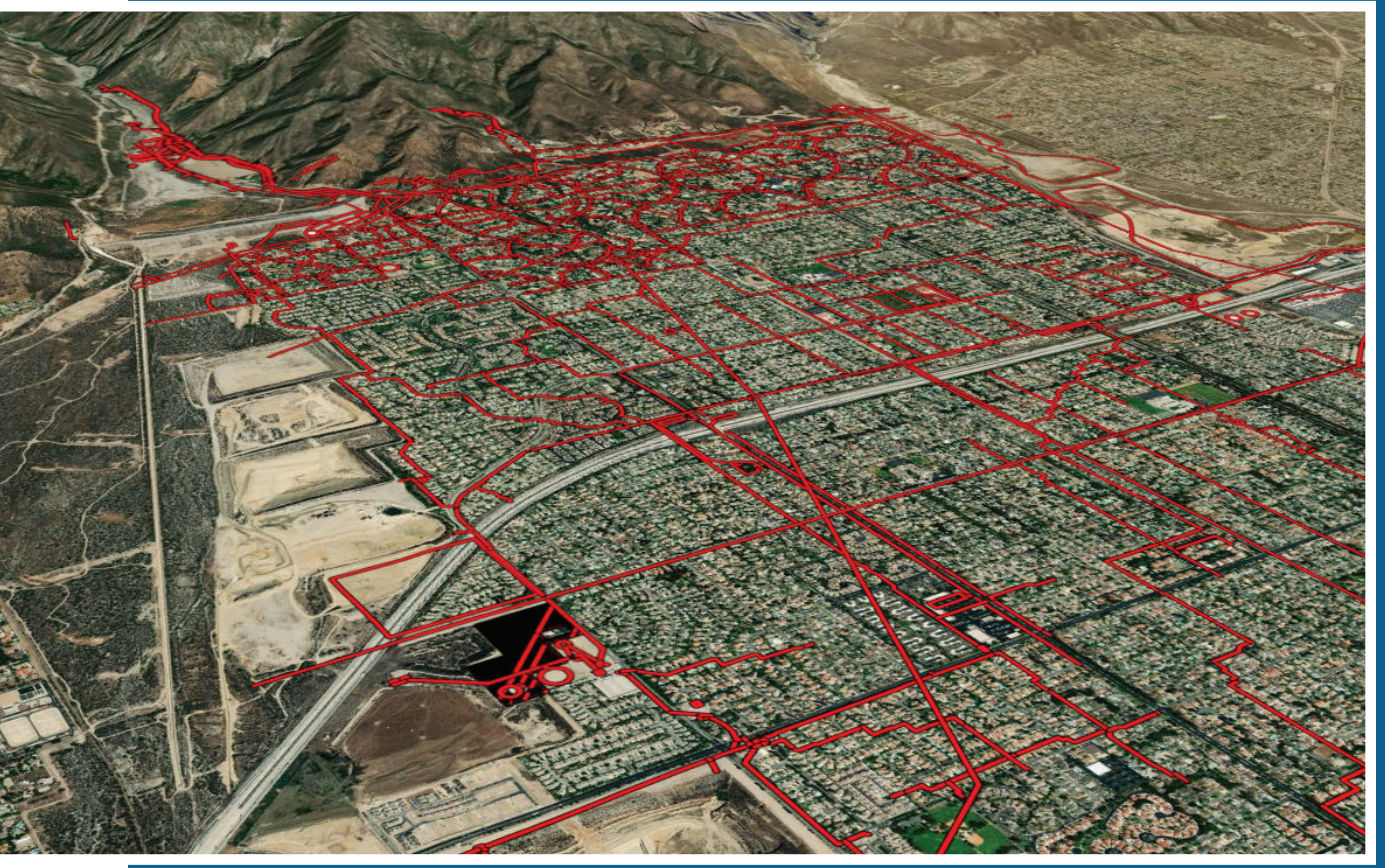
August 29, 2019

PROPOSAL FOR

SYSTEM MAPPING AND GIS DATABASE



WSC

WATER SYSTEMS CONSULTING, INC.

August 29, 2019

Brian Lee
General Manager/CEO
San Antonio Water Company
blee@sawaterco.com

SUBJECT: PROPOSAL TO PROVIDE CONSULTING SERVICES FOR SYSTEM MAPPING AND GIS DATABASE

Water Systems Consulting, Inc. (WSC) is pleased to submit this proposal to provide consulting services to San Antonio Water Company (Company) for System Mapping and Geographical Information Systems (GIS) Database (Project). The Company is looking for an experienced, responsive consultant to deliver a cost-effective GIS database that is developed in a pragmatic way to consolidate multiple data sources into a comprehensive repository that can be leveraged for multiple every-day and long-term uses. At the core, the system map needs to be accessible to Company staff to quickly look up system information, link to relevant data from other systems, and position the system map for updates that can be incorporated into a hydraulic water model for long-term master planning.

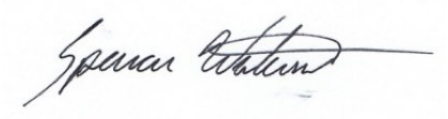
WSC is a full-service engineering consulting firm that specializes in GIS development and support, GIS and hydraulic modeling integration, master planning, sustainable solutions, relationship building, and bringing value to our clients. Our team has helped multiple agencies develop GIS databases for multiple purposes including hard-copy atlas maps, incorporation into proprietary mobile mapping software platforms, hydraulic modeling and master planning, and on-call operations and maintenance analysis.

WSC's approach is designed to:

- Build on previous experience and apply lessons learned from previous GIS database development to build a GIS database capable of multiple uses, from mobile mapping, to hydraulic modeling and master planning.
- Utilize training for use of cutting-edge ESRI software that streamlines CAD conversion to GIS.
- Leverage collaboration with Company staff to build the right database for the Company's objectives.
- Provide recommendations for implementation and maintenance considering Company budgets, goals, and objectives.

WSC is excited for the opportunity to propose on this project. Please contact WSC's proposed Project Manager, Spencer Waterman at (805) 457-8833, ext. 102, or Principal in Charge, Kirsten Plonka, at (858) 4397-2617, ext. 304 with any questions. You can also email us at swaterman@wsc-inc.com or kplonka@wsc-inc.com. We are excited for the opportunity to partner with you on this project and look forward to collaborating with the Company.

Sincerely,
Water Systems Consulting, Inc.



Spencer Waterman
Project Manager

Kirsten Plonka, PE
Principal in Charge & QA

Executive Summary

Why Select WSC?

Within WSC's proposal to provide System Mapping and GIS Database services, you will find descriptions of our firm, staff experience and expertise, and a detailed understanding and approach that includes our proposed scope and schedule. WSC's proposed total professional fee and fee schedule are submitted under a separate sealed cover.

WSC is excited for the opportunity to work with the Company as it develops a useful mapping and GIS tool that supports its operations, maintenance, and master planning efforts.

WSC provides high-quality, responsive service.

WSC is a full-service water system engineering company with more than a decade of experience in California. Our proposed team is led by experienced staff who have expertise developing and implementing mapping and GIS databases.

Some members of our staff are former water utility employees who work hard to develop products that are user friendly, easy for our clients to update, and integrate well with the everyday operation of water systems. Our team also includes experienced master planners who understand what GIS features and other information are necessary to seamlessly integrate with a water utility's broader hydraulic modeling and planning efforts.

WSC will work with Company staff to meet immediate needs and deliver a valuable, long-term tool.

Our approach was developed to deliver a GIS database capable of multiple uses, from mobile mapping, to hydraulic modeling and master planning. Our team has a wealth of experience and lessons learned that will help with the efficient, cost-effective development of the database.

WSC staff have been trained in the use of cutting-edge ESRI software that streamlines CAD conversion to GIS. We will incorporate this knowledge into our work to set the Company up for success. We know that nobody knows your water system better than your staff, and we will make collaboration with your staff a priority to build the right database for the Company's objectives.

Utilities operate with strict budgets and need to make the most of their investments. That is why we will provide recommendations for implementation and maintenance that consider the Company budgets, goals, and objectives.

Firm Background

WSC is Your Premier Water System Planning Firm

Water Systems Consulting, Inc. (WSC) is a civil and environmental engineering firm that specializes in developing and maintaining GIS databases, hydraulic modeling, master planning, and project management. We are a people-centric enterprise, thriving and growing from a mentality that people come first, and we aim to foster an environment of next-generation thinkers and professionals.

Our expert staff includes 58 skilled employees working from nine offices in California and the Pacific Northwest, including our local office in Rancho Cucamonga. We serve investor owned utilities, cities, counties, special districts, and regulatory agencies throughout California and Oregon.

Our local GIS experience includes developing the Big Bear Lake Department of Water and Power (BBLDWP) Atlas Map Updates, and several projects for the City of Riverside including its Urban Water Management Plan and Annual Groundwater Assessment Report which leverage multiple databases to develop a comprehensive hydrologic/hydrogeologic GIS database. Our expert staff are prepared and possess the experience to deliver high-quality system mapping and a GIS database for the Company.

REQUIRED STATEMENTS

WSC verifies it possesses liability insurance for coverage of at least $1,000,000.

WSC certifies that it takes no exceptions to the RFP and the Consultant Services Agreement. However, WSC respectfully requests the Company consider the revisions to the Consultant Services Agreement in Appendix B.

We are an S-Corporation and Certified Small Business with the State of California (Certification Reference Number 51018), a Certified Minority Business Enterprise with the CPUC Supplier Clearinghouse (Verification Number 9IS00088).

WSC's proposed Project Manager, Spencer Waterman, and Principal in Charge and QA/QC, Kirsten Plonka, will be the primary points of contact for System Mapping and GIS Database services for the San Antonio Water Company.

SPENCER WATERMAN
Project Manager

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swaterman@wsc-inc.com
805 Aerovista Place, Suite 201 San Luis Obispo, CA

KIRSTEN PLONKA
Principal in Charge | QA/QC

Phone: (858) 397-2617, ext. 304
Fax: (619) 393-0106
kplonka@wsc-inc.com
9815 Carroll Canyon Road, Ste. 205, San Diego, CA 92131

WSC Uses GIS Database Creation and Maintenance Best Practices

WSC has developed numerous GIS geodatabases with industry standard water data schemas to capture vital system feature information, such as asset ID, as-built ID, work order ID, material, age, and sizing. The geodatabases were developed with ESRI network topology to make them "model-ready" for import into hydraulic modeling software and mobile mapping platforms.

WSC has updated and maintained many water system GIS geodatabases as part of ongoing and on-call hydraulic modeling services. System features often have incorrect attribute data and must be updated with accurate information from as-builts and staff knowledge. WSC has policies and procedures for tracking changes to system features so that changes can be retraced and verified. WSC uses the ESRI Editor Tracking feature, ESRI Task feature, and memorandums to update and maintain system geodatabases.

Case Study:

WSC worked directly with Big Bear Lake Department of Water and Power operations staff to update the system geodatabase based on their observations and markups from the field. WSC maintained the geodatabase until it was imported into Sedaru's mobile mapping system, which they currently maintain.

WSC Brings Reliable Quality Assurance and Quality Control

WSC has a reputation for consistently providing high-quality work products and has an established QA/QC program to make sure these high standards are met. We use industry-recognized best practices and track our work to create deliverables that are defensible and actionable. We establish critical success factors at the outset of each project to guide our actions throughout execution.

We also understand that your staff need a tool that they can use long after our work is done. That is why we take the time to understand how your staff will use our deliverables and identify the best way to facilitate the handoff and train your staff.

WSC's QA/QC lead, Kirsten Plonka, will implement our QA/QC program throughout the project. Ms. Plonka is a highly qualified engineer with extensive engineering planning and design experience in Southern California and has previous experience as a public utility engineer. This experience allows her to approach projects from an owner's perspective.

Ms. Plonka will follow progress and regularly check in with the project team to help anticipate, identify, and resolve any issues that may arise. These periodic injections of a fresh perspective stimulate creativity and collaboration, and drive efficiency. Ms. Plonka will review interpretation of data and methodologies, as well as perform thorough quality control review on deliverables prior to submission to the Company. A final subsequent review by WSC's project manager, Spencer Waterman, will confirm that deliverables are clear, defensible, and consistent with the Project objectives.

WSC Provides Integrated and Collaborative GIS Data Services

WSC is a collaborative company that works seamlessly alongside our clients to incorporate their input into our work. We believe in utilizing integrated communications and engineering teams focused on providing clients small-firm service backed by high-quality resources. WSC provides GIS data services for various clients throughout California. The projects range from creating new GIS databases from CAD and as-builts for atlas mapping to building and maintaining GIS databases for hydraulic modeling and master planning.

Some examples of recent projects and tasks completed by WSC include:

- Updated the BBLDWP atlas map using CAD data, as-built information, atlas map markups, and a pipeline inventory database from BBLDWP staff. Developed a robust GIS database to support BBLDWP's needs for future initiatives.
- Created GIS database from CAD for the Cayucos Sanitary District's System Map.
- Incorporated as-builts and an old hydraulic model in a new model and modified GIS database for the County of San Luis Obispo Operations Center.
- Updated GIS data to develop an all-pipes collection system hydraulic model to replace the City of Santa Barbara's existing skeletonized model.
- Developed the City of Paso Robles' water and sewer master plans, which included building new models for both systems using GIS data.
- Created a new hydraulic model for Big Bear City Community Services District by importing data from a new GIS database.

WSC Delivers Efficient and Proven Planning Expertise

Before developing the GIS database, a well-informed and thought-out work plan needs to be in place to make sure Project objectives are established, methods to achieve objectives are laid out, and the Project deliverables can be completed efficiently. WSC utilizes industry-recognized best practices, innovative tools, and creative approaches to deliver functional and resilient GIS and planning services. Our team is experienced in providing GIS services, GIS-based hydraulic modeling, condition assessment, data analysis, master planning, supplemental supply planning, strategic planning, regulatory compliance, and feasibility studies. Whether developing GIS databases, providing as-needed hydraulic modeling services, or updating system asset databases, we collaborate with our clients to make sure they are informed and their needs are being met.

GIS and Modeling Clients:

Big Bear City Community Services District
Big Bear Lake Department of Water and Power
Cayucos Sanitary District
County of San Luis Obispo
City of Paso Robles
City of Riverside Public Utilities
City of San Luis Obispo
City of Santa Barbara
Otay Water District

Recent Water Master Plans

Big Bear City Community Services District
California American Water Monterey District
Casitas Municipal Water District
City of Arroyo Grande
City of Paso Robles
City of Pismo Beach
City of Santa Maria
City of Victorville
Oak Lodge Water Service District

Project Organization and Experience of the Team

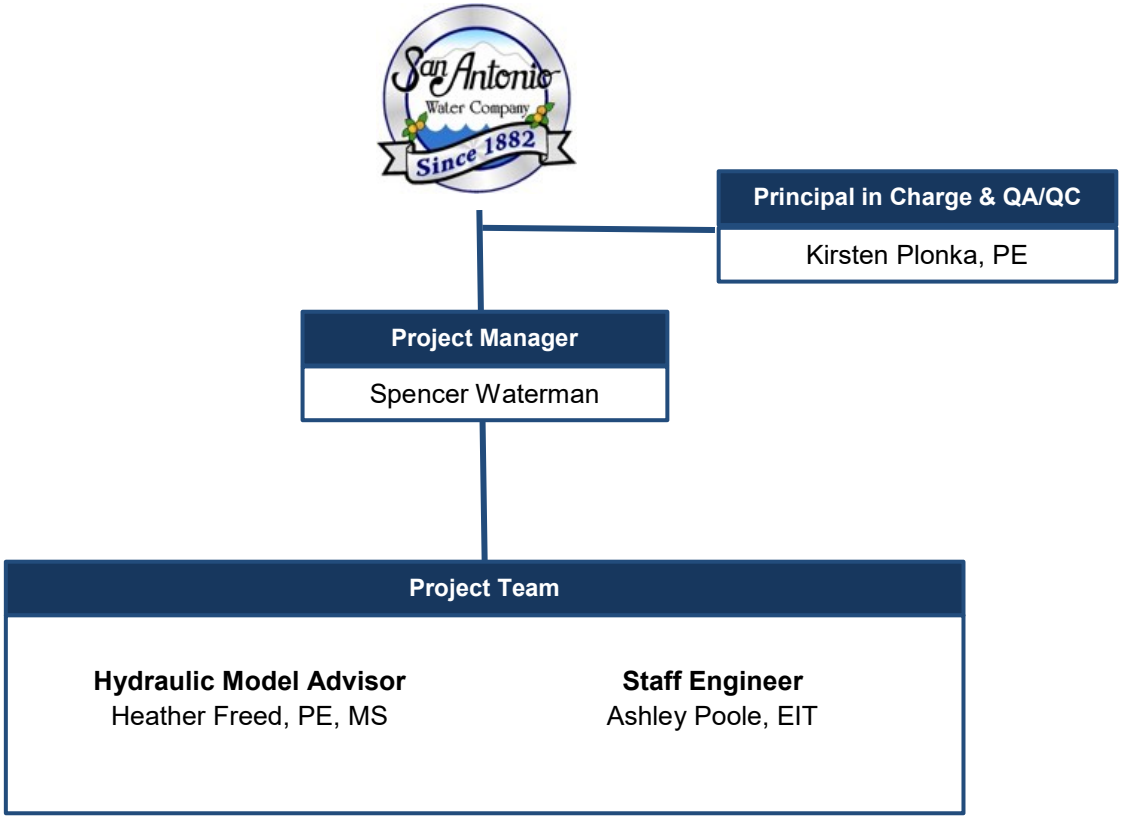
Meet the WSC Team

WSC's team is functionally organized to take advantage of the strengths of our expert staff within a streamlined structure to provide the highest level of responsiveness and quality.

WSC's proposed Project Manager, Spencer Waterman, possesses extensive experience providing GIS and mapping services. Spencer will leverage his experience to effectively manage the delivery of the system mapping and GIS database for the Company. He will be responsible for maintaining clearly coordinated responsibilities among team members and serve as the primary point of contact between the Company and WSC.

Spencer will be supported by a highly qualified team which includes WSC's proposed Principal in Charge, Kirsten Plonka. Kirsten has more than 15 years of experience in water system planning and database development and integration of GIS with hydraulic models. Hydraulic Model Advisor Heather Freed is a Professional Engineer specializing in water system hydraulic modeling. She will advise on necessary data and methodologies to make sure the GIS database is model-ready and can be easily used by field staff.

The assembled team has experience providing GIS and mapping services to clients throughout California. Spencer and Kirsten have experience working together on the Atlas Map Update for BBLDWP. Heather assisted Spencer and Kirsten to create new GIS-based hydraulic models for the Casitas Municipal Water District and Montecito Sanitary District.



Key Personnel Capabilities and Expertise

The following table includes a brief summary of the role, experience, address, phone number, and email address of each person on WSC's team. Detailed resumes are included in Appendix A.

Key Personnel

SPENCER WATERMAN – Project Manager

Mr. Waterman has ten years of experience as a planner with an emphasis on water resources planning and water use efficiency. He has extensive experience providing GIS and mapping services for atlas map updates, hydraulic modeling projects, and master plans. He provided GIS and mapping support for BBLDWP and served as Project Manager for the System Map for the San Miguelito Mutual Water Company.

(805) 457-8833, ext. 102 | swaterman@wsc-inc.com | 805 Aerovista Place, Ste. 201, San Luis Obispo, CA 93401

KIRSTEN PLONKA, PE – Principal in Charge

Ms. Plonka brings more than 15 years of experience in the planning, design, and management of water, wastewater and recycled water systems. Her experience includes database development and integration of GIS with hydraulic models, recycled water customer databases, and asset databases. She served as Project Manager for the Casitas Municipal Water District's Hydraulic Model and Project Engineer for BBLDWP's Atlas Maps Update.

(858) 397-2617, ext. 304 | kplonka@wsc-inc.com | 9815 Carroll Canyon Road, Ste. 205, San Diego, CA 92131

HEATHER FREED, PE, MS – Hydraulic Model Advisor

Ms. Freed is a Professional Engineer specializing in water system hydraulic modeling and master planning. She has experience updating and consolidating data in GIS databases for integration into hydraulic models. She performed significant roles on five water master plans in the past two years and worked alongside Kirsten and Spencer as Project Engineer for the Casitas Municipal Water District's Ojai Water System Master Plan and Casitas Water System Hydraulic Model.

(805) 457-8833, ext. 113 | hfreed@wsc-inc.com | 805 Aerovista Place, Ste. 201, San Luis Obispo, CA 93401

Ashely Poole – Staff Engineer

Ms. Poole is an Engineer-in-Training with experience analyzing data in Excel and ArcGIS. She is currently providing data management support for two WSC projects. She is also providing GIS mapping services as part of client development and is providing additional mapping and database creation services for WSC's 2020 UWMP priority clients.

(858) 397-2617, ext. 306 | apoole@wsc-inc.com | 9815 Carroll Canyon Road, Ste. 205, San Diego, CA 92131

Project Understanding and Approach

Project Understanding

The Company needs to convert its existing hard copy and electronic system mapping information to a Geographical Information System (GIS) database that can be used for an interactive system atlas map. Company staff need a system map with vital information at their fingertips while working in the office and in the field. This GIS database will need to provide readily accessible and useful information for day-to-day operations as well as for long-term master planning. WSC has helped clients develop system maps for these exact same purposes, and we can apply our experience to provide a comprehensive GIS database that can be leveraged to meet the Company's GIS goals.

The RFP for this project provides a comprehensive background of the Company's existing data, the rationale for incorporating multiple data sources into a robust GIS database, and the goals for the GIS database to be used for multiple purposes.

The five core tasks outlined in the Project Scope of Services and summarized in the following section of this proposal provide a prudent step-by-step process to assess what is available, what is needed, and steps to achieve goals for the GIS system map. The description and methods for completing each task in conjunction with Company staff, the outputs of each task, and the schedule to accomplish this effort are described in further detail below.

Project Approach

WSC will build on our understanding to implement a Project approach that is designed to:

- Build on previous experience and apply lessons learned from previous GIS database development to build a GIS database capable of multiple uses, from mobile mapping, to hydraulic modeling and master planning.
- Utilize training for use of cutting-edge ESRI software that streamlines CAD conversion to GIS.
- Leverage collaboration with Company staff to build the right database for the Company's objectives.
- Provide recommendations for implementation and maintenance considering Company budgets, goals, and objectives.

Task 1.0: Project Management

Description/Major Issues: WSC will coordinate with Company staff throughout development of the Project to provide efficient consolidation of existing information and conversion to an updated GIS database.

Output(s): In-person and teleconference meetings, agendas, action items summaries, and monthly progress reports.

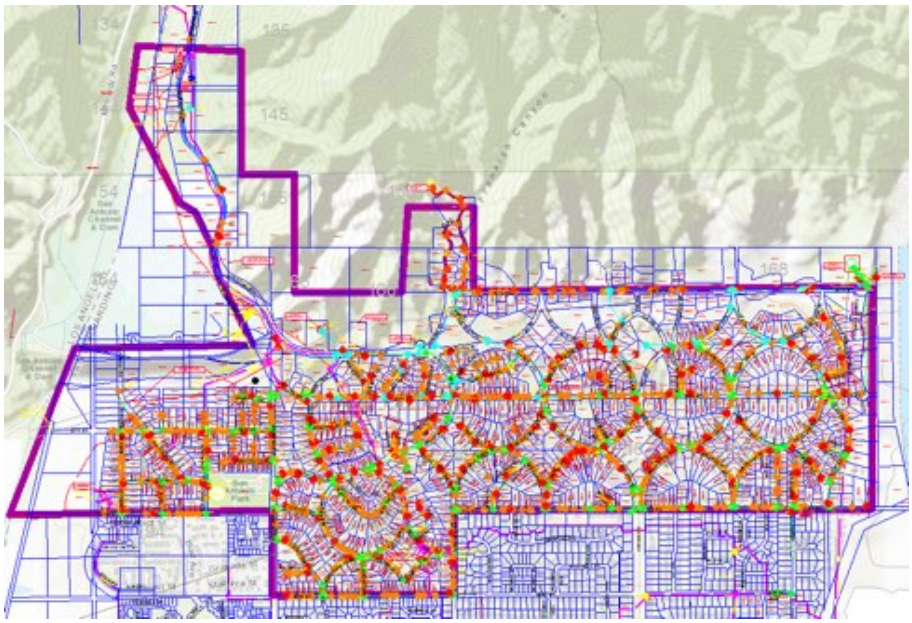
Method/Key Input from Staff: WSC has proposed some additional project meetings to make sure the Company is confident in the GIS database development process and outcomes. Key staff input points include meetings added to Task 1.2 in the Scope of Work later in this section.

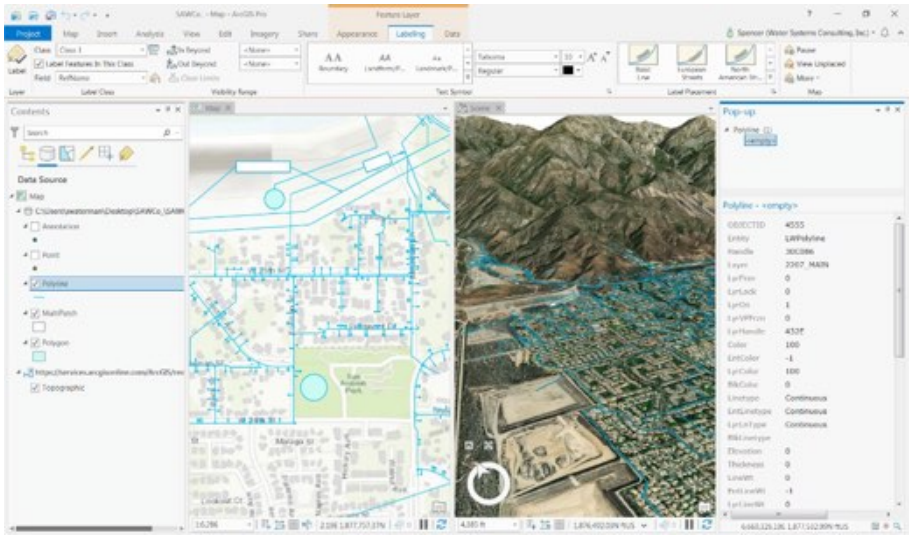
Task 2.0: Data Gathering and System Evaluation Criteria

Description/Major Issues: Data inventory and review is critical to understanding what value can be integrated from multiple datasets and sources. Some data is readily incorporated or referenced to a GIS database, while other data may require more effort with varying value added. Additionally, software, hardware, and database organization need to be assessed.

Output(s): WSC will work closely with Company staff to create a feasible work plan for developing the most valuable GIS database that can be used to achieve multiple benefits.

Method/Key Input from Staff: WSC has already invested time into reviewing data sources and mapping software and hardware for this Project. Based on our familiarity with the data and software capabilities, we can hit the ground running with Company staff to identify the most efficient and beneficial path to achieve the Company's goals for the GIS database.





WSC has analyzed existing CAD data to inform our methodologies for importing critical system feature information into a GIS database. The CAD data is in a commonly used NAD 1983 state plane coordinate system, which means it can be readily imported into GIS. Recently developed and improved tools from ESRI will be utilized to parse CAD data into useful GIS database data to avoid manual adjustments that used to be necessary in this type of process. This will allow the Company to focus their efforts on other beneficial elements in the work plan.

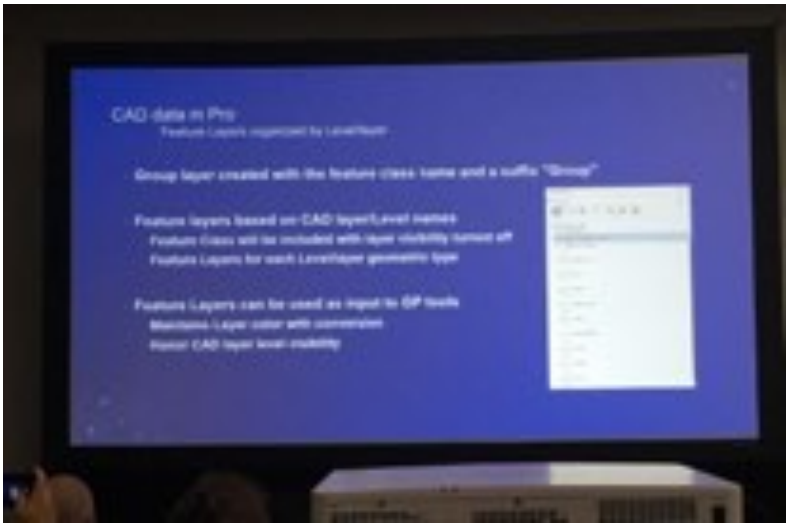
Task 3.0: Database Creation

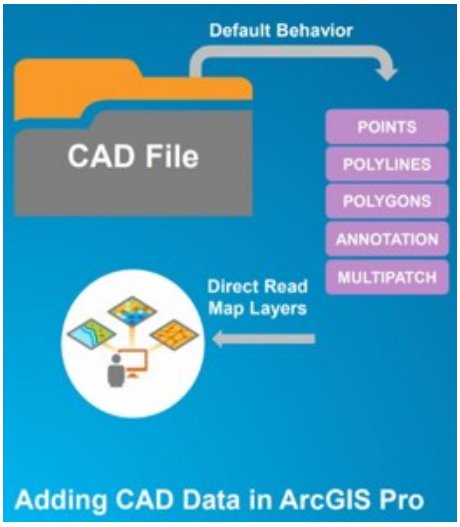
Description/Major Issues: WSC will implement the work plan developed with the Company to incorporate key data into a useful GIS database. The GIS database needs to compile multiple data sources into a format that allows the Company to achieve the following:

- Readily query pertinent facilities information (e.g., location, size, material, year constructed, as-built ID, etc.)
- Incorporate easements, external geospatial information, and facility records
- Link GIS to meter data, billing records, and asset management records
- Ready for tablet enabled system mapping platforms
- Ready for modeling software import

Output(s): WSC will develop a GIS database with ESRI network topology that is model and tablet ready in a format based on industry standard water data schemas to capture vital system feature information.

Method/Key Input from Staff: As mentioned previously, WSC intends to use cutting edge tools, processes, and work flows from ESRI in ArcGIS Pro to streamline data conversion and geospatial referencing of various sources. WSC has proposed some additional project meetings in Task 1.2 to ensure the Company is confident in the GIS database development process and outcomes.





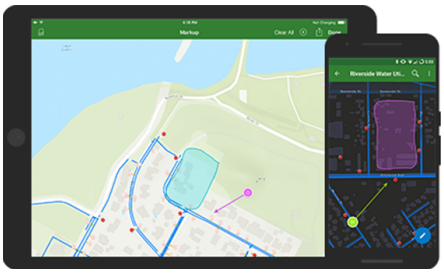
WSC staff recently attended a technical training workshop at the ESRI 2019 User Conference which went over cutting-edge tools to incorporate CAD data into GIS efficiently. WSC will leverage this experience to streamline CAD conversion allowing us to reallocate saved efforts towards other Company objectives.

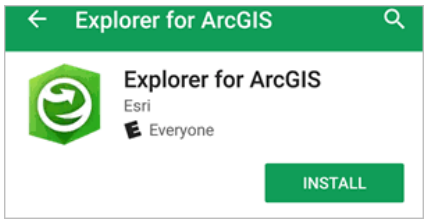
Task 4.0: Implementation

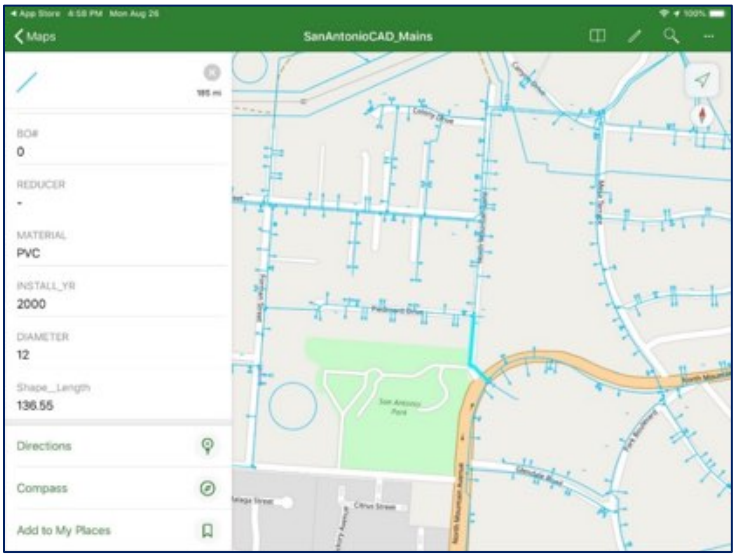
Description/Major Issues: The Company needs insight from WSC on how to implement their GIS database so that they can use it right away, develop a plan for future uses, and empower Company staff to become GIS power users.

Output(s): WSC will provide supporting documentation, implementation options and recommendations, and in-person training.

Method/Key Input from Staff: As mentioned previously, WSC intends to use cutting edge tools, processes, and work flows from ESRI in Arc GIS Pro to share the GIS database with the Company. WSC proposes using free mobile friendly apps to review and explore the GIS database.







WSC will use its ESRI licenses to share web maps and apps with Company staff to explore the GIS database. If the Company chooses to purchase its own licenses, they can choose from a plethora of default apps to use the GIS database in every-day and long-term uses. Other software options will also be assessed.

Task 5.0: Maintenance

Description/Major Issues: The Company needs support maintaining its GIS database for at least two years.

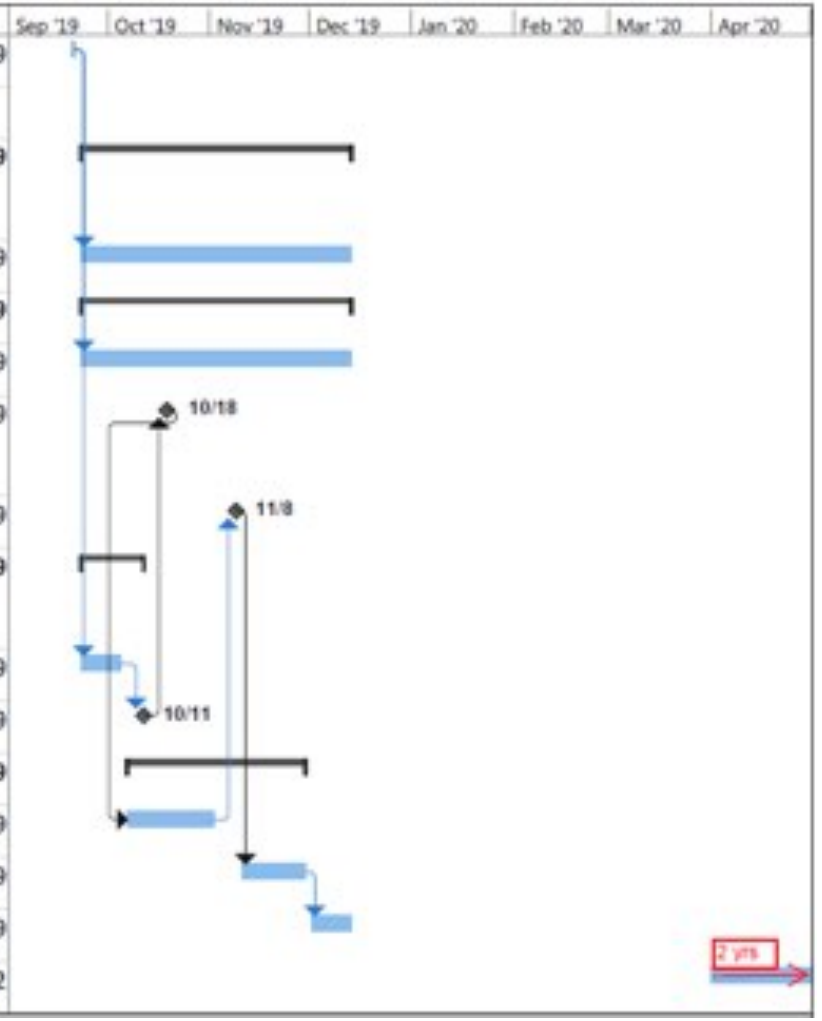
Output(s): WSC will provide maintenance support services from its Rancho Cucamonga office and nearby offices.

Method/Key Input from Staff: WSC will be available for in-person meetings or through remote conference calls and/or webinars. We have staff in the Rancho Cucamonga office that can respond to short notice needs and staff from other nearby offices such as Temecula, Orange County, and San Luis Obispo who can support remotely or on-site as needed. WSC anticipates incorporating on-going digital and hard-copy markups of the system map from Company staff throughout the maintenance period.

WSC proposes to perform the Scope of Work detailed in the following section according to the following proposed project schedule identifying key tasks, their expected duration, and milestone dates.

Schedule

ID	Task Name	Duration	Start	Finish
1	Assumed Notice to Proceed	1 day?	Fri 9/20/19	Fri 9/20/19
2				
3	**Task 1.0 Project Management & Meetings**	**60 days**	**Mon 9/23/19**	**Fri 12/13/19**
4	1.1 Project Management	3 mons	Mon 9/23/19	Fri 12/13/19
5	**1.2 Project Meetings**	**60 days**	**Mon 9/23/19**	**Fri 12/13/19**
6	As-needed Calls and Meetings	3 mons	Mon 9/23/19	Fri 12/13/19
7	Work Plan Memorandum Review Meeting	0 days	Fri 10/18/19	Fri 10/18/19
8	Draft Mapping Meeting	0 days	Fri 11/8/19	Fri 11/8/19
9	**Task 2.0 Data Gathering and System Evaluation Criteria**	**15 days**	**Mon 9/23/19**	**Fri 10/11/19**
10	2.1 Data Gathering and Evaluatic	2 wks	Mon 9/23/19	Fri 10/4/19
11	2.2 Work Plan	0 days	Fri 10/11/19	Fri 10/11/19
12	**Task 3.0 Database Creation**	**40 days**	**Mon 10/7/19**	**Fri 11/29/19**
13	3.1 Draft Mapping	1 mon	Mon 10/7/19	Fri 11/1/19
14	3.2 Final Mapping	3 wks	Mon 11/11/19	Fri 11/29/19
15	**Task 4.0 Implementation**	2 wks	Mon 12/2/19	Fri 12/13/19
16	**Task 5.0 Maintenance**	24 mons	Wed 4/1/20	Tue 2/1/22



Scope of Work

The following tasks represent the work that will be undertaken to complete the System Mapping and GIS Database. Work includes the performance of the Scope of Services listed in the RFP and augmented tasks proposed in red text:

TASK 1.0 PROJECT MANAGEMENT & MEETINGS

1.1 Project Management

Provide overall project management services including:

- Quality assurance/ quality control
- ~~Present recommendations for Company selection regarding software, hardware and database organization.~~ *Moved to Task 2.2*
- ~~Develop appropriate documentation regarding data standards, operation, maintenance and upkeep of GIS system.~~ *Moved to Task 4.0*
- Prepare progress reports to be submitted with each monthly invoice. The reports will include a summary of activities accomplished in the current month.

Deliverable

➢ ***WSC will provide monthly progress reports with project invoices.***

1.2 Project Meetings

Organize and attend meetings including:

- *As-needed* teleconferences and meetings- *WSC will allot 20 hours for as-needed calls and meetings to be used as directed by Company staff* at appropriate intervals to keep Company staff updated on progress and address any needed management level decisions.
- *Work Plan Memorandum Review Meeting- Discuss results of Task 2.0 and next steps in a one-hour meeting. Expenses are included for travel.*
- *Draft Mapping Meeting – Discuss the Draft system map and geodatabase from Task 3.1 in a one-hour meeting. Expenses are included for travel.*

Deliverable

➢ ***WSC will provide agendas and action item summaries for each meeting.***

TASK 2.0 DATA GATHERING AND SYSTEM EVALUATION CRITERIA

2.1 Data Gathering and Evaluation

The Company recognizes that a major upfront component of this project involves discovery tasks that will assist in developing a remaining scope of work. *WSC* shall propose a mechanism to collaboratively work with staff to review, prioritize, sequence and implement dependent tasks.

As a minimum *WSC* shall:

- Conduct a technical audit of the Company's existing hard-copy and digital data that can be converted to GIS data.
- Conduct a technical needs assessment to determine optimal data conversion methodologies and techniques as well as general data format and structure specifications.
- *Assess software, hardware and database organization options*

2.2 Work Plan

- Present recommendations for Company selection regarding software, hardware and database organization.
- Develop a detailed, prioritized implementation work plan for development of Company geospatial database.

It is assumed that the Company will provide CAD data in a known coordinate system for the domestic and irrigation systems. CAD data will be used as the basis for developing GIS features and will be updated based on markups of the San Antonio Water Company System Index Map revised most recently in January 2013 by Civiltech Engineering, Inc. It is anticipated that as-built sheets developed after the last CAD update in 2013 will be reviewed for incorporation into GIS. Basic feature data (pipe material, diameter, and install date) presented in the CAD and as-builts will be incorporated into a geodatabase, but is anticipated to be further populated by Company staff in an Excel file.

Deliverable

➢ WSC will provide a Work Plan Memorandum summarizing the work plan for development of a Company geodatabase.

TASK 3.0 DATABASE CREATION

3.1 Draft Mapping

- Utilizing information from Task 1 and Task 2, develop Company geospatial database.
- Convert data from various sources into a standard GIS format.
- Spatially reference geographic data from multiple sources to the same spatial reference specification.

See assumptions in Task 2.0.

Deliverable

➢ WSC will provide an electronic file of a Draft Company system map and geodatabase for review by Company staff. Company staff comments will be reviewed in the Draft Mapping Meeting outline in Task 1.2.

3.2 Final Mapping

Update system mapping based on comments reviewed in the Draft Mapping Meeting outlined in Task 1.2. See assumptions in Task 2.0.

Deliverable

➢ ***WSC will provide an electronic file of a Final Company system map and geodatabase.***

TASK 4.0 IMPLEMENTATION

- *Provide required parameters and recommendations to i*nstall *a* GIS Server*, or other hosted service,* and computer/tablet software in coordination with Company staff and Company IT Consultant.
- Configure *file structure and GIS data on* server *or other hosted service,* desktop, laptop and handheld software
- Conduct training to field and office staff. *It is assumed WSC will provide eight hours of training for field personnel and four hours for office staff based on language in the RFP. Expenses are included for travel, meals and lodging.*
- Develop appropriate documentation regarding data standards, operation, maintenance and upkeep of GIS system.

TASK 5.0 MAINTENANCE

For a two-year period after implementation, *WSC* shall provide maintenance services, including as-needed software support and quarterly database updates. *It is assumed WSC will provide 16 hours per quarter for two years based on language in the RFP. The budget provided includes project management and invoicing services as well. Expenses are included for travel.*

Past Projects

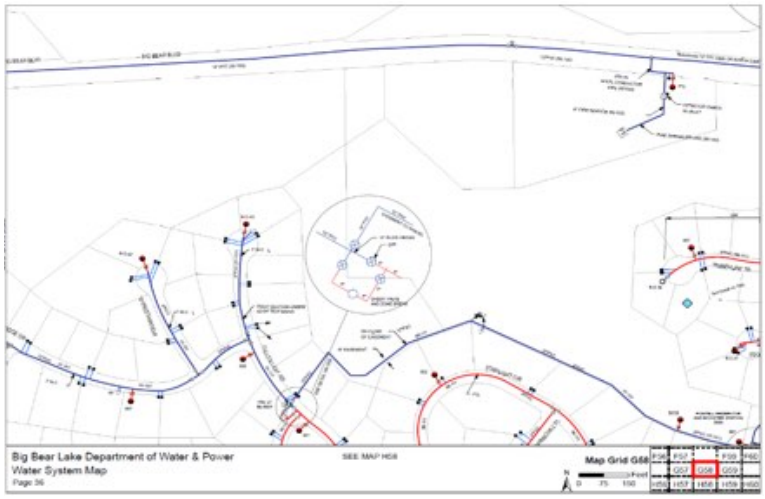
Demonstrated Expertise and Proven GIS Qualifications

WSC acknowledges the importance and need for finely tuned and updated GIS databases and system maps for our clients. We incorporate change tracking features into our process that create tracking logs and memorandums to help update and maintain GIS geodatabases. Our team of experienced planners and engineers have built system-wide maps from scratch, updated geodatabases from CAD, incorporated as-builts into modified GIS databases, and provided extensive GIS-based on-call modeling and master planning services for a variety of investor-owned utilities, local governments, and regulatory agencies throughout California.

The following projects are examples of some of our recent relevant GIS and system mapping efforts:

Atlas Maps Update

City of Big Bear Lake Department of Water and Power



Owner Contact Name and Phone Number: Mr. Reggie Lamson, PE, PLS, General Manager | 41972 Garstin Drive, Big Bear Lake, CA 92315 | (909) 866-5050 | rlamson@bbldwp.com

Project Team Members: Kirsten Plonka (Project Engineer); Spencer Waterman (GIS and MappingSupport)

Project Size and Description:

WSC updated BBLDWP's atlas maps by converting their existing AutoCAD® atlas map into a Geographical Information Systems (GIS) format to provide a robust platform to support BBLDWP's need for updated hard copy atlas maps and future initiatives (mobile field mapping, hydraulic modeling, master planning, CMMS integration, asset management, resource planning, emergency response, etc.). WSC updated the atlas map using CAD data, as-built information, atlas map markups, and a pipeline inventory database from BBLDWP staff. The GIS geodatabase was imported into the Sedaru mobile mapping platform, and BBLDWP currently maintains and uses the GIS mobile map and data through contract services with Sedaru.

System Map Development

San Miguelito Mutual Water Company

Owner Contact Name and Phone Number: Mr. Rick Koon, General Manager | 1561 Sparrow Street, San Luis Obispo, CA 93405 | (805) 595-2348 | rkoon@smmwc.com

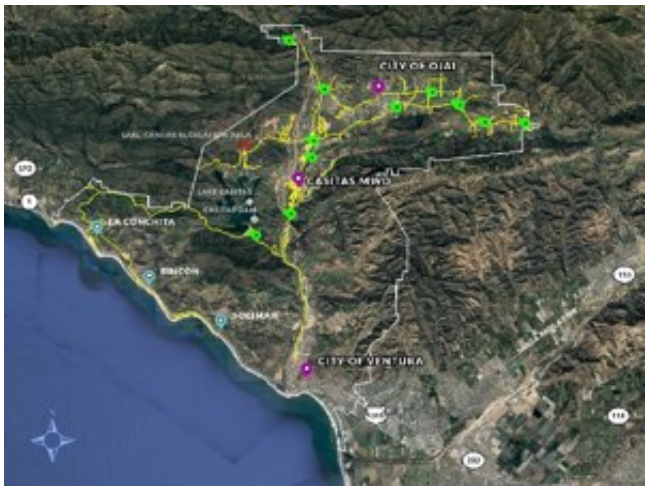
Project Team Members: Spencer Waterman

Project Size and Description:

WSC assessed the capacity of the San Miguelito Mutual Water Company's (SMMWC) water and wastewater systems under current and future conditions, including the inclusion of a proposed development at the Chevron Tank Farm. As part of the project, WSC developed water and wastewater system maps in GIS and conducted an analysis of demand, supply, capacity and storage for SMMWC's existing and projected infrastructure. Tasks included developing demand and loading estimates for future modeling of the capacity of the SMMWC's water and wastewater systems. WSC prepared a summary Technical Memorandum that describes the GIS geodatabase development, existing systems, proposed growth and recommendations completing future phases of the project. The GIS geodatabase was eventually imported into a hydraulic model and used for master planning purposes and development impact analysis.

Casitas System Hydraulic Model

Casitas Municipal Water District



Owner Contact Name and Phone Number: Mr. Todd Evans, Assistant Engineer | 1055 Ventura Ave. Oak View, CA 93022 | (805) 649-2251 ext. 108 | tevans@casitaswater.com

Project Team Members: Kirsten Plonka (Project Manager), Heather Freed (Project Engineer), Spencer Waterman (GIS and Mapping Support)

Project Size and Description:

WSC provided major GIS updates for the District as part of the Casitas Hydraulic Model project including exporting calibrated and corrected features from the model to update the District's geodatabase and format the data into the ArcGIS standard data model. WSC added pressure zone boundary conditions, including closed valves and pressure reducing valves, into the GIS system to augment missing information in the current system. WSC reviewed the water distribution system geodatabase of 120 miles of pipe and corrected apparent errors such as pipe diameter and material discrepancy.

Appendix A: Qualifications and Resumes

Spencer J. Waterman

Education
BS, City & Regional Planning, California Polytechnic State University, San Luis Obispo

Certifications
American Water Works Association, California-Nevada Section, Water Use Efficiency Practitioner Grade 1, Certificate # 1714

Professional Affiliations
American Water Works Association, Member

Professional Experience

Mr. Waterman has ten years' experience as a planner with an emphasis on water resources planning and water use efficiency. He has extensive experience providing GIS and mapping services for water system master plans and hydraulic modeling projects. His planning related experience includes urban redevelopment plans, specific plans, and general plans.

Representative Projects

Atlas Map Update, City of Big Bear Lake Department of Water and Power, Big Bear, CA. GIS and Mapping Support. Provided GIS and Mapping support as part of WSC's update for the City's atlas maps by converting their existing AutoCAD atlas map into GIS format to provide a robust platform to support BBLDWP's need for updated hard copy atlas maps and future initiatives. Updated the atlas map using CAD data, as-built information, atlas map markups, and a pipeline inventory database from BBLDWP staff. The GIS geodatabase was imported into the Sedaru mobile mapping platform and BBLDWP currently maintains and uses the GIS mobile map and data through contract services with Sedaru.

System Map, San Miguelito Mutual Water Company, San Luis Obispo, CA. Project Manager. Assessed the capacity of SMMWC's water and wastewater systems under current and future conditions including the inclusion of a proposed development at the Chevron Tank Farm. Developed water system maps in GIS and conducted an analysis of demand, supply, capacity, and storage for SMMWC's existing and projected infrastructure. Developed demand and loading estimates for future modeling of the capacity of the SMMWC's water and wastewater systems. Prepared a summary Technical Memorandum that describes the GIS geodatabase development, existing systems, proposed growth and recommendations completing future phases of the project.

Hydraulic Model, Casitas Municipal Water District, Ojai, CA. GIS and Mapping Support. Exported calibrated and corrected features from the model to update the District's geodatabase and format the data into the ArcGIS standard data model. Added pressure zone boundary conditions, including closed valves and pressure reducing valves, into the GIS system to augment missing information in the current system. Reviewed the water distribution system geodatabase of 120 miles of pipe and corrected apparent errors such as pipe diameter and material discrepancy.

On-Call Water Modeling, City of Victorville, Victorville, CA. Staff Planner. Providing staff support services for hydraulic water modeling and development planning as well as GIS and data management to support GIS based InfoWater modeling to help the City make informed decisions regarding potential changes to the system. Providing GIS support for preparing Feasibility Studies and Water Supply Assessments as needed to support the City's review and conditioning of proposed development projects.

Hydraulic Modeling Services, City of Santa Barbara, Santa Barbara, CA. Staff Planner. Utilized updated GIS data to develop an all pipes collection system hydraulic model to replace the City's existing skeletonized model. Utilized the hydraulic model to identify capacity-constrained pipelines under the current and future sewer flow scenarios and to develop list of necessary capital projects. Performing on-going model maintenance and as-needed model updates.

Kirsten L. Plonka, PE

Education
BS, Civil Engineering, California Polytechnic State University, San Luis Obispo

MS, Management, Colorado State University, Global Campus (in-process)

MS, Organizational Leadership, Colorado State University, Global Campus (in-process)

Professional Registrations
Professional Engineer – Civil, California, No. C70746

Professional Affiliations / Certifications
American Society of Engineers

American Public Works Association

Engineers Without Borders (former Southern California State Representative)

Potable Reuse Advisory Committee, San Diego County Water Authority

Advanced Water & Wastewater Modeling Certified by Innovyze & Bently

Publications

"Health Effects Study on Potable Water Reuse", A&WMA

Industry Recognition

2013 Outstanding Water Project of the Year from Region 9 ASCE, Award of merit for San Diego Section ASCE for Pala Mesa Tank

Professional Experience

Ms. Plonka brings more than 15 years of experience in the planning, design, and management of water, wastewater and recycled water systems. Her experience includes database development and integration of GIS with hydraulic models, recycled water customer databases, and asset databases. She specializes in project management, hydraulic modeling, feasibility studies, infrastructure and water resource planning studies, and master planning. Her extensive experience in the public sector allows her to approach projects from an owner's perspective and plan and design projects that are implementable and user-friendly.

Professional Project Experience

Atlas Map Update, City of Big Bear Lake Department of Water and Power, Big Bear, CA. Project Manager. Managed project where WSC updated BBLDWP's atlas maps by converting their existing AutoCAD® atlas map into a Geographical Information Systems (GIS) format to provide a robust platform to support BBLDWP's need for updated hard copy atlas maps and future initiatives (mobile field mapping, hydraulic modeling, master planning, CMMS integration, asset management, resource planning, emergency response, etc.). Updated the atlas map using CAD data, as-built information, atlas map markups, and a pipeline inventory database from BBLDWP staff. The GIS geodatabase was imported into the Sedaru mobile mapping platform and BBLDWP currently maintains and uses the GIS mobile map and data through contract services with Sedaru.

Hydraulic Model, Casitas Municipal Water District, Ojai, CA. Project Manager. Developing a calibrated hydraulic model to be used for the District's next Water Master Plan for the new owner of the Ojai water system. WSC provided major GIS updates for the District as part of the Casitas Hydraulic Model project including exporting calibrated and corrected features from the model to update the District's geodatabase and format the data into the ArcGIS standard data model. WSC added pressure zone boundary conditions, including closed valves and pressure reducing valves, into the GIS system to augment missing information in the current system. WSC reviewed the water distribution system geodatabase of 120 miles of pipe and corrected apparent errors such as pipe diameter and material discrepancy. Tasks include developing opinions of probable cost for recommended projects, and evaluating production and consumption data to develop projections and recommend improvements necessary to maintain a safe and reliable level of service.

Hydraulic Water and Sewer Modeling, Rainbow Municipal Water District, Fallbrook, CA. District Engineer. Providing services for hydraulic water and sewer modeling and development planning. Converting the District's existing hydraulic models to GIS based InfoWater and updated the model to include projects completed since it was originally developed. Performed continuous model updates and calibrated a previously un-calibrated sewer model including performing a flow monitoring study. Provided modeling analysis of the existing system to help the District make informed decisions regarding potential changes to the system. Review of Feasibility Studies and Water Supply Assessments as needed to support the District's review and conditioning of proposed development projects.

Asset Management Plan, Rainbow Municipal Water District, Fallbrook, CA. District Engineer. Lead staff review of GIS based asset management program for water and wastewater infrastructure based on materials and age.

Heather Freed, PE, MS

Education
MS, Civil and Environmental Engineering, Cal Poly, San Luis Obispo

BS, Environmental Engineering, Cal Poly, San Luis Obispo

Professional Registrations
PE – Civil, CA, No. 89406

Professional Experience

Ms. Freed is a Professional Engineer specializing in water system hydraulic modeling and mater planning. She has experience updating and consolidating data in GIS databases for integration into hydraulic models and developing master plans. She has experience evaluating various hydraulic measures including headloss through pipes, hydraulic jumps, and groundwater pumping.

Representative Projects

Hydraulic Model, Casitas Municipal Water District, Ventura, CA. Hydraulic Modeling Lead. Developing and calibrating a hydraulic model of the Casitas Water System and incorporating it into the existing Ojai Water System hydraulic model. Evaluating consumption and production data to determine spatial demand scenarios and evaluate the capacity distribution system. WSC provided major GIS updates for the District as part of the Casitas Hydraulic Model project including exporting calibrated and corrected features from the model to update the District's geodatabase and format the data into the ArcGIS standard data model. WSC added pressure zone boundary conditions, including closed valves and pressure reducing valves, into the GIS system to augment missing information in the current system. WSC reviewed the water distribution system geodatabase of 120 miles of pipe and corrected apparent errors such as pipe diameter and material discrepancy.

Ojai System Condition Based Assessment and Water Master Plan, Casitas Municipal Water District, Ojai, CA. Staff Engineer. Conducting a condition-based assessment and developing a Water Master Plan for the new owner of the Ojai water system. Tasks include developing opinions of probable cost for recommended projects, and evaluating production and consumption data to develop projections and recommend improvements necessary to maintain a safe and reliable level of service. Developing, calibrating, and utilizing hydraulic model of the system in conjunction with GIS datasets to improve system operations and CIP development. Evaluating the capacity of the existing water system and identifying improvements to meet demands, including fire flow, of the current and future population.

2015 Water Master Plan Update, City of Pismo Beach, Pismo Beach, CA. Staff Engineer. Performing an update of the City of Pismo Beach 2004 Water Master Plan. Creating and calibrating an all-pipes, spatially allocated demand hydraulic model of the City's water distribution system using Bentley's WaterGEMS software. Utilizing the hydraulic model to evaluate capacity limitations for current and future buildout scenarios and opportunities to optimize operations. Developing condition based-replacement plans for aging infrastructure and an updated CIP project list to prepare the City for budget planning.

Water Master Plan Update, Oak Lodge Water Services District, Oak Grove, OR. Staff Engineer. Preparing a Master Plan Update which will consider future water service commitments and build-out, including both area-specific water quality needs and system operations and maintenance priorities. The project includes constructing a new model from the District's GIS database, hydrant testing, and calibration of the completed model prior to using the model to identify and evaluate system improvements. Supply, demand, and storage data will be analyzed, projections developed, and recommendations made to address system deficiencies. The update includes development of an asset database to capture and track condition data for individual assets within the water system. The final update will include a capital improvement program.

Ashley Poole, EIT

Education
BS, Environmental Engineering, California Polytechnic State University, San Luis Obispo, CA

Professional Experience

Ms. Poole is an Engineer-in-Training with experience analyzing data in Excel and ArcGIS. She is currently providing data management support for two WSC projects. She is also providing GIS mapping services as part of client development and is providing additional mapping and database creation services for WSC's 2020 UWMP priority clients.

Representative Projects

Big Bear Area Regional Wastewater Agency, Replenish Big Bear, Big Bear, CA. Engineering Support. Providing data management support for project that is evaluating conceptual recycled water use alternatives to retain treated water and create a sustainable water resource to augment the potable water supply.

Goleta Sanitary District, Local Limits Reevaluation, Goleta, CA. Engineering Support. Providing data management services as part of a Local Limits reevaluation for the Goleta Sanitary District.

Appendix B: Requested Revisions

4. Standard of Care:

Consultant's services shall be conducted, within the limits prescribed by this Agreement, in a manner consistent with that level of care and skill ordinarily exercised by members of the same professions currently practicing under similar conditions within the surrounding regional area of the State (the "Standard of Care"). No other guarantee, warranty, or representation, either express or implied, is included or intended herein or in proposals, contracts or reports. Client agrees to provide Consultant prompt written notice of any defect or suspected defect in its services.

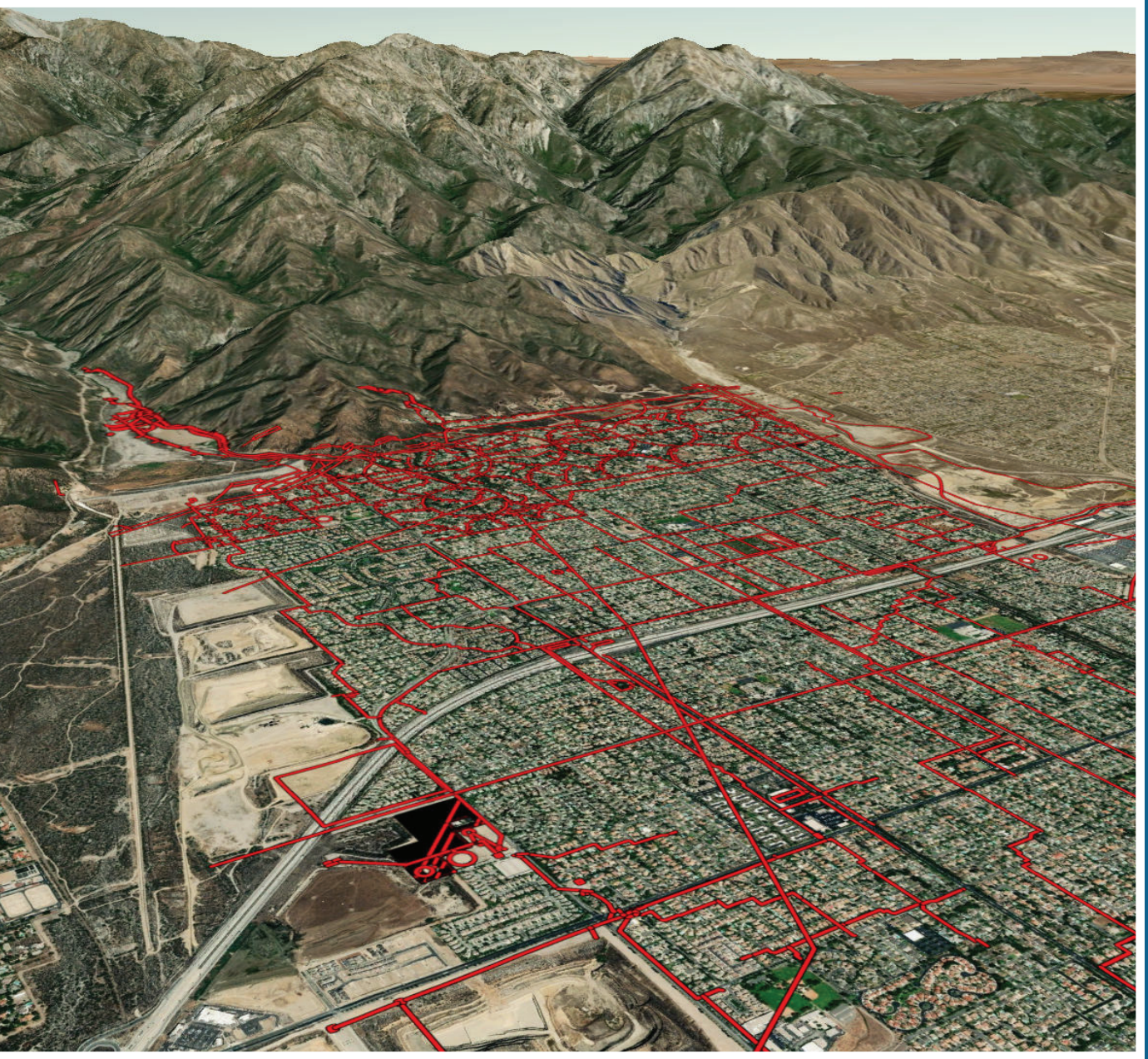
9. Ownership of Documents:

Unless expressly agreed otherwise, upon payment of all outstanding invoices owing to Consultant pursuant to the terms of this Agreement, Client ~~is~~ shall become the owner of all final documents, including, but not limited to, reports, investigations, written analysis, plans and specifications and opinions of cost generated by Consultant within the scope of services. Consultant is the owner of all other documents, including, but not limited to, all proposals, draft documents and other written communications generated within the scope of services. Consultant may retain copies of all final documents owned by Client. However, any reuse of the final documents by the Client for other than their specific intended purpose shall be at the sole risk of the Client and without liability or legal exposure to the Consultant.

Except as provided in Section 10, "Confidentiality", Consultant agrees that all project documents shall not be made available to any individual or organization, private or public, without the prior written consent of the Client.

13. Indemnity:

Consultant agrees to indemnify, and hold harmless (but, for claims alleging professional liability, shall not defend) Client, its officers, directors and~~,~~ employees ~~and agents~~, to the fullest extent permitted by law from and against any and all actual or alleged loss, cost, damage, expense and liability (including reasonable attorneys' fees and other costs of defense (as limited above) and/or settlement), for bodily injury/death, property damage and economic loss arising out of third party tort claims to the extent caused by~~from~~ the negligent acts, errors or omissions, or the willful misconduct of Consultant, its officers, employees, agents, invitees or subcontractors in the performance of services rendered under this Agreement.



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