



Professional Services for **STORM DRAIN SYSTEM MASTER PLAN UPDATE PROPOSAL**

City of Costa Mesa
Public Services/Engineering
77 Fair Drive, 4th Floor
Costa Mesa, California 92626

March 17, 2020

Prepared by:





March 17, 2020

Ms. Naz Mokarram, Senior Engineer
Public Services Department – Engineering Division
City of Costa Mesa
77 Fair Drive, 4th Floor
Costa Mesa, CA 92626

Ref: RFP FOR THE STORM DRAIN SYSTEM MASTER PLAN UPDATE IN THE CITY OF COSTA MESA

Dear Ms. Mokarram:

Q3 Consulting (Q3) is pleased to submit this proposal to the City of Costa Mesa to prepare a Storm Drain System Master Plan Update for the City. We have reviewed the Request for Proposal issued February 2020 and understand the elements involved in the project. Q3 has teamed with **Harris & Associates** (Financial Services), **DCSE, Inc.** (GIS services) and others to provide the City the most qualified team to complete the master plan update. Our team has the experience, resources, and local knowledge to complete the required elements with the requested timeframes. The Q3 team members provide a unique set of qualifications including:

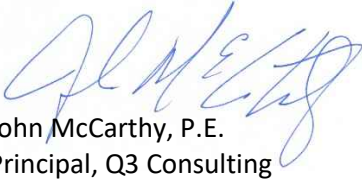
- **Orange County Master Planning and Advanced Modeling Expertise.** The team has completed numerous drainage master plans within Southern California and Orange County and understand the local and regional drainage design standards. In addition, team members specialize in XPSWMM/XPStorm, preparing several advanced hydrology/hydraulic models for regional drainage solutions within the County that have resulted in significant cost savings.
- **Local Project Experience.** Team members are currently working on and have recently completed multiple development and storm drain projects in the Orange County (including the City of Costa Mesa). We know and understand the local conditions, constraints and opportunities within the area which provides a valuable resource for the preparation of the master plan of drainage update.
- **Agency Experience.** Team members have experience working with the key stakeholders in the area including the Orange County Flood Control District, Santa Ana Regional Water Quality Control Board. These relationships will assist the City in developing feasible solutions for the recommended drainage facilities.
- **Subconsultant with City Financial Experience.** Our teaming partner, Harris & Associates is currently completing a citywide study for all fees, including user fees and development impact fees. Having Harris & Associates on our team will allow information to be communicated instantaneously between two projects. As a team member, the work completed will be uniform to the work of the citywide fee study, which will benefit both projects.

As a focused Stormwater firm, our senior level staff will be directly involved in the project. This allows us to provide expert hands-on service to develop a high-quality master plan that exceeds the City's expectations within the requested schedule. Mr. Tom Ryan, MS, PE will serve as Project Manager for this project. Tom has more than 24 years of experience in surface water management, including recent storm drain master plan and design projects.

I attest that all the information in the attached proposal is true and correct. We appreciate the opportunity to submit our proposal and look forward to discussing how we can assist the City on this important project. We are in receipt of all RFP documents and Addendum Nos. 1 and 2. Signed copies of the addendums are included in the appendix of the proposal.

If you have any questions or require further information, please contact me at (949) 259-6730 or via email at jmccarthy@q3consulting.net or Mr. Tom Ryan at (949) 259-6760 or via email at TRyan@q3consulting.net.

Respectfully submitted,

A handwritten signature in blue ink, appearing to read 'John McCarthy'.

John McCarthy, P.E.
Principal, Q3 Consulting

Enclosures: Proposal



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Additional Information

1. Detailed Resumes
2. Addendums 1 & 2



A. Project Understanding and Approach

Project Understanding

The City of Costa Mesa is soliciting proposals from qualified firms for professional services for the preparation of a unique and modernized, or "Smart", Citywide Storm Drain System Master Plan (SDSMP). Using advanced stormwater modeling software, the City is requesting an update to their 2006 Storm Drain System Master Plan. This "Smart City" plan can include an "alert" system, capable of forecasting potential floods, in addition to detecting real-time floods in storm drain systems to aid in developing and implementing flood control emergency action plans. Smart City can also include real-time regional water quality control facility monitoring to help optimize facility effectiveness and development of a City-Wide water quality plan.



17th St./Pomona Ave December 6, 2018

As part of the modernized SDSMP, the City of Costa Mesa has requested planned facilities be evaluated and developed using advanced stormwater modeling software. As one of only a few cities in Southern California to develop a City-wide Master Plan of Drainage using advanced modeling (XPSWMM), Costa Mesa will be on the forefront of technology using GIS database driven hydraulic models to evaluate their existing and proposed drainage infrastructure. XPSWMM-based Master Plans of Drainage are what Q3 specializes in. The engineers at Q3 have completed eight Master Plans (and Focused Master Plans) using XPSWMM over the last 7 years. Our experience and knowledge of XPSWMM has led to local, national, and international presentations focusing on the benefits of using XPSWMM.

The City is also requesting services to develop and update the Drainage System Upgrade Fees. This study will include proposed storm drain improvement costs, examine existing fees, review and identify available grant funds, and evaluate current and potential formulas for establishing new fees. The results of this study will need to be coordinated and integrated into the City's current City Fee Study & Cost Allocation Plan.

The City consists of many low points that create flooding hazards during large storm events. These depressions create large ponds that frequently shut down traffic, and flood surrounding structures. For Cities that are built-out, or nearly built-out, it is often times difficult to implement storm drain improvements due to the presence of existing utilities and disruption to everyday business. Consequently, identifying the least impactful drainage solutions are essential in heavily urbanized areas. The City understands this, as the RFP calls for XPSWMM (an advanced model) to evaluate more realistic drainage solution sizes to minimize the potential construction impacts. Q3's experience in advanced drainage master planning has helped us identify multiple avenues to identify the most feasible drainage solutions possible, including using a more advanced hydrologic modeling method (rain-on-grid) that still conforms to the Orange County Hydrology Manual. Our experience in these methods have helped Q3 garner a reputation as the experts in advanced urban modeling in Southern California.

The goal of the project will be to develop a tool for the City to effectively and efficiently plan, design, construct, and maintain the City's storm drain infrastructure for the next 20 years.

This RFP consists of three projects; 1) the development and analysis of the SDSMP, and the Smart City facilities; 2) Drainage System Upgrade Fee and Financing Study; and 3) the future design of the Westside Storm Drain. Below, the Q3 team has identified several Key Issues pertinent to the success of this project.



Key Issues

XPSWMM/XPStorm Experience and Expertise - Advanced stormwater models have been around since early 1970s. As computer speeds increase, the complexity and progression of the models increase. XPSWMM/XPStorm is one of the most widely used advanced urban stormwater models in the United States. In Southern California, advanced modeling is relatively new, compared to the rest of the country.

This project will require and comprehensive knowledge of XPSWMM/XPStorm to develop a GIS database driven hydrologic and hydraulic model. The comprehensive model will include rain-on-grid (or distributed rainfall) hydrology, a linked 1-dimensional (storm drain) and 2-dimensional (surface flow) model, green infrastructure, and model calibration. The engineers at Q3 have been on the forefront of developing XPSWMM models for communities since 2006. Mr. Ryan was the first engineer to introduce XPSWMM to the County of Orange, resulting in the Flood Control District to hire him to analyze a County project. Our experience in XPSWMM includes dozens of Master Plans and most recently, a combined "green" and "grey" infrastructure Master Plan. We have given educational seminars (including for XP Solutions) on how to verify or (calibrate) complex urban models using different methods.



XPSWMM Model 2-D Max Depth Encinitas 500-Year Storm

To view some of our advanced model animations, used for public awareness presentations, please use the following link. <https://q3consulting.net/main/services/modeling/>

Coordination with Current Citywide Fee Study and Allocation Plan - Q3 Team member, Harris & Associates are currently contracted with the City to perform a comprehensive review and evaluation of existing user fees as part of the Citywide Fee Study and Cost Allocation Plan. As Q3 team members, a seamless transition of information will be established to implement the new (advanced model based) proposed facilities into the fee program. This teaming partnership will help ensure both the SDSMP and the City Fee Study & Cost Allocation Plan results are integrated seamlessly together.

Smart City Implementation - Smart Cities require IoT (Internet of Things) or connections and sensors to collect data on assets to monitor for the purpose of gaining insight to develop more efficient serviceability. For this project, the City has requested the development of a plan to access precipitation gages, flow gages, potentially water quality facility monitoring stations to develop a comprehensive network to collect data, monitor and refine future system improvements. Q3 team members have worked with the County of Orange to help develop the "Alert" system, or Automated Local Evaluation in Real Time, which is a real-time monitoring and forecasting system for flood control facilities. This knowledge, and relationship will be utilized to develop a system for the City that can communicate with the County system, as well as, develop a local system. Results from the Smart System can be processed, evaluated, and viewed in GIS.

Green Infrastructure - Developing proposed drainage systems now includes "green infrastructure" that provide water quality and flood control benefits. The days of only "grey infrastructure" solutions are becoming something of the past. Developing hydrologic and hydraulic models of combined grey and green infrastructure is needed to identify the positive impacts of low impact development and source control facilities. Q3 recently developed a City-wide XPSWMM model for the City of Encinitas incorporating green



infrastructure (source control) with the flood control facilities to identify the most cost effective and environmentally sound stormwater master plan solutions. This comprehensive model included running the water quality storm event, in addition to the flood control storm frequencies. Tailoring the green infrastructure and water quality BMPs to the area will yield facilities that target pollutants identified in the receiving waters, while reducing runoff volumes of larger storm events.

Project Approach

The Q3 team has developed the following approach to complete the detailed scope of work outlined in the RFP based on similar successful past projects.

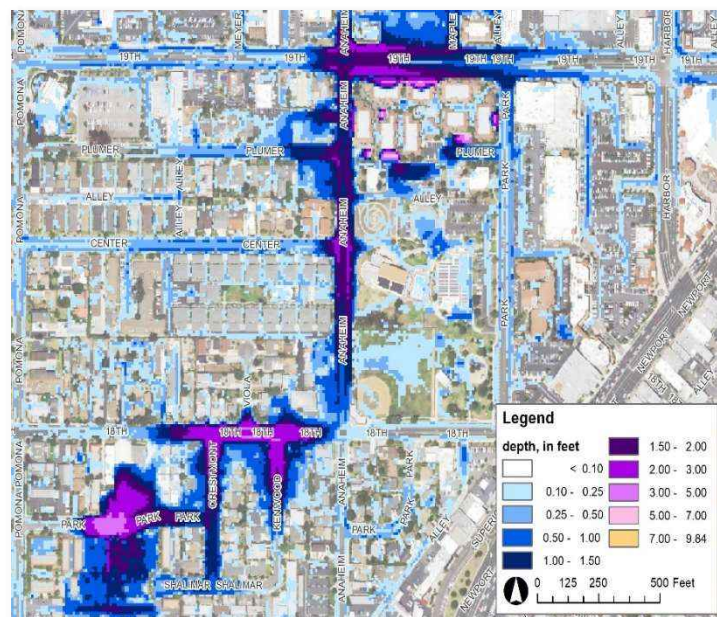
Data Acquisition and Review: Prior to commencing with the model setup, it is imperative to perform a detailed and thorough investigation of background information and data collection. This task is one of the most important, as it forms the foundation for the existing model development. In this task, the team will interview City staff regarding known flooded areas, coordinate with maintenance staff regarding field operations during flood events and water quality facility maintenance and discover the City's primary objectives and criteria for this project. Other data from the City will include as-built plans, previous reports, GIS data, past project hurdles and regulatory issues/restrictions, storm photos/records, soils data and land use data.

Data will be acquired from public domain such as LiDAR topographic data (NOAA, 2012 USGS Survey), County drainage and watershed studies, groundwater information, and tidal data. The Q3 team will verify as-built plans to current GIS databases and field truth data to identify all existing topographic data and storm drain infrastructure.

For the purpose of this study, drainage conduit sizes will be limited to 18-inches or greater, unless located within an area of concern. Field verification will include conduit identification, GPS snapshot photos at locations where storm photos exist, and reviewing potential outfall location conditions.

Existing Conditions Model Development: The next phase will be to develop the Existing Conditions model. This task is critical with respect to modeling as it sets the bar for how accurate the project results will be. The more accurate the input data, the better the results will be. The Q3 team believes the USGS LiDAR is detailed enough for use in XPSWMM/XPStorm. The team will process the USGS LiDAR data to create the 3-D surface for the proposed model. Processing the data will include adding break lines at locations where bridge crossing exists, or known barriers, such as the walls and large curbs, or adding surface drainage features such as channels that may not show up on the topo.

The Q3 Team proposes to use the XPStorm model, which is the same model as XPSWMM without the Sanitary Sewer option (which is not needed in this project). If for some reason the City favors XPSWMM, Q3 will use it.



Southwest Costa Mesa - XPSTORM (2D Only Test Run)



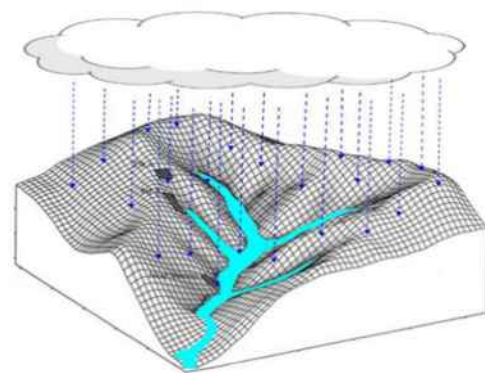
Once the surface is processed, the 1-D elements are added. All existing storm drain information is added including surface channels, subsurface storm drains, pumps, restriction plates, and catch basins. Initial XPStorm 1-D/2-D runs are performed using generic storms to evaluate the runoff characteristics on the 3-D surface. During this task, missing storm drain facilities or surface inaccuracies are usually flushed out. The initial results will be discussed with the City staff to ensure areas of flooding identified in the model are accurate.

The Q3 team will then “validate” the existing conditions XPStorm model by running it with a known storm event (based on local rain gage data) that also has photographic documentation of flooded areas. For example, photographs of the December 6, 2018 event (shown on right) will be used to correlate the results using rainfall data from a local rain gage for that particular event. With a total of 3.19 inches recorded, this storm was a 100-year storm for the 2 and 3-hour durations. For the 24-hour duration, it was a 20-year storm (i.e. 20-year/24-hr storm). This rainfall hyetograph will be used in the XPStorm model and results compared with observations. The model will be evaluated and adjusted as necessary until the flooded depths in the model match that of the photo. The Q3 team will correlate up to 2 storm events to validate the model. Once the model has been validated, we will begin preparing the design hydrology models.



Example Validation Location: Dec. 6, 2018 Storm

Hydrology: The Q3 team proposes to use a distributed rainfall method to develop the hydrology for each of the design storm events. If requested, Q3 can prepare models using standard methods (i.e. rational method followed by hydrograph methodology), but due to the flat nature of the watersheds, in our experience the rain-on-grid approach will model the surface flows more accurately.



Distributed Rainfall Method (Rain-on-Grid)

Hydrology will be developed for the 10-, 25-, and 100-year events per the requirements in the RFP. Rainfall data and loss rates will be developed based on the Orange County Hydrology Manual. Losses will be subtracted from the gross rainfall data for each storm event, which is typical when using rain-on-grid. Q3 will develop one single-area unit hydrograph for a large representative sub-watershed within the Costa Mesa area to compare against the distributed rainfall model runoff volume. This process assures that the runoff volumes produced by distributed rainfall method are the same as the traditional Orange County single-area unit hydrograph volume for the same area. Once developed, the design hydrology will be run with the Existing Condition Model to identify level of deficiencies. The results will be documented in the Existing Conditions Assessment Report (ECAR).

Proposed Drainage & Water Quality Improvements: From the existing condition model results, alternative solutions will be formulated and vetted. During this process, the Q3 team will evaluate and work with the City to review the current criteria for development within the areas of inundation and establish new criteria where needed. Models of these alternatives will be prepared in XPStorm. Based on the results, the Q3 team will formulate levels of hydraulic deficiency. Potential improvements may include green



infrastructure within the watersheds (source control) and facility capacity improvements. This process of modeling multiple alternatives is crucial and requires experience in understanding improvements in series. In some cases, upstream improvements may benefit downstream flooded areas, while in other cases, they may adversely impact downstream areas by shifting the flood to a different location. Our wholistic view of the watershed will allow us to identify and account for these conditions. During the identification and development of solutions, our team will seek opportunities to incorporate green infrastructure or water quality BMPs as part of the solution. The results of this step will include the development of a proposed condition, GIS-based Storm Drainage Proposed Improvement Map (SWAIM). This database will include both green and grey infrastructure improvements and regional water quality treatment systems. The SWAIM can be used as a dynamic project status tool. As solutions become more developed, updates to the SWAIM will allow the City to identify progress.

Facility Prioritization: To help identify which project should be prioritized, the potential flood control mitigation projects will be prioritized based on criteria established by the City and the Q3 team. A decision matrix will be developed identifying and establishing a weight for each criterion within the matrix. The final matrix will reveal a list of priority projects. The priorities will also be divided into Extremely High Priority, High Priority, and Medium Priority. A color-coded map will be created for each of the two main watersheds. Q3 prepared a similar prioritization ranking for both the City of Redlands and the City of Yucaipa master plans of drainage.



Priority Drainage System Map – Redlands SMP

Master Plan Document Development: The results of the study will be documented in a single report and include the methodologies, results, and recommendations. The report will include supporting calculations for the modeling as well as the cost estimates. Concept plans will be included in the report, as well as the priority drainage system map. It is anticipated that two submittals will be made, a draft submittal and a final submittal. Within this document, the Q3 team will identify and extrapolate on alternative benefits for potential stormwater harvesting, percolation, and water quality. Future climate change scenarios will be discussed with respect to the project alternatives. The conclusions, recommendations, and supporting calculations in the report can be used as a basis for drainage impact fee development and future grant or capital funding requests.

Smart Facilities: The Q3 team will evaluate the existing and proposed stormwater infrastructure to identify upgrades in the stormwater management technology for the City. This will include potential water quality facility, rain gage, and stream gage real-time monitoring opportunities, including the use of telemetry. Q3 team members were involved in the update of the County of Orange's ArcGIS web-based map with analytical tools to communicate hydrologic data (stream and rain gage) across the County. This system also used NOAA observations to correlate with ALERT gage stations to inform public of flooding events. The Q3 team will use this knowledge to develop a plan to not only tap into the Orange County system, but also to monitor water quality and local facilities.

Drainage System Upgrade Fees and Financial Study: Q3 has teamed with the City's current financial consultant, Harris and Associates to develop and upgrade the drainage fees and prepare the financial study. Utilizing the information from the updated Storm Drain Master Plan, Harris will calculate development impact fees for each identified watershed and will prepare a funding gap analysis for the two CIP scenarios to identify potential funding sources outside of development impact fees. Harris will evaluate and provide recommendations for other funding structures and the feasibility of each. In addition, we will help the City with the development of a storm drain fee assessment brochure and questionnaire.



The updated facility and fee information develop as part of this project will be quickly and accurately communicated between the Q3 team and the Clearsource team for the City's ongoing Citywide Fee Study and Cost Allocation Plan. This seamless transition of information will benefit the City on both projects.

Council Approval: The final task for this SDSMP will be a series of presentations to gain acceptance for the project results and recommendations. It is anticipated that one presentation will be made to the City staff, and a final presentation to the City Council. The presentation will include the findings of the project including methodologies, assumptions, final concept projects, recommendations and conclusions. It is anticipated that a visual animation will be included as part of these presentations to help with the "public awareness" aspect of the project. This will also act as a tool to convey the technical aspects of the study to the stakeholders and non-technical audience.

Preparation of Plans, Specifications, and Estimates (Westside Storm Drain): The final task in the RFP will include the development of Construction Documents for the Westside storm drain. One of the reasons the engineers at Q3 have such a successful record of preparing Drainage Master Plans, is due to our long history of preparing successful design projects. Full understanding of the design process, including constructability, is critical in developing feasible drainage and water quality solutions. Q3 will utilize the results in the advanced models to develop the most feasible sizes and alignments for the proposed system. Upon completion of the proposed models and concept design, Q3 will develop a breakdown of design costs with the not-to-exceed budget of \$100,000.

Scope of Work Clarifications

Our detailed scope of services for the Citywide Drainage Master Plan project is based on the requirements in the RFP, our understanding of the requirements to complete a successful SDSMP and supplemented to include additional information as necessary to document our approach to complete the work.

A summary of the total hours estimated to complete each task is included in Section E – *Fee Proposal*. The following items are clarifications to the Scope of Work identified in the RFP.

1.3 – CCTV (Optional) – The cost basis for the CCTV subtasks will be prepared based on the conditions of the potential drainage systems to be evaluated. Q3 team members Innerline Engineering use a rate of \$2/linear foot of clean pipe. Pipes that are blocked with debris, that cannot accommodate the camera, will be priced based on level of "blockage" and cleaning.

1.4.1 Existing Watersheds Map/Database – The estimated cost for the GIS database to be updated and prepared assumes a maximum number of as-built sheets of 500.

1.4.2 City-Wide Topographic Basemap (Full LiDAR) – Q3 researched available LiDAR and identified that full City LiDAR is already available at 1-meter resolution (2012). Preliminary calculations using XPStorm revealed this LiDAR provided good enough resolution to run accurate 2-D surface flows from. Consequently, we believe a full LiDAR option is not needed for this project.

2.1-Research & Development of "Alert" system for Flood Control/WQ Facilities - This task was added to develop a plan for the "smart" system that will link available rain gages, stream gages, and proposed water quality monitoring systems to a City website and GIS database.



B. Project Team



Q3 Consulting (Q3) is a focused stormwater engineering firm, specializing in "all things stormwater". Our extensive background includes a wide spectrum of stormwater and flood control planning, analysis, and design related projects. Understanding all facets of stormwater engineering provides Q3 with a major advantage in providing master planning services. Critical to developing viable planning documents requires a knowledge of currently available analysis software and a full understanding of facility design. Our experience includes the preparation of design documents and comprehensive storm drain master plans and drainage solutions for public and private sector projects within Orange County.

Q3 is a dba of Proactive Engineering Consultants Inc. (PEC). PEC is a Southern California based Civil Engineering Consulting Firm (California corporation) serving Governmental Entities and the Development Community. PEC was founded in 2006 and has a staff of 58 engineers, surveyors, professionals, and administrative personnel (including Q3). The principals have operated in Southern California for over 40 years for both large and small multi-discipline consulting firms.

Financial Condition. PEC has been in business for over 12 years with offices in Foothill Ranch and Corona. The project will be managed from the Foothill Ranch office. The company has the financial capacity, staff, and resources to successfully complete the Storm Drain System Master Plan Update project for the City of Costa Mesa. Q3 Consulting/Proactive Engineering Consultants, Inc. is a California Certified Small Business (DGS #2009320).

Drainage and Master Plan Experience. With specialized storm drain master plan experience throughout Southern California, each of the Q3 team members have a thorough understanding of the local and regional hydrology methodology, Orange County staff, and guidelines and criteria used by the City and County. Within the last 10 years, the Q3 team members have focused on providing our municipal and private sector clients with innovative and advanced technical approaches to understanding and evaluating cost effective stormwater solutions for their unique drainage conditions.

Key personnel have been involved in recent projects including preparing hydrology and hydraulic models and master planning services for municipal clients in the Cities of Anaheim, Santa Ana, Tustin, Chino, Redlands, Yucaipa, Grand Terrace, Encinitas, La Quinta, San Diego, Los Angeles, Rancho Palos Verdes, Coachella, and Cathedral City, and the Orange County Flood Control District. The team's detailed stormwater engineering services include:

- Storm Drain Assessments and Master Plans
- Local and Regional Hydrology Modeling
- 1- and 2-dimensional Hydraulic Modeling
- Regional Flood Protection Systems
- Local Storm Drain and Detention Facilities
- Green Infrastructure Implementation
- Floodplain Mapping/Management
- CLOMR/LOMR Applications
- Water Quality/BMP Design
- LID Storm Water Applications
- Construction Documents
- Agency Coordination/Processing

Local Experience. Key team members have extensive experience working on projects within the County, including multiple Cities. Our experience using advanced hydrologic and hydraulic modeling within Orange County is second to none. This experience provides a tremendous value in the teams's understanding the conditions, constraints, and opportunities within the City.

Lead Office and Project Manager

John McCarthy, PE, CFM
27042 Towne Centre Drive
Suite 110
Foothill Ranch, CA 92610
Phone: 949-259-6730
Email: JMccarthy@q3consulting.net

Corona Office

200 S. Main Street, Suite 300
Corona, CA 92882
Phone: 951-280-3300
Fax: 951-280-0279
Federal ID No. 20-5345716



Subconsultants

Q3 has teamed with **Harris & Associates**, **DCSE Inc.** and **Huitt-Zollars** to provide the City the most qualified Team to develop the Citywide Storm Drain System Master Plan. DCSE is a unique firm that specializes in the development of GIS databases and is experienced working with numerous Cities to prepare GIS databases for their storm drain, water and sewer facilities. Huitt-Zollars is a full-service civil engineering firm with extensive experience implementing multi-benefit water quality projects within Southern California and the Santa Ana and Watershed. Combining the talents of DCSE and Huitt-Zollars with Q3 provides the City a comprehensive team with extensive experience in Orange County hydrology and hydraulic modeling, integrated stormwater multi-benefit projects, and GIS database development. For the optional task (CCTV), we have included Innerline Engineering that also brings experience with multiple municipal agency projects. Our team has local knowledge of the study area and over 30 years of experience preparing storm water master plans in Southern California.



Harris & Associates

Harris has served public agencies since 1974. We offer our clients expertise and assistance in various realms of municipal and district finance, engineering services, program and construction management, and environmental and planning services. Harris' Municipal and District Finance team consists of twenty-one employees with the majority of the team located in Irvine, California. Our team provides our clients with the technical expertise and knowledge needed to develop and implement sound financial strategies. Some of our services include development of Impact Fees in compliance with AB1600, utility user fee studies, feasibility at rate studies and maintenance fee establishment services.

Harris & Associates Office & Project Lead

Alison Bouley, PE
22 Executive Park, Suite 200
Irvine, California 92614
Phone: 949-536-2515
Email: Alison.bouley@wareharris.com

Harris is currently working with agencies throughout California (including Costa Mesa) in developing, updating and implementing their development impact fee programs so we are familiar with the trends in the industry. In addition, we keep abreast of new legislation and lawsuits in order to provide our clients with fee programs that stand up to legal scrutiny.



Founded in 1989, DCSE is a California-based Engineering and GIS consulting firm specializing in developing solutions to help municipal and quasi-government agencies, engineering firms and private utilities. DCSE has the knowledgeable staff and the well-rounded expertise to provide a broad range of integrated GIS services, from needs assessment and implementation to GIS data conversion, Geodatabase migration, and advanced application development.

DCSE Office & Project Lead

Masoud Hoseyni, Ph.D.
23461 S. Pointe Dr., Suite 300
Laguna Hills, CA 92653
Phone: 949-465-3407
Email: mhoseyni@dcse.com

DCSE has developed GIS-based master plans and decision support systems for several agencies. Their spatial database development services involve migration of data to local government information data model, spatial database development (shapefiles, SDE layers, and personal and enterprise Geodatabases), data conversion (paper to CAD or Geodatabase), correction and enhancement of existing data, and development and implementation of maintenance procedures. DCSE has been working with GIS since the company was founded two decades ago in 1989. From its inception, DCSE has been working with Esri's ArcGIS Technologies - they were also awarded **ESRI's Foundation Partner of the Year in 2006**.



HUITT-ZOLLARS Established in 1975, Huitt-Zollars is a pioneer in the planning, design, and construction of integrated stormwater facilities for multiple benefits. Team members are intimately familiar with the Orange County NPDES MS4 permit requirements for the Santa Ana Region Watershed (including Newport Bay) having worked on numerous projects within the region.

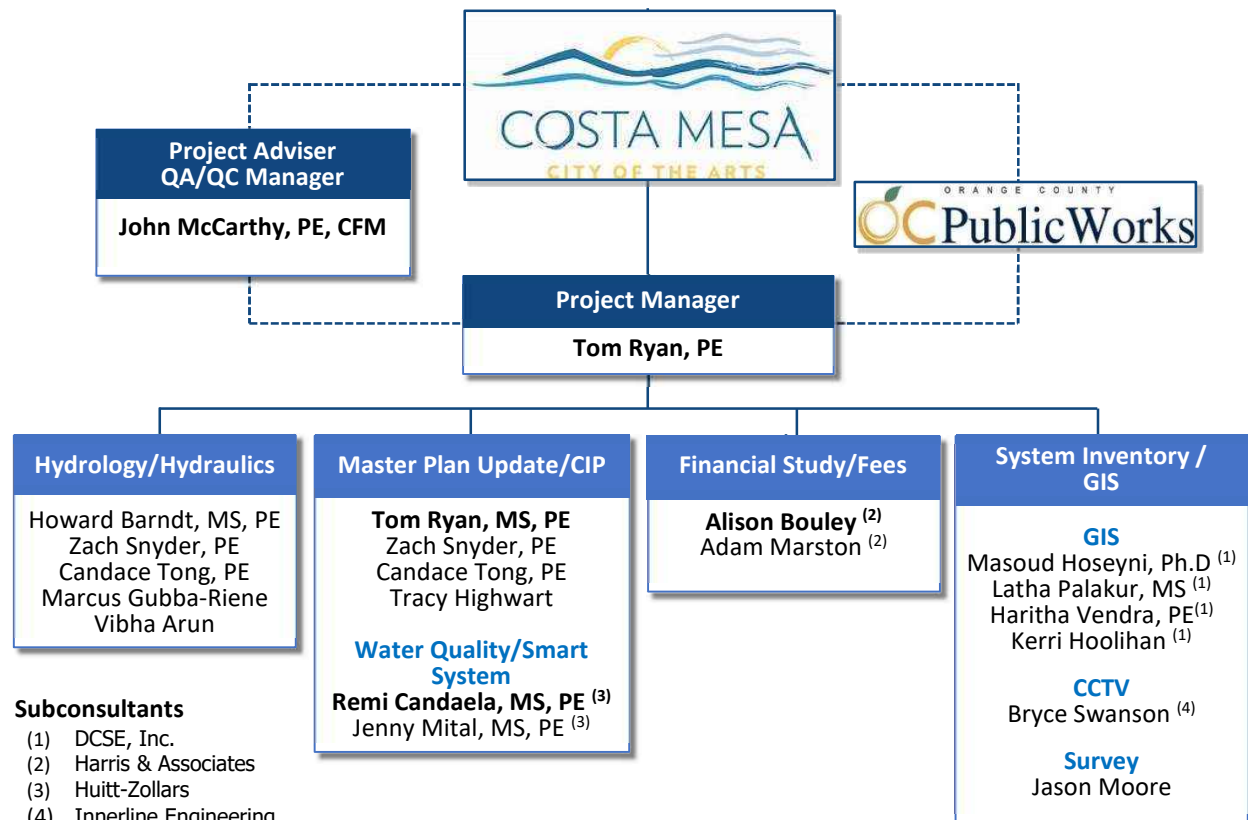
Huitt-Zollars Office & Project Lead

Remi Candaele, PE, MS
 2603 Main Street, Suite 400
 Irvine, CA 92614
 Phone: 949-988-5815
 Email: rcandaele@huitt-zollars.com

For over twenty years they have been integrating water quality treatment facilities with drainage and public works infrastructure projects including recent awarding winning projects for Trancas Creek Lagoon Rehabilitation Project (ACEC, 2018), La Pata Avenue Stormwater Infrastructure and multi-benefit biofiltration basins (CMAA, ASCE, APWA, and OCEC, 2018) and the Lost Hills Interchange including biofiltration and flood control basins (APWA, 2018). This experience together with excellent working relationships with the OCFCD and Santa Ana Region Water Quality Control Board make Huitt-Zollars an asset to the Q3 team.

Proposed Team

As a focused stormwater engineering firm, our experienced staff are dedicated to meeting the City's needs. The high-level experienced staff on the organization chart are the individuals that will be directly involved on the project and with the City. Our team's experience, understanding of the local conditions, successful track record, working relationships with the City and Stakeholders, combined with our history providing professional services throughout Southern California, gives us the ability to successfully complete the services on this contract. Our team of highly experienced professionals are known in the industry for their demonstrated expertise. The Q3 team key personnel involved in performing the work and their project roles and qualifications are shown in the following organization chart.





The leadership of the Q3 team, along with our staffing plan and resumes of key individuals are provided below. No changes will be made to the key staff identified, except as agreed to and with prior written approval by the City.

Tom Ryan, MS, PE- Project Manager



Leadership is important to the successful management of any project, even more so on projects that require solutions to complex challenges and team coordination. Tom Ryan will serve as the Project Manager based on his extensive background in managing XPSWMM-based storm water master plan projects, strong knowledge with the local area, and his ability to convey complex results in a public forum. His 24 years of stormwater engineering and design for both private and public-sector clients give Mr. Ryan the skills necessary to successfully complete this project.

John McCarthy, PE, CFM - Project Adviser/QAQC



Mr. McCarthy will serve as Project Adviser and Quality Control based upon his strong leadership abilities, extensive background with stormwater master plan projects, and local knowledge of the watershed area. John's 30 years of engineering experience is focused in the field of stormwater management and includes preparation of stormwater master plans, advanced hydrologic/hydraulic analyses, and storm drain and flood control design projects. His extensive work in flood control facility design provides the necessary ability to oversee cost estimations and proposed alternative constructability.

Alison Bouley, PE – Upgrade Fees & Financing Study



Alison is a Senior Director in our Municipal and District Finance Group at Harris & Associates and has 20 years of experience in providing program management and financial engineering services to cities, counties, and special districts on a wide variety of project types, including AB1600 development impact fees. She is currently working on fee programs throughout the state including the City of Costa Mesa's Development Impact Fee Update. Her current work with the City will provide a seamless transition for the proposed updates associated with this project.

Remi Candaele, MS, PE- Water Quality & Alert System Lead



Remi Candaele is a Senior Project Manager at Huitt-Zollars with extensive experience in numerous aspects of surface water management and water quality. He is recognized for his technical expertise, responsiveness, leadership, and strategic initiatives. He has prepared numerous publications covering his expertise in NPDES permitting, stream rehabilitation, hydromodification, water quality modeling, BMP design and performance, and comprehensive watershed strategic plans. He has worked with the County of Orange, Flood Control to develop and optimize their current ALERT (Automated Local Evaluation in Real Time) Flood

Detection System. Remi will work with the hydraulic modeling and GIS team to identify regional water quality opportunities and to develop a Smart monitoring plan.

Masoud S. Hoseyni, Ph.D – GIS Lead

Dr. Hoseyni is the President of DCSE and will serve as the GIS Conversion Manager. He has extensive experience in managing the development of large-scale database applications for public agency clients. He has been actively involved in projects assisting utility companies, municipalities and industrial users to develop enterprise GIS and database management systems. He has worked with numerous Cities/public



agencies on the development of GIS databases for the storm drain, water, and sewer facilities. Masoud will lead of team of specialized experts with specific experience working with the City.

Staffing Plan and Experience

Our staff plan with project roles, availability, and a summary of their qualifications and experience is provided the table below. Our team is dedicated and committed to serving the City of Costa Mesa to efficiently complete the Citywide Drainage Master Plan project.

NAME/ROLE/AVAILABILITY	LICENSES/EDUCATION	RELEVANT PROJECT EXPERIENCE
Q3 CONSULTING		
John A. McCarthy, PE, CFM Project Adviser 25% Available	Civil Engineer, CA #47583 Certified Floodplain Manager #05-01596 B.S., Civil Engineering, California State Polytechnic University, San Luis Obispo – 1989	- Stormwater Master Plan, Coachella - Encinitas Stormwater Master Plan - Drainage Master Plan, Redlands - Master Plans of Drainage, Anaheim - OC Flood On-Call (Design)
Tom Ryan, MS, PE Project Manager 40% Available	Civil Engineer, CA #61701 M.S., Royal Institute of Technology, Stockholm, Sweden, Environmental Eng. – 1997 B.S., California State University, Long Beach, Civil Eng. – 1995	- Encinitas Stormwater Master Plan - Focused Master Plan, Grand Terrace - Drainage Master Plan, Redlands - Focused Drainage Study, La Quinta - Yucaipa Master Plan of Drainage - Buena Park Master Plan of Drainage
Howard J. Barndt, MS, PE Hydrology/Hydraulics 50% Available	Civil Engineer, CA #65914 B.S., California State University, Long Beach, Civil Eng. – 1999 M.S., California State University, Long Beach, Civil Eng. – 2004	- Master Plan of Drainage Update, <i>Wilson and Wildwood Creeks</i>, Yucaipa - Drainage Master Plan for North, South, and West Santa Ana River Tributary Areas, Anaheim - Encinitas Stormwater Master Plan
Zach Snyder, PE Hydraulics/Alternatives Analysis/ Cost Estimates 60% Available	Civil Engineer, CA #87537 B.S., Civil Engineering, California State Polytechnic University, Pomona – 2014	- Encinitas Stormwater Master Plan - Focused Master Plan, Grand Terrace - Focused Drainage Study, La Quinta - Los Penasquitos Watershed Master Plan, San Diego
Candace Tong, PE Hydrology/Master Plan 70% Available	Civil Engineer, CA #90444 B.S., Civil Engineering, University of California, Irvine – 2014	- Stormwater Master Plan, Coachella - Chino-Corona Road Storm Drain, Chino - North Fontana Master Plan, Fontana - Encinitas Stormwater Master Plan
HARRIS & ASSOCIATES (Subconsultant) – Upgrade Fees/Financial Study		
Alison Bouley, PE Financial Lead 25% Available	Civil Engineer, CA 61383 B.S., Civil Engineering B.S., Engineering Management	- Costa Mesa Development Impact Fee Update - City of El Cajon Development Impact Fee Program
Adam Marston, LEED Assoc. Project Analyst 50% Available	LEED Green Associate 11033913 B.S., City and Regional Planning	- Costa Mesa Development Impact Fee Update - City of Rancho Cordova Zone 11 Storm Drainage Fee - City of Lodi, Impact Fees Update



NAME/ROLE/AVAILABILITY	LICENSES/EDUCATION	RELEVANT PROJECT EXPERIENCE
DCSE (Subconsultant) – GIS Database		
Masoud Hoseyni, Ph.D. GIS Conversion Manager 15% Available	Ph.D. Mechanical Engineering, UCLA, 1991 M.S., Chemical Engineering, UCLA 1981 B.S., Chemical Engineering, AMUT 1977	• Rancho California Water District GIS Services • Chino Sewer GIS Conversion • Contra Costa Water District, Enterprise GIS • Central Arizona Water Conservation District GIS Modernization
Haritha Vendra, PE, GISP, MS GIS Conversion, Developer 25% Available	M.S., Civil Engineering-Water Resources, University of Texas, Arlington, 2001 B.S., Civil Engineering, Osmania University (India), 1996	• Chino Water GIS Conversion • Chino Sewer GIS Conversion • City of Simi Valley Water GIS System • City of Los Angeles-Bureau of Sanitation, Enterprise GIS
Kerri Hoolihan GIS Analyst 40% Available	B.S., Geography & Environmental Studies/GIS & Technology Studies Minor, UCLA, 2019	• Chino Water GIS Conversion • Montebello Land and Water Company, Water GIS Conversion • City of Sunnyvale, Water, Sewer & Stormwater GIS conversion • Chester Public Utility District, Sewer GIS Database
HUITT-ZOLLARS (Subconsultant) – Stormwater Quality		
Remi Candaele, MS, PE Stormwater Quality 25% Available	Civil Engineer, CA 77517 M.S., Civil Engineering, Water Resources, University of Texas, Austin 2016 Young Civil Engineer in the Private Sector, Western US, ASCE	• Santa Margarita Region Hydromodification Management Plan & LID Manual, Riverside County • Santa Ana Watershed Action Plan, Riverside County • NPDES On-Call, Riverside County Transportation Department • Citywide BMP Implementation, Huntington Beach
Jenny Mital, MS, PE Stormwater Quality 65% Available	Civil Engineer, CA 88614 M.S., Civil Engineering, Water Resources, University of California, Davis	• Malibu Creek EWMP, Los Angeles • Citywide Runoff Management Plan, Rancho Mission Viejo • Chino Subarea 2 Master Plan, Chino • Trash Amendments MS4 Support, Huntington Beach • TMDL Implementation Assistance, Los Angeles County



C. Team Experience

Firm Qualifications

Storm Water Master Planning Services

The Q3 team members have been involved in the development of storm water master plans for both public agencies and private clients throughout Southern California and our expertise is recognized throughout the region. We are known for our experience with advanced hydrologic and hydraulic modeling techniques in both urban and rural watersheds. In Southern California, we are leaders in using state-of-the-art stormwater tools, which translates to developing more cost-effective drainage solutions. Our engineers have given international seminars, were conference presenters, guest University lecturers and international award winners for the work we have done using SWMM based software for City Master Plans of Drainage projects. Software includes XPSWMM, XPStorm, PCSWMM, FLO-2D, SWMM5 and MIKE-URBAN.

Our drainage studies of urban areas using the more advanced programs such the XPSWMM model, include work for the Encinitas, Cities of La Quinta, Grand Terrace, Fontana, Redlands, Tustin, Santa Ana, and Coachella. As a result of these projects, Q3 staff members have developed expertise in identifying creative solutions to complex drainage issues and in incorporating these solutions into comprehensive Capital Improvement Programs. Q3 team members experience in developing master plan projects includes:



Encinitas MPD Priority Project Watersheds

- Leucadia Watershed Master Plan, San Diego County
- Anaheim Master Plans of Drainage, Orange County
- Laguna Beach Focused MPD, Orange County
- Buena Park Master Plan of Drainage, Orange County
- La Quinta Focused Drainage Study, Riverside County
- Coachella Stormwater Master Plan, Riverside County
- Grand Terrace Focused MPD, San Bernardino County
- North Fontana MPD, San Bernardino County
- Yucaipa MPD Update, San Bernardino County
- Redlands Drainage Master Plan, San Bernardino County
- Tustin Legacy (Tustin Air Base Reuse) MPD, Orange County
- El Toro Marine Air Station MPD, Orange County
- Santa Ana Master Plan of Drainage, Orange County
- San Diego Creek Master Plan, Orange County

Previous master plan projects have required development of GIS database driven, accurate hydraulic models for storm drain sizing/design, hydraulic deficiency studies, coupled 1- and 2-dimensional modeling, and floodplain evaluations. The Q3 team understands the advantages and limitations of each of the modeling software packages and has the ability to evaluate different types of products to recommend and develop the appropriate model for the individual situation.



Stormwater Quality Integration

Identification of potential water quality features which can be incorporated into the Drainage Master Plan is an important element in the creation of a multi-benefit plan. The team will identify opportunities to incorporate green infrastructure and water quality facilities through infiltration, retention, local and regional LID BMPs, and stream rehabilitation into the plan. Incorporation of these types of system can help ensure City compliance with all applicable regulations including the National Pollutant Discharge Elimination System requirements and may increase the opportunities for potential grant funding. To solidify our team, Q3 added Huitt-Zollars to capitalize on their Orange County experience with incorporating comprehensive and regional water quality planning and recent work performed Orange County's ALERT system. Q3 has a long history of working with Remi Candale on similar projects. Additional detailed representative projects can be supplied upon request.



*Green Infrastructure - Harvesting
Rainwater(Brad Landcaster)*

GIS Services

Q3 team members DCSE have experience using GIS based technology solutions to integrate and streamline the development of complex hydrology and hydraulic models. We can expand on the City's existing storm drain database to include the information necessary (size, material, elevations, condition) to run the advanced watershed models. This type of integrated analysis allows the City to inventory and categorize their existing drainage infrastructure and allows the models to be easily updated as new drainage facilities are constructed. DCSE has worked for several Southern California Cities developing their GIS database systems.

DSCE has developed and updated infrastructure GIS Databases for multiple municipal agencies within California. Some of these agencies include City of Chino, City of Simi Valley, City of Poway, and City of Sunnyvale. Projects include drainage, water, and sewer infrastructure databases.

Financial Studies and Fee Development

Q3 has brought Harris & Associates to the team to ensure a smooth transition is maintained with the flow of information between the SDSMP and the current work the City is doing on their current Citywide fee study. Even though Q3 has experience in developing drainage impact fees, we believed this teaming arrangement would benefit the City the most.

CCTV Services

For the optional tasks of CCTV, the Q3 Team included Innerline Engineering. Innerline has performed CCTV work for multiple regional agencies including work for the City of Fullerton, City of Newport Beach, Orange County Sanitation District, City of Corona, City of Los Angeles, and City of San Diego. Innerline understands the process of CCTV in large drainage systems, with multiple miles of pipe.

Representative Project Experience and References

The Q3 team has extensive experience in all aspects of the task areas that will be part of the Citywide Drainage Master Plan. Representative projects completed by the Q3 team members, including reference contact information is provided below. These projects demonstrate our ability to complete projects similar in magnitude and design requirements on schedule, in an efficient, cost-effective manner using innovative design techniques.

The following representative projects focus on the development of advanced Master Plans of Drainage prepared by the Q3 team members. These projects in particular included advanced modeling, development and updates to their GIS databases, proposed facility prioritization, and cost estimates.



Leucadia Area Watershed Master Plan, Encinitas, CA

Q3 Consulting is providing engineering services to provide stormwater services to complete a Master Plan of Drainage for the City of Encinitas. A major portion of the City frequently floods during moderate storm events due to existence of multiple low points or sumps within the City. Environmental regulations and previously proposed facility costs have deemed improvements infeasible. As a result, the City hired Q3 to prepare advanced stormwater models to identify more feasible flood control solutions. As an environmentally proactive City, "green infrastructure" was just as important for any proposed solution.

The project involved utilizing a new method of calculating hydrology and hydraulics driven by linking GIS databases. Q3 reviewed and updated the City's storm drain layers by reviewing as-built data and supplementing with field verification. Using GIS soils data, land use data, drainage infrastructure data and a water quality data, a comprehensive XPSTORM base model was prepared.

The models were validated against actual storm events and compared to known flood elevations, photos, and videos. Once validated, the models were used to define proposed drainage solutions that included green and grey infrastructure.

Per the City's request, Q3 focused on one of the priority regions first that had been studied multiple times in the past but proposed improvements proved to be too expensive. With the use of a linked 1-D/2-D model, Q3 successfully identified a more feasible solution that provided flood control and green infrastructure for a 2-mile stretch of Highway 101 and the areas surrounding it. The proposed solution was approved by the City Council unanimously to move into final design.

CLIENT

City of Encinitas
505 S. Vulcan Avenue
Encinitas, CA 92024
Mr. Ed Wimmer
760-633-2763
Ewimmer@encinitasca.gov

STAFF INVOLVED:

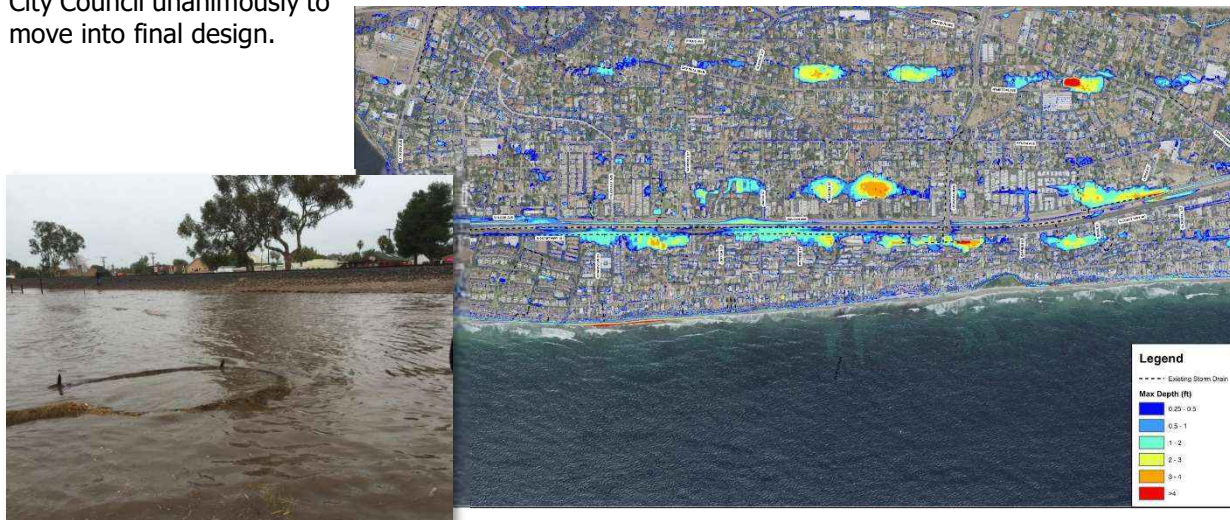
Tom Ryan
John McCarthy
Howard Barndt
Zach Snyder
Candace Tong

SERVICE AREAS

- Rain-on-Grid Hydrology
- Green Infrastructure Modeled
- 1D/2D flood routing
- Water Quality Models
- Preliminary facility sizing
- Comprehensive Modeling
- Master plan preparation
- Facility Cost Estimates CIP

BUDGET: \$420,000

COMPLETED: Est. August 2020



One of numerous flood event photographs used to correlate the results of the XPSWMM analysis, and one of the drainage maximum depth maps (right) used to identify alternative and recommended improvements



La Quinta Focused Drainage Study, La Quinta, CA

Q3 team members prepared hydrology and hydraulic analysis and developed a stormwater master plan for an area of the City of La Quinta hardest hit by the extreme storm events in 2013 and 2014. The study evaluated the flood risk associated with extreme storm events and identified potential drainage improvements to reduce future flood damage and increase public safety if or when extreme storm events occur. The team prepared a coupled 1D and 2D hydrology and hydraulic SWMM model encompassing the central area of the City. This innovative modelling incorporated surface topography with as-built storm drain information and distributed rainfall to accurately model the unique conditions of the study area.

The study included the preparation of a coupled 1D and 2D hydrology and hydraulic model for the study area. Offsite hydrology was prepared using Riverside County Hydrology Manual procedures. Onsite hydrology was evaluated using a direct rainfall method, or "rain on grid" applied over the study area. The model was correlated to historical flood photos taken during the September 2014 storm event. The advanced model was used to more accurately depict drainage flow paths and overflow patterns and storm water runoff volumes in the identification of appropriate storm drain infrastructure. The results of the analysis were used to develop alternatives and cost estimates for recommended improvements to reduce the flood hazard during extreme events. The analysis and recommendation led to three separate design projects that both Tom Ryan and John McCarthy managed.

CLIENT

City of La Quinta
78-495 Calle Tampico
La Quinta, CA 92253
Nick Nickerson, (NIA) Consulting
Manager, (760) 777.2370
nnickerson@naiconsulting.com

STAFF INVOLVED:

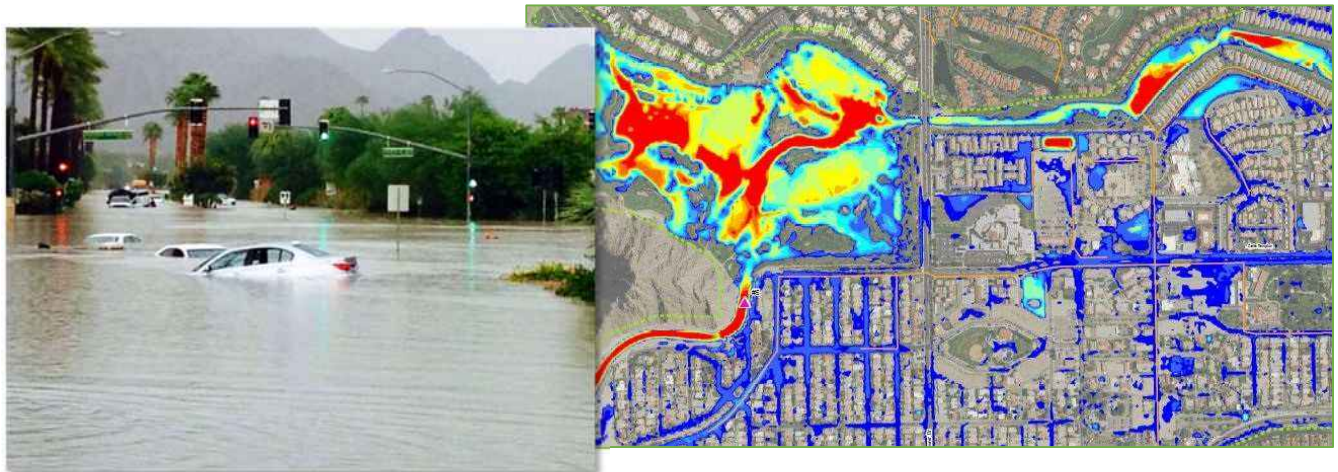
John McCarthy
Tom Ryan
Zach Snyder

SERVICE AREAS

- Hydrology analysis
- Storm drain hydraulics
- SWMM modeling
- Preliminary facility sizing
- Master plan preparation
- 1D/2D modeling
- Validation of model results
- Cost Estimates/Prioritization

BUDGET: \$320,000

COMPLETED: February 2017



Location of known flooding used to calibrate 1D-2D Model. Also a Priority project site.



Grand Terrace Focused Area Master Plan Update, Grand Terrace, CA

Q3 Consulting provided engineering services to update the "Pico" area of the City's master plan of drainage. The City's draft master plan update was never completed and lacked the necessary information for the required storm drain sizes associated with new development projects. The update for the Pico area included an advanced hydrology/hydraulic SWMM model that used a combination of 2-d surface flow analysis with a 1-d subsurface (storm drain) analysis. Due to the steep terrain, and gridded street network, a rain-on-grid approach was used for the developed urban areas to more accurately determine the stormwater runoff patterns. The rational method and unit hydrograph hydrology for the hillslopes tributary to the urban areas were prepared in accordance with San Bernardino County hydrology methods and incorporated into the advanced models.

The update included the evaluation of the existing watershed conditions to identify the deficiencies and flood prone areas. These areas were confirmed through discussions with City staff and review of historic flooding documentation. Q3 identified a set of potential alternatives and evaluated the effectiveness in the hydrology/hydraulic model. The results of the alternatives analysis runs were used to determine the most cost-effective solutions for the deficient areas. Alignments and facilities sizes were prepared for the recommended storm drain systems.

A focused master plan update report was prepared and processed for approval through the City.

CLIENT

Lewis Management Corp.
1156 N. Mountain Avenue
Upland, CA 91785
Mr. Adam Collier
909-946-7596
Adam.collier@lewismc.com

City of Grand Terrace
22795 Barton Road
Grand Terrace, CA 92313
Mr. Alan French
909-824-6621 x251
afrench@grandterrace-ca.gov

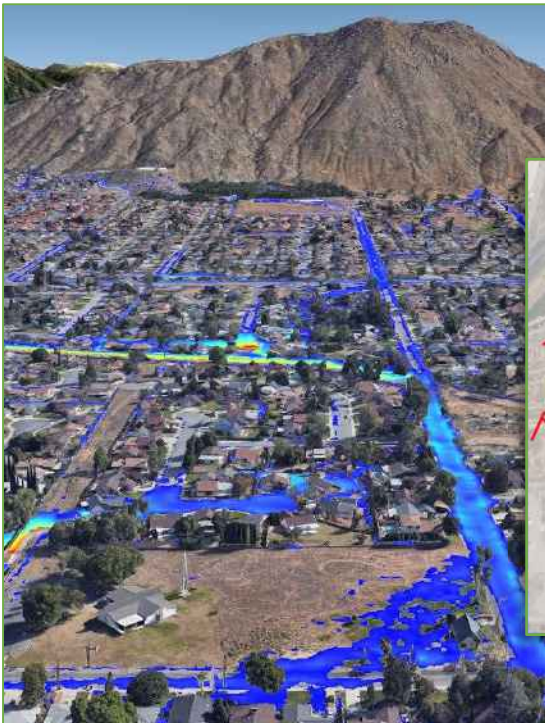
STAFF INVOLVED:

John McCarthy
Tom Ryan
Howard Barndt
Zach Snyder
Candace Tong

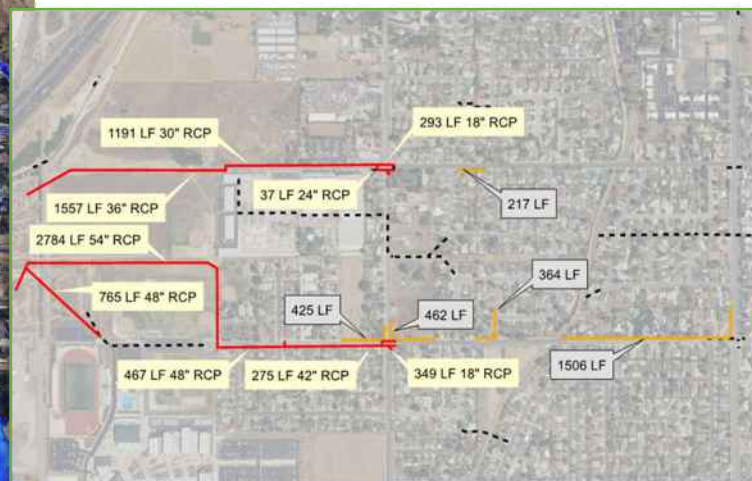
SERVICE AREAS

- Hydrology analysis
- Storm drain hydraulics
- 1D/2D flood routing
- Detention basin routing
- Preliminary facility sizing
- Master plan preparation
- Facility Cost Estimates

BUDGET: \$165,000
COMPLETED: January 2020



Results of 1- & 2-dimensional hydraulic analysis.



Recommended drainage facilities and sizes.



Redlands Drainage Master Plan, Redlands, CA

Q3 Consulting team members managed and prepared a drainage master plan for the city to update its drainage infrastructure and to identify regional drainage solutions to the city's flooding issues. The heavily developed and historical downtown portion of the city has been plagued by several large flood events during the past few decades, some resulting in more than four feet of water. The study developed a state-of-the-art drainage master plan to identify solutions for this issue. Services included advanced hydrologic and hydraulic modeling, flood control alternative evaluation, City-wide master drainage plan development and stakeholder coordination.

The team prepared hydrology and hydraulic analyses for the City in accordance with the procedures in the San Bernardino County Hydrology Manual and integrated the results with the County's previous hydrology for the regional drainage systems. A linked one-dimensional and two-dimensional model was prepared for the downtown area to evaluate surface and subsurface conveyance capacities. Multiple studies had been performed over the last few decades to try and find solutions to the downtown flooding, with no success. By using an advanced hydraulic model, we were able to identify major issues, previously unknown to the City, and develop mitigation alternatives that worked. Due to the historic nature of the downtown area, and the lack of options for implementing drainage infrastructure, it was crucial to use an advanced model to identify viable alternatives that were constructible and feasible.

Proposed Improvements included alternative evaluations and recommendations for the design of the historic Mill Creek Zanja Channel. The study prepared a prioritized ranking system for the proposed improvements. A major hurdle for the City was to gain the acceptance of the City Council and several outside stakeholders. Initially unsuccessful with traditional hydraulic output graphics, the team prepared a three-dimensional animation to help stakeholders understand the flood hazards and the benefits of the proposed improvements. The result was a unanimous vote to proceed with the next step in the funding process.

CLIENT

City of Redlands
35 Cajon Street
Redlands, CA 92373
Mr. Monty Morshed (no longer at City)
909-798-7584
mmorshed@cityofredlands.org

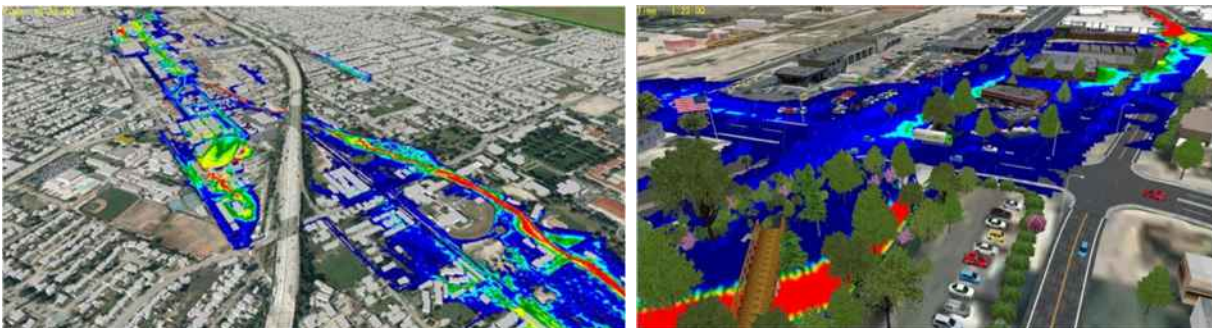
STAFF INVOLVED:

John McCarthy
Tom Ryan
Zach Snyder

SERVICE AREAS

- Urban watershed hydrology
- Hydrology and hydraulic analysis
- Coupled 1D/2D modeling
- Drainage facility alternative analysis
- Local and regional flood solutions
- Drainage Master Plan preparation
- Water Quality BMPs

BUDGET: \$325,000
COMPLETED: January 2015



Graphic results of 2-dimensional flood routing analysis used to develop the City's master plan update



Subconsultant References

Additional representative projects and references can be supplied at the request.

DSCE: CITY OF SUNNYVALE – GIS Data Migration & Support Services

Contact Name: Eric Evans, PE – Senior Civil Engineer

Telephone Number: (408) 730-7783 || Email: EEvans@sunnyvale.ca.gov

Description of Services: DCSE assisted the City of Sunnyvale with developing the GIS data for wastewater and storm water systems. A geodatabase was designed in Esri ArcGIS compatible format, which was reviewed and approved by the City. The immediate goal for the data was to be used as the foundation for hydraulic model, to be used in master planning and long-term goal is to serve as a repository of the City's assets. The data was converted using as-builts, City block maps, and red lines. This was further reinforced with data from field verifications. DCSE used data from manhole surveys and GPS locations to verify and validate the GIS data. DCSE delivered the data in geodatabase format, along with documentation, and maps. DCSE continues to support the City with GIS updates as needed.

DSCE: SIMI VALLEY DEPT. OF PUBLIC WORKS – Enterprise GIS

Contact Name: Aaron Russell, M.A., G.I.S.P. - GIS Manager

Telephone Number: (805) 583-6777 || Email: arussell@simivalley.org

Description of Project: DCSE assisted the City of Simi Valley with several GIS projects since 2013. These include GPS data collection for City wide area, data migration for water system, developing yard piping layers, migration to Local Government Information model for Sewer system, and integration with Hansen. Most recently, DCSE assisted the City in upgrading their Enterprise GIS to ArcGIS 10.6.1 platform for supporting integration with Tyler Energov. DCSE started with an inventory of the existing GIS data, and services. The latest enterprise GIS was installed on a parallel server, with Portal, ArcGIS Server, and SDE. This included setting up users and their corresponding privileges. A collaboration was also created to facilitate sharing between the City's ArcGIS Online and Portal.

Huitt-Zollars: Citywide BMP Implementation Study & McCallen Park Improvements



Huitt-Zollars prepared a Trash Compliance Master Plan for the City of Huntington Beach to meet the requirements of the Statewide Trash Amendments. A citywide

desktop analysis of the entire storm drain analysis resulted in the identification of more than 70 retrofit opportunities. An emphasis on Regional BMPs, including infiltration BMPs, biofiltration BMPs, and large-scale hydrodynamic separators will help minimize long-term maintenance costs. A BMP sitting feasibility was performed to determine pollutant load reduction, flow capacity, flooding impacts, and traffic impacts during construction. BMP opportunities were then be validated by assessing the presence of potential easements, utility conflicts, and hydraulic gradients. Preliminary engineer's estimates of probable costs and fact sheets were created for each opportunity. We helped prepare a successful grant application to OCTA, which has led to preparation of design plans for the Regional BMP at the McCallen Park.

CLIENT

City of Huntington Beach
2000 Main Street
Huntington Beach, CA
Mr. Jim Merid
714-374-1548

STAFF INVOLVED:

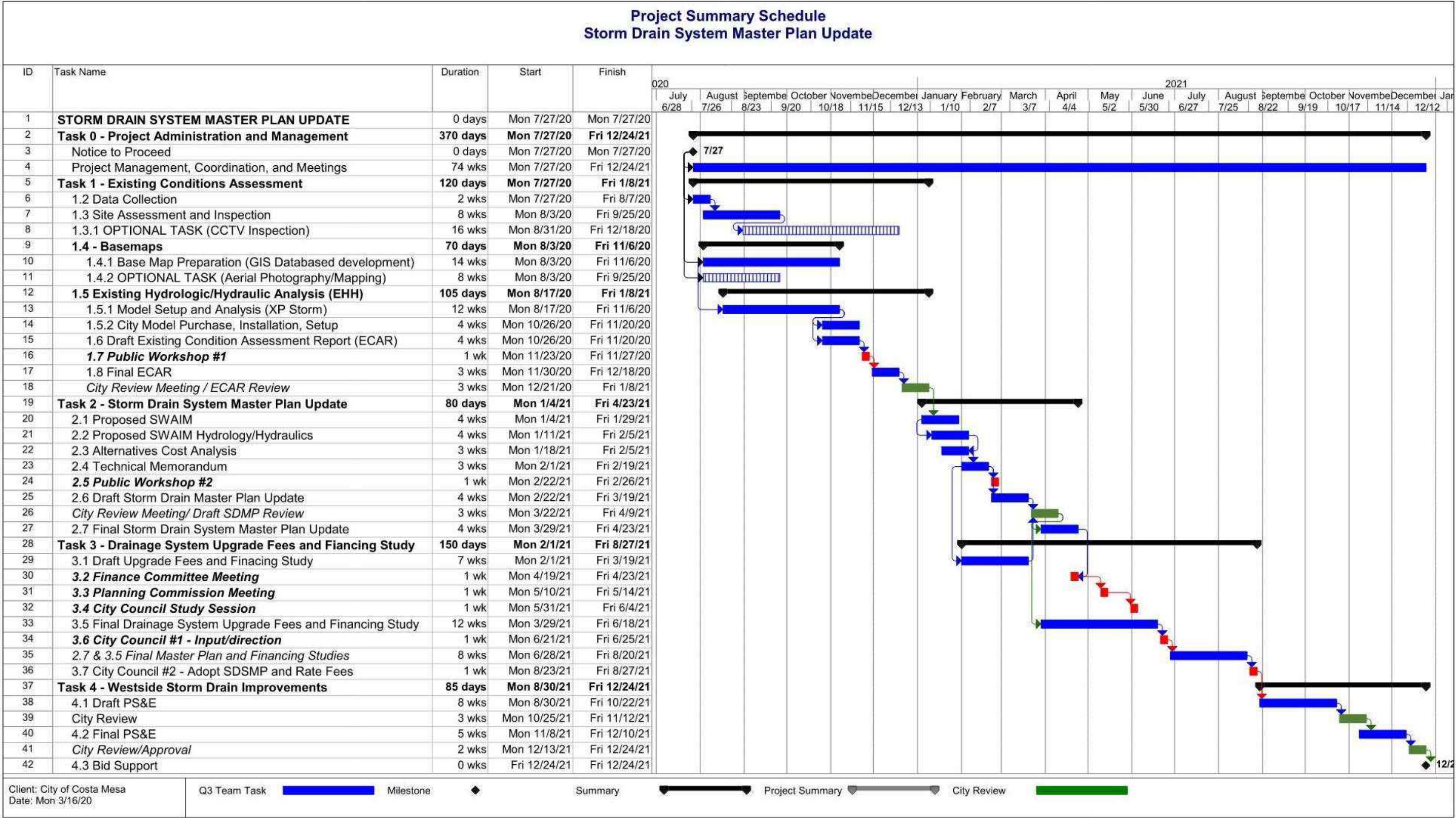
Remi Candaele

SERVICE AREAS

- MS4 Permit compliance
- Multi-benefit BMPs
- Master Plan implementation
- Grant funding



D. Schedule of Work





Additional Information

1. Detailed Resumes
2. Addendum 1 & Addendum 2

TOM J. RYAN, PE

PROJECT MANAGER

Mr. Ryan has more than 23 years of engineering experience and 11 years of project management experience. Project experience includes preparation of storm water master plans, flood control and storm drain plans, advanced hydrologic/hydraulic analyses, FEMA flood studies, channel restoration, and water quality planning and design. In recent years, Tom's work in advanced urban area dynamic hydraulic modeling and public awareness has included first-of-its-kind flood routing simulations that resulted in award winning projects and numerous national and local presentations and publications.

Project Experience

Leucadia Area Watershed Master Plan, Encinitas, CA. *City of Encinitas.* Project Manager for the development of a comprehensive master plan for the Leucadia and Old Encinitas areas of the City. Hydrology and hydraulics being prepared using the XPStorm program and includes incorporation grey and green infrastructure (LID and water quality BMPs) in the master plan recommendations. Hydrology methods using rain-on-grid approach to develop a complete GIS-based advanced model of the City. Work included preparing GIS database for existing and proposed drainage systems.

Focused Drainage Master Plan, Grand Terrace, CA. *Lewis Management Corp. & City of Grand Terrace.* Project Manager. Q3 is updating the "Pico" area of the City's master plan of drainage. The update for the Pico area included an advanced hydrology/hydraulic model (XPStorm) that used a combination of 2-d surface flow analysis with a 1-d subsurface (storm drain) analysis. A rain-on-grid approach was used for the developed urban areas to more accurately determine the stormwater runoff patterns. The hydrology for the hillslopes tributary to the urban areas were prepared in accordance with San Bernardino County hydrology methods. The update included the evaluation of the existing watershed conditions to identify the deficiencies and flood prone areas. Q3 identified a set of potential alternatives and evaluated the effectiveness in the hydrology/hydraulic model. The results of the alternatives analysis runs were used to determine the most cost-effective solutions for the deficient areas. Alignments and facilities sizes were prepared for the recommended storm drain systems. A focused master plan update report is being prepared and processed for approval through the City.

Master Plan of Drainage, Redlands, CA. *City of Redlands.* Project Manager. The team identified existing drainage deficiencies and sizing for proposed replacement facilities to alleviate flooding for the designated storm events using a 1-d/2-d advanced modeling system (XPSWMM). Historical floods for the City of Redlands included more than three feet of runoff inundating the downtown portion of the city. As part of this project, a hydraulic model was prepared which includes a fully hydrodynamic 2-dimensional analysis of the surface runoff, coupled with the subsurface facilities, which was used to identify the most feasible flood mitigation alternatives. A 3D animation was created to demonstrate the results of the downtown flooding (first of its kind for urban modeling) for review by stakeholders.

City of Buena Park Master Plan of Drainage, Buena Park, California. As project manager, managed team that performed a full field evaluation of the drainage infrastructure of the City of Buena Park. Using a state-of-the-art GIS/GPS system to field identify and map each facility, a GIS database of the city's drainage infrastructure was developed. Calculations of the existing facility capacities and proposed

Title: Principal

Years of Experience: 24

Registration

Civil Engineer, CA #61701 – 2000

Education

M.S., Royal Institute of Technology, Stockholm, Sweden, Environmental Engineering – 1997

B.S., California State University, Long Beach, Civil Engineering – 1995

Professional Affiliations

Member, American Society of Civil Engineers (ASCE)

Phi Beta Delta Honor Society for International Scholars, Member



infrastructure were prepared for all main storm drains. Hydrology was performed using AES Software for the 10-, 25-, and 100-year design storms. Hydraulics were performed using WSPG, Flowmaster, and XPSWMM. Prepared a citywide facility prioritization map and system.

La Quinta Focused Drainage Study, La Quinta, CA. *City of La Quinta.* Project Manager responsible for the preparation of the hydrologic and hydraulic models that encompassed the majority of the City. Mr. Ryan used a SWMM based 1-d/2-d model to create a comprehensive model capable of analyzing the entire City's storm drainage system in response to a 500-year storm event using XPSWMM. The study was triggered after two years of consecutive extreme storm events. The largest storm event, September 9th, 2014 dropped approximately 3-inches of rain in one hour causing multiple locations to flood. The drainage system was overrun by the thunderstorm's flash flood-like runoff that was a product of heavy rain, short duration, and adjacent hillside runoff. The models were prepared using data from the 2014 storm event and flood depths in the model correlated to actual storm photos. The model was then used to identify drainage improvements in five locations within the City. Mr. Ryan and Mr. McCarthy were responsible for developing the design alternatives for four of the locations. The use of these models showed more realistic design alternatives than using standard H&H models.

Master Plan of Drainage Update, Yucaipa, CA. *City of Yucaipa.* As Project Manager, provided engineering services to update Yucaipa's Master Plan of Drainage. The update included development of unit hydrographs for calculation of peak flow rates along Wilson and Wildwood Creeks within the city limits. The unit hydrographs were prepared in accordance with San Bernardino County hydrology methods. Included incorporation of existing and future stormwater detention basins proposed for the watersheds. Identified the configuration of the existing basins based on available as-built plans and data. Preliminary stage-storage and stage-discharge relationships were prepared for the proposed basins based on preliminary sizes and estimated storage volumes provided by the city.

North Fontana Master Plan, Fontana, CA. *Lewis Management Corp.* Project Manager for the preparation of an updated storm drain master plan for the northern area of the City using a combination of XPStorm for 1-d/2-d evaluations of targeted areas and SWMM5 for the storm drain infrastructure. The project includes hydrology for the onsite and offsite areas draining to the City. The hydrology results will be used to develop a SWMM hydrodynamic model of the City's existing drainage infrastructure. The results will be used to identify existing deficiencies and develop recommended improvements.

Tustin Legacy – Drainage Master Plan and Runoff Management Plan, Tustin, CA. Lead Engineer. Mr. Ryan prepared a Master Plan of Drainage and comprehensive runoff management plan (RMP) for the redevelopment of the 1,650-acre Tustin Air Base. Existing watershed conditions were documented, and a plan was outlined to mitigate development runoff through appropriate backbone infrastructure to afford flood protection. The plan included the developing a conceptual plan of drainage for the Tustin Legacy area, and preliminary plans for 13,400 linear feet of regional channel improvements adjacent to the project site. Work also included comparative analysis using SWMM 1-dimensional hydrodynamic model versus traditional hydraulic models for the design of over a mile of large storm drain culverts.

North Eastern Sphere Annexation Area, San Bernardino, CA. *Sargent Town Planning, LLC.* Mr. Ryan provide hydrologic modeling services for the EIR and associated technical studies for the completion of pre-zoning and annexation of a portion of the City of Rancho Cucamonga's northern sphere of influence. The area to be annexed is currently within the jurisdiction of the County of San Bernardino and consists of 4,115 acres of mostly undeveloped space. The City envisions a significant portion, approximately 2,915 acres, of the northerly portion of the annexation area to remain as open space area or allow for very limited development. The remaining 1,200 acres in the southern portion of the annexation area is envisioned to be developed as a residential "village" with a distinct sense of place and use of sustainability principles, such as walkable, compact design, mix of uses, and multi-modal transportation options.

JOHN A. MCCARTHY, PE, CFM

PRINCIPAL IN CHARGE

Mr. McCarthy is experienced in the development, final design, and construction of flood control and drainage projects for public works and private sector projects. He has completed storm water master plans for numerous cities and large-scale development projects throughout California. Mr. McCarthy has extensive experience in planning and design projects within the County of Orange. His long history of work with Orange County Public Works including acting a Program Manager on On-Call Flood contracts for over 16-years. This has resulted in strong relationships with the management and staff. Mr. McCarthy will act as principal in charge and a secondary point of contact for the City on this project.

Project Experience

Coachella Stormwater Master Plan, Coachella, CA. *City of Coachella.* Project Manager. Mr. McCarthy is currently managing the preparation of hydrology and hydraulic technical studies for the preparation of a stormwater master plan for the City. The project includes updating the hydrology for the on-site and offsite areas draining to the City. The hydrology results will be used to develop a hydrodynamic model of the City's existing drainage infrastructure. The results will be used to identify deficiencies and areas subject to flooding. Alternatives will be identified and evaluated for use in the proposed system including storm drain pipes, channels, detention basins, and infiltration basins. The EPA's SWMM will be used for the hydrodynamic analysis. The work includes capital and life-cycle costs for the system and the identification of a prioritization and phasing plan for the recommended improvements.

Master Plans of Drainage, Anaheim, CA. *City of Anaheim.* Project Manager and Principal in Charge for the preparation of 2 drainage master plans for the City. The master plans were prepared for the "North and West Santa Ana Tributary Areas," and the "South and East Santa Ana River Tributary Areas." Work included hydrology and hydraulic analyses, drainage deficiencies evaluation, recommended facilities, cost estimates, and prioritization schedule. GIS based maps were prepared for the recommended facilities and the work was summarized in a comprehensive master plan report.

Orange County Flood Control On-Call Contract, Orange County, California. *Orange County Public Works.* Program Manager. Responsible for project management. Provided flood control planning and engineering services to support flood control. The projects included: San Diego Creek Master Plan Update; Local Drainage Manual Update; Santiago Creek Scour Analysis Plan Check; San Diego Creek Restoration Plans and Operations and Maintenance Manual; Foothill Basins Restoration Plans and Operations and Maintenance Manual; and Santa Ana River Reach 9 SARI Line Protection. The projects included flood control, water quality, and wildlife corridor or habitat conservation and protection. Mr. McCarthy served as Program Manager to OCPW for over 16 years.

Drainage Master Plan, Redlands, CA. *City of Redlands.* Principal-In-Charge. Responsible for overseeing project. The team developed a drainage master plan for the city to update its drainage infrastructure and to identify regional drainage solutions to the city's flooding issues. Services included hydrology, advanced 1 and 2-dimensional hydraulic modeling, stormwater planning, best management

Title: Principal

Years of Experience: 30

Registration

Professional Engineer – Civil,
CA #47583 – 1991

Certified Floodplain Manager –
#05-01596 – 2005

Professional Engineer – Civil,
AZ #51805 – 2010

Education

B.S., Civil Engineering, California
State Polytechnic University, San
Luis Obispo – 1989

Certificate, Light Construction
and Development Management
– 1997

Professional Affiliations

Member:

Association of State Floodplain
Managers (ASFPM)

American Society of Civil
Engineers (ASCE)

Floodplain Management
Association (FMA)



practice (BMP) identification and evaluation, cost estimates, master plan report, and stakeholder coordination.

Pine Avenue Widening, Chino, CA. *Lewis Management Corp.* Drainage Manager. Q3 Team members prepared hydrology and hydraulic analysis and drainage design for the widening of Pine Avenue Phase 3 in the City of Chino. The widening is being completed to support the increased traffic demand as a result of the build out of the Chino Agricultural Preserve area. Hydrology studies were completed for the on-site drainage and coordinated with the regional master plan studies that were previously prepared for the Preserve area. The project includes the construction of new roadway culverts for Line J, and the team identified regional flow rates, completed hydraulic modeling, and prepared construction documents for the facilities.

Storm Water Master Plan, Rancho Palos Verdes, CA. *City of Rancho Palos Verdes.* Project Manager. Provided drainage planning management for the overall Stormwater Master Plan for the City. The flood control portion of the report includes the use of the XP-SWMM model for both hydrology and hydraulics. The Storm Water Master Plan includes the development of a GIS database for the storm drain inventory including a Facility Mapping Tool which is being utilized to gather field data and keep the City informed of the field work schedule and finding. The hydrology and hydraulics modeling was completed utilizing GIS, XPSWMM, and XPWSPGW. This master plan includes the integration of stormwater quality retrofit opportunities. The Master Plan will ultimately provide the City with a comprehensive "living" storm water master plan. The master plan also includes a project prioritization scheme and a Capital Improvement Plan.

South San Francisco Storm Drain Master Plan. South San Francisco, CA. *City of South San Francisco.* Technical Manager for the preparation of a Storm Drain Master Plan for the City. The storm drain master plan included the development of a GIS database for the storm drain inventory based on available as-built plans and field documentation. Data gathering for the project includes filling in missing as-built data such as inverts and facility naming. The hydrology and hydraulic modeling were completed utilizing GIS and XP Solutions SWMM program. This master plan includes the integration of potential trash capture devices and included a 1-year 1-hour storm event. The capacity of the existing systems were evaluated and recommended facilities were identified for deficient systems. The master plan also includes a project prioritization scheme and a Capital Improvement Plan.

Sundance Master Plan of Drainage and Regional Flood Control Facility Design, Beaumont, CA. *Pardee Homes.* Drainage Manager. Responsible for drainage design. Mr. McCarthy prepared the drainage master plan for the Sundance Development encompassing 1,195-acres of mixed-use development. The plan identified regional and local storm drain facilities for the site, including the construction of two regional storm drain channels and multiple detention basins. Final design studies were prepared, including hydrology, hydraulics, and flood routing for the regional systems and detention basins and prepared a conditional letter of map revision and letter of map revision for the resulting floodplain modifications.

La Entrada Specific Plan Stormwater Master Plan, Coachella Valley, CA. *PSAV, LLC.* Drainage Manager. Responsible for hydrology/hydraulic studies and storm drain master plan for the specific plan area. The project site includes seven regional conveyances and coalescing alluvial fans tributary to the Eastside Dike along the Coachella Canal. Mr. McCarthy completed regional hydrology studies for the 50.6 square mile watershed, and 1D and 2D flood routing analyses to support the technical studies and identified the recommended improvements and project mitigation measures for the project site development. Mr. McCarthy identified a whole fan flood hazard management program and developed the alignment and conceptual design for seven regional master planned channels and extensive storm drain systems through the site.

Avenue E and Bryant Avenue Stream Crossings, Yucaipa, CA. *City of Yucaipa.* Project Manager. Mr. McCarthy was responsible for the preparation hydrology, hydraulics, and scour studies for the design of ultimate stream crossings for these roads over Wilson and Wildwood creeks in the City. Each project consisted of converting a low water crossing into multiple-cell RCB crossing. The team provided technical design studies and the final design for the channel and roadway improvements

Howard J. Barndt, PE

Hydrology & Hydraulics

Mr. Barndt is experienced in regional and local hydrology studies, urban drainage design, regional and local flood control design, flood- and dam-inundation studies, 1- and 2-dimensional hydraulics, sediment transport and scour analysis, floodplain management studies, reservoir operations, and dam/levee breach and inundation studies. Mr. Barndt's extensive work in the Orange County (all of Southern California) region has given him an intimate knowledge of hydrologic conditions and the County's regulations and guidelines.

Project Experience

Leucadia Area Watershed Master Plan, Encinitas, CA. *City of Encinitas.* Technical lead and oversight for the development of a comprehensive master plan for the Leucadia and Old Encinitas areas of the City. Mr. Barndt was in charge of developing the GIS based rainfall raster files for the XPStorm models to run rain-on-grid. This approach allowed Q3 to develop hydrology for the entire City based on existing rain gage data. Hydrology and hydraulics being prepared using the XPStorm program and includes incorporation grey and green infrastructure (LID and water quality BMPs) in the master plan recommendations. Hydrology methods using rain-on-grid approach to develop a complete GIS-based advanced model of the City. Work included preparing GIS database for existing and proposed drainage systems.

Drainage Master Plan for North, South, and West Santa Ana River Tributary Areas, Anaheim, CA. *City of Anaheim.* Project Engineer responsible for performing hydraulic deficiencies studies of existing storm drain systems; selected by the City of Anaheim to prepare an updated comprehensive storm drainage master plan for the North and West Santa Ana River tributary areas. The new plan was based on previous studies for the areas, updated to account for current hydrology methods, new hydrology modeling in areas without existing studies, improvements to the storm drain and tributary channel systems, and the latest land use planning. The new plan modeled existing storm drainage systems from as-built plans and identified deficiencies in the existing street sections and storm drain systems based on the results of the hydrology and hydraulic analyses. Alternatives to improve existing deficiencies and recommended improvements and cost estimates were developed and incorporated into an update Drainage Master Plan.

Tustin Legacy Runoff Management Plan, Tustin, CA. *City of Tustin/Centex* – Part of the team responsible for the development of the runoff management plan for the reuse of the 1,600-acre Tustin Marine Corps Air Station (MCAS). The project included the development of a storm water runoff system based on the proposed land uses for the base reuse. Assessed existing and proposed condition hydrology and developed regional and master plan level drainage improvements for project implementation and mitigation of project impacts. The project included the development of XP-SWMM analysis for the local drainage systems, which tie into the regional channels.

North Fontana Master Plan, Fontana, CA. *Lewis Management Corp.* Technical Manager for the preparation of an updated storm drain master plan for the northern area of the City using a combination of XPStorm for 1-d/2-d evaluations of targeted areas and SWMM5 for the storm drain infrastructure. The project includes hydrology for the onsite and offsite areas draining to the City. The hydrology results will be used to develop a SWMM hydrodynamic model of the City's existing drainage infrastructure. The results will be used to identify existing deficiencies and develop recommended improvements.

Title: Senior Technical Manager

Years of Experience: 21

Years at Q3: 2

Registration

Civil Engineer, CA #65914 – 2004

Education

B.S., Civil Engineering, California State University, Long Beach – 1999

M.S., Civil Engineering (Water Resources), California State University, Long Beach – 2004

Zach Snyder, PE

Hydrology and Hydraulics/CIP

Mr. Snyder is a project engineer with a diverse background and an emphasis in stormwater resources. An out of the box thinker, he uses all the tools at his disposal to come up with creative and cost effective solutions to urban flooding. His experience includes stormwater hydraulics and hydrology for drainage master plans, low impact (LID) drainage design, flood control system plan design, 1- and 2-dimensional hydrology/hydraulic analysis, and floodplain analysis and mapping. He has successfully prepared drainage master plans for the Cities of Encinitas, Redlands, Grand Terrace, La Quinta, Palm Desert, and Santa Ana. Zach has tremendous expertise in two-dimensional (and linked 1D/2D) advanced stormwater hydrologic and hydraulic modeling using programs, such as SWMM and with AutoCAD Civil3D.

Title: Project Engineer

Years of Experience: 6

Years at Q3: 1

Registration

Civil Engineer, CA #47583 – 2016

Education

B.S., California Polytechnic State University at Pomona, Civil Engineering – 2014

Professional Affiliations

Member, American Society of Civil Engineers (ASCE)

Project Experience

Leucadia Area Watershed Master Plan, Encinitas, CA. *City of Encinitas.* Project Engineer and for the development of a comprehensive master plan for the Leucadia and Old Encinitas areas of the City. Mr. Snyder is the lead modeler for the project responsible for data input into the XPStorm program. This approach allowed Q3 to develop hydrology for the entire City based on existing rain gage data. Hydrology and hydraulics being prepared using the XPStorm program and includes incorporation grey and green infrastructure (LID and water quality BMPs) in the master plan recommendations. Hydrology methods using rain-on-grid approach to develop a complete GIS-based advanced model of the City. Work included preparing GIS database for existing and proposed drainage systems.

Focused Drainage Study, La Quinta, CA. *City of La Quinta.* Engineer responsible for the preparation of a linked 1D/2D model using XPSWMM in the City of La Quinta encompassing three square miles. This innovative model included in depth topography, storm drain information, hydrology, and rainfall. Hydrology and hydraulic analysis were prepared for an area of the City hardest hit by extreme storm events in 2013 and 2014. The study evaluated the flood risk associated with extreme storm events and identified potential drainage improvements to reduce future flood damage and increase public safety if or when extreme storm events occur. Zach prepared the offsite hydrology using County Hydrology Manual procedures and the onsite hydrology using a direct rainfall method applied over the study area. This work led to the ultimate design of two regional flood control and water quality facilities.

Focused Drainage Master Plan, Grand Terrace, CA. *Lewis Management Corp. & City of Grand Terrace.* Project Engineer. Q3 updated the "Pico" area of the City's master plan of drainage. The update for the Pico area included an advanced hydrology/hydraulic model (XPStorm) that used a combination of 2-d surface flow analysis with a 1-d subsurface (storm drain) analysis. A rain-on-grid approach was used for the developed urban areas to more accurately determine the stormwater runoff patterns. The hydrology for the hillslopes tributary to the urban areas were prepared in accordance with San Bernardino County hydrology methods. The update included the evaluation of the existing watershed conditions to identify the deficiencies and flood prone areas. Q3 identified a set of potential alternatives and evaluated the effectiveness in the hydrology/hydraulic model. The results of the alternatives analysis runs were used to determine the most cost-effective solutions for the deficient areas. Alignments and facilities sizes were prepared for the recommended storm drain systems. A focused master plan update report is being prepared and processed for approval through the City. Mr. Snyder was the lead modeler using XPStorm.

Candace Tong, PE

Hydrology and Hydraulics/CIP

Ms. Tong earned a Bachelor of Science degree in Civil Engineering from the University of California, Irvine and has over four years of professional experience encompassing hydrologic and hydraulic modeling and calculations for storm drain and channel design, water quality compliance, urban land development, and the design of drainage improvements. Her experience includes stormwater hydraulics and hydrology, storm drain and flood control system plan design, Best Management Practice design, and 2-dimensional flood routing studies, and GIS. She has successfully prepared drainage design studies and final design plans for various stormwater master plan and land development projects. Candace is experienced with Orange County standards for hydrology and hydraulic design of storm water facilities.

Title: Design Engineer

Years of Experience: 4

Years at Q3: 1

Registration

Civil Engineer, CA #90444 – 2019

Education

B.S., University of California,
Irvine, Civil Engineering – 2014

Professional Affiliations

Member, American Society of
Civil Engineers (ASCE)

Project Experience

Leucadia Area Watershed Master Plan, Encinitas, CA. *City of Encinitas.* Design Engineer for the development of a comprehensive master plan for the Leucadia and Old Encinitas areas of the City. Candace was responsible for data input, GIS database development and model input. Hydrology and hydraulics being prepared using the XPStorm program and includes incorporation grey and green infrastructure (LID and water quality BMPs) in the master plan recommendations. Hydrology methods using rain-on-grid approach to develop a complete GIS-based advanced model of the City. Work included preparing GIS database for existing and proposed drainage systems.

Chino Agricultural Preserve Master Plan Updates, Chino, CA. Design Engineer providing engineering services to update the City's drainage master plan for the Preserve area. Responsible for updating the watershed boundaries and hydrology studies based on recent development projects and revising storm drain hydraulics and sizing to incorporate installed facilities and changes to land use assumptions and drainage patterns. Prepared hydrology in accordance with San Bernardino County Hydrology Manual and storm drain hydraulics using the WSPG computer program.

Pine Avenue Widening- Regional Drainage Improvements, Chino, CA. *Lewis Management Company.* Engineer working on the preparation hydraulic analysis and water quality facilities for the drainage design for the widening of Pine Avenue in the City of Chino. The widening is being completed to support the increased traffic demand as a result of the build out of the Chino Agricultural Preserve area. Candace was responsible for the preparation of storm drain and water quality improvements associated with the widening.

KPC Coachella Specific Plan Stormwater Master Plan, Coachella, CA. *KPG Group.* Design Engineer responsible for the preparation of technical studies to support the drainage and flood protection master plan for a proposed 2,800-acre development. Work includes preparing pre- and post-condition hydrology for the project site and hydraulic analyses. Prepared 2D model to analyze the flood flow characteristics in conjunction with applying storage and diversion strategies to mitigate potential flood damage. The results are being used to develop the drainage and flood control master plan.

Whitewater Rivers Crossings Project, CA. *The Kiner Group.* Design Engineer responsible for preparing preliminary plans for proposed channel improvements to support the 2-mile channel improvement project. Her work included creating channel improvement plans, hydraulic models, and assistance with the preparation of the Preliminary Design Report.

Alison Bouley, PE

PROJECT MANAGER



Alison is a Senior Director in our Municipal and District Finance Group and has 20 years of experience in providing program management and financial engineering services to cities, counties, and special districts on a wide variety of project types, including AB1600 development impact fees. She is currently working on fee programs throughout the state including the City of Costa Mesa's Development Impact Fee Study.

RELEVANT EXPERIENCE

- **City of Costa Mesa.** *Development Impact Fee Update.* Project Director. Harris is currently updating the City's development impact fee program for Traffic, Storm Drainage, Parks, Government Buildings, and Public Safety. Harris is working with the City to identify the projects that need to be funded from the fees and is developing a defensible methodology for each fee. Harris will prepare and give presentations to stakeholder groups and City Council.
- **City of El Cajon.** Development Impact Fee Program. Project Director. Harris is currently developing an impact fee program for the City of El Cajon. The City does not currently have an impact fee program and Harris is analyzing potential fees. Harris will prepare a summary of the potential fees and a comparison to surrounding agencies and present the fees to City Council for consideration.
- **City of Oxnard,** *Development Impact Fee Update.* Project Director. Harris is finalizing a comprehensive update of the City's development impact fee program, downtown parking fee and affordable housing fee. The development impact fees include traffic, storm drainage, park development, public safety, public buildings, utility undergrounding, and art in public places. Harris has also prepared the annual report for the last two years.
- **City of Millbrae,** *Development Impact Fee Study.* Project Director. Harris is currently preparing a comprehensive Development Impact Fee Study for the City of Millbrae. The City does not currently collect impact fees and the city is working with them in establishing a comprehensive fee program as well as a maintenance CFD.
- **City of Tracy,** *Citywide Master Plans and AB1600 Fee Studies and Ongoing Program Management.* Project Manager. Harris managed the update of the City's master plans for water, recycled water, wastewater, storm drainage, traffic, public facilities, public safety, and parks. The team prepared AB1600 studies for public facilities, public safety and parks and coordinated with the City's technical consultants on the water, wastewater, recycled water, storm drainage and traffic studies. Harris continues to provide ongoing support to the City in support of their development impact fee program including assisting with annual reports.
- **City of Lodi,** *Infrastructure Master Plan and Impact Fees.* Project Manager. Harris developed new master plans for storm drainage, water, wastewater, traffic, police, fire, general facilities, parks, bike paths, and electrical utility. Harris developed costs for facilities and calculated development impact fees under AB1600, as well as created a finance plan that summarized the fees, gave cash flow projections, and summarized important implementation measures.
- **City of Rancho Cordova.** *Zone 11 Storm Drainage Fee.* Project Manager. Harris assisted the City in developing a storm drainage fee in support of their detachment from Sacramento County's storm drainage fee. Harris reviewed the storm drainage technical memorandum and developed a methodology for calculating the fee. Harris will present the fees to the development community and City Council at upcoming meetings.

EDUCATION

BS, Civil Engineering
BS, Engineering Management

REGISTRATIONS

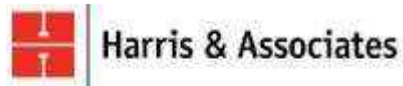
Professional Civil Engineer, CA
#61383

AFFILIATIONS

American Society of Civil Engineers (ASCE)
California Society of Municipal Finance Officers (CSMFO)
Growth and Infrastructure Consortium (previously Impact Fee Roundtable), Board Secretary

Adam Marston, LEED Assoc.

PROJECT ANALYST



Adam has been involved in development impact fee studies throughout California including his current work on Costa Mesa's Development Impact Fee Update. He has also been involved in a number of utility undergrounding master plans and funding studies. Adam has direct experience working as an integral part of a city's Community Development Department. He is a versatile team-player, focused on connecting with clients and stakeholders alike to deliver a final product reflective of a collective vision of the community.

RELEVANT EXPERIENCE

- **City of Costa Mesa.** *Development Impact Fee Update.* Project Manager. Harris is currently updating the City's development impact fee program for Traffic, Storm Drainage, Parks, Government Buildings, and Public Safety. Harris is working with the City to identify the projects that need to be funded from the fees and is developing a defensible methodology for each fee. Harris will prepare and give presentations to stakeholder groups and City Council.
- **City of Rancho Cordova.** *Zone 11 Storm Drainage Fee.* Project Analyst. Harris assisted the City in developing a storm drainage fee in support of their detachment from Sacramento County's storm drainage fee. Harris reviewed the storm drainage technical memorandum and developed a methodology for calculating the fee. Harris will present the fees to the development community and City Council at upcoming meetings.
- **City of Lodi,** *Impact Fees Update.* Project Analyst. Adam served as the lead for the five year update to the City's impact fee program. Adam updated land use information, cost estimates, fund balances and calculated new fees. Adam also prepared a new fee for the recycled water system. Adam presented the information at a City Council workshop and will present the final information for adoption.
- **City of Millbrae,** *Comprehensive Development Impact Fees Study.* Project Analyst. Harris is working with the City to create a comprehensive development impact fee program including fees for transportation, water and wastewater, storm drainage, park and recreation, libraries, affordable housing, public buildings, and city beautification. The City also retained Harris to create a maintenance CFD to offset the ongoing fiscal impacts of new development.
- **City of Tracy,** *NEI Water and Sewer Fees.* Project Analyst. Harris prepared new water and sewer fees for the NEI area within the City of Tracy. Harris reviewed the technical studies for water and sewer, determined the fee methodology, prepared the Nexus Study, and presented the fees at City Council.
- **City of Sacramento,** *Jacinto Creek Development Impact Fee Update.* Project Manager. Adam managed the update to the Jacinto Creek Finance Plan. The finance plan includes traffic improvements, storm drainage improvements, water improvements, and planning fees. The update included reviewing the project status of each project, updating costs, updating outstanding credit obligations, re-calculating the fees and preparing a new nexus study.

EDUCATION

BS, City and Regional Planning

CERTIFICATIONS

LEED Green Associate #11033913



HARITHA VENDRA P.E., GISP, M.S.

P: 949.465.3400 || E: hvendra@dcse.com

■ GIS Developer

■ PROFESSIONAL REGISTRATIONS

- **Registered Civil Engineer – California #C 85404**
- **Certified Geographic Information Systems Professional - GISP Certificate #90290**

■ EDUCATION

- **M.S., Civil Engineering – Water Resources - University of Texas, Arlington – 2001**
- **B.S., Civil Engineering - Osmania University (Hyderabad, India) – 1996**

■ CERTIFICATIONS

- **InfoWater Water Distribution Modeling - MWH Soft Inc.**
- **Master Modeler in Storm Sewer Design - Haestad Methods Inc.**

■ AFFILIATIONS

- **American Water Works Association (AWWA)**

■ SUMMARY

Ms. Vendra has over 17 years of experience in Geographic Information Systems (GIS) and hydraulic modeling. She is highly experienced in using GIS, CAD and modeling software for design and analysis. She has analyzed data for more than 60 municipal agencies in the past several years for data conversion, migration and workflow designs. She has also presented several papers at conferences on Enterprise GIS Development.

■ SELECTED PROJECT EXPERIENCE

■ **Central Arizona Water Conservation District - GIS Modernization: Custom Web App Builder Widget Development**

Ms. Vendra acted as GIS Lead for this project, which involved the development of widgets that provided functions by user role and could enable internal employees outside of IT to build their own maps and queries. The Web App Builder Widgets to provide functionality that upgraded their existing viewers to template-based, web-enabled configurable mapping applications integrated seamlessly across all departments within the District. In her role, Ms. Vendra was responsible for configuration, documentation, and testing aspects of the project.

■ **Irvine Ranch Water District - GIS Conversion**

DCSE was tasked with converted the Irvine Ranch Water District's GIS for basemap, potable water, wastewater, and recycled water from legacy GIS format and As-Builts to a Geodatabase. Ms. Vendra was responsible for analyzing the District's existing data and developing a migration plan from coverage format to Geodatabase and was also involved in the Geodatabase design. Ms. Vendra also worked on developing specs for the District's editing tools, assisting in the setup of the District's GIS environment in ArcSDE.

■ **Moulton Niguel Water District - Asset Management-Enabled GIS**

For Moulton Niguel Water District, DCSE developed an asset management-enabled geodatabase as well as a robust synchronization tool that kept GIS data and the assets data in sync. Ms. Vendra was responsible for developing the specs of the tool, as well as testing, installation and training at client site.

■ **City of Simi Valley Water System - GIS Upgrades**

DCSE assisted the City of Simi Valley in upgrading their Enterprise GIS from 10.3 to the latest from ArcGIS Enterprise. Ms. Vendra coordinated the upgrade and performed the installations and configuration – including ArcGIS Server, Enterprise Geodatabases, and ArcGIS Portal.

■ **City of Los Angeles (Bureau of Sanitation) - Enterprise GIS**

DCSE is assisting the City of Los Angeles (Bureau of Sanitation) with upgrading their Enterprise Geographic Information System. Ms. Vendra was responsible for upgrading the geodatabase to the latest version of ArcGIS and migrating the



data. She also uploaded the GIS services to the City's ArcGIS Server and deployed them through apps on ArcGIS Online. Ms. Vendra then set up access to Sewer CCTV Videos using web maps. She also provided project documentation, training and updated manuals for the City to maintain the apps in the future.

- **City of Enid - Potable Water Distribution System Hydraulic Model**

Ms. Vendra developed an all-mains hydraulic model for the City of Enid (OK). This project involved the linking of GPS meter locations with customer billing data, as well as developing the demands of the hydraulic model. The hydraulic model was developed using GIS and has been calibrated using fire-flow test data. Ms. Vendra also provided training and documentation on model updates.

- **City of Lomita - Water Master Plan Support**

For this project, Ms. Vendra provided Master Plan Support for the City (which was being developed by KEC Engineers). Ms. Vendra worked on developing a hydraulic model based on the City's updated GIS, allocated demands using the billing system data and filled in operational settings after coordinating with the City's operations staff. The model was calibrated to the fire-flow test data and analyzed to identify system improvements.

- **Yorba Linda Water District**

DCSE has recently completed the conversion of water and wastewater data for Yorba Linda Water District. Ms. Vendra worked on the Geodatabase design and coordinated data conversion efforts. She also worked on establishing the standards for the project with the District feedback on the pilot area. Ms. Vendra was also tasked with performing a detailed quality control on the final converted data to ensure network connectivity and correct pressure zone allocation.

- **Contra Costa Water District**

DCSE converted the District's water system data from Micro station drawing format to GIS. Ms. Vendra worked on the District's Geodatabase design and coordinated data conversion efforts.

- **Valencia Water Company**

DCSE has converted the Valencia Water Company's water system data to Geodatabase format. Ms. Vendra coordinated the Geodatabase design and data conversion efforts. She was also responsible for scanning as-builts and linking them to GIS.

- **City of Glendale Water - System GIS**

DCSE has converted the City of Glendale's water system from Shapefile format to Enterprise Geodatabase. Ms. Vendra was involved in conducting a *Needs Assessment* for the City. She worked on the Geodatabase design and composed a migration plan for the data. To further the migration of data to Geodatabase format, Ms. Vendra coordinated the efforts to update the City's GIS from various data sources (redlines, As-Builts and work orders) and was responsible for printing 30 Atlas books (at 250 scale) for the City. Ms. Vendra has drafted a workflow for the City staff to update their Geodatabase in a multi-versioned environment.





HARITHA VENDRA P.E., GISP, M.S.

P: 949.465.3400 || E: hvendra@dcse.com

■ GIS Developer

■ PROFESSIONAL REGISTRATIONS

- **Registered Civil Engineer – California #C 85404**
- **Certified Geographic Information Systems Professional - GISP Certificate #90290**

■ EDUCATION

- **M.S., Civil Engineering – Water Resources - University of Texas, Arlington – 2001**
- **B.S., Civil Engineering - Osmania University (Hyderabad, India) – 1996**

■ CERTIFICATIONS

- **InfoWater Water Distribution Modeling - MWH Soft Inc.**
- **Master Modeler in Storm Sewer Design - Haestad Methods Inc.**

■ AFFILIATIONS

- **American Water Works Association (AWWA)**

■ SUMMARY

Ms. Vendra has over 17 years of experience in Geographic Information Systems (GIS) and hydraulic modeling. She is highly experienced in using GIS, CAD and modeling software for design and analysis. She has analyzed data for more than 60 municipal agencies in the past several years for data conversion, migration and workflow designs. She has also presented several papers at conferences on Enterprise GIS Development.

■ SELECTED PROJECT EXPERIENCE

■ **Central Arizona Water Conservation District - GIS Modernization: Custom Web App Builder Widget Development**

Ms. Vendra acted as GIS Lead for this project, which involved the development of widgets that provided functions by user role and could enable internal employees outside of IT to build their own maps and queries. The Web App Builder Widgets to provide functionality that upgraded their existing viewers to template-based, web-enabled configurable mapping applications integrated seamlessly across all departments within the District. In her role, Ms. Vendra was responsible for configuration, documentation, and testing aspects of the project.

■ **Irvine Ranch Water District - GIS Conversion**

DCSE was tasked with converted the Irvine Ranch Water District's GIS for basemap, potable water, wastewater, and recycled water from legacy GIS format and As-Built to a Geodatabase. Ms. Vendra was responsible for analyzing the District's existing data and developing a migration plan from coverage format to Geodatabase and was also involved in the Geodatabase design. Ms. Vendra also worked on developing specs for the District's editing tools, assisting in the setup of the District's GIS environment in ArcSDE.

■ **Moulton Niguel Water District - Asset Management-Enabled GIS**

For Moulton Niguel Water District, DCSE developed an asset management-enabled geodatabase as well as a robust synchronization tool that kept GIS data and the assets data in sync. Ms. Vendra was responsible for developing the specs of the tool, as well as testing, installation and training at client site.

■ **City of Simi Valley Water System - GIS Upgrades**

DCSE assisted the City of Simi Valley in upgrading their Enterprise GIS from 10.3 to the latest from ArcGIS Enterprise. Ms. Vendra coordinated the upgrade and performed the installations and configuration – including ArcGIS Server, Enterprise Geodatabases, and ArcGIS Portal.

■ **City of Los Angeles (Bureau of Sanitation) - Enterprise GIS**

DCSE is assisting the City of Los Angeles (Bureau of Sanitation) with upgrading their Enterprise Geographic Information System. Ms. Vendra was responsible for upgrading the geodatabase to the latest version of ArcGIS and migrating the



data. She also uploaded the GIS services to the City's ArcGIS Server and deployed them through apps on ArcGIS Online. Ms. Vendra then set up access to Sewer CCTV Videos using web maps. She also provided project documentation, training and updated manuals for the City to maintain the apps in the future.

- **City of Enid - Potable Water Distribution System Hydraulic Model**

Ms. Vendra developed an all-mains hydraulic model for the City of Enid (OK). This project involved the linking of GPS meter locations with customer billing data, as well as developing the demands of the hydraulic model. The hydraulic model was developed using GIS and has been calibrated using fire-flow test data. Ms. Vendra also provided training and documentation on model updates.

- **City of Lomita - Water Master Plan Support**

For this project, Ms. Vendra provided Master Plan Support for the City (which was being developed by KEC Engineers). Ms. Vendra worked on developing a hydraulic model based on the City's updated GIS, allocated demands using the billing system data and filled in operational settings after coordinating with the City's operations staff. The model was calibrated to the fire-flow test data and analyzed to identify system improvements.

- **Yorba Linda Water District**

DCSE has recently completed the conversion of water and wastewater data for Yorba Linda Water District. Ms. Vendra worked on the Geodatabase design and coordinated data conversion efforts. She also worked on establishing the standards for the project with the District feedback on the pilot area. Ms. Vendra was also tasked with performing a detailed quality control on the final converted data to ensure network connectivity and correct pressure zone allocation.

- **Contra Costa Water District**

DCSE converted the District's water system data from Micro station drawing format to GIS. Ms. Vendra worked on the District's Geodatabase design and coordinated data conversion efforts.

- **Valencia Water Company**

DCSE has converted the Valencia Water Company's water system data to Geodatabase format. Ms. Vendra coordinated the Geodatabase design and data conversion efforts. She was also responsible for scanning as-builts and linking them to GIS.

- **City of Glendale Water - System GIS**

DCSE has converted the City of Glendale's water system from Shapefile format to Enterprise Geodatabase. Ms. Vendra was involved in conducting a *Needs Assessment* for the City. She worked on the Geodatabase design and composed a migration plan for the data. To further the migration of data to Geodatabase format, Ms. Vendra coordinated the efforts to update the City's GIS from various data sources (redlines, As-Builts and work orders) and was responsible for printing 30 Atlas books (at 250 scale) for the City. Ms. Vendra has drafted a workflow for the City staff to update their Geodatabase in a multi-versioned environment.





ADAM STEIN

P: 949.465.3400 || E: astein@dcse.com

■ GIS Analyst

■ EDUCATION

- **B.S., Geography & Environmental Studies**
– University of Shippensburg
Pennsylvania, 2012

■ TECHINICAL SKILLS

- ESRI ArcGIS Desktop, Pro, Scene, Online
- SDSFIE Compliant Databases
- Python
- MS Access
- Site Safety and Health
- Trimble GPS/GNSS Surveying

■ SUMMARY

Mr. Stein works as a GIS analyst at DCSE, an engineering and GIS consulting firm focused on developing solutions for public and private establishments primarily in utilities and resource management.

His background in geographic information systems and environmental work has contributed significantly to his GIS skillset. He has experience using GIS for asset registry, web mapping applications, data quality control, and geodatabase management.

■ SELECTED PROJECTS

■ **City of Chino Water – GIS Conversion**

DCSE is working with the City of Chino to create a new enterprise geodatabase and atlas book for potable and recycled water systems. Mr. Stein's responsibilities include geodatabase creation, conversion of data from as-builts, atlas, quality control procedures, and the production of a water atlas book for the city.

■ **City of Riverside – GIS Editor Migration**

DCSE is working with the City of Riverside to convert coverages into a geodatabase format with schema to support the editing functions and integrations. The City needs to migrate the editing functionalities from CADME to ArcGIS Desktop and ArcFM. Mr. Stein's responsibilities include development and quality assurance / quality control of deliverables, as well as training of City Editors.

■ Previous Experience

Before working with DCSE, Mr. Stein provided GIS support to Ayuda, an environmental consulting firm in the Denver Area. His responsibilities included: managing GIS data in SDSFIE compliant databases, groundwater sampling and analysis, soil sampling and analysis, spatial analysis, data management, GIS training, GNSS/GPS surveying, and GIS editing. These projects were for a range of clients including the US Army Corps of Engineers, NASA, US Fish and Wildlife Service, and the National Institute of Standards and Technology (NIST).





PROFESSIONAL EXPERIENCE

15 years

EDUCATION

MS, Civil Engineering, Water Resources
- University of Texas at Austin

PROFESSIONAL REGISTRATION

Professional Civil Engineer:
California #77517

Qualified SWPPP Practitioner:
California #20873

PROFESSIONAL AWARDS

2016 Young Civil Engineer in the
Private Sector, Western U.S., American
Society of Civil Engineers

Remi Candaele is a Senior Project Manager with extensive experience in numerous aspects of surface water management. He is recognized for his technical expertise, responsiveness, leadership, and strategic initiatives. Candaele has prepared numerous publications covering his expertise in NPDES permitting, stream rehabilitation, hydromodification, recycled water, sediment transport, 2D hydraulic and water quality modeling, BMP design and performance, and comprehensive watershed strategic plans. Candaele co-authored multiple water quality restoration plans for the Santa Margarita River Watershed. He is uniquely qualified based on the following achievements:

1. Adoption of the Santa Margarita Region Hydromodification Management Plan for Riverside County, the City of Temecula, and other stakeholders.
2. Successful completion of RAAs for the Malibu Creek EWMP, San Bernardino County Watershed Action Plan, and Orange County Retrofit Opportunity Study;
3. Unique understanding of integrating water quality BMPs into green streets, ADA, park beautification, and utility improvement projects - Del Amo Neighborhood Park;
4. Author of a proprietary RAA model for the identification and prioritization of BMPs for the entire United States;
5. Relationships with the San Diego Regional Board and the Riverside County Watershed Protection District

Remi brings qualifying experience from the following projects:

- Malibu Creek EWMP and RAA - Los Angeles County
- City of Huntington Beach Trash Compliance Master Plan
- Aliso Creek Watershed Water Quality Retrofit Study - OC Environmental Resources
- City of Salinas Storm Water Master Plan - City of Salinas
- City of Buena Park Storm Water Master Plan - City of Buena Park
- District-Wide Water Capture and Reuse Feasibility Study - Los Angeles Community College District and Los Angeles County Department of Public Health

SMR Hydromodification Management Plan & Low Impact Development Manual | Riverside County Flood Control On-Call - Riverside County, CA

Candaele co-authored the Santa Margarita Region (SMR) HMPs, edited the LID BMP Manual, WQMP templates, and Model WQMP to reflect the content of the HMP, and led the development of associated technical studies. Candaele created HMP monitoring plans to evaluate the HMP effectiveness. Providing technical assistance for the negotiations with Regional Boards. Remi worked with Clear Creek Solutions to develop the Santa Margarita Region Hydrology Model (SMRHM). Candaele hosted multiple-day trainings for City stormwater leads, implementation staff, and plan checkers.

Santa Ana Watershed Action Plan (WAP) - Riverside County, CA

Candaele served as Project Engineer for the development of the Riverside County Santa Ana Region Watershed Action Plan (WAP), which is a requirement of the Riverside Santa Ana Region MS4 Permit. The WAP describes and implements the Permittees' approach to coordinated watershed management. The objective was to address watershed scale water quality impacts of urbanization in the permit area associated with urban stream system vulnerability to hydromodification from urban runoff, cumulative impacts of development on vulnerable streams, preservation of beneficial uses of streams in the permit area, and protection of water resources including groundwater recharge areas.

On-Call Watershed Planning, Orange County - County of Orange, CA

Candaele served as Lead Civil Engineer and supervised the development of the Hydromodification Management Plan (HMP), and monitored plans to evaluate the HMP effectiveness. He provided technical assistance for the negotiations with Regional Boards, worked with Clear Creek Solutions to develop the Orange County Hydrology Model, and addressed technical challenges and questions related to the implementation of the HMP. Other services included assistance with watershed planning and engineering, including the identification of retrofit opportunities in the Aliso Creek watershed, updates of HMP design services, and construction documents for post-construction BMPs, development of the 2013 NSMP BMP Strategic Plan.



CITY OF COSTA MESA

P.O. BOX 12000 77 FAIR DRIVE CALIFORNIA 92628-1200

FROM THE DEPARTMENT OF PUBLIC SERVICES/ENGINEERING DIVISION

DATE: MARCH 12, 2020

TO: ALL PROSPECTIVE PROPOSERS

SUBJECT: ADDENDUM NO.1 – REQUEST FOR PROPOSALS (RFP) FOR THE STORM DRAIN SYSTEM MASTER PLAN UPDATE IN THE CITY OF COSTA MESA

This addendum, effective on this date, addresses the following items:

PROPOSAL DUE DATE: NO CHANGE, MARCH 17, 2020

The contents of this Addendum are as follows:

CLARIFICATIONS TO PROPOSAL:

The following questions were received at the pre-proposal meeting and through email with subsequent answers and clarifications:

Q1 – Can the consultant select a different hydraulic modeling tool versus XPWSPG and XPSWMM?

Ans 1 – Tasks 1.5.1, 1.5.2, and 2.2 will be modified to allow the consultant to use a hydraulic modeling software/tool that is an approved equal to XPWSPG and XPSWMM pursuant to requirements within said Tasks. The selected consultant must demonstrate the equivalency of the software and ability for the data input and output files to be integrated into the City's GIS system.

Q2 - Has the City been maintaining its Storm Drain GIS data since the last update in 2006?

Ans 2 - The City has not been updating the GIS inventory as it pertains to new/upgraded storm drain facilities since the 2006 SDSMP, nor has it integrated private development direct connections that have occurred since that time into the GIS inventory. A limited number of private direct connections are shown in the current GIS system. Task 1 – Existing Conditions Assessment, specifies the scope of work for the selected consultant to perform with respect to integrating available historical development records, as well as CIP projects, with field verification to develop an updated Storm Drain GIS inventory layer.

Q3 - What attributes are included in the GIS data (i.e. U/S invert, D/S invert, pipe size, material, etc) and how complete is it?

Ans 3 – The existing SDSMP GIS attributes/layers define the upstream invert, downstream invert, pipe size, material, ownership, other hydrologic flow data, and year constructed, which are based on available records at the time of the development of the 2006 SDSMP. It is mostly complete from records up to the 2006 update, with the exception of private direct connections from development projects. Approximately 12 new CIP storm drain projects have been completed since that time that

would need to be added to the GIS system coupled with the updated inventory as developed under Task 1 – Existing Conditions Assessment.

Q4 - Section 1.2: How many storm drain As-Builts does the City have? Will the City provide all as-builts, and are they scanned and indexed?

Ans 4 – The City's archive system contains scanned/indexed As-Builts/Record Drawings for storm drain and street improvements that were used to develop the 2006 SDSMP. Since that time, there have been approximately 12 new CIP storm drain projects that have been completed that would need to be added to the GIS system coupled with the updated inventory as developed under Task 1 – Existing Conditions Assessment. All available As-builts/Record Drawings within the City's archive and GIS will be provided to the selected consultant as part of Task 1.

Q5 - Section 1.3: Does the City expect the vendor to perform site assessment on every Storm Drain facility? Or only for data gaps?

Ans 5 – Pursuant to Task 1.2 Data Collection – Record Information, the selected consultant shall research, collect, review and verify all existing studies/reports/as-builts/records (from County, City, Caltrans, and other public/government entities) Therefore, upon completion of the existing inventory and research efforts, gaps in the storm drain data/information could be discovered by the selected consultant, which would then be addressed in Task 1.3 Site Assessment and Inspection. The intent of Task 1.3 is for the consultant to assess the entirety of the City's storm drain system to inspect, verify, and update the record information obtained in Task 1.2 via GPS/photo/data collection equipment.

Q6 - Section 1.3: For the storm drain information (i.e. SDMH TC and IE, CB TG and IE, pipe sizes, slopes, etc..) it states that the vendor is to check the existing information "against all available existing storm drainage studies/reports/as-builts/records" If there is no information in these documents does the City expect the vendor to GPS this data? If yes, what is the intended vertical accuracy?

Ans 6 – See Ans 5. As for the vertical accuracy of the GPS, the City expects the selected consultant to use best professional survey judgement to capture the appropriate x,y,z coordinates of the storm drain system that can be verified via ground survey from a known and accurate bench mark datum (NVGD 88 and NAD 83).

Q7 - Section 1.4.1 discusses updating/creating a GIS layer containing drainage information (i.e. slope, discharge). Does this refer to design Q on as-builts or calculated Q from hydrology calculations? If hydrology Q, what storm event? At how many locations? Outlets only?

Ans 7 – The intent of Task 1.4.1 – Basemaps – (Watersheds, Aerials, Soils, Hot Spots, etc..) is to update all watersheds, flowpaths, etc. and provide updated basemaps and GIS layers from the data/information collected and verified from Task 1 activities to create a sound base to perform the subsequent activities under Task 1.5 Existing Hydrologic/Hydraulic Analysis (EHH). The discharge reference is related to the existing information gathered from the existing GIS layers as part of Task 1, with updates as needed where field verification discovered changes to said data set or new storm drain data obtained (gaps), whereby the selected consultant would revise/add the Qfull capacity of said storm drain.

Q8- Does the City have a records of filter inserts or BMPs public maintain?

Ans 8 – Yes the City has records of filter inserts and BMP inventory, which will be provided to the selected consultant.

Q9 - Does the City have existing LiDAR dataset?

Ans 9 - No

Q10 - Page 4 of the RFP notes that proposals must be limited to 20 pages excluding resumes. Section B states "A Project team organization chart identifying those who will perform work and a brief resume of each team member, including similar type projects in which they have been directly involved." Would the City allow proposers to place resumes in an Appendix to the proposal?

Ans 10 - Yes

Q11 - Is the intent of the field investigation to also see the conditions of the existing SD facilities or is it just to supplement what does not have as-built plans. In other words, should we budget for full system recon?

Ans 11 – As stated in Ans 5 and expanded herein; the field investigation tasks are included for the purpose of 1) investigating drainage locations and system components that may be contributing to flooding and other drainage issues, either as a result of design capacity limitations or system obstructions; 2) supplementing available as-built/record information to fill gaps in the City's inventory records of existing storm drain facilities, including private direct connections into the City's storm drain system; and 3) evaluating and identifying known or suspected features of the City's storm drain system that have potential failure issues (e.g. aging, corroded metal pipes, etc.).

Q12 - How many Record Drawings (as-built sheets) for development an CIP projects will be used for GIS updates. Would an assumption of about 500 as-built sheet reasonable for estimate?

Ans 12 – As stated in Ans 3 and 4, approximately 12 new CIP storm drain projects have been completed subsequent to the development of the 2006 SDSMP. Furthermore, since the 2006 SDSMP update, there have been 14 years of development projects within the City that may have storm drain improvements that would need to be evaluated/inventoried as part of Task 1. The City will provide available development plans/documents know from this period of time to the selected consultant.

Q13 - How much percentage of the existing data is accurate?

Ans 13 – The City considers the data/information contained within the 2006 SDSMP GIS reflective of the as-built/record information entered at the time of the 2006 SDSMP development. The selected consultant would verify this accuracy as part of Task 1.

Q14 - The result of 2006 SDSMP provides 64.7 miles of existing storm drain system. However, City's web map has 115 miles of Pipe. Which one is more correct?

Ans 14 – To the City's knowledge, the 64.7 miles of storm drainage systems identified in the 2006 SDSMP reflects the mileage of storm drain at the time of the development of the 2006 SDSMP. Additional storm drain systems, as part of the approximate 12 CIP storm drain projects, have been constructed since 2006. The difference of the 2006 mileage and 2020 mileage would be discovered by the selected consultant as part of Task 1. The City is unclear how the 115 miles of pipe was arrived at and therefore considers this number not reflective of the 2020 storm drain mileage.

Q15 - Has the City done any CCTV work in the recent past? If yes, will the City be able to provide the results to the selected consultant?

Addendum No. 1
RFP for SDSMP Update

Ans 15 – The City has performed CCTV work at one residential intersection to investigate pipe conditions with an approximate length of 100 LF. This investigation is not expected to be significant to the cost associated with Task 1.3.1 Optional Task for the SDSMP update. If necessary, these results can be provided to the selected consultant.

Q16 - Will the City provide electronic 2006 master plan data to the selected consultant, including the hydrology, hydraulics and GIS? We are assuming that the 2020 update will utilize some of the 2006 data/results (GIS, hydrology and hydraulics). While there will be many changes to variables associated with the computations, it would be more efficient for the City to utilize the same node numbers, facility ID numbers, etc.

Ans 16 – Yes, the 2006 SDSMP GIS data will be provided to the selected consultant. The City will be seeking input from the selected consultant on a logical strategy to use and update the existing GIS dataset with key fields (pipe id, ws id, nodes, etc..) that would allow for a user friendly data access/retrieval methodology that is consistent with the current storm drain database/GIS standards and provides efficiency for management of the City's storm drain system.

Q17 - Does the City possess any or all of the As-builts for OCFCD and Caltrans existing drainage facilities? If yes, is it possible to receive a list of those available at the City?

Ans 17 – The City expects the selected consultant to obtain all OCFCD and Caltrans As-Builts/Record Drawings as part of Task 1.

The contents of this addendum shall have precedence over all related provisions within the RFP. It is the intent of the City to clarify the above-mentioned items to all proposers and should it be necessary to request clarification on these matters, please direct all inquiries to Naz Mokarram Naz.mokarram@costamesaca.gov

Please acknowledge receipt of all addenda within the cover letter of the proposal and attach this Addendum #1 to the proposal.

Sincerely,



Naz Mokarram, PE, GE
Senior Engineer



CITY OF COSTA MESA

P.O. BOX 12000 77 FAIR DRIVE CALIFORNIA 92628 1200

FROM THE DEPARTMENT OF PUBLIC SERVICES/ENGINEERING DIVISION

DATE: MARCH 16, 2020
TO: ALL PROSPECTIVE PROPOSERS
SUBJECT: ADDENDUM NO.2 – REQUEST FOR PROPOSALS (RFP) FOR THE STORM DRAIN SYSTEM MASTER PLAN UPDATE IN THE CITY OF COSTA MESA

This addendum, effective on this date, addresses the following items:

PROPOSAL DUE DATE: NO CHANGE, MARCH 17, 2020

The contents of this Addendum are as follows:

In response to Governor Gavin Newsom's direction regarding COVID-19, the City of Costa Mesa has closed all City facilities out of concern for public health and safety. Due to the closure of City Hall please mail your proposal, one original, 3 copies and a pdf version on a flash drive, for the Storm Drain System Master Plan Update to the following address:

City of Costa Mesa
Public Services Department
77 Fair Drive
PO Box 1200
Costa Mesa, CA 92628
Attn: Naz Mokarram

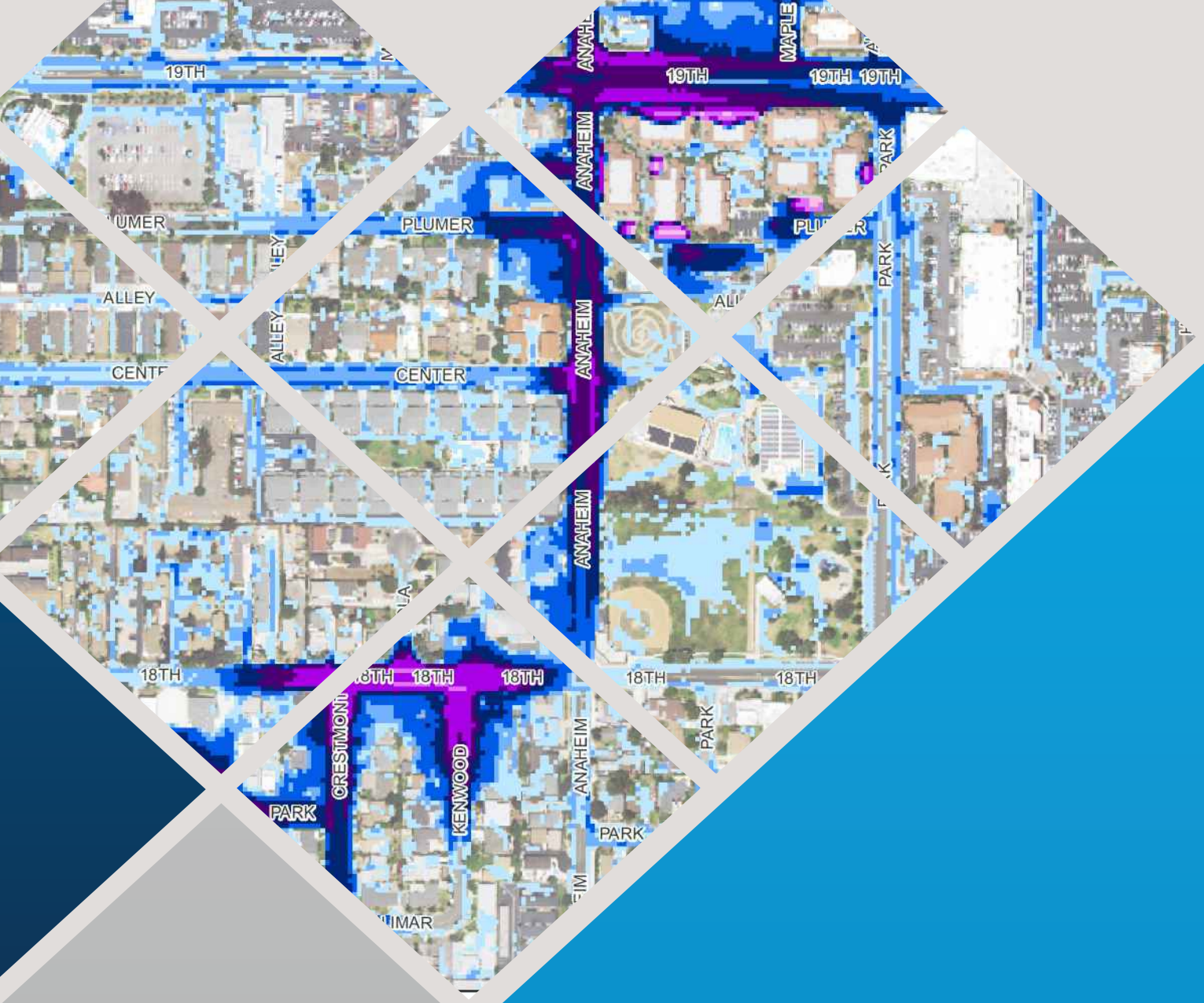
The proposal must be postmarked by March 17, 2020.

The contents of this addendum shall have precedence over all related provisions within the RFP. It is the intent of the City to clarify the above-mentioned items to all proposers and should it be necessary to request clarification on these matters, please direct all inquiries to Naz Mokarram Naz.mokarram@costamesaca.gov

Please acknowledge receipt of all addenda within the cover letter of the proposal and attach this Addendum #2 to the proposal.

Sincerely,

Naz Mokarram, PE, GE
Senior Engineer



27042 Towne Centre Drive, Suite 110
Foothill Ranch, CA 92610
949.259.6770 | Q3consulting.net