



**Qualifications for
City of Hermosa Beach
On-Call Engineering Design Services
For Utilities (Sewer, Storm Drain)
RFQ No. 20-02**



September 21, 2020

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS



Table of Contents

| | |
|---|----|
| 1. Cover Letter | |
| 2. Firm Profile..... | 4 |
| 3. Project Understanding and Approach to Scope of Work..... | 6 |
| 4. Project Management Plan | 12 |
| 5. Experience and Qualifications..... | 15 |
| 6. Required Forms | 28 |
| Appendix: Resumes | 32 |
| 7. Fee Schedule - Separately Sealed | |



Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS

1171 Homestead Rd., Ste. 255
Santa Clara, CA 945050
408-246-4848
Fax 408-246-5624

1: Cover Letter

September 21, 2020

Attn: Mr. Andrew Nguyen
City Clerk Office,
City of Hermosa Beach
1315 Valley Drive
Hermosa Beach CA, 90254

Subject: On-Call Engineering Design Services for Utilities (Sewer, Storm Drain) (RFQ 20-02)

Dear Mr. Nguyen:

Schaaf & Wheeler is pleased to submit qualifications to provide on-call engineering design services for utilities (sewer, storm drain) to the City of Hermosa Beach.

Schaaf & Wheeler is a civil engineering firm with focus on water resource projects. Founded in 1985, we specialize in wastewater, potable water, stormwater, recycled water, hydrology & hydraulics, drainage and flood management projects. Schaaf & Wheeler is a registered small business enterprise (SBE) within the State of California. For more than 35 years our engineers have been providing on-call engineering services to various California municipalities, agencies, local water districts, and flood control agencies including the Cities of South San Francisco, Half Moon Bay, San Mateo, Santa Clara, Sunnyvale, San Jose, Alameda, Livermore and Belmont; Counties of Monterey, San Mateo, Napa and Marin and San Jose Water Company, Valley Water and San Lorenzo Valley Water District to name a few.

[Schaaf & Wheeler completed the City's Storm Drain Master Plan and thereby understands the City's systems, standards, and requirements.](#)

For this RFQ, we understand that the City of Hermosa Beach intends to select consultant(s) for a two year contract with up to three one year extensions to provide as-needed engineering design services for utilities – sewer and storm drain. Our Statement of Qualifications presents a general approach to provide engineering services for these utilities. Schaaf & Wheeler will work with the City to develop a detailed scope of services that is appropriate for each specific project to match the project requirements, complexity, and the goals of the City.

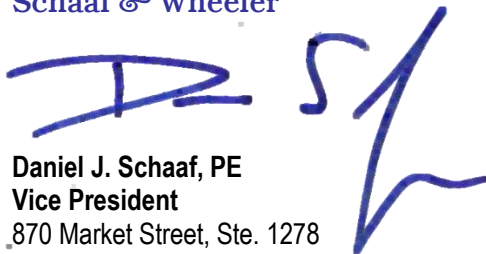
Our lead engineers bring extensive experience in sewer, and stormwater systems including pipelines, pump stations, trash capture devices, green infrastructure and hydrologic and hydraulic modeling. Our engineers are proficient at assessing existing conditions, identifying deficiencies, modeling, developing alternatives, prioritizing projects, and designing improvements. They have in-depth knowledge of the regulatory requirements that help expedite project processes.

With 14 years of experience in design and construction support, Glen M. Anderson, PE will serve as the project manager and main point of contact. I will be the Principal-in-Charge and bring veteran knowledge of the City's storm drain system. Our firm is currently managing similar on-call contracts with other clients throughout California. I am authorized to bind the firm for any contracting negotiations. Subconsultants will be added as and when needed for each specific project, based on its needs.

We understand that no addendum was posted/issued on the City's website for this RFQ. My team and I are available and look forward to extending services to the City of Hermosa Beach. Should you need any further information or have any questions, please contact Glen Anderson at Cell Ph: 408.966.5341; email: ganderson@swsv.com.

Sincerely,

Schaaf & Wheeler

A handwritten signature in blue ink, appearing to read 'DS' followed by a stylized flourish.

Daniel J. Schaaf, PE
Vice President

870 Market Street, Ste. 1278
San Francisco, CA, 94102
Ph: 415.433.4848
dschaaf@swsv.com

A handwritten signature in blue ink, appearing to read 'Glen Anderson' in a cursive style.

Glen M. Anderson, PE
Senior Project Manager

1171 Homestead Road, Ste. 255
Santa Clara, CA 95051
Ph: 408.246.4848
ganderson@swsv.com



2. Firm Profile

About Schaaf & Wheeler

| | |
|-------------------------------------|---|
| Firm Name | Schaaf & Wheeler CONSULTING CIVIL ENGINEERS |
| Primary Point of Contact | Glen M. Anderson, PE - Project Manager 1171 Homestead Rd., Ste. 255, Santa Clara, CA 95050 Phone: (408) 246-4848; Cell: (408) 966-5341; Email: ganderson@swws.com |
| Type of Organization | Corporation, Incorporated in California |
| Federal Employer I.D. Number | 77-0061375 (Tax Identification Number) |
| S&W Offices | HQ - 1171 Homestead Rd., Ste. 255, Santa Clara, CA 95050 3 Quail Run Drive, Ste. 101, Salinas, CA 93907 870 Market Street, Ste. 1278, San Francisco, CA, 94102 2200 Range Ave., Ste. 201, Santa Rosa, CA 95403 Schaaf & Wheeler is not owned by any other organization or individual. |
| Company Certifications | State of California Certified Small Business Enterprise (SBE) Certification No. 40527 |
| Years in Business and of experience | 35 Years in Civil Engineering Design, since 1985 There are no failures or refusals to complete a contract. |

Schaaf & Wheeler is a civil engineering firm focused in water resources. With over thirty years of commitment to solving flood control, stormwater, wastewater, potable water, and recycled water problems; Schaaf & Wheeler is recognized by public and private sector clients for its value-adding engineering. Certified as a small business enterprise by the State of California, Schaaf & Wheeler engineers operate from four locations: Santa Clara, San Francisco, Santa Rosa and Salinas.

Our Areas of Focus: Schaaf & Wheeler has ten areas of focus:

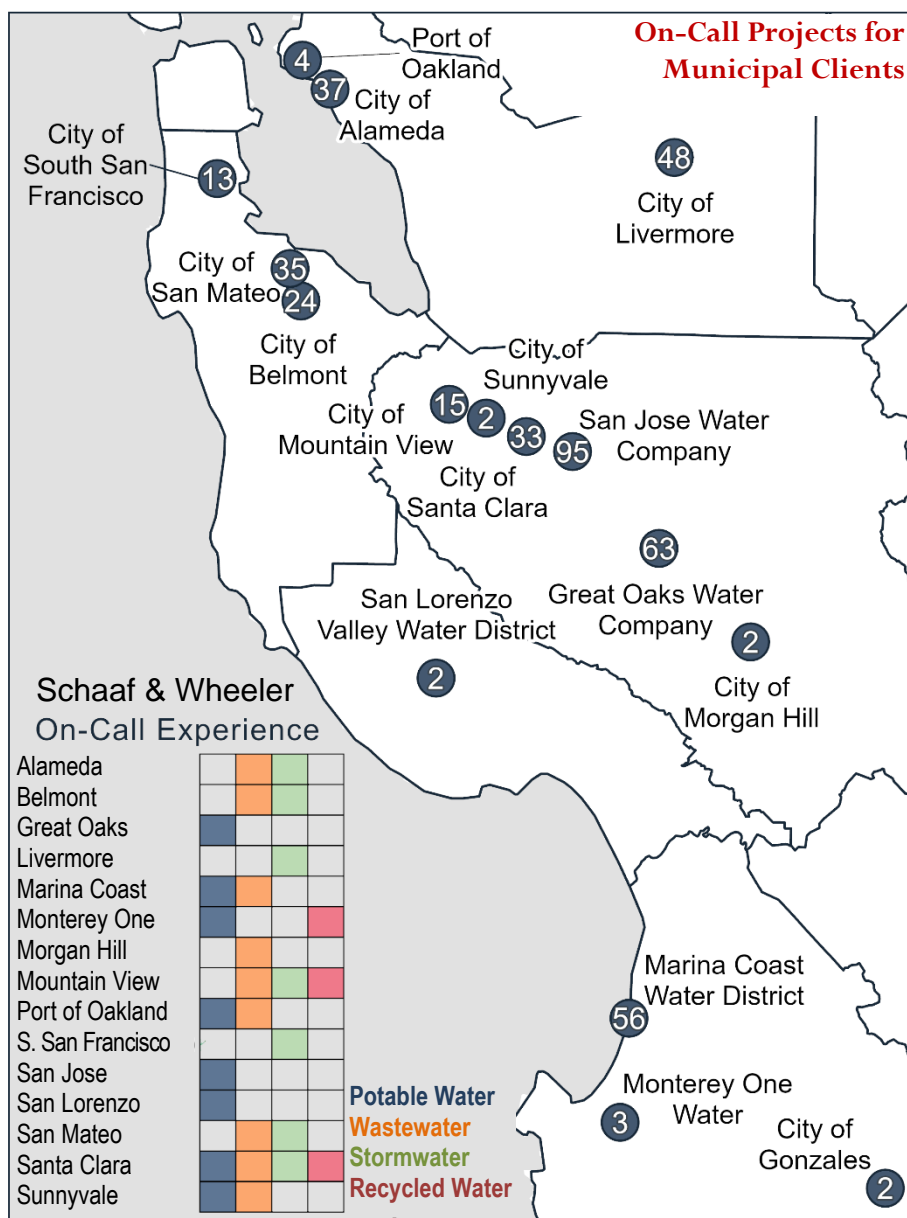
- **Waste water** system master planning, engineering, and design of conveyance systems, including lift stations and pump stations;
- **Stormwater** management and drainage services, including master planning, engineering, and design of urban storm drain systems and pump stations;
- **Potable water** system master planning, modeling, engineering; and design of supply, storage, distribution systems, including tanks and booster stations;
- **Recycled water** systems planning, engineering, and design; including reclamation feasibility studies and customer retrofits;
- **Hydrology and hydraulics** analyses, including site evaluations and modeling;
- **Flood control analyses**, including floodplain studies and channel design, filing of letters of map revision, and FEMA coordination;
- **Watershed assessments**, erosion and sediment control, and bioengineered channel stabilization;
- **Water quality**, including design or review of best management practices (BMPs) for storm water treatment and hydromodification flow control facilities;
- **Construction management**, construction site observation, construction inspection services, value engineering, construction cost analysis, and constructability reviews;
- **Program management**, including management of subconsultants, containment of schedule and cost, and communications with client and stakeholders.



- ✓ *Currently Completing City-wide Sewer and Storm Drain Design Projects for:*
 - City of Belmont
 - City of San Mateo
 - Town of Corte Madera
 - City of Milly Valley
 - City of Morgan Hill
- ✓ *Assessed and Designed more than 200 pump stations*
- ✓ *Proficient in CIP Design, Bid and Construction Support*



Schaaf & Wheeler has been providing as-needed and CIP project focused stormwater, wastewater and potable water planning, design and construction support services to California municipalities for last 35 years since 1985.



Schaaf & Wheeler's Relevant Experience:

| | | | |
|-------------------------------------|-------------|--|----------------|
| ▪ Pump stations assessment & design | >300 | ▪ Trash capture design and feasibility | 20, 25+ |
| ▪ Storm drain design and CS | ~55,000+LF | ▪ SWMP Reviews & Inspections | 500+ |
| ▪ Sewer design and CS | >150,000+LF | ▪ Stormwater BMPs | 20+ |
| ▪ Storm Drain Master Plans | >55 | ▪ Urban drainage analyses & modeling | 100's of miles |
| ▪ LOMRs/CLOMRs/FIS | 1000+ | ▪ Sea Level Rise studies | 50+ |



3. Project Understanding and Approach to Scope of Work

Project Understanding

The City of Hermosa Beach intends to select consultant(s) for a two years contract with up to three one-year extensions to provide as-needed engineering design services for utilities – sewer and storm drain. These services may require:

- Coordination with various utility companies and jurisdictions as needed
- Attending meetings and preparing meeting minutes
- Field visits and site inspections
- Preparation of permit applications from various jurisdictions as needed
- Topographic surveys
- Soil Reports
- Environmental documentation
- Preparation of all plans, specifications, estimates and reports/studies for projects (using open cut, trenchless methods such as pipe reaming, pipe bursting, cured-in-placed pipe (CIPP) and others)
- Preparation of bid packages, bid and construction support including RFI responses and submittal reviews.

Key Elements for Completing the Project Successfully

- Efficient Project Management
- Familiarity with City's Sewer System
- Close Communication with City Staff
- Timely Stakeholder Engagement
- Streamlining the Preliminary Design Phase
- Meeting project schedule to complete construction before the rainy weather
- Minimizing Change Orders

This Statement of Qualifications presents a general approach to provide engineering services for these utilities.

We anticipate the preparation of individual scope and fees for each of the projects awarded through this RFQ. Though the technical details of these various projects differ from each other, the general project scopes will generally include:

1. Front-End Work – This task description covers the various items of work that are necessary to get a project going. The services that may be necessary vary from project to project and may include preliminary studies, alternative analysis, surveying, geotechnical analysis, CEQA analysis, permitting, agency coordination, utility research, and any number of additional services that may be required.
2. Design Documents – This task description covers the various iterations of design plans, specifications, and cost estimates that will be prepared for each of the Capital Improvement projects being implemented. Based on the RFQ, Schaaf & Wheeler anticipates preparation of plans, specifications at the 60%, 100% and Bid levels. We anticipate City review and comments for the 60% and 100% plans, specifications, and estimates.
3. Bid and Construction Services – This task description includes items after the design is completed. During the bid period, we anticipate involvement in the prebid meeting(s) and preparation of addenda as necessary. We would also anticipate review of submitted bids and recommending whether to accept a given bid. Once the construction contract is awarded, Schaaf & Wheeler would anticipate providing construction support services such as submittal review, RFI response, participation in construction meetings, and preparation of record drawings once construction is completed.

We will include subconsultants for specialized services based on the scope of each project. Our proposed subconsultants for survey, structural engineering and geotechnical engineering are included in this SOQ.



Organization Chart

We have put together a dedicated team for the City of Hermosa Beach. The team will be led by Glen M. Anderson, PE and Daniel J. Schaaf, PE of Schaaf & Wheeler, who have successfully led multidisciplinary teams for sewer and stormwater design projects. Figure below shows our team's organization.

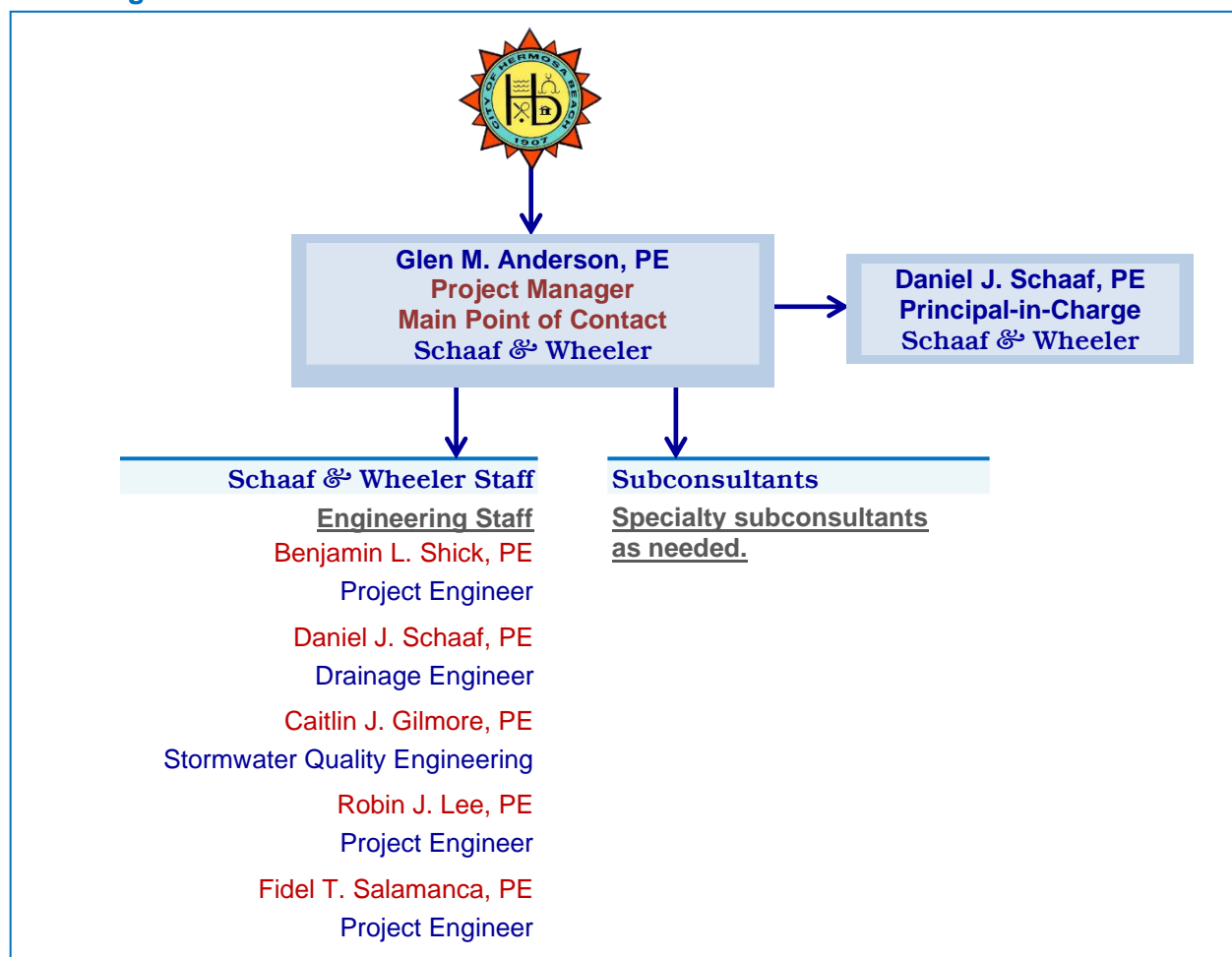
Schaaf & Wheeler brings extensive experience in assessment, design and construction support of:

- Sanitary Sewer/Storm Drain Rehabilitation Assessment, Design and Construction Support
- Sanitary Sewer/Storm Drain Pump Station Assessment, Design and Construction Support
- Trash Capture Feasibility and Large/Small Trash Capture Design
- Hydraulic modeling and evaluation

Understanding the needs of each project, Schaaf & Wheeler will draw expertise from subconsultants for specialized services including:

- Structural Engineering
- Survey and Mapping
- Other as needed

Team Organization Chart





Approach to Work Program (Required and Optional Tasks)

Schaaf & Wheeler's approach to several key elements of the project is narrated in the sections below.

Schaaf & Wheeler has successfully completed numerous water, sewer, and storm drain rehabilitation and repair projects in California. Schaaf & Wheeler's approach will provide the City with cost-effective and constructible solutions that will efficiently address the defects and deficiencies within the sewer and storm system. This section is intended to highlight key elements of Schaaf & Wheeler's approach that have been effective in similar projects and will be implemented in this project.

Project Management Approach:

1. Develop a team of qualified engineers with extensive experience working on similar projects:
 - a. Schaaf & Wheeler's **Project Manager, Glen M. Anderson, P.E.**, has successfully managed multiple sanitary sewer and storm drain rehabilitation projects.
 - b. **Daniel J. Schaaf, PE – Principal in-Charge** will ensure the completion of contractual and procedural obligations.
 - c. Schaaf & Wheeler's proposed team has successfully completed the Storm Drain Master Plan for the City.
 - d. Schaaf & Wheeler has engineering staff that are **NASSCO PACP and MACP** certified.
2. Outline project scope, data needs, project timeline, and associated costs.
3. Pull in expertise and workforce as needed (in-house and subconsultants)
4. Data gathering, site review and meeting with City staff to get a thorough understanding of the issues and goals of the project.
5. Schedule and perform necessary field work and assessments.
6. Proceed with analysis, reports, and design.
7. Develop detailed and robust construction documents that accurately reflect existing site conditions.
8. Maintain close coordination with City during bid and construction support.



Schaaf & Wheeler's recently completed Shoreway Drive Sewer Rehabilitation Project

- Two sewer mains were replaced with one larger and deeper sewer main
- This project was a part of the City of Belmont's Annual Repairs Program
- Project was successfully designed and constructed within budget and schedule
- The project resulted in significant long-term savings
- Awarded as the Project of the Year by APWA in 2019



Relocation of 96-inch RCP

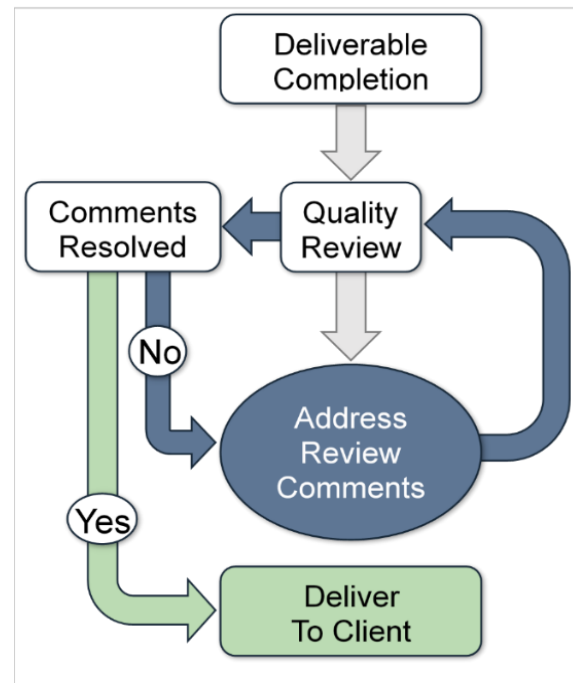


Kickoff Meeting – Schaaf & Wheeler will facilitate a project kickoff meeting with the City to discuss the project goals, scope, budget, and schedule. Schaaf & Wheeler firmly believes that engaging all stakeholders including management, engineering, and operations & maintenance early in the process is a great way to ensure all parties are informed and everyone is working towards the same goal. The following Key elements will be covered in the Project Kick-off Meeting:

- Project Goals: Engineering Requirements, O&M Requirements, City standards;
- Project Constraints: Budget, schedule, physical site constraints, utility constraints and conflicts, traffic coordination;
- Project Expectations: Construction contract type, deliverables, project management/staffing, schedule.

QA/QC Process and Constructability Review – Schaaf & Wheeler will perform an internal QA/QC review of each progress submittal prior to submission to the City. QA/QC staff will review all design documents and work with the project design team to identify and correct potential issues and conflicts. The constructability of the proposed repairs will be assessed by both the project design team and QA/QC Manager as described below:

- The design team will assess the constructability of each pipe segment and manhole by performing detailed utility investigations in locations where excavations are proposed, developing preliminary plan and profiles, and walking each site to identify constraints and potential issues with the proposed repairs. Adjustments to the design will be made as necessary to mitigate potential issues.
- Following the design team assessment, the **QA/QC Manager (Ben Shick)** will perform an independent constructability review of the proposed improvements. The constructability review will be focused on identifying potential conflicts and issues with the proposed construction methods and materials at each location. Following the review, the QA/QC Manager will meet with the design team to discuss and review the proposed improvements. All QA/QC comments will be backchecked by the QA/QC Manager to ensure they have been properly addressed.



**Schaaf & Wheeler's
Typical QAQC Process to
Ensure Quality Deliverables**

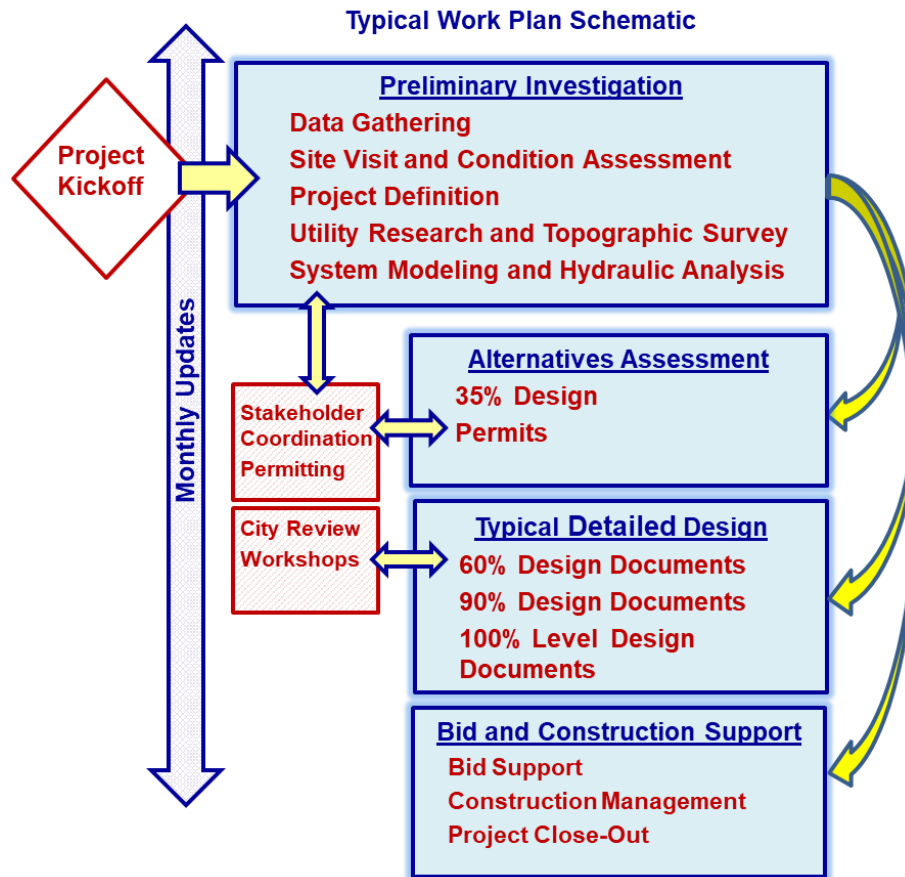
Technical Approach:

All available existing data will be gathered and reviewed which may include CCTV data, record drawings, asset management databases, flow data (sewer/storm drain master plan), system map and other utility maps, etc. The pipe segments will be tabulated with noted issues, dimensions, condition, and flow rates.

Each site will then be visited by the engineering staff to identify site constraints such as proximity to adjacent utilities, infrastructure obstructions, potential conflicts, and construction impacts to residents and traffic. Each pipe segment will be evaluated separately; however, the rehabilitation requirements on the adjacent pipe segments will be taken into account when developing the comprehensive recommendations.



Site conditions will be utilized in conjunction with cost estimates to develop recommended methods for rehabilitating or replacing each pipe segment. A summary table will be prepared along with a memorandum identifying the evaluation methodology, recommendations, and cost estimates.



Manuals/Standards

Though the RFQ doesn't identify specific projects that will be included within this contract, it is our understanding that a variety of water resources projects may be included with a goal of developing bid documents and seeing the various projects through construction. To that end, we have included staff members specializing in each of the various anticipated projects who are well versed with the various standards and agencies discussed below. We anticipate that for any given project, coordination and compliance with any number of the following standards, permits, and regulatory agencies may be required as listed here.

Anticipated Permits

- California Building Code
- City of Hermosa Beach Standard Plans and Specifications
- City of Hermosa Beach Storm Drain Masterplan
- Regional Water Quality Control Board Permit Requirements
- Regional Water Quality Control Board Reliability Requirements (sewer)
- American Water Works Association (AWWA) standards
- NASSCO PACP rating systems
- Caltrans Standard Plans and Specifications
- APWA "Greenbook" Specifications
- LA County Hydrology Manual
- Beach Cities Watershed Management Group EWMP
- Regional Water Quality Control Board Permit Stormwater Trash Reduction requirements



Approaches and techniques to engagement of community and stakeholders in the process of developing projects.

Properly notifying residents/businesses impacted by rehabilitation/repair work can be especially important for repair work in private right-of-way within City easements. For these locations, the locations of easements will be shown on the construction drawings. Work restrictions and notification procedures will be stated in the construction documents.

In case of projects that may require access to private properties to perform the field survey, public outreach becomes critical to project success. For such a project, Schaaf & Wheeler would propose to work with the City to develop door hangers to be provided to properties directly impacted by the project. Schaaf & Wheeler would recommend outreach and perhaps a townhall style meeting with the potentially affected properties to keep the impacted informed and responsive.

One of the most difficult aspects of large design projects that involve multiple agencies is coordinating the stakeholders and obtaining permits from relevant/governing agencies. To make the design process move more smoothly, it is Schaaf & Wheeler's approach to identify and contact stakeholders as early as possible in the design process to establish lines of communication and begin the coordination process for potential utility conflicts or obtaining encroachment permits. Schaaf & Wheeler generally includes coordination time with utility companies as well as permitting agencies as part of project plan to help move the design process along more smoothly.

Roles and Responsibilities for City Staff

Our goal is to limit the City's responsibility for these projects to the greatest extent possible. To that end, we only expect the City to:

- Identify City-imposed project constraints (schedule, budget, etc.)
- Facilitate access to restricted areas
- Provide review and input during the design process
- Negotiate for property rights
- Participate in public outreach efforts
- Perform actions that the City is the only authorized agent for (Signing permit applications, Adopting CEQA documents, etc.)

26 Woodland Place, San Rafael, CA

PUBLIC UTILITY ACCESS NOTICE

PROJECT SPONSOR: San Rafael Sanitation District

PROJECT NAME: WOODLAND AVENUE SEWER IMPROVEMENT PROJECT

Tuesday August 25, 2020

WHAT: Schaaf & Wheeler, Consulting Civil Engineers has been hired by the San Rafael Sanitation District to develop improvements to the sewer main. As part of this work locations of active sewer lateral connections need to be determined. This process requires access to your property and you may be requested to run certain household plumbing fixtures.

WHEN: On Tuesday August 25, 2020, we will need access to your yard to locate and any cleanouts and you may be requested to run certain household plumbing fixtures.

WHO TO CONTACT:

| | |
|------------------|---|
| Ben Shick | Doris Toy, San Rafael Sanitation District |
| Schaaf & Wheeler | 111 Morphew Street |
| 707-528-4848 | San Rafael, CA 94901 |
| | (415) 485-3484 |

We ask that on the date listed you make alternate arrangements for pets normally kept in your yard.

Thank you in advance for your patience and cooperation.

Typical Informational Notice About a Project and Activities Associated for Private Property Access



4. Project Management Plan

Managing Task Order Projects under an As-Needed Contract

We have crafted our team specifically to meet the challenges of managing multiple service orders that may require different sets of expertise. Our dedicated team will provide ample opportunity for a robust quality assurance / quality control program including peer reviews before we submit Work products to the City for their review.

To meet the schedules and negotiated budget for multiple and possibly simultaneous service orders, the Project Manager – Glen Anderson and individual discipline engineers will develop Project Management Plans (PMPs) tailored to each service order.

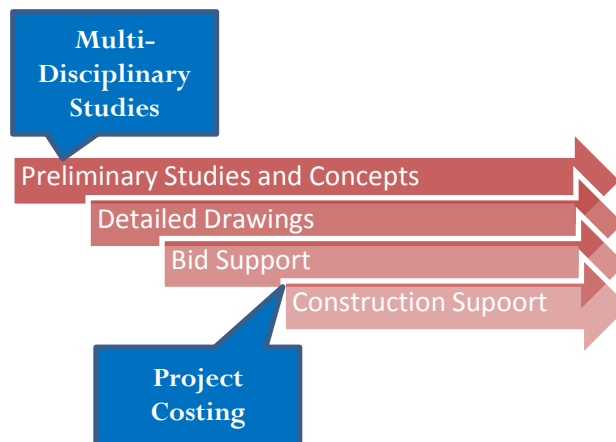
Professional teams will be formed to meet the specific challenges of work being performed under each service order. As has been our experience with similar projects, the teams are often multidisciplinary and comprised of individuals from more than a single firm. We have crafted our team specifically to meet the challenges of managing multiple service orders that may require different sets of expertise.

The PMPs will be shared with both the internal team and the City's project leadership team, providing living documents to guide and track project performance. The PMPs will outline each project's desired outcome, schedule, budget, and communication structure. As Work progresses, the PMPs will become monthly reports so that we all know where each project stands at-a-glance.

We have put together an experienced and competitive team led by Glen Anderson, PE, who has successfully completed wastewater and stormwater conveyance and pumping infrastructure projects for municipalities. Our team has the desired experience and availability to work on the projects. This proposed team will work cohesively together to complete tasks within budget and schedule.

MONTHLY REPORTING

- Tasks Completed
- Action Item Log
- Decision Tracking Log
- Change Management Log
- Budget & Schedule





Communications Approach

We firmly believe that keeping the City involved in the projects as they progress makes certain that corrections can be made before milestone submittals if the City's expectations aren't being met. Furthermore, it serves to keep City staff actively involved in the project so that they can be assured the end result meets their expectations. To that end, we would propose to hold bi-weekly conference calls for each project. In addition to bi-weekly progress calls, our monthly invoices will be accompanied by project summaries that detail the work performed for each invoice period.

Deriving effective management techniques from our prior project experience, we will be able to deliver services within cost, schedule, and resources. We will ensure projects are completed on time and on budget while giving constructible alternatives and designs to the City. The Project Manager will define and manage the scope of each project, build a work breakdown structure, create a project plan, create the project budget, define and allocate resources, manage the project development, identify and manage risks, and understand the project procurement process. These will be achieved by following three key factors.

- i) **Communication** – Effective management begins with communication which needs to occur in many areas including:
 - o **between design team and the City Project Manager.** This can be accomplished through regular scheduled meetings such as monthly meetings, progress meetings at critical design phases such as preliminary design workshops and submittal review, and written progress reports with invoicing.
 - o **between consultant project manager, staff and subconsultants.** This can be accomplished through weekly, project workforce scheduling and milestone progress reports. We have a very close working relationship with all of our proposed subconsultants which is a key to a successful project with multiple disciplines.
- ii) Project Development and Progress Monitoring - Establishment and Tracking of Submittal Milestones – Significant part of management

includes the establishment of milestones for deliverables to the client and subconsultant deliverables to the consultant. Milestones should also include dates of City tasks that need to be accomplished for the project including record information, submittal reviews and City supplied specification sections.

- iii) **Resource Allocation - Workforce Scheduling and Monitoring** - Weekly workforce schedule goes hand in hand with milestone target success. Schaaf & Wheeler has companywide weekly workforce meetings in which staff allocations are set in order to meet project requirements and deadlines. Workforce usage is monitored and reviewed in monthly billing cycles.

This team is readily available to respond to the needs of the City for this contract, including virtual community meetings, time-sensitive design changes, or to meet with the City for progress or needed meetings.

Virtual Engagement

The challenges and demands of a remote business during periods of uncertainty does not have to mean cancellations or delays of planned stakeholder consultation activities. Shifting how we communicate and consult through virtual public engagement alternatives keeps project schedules on track and helps maintain your important stakeholder relationships. Well-tailored virtual engagement solutions are needed now more than ever.





Quality Assurance / Quality Control (QA/QC)

A specific Quality Assurance (QA) methods and Quality Control (QC) processes and procedures plan for the project will be attached to each PMP. This provides an important tool for ensuring on-time and on-budget delivery include tracking action items and decisions; and early notification of potential contract changes to scope, schedule or budget and then discussing the implications of such changes and seeking your approval before implementing any changes.

Quality assurance is integral to project progress. The time for course correction is early; not after submittals are made and problems discovered. Our QA methods involve actions at the project and management levels that directly improve the chances that QC processes and procedures will result in a product or service that meets or exceeds your expectations and contract requirements. More formal QA/QC processes and documentation occur at milestones such as Basis of Design, 60% Submittal, 90% Submittal and Final Document phases to ensure the quality of work and proper resource allocation moving to the next phase of project delivery.

Customized QA/QC Plans

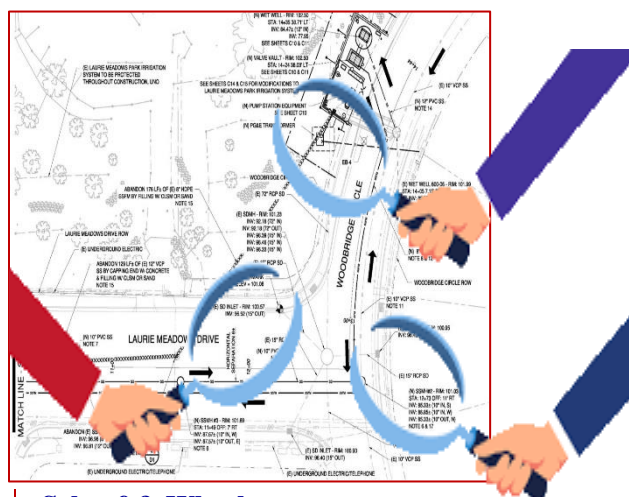
The customized QA/QC Plan will utilize a series of discipline and peer review checklists to perform specific Quality Control checks at each stage of the design or project deliverable.

Intra-discipline Reviews: Each discipline involved in project delivery will perform a Quality Control peer review of all deliverables by a senior level person who was not directly involved in the production of the Work product, prior to submittal using the formal checking and back-checking procedure and a pre-developed set of design review checklists.

Inter-discipline Reviews: Each discipline will perform a QC review of the plans, specifications, and other relevant project documents prepared by other disciplines to confirm that interfaces are compatible using the formal checking procedure.

Constructability Reviews: A senior-level engineer or appropriate professional experienced in design and construction relevant to the project at hand will perform constructability reviews to confirm that the project is constructible, and that all information required to construct the project is included in the contract documents. The level of this review will be appropriate to the submittal being made.

Quality Assurance Certifications: Prior to each submittal, the QA Team reviews the documentation prepared for each of the Quality Control reviews to ensure that the review followed our quality control processes, our Service Order Scope, and our contract terms and conditions. The Quality Assurance Manager will then certify that each document is ready for submittal.



Schaaf & Wheeler QA/QC Procedure

- Level I: Identifying Serious Issues
- Level II: Technical Comment – Addressed through Design
- Level III: Editorial or Preferential
 - Constructability Review
 - Independent Peer review
 - City Review
 - Project Management Review
 - Calculation, Plan, Specification, and Estimate Review
 - Plan review
 - Checking for fatal flaws and/or construction and staging issues,
 - System maintenance concerns, and
 - Verification of the plans to ensure concurrence with the City's standards and policies.



5. Experience and Qualifications

Summary of Relevant Projects

Port of Oakland On-Call Engineering Services, 2016 - Ongoing

Sanitary Sewer CCTV Inspection and Data Review, 2020.

This project includes the cleaning and CCTV inspection of approximately 50,000 linear feet of sanitary sewer piping within the Port of Oakland's Seaport Facility including the TraPac, 7th Street, Middle Harbor Road, Middle Harbor Shoreline Park, Joint Intermodal Terminal, Matson Terminal, and other areas as requested by the Port. CCTV inspection reports are generated in conformance to NASSCO PACP and LACP standards. The findings of these inspections are summarized in a technical memorandum that ranks the pipeline segments in order of severity and provides recommended improvements for pipelines receiving a level 4 or level 5 rating through the ranking process. Manholes with observed deficiencies are noted and assessed in conformance NASSCO MACP standards. The inspected pipeline that shows breakage, Inflow and infiltration, blockage are identified and made known to the Port in real-time.

Key Elements:

- ✓ 50,000 LF of sanitary sewer inspection, 6" to 36"
- ✓ CCTV data review and evaluation for all sewer infrastructure within and connected to the Port
- ✓ Manhole inspections and assessment
- ✓ Evaluation of condition related deficiencies
- ✓ Rehabilitation strategies

Tasks included:

- Pre-Inspection Investigations and Field Reconnaissance
- Hydro-jetting and CCTV inspections of Port and City of Oakland Sewers
- Technical memorandum including maps, tables, and figures
- Ranking and grouping for rehabilitation prioritization
- Suggest rehabilitation strategies

Oil/Water Separator Condition Assessment, 2019. Schaaf & Wheeler (S&W) completed condition assessment and improvement recommendations for four existing oil/water separators operating within the port. Field investigation were conducted to examine the operating condition of the four oil/water separators currently in operation. A memorandum summarizing the existing conditions and the recommended improvements for each of the oil/water separators was submitted. Schaaf & Wheeler assessed issues with the existing oil/water separators and associated equipment. The existing oil/water separator structures are generally in good structural condition; however the current maintenance may not be sufficient to maintain the designed level of service at the sites. Varying levels of oil were

Client and Contact:

Liem Nguyen
Port of Oakland
Engineering Division
530 Water St
Oakland, CA 94607
Ph: 510. 627.1636
Inguyen@portoakland.com

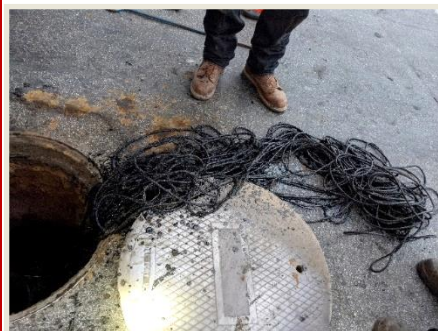
Services Provided:

- ✓ Sewer Inspections
Review and
Analyses
- ✓ Pump Station Design
- ✓ Outfall investigations and
recommendations

Contract Value: ~\$900,000

Team Members:

Glen M. Anderson, PE
Erin Slezak, PE
Benjamin L. Shick, PE
Glen M. Anderson, PE
Fidel T. Salamanca, PE





observed in each of the oil/water separators, with some even having oil in the discharge pipe. Some oil/water separators also had solids within the system. Because the rate of inflow into each device could not be determined, it is recommended that Port staff monitor the upstream chambers of the oil/water separators on a weekly basis to determine a necessary maintenance/cleaning interval for each device. Once an interval is established, monitoring can be reduced. Two of the four sites do not have installed actuators, and of the existing two sites with actuated valves, neither are operational. Only one of the two rain gauges is in an operable condition but it is in a non-ideal location.

7th Street Outfall Investigation, 2018. Schaaf & Wheeler conducted the field investigation and condition assessment of the existing 7th Street outfall based on port observations of significant debris within the outfall pipe. A memorandum summarizing the existing field condition and the options for repairing the system was submitted. The existing 7th Street outfall is an 18-inch reinforced concrete pipe and is embedded in the existing rip-rap covered shoreline. There is an existing hydro-dynamic separator trash capture unit directly upstream of the outfall. The outfall had been noted as having significant sedimentation and debris; upon an initial site visit, it was believed that the pipe had been broken due to the high levels of observed sediment. Schaaf & Wheeler recommends the full pipe replacement to address the underlying cause of the joint separation. The existing joint separation was likely caused by the loose backfill that supports the pipe and the CIPP liner would only be a temporary solution until the pipe shifts again causing a new failure. The full replacement is a long term solution that would address the cause of the joint separation and is anticipated to provide a much longer run of uninterrupted service.





South San Francisco On-Call Engineering Services, 2014 - Ongoing

On-Call Services

Green Stormwater Infrastructure Plan (C.3.j Compliance), 2017 – 2019 - Schaaf & Wheeler assisted the City develop their workplan and presented it to City Council in 2017. Schaaf & Wheeler is currently assisting the City with development of the Green Infrastructure Plan. This Green Infrastructure Plan is intended to describe how the City will shift their impervious surfaces and storm drain infrastructure from gray (traditional) to green. **Contract Value: \$100,000**

Orange Memorial Park (OMP) 90% Submittal Peer Review, 2019-2020 - Schaaf & Wheeler reviewed the plans and design for the regional green infrastructure project at Orange Memorial Park. Schaaf & Wheeler prepared a list of questions and comments for the City to send to design team. Comments focused primarily in missing information, unit costs, and constructability of the project **Contract Value: \$18,460**

Inlet Filter Trash Capture Design, 2017 – Schaaf & Wheeler assisted the City in identifying locations to install around 250 inlet screens in catch basins in order to meet the 70% trash capture requirement in 2017. Schaaf & Wheeler identified sufficient locations so that the City exceeded the 70% requirement and is currently meeting the 80% requirement that is not due until 2019. **Contract Value: \$32,616**

Trash Capture Feasibility Study, 2016 – Provides a multi-year plan to reduce trash entering creeks and the San Francisco Bay from the City of South San Francisco municipal separate stormwater system (MS4), with the goal of meeting the July 1, 2017 70% and July 1, 2022 100% trash reduction requirements as outlined in the Regional Water Quality Control Board (RWQCB, 2015) NPDES Municipal Permit section C.10. **Contract Value: \$40,000**

FEMA San Francisco Bay Coastal Hazard Peer Review, 2014 - Peer review of FEMA's San Francisco Bay Coastal Study and potential changes in the mapping of regulatory flood hazards in South San Francisco. Schaaf & Wheeler engineers reviewed the San Francisco Bay Area Coastal Study draft maps for San Mateo to provide a list of comments and questions for the City to submit using the San Mateo County Flood Risk Review/Comment Tool. This summary report also compares FEMA's study results to other recent coastal analysis undertaken in South San Francisco, San Mateo/Foster City, and San Francisco International Airport and comments on significant differences and the potential reasons for such differences. **Contract Value: \$9,500.**

Flood Plain Analyses and Hydrology Studies:

Francisco Terrace Hydrology Study, 2015 - Schaaf & Wheeler researched historical data from Colma Creek and San Francisquito USGS stream gages and the FEMA Flood Insurance Study (FIS) to identify large historical events that have occurred in San Mateo County

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Eric Evans
Associate Civil Engineer
Department of Public Works
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South San Francisco, CA 94080
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Eric.evans@ssf.net

Services Provided:

- ✓ Green Infrastructure Planning
- ✓ Trash Capture Planning and Design
- ✓ NPDES compliance studies
- ✓ Pump Station Design and Construction Support
- ✓ Hydrology and hydraulic studies
- ✓ FEMA submittals
- ✓ Floodplain mapping

Contract Value: ~\$1.4 million

Team Members:

Caitlin J. Gilmore, PE
Robin J. Lee, PE
Charles D. Anderson, PE
Leif M. Coponen, PE
Fidel T. Salamanca, PE



since the development of the Francisco Terrace neighborhood in 1948. Schaaf & Wheeler provided the City Attorney's Office with an understanding of the capacity of the local storm drain system. This information may be used by the City to research any maintenance or flooding issues reported by the residents. Schaaf & Wheeler identified properties that are likely impacted during a 10-year storm runoff event based on the modeled water surface elevation in the Francisco Terrace neighborhood. **Contract Value: \$35,100.**

Colma Creek Floodplain Analysis, 2016 - The hydraulic analyses define 100-year flood depths associated with Colma Creek overflows in the area bound by the El Camino Real to the west, South Spruce Ave to the south, and Mission Road to the north. Schaaf & Wheeler found the re-analyzed floodplain at the intersection to be consistent with the effective FEMA FIRM. **Contract Value: \$15,000.**



Valverde Storm Drain Issues and Development of Conceptual CIPs, 2017 - The City's Storm Drain Master Plan (SDMP - Michael Baker International, 2016) included a Focus Study on Valverde Drive to evaluate the system in more detail. Valverde Storm Drain Issue Investigation & Conceptual Design Memo provides a more detailed analysis on the system in the SDMP and provides an additional conceptual design alternative to the proposed project in the SDMP to alleviate flooding issue. Schaaf & Wheeler conducted a site visit to inspect the drainage system which identified a local drainage system and is not included in the City's GIS data. Schaaf & Wheeler studied an alternative to the proposed solution in the SDMP. Improvements to the drainage system to prevent water leaving the system and flooding the property were identified and planning level cost estimates were included. **Contract Value: \$13,000.**

South San Francisco Rehabilitation of Eight Wastewater Pump Stations, 2004 – 2009, 2017 -2018

Schaaf & Wheeler prepared contract documents to rehabilitate eight of the City's nine sewage pumping stations (with individual station capacities ranging up to 13 MGD) as part of a multi-phase, multi-year project to rehabilitate major trunk lines, interceptors, force mains and sewage pump stations serving commercial and industrial tributaries.

Work includes pumping capacity upgrades, wet well rehabilitation, electrical and mechanical reliability, seismic retrofit and code compliance.

A variety of pump station configurations are involved -- from small, simple, duplex submersible stations to three-level structures with full ventilation systems. Schaaf & Wheeler worked with the City to install a uniform SCADA system at each rehabilitated station.



Pump Station No. 3 was rehabilitated and placed back into service in 2006. Pump Station No. 4 (the largest City pumping facility east of Highway 101) was rehabilitated and placed back into service in 2009. The design for Pump Station No. 8 rehabilitation was completed in 2009 and has been in service since 2011.

Schaaf & Wheeler prepared a basis of design for the rehabilitation of Pump Station No. 2 and recently provided design engineering services. The pump station was designed to City standards with input from their operations and maintenance staff. Services also include assistance with the design of the discharge force main servicing Pump Station No. 2 by providing hydraulic design input necessary to replace the force main for operating efficiency.

Recent work for Industrial Sewage Pump Station No. 1 includes basis of design for the pump station relocation. Pump Station No. 1 will be an entirely new facility. Sanitary sewer service cannot be interrupted, so the existing pumping facility should remain operable throughout construction to avoid temporary pumping. As part of the construction plans, the old Pump Station No. 1 will be demolished and/or abandoned. **Contract Value: PS 8: \$48,300; PS 1: 431,902; PS2: \$357,219; PS3,4,6,7,10: \$539,556**



Hermosa Beach Storm Drain Master Plan, 2016 - 2017

The stormwater study conducted in 1996 is outdated and is of unknown quality, therefore the City lacked a firm understanding of their stormwater system. Requirements of the Regional NPDES permit have greatly changed the way cities build and operate their storm drainage systems currently.

Schaaf & Wheeler assisted the City of Hermosa Beach with the development of a Storm Drain Master Plan (SDMP). This SDMP provides Hermosa Beach with a comprehensive summary of the existing drainage network and a plan to meet conveyance and water quality goals. Schaaf & Wheeler incorporated innovative technologies and forward-thinking solutions to help Hermosa Beach provide stormwater services to its residents, businesses and visitors.

Data Collection. Schaaf & Wheeler reviewed and utilized readily available land use, topographic, geological, geographical, and storm drain system data within the Hermosa Beach Storm Drain Master Plan Area (study area). System attributes were examined, and irregularities were identified in the modeled system data (e.g. potentially incorrect pipe diameters). City and County record drawings were reviewed to verify data and fill data gaps. Where record drawings were not sufficient, field measurements of pipe sizes, layout, and invert depth have been taken. A survey of the storm drain network was conducted by the subconsultant - Kier & Wright to measure manhole and catch basin rim elevations. Field information including node depth, pipe diameter, and network layout was collected by Schaaf & Wheeler. Corrections were entered into the storm drain network GIS files with data sources noted. Interpolation was used to determine missing information not available from GIS data, survey, or record drawings.

Modeling. Schaaf & Wheeler initially applied the Los Angeles County (County) modified rational method using the HydroCalc Calculator as detailed in the 2006 County Hydrology Manual. After analysis, it was determined that this method did not accurately model watershed properties. A modified method was applied to the watershed to address these inaccuracies. This method was used alongside MIKE URBAN by DHI and the US EPA SWMM5 engine storm drain modeling software to evaluate system performance, identify deficiencies and recommend necessary improvements. Physical parameters used in the model are based on the City and County GIS data and other information.

Capital Improvements Plan. Improvement projects that are required to alleviate or minimize flooding based on the 10-year performance standards are identified and prioritized in the Capital Improvements Plan (CIP). The proposed CIP is broken into four priority levels for the purpose of funding and implementation. The summarized costs include for design, administration, construction management, and contingency of each improvement.

Client and Contact:

Lucho Rodriguez
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City of Hermosa Beach
1315 Valley Drive
Hermosa Beach, CA 90254
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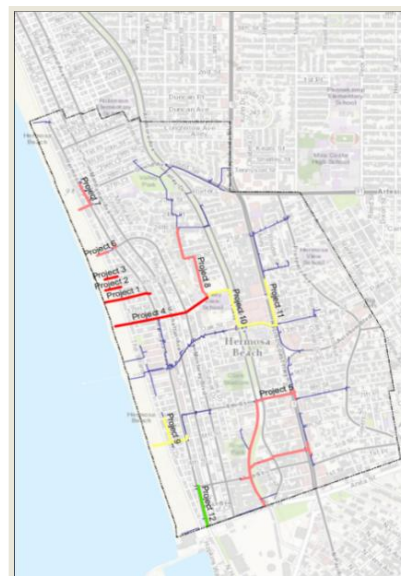
Services Provided:

- ✓ Coastal condition analysis,
- ✓ CIP development,
- ✓ Field investigations,
- ✓ Updated GIS data
- ✓ Cost estimates
- ✓ Cost effective designs and constructability.

Contract Value: \$189,950

Team Members:

Daniel J. Schaaf, PE
Emily D. Straley, PE
Fidel T. Salamanca, PE





City of Livermore On-Call Services (2005 – Ongoing)

Schaaf & Wheeler has assisted the City of Livermore on several major drainage studies and designs over the past fifteen years. Starting with the City's Storm Drain Master Plan in 2004 our team has modeled and designed improvements across Livermore. Schaaf & Wheeler works closely with the City and functions as an extension of its staff. The following is a list of significant projects within Livermore:

Design and Planning Project Completed:

- Flood Damage Repairs
- Flood Control Design
- Trash Capture Feasibility and Design
- Livermore Airport Levee/Floodwall Plan
- City Storm Drain Master Plan
- City Creek Master Plan
- El Charro Specific Plan H&H Study
- El Charro CLOMR/LOMR
- Arroyo Las Positas Desilting
- Livermore Trash Capture Master Plan
- Livermore Airport Stormwater Master Plan (NPDES)
- Bear Creek Oil Separator Design
- Development Review
- Brisa Storm Drain Box Culvert Design
- El Charro HMP Basin Design

The adjacent map shows the stormwater and wastewater projects our engineers have worked on in and for the City of Livermore.

Storm Drain Master Plan Update, 2020. Schaaf & Wheeler is updating the 2006 citywide storm drain master plan utilized improved data and modeling capabilities. The updated model will incorporate the City's vast network of open channels, pipes and detention basins. Trash capture and green infrastructure improvements will be incorporated into the updated CIP. **Contract Value: \$377,540**

Storm Drain Master Plan, 2003 – 2004. Schaaf & Wheeler prepared a storm drain master plan update for the City of Livermore. Project engineers evaluated the City's storm drain system for 10- and 100-year storm events using DHI MIKE-URBAN modeling software that combines the use of GIS and SCS unit hydrograph urban hydrology methods to model flow through pipe networks, open channels, and city streets. Project engineers modeled existing land uses along with future development conditions to determine potential storm drain impacts and improvements. The team worked closely with the City to categorize these projects by cost and urgency. Schaaf & Wheeler helped the City to form a nexus to update their storm drainage development fees.

Livermore's storm drain system is greatly affected by the water levels in flood control channels and streams; Schaaf & Wheeler subsequently developed a creek master plan that added detailed channel and culvert

Client and Contact:

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Senior Engineer
City of Livermore, City Hall
1052 S. Livermore Ave.
Livermore, CA 94550
Ph: 925-960-8129
jhwaxdeck@ci.livermore.ca.us

Services Provided:

- ✓ Storm drain master planning
- ✓ Trash Capture Planning & Design
- ✓ Hydraulic and scour analyses
- ✓ Storm drain assessment and rehabilitation design
- ✓ Hydrologic analysis and calculations
- ✓ Creek rehabilitation and stabilization
- ✓ Environmental permitting assistance
- ✓ Flood Plain Mapping and Protection
- ✓ Construction support services

Contract Value: ~1.2 million

Team Members:

Daniel J. Schaaf, PE
Emily D. Straley, PE
Benjamin L. Shick, PE
Caitlin J. Gilmore, PE
Robin J. Lee, PE
Fidel T. Salamanca, PE



data to the city's models. These combined models are an important planning tool for the City. **Contract Value: \$225,292**

City of Livermore Stormwater Trash Reduction Plan and Design, 2014 - 2019. Schaaf and Wheeler provided the City of Livermore with a multi-year plan to reduce trash entering channels within the City from the municipal separate stormwater system (MS4), with the goal of meeting trash reduction requirements as outlined in the Regional Water Quality Control Board (RWQCB) NPDES Municipal Permit section C.10.

The proposed Stormwater Trash Reduction Plan (Plan) guided the City to comply with both the 2017 and 2022 trash reduction deadlines. It includes a schedule for implementation, a description of proposed control measures and proposed best management practices (BMPs). The Plan supplements the Long-Term Trash Reduction Plan and Progress Assessment Strategy developed by the City to meet the NPDES of 2014. **Contract Value: \$76,840**

Design of large-scale trash capture device for Southfront Road that would intercept flows leaving two 66" diameter storm pipes that feed into two 12' by 8' box culverts. A 45-inch high weir that will be constructed to facilitate two 30-inch diameter stainless steel pipe extensions. Debris leaving the two 66-inch pipes will be intercepted and stored in nets attached to the pipe extensions meeting the NPDES Section C.10 permit requirements. The Trash Nets are currently in operation. 150 locations where CPS devices are feasible to provide a factor of safety in meeting the City's trash collection goals are also identified. **Contract Cost: ~\$106,780.**

Livermore Flood Damage Repairs, 2017- 2020. Winter of 2017 storms produced several high flow events throughout the City of Livermore. These flows caused significant damage to the City owned or maintained flood conveyance infrastructure. Schaaf & Wheeler was contracted by the City to design improvements for nine damaged locations to be constructed before the 2018 rainy season. The Schaaf & Wheeler team designed emergency channel repairs for portions of the Arroyo Mocho, Collier Canyon Creek and Arroyo las Positas. With channel construction banned between October 15th and April 15th, the construction documents for these repairs were required to be finalized at the beginning of June for construction to start at the beginning of July. Work under this extremely tight schedule design included:

- Detailed topographic surveys of the damaged sites;
- Hydraulic and scour analyses;
- Advanced soils sampling, including dioxins, as required by the City's Stream Maintenance Permit;
- Repair designs including rock riprap,
- Sediment and debris removal,
- Pavement and gravel path repair, and the clearing of damaged pavement from the channel; and
- Technical specifications; cost estimating; and mitigation planning.





Several additional sites throughout the City of Livermore are also being designed under this contract to maintain channel conveyance as permitted. The Schaaf & Wheeler team worked closely with City staff, the Alameda County Resource Conservation District, the Livermore Area Parks and Recreation District and the Regional Water Quality Control Board to get these projects designed in a timely and cost-effective manner.

Schaaf & Wheeler is also planning and designing additional City storm drainage repairs and improvements to correct interior flooding issues. These problem spots throughout the City are related to maintenance and piping system conveyance constraints. A planning document highlighting potential improvements to the City's drainage system was also developed. **Contract Value: \$800,000**

Grant Writing Support. Collier Canyon Sediment Basin Project and Las Positas Golf Course Flood Protection Project. Schaaf & Wheeler provided preliminary design, cost estimates, construction schedules and grant application support for these two projects. Schaaf & Wheeler coordinated with City of Livermore, Zone 7, FEMA and other involved agencies and consultants. Annual watershed sediment yield was analyzed using available data and regional regression calculations. Existing hydrologic and hydraulic models of the Collier Creek watershed were modified to optimize sizing and outlet configurations for the proposed basin. The volume of detention and peak flow reduction for various frequency events was documented. The preferred basin sizing was presented to the City. Estimates were made for the volume of sediment and invasive debris to be removed along the Las Positas channel through the golf course. Existing hydraulic models (HEC-RAS) of the channel were modified to develop modified floodplains. Schaaf & Wheeler also designed numerous berms and drainage systems throughout the golf course to reduce flood inundation and minimize damages during large storms. **Contract Value: \$25,000**

References

Port of Oakland On-Call Engineering Services, 2016 - Ongoing

Client and Contact:

Liem Nguyen
Port of Oakland, Engineering Division
530 Water St, Oakland, CA 94607
Ph: 510.627.1636
Inguyen@portoakland.com

Services Provided:

Sewer Inspections Review
and Analyses
Pump Station Design
Outfall investigations and
recommendations

On-Call Engineering Services, City of South San Francisco, 2014 - Ongoing

Client and Contact:

Matthew Ruble, PE - Senior Civil Engineer
City of South San Francisco
315 Maple Avenue, South San Francisco, CA 94080
Ph: 650.829.6668
Mathew.Ruble@ssf.net

Services Provided:

GI Planning,
Hydrology and Hydraulic studies,
Trash Capture Planning and Design,
FEMA Submittals,
Floodplain Reviews

On-Call Engineering Services, City of Livermore, 2005 - Ongoing

Client and Contact:

Joel Waxdeck, PE - Assistant City Engineer
City of Livermore, City Hall
1052 S. Livermore Ave., Livermore, CA 94550
Ph: 925.960.8129
jhwaxdeck@ci.livermore.ca.us

Services Provided:

Storm Drain Master Planning
Storm Drain Assessment & Design
Hydraulic and Scour Analyses
Hydrologic Analysis & Calculations
Creek Rehabilitation & Stabilization
Permitting Assistance
Flood Plain Mapping and Protection



Experience and Qualifications of Key Personnel

Team and its Management - Our Project Manager

Has Necessary Experience - Our results-oriented team for the City of Hermosa Beach As-Needed Civil Engineering Services for Sanitary Sewer Storm Drain projects is under the strong leadership of **Glen M. Anderson, PE**. **Glen has 14 years of experience** in infrastructure planning, assessment; and design of waste water conveyance systems, stormwater systems and water supply and distribution systems. Most of these projects have required multidisciplinary subconsultant coordination including structural engineering, RWQCB compliance, electrical engineering, survey and mapping, utility relocation, environmental permitting and stakeholder involvement.

Is an Accomplished Project Manager – Glen M. Anderson, PE is an owner and Senior Project Manager at Schaaf & Wheeler. He will be the Project Manager and provide his expertise in assessment, design and construction support of sewer pipes repairs. **Glen has completed design of more than 15,000 LF of Sewer pipes**. Additionally, he has worked on numerous pump station rehabilitation/replacement design projects throughout the Bay Area. **Glen Anderson has performed condition assessments for more than 150 pump stations and designed about 100 of them**.

Glen has served as project manager and project engineer of gravity sewers, force mains, sewage lift stations, storm drain pipes, stormwater pumping stations, water booster stations and storm drains for public agencies throughout and feasibility studies to construction document preparation and construction support – help complete the projects within schedule and budget.

Some of his relevant projects are:

- PSQ Reserve Flow and URD Project, East Bay Municipal Utility District
- Rehabilitation of 96" CMP, Town of Moraga
- O'Connor Pump Station Trash Capture Retrofit, City of East Palo Alto
- City-wide Sewer Repairs, City of Morgan Hill
- Assessment and Engineering for Sanitary Sewer Main Rehabilitation, City of San Mateo
- Crestmoor and Lomita Pump Stations and Forcemain, City of San Bruno
- Force Main Appurtenance Projects ESDC, Ross Valley Sanitary District
- Cabrillo Avenue Sewer Main Abandonment and Replacement, City of Santa Clara
- South Trunk Sewer Relief Line, City of San Mateo
- Morgan Hill Trunk Sewer No. 2, City of Morgan Hill

Project Role: *Glen will be responsible for day-to-day project management for the entire length of the project. He will focus and maintain the project schedule and budget as well as undertake ultimate responsibility for the quality of all work products. Glen will hold regular team meetings to make sure issues are resolved effectively and to allocate resources to critical tasks. He will work closely with the City staff to make sure contractual and procedural issues are exposed and resolved.*



Education

BSCE, Civil and Environmental Engineering, University of California, Davis

Licenses

Registered Civil Engineer
California C 76720

Certifications

NASSCO PACP, MACP and
LACP Certified, Cert. No.
U-714-06021855

Hydraulic Institute, Pump System
Assessment Certified

Years of Experience: 14

Years with S&W: 14

District's Day-to-Day Contact:

1171 Homestead Rd., Ste. 255,
Santa Clara, CA 95050
Ph: 408.246.4848

Email: ganderson@swws.com

Qualification Highlights:

- ✓ Completed design and CS of a \$7.5 million gravity main and force main project for EBMUD in City of Berkeley
- ✓ Knowledge and Experience in Open Cut and Trenchless Technologies: CIPP, Pipe Bursting, Pipe Reaming
- ✓ Project Design Manager for Sewer Rehabilitation Projects for:
 - City of San Mateo
 - City of Santa Clara
 - City of Morgan Hill



Other Key Personnel

Daniel J. Schaaf, PE – Principal-in-Charge – Vice President and an owner of Schaaf & Wheeler. Dan has more than twenty years of experience in storm drain master planning, flood control and drainage, hydrology and hydraulics, and physical and numerical modeling.

Dan recently led Schaaf & Wheeler teams that produced storm drain master plans for the cities of Hermosa Beach, Cupertino, Larkspur, Palo Alto, and Mountain View. Many of these storm drain master plans included evaluation of the impacts of sea-level-rise (SLR) and climate change on storm drainage and flood protection systems. Models were used to analyze both the 2050 and 2100 scenarios.

Dan Schaaf has also performed several FEMA flood insurance studies throughout California. He has extensive experience with several one- and two-dimensional numerical modeling software programs and, more importantly, understands the capabilities and limitations of these tools. He utilizes this valuable experience to efficiently expedite project processes and complete projects within schedule.

Dan is currently working on the Storm Drain Master Plan for City of Carmel by-the-Sea and County of Santa Cruz Zone 5. He has a thorough understanding of technical methods for watershed hydrology, open channel and pipe-network hydraulics, coastal and estuary processes, one-dimensional and two-dimensional (2D) modeling and floodplain mapping.

Project Role: *Dan will be responsible for contractual negotiations with the City. He is the authorized signatory for this On-Call contract. Dan will evaluate and model storm drain improvements and modifications, where necessary.*

Dan brings the veteran knowledge of the City's drainage and stormdrain infrastructure and its associated issues and needs from assisting the Drainage Study Master Plan that Schaaf & Wheeler Completed back in 2016-2017.

Benjamin L. Shick, P.E. – QA/QC – Ben Shick is a vice president and owner at Schaaf & Wheeler. Ben has more than **18 years of experience** in infrastructure planning and design of wastewater, stormwater and potable water systems. He provides expertise in alternative analyses, trenchless technologies, design and construction support sewer main rehabilitation. He has served as project manager and project engineer for design of large diameter pipes, sewage lift stations, stormwater pumping stations and gravity sewers.

Ben's sewer rehabilitation/replacement projects generally include flow monitoring, CCTV inspections, pipe rehabilitation and replacement, manhole rehabilitation and replacement, pipe placed on structural supports, etc. Ben is proficient in water resources modeling tools: AutoCAD, WaterCAD, HEC-RAS, HEC-HMS, GeoRAS, MOUSE, and ArcGIS 9.0.

Years of Experience: 25+

Qualifications Highlights:

- ✓ Completed Stormdrain Master Plan for the City of Hermosa Beach
- ✓ Completed 20 Storm Drain Master Plans.
- ✓ Proficient at modeling and developing prioritized CIPs
- ✓ Highly familiar with FEMA process
- ✓ Worked on over Hundred FEMA LOMR/CLOMR Submittals
- ✓ Completed several Dam Inundation Studies
- ✓ Council Presentations for Project Execution
- ✓ Evaluated impacts of SLR on storm drainage and flood protection systems.

Years of Experience: 18

Qualification Highlights:

- ✓ Design & CS of ~150,00 LF of sanitary sewer pipes
- ✓ Knowledge and Experience in Open Cut and Trenchless Technologies: CIPP, Pipe Bursting, Pipe Reaming
- ✓ 10 Years of QA/QC experience
- ✓ Resource optimization and cost control
- ✓ Stakeholder coordination
- ✓ Award-Winning Projects



Ben is currently providing On-Call engineering services to the City of San Mateo, City of Belmont, and the City of Alameda. Some of his relevant sewer projects are:

- Sanitary Sewer and Storm Drain Rehabilitation and Replacement Projects, City of Belmont
- Harbor Drive Sewer Rehabilitation Project, Town of Corte Madera
- Woodland Avenue Sewer Improvement Project, San Rafael Sanitation District
- Sanitary Sewer Repair Project, City of Mill Valley
- El Camino Real Sanitary Sewer Rehabilitation, City of San Mateo
- Sanitary Sewer Rehabilitation Projects, City of San Mateo
- El Camino Real Sanitary Sewer/Water Improvement Project and Cabrillo Avenue Sewer Main Abandonment and Replacement, City of Santa Clara
- Kingridge Sanitary Sewer and Storm Drain Improvement Project, City of San Mateo
- Sanitary Sewer Pump Station Evaluation and Design, Town of Hillsborough
- Rehabilitation and Replacement of 32 Sanitary Sewer Pump Station, City of Alameda
- Rehabilitation and Replacement of 28 Sanitary Sewer Pump Stations, City of Oakland

Project Role: Ben will ensure quality control and quality assurance for all deliverables of the project. He will perform quality control several times throughout the project to minimize the need to fix problems further along in the project. Ben will work with Glen Anderson at Schaaf & Wheeler to provide critical reviews of alternatives and design methods. He will also scrutinize improvements for constructability and cost.

Caitlin J. Gilmore, P.E., QSD, CPSWQ – Stormwater Treatment and Trash Capture - Caitlin is a Senior Project Manager at Schaaf & Wheeler and brings forth in-depth understanding of urban drainage systems. Caitlin is certified by the state of California as Qualified Stormwater Pollution Prevention Plan (SWPPP) Developer and Practitioner, is a Certified Professional in Storm Water Quality and brings in more than 12 years of experience in stormwater systems, hydrology and hydraulics, open channel design, bridge scour analysis, pump stations and water distribution. She is accomplished in full trash capture planning and design, NPDES permit compliance and storm sewer system design.

Caitlin augments her skills regularly through training and she has provided numerous third-party reviews of stormwater management and pollution prevention plans. Recently, she conducted a presentation on trash capture hydraulics at the APWA North conference.

Caitlin is leading the teams conducting feasibility studies for location of the trash capture devices. For some of these cities, Schaaf & Wheeler is also designing the trash capture devices that were proposed as a part of the feasibility studies.

Project Role: Caitlin will be the lead on all projects related to stormwater treatment and trash capture.

- *Water/ Sewer Main Replacement Project Completed for Mid-Peninsula Water District/ City of Belmont, APWA Honor Award for 2019*
- *Shoreway Sewer Replacement Project Completed for City of Belmont, Project of the Year Award for 2019*

Years of Experience: 12+

Qualifications Highlights:

- ✓ *Caitlin is assisted several California municipalities to comply with the Regional Municipal Permit Section C.10 to achieve their trash capture reduction goals, including:*
 - *San Jose,*
 - *South San Francisco,*
 - *San Bruno,*
 - *Mountain View,*
 - *San Mateo,*
 - *Hermosa Beach,*
 - *Palo Alto,*
 - *Livermore.*
- ✓ *Some of these projects are award winning*
 - *The San Jose Project received a 2019 APWA Silicon Valley Chapter Honor Award and a Commendation Award at the 2019 ACEC Engineering Excellence Awards.*
 - *Mountain View Citywide Trash Capture Phase I Project received the APWA 2019 Environment Award.*



Robin J. Lee, PE –Stormwater Green Infrastructure - Robin is a senior project engineer at Schaaf & Wheeler with over 13 years of experience and has been working with the City of South San Francisco for the past three years to comply with the Regional Municipal Permit Section C.3.j. to achieve their PCBs and mercury reduction goals. Robin authored trash capture feasibility reports for both the cities of San Bruno and South San Francisco. She also assisted both jurisdictions install small scale CPS units to meet the 80% trash capture targets. Robin conducted the San Mateo Countywide Water Pollution Prevention Program and the Santa Clara Valley Urban Runoff Pollution Prevention Program new development workshop training sessions regarding stormwater treatment measure reviews and inspections.

Robin is currently managing a green infrastructure project for the City of Menlo Park and routinely reviews stormwater management plans to ensure low impact development (LID) is designed to meet the permit requirements and engineered to function as a drainage system.

Robin has worked on numerous successful storm drainage and flood control projects throughout the Bay Area. Her experience with master planning hydraulic systems is extensive and she has the natural ability to explain complex engineering concepts to the general public as well as government officials. Robin is proficient in PCSWMM, SWMM, HEC-RAS, HEC-HMS, HY-8, BAHM, and ArcMap.

Project Role: Robin will be the lead on all projects related to stormwater green infrastructure.

Fidel T. Salamanca, P.E. - Project Engineer – Fidel Salamanca is a senior engineer at Schaaf & Wheeler with more than 7 years of experience in designing water mains, pump stations for sanitary sewer and stormwater systems, open channels, culverts, and stormwater networks. He is currently managing the design and construction support for five (5) water mains for Contra Costa Water District. He has completed the campus-wide Water System Pipe Replacement preliminary design for seven (7) water mains for Sandia National Laboratories. He has valuable experience in storm drain master planning, modeling, analyzing and planning urban stormwater systems. He has completed Storm Drain Master Plans for the Cities of Alameda, El Cerrito, East Palo Alto, Palo Alto, Orinda, Mountain View, North San Jose, the Town of Moraga and County of Santa Cruz, Zone 5 & 6. Fidel has been involved in water quality related projects and has assisted trash capture feasibility studies for Bay Area cities. He assisted with the design of the trash capture devices for the City of Mountain View and San Jose. Fidel is also proficient in modeling software including ArcGIS, AutoCAD, EPA SWMM5, HY8, MIKE URBAN, MIKE 21, BAHM, HAMMER, Microstation, HEC-RAS, geo-RAS, HEC-HMS, geo-HMS, and HEC-1.

Project Role: Fidel will be the project engineer and assist with the alternatives, design and construction support.

Years of Experience: 13+

Qualifications Highlights:

- ✓ Stormwater GI Planning and Design;
Currently assisting:
- City of Pacifica
- City of South San Francisco
- City of Menlo Park
- City of Palo Alto
- ✓ NPDES Compliance and Trash Capture
- ✓ C.3 Reviews and Inspections
- ✓ Water Quality and Hydrology Studies
- ✓ Permitting Assistance
- ✓ Training and Stakeholder Workshops
- ✓ Proficiency in Storm Drain Master Planning
- ✓ SLR Study on Storm Drainage and Flood Protection Systems
- ✓ Hydrology and Hydraulics

Years of Experience: 7+

Qualifications Highlights:

- ✓ Project Engineer for the Hermosa Beach Storm Drain Master Plan
- ✓ Assessed and designed wastewater and stormwater pump stations
- ✓ Assisted with:
- Sewer Rehabilitation Projects
- Storm Drain Design
- Trash Capture Design
- ✓ Water Mains Design for Sandia National Laboratories and CCWD
- ✓ NPDES Compliance
- ✓ C3 Reviews
- ✓ Hydraulic Modeling



Table: Key Personnel Qualifications, Experience and Role

| Name & Firm | Years of Experience | Role and Responsibility | License, Certifications and Education |
|---|----------------------------|--|---|
| Glen M. Anderson, PE, PACP | 14 | Project Manager | Registered Civil Engineer, California C76720 BSCE, Civil and Environmental Engineering, University of California, Davis NASSCO PACP Cert. U-714-06021855 Hydraulic Institute, Pump System Assessment Certified |
| Daniel J. Schaaf, PE | 25+ | Principal-in-Charge and Project Engineer Modeling | Registered Civil Engineer, California C57617 BSCE, San Jose State University MSCE (Water Resources Engineering), San Jose State University |
| Benjamin L. Shick, PE | 18 | Quality Control and Quality Assurance | Registered Civil Engineer, California C68813 MSCE, Montana State University-Bozeman BSCE, Montana State University-Bozeman |
| Caitlin J. Gilmore, PE, QSD/QSP, CPSWQ, LEED AP | 12 | Project Engineer Stormwater Treatment & Trash Capture Design | Registered Civil Engineer, California C76810 BSCE, Civil and Environmental Engineering, California Polytechnic University, SLO MS, Environmental Engineering, University of Southern California |
| Robin J. Lee, PE - Senior Project Engineer | 13 | Project Engineer Green Infrastructure NPDES Compliance | Registered Civil Engineer, California C70040; Washington 43587 MS, Civil and Environmental Engineering, UC Berkeley BS, Civil and Environmental Engineering, UC LA |
| Fidel T. Salamanca, PE | 7 | Project Engineer | Registered Civil Engineer, California C84851 BSCE, Civil Engineering, California Polytechnic State University, San Luis Obispo |

Detailed resumes of the entire team are attached as Appendix.



6. Required Forms

RFQ 20-02

City of Hermosa Beach



6.3 Required Forms

6.3.1 Certification of Proposal

RFQ #: No. 20-02

The undersigned hereby submits its proposal and agrees to be bound by the terms and conditions of this Request for Proposal (RFQ).

1. Proposer declares and warrants that no elected or appointed official, officer or employee of the City has been or shall be compensated, directly or indirectly, in connection with this proposal or any work connected with this proposal. Should any agreement be approved in connection with this Request for Proposal, Proposer declares and warrants that no elected or appointed official, officer or employee of the City, during the term of his/her service with the City shall have any direct interest in that agreement, or obtain any present, anticipated or future material benefit arising therefrom.
2. By submitting the response to this request, Proposer agrees, if selected to furnish services to the City in accordance with this RFQ.
3. Proposer has carefully reviewed its proposal and understands and agrees that the City is not responsible for any errors or omissions on the part of the Proposer and that the Proposer is responsible for them.
4. It is understood and agreed that the City reserves the right to accept or reject any or all proposals and to waive any informality or irregularity in any proposal received by the City.
5. The proposal response includes all of the commentary, figures and data required by the Request for Proposal
6. The proposal shall be valid for 90 days from the date of submittal.
7. Proposer acknowledges that the City may issue addendums related to this RFQ and that the proposer has reviewed the following addendums which have been issued:

Addendum: None

Addendum: _____

Addendum: _____

Addendum: _____

8. Proposer further acknowledges the provisions of any addendums issued have been incorporated into their proposal.

Signature of Authorized Representative:



Printed Name and Title:

Daniel J. Schaaf, P.E. - Vice President



RFQ 20-02

City of Hermosa Beach



6.3.2 Non-Collusion Affidavit

RFQ #: No. 20-02

The undersigned declares states and certifies that:

1. This proposal is not made in the interest of or on behalf of any undisclosed person, partnership, company, association, organization or corporation.
2. This proposal is genuine and not collusive or sham.
3. I have not directly or indirectly induced or solicited any other Proposer to put in a false or sham proposal and I have not directly or indirectly colluded, conspired, connived, or agreed with any other Proposer or anyone else to put in a sham proposal or to refrain from submitting to this RFQ.
4. I have not in any manner, directly or indirectly, sought by agreement, communication, or conference with anyone to fix the proposal price or to fix any overhead, profit or cost element of the proposal price or to secure any advantage against the City of Hermosa Beach or of anyone interested in the proposed contract.
5. All statements contained in the Proposal and related documents are true.
6. I have not directly or indirectly submitted the proposal price or any breakdown thereof, or the contents thereof, or divulged information or data relative thereto, or paid, and will not pay, any fee to any person, corporation, partnership, company, association, organization, RFQ depository, or to any member or agent thereof, to effectuate a collusive or sham proposal.
7. I have not entered into any arrangement or agreement with any City of Hermosa Beach public officer in connection with this proposal.
8. I understand collusive bidding is a violation of State and Federal law and can result in fines, prison sentences, and civil damage awards.

Signature of Authorized Representative:

Printed Name and Title:

Daniel J. Schaaf, P.E. - Vice President



RFQ 20-02

City of Hermosa Beach



6.3.3 Compliance with Insurance Requirements

RFQ #: No. 20-02

The selected consultant will be expected to comply with the City's insurance requirements contained within this RFQ.

The undersigned declares states and certifies that:

1. Proposer agrees, acknowledges and is fully aware of the insurance requirements as specified in the Request for Proposal.
2. If selected, proposer agrees to accept all conditions and requirements as contained therein.

Signature of Authorized Representative:

Printed Name and Title:

Daniel J. Schaaf, P.E. - Vice President



RFQ 20-02

City of Hermosa Beach



6.3.4 Acknowledgement of Professional Services Agreement

RFQ #: No. 20-02

The selected consultant will be expected to comply with and sign the City's Professional Services Agreement. Proposers should identify and/or indicate any exceptions to the Sample Professional Services Agreement included in Section 6.2. The City Attorney or their designee retains the discretion to accept or reject proposed exceptions or modifications to the City's Professional Services Agreement.

1. Proposer agrees, acknowledges and is fully aware of the conditions specified in the City's Sample Professional Services Agreement.
2. Proposer agrees to accept all conditions and requirements as contained therein with exceptions noted as follows:

RECITALS

C. The Consultant ~~warrants to the City that it~~ has the qualifications, experience and facilities to perform properly and timely the services under this Agreement.

12. INDEMNIFICATION.

CONSULTANT shall indemnify, defend with counsel approved by CITY, ~~with said approval not unreasonably withheld~~ and hold harmless CITY, its officers, officials, employees and volunteers from and against all liability, loss, damage, expense, and cost (including without limitation reasonable attorneys fees, expert fees and all other costs and fees of litigation) ~~of every nature to the extent arising out of or in connection with~~ CONSULTANT's negligent performance of work hereunder or its failure to comply with any of its obligations contained in this AGREEMENT, regardless of CITY'S passive negligence, but excepting such loss or damage which is caused by the sole active negligence or willful misconduct of the CITY. ~~Should CITY in its sole discretion find CONSULTANT'S legal counsel unacceptable, then CONSULTANT shall reimburse the CITY its costs of defense, including without limitation reasonable attorneys fees, expert fees and all other costs and fees of litigation.~~ The CONSULTANT shall promptly pay any final judgment rendered against the CITY (and its officers, officials, employees and volunteers) covered by this indemnity obligation. It is expressly understood and agreed that the foregoing provisions are intended to be as broad and inclusive as is permitted by the law of the State of California and will survive termination of this Agreement.

Signature of Authorized Representative:

Printed Name and Title:

Daniel J. Schaaf, P.E. - Vice President

17. INSURANCE REQUIREMENTS.

C. CONSULTANT agrees to provide immediate notice to CITY of any claim or loss against ~~Contractor~~ CONSULTANT arising out of the work performed under this agreement. CITY assumes no obligation or liability by such notice, but has the right (but not the duty) to monitor the handling of any such claim or claims if they are likely to involve CITY.

21. NON-APPROPRIATION OF FUNDS. Payments to be made to CONSULTANT by CITY for services preformed within the current fiscal year are within the current fiscal budget and within an available, unexhausted fund. In the event that CITY does not appropriate sufficient funds for payment of CONSULTANT'S services beyond the current fiscal year, the Agreement shall cover payment for CONSULTANT'S services only to the conclusion of the last fiscal year in which CITY appropriates sufficient funds and shall automatically terminate at the conclusion of such fiscal year. CITY shall provide reasonable notice to CONSULTANT so that work does not proceed beyond such fiscal year.



Appendix: Resumes

Glen M. Anderson, P.E. Project Manager

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS



Glen M. Anderson, P.E. has more than 14 years of experience in stormwater and wastewater pumping and conveyance, sanitary sewer systems, potable water assessment and design as well as the associated construction support and management for those projects. Glen has worked on storm and sanitary sewer pump station rehabilitation projects throughout the Bay Area. He leads multidisciplinary teams to provide assessment, feasibility studies, complete design of pump stations rehabilitation and replacement projects. His management skills in every phase of the project help complete the projects within schedule and budget. Glen has successfully completed work on several sanitary sewer main and trunk rehabilitation projects. Glen's potable water experience projects include the assessment and rehabilitation of booster pump stations, design of water tanks and

planning and design for potable water wells and pipelines. In addition to design, Glen has provided design, construction support and management services for a variety of projects, including pump stations, wells, pipelines, storage tanks and generator installations.

Glen has performed condition assessments for more than 150 stormwater and sewer pump stations and designed several of them that are currently operational.

Education

BSCE, Civil and Environmental Engineering,
University of California, Davis

Licenses

Registered Civil Engineer California C76720

Certifications: NASSCO PACP, MACP and LACP
Certified, Cert. No. U-714-06021855

Hydraulic Institute, Pump System Assessment Certified

Affiliations: Peninsula Water Works Association –
Board Member; Pipe Users Group - NorCal;

Relevant Projects

Sanitary Sewer CCTV Inspection and Data Review, Port of Oakland (2020 – 2022), Contract Value: \$429,094. As Project Manager, Glen Anderson is leading the cleaning and CCTV inspection of approximately 50,000 linear feet of sanitary sewer piping within the Port of Oakland's Seaport Facility including the TraPac, 7th Street, Middle Harbor Road, Middle Harbor Shoreline Park, Joint Intermodal Terminal, Matson Terminal, and other areas as requested by the Port. CCTV inspection reports are generated in conformance to NASSCO PACP and LACP standards. The findings of these inspections are summarized in a technical memorandum that ranks the pipeline segments in order of severity and provides recommended improvements for pipelines receiving a level 4 or level 5 rating through the ranking process. Manholes with observed deficiencies are noted and assessed in conformance NASSCO MACP standards. The inspected pipeline that shows breakage, Inflow and infiltration, blockage are identified and made known to the Port in real-time.

Corporation Way System Upgrades and Pump Station, West Bayshore Road Pump Station and West Bayshore Road Trunkline Improvements Project, City of Palo Alto (2020-2021), Contract Value: \$798,578. The areas along East Bayshore Road and West Bayshore Road are not capable of draining

when the water levels are high in Adobe Creek. The existing piping at these locations is undersized for the anticipated flows. Therefore, these areas often experience localized flooding during storm events. To mitigate the flooding at these sites, as Project Manager, Glen Anderson is leading a multidisciplinary team to provide design and construction support services to install small storm drain pump stations at each site.

Basin 2 and 3 Collection System Improvements Project: Sanitary Sewer Pump Stations Rehabilitation, City of San Mateo (2016–2019). Schaaf & Wheeler completed the preliminary evaluation, alternatives analysis, and design for the rehabilitation of the 38th Ave., 41st Ave., and Dale Ave. pump stations. Tasks included alternatives analyses for capacity augmentation, upgrade of the standard equipment including flygt rail-mounted submersible pumps; modern electrical panels, pump starters, and automatic transfer switch; Hydrotainer 200 pump controller; Motorola ACE6300 RTU; and Cummins standby diesel engine generator. Dale Avenue pump station upgrades include replacement of existing pumps and motors; replacement of control panels; installation of new VFDs; replacement of engine generator; improved SCADA and controls system; and wetwell improvements.

Pump Station Q Reverse Flow Project, East Bay Municipal Utility District (2016-2019). Schaaf & Wheeler designed two



36-inch valves, approximately 1,800 linear feet of 36-inch gravity line, and two weir vaults that allow the existing Pump Station Q forcemain to be used in reverse as a gravity pipeline. In the event that a large rain event requires the use of Pump Station Q, the valves close and the forcemain is back to service as a forcemain. This project was mandated in the EPA consent decree to the District and significantly reduces the use of the District's wet weather sewer facilities

Rehabilitation of Failed 96" Stormwater Corrugated Metal Pipe, Town of Moraga, 2016 – 2017. The sinkhole (approximately 15-feet wide by 20-feet long by 15-feet deep) developed over an existing 96-inch diameter corrugated metal pipe (CMP). The Town immediately declared a State of Emergency. Following the emergency protocol, As Project Manager, Glen Anderson assisted with the detailed investigation into the sinkhole cause including inspection of the existing CMP. Glen completed the design of approximately 120 linear feet of replacement pipe. The CMP was replaced with reinforced concrete pipe.

Sanitary Sewer Rehabilitation Projects, City of San Mateo, (2014 – 2016), Contract Value: \$190,913. As Project Engineer, Glen Anderson led and completed site investigations, inspections, researched existing data, and developed recommended alternatives for various sewer rehabilitation projects within the City. Provided detailed design of the recommended alternatives which consisted of: replacement of sewer lines across drainage channels (both above ground on piers, and below ground); replacement of sewer lines in back yard easements with tight access; replacement of sewer lines through large drainage box culverts; sewer line rehabilitation with cured-in-place pipe (CIPP); sewer main replacement and realignment; manhole rehabilitation and replacement; the work included geotechnical investigations, easement research, topographical surveying, environmental permitting, and Caltrans Encroachment Permit.

AP12 and 15 Pump Stations Rehabilitation – Port of Oakland (2018 – 2020). Contract Value: \$113,697. As Project Manager, Glen Anderson prepared rehabilitation/replacement plans for the two lift stations. This project rehabilitates the pump stations and eliminates failures associated with the existing ejector pumps. Necessary and desired improvements for each pump station were identified. Improvements include pump station capacities, available power sources, station limitations, and other constraints that influence pump station design. The pump station improvement recommendations are based on deficiencies observed during visits and desired operational improvements. The noted deficiencies as well as the recommended improvements for each of the stations are outlined in the Basis of Design Report.

Sewer Lift Stations J&K and D, F & W Improvements, City of Morgan Hill (2015 – 2017), Contract Value: \$247,325. J&K Lift Stations included complete design, plans, specifications, estimates and bidding and construction support. Existing station is rebuilt by replacing the MCC, cabinets and their supports; rebuilding electric meter assemblies and piping with

check valves and gate valves outside the wet wells; preparing surface and recoating the wet wells; replacing the wet well cover with H20 traffic lid; concrete site work; removing bollards and repaving; providing short retaining structures. The rehabilitation of 3 sewage pump stations D, F & W included new wet well lids and hatches, grading modifications, new electrical panels and possibly new pumps. Station F includes evaluation of a new access driveway to the station.

Sanitary Sewer Rehabilitation Projects, City of San Mateo, (2014 – 2016), Contract Value: \$190,913. As Project Engineer, Glen Anderson led and completed site investigations, inspections, researched existing data, and developed recommended alternatives for various sewer rehabilitation projects within the City. Provided detailed design of the recommended alternatives which consisted of: replacement of sewer lines across drainage channels (both above ground on piers, and below ground); in back yard easements with tight access; through large drainage box culverts; sewer line rehabilitation with cured-in-place pipe (CIPP); sewer main replacement and realignment; manhole rehabilitation and replacement; the work included geotechnical investigations, easement research, topographical surveying, environmental permitting, and Caltrans Encroachment Permit.

Cabrillo Avenue Sewer Main Abandonment and Replacement, City of Santa Clara (2013 – 2014), Contract Value: \$101,650. As Project Manager, Glen Anderson provided design and construction support services for the replacement of sewer pipe located within Cabrillo Avenue, running parallel to the existing sewer line. Design included plan and profile of a new 12-inch PVC sewer main, associated manholes, and lateral connections. An inverted siphon was required to cross under an existing 24-inch storm drain line. The siphon consists of two 8-inch barrels, inlet structures, outlet structures, and an air jumper. In addition, replacement of several smaller sewer and storm drain lines necessary to facilitate the installation of the new sewer mainline were also designed.

El Camino Real Sanitary Sewer Rehabilitation, City of San Mateo (2017 - 2018), Contract Value: \$500,000 . As Project Engineer, Glen Anderson reviewed and evaluated the condition of all of the City's sanitary sewer pipes within and adjacent to El Camino Real and developed a recommended improvement project to address all significant condition related issues. Subsequently the rehabilitation and replacement design of 10,050 LF of pipe and the rehabilitation and replacement design of 110 manholes were also prepared. Rehabilitation methods were primarily cured-in-place pipe (CIPP), pipe bursting and open trench replacement methods were also used.

Sanitary Sewer Rehabilitation Projects, City of Belmont (2015, 2016 and 2017), Contract Value: 2015 - \$567,000; 2016 - \$456,961; 2017 - \$194,000. As Project Engineer, Glen assisted with the evaluation, prioritization, and design of the rehabilitation and replacement of their high priority gravity sewer lines throughout the City. The 2015 Sewer Rehabilitation project consisted of the replacement and rehabilitation of



approximately 2 miles of gravity sewer lines and associated manholes. Schaaf & Wheeler team provided detailed utility investigations, potholing, and sewer modeling services. The 2016 sewer rehabilitation project consisted of evaluating and preparing design documents for approximately 5 miles of gravity sewer lines located throughout the City in back yard easements and in City streets. Construction methods include pipe bursting, open trench excavation, and CIPP lining. A large portion of the sewer mains included within the City of Belmont sewer rehabilitation projects are located within backyard and side yard easements with difficult access and easement issues.

Sanitary Sewer Rehabilitation Projects for City of Morgan Hill, 2019 – Present, Contract Value: \$162,285. Project Manager for 47 pipe segments. Evaluated and assessed the existing sewer infrastructure. Reviewed the existing sewer model to evaluate the pipe sizes and recommend the rehabilitation/replacement method. Visited each site to collect additional field data to assess pipes and make recommendations. Prepared a TM summarizing the assessments, capital improvements and construction cost estimates. Subsequently designed the recommended improvements. Tasks included project basemapping, detailed utility investigations, evaluations to re-route sewer mains and laterals from backyard easements, plan and profiles of sewer lines, construction details, technical specifications, and cost estimates. The proposed construction methods were tailored to minimize impacts and costs at each location. Construction methods include pipe bursting, open trench, spot repairs, and CIPP rehabilitation.

Force Main Appurtenance Projects - Ross Valley Sanitary District, San Rafael, Contract Value: Preliminary Design: \$220,885; Design: \$155,570. As Project Engineer, Glen Anderson assisted the preliminary design of the replacement of five air release valves. The project includes replacement of four failing air-release valves (ARVs) on District-owned force mains and install a new ARV at a critical location, install four cathodic protection (CP) test stations at various locations along Pump Station 13 (PS13) force main, and to install an impressed current cathodic protection (ICCP) system at PS13. This project required Caltrans and environmental permitting. It also involved pipeline excavation, removal and disposal of existing ARV and piping and site restoration to pre-construction condition.

Matadero Stormwater Pump Station Rehabilitation Design, City of Palo Alto (2018), Contract Value: \$547,190. Design of improvements to the existing pump station to increase reliability and mitigate risk of interior flooding. Work includes raising the ground surface, constructing a building to house new electrical equipment and a new emergency standby generator, making modifications to the existing wetwell structure, replacing outfall flap gates, and replacing existing mechanical equipment. Also coordinated the pump station upgrades with Valley Water. Issues encountered during design include public outreach with concerned residential housing neighbors adjacent to the project site. Worked with the HOA to redesign the buildings to conform with residential housing architecture, and provide natural screening and adjustment to minimize visual impacts.

O'Connor Stormwater Pump Station Improvement Feasibility Study – City of East Palo Alto (2016); Contract Value: \$10,000.

This project included a review of the existing condition and capacity, and summarized the deficiencies along with the recommended improvements. The recommendations also address improvements to increase the reliability and capacity of the pump station. As Project Manager, Glen Anderson conducted the assessments, made recommendations and prepared the cost matrix to bring the Pump Station into compliance with the modern pump station standards and current California Electric Code (CEC), and to perform recommended improvements. The City approved four specific recommended improvements to the pump station. Glen also designed the Trash Capture retrofit to the pump station.

Sears Point Stormwater Pump Stations Design, 2 Stations - Ducks Unlimited, Inc. (2014); Contract Value: \$104,765. The project involves design of two stormwater pump stations that are used to convey stormwater over the newly constructed levee system at Sears Point. Each pump station design includes new pump bays, two vertical turbine pumps, new electrical services, new MCC's, discharge piping, valves, force main, and flap gates. The design capacity for each pump station is 22,500 gpm. As Project Engineer, Glen Anderson prepared the detailed design and specifications; coordinated and prepared service applications with PG&E; worked to meet the strict regulatory requirements; and worked closely with the Contractor (Magnus Pacific, Inc.) throughout construction. The pump stations were completed as a design-build project with a total design and construction duration of 6-months.

Marsten Storm Drain Pump Station (284 cfs) – City of Burlingame (2010-2013); Contract Value: \$736,000. It is a replacement pump station funded by a City-wide parcel. The new pump station receives water from two sources: local storm drain discharge and diverted creek flow that discharges to a common 66-inch force main which outfalls to Easton Creek downstream of Old Bayshore Blvd. The station is designed to convey flows corresponding to a 30-year storm event – 122 cubic feet per second from the local storm drain system and 162 cubic feet per second from the Easton Creek diversion. As Project Manager, Glen Anderson prepared the detailed design, coordinated with subconsultants and different stakeholders and provided bid and construction support services. The project construction was completed in 2015 and is operational.

San Francisquito Creek Stormwater Pump Station (300 cfs) – City of Palo Alto (2009); Contract Value: \$742,122. This new pump station is designed with the pumping facility to handle up to 300 cfs of local storm water runoff with submersible axial flow pumps discharging through an energy dissipating structure and a constructed wetland channel to provide mitigation habitat and prevent creek erosion. As Project Engineer, Glen Anderson prepared the detailed design documents and bid and construction support services. He also facilitated numerous regulatory approvals. The project was dedicated in 2009 and is operational.



Benjamin L. Shick, P.E. QAQC

Schaaf & Wheeler CONSULTING CIVIL ENGINEERS



Benjamin L. Shick, P.E., has more than 18 years of experience in infrastructure planning and design of stormwater systems, wastewater conveyance systems, water supply and distribution systems and pump stations. Ben has completed the design of 50,000+ LF of storm drain rehabilitation and replacement projects in the recent past. Ben has conducted floodplain investigation, shoreline protection studies, drainage studies, channel design and modeling, water rights permitting, wetland analysis and design, small bridge design, infrastructure design, surveying, construction management, and construction quality control testing. He has been involved with all project phases from project initiation to construction document preparation and construction support. Ben is proficient in water resources modeling tools: AutoCAD, WaterCAD, HEC-RAS, HEC-HMS, GeoRAS, MOUSE, and ArcGIS.

Experience in stormwater, wastewater and potable water systems design, conveyance and pumping. Trenchless Technologies: Open-Trench, CIPP, Pipe Bursting, Pipe Reaming, etc.

Education

BSCE, Montana State University-Bozeman

MSCE, Montana State University-Bozeman

Licenses

Registered Civil Engineer California 68813

Affiliations: FMA, ASCE

Relevant Projects

Shoreway Sanitary Sewer Rehabilitation Design, City of Belmont, 2017 - 2019, Contract Value: \$129,000. As Project Manager, Ben Shick led the assessment of the feasibility of eliminating the existing pump station along Shoreway Drive by installing a new deeper gravity sewer main. The feasibility analysis included detailed topographic surveying, geotechnical investigations, detailed utility investigations, sewer system modeling, and alternative evaluation. Subsequently Schaaf & Wheeler developed detailed construction documents and provided bid and construction support services. The Shoreway sewer project was successfully designed and constructed within budget and schedule.

Sanitary Sewer Rehabilitation Projects, City of Belmont 2015 - 2020, Contract Value: 2015 - \$567,000; 2016 - \$456,961; 2017 - \$194,000. As Project Manager, Ben Shick led the evaluation, prioritization, and design of the rehabilitation and replacement of their high priority gravity sewer lines throughout the City. The 2015 Sewer Rehabilitation project consisted of the replacement and rehabilitation of approximately 2 miles of gravity sewer lines and associated manholes. Under Ben's supervision, Schaaf & Wheeler team provided detailed utility investigations, potholing, and sewer modeling services. The 2016 sewer rehabilitation project consisted of evaluating and preparing design documents for approximately 5 miles of gravity sewer lines located throughout the City in backyard easements and in City streets. Construction methods include pipe bursting, open trench excavation, and CIPP lining. A large portion of the sewer mains included within the City of Belmont sewer rehabilitation projects are located within backyard and side yard easements with difficult access and easement issues.

San Mateo Sanitary Sewer Rehabilitation Projects, City of San Mateo, 2014 - 2017, Contract Value: 2015 - \$191,000; 2017 - 2018 - \$500,000. As Project Manager, Ben Shick led site investigations, inspections, researched existing data, and developed recommended alternatives for sewer rehabilitation projects within the City. Provided detailed design of the recommended alternatives which consisted of: replacement of sewer lines across drainage channels (both above ground on piers, and below ground); replacement of sewer lines in backyard easements with tight access; replacement of sewer lines through large drainage box culverts; sewer line rehabilitation with cured-in-place pipe (CIPP); sewer main replacement and realignment; manhole rehabilitation and replacement; the work included geotechnical investigations, easement research, surveying, environmental permitting, and Caltrans Encroachment Permit.

Sanitary Sewer Rehabilitation Projects for City of Morgan Hill, 2019 - Present, Contract Value: \$162,285. Project Manager for 47 pipe segments. Evaluated and assessed the existing sewer infrastructure. Reviewed the existing sewer model to evaluate the pipe sizes and recommend the rehabilitation/replacement method. Visited each site to collect additional field data to properly assess the pipes and make recommendations. Prepared a TM summarizing the assessments, capital improvement recommendations and construction cost estimates. Subsequently designed the recommended improvements that include project basemapping, detailed utility investigations, evaluations to re-route sewer mains and laterals from backyard easements, plan and profiles of sewer lines, construction details, technical specifications, and cost estimates. The proposed construction methods were tailored to minimize impacts and costs at each location. Construction



methods include pipe bursting, open trench, spot repairs, and CIPP rehabilitation.

Woodland Sewer Improvement Project, San Rafael Sanitation District, 2019 – 2020, Contract Value: \$237,213. This project includes pipe replacement, rehabilitation, adjusting pipe slope, and re-routing laterals along B Street, Woodland Avenue, Warner Court, Woodland Place, and Octavia Street. As Project Manager, Ben Shick coordinated topographic surveying, utility investigations and geotechnical investigation. Tasks included condition assessment and development of alternatives. Subsequently detailed design and bid documents are being prepared.

Harbor Drive Sewer Rehabilitation, Town of Corte Madera Sanitary District No. 2, 2019 – 2020, Contract Value: \$234,060. This project includes rehabilitation/replacement of 7,100+ LF of existing 6" and 8" VCP pipes - existing sewer mains within the Harbor Drive area. As Project Manager, Ben Shick coordinated CCTV inspection, conducted assessments and identified rehabilitation and replacement alternatives and methods. Subsequently the improvements were designed; currently our team is providing support services during construction.

Mill Valley Sewer Repair Project, City of Mill Valley, 2019 – 2020, Contract Value: \$131,000. As Project Manager, Ben Shick provided evaluation, assessment, and design services for the City of Mill Valley's sanitary sewer system. This project prioritizes and develops a strategic plan to address the most critical infrastructure needs for future repairs to be constructed under the 2020 budget. Project tasks include surveys, investigations, and inspections for each project location to identify proposed improvements. 75% and 100% design documents along with construction support were provided for this project.

Belmont Water/Sewer Main Replacement, Mid-Peninsula Water District, 2017, Contract Value: \$87,610. As Project Manager, Ben Shick prepared engineering design for this joint CIP for the water and sewer mains. The project consists of replacing and rehabilitating the water mains, service lines and meters to address condition issues with the sewer mains. The project also includes additional street improvements. This project required close coordination and approval with multiple agencies including the City of Belmont, Mid-Peninsula Water District, Fire Marshal, Caltrans, and private developers. A Caltrans Encroachment Permit for work along El Camino Real was prepared, submitted, and obtained.

Kingridge Sanitary Sewer Improvements (6" and 8"; 3,100 LF), City of San Mateo, 2010 – 2015; Contract Value: \$927,673. As Project Manager, Ben Shick led the team for system evaluation, hydraulic analysis of the existing Kingridge canyon sewer and storm drain system, development of improvement alternatives for the sewer main, and development and production of construction documents for the selected alternative of the project to replace and rehabilitate the 6-inch sanitary sewer main. Some of the key features were:

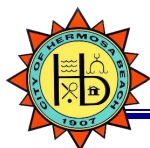
Alternative evaluation for alignment and construction methods; Emergency repairs to mitigate active land movement; Capacity evaluation; Open cut pipe replacement, CIPP rehabilitation, pipe on piers, retaining walls, etc.; Securing right-of-access to project location including permanent sewer easements; Environmental permitting, mitigation, and monitoring; Construction support, special inspection, and material testing services.

El Camino Real Sanitary Sewer Improvement Project and the Calabazas Creek Sewer Siphon Design Projects, City of Santa Clara, 2006 – 2009; Contract Value: \$480,520. As Project Manager, Ben Shick led the design of 2,600 feet of parallel sewer line in El Camino Real from Flora Vista Avenue to Calabazas Boulevard. The project also included a separate design plan set for a replacement sewer siphon with dual pipes under Calabazas Creek as part of a Santa Clara Valley Water District channel improvement project. Existing lateral connections were improved through cured-in-place pipe (CIPP) lining of 2,600 feet of parallel collector sewer and reconstruction. Tasks included the design of relocation of existing water mains, storm drains, sewer laterals, and traffic signals.

Culvert Rehabilitation and Replacement (Grass Valley Sinkhole Project), City of Grass Valley, 2017. As Project Manager, Ben Shick worked with the City of Grass valley to address a 90" CMP culvert that failed and created a large sinkhole. The project includes assessing existing conditions, making recommendations for rehabilitation and replacement of the existing culvert, and mitigating high velocities within the culvert.

Storm Drain Improvement Projects, City of Belmont, 2009, 2011 and 2018. As Project Manager, Ben Shick helped the City identify and designed 29 separate storm drain improvement projects in 2009 and 12 projects in 2011 throughout the City to address aging storm drain infrastructure and mitigate flooding issues. The final design included installation of cured-in-place pipe (CIPP) within several aged pipes ranging from 12" to 36" in diameter; spot repairs of several collapsed pipes; installation of new inlets, pipes, and curb and gutters; and some minor channel repairs. The 2018 storm drain improvements include design of new piping systems and identification of locations that need improvements.

Stormdrain Improvements, Town of Woodside, 2015 – 2016. As Project Manager, Ben Shick worked with the Town to identify and design 7 separate high priority improvement projects throughout the Town. The final design includes installation of cured-in-place pipe (CIPP) within several corroded pipes ranging from 10" to 24" in diameter, rock outlet protection, headwall repair, inlet replacement, and a new 36" HDPE pipe and concrete headwall. The Phase 2 Storm Drain Repair Project included the design of 4 more high priority improvement projects of a similar nature throughout the and access points for the box culvert and detention basin; parallel storm drain improvements (24" to 54").Town. The designs also included traffic control and stormwater pollution protection measures.



Daniel J. Schaaf, P.E. Principal-in-Charge

Schaaf & Wheeler CONSULTING CIVIL ENGINEERS



Daniel J. Schaaf, P.E., has more than 20 years of project experience encompassing the areas of storm drainage, surface water hydrology, flood control and physical and numerical modeling. He has managed several large hydrology/hydraulics, flood control and drainage projects. He is skilled in and storm drain master planning, floodplain mapping, open channel hydraulics, coastal and estuary processes and 1D and 2D modeling. He is currently working on implementing modeling projects that integrate pipe and surface flows using sophisticated 2D modeling software. He has performed several FEMA Flood Insurance Studies and Letters of Map Revisions for clients throughout California. He is proficient in modeling and GIS software: GeoHEC-HMS, GeoHEC-RAS, TRIM3D, RMA-2, RMA-10, MIKE 11, MIKE 21, MIKE-URBAN, MOUSE, EPA SWMM, Cybernet, InfoSWMM, InfoWorks, QUAL2E, EPA-Net, ArcGIS 10.0, Spatial Analyst, 3D Analyst, AutoCAD Map and ArcIMS.

Dan Schaaf has completed more than 20 Stormdrain Master Plans (SDMP) in last 10 years. He also completed the Storm Drain Master Plan for the City of Hermosa Beach.

Education

BSCE, San Jose State University
MSCE (Water Resources Engineering),
San Jose State University

Licenses: Registered Civil Engineer, California C57617

Professional Membership

American Society of Civil Engineers
Floodplain Management Association

Relevant Projects:

Stormwater Master Plan - County of Santa Cruz (2009-2010), Contract Value: \$415,000; Zone 5 Update (2020) Contract Value: \$600,000. As Project Manager, Dan Schaaf led the preparation of a master plan for the County's storm water facilities in Zones 5 and 6. Models of the pipe, channel and culvert systems were developed utilizing Innovyze's InfoSWMM software. Tasks included data collection, agency coordination and development of Capital Improvements Program. This Master Plan also included design and implementation of best management practices (BMPs) and low impact development (LID) design elements, hydromodification management support, creek stability assessments, and review of storm drain design and analysis standards. Training Workshop to educate the County staff in hydrology and use of Innovyze.

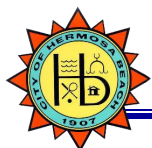
Storm Drain Master Plan – City of Carmel-by-the-Sea (2019-2020), Contract Value: \$174,910. As Project Manager, Dan led the development of the Storm Drain Master Plan. Tasks included data collection, condition assessment, hydrologic analysis, hydraulic modeling using MIKE URBAN, preparation of cost estimate, and development of the storm drain master plan document. The Master Plan will determine infrastructure needs for both capacity and condition related projects. A complex MIKE-URBAN is developed to assess drainage system hydraulic capacity and impacts from future conditions. Capital improvements are costed, prioritized and developed into a schedule. Projects to address nuisance issues and underserved portions of the City are also developed.

Storm Drain Master Plan – City of Cupertino (2017 – 2018), Contract Value: \$117,500. As Project Manager, led the Storm Drain Master Plan of the City's drainage infrastructure. Tasks include updating the GIS mapping with records searches and field verifications. Hydrologic and hydraulic modeling of the City owned

pipe and channel systems to determine existing system deficiencies using DHI's MIKE-Urban software coupled with Santa Clara County methodologies. Capacity projects, along with alternatives, were sized to provide a 10-year level-of-service. Cost estimates, prioritization and a Capital Improvement Program were developed. Highest priority projects were developed to be added into the City's CIP program. Report includes a system wide GIS, models and funding strategies. The \$79 million in improvements recommended by this master plan are based on the capacity of the existing system and the need to correct identified deficiencies.

Storm Drain Master Plan – City of Hermosa Beach (2016 – 2017), Contract Value: \$189,950. As Project Manager, Dan Schaaf led the development of a Storm Drain Master Plan (SDMP). This SDMP provides Hermosa Beach with a comprehensive summary of the existing drainage network and a plan to meet conveyance and water quality goals. Initially the Los Angeles County (County) modified rational method using the HydroCalc Calculator was applied. After analysis, it was determined that this method did not accurately model watershed properties. A modified method was applied to the watershed to address these inaccuracies. This method was used alongside MIKE URBAN by DHI and the US EPA SWMM5 engine storm drain modeling software to evaluate system performance, identify deficiencies and recommend necessary improvements. Improvement projects that are required to alleviate or minimize flooding based on the 10-year performance standards are identified and prioritized in the Capital Improvements Plan (CIP).

Livermore Flood Damage Repairs, City of Livermore, 2017 – 2020, Contract Value: \$800,000. This project involves design of emergency channel repairs for portions of the Arroyo Mocho, Cottonwood Creek, Collier Canyon Creek and Arroyo Las Positas.



Tasks include hydraulic and scour analyses. Repair designs including rock riprap, sediment removal, debris removal, and erosion protection; Pipeline protection; Pavement and gravel path repair, and the clearing of damaged pavement from the channel; and Construction plans, technical specifications, cost estimating, and mitigation planning.

Storm Drain Master Plan, City of Larkspur, 2019, Contract Value: \$80,000. As Project Manager, Dan Schaaf led the development of a comprehensive Storm Drain Master Plan. Tasks included review of available data, additional data collection, hydrologic analysis, hydraulic modeling using MIKE URBAN, preparation of cost estimate, and development of the SDMP document. Much of Larkspur is low lying and subject to tidal and riverine effects; therefore, portions of the City are dependent on pump stations to provide drainage protection. This SDMP determines whether existing infrastructure meets the City's 10-year level-of-service criteria. Tasks also included the assessment and analysis of the performance and operations of the five (5) existing pump stations. A numerical storm drain network model using MIKE-URBAN is developed to assess the potential impacts of storms, tides, sea level rise, watershed improvements, and other physical impacts on the City's drainage system. Alternatives for high priority improvement projects have been developed. Capital projects are sequenced while meeting City's service needs and funding plans.

Storm Drain Master Plan & Sea Level Rise Study - Alameda City (2010), Contract Value: \$246,800. As Project Manager, Dan Schaaf led the preparation of the City's first comprehensive GIS-based storm drain master planning effort. The models developed for this project were subsequently used to analyze the impacts of sea level rise on the system. Tasks included data collection, modeling using DHI's MIKE-URBAN, development of a prioritized Capital Improvements Program. System's performance under both 18-inch and 55-inch SLR scenarios was analyzed and the CIP addressed the improvements needed to combat the SLR.

Mechanical Engineering Services for City of Alameda, 2015-2017 (Contract Value: \$150,000). Projects under this on-call include sewer, storm drain, and lagoon pump station upgrades or replacement and motorized weirs on lagoons. Alameda Point Storm Drain Outfall, Pump and Pump Stations Review and Storm Drain Review. Under Dan Schaaf's supervision Schaaf & Wheeler provided review services of the Alameda Point Site A – Phase 1 Storm Drain Outfall to Seaplane Lagoon. Work included review of the storm drain system, outfall, and CDS unit for conformance with industry standards. The City's hydraulic model was updated with the proposed storm drain improvements and the resulting hydraulic grade line for various scenarios including sea level rise was evaluated. Schaaf & Wheeler also provided review of Bay Fair Hall and Group 3 pumps; Paru stormwater pump station; Alameda Pt. stormwater pump station; Alameda Point storm drain plan; and Eastshore Drive gravity sewer.

Stormwater Master Plan – City of Palo Alto (2014-2015), Contract Value: \$250,000. As Project Manager, Dan Schaaf led the SDMP

update for the City. Tasks included PC-SWMM modeling, hydrology development, field data collection, condition assessment, drainage standards development, pump stations assessment and development of a Capital Improvement Program for eliminating weirs, increasing pipe diameter, pump station upgrades, and storm drain network extensions.

Half Moon Bay Stormwater Master Plan & Kehoe Ditch Hydraulic Analysis – City of Half Moon Bay (2015 - 2016), Contract Value: \$170,000. As Project Manager, Dan Schaaf led the preparation of the SDMP that guides the City in establishing an approach to creating a prioritized Capital Improvement Program to mitigate the impact of stormwater runoff. Tasks involved verifying storm drain locations, diameters, connectivity, and condition; modeling using the MIKE URBAN; preparation of flood maps and identification of areas with capacity deficiencies; and analysis and identification of improvements alternatives and their prioritization.

San Francisco Airport Shoreline Protection Study, Moffatt & Nichol, San Francisco County (2014). Project Manager for the study. Tasks involved analyzing the deficiencies in the Airport's interior drainage systems as well as the San Bruno Creek and Millbrae Channel systems, which drain adjacent to the airport property. Analyses included potential for water entering airport lands from Highway 101.

Carmel River Hydraulics Studies, Carmel Area Wastewater District (2016 – 2018). Project Manager for hydrologic and hydraulic modeling studies of the Lower Carmel River for the District. Studies include FEMA LOMRs, peer review of the CRFREE project, channel scour analysis of bridges and outfall pipes, sea-level-rise analyses, and impacts analysis of levees and floodwalls. Modeling of flood protections of the treatment plant under existing and climate change conditions was performed to assist the District with long-term planning.

FEMA San Francisco Bay Coastal Hazard Peer Review, City of South San Francisco (2014). Principal-in-Charge for peer review of FEMA's San Francisco Bay Coastal Study and potential changes in the mapping of regulatory flood hazards in South San Francisco. San Francisco Bay Area Coastal Study draft maps were reviewed to provide a list of comments and questions for the City to submit using the San Mateo County Flood Risk Review/Comment Tool. This summary report also compares FEMA's study results to other recent coastal analysis undertaken in South San Francisco, San Mateo/Foster City, and San Francisco International Airport and comments on significant differences and the potential reasons for such differences.

Cove Stormwater Pump Station Evaluation – County of Marin (2015-2016), Contract Value: ~ \$165,000. As Project Manager, Dan Schaaf led the Cove Stormwater Pump Station Evaluation. This project helps understand the functioning of the pump station during storm events and consequently make recommendations to increase the system's reliability while potentially adding hydraulic capacity, which is necessary to restore an acceptable level of service.



Robin J. Lee, P.E. Senior Engineer

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS



Robin J. Lee, P.E. has thirteen years of experience in stormwater management, water quality, hydrology, drainage systems and flood control. Robin has been working with Bay Area cities to comply with the Regional Municipal Permit Section C.3.j. of NPDES regulations to achieve their PCBs and mercury reduction goals. She presented at the San Mateo Countywide Water Pollution Prevention Program and the Santa Clara Valley Urban Runoff Pollution Prevention Program on infiltration systems and how to inspect stormwater treatment measures in the field.

Robin has completed and worked on several Stormwater Master Plans and presented to elected officials on master plans and green infrastructure. Robin has extensive experience in master planning hydraulic systems. She has the natural ability to explain complex engineering concepts to the general public as well as government officials. Robin brings the engineering side to stormwater management to ensure both regulatory requirements and stormwater conveyance are met at the same time to provide water quality benefits.

Robin has also worked on numerous successful floodplain management and control and storm drainage projects throughout the Bay Area. She recently assisted several clients in Napa and Morgan Hill with flood studies for proposed developments. Robin is proficient at HEC-HMS, EPANET, HEC-RAS, SWMM, PCSWMM, GIS, HY-8, and BAHM.

[Robin is currently managing a green infrastructure project for the City of Menlo Park and routinely reviews stormwater management plans to ensure low impact development \(LID\) is designed to meet the permit requirements and engineered to function as a drainage system.](#)

Education:

MS, Civil and Environmental Engineering,
UC Berkeley
BS, Civil and Environmental Engineering,
UC Los Angeles

Licenses: Registered Civil Engineer California C70040
Washington C43587

Affiliations:

American Society of Civil Engineers (ASCE)
Toastmasters International

Relevant Projects

[Green Stormwater Infrastructure Plan, City Pacifica, 2018 – 2019.](#) As Project Manager, Robin Lee assisted to develop the City's Green Infrastructure (GI) Plan. This GI Plan is intended to describe how the City will shift their impervious surfaces and storm drain infrastructure from gray (traditional) to green. Tasks include the development of prioritization mapping of planned and potential GI project locations by overlaying known information such as upcoming planned developments, capital improvement plans, utility improvements and pedestrian and bicycle improvements. A work plan is developed to meet the timeline in the NPDES Municipal Regional Permit that targets 2020, 2030 and 2040 reductions in pollutant load. Work includes an evaluation of funding options and outreach and education with the public, City staff and elected officials.

[Green Infrastructure Plan, City of South San Francisco, 2017-2019.](#) As Project Manager, Robin Lee developed Green Infrastructure Plans that was adopted by City Council to be submitted with the jurisdiction's annual report in September, 2019. Robin presented the information to Council numerous times and answered questions. She co-presented with C/CAG representatives and a representative from the Regional Water Quality Control Board.

[Oak Grove Ave. Sidewalk and Green Storm Drain Infrastructure Design and Construction Support – City of Menlo Park, 2018 – 2020.](#) As Project Manager, Robin Lee provided complete engineering and project management services for the green storm drain infrastructure design including revised sizing calculations, design development, plans and specifications, bid documents, bidding support, and construction support. This project is currently under construction.

[Green Stormwater Infrastructure Planning - City of Palo Alto, 2017 – 2019.](#) As Project Engineer, Robin Lee assisted with the preparation of City's GSI Plan that describes the gradual integration of GSI features into the urban landscape and stormwater conveyance systems. This plan aims to create a more sustainable system that may carry out one or more of the following functions: 1) reduce and slow runoff by dispersing it to vegetated areas; 2) promote infiltration and evapotranspiration; 3) collect runoff for non-potable uses; 4) and treat runoff using biotreatment and other GSI practices. The Plan will also be used to meet City's long-term commitment to implement GSI to help reduce loads of pollutants of concern (POCs), particularly mercury, PCBs, trash and pesticides.



[Orange Memorial Park Water Capture Project Peer Review, City of South San Francisco \(2020\)](#). As Project Manager, Robin Lee is leading the peer review effort for Orange Memorial Park Water Capture project. The project involves review of 90% plans, specifications, and engineering cost estimate (PS&E) for the Orange Memorial Park Water Capture Project. Peer review comments included maintenance issues, constructability issues, bidding issues and cost estimating. Schaaf & Wheeler ultimately suggested that the City hire a construction management firm prior to bidding the project in order to flush out the costs and any construction issues prior to bidding the project to avoid RFIs and SIs in the field that would increase the cost of the construction.

[City of City of South San Francisco NPDES Trash Feasibility Study, 2016 - 2018](#). As the Project Engineer, Robin Lee conducted a feasibility study which analyzes the City's storm drainage system to provide a road map for the City to meet the 70% and 100% trash reduction goals. The feasibility study resulted in conceptual level drawings for storm drainage system outfalls which drain medium or high generation trash areas. A prioritization of trash capture device locations was developed which will guide the City through to design.

[Trash Capture Device Feasibility Study - City of San Bruno, 2017 – 2018](#). Schaaf & Wheeler prepared the feasibility study to evaluate alternative devices and locations and to develop conceptual level detail which may lead directly into the design phase. As Project Engineer, Robin Lee reviewed the 70%, 80% and 100% capture goals for efficiency to prioritize list of devices. The Feasibility Report located only one potential site for a large-scale device and the City is still working on the legal rights to the location.

[Citywide Flood Control and Storm Drainage Master Plan, City of Mill Valley, 2017 – ongoing](#). As Project Manager, Robin Lee developed a comprehensive Master Plan that deals with flood control provided by the creek network and pipe system that is comprehensive and implementable with streamlined analyses and prioritized improvements. An integrated hydraulic model of the City's storm drainage pipe network was developed using MIKE URBAN. It includes overland (2D) flow systems for both the 10-year and 100-year events. Potential impacts of climate change on future tide levels are evaluated to develop higher boundary conditions for the pipe and creek drainage networks. Schaaf & Wheeler served as the technical lead on a public advisory committee.

[Storm Drain Master Plan, City of Santa Clara, 2014-2015](#). As Project Engineer, Robin Lee assisted the preparation of the SDMP update. System performance was evaluated against selected drainage standards to identify deficient segments, which includes catch basins, pipe, manholes, pumping facilities, and storage basins. This master plan included the study of the amusement park: Great America Parkway.. The two-dimensional flow model, MIKE-FLOOD, was coupled with

the MIKE-URBAN to analyze the performance of the entire City stormdrain system and provide 2-year, 10-year and 100-year floodplain maps. Alternative solutions to resolve deficiencies were formulated along with their capital costs, maintenance costs, and other project implementation criteria to develop a prioritized Capital Improvement Program (CIP).

[Moraga Storm Drain Master Plan, Town of Moraga, 2011-2019](#). As Project Manager, Robin completed the development of the SDMP to guide the Town in planning, financing, engineering, and maintaining its stormwater infrastructure. This Master Plan helps identify problems and deficiencies, manage resources, and provide cost-effective and comprehensive solutions. Tasks included data collection, condition assessment, hydraulic modeling for current and future development, alternatives for capital improvements. In 2019, Robin compiled an Addendum to the Master Plan to revised the project priorities and costs, prioritizing condition related projects as the Town had experienced two sinkholes since the completion of the Master Plan in 2014 caused from failing storm drain pipes.

[San Francisco Airport Shoreline Protection Study, Moffatt & Nichol, San Mateo County, 2013](#). Project Engineer for the study. Tasks involved analyzing the deficiencies in the Airport's interior drainage systems as well as the San Bruno and Millbrae Channel systems, which drain adjacent to the airport property. The potential for interior drainage flooding using the rational method within the airport lands based on a 100-year storm event and the pumps combined capacity was analyzed.

[SFO/San Bruno/Colma Creeks Resiliency Study, Moffatt & Nichol, San Mateo County, 2013](#). Project Manager for modeling of Colma and San Bruno Creeks in more detail and to specifically look at sea level rise boundary condition impacts to flooding. The Creeks were modeled with a wide range of boundary conditions to analyze existing 100-year tide elevation, MHHW, and sea-level rise scenarios.

[Foster City Levee Protection Planning and Improvements Project, City of Foster City, 2014 - 2020](#). Project Engineer for preparation of a comprehensive framework to understand impact on flood risk by the newly released coastal study results for San Francisco Bay and the recent levee crest survey. Project requires designing roughly eight (8) miles of levee improvements which include future sea level rise adaptation measures. Project components include data acquisition, engineering analyses, design, regulatory permitting, construction support, FEMA accreditation and public outreach through the five-year process.

[Third Party C3 Review for SWMP- numerous clients \(ongoing\)](#)

[Third Party Inspections for C3 Installation Compliance - City of Palo Alto \(2015-Ongoing\)](#)

Caitlin J. Gilmore, P.E., QSD/QSP, CPSWQ, LEED AP
Senior Project Manager

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS



Caitlin J. Gilmore, P.E., QSD, CPSWQ, LEED AP has over 12 years of experience with trash capture, water quality, hydrology and hydraulics, water supply and distribution, stormwater systems, open channel design, bridge scour analysis and pump stations.

Caitlin is accomplished in assessment and design of trash capture infrastructure; SWMP Inspection and Review; NPDES permit compliance, and storm system design. She is currently assisting several Bay Area cities to comply with the Regional Municipal Permit Section C.10 to achieve their trash capture reduction goals. These projects include feasibility and design of trash capture devices. In the last 5 years, Caitlin has conducted more than 100 third party development plan reviews for different Bay Area Agencies and Developers. She is adept at conducting training workshops for BMPs and awareness of Federal, State and Bay Area

Regulatory requirements related to urban developments and water pollution.

Caitlin regularly prepares hydrology and water quality reports for EIRs of new developments. She has been involved in the water supply assessments for several new development and/or expansion projects requiring compliance to California Water Code section 10910 and Senate Bill 610 as part of the project's CEQA process. Caitlin is proficient in MikeUrban, AutoCAD, StormCAD, FlowMaster, BAHM, HEC-RAS, HEC-HMS, HEC-1, and geoRAS.

Caitlin has been at the forefront of the NPDES regulation development and has helped shape the Stormwater Management program for the Counties of San Mateo and Santa Clara.

Education

BSCE, Civil and Environmental Engineering,
California Polytechnic University, San Luis Obispo
MS, Environmental Engineering, University of
Southern California

Licenses

Registered Civil Engineer California C76810

Certifications: QSD/QSP, CPSWQ, LEED AP

Affiliations: FMA, ASCE

Relevant Projects: Trash Capture

Master Agreement for Large Trash Capture Projects - City of San Jose (2016 – 2019), Contract Value: \$1million. Schaaf & Wheeler was awarded a Master Agreement for the design of large trash capture projects. As project engineer, Caitlin assisted with the design of DSBB or HDS units for 6 locations that meet the RWQCB requirements to remove trash and debris from the City's stormwater collection system before it enters into the waterway. She also coordinated with subconsultants and construction services.

Trash Capture Design at Dore Avenue – City of San Mateo (2017-2018), Contract Value: \$44,797 - Feasibility; \$66,531 - TC Design. As Project Manager Caitlin conducted the Trash Capture Feasibility study to investigate potential projects to install approved full trash capture devices within the existing public storm drain system infrastructure at 7 locations. Designed two large trash capture devices for Poplar Avenue. Plans and specifications were prepared for two parallel Bioclean Debris Separating Baffle Box trash capture devices at the end of Dore Avenue in San Mateo, designed to treat 15% of the City's baseline trash load from a total drainage area of 313 acres. This aids the City's compliance with provision

C.10 of regional NPDES permit. Project is currently under construction.

Trash Capture Feasibility Study and Conceptual Design for Athlone Pump Station – County of San Mateo (2018), Contract Value: \$41,840 - Feasibility; \$99,580 - TC Conceptual Design. As Project Manager Caitlin evaluated the Athlone Terrace pump station and contributing drainage area to provide the County with conceptual design alternatives of system upgrades. 30% design drawings will include; forcemain size and conceptual layout, pump station plan and sections, electrical, pump components, upstream pipe sizes, trash capture size, type and location. An engineer's cost estimate will be developed based on the 30% plans, including design and construction costs.

Green Stormwater Infrastructure Planning - City of Palo Alto, 2017 – 2019. As Project Manager, Caitlin prepared the City's GSI Plan that describes the gradual integration of GSI features into the urban landscape and stormwater conveyance systems. This plan aims to create a more sustainable system while following these functions: 1) reduce and slow runoff by dispersing it to vegetated areas; 2) promote infiltration and evapotranspiration; 3) collect runoff for non-potable uses; 4) and treat runoff using biotreatment and other GSI practices.



The Plan is designed to be used to meet City's long-term commitment to implement GSI to help reduce loads of pollutants of concern (POCs), particularly mercury, PCBs, trash and pesticides.

City of Mountain View Trash Capture Design (2016), Contract Value: \$249,430. As Project Manager Caitlin designed 1 large trash capture devices and 2 floating trash booms. Leading and coordinating the subconsultants to perform geotechnical engineering, potholing and utility location, survey, structural engineering, environmental and permitting for the project. Trash design of the 1 large device (NSBB unit) will meet the full capture requirements of the MRP2.0, treating a drainage area of 941 acres. Responsibility also includes analysis of constructability, cost, and maintenance and construction and bid services. This project is currently under construction.

Trash Capture Design, Small Scale and Large Scale – City of Livermore (2017 – 2018), Contract Value: \$106,780. As Project Manager Caitlin designed the large scale trash capture device for Southfront Road that intercepts flows leaving two 66" diameter storm pipes that feed into two 12' by 8' box culverts. A 45-inch high weir is constructed to facilitate two 30-inch diameter stainless steel pipe extensions. Debris leaving the two 66-inch pipes is intercepted and stored in nets attached to the pipe extensions. Additional 150 feasible CPS device locations are identified to meet the City's trash collection goals.

Trash Capture Feasibility Study and Preliminary Design – City of South San Francisco (2016 – 2017), Contract Value: \$40,005 – Feasibility Study; \$32,616 – Conceptual Design. As Project Manager Caitlin prepared the Trash Capture Feasibility Study report that provides a multi-year plan to reduce trash entering creeks and the San Francisco Bay from the municipal separate stormwater system (MS4), with the goal of trash reduction requirements as outlined Section C.10. Ultimately, South San Francisco elected to install catch basin inlet screens due to capital costs and Caitlin assisted in the identification of the locations and maps for the vendor to install.

City of San Bruno Trash Capture Device Feasibility Study and Design (2017 – 2018), Contract Value: \$315,813. Schaaf & Wheeler is preparing the feasibility study to evaluate alternative devices and locations and to develop conceptual level detail which may lead directly into the design phase. As Project Manager, Caitlin Gilmore reviewed the 70%, 80% and 100% capture goals for efficiency to prioritize list of devices. The Feasibility Report located only one potential site for a large scale device. Caitlin also assisted the City with procuring a catch basin inlet screen vendor to install sufficient amount of catch basin screen to meet the upcoming 80% requirement.

Trash Capture Evaluation, Phase II – Town of Windsor (2019 – 2020), Contract Value: \$18,500. Windsor Storm Water Management Program includes the development of the Town's

Phase 1 MS4 Permit compliance program. As Project Manager Caitlin provided engineering services subsequent to the Storm Water Trash Control Measure Implementation Plan and Approach to Demonstrating Trash Full Capture Equivalency (Implementation Plan) developed by EOA in December 2018 - Phase I. The Town decided to pursue Track 2 which includes both the potential use of Full Trash Capture (FTC) devices as well as using other controls to demonstrate Full Capture System Equivalency (FCSE). A memorandum addressing the use of FTC devices only for Phase IIA was prepared. An additional metric was developed to determine the priority and value associated with each FTC option including the analysis of the life cycle costs of the devices and their maintenance over the design life were compared to the FCSE options.

Trash Capture Feasibility Study – City of Vallejo (2017-2018), Contract Value: \$7,500. As Project Manager Caitlin assisted EOA in reviewing draft locations being considered for large full trash capture systems within the City. Based on the Site maps, information provided and observed during the field visit, a review of large scale device alternatives was compiled including system hydraulics, constructability, system depth, device recommendations and alternative placement.

Design of Trash Capture Device for Coyote Stormwater Pump Station - City of San Mateo (2015-2016); Contract Value: \$299,900. Schaaf and Wheeler is currently designing complete rehabilitation of Coyote Point Stormwater Pump Station. Caitlin analyzed the feasibility of location and type of trash capture devices to meet City's goal of reducing trash as per Provision C.10 for the reduction of municipal trash loads. Work includes the device sizing, system hydraulics and upstream flooding mitigation, managing of CEQA and permitting subconsultants, constructability review and coordination with device manufacturers.

NPDES Trash Capture Feasibility Study- City of Mountain View (2015); Contract Value: \$85,000. Schaaf & Wheeler completed a trash capture feasibility plan to assist the City in complying with Section C.10. As project engineer, Caitlin analyzed the City's existing storm drainage system and trash capture efforts to determine the most feasible alternatives. She also assisted in determination of cost estimates, hydraulic impacts and estimates of trash capture volumes for each of the 12 full capture device alternatives studied.

Cotton Shires& Associates/City of Pacifica Esplanade Trash Capture Device (2013); Contract Value:\$6,500. Worked with the City of Pacifica and trash capture device manufacturer's, Caitlin specified and sized a trash capture device to be included in the Esplanade outfall reconstruction to the Pacific Ocean. The existing outfall was damaged by bluff erosion. Work included outfall profiling and storm drain sizing.



Fidel T. Salamanca, P.E. Senior Engineer

Schaaf & Wheeler
CONSULTING CIVIL ENGINEERS



Fidel T. Salamanca, PE, has more than seven years of experience in planning and design of urban water and stormwater systems, open channels and pump stations. Fidel is proficient at hydraulic modeling for water system planning, pumps, reservoirs, and large watersheds. He has been involved in water quality related projects and has assisted trash capture feasibility studies for several cities. He has significant design experience in water, sanitary and stormwater pump stations, pipelines, and trash capture devices throughout the Bay Area. He has conducted several third-party reviews to ensure NPDES compliance. He is also proficient in ArcGIS, AutoCAD, EPA SWMM5, HY8, MIKE URBAN, MIKE 21, MIKE ZERO, MIKE 11, BAHM, HAMMER, Microstation, HEC-RAS, geo-RAS, HEC-HMS, geo-HMS, and HEC-1, InfoSWMM, and InfoWater.

Education

BSCE, Civil and Environmental Engineering,
California Polytechnic University, San Luis Obispo

Licenses: Registered Civil Engineer California C84851

Affiliations: Society of Civil Engineers,
FMA, ASCE (Young Member Forum)

Relevant Projects

On-Call Engineering Services, Port of Oakland, 2016 – Present, Contract Value: \$113,697. Schaaf & Wheeler prepared rehabilitation/replacement plans for the two lift stations. The two pumps convey flow through a common force main through the airport terminal. Fidel Salamanca is the design engineer. These plans will be used to rehabilitate the pump stations and eliminate failures associated with the existing ejector pumps. The design includes replacing the ejector pumps with rail mounted submersible pumps, integrating the pump controls to the existing SCADA system, installing a new valve vault, and adding check valves on the discharge piping to prevent backflows. Tasks included identification of necessary and desired improvements to each of the pump stations, pump station capacities, available power sources, station limitations, and other constraints or requirements influencing pump station design.

Pump Stations Improvements, City of Oakland, 2014 – 2015, Contract Value: \$411,000. Schaaf & Wheeler designed a new pump station and improvements for 5 other sanitary sewer pump stations. Fidel Salamanca was the project associate. Designs included upsizing pumps to meet sanitary sewer flow requirements, rehabilitating pump stations based on existing conditions and applicable code requirements, including O&M staff input during the design process, and adhering to permit requirements from following agencies: East Bay Regional Parks, Port of Oakland, Bay Area Rapid Transit System, and the Oakland International Airport.

Design for Relocation of Industrial Sewage Pump Station No. 1, South San Francisco, 2017 – 2018, Contract Value: \$431,902. This pump station receives sewage from the Oyster Point commercial area and discharges sewage through a force main to a gravity sanitary sewer manhole. Schaaf & Wheeler developed a Basis of Design report including alternative pump station configurations (e.g. wet well / dry pit; variable speed and constant speed). Fidel assisted the preparation of 90% level

drawing and the detailed structural design. The pump station design includes the force main design up to the discharge manhole, the valve vault configuration, and an on-site standby backup generator.

Pump Station Q Force Main Reverse Flow Project, East Bay Municipal Utility District, 2015 – 2017, Contract Value: \$1,100,000. Schaaf & Wheeler designed a 36" gravity sewer interceptor and relief structure that utilized an existing 36-inch force main via gravity to provide additional conveyance to the District's North Interceptor. Fidel Salamanca was the project design engineer. The project extended the 36-inch gravity portion past an existing bottleneck in the District's north interceptor to effectively double the North Interceptor capacity. The 36-inch line utilizes valves which allow it to operate as a gravity system when draining to the south and can still be switched back to a pressurized system to be utilized as a force main during extreme precipitation conditions to pump north.

Water Main Design (Design Build) with ConQuest, Contra Costa Water District (2018-2019), Contract Value: \$234,040. As Project Manager, Fidel provided engineering design and construction support services for phase 1 of the project. It includes five projects (5) with varying replacement lengths, multiple agency involvement, and permitting at each site. The water main sizes vary in diameter from 4 to 8 inches. Of the 5 projects, 2 have been constructed, two are under construction, and one is being finalized in design.

Water System Master Plan and Design, Sandia National Lab (2018), Contract Value: \$149,925. Schaaf & Wheeler assisted SNL conduct a study of the potable and underground fire water system to improve the reliability and redundancy of the infrastructure. As Project Engineer, Fidel assisted in developing a hydraulic model and determine the system's performance. The model is utilized to determine necessary improvements to meet use demands and fire flow requirements and thereby develop Water System Master Plan. Additionally, Schaaf & Wheeler



assisted SNL with the preparation of 30% design drawings for seven (7) water main replacement projects. Fidel reviewed pipe alignments to identify locations for additional fire hydrants, isolation valves, water meters, potential utility conflicts, and California Plumbing Code compliance.

[Utility Impact Study Confirmation for Gateway Master Plan, Mountain View, Raimi and Associates \(2019\), Contract Value: \\$90,000.](#) This project includes the utility planning and modeling for the Master plan for North Bayshore Gateway area (Shoreline). Utility studies include water, sewer, recycled water and stormdrain. As Project Engineer, Fidel build a model for all the four utilities to provide technical engineering support to the CEQA consultant for the City of Mountain View's CEQA documentation process. Project tasks entail confirmation of previous technical studies include the proposed development in Project Area; identification of available capacity and determination of needed revisions to previous study findings;

and determine impacts of the development on planned capital improvement projects to assist City staff in planning future infrastructure improvement implementation.

[Mountain View On-Call Water and Wastewater Modeling Support, City of Mountain View \(2013 – Present\), Contract Value: ~\\$100,000.](#) Fidel is assisting computer model analyses for the sewer and water systems associated with the City's 2030 General Plan Update to determine needed infrastructure improvements, and to help update the City's Capital Improvement Program for anticipated commercial and residential growth, including long-term planning for eliminating the City's main pump station. Hydraulic models used are Innovyze InfoWATER / InfoSWMM in coordination with rapid redevelopment growth.