



The City of Burlingame

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June 17, 2019

REQUEST FOR PROPOSAL

FOR

PROFESSIONAL ENGINEERING SERVICES **FOR THE PREPARATION OF CITY OF BURLINGAME 2019-20** **WASTEWATER COLLECTION SYSTEM MASTER PLAN**

1. INTRODUCTION

City of Burlingame (City) is seeking proposals from qualified civil engineering consulting firms to prepare a comprehensive 2019-20 Wastewater Collection System Master Plan (Master Plan). The goal of this project is to prepare a Collection System Master Plan that enables the City to plan for and meet its customers' desired service levels at an acceptable level of risk and at the lowest possible life cycle costs. The Master Plan will include a complete inflow and infiltration (I/I) study, a recommendation of the collection system infrastructure needs for projected growth, and a recommendation of 10 year CIP improvements to meet the needs of both existing and future City customers.

The Master Plan will review the City's "Sewer System Master Plan, 2002" to address recent sewer rehabilitation within the collection system.

2. SCOPE OF WORK

The City encompasses approximately four square miles with area elevations ranging from about 10 feet near Highway 101 to about 580 feet near Highway 280. The City's collection system serves about a population of 30,150. The system serves about 7,600 residential connections and 944 commercial, industrial, and institutional connections. The collection system consists of about 81 miles of gravity sewers, about 31 miles of lower laterals, about 1,625 manholes, about six miles of force mains, and seven pump stations. The sewer pipe sizes range from 4-inches to 51-inches. In addition, Town of Hillsborough and Burlingame Hills Sewer Maintenance District contribute their sewer flows into the City's sewer. The City's collection system eventually flows into the City of Burlingame Wastewater Treatment Facility (WWTF), located at 1103 Airport Blvd., Burlingame, California. The treated wastewater is eventually discharged to the effluent pipe located in the City of South San Francisco.

The following sections provide scope of work outline for completion of the City's Wastewater Collection System Master Plan. The consultant team is encouraged to expand on this scope, as it deems necessary, to provide a complete work product.

Task 1: Data Collection and Assessment of Collection System

The City has data for the collection system and it is expected that the consultant team makes a request for the data required from the City. Here is the data that the City may have in a complete or partial format:

- **General Plan and Specific Plans:** The City's general plan will provide information on the proposed developments. It identifies the zoning and the land-use proposed for these developments. The City may have specific plans for these new developments. With the information from these plans, the consultant team is expected to calculate the additional flows into the collection system, as part of this Master Plan effort.
- **Sewer Records:** The City maintains records of the repairs and the maintenance work of the collection system. The consultant team is expected to review this data to incorporate any improvements work within the capital improvement program.
- **Sanitary Sewer Management Plan (SSMP):** The consultant team is expected to review the SSMP for information and maintenance regarding the City's collection system. The recent update was performed in 2018.
- **Flow Data:** Flow data from the sewer pump stations can be obtained from the City's Supervisory Control and Data Acquisition (SCADA) information in a tabular format.
- **Water Billing Data:** City can provide the available water billing data.
- **GIS maps:** The City will make the GIS data available for a successful the consultant team. The GIS data provides the information on the pipe sizes, elevations, maintenance information, and other related data.
- **Other Data:** It is expected that the consultant team will identify data needs to complete this project.

Some of the data mentioned above is already publicly available and the interested consultants are encouraged to review the information since the information within those documents maybe helpful in developing an informed proposal. The data that is not available publicly will be provided to the successful consultant. For data that is not available, the consultant team will make assumptions and recommendations as to the approach that will be used for the evaluation of the collection system using the available data.

Task Deliverables:

The consultant team will summarize the documents reviewed and the information used for the analysis of the collection system and the development of the master plan report. This summary will be included in the Master Plan report.

Task 2: Flow Monitoring and Analysis

The flow monitoring will capture the required data for the collection system hydraulic model. The consultant team will review the City's sewer system map and identify major sewer sub-basins and determine the manholes for flow monitoring. Flow monitoring will be timed such that dry weather and peak wet weather flows are captured. The City expects the consultant team to achieve the following from the flow monitoring.

- Identify major sewer basins within the City.
- Determine the optimal locations for flow monitoring.
- Identify the locations to capture the flows from the neighboring agencies whom contribute flows to the City's collection system.
- Develop a flow monitoring plan.
- Collect dry weather flow data.

- Collect wet weather flow data.
- Develop peaking factors, peak dry weather and peak wet weather, per sub-basin.
- Present the results of the flow monitoring plan.

Since flow monitoring will be an important aspect to perform the hydraulic analyses and the subsequent master plan report, the consultant team will consistently review the collected data and determine its adequacy for the calibration of the collection system. The consultant team will keep the City informed of any changes to the flow monitoring period or the locations. The City would like to meet with the consultant team after a flow monitoring plan is developed and after the completion of the flow monitoring. If required, the consultant team will schedule progress meetings during the flow monitoring period.

In the proposal, the consultant team will detail the flow monitoring process, such as, the frequency of data review, verification of the data collected, corrective measures if data is incorrect, and any additional information that will be important for successful data collection. The consultant team will also outline any actions or procedures that the City needs to implement for the collection of the flow monitoring data.

Task Deliverables:

The consultant team will submit a draft of the flow monitoring plan to the City prior to commencement of flow monitoring. Please assume a City review period of two weeks. After the City's review, the City and the consultant team will meet to discuss the logistics of the flow monitoring. The consultant team will prepare a draft and final Flow Monitoring Technical Memorandum including recommendations regarding the need for additional flow monitoring. This memorandum will explain flow monitoring plan, data collected, data analysis, and results of flow monitoring. Five hard copies of the draft and the final will be submitted to the City in addition to an editable electronic version.

Task 3: Hydraulic Model Development

The consultant team will develop a hydraulic model to assess the City's collection system. The system will be evaluated for the hydraulic deficiencies of the collection system and associated pump stations and force mains. The consultant team is expected to perform the following aspects as part of the hydraulic model development:

Software Selection and Model Development: The consultant team is expected to review City's GIS data and other asset management information and select a hydraulic modeling software that can be integrated easily with the City's databases. The goal is to have an easy integration of the existing data so that it does not require a lot of effort for the City data to be transferred to hydraulic model and also hydraulic model data to be integrated in the City's data. Therefore, a software that has an ArcGIS interface maybe helpful. However, the consultant team is encouraged to provide its own recommendation on a hydraulic modeling software that works the best for the City, considering the City's GIS data and asset management information. The consultant team will closely work with City's team to determine a software that best suits City's needs. After a hydraulic modeling software has been selected, the collection system model will be developed. The consultant team is expected to replicate the model elements, such as, pipe sizes, invert elevations, rim elevations, pump curves, pump operating conditions, and other relevant information, as closely as possible with the ground conditions. The consultant team is expected to coordinate with the City staff to obtain missing information. For the information that is not available, the consultant team will make reasonable assumptions for the model development.

Dry Weather Flows Calibration, Unit Flow Factors, and Peaking Factors: Dry weather flows (DWF) are representative of the collection system when there are no external flows in addition to the daily sewer flows from various land use categories. The collection system hydraulic model will be calibrated for dry weather flows obtained during the flow monitoring. Based on the dry weather data collected, the consultant team

will develop flow factors per unit and compare with the published unit flow factors in the recent studies. Any inconsistencies between the developed and the published unit flow factors will be rectified as part of this study. In addition, the consultant team will develop appropriate peaking factors. In the absence of flow monitoring data or erroneous data, the consultant team will make appropriate assumptions for the hydraulic model. Any deficiencies identified within the City's system during DWF will be brought to City's attention.

Design Storm/Diurnal Curve Selection: The consultant team will select a design storm/diurnal curve to be used for the wet weather analysis of the collection system. The diurnal curve that will be used for the hydraulic analyses will be representative of the storms that the City has experienced historically.

Wet Weather Flows Calibration and Peaking Factors: Wet Weather Flows (WWF) are indicative of the flows that the collection system received during a rain event, in addition to the average flows. These flows indicate the amount of inflow and infiltration (I/I) taking place within the collection system. After the model is calibrated for WWF, the consultant team will summarize the I/I per each flow monitoring basin. In the absence of flow monitoring data or erroneous data, the consultant team will make appropriate assumptions for the hydraulic model. The consultant team will meet with the City staff to discuss the findings of the WWF calibration and confirm that the observations from the model match the field observations by the City staff. Any deficiencies identified during the WWF calibration will be brought to City's attention.

Hydraulic Analysis for a Design Storm: After the collection system model is calibrated for DWF and subsequent WWF, the system will be analyzed for the selected design storm. Any deficiencies identified during the design storm analysis will be highlighted and will be brought to City's attention. The design storm used for this analysis will be used for future system analyses.

Task Deliverables:

The consultant team will prepare a draft and final Model Development and Calibration Technical Memorandum. Five hard copies of the draft and the final will be submitted to the City in addition to an editable electronic version. A copy of the hydraulic model files will be submitted to the City.

Task 4: System Performance Evaluation and Capacity Assurance Plan

The consultant team will evaluate the City's collection system based on the established criteria. The system evaluation criteria will be developed prior to the evaluation of the collection system. The following criteria will be considered for the system evaluation:

Pipe Sizes: Pipe sizes 6-inches and greater will be modeled. The consultant team is expected to develop a model of all pipes that are 6-inches and larger within the City's system. During the system review phase, if the consultant team deems that it is efficient to exclude some of the pipes that are 6-inches and larger or include pipes that are smaller than 6-inches, the consultant team is encouraged to discuss with the City staff.

Design Storm/Diurnal Curve: The City's previous Master Plan used a 10-year, 24-hour storm. The consultant team will review historical data and recommend a design storm that is most relevant for the current analysis.

Collection System Elements: The consultant team will analyze and evaluate the City's entire wastewater collection and pumping system design and performance for the existing main collector pipes 6 inches and larger (e.g., sewer mains, trunk mains, interceptors, siphons, junction structures, lift stations, force mains, and other wastewater collection system components). The consultant team shall establish hydraulic conditions for sewer mains, trunk mains, siphons, force mains, manholes, clean outs, and other components of the wastewater hydraulic system.

Pipe Capacity Criteria: The consultant team will identify two sets of pipe segments: (1) Any pipe that is surcharging will be considered deficient, and (2) Any pipe over 90 percent of its capacity will be considered at capacity.

Hydraulic Analysis Scenarios: The consultant team will explore the following scenarios: (1) Existing Dry Weather Flow scenarios; (2) Existing Wet Weather Flow scenarios; (3) Future Dry Weather Flow scenarios; and (4) Future Wet Weather Flow scenarios.

Improvements: The consultant team will meet with the City staff to identify all the necessary improvements required to remove the deficiencies within the system. After the improvements are identified, the consultant team will perform the analysis of the future system to confirm that the proposed improvements can handle the future flows. In addition, the consultant team will identify any additional improvements required to optimize City's operations, such as, diverting flows into a different sewer sub-basin or combining pump station operations, to avoid any expensive system wide infrastructure improvements. Also, for the future system evaluations, the consultant team will consider the reduction in I/I from the improvements to the collection system. The consultant team will coordinate with the City staff to discuss the feasibility of the implementing the identified improvements prior to performing future system analyses.

The consultant team will review and discuss the condition and operations of the existing wastewater collection system and anticipated bottlenecks and problems with City Staff.

Task Deliverables:

The consultant team will prepare a draft and final System Analysis Technical Memorandum. Five hard copies of the draft and the final will be submitted to the City in addition to an editable electronic version.

Task 5: Capital Improvement Plan Development

The consultant team will prepare a capital improvement plan (CIP) that will detail the implementation of the improvements identified as part of this master plan effort. The hydraulic analyses and the coordination with the City's operations team will be the basis for identifying the improvements required to the City's system. CIP will clearly outlay the following elements:

Required Improvements: The consultant will outline all the improvement required to fix the deficiencies within the collection system. These improvements will be identified using results of hydraulic analyses and using the input from the City's staff. That is, these improvements will include the hydraulic and operational deficiencies in the system.

Costs of these Improvements: The consultant team will come up with a rough order of magnitude cost estimate of each of these improvements based on the current dollars. These cost estimates will consider all aspects of the engineering design, construction, management, City's administration, and contingency.

Implementation Period: The City's intent is to develop a 10-year CIP. The City has a certain budget for each fiscal year to implement the collection system improvements. The consultant team will understand the City's available budget and layout an implementation plan to incorporate all the identified improvements. The consultant team will discuss with the City on the implementation periods of various projects, so that the City's various engineering departments can coordinate and decide on project priorities.

Optimization Summary: The consultant team will present a summary of all optimization efforts performed for the collection system. These optimization efforts will either reduce the costs of improvements or improve the operations of the collection system.

The consultant team proposal will present all the elements that will be considered as part of the CIP and any recommendations that need to be incorporated for an effective capital improvement plan.

Task Deliverables:

The consultant team will prepare a draft and final Capital Improvement Plan Technical Memorandum and submit project cost sheets for recommended projects in years one through fifteen. Five hard copies of the draft and the final will be submitted to the City in addition to an editable electronic version.

Task 6: Master Plan Preparation

The consultant team will prepare a Master Plan report that will incorporate all the technical memoranda that were submitted during the master plan process. The Master Plan report will, at a minimum, include the following aspects:

1. *Executive Summary*: Summarizing all the aspects of the master plan report in one section. Will present the assumptions, findings, and recommendations in this sections.
2. *Introduction*: Will present the scope of the work, approach, and master plan components.
3. *Flow Monitoring*: Will present the flow monitoring plan, locations, and findings.
4. *Land Use*: Will present the data sources, current land use, proposed land use, and flow factors published and determined.
5. *Design Storm/Diurnal Curve*: Will summarize the historical data and approach to determining the design storm/diurnal curve.
6. *Dry and Wet Weather Flow Projections*: Will summarize dry weather and wet weather flows for each sewer basin. Determination of peaking factors and I/I for each sewer basin.
7. *Hydraulic Analysis and Results*: Will summarize the modeling process, scenario developments, existing conditions analyses, future conditions analyses, improvements identification, and optimization.
8. *Capital Improvement Plan*: Will present all aspects of the capital improvement plan, including, improvements development, cost estimate, and implementation.

Task Deliverables:

The consultant team will prepare draft and final Master Plan reports. The consultant team will submit all electronic files, including the hydraulic model, GIS and AutoCAD files, used to create the Master Plan report to the City. The consultant team will submit ten bound copies of the final report and one copy of the final report in an editable electronic version.

Task 7: Project Management

This task will include project monitoring and administration, attendance at monthly progress meetings with City staff and key stakeholders, and project quality assurance/quality control activities. The consultant team will identify coordination tasks with neighboring agencies and provide coordination requests to the City's project manager. The consultant team will conduct weekly phone conference calls of typically no longer than one hour with the City's Project Manager. The consultant team will also prepare a 3-week rolling schedule of items to be submitted by the City and Consultant and a log of decisions to be made and action items.

Task Deliverables:

The consultant team will provide meeting agendas and minutes and monthly status reports and invoices. The consultant team will provide a project management plan a week following the notice to proceed. The

project management plan will contain a contact list, contract and attachments (includes scope of work, budget, schedule), communications protocol, quality assurance and quality control plan, and templates for invoices and meeting agendas.

Task 8:Hydraulic Modeling Workshop

The consultant team will provide a one-day workshop of the hydraulic model to the City staff.

Task Deliverables:

The consultant team will provide a detailed document explaining model start-up, model set-up, exporting and importing data, scenario set-up, calibration, running, debugging, viewing results, exporting results, and printing results.

OPTIONAL TASKS: Pump Stations Evaluation and Additional Water System Requirements

The City would prefer to evaluate the City's pump collection system pump stations and understand any improvements required to improve the performance of these pump stations. The City would like to request the consultant team to provide costs for the following:

1. Pump Stations Evaluation: Perform collection system pump stations evaluation, and provide recommendations on the improvements required for these pump stations. This task will include: collection system pump stations evaluation, identify any deficiencies, recommended improvements with cost estimates, preparing a technical memorandum summarizing this evaluation, and associated project management.

The City requests that this task be considered optional and will be included in this project, if there is available budget to perform this task.

Task Deliverables:

The consultant team will prepare a draft and final of the Pump Station Evaluations Technical Memorandum. Five hard copies of the draft and the final will be submitted to the City.

3. CITY PROJECT TEAM AND MANAGEMENT

Mahesh Yedluri, Senior Civil Engineer, and Lisha Mai, Associate Engineer, will be the City's leads and will have overall responsibility and accountability for the project. Various City Staff will work directly with the consultant team to coordinate system demands, develop the hydraulic model, and coordinate capital improvement plans.

4. PROPOSAL SUBMITTALS

Interested parties shall submit seven (7) copies of their Proposal to the City by no later than 5:00 p.m., July 22, 2019. The Proposal shall be presented in a sealed envelope labeled “Wastewater Collection System Master Plan” and addressed as follows:

City of Burlingame
Mahesh Yedluri, P.E.
Project Manager/Senior Civil Engineer
501 Primrose Rd
Burlingame, CA 94010
(650) 558-7238

Proposals shall not exceed fifteen (15) pages in length (plus a project schedule, manpower loading matrix, and appendix material) using a minimum 11-point font size type. Resumes shall be included as attachments and will not be counted within the 15-page proposal limit.

Accompanying Cost proposals shall be provided in a separate sealed envelope.

5. PROPOSAL CONTENTS AND REQUIREMENTS

To be considered for Engineering Services, your **Proposal Contents and Requirements** must be submitted in separate envelope, clearly marked and shall include the following:

The proposal shall be a maximum of fifteen (15) pages, plus a project schedule, manpower loading matrix, and appendix material. A typical proposal submittal may be as described below.

- Transmittal Letter (2 pages): Include any information you believe should be highlighted from your proposal or any key considerations for the selection committee to consider that are not covered in the proposal requirements. The consultant team will also include in the transmittal, any exceptions taken to the City’s Standard Consulting Agreement.
- Firm Experience (3 pages): Provide a general overview of your firm and the firm’s experience at providing engineering services associated with preparation of a wastewater collection system master plan.
- Firm’s Approach to Project (4 pages): The consultant team shall describe its approach in implementing and managing the project to a successful completion. This includes how the consultant team shall meet the stated goals within the scheduled time of completion, the ability to work with a multi-disciplines project team, including City Staff, and other consultants if necessary.
- Project Team (3 pages): Describe your project team. Include the key individuals, including sub-consultants that will actually be responsible for the project’s technical activities and for management of the project. Include a percent-time availability table for the project manager and key staff, who will be working on the design. An organization chart should be provided showing the inter-relation of all the project team members, both City and the consultant team.
- References (3 pages): Provide at least five (5) references for the key individuals on the project team. This section should provide a short description of the project and your firm or staff members’ role, and a specific contact person with phone number. The selection team will be focusing on project performance and will be requesting input as to conformance with schedules and budgets.

- Submit manpower-loading matrix indicating an estimate of hours to complete the services as described in this Request for Proposals. The estimate should be an itemized staffing breakdown in spreadsheet form, indicating personnel classification, hours for each consultant team member for each work task. This section will not include any estimate of costs.
- Appendix materials may be provided, but is not required other than specifically identified, in addition to the fifteen-page proposal limit. Appendix material may not be read and if submitted will be limited to resumes of proposed key staff, previously published papers, articles, or reports relevant to the scope of work.

6. PROPOSED COMPENSATION

The consultant team shall provide, in a separately sealed and clearly marked envelope, the cost to be charged to the City by task and a total proposed project cost. The cost proposal shall identify the overall multiplier and include direct labor costs and expenses including travel and high-end computer use. The Option Task cost shall be listed in a separate spreadsheet in the proposal. Cost proposals will not be opened until after each firm interviewed has been ranked and the firm deemed most qualified has been selected. Only the cost proposal for the selected firm will be opened and will form the basis of negotiations for the contract.

7. CITY'S STANDARD CONSULTING AGREEMENT

The selected firm will be required to enter into a Consultant Agreement with the City. The City's Agreement is included in Attachment A. The consultant team should comment in the Proposal Cover Letter on any issues that may be of concern with the City's standard agreement.

8. DESIRED SCHEDULE

RFP Phase

Begin RFP Process	June 17, 2019
RFP Submittals Due	July 22, 2019
Review by City Staff	August 05, 2019
Consultant Interview (if necessary)	August 15, 2019
Notify Successful Firm	August 22, 2019
Negotiate Contract	August 30, 2019
City Council Approval	September 16, 2019

Collection System Master Plan

Kick-Off Meeting	September 25, 2019
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