

**Council Meeting: October 22, 2013****SUBJECT: Award of a Contract for Analytical, Design and Support Services for Emergency Flow Management Improvements at the Water Pollution Control Plant (F13-62)****REPORT IN BRIEF**

Approval is requested to award a contract to CDM Smith, Inc. of Walnut Creek for engineering analysis, design and related services for the Emergency Flow Management Improvements at the Water Pollution Control Plant (WPCP or Plant) in the amount of \$619,559. This includes base services in the amount of \$466,339, and optional services in the amount of \$153,220 for three optional tasks that may be required pending the outcome of alternatives analyses detailed below. Due to the complexity of the work and challenges associated with potential improvements, approval is also recommended for a 15% contract contingency on the base services portion in the amount of \$69,951.

BACKGROUND

The WPCP reconstruction program is exceedingly complex and will take many years to complete. Even though the first stages the Master Plan and primary treatment facility design are in process, the City must resolve immediate operational challenges at the Plant to maintain current functionality and regulatory compliance, and to ensure reliability/stability in the event of an emergency. Staff has identified three interrelated areas that must be addressed, and for which services will be provided under this recommended contract, as follows:

<u>Key Areas</u>	<u>Contracted Service</u>
Emergency Bypass of Primary Treatment and/or Primary Effluent Pipeline	Alternatives Analysis and Basis of Design Report
Influent Pumping Compliance Reliability Improvements	Alternatives Analysis and Basis of Design Report
Improvements to Power Reliability and Stand-by Power Provisions	Engineering Design and Related Services

CEQA REVIEW

Part of the consultant's design scope will include evaluating the CEQA component for this project. Once a CEQA determination has been made and

approved, a summary will be included in the construction award Report to Council.

DISCUSSION

In order to maintain current functionality, regulatory compliance and stability in the event of a disaster, emergency flow management improvements must be made at the WPCP in the near future. Following are the key areas that need to be addressed, as well as a description of the consultant services to be rendered for each area.

Emergency Bypass of Primary Treatment and/or Primary Effluent Pipeline

The WPCP relies on a single, 2,000-foot, 60-66 inch diameter reinforced concrete pipeline, constructed in the 1970s, to convey effluent from the primary sedimentation tanks to the oxidation ponds. According to a 2006 Condition Assessment, the primary effluent pipeline is one of the most vulnerable facilities at the Plant. An alternative bypass conveyance system needs to be constructed to address this vulnerability.

The consultant's scope of work under this portion of the contract will be to provide an alternatives analysis to critically evaluate options, and a basis of design report for the selected option. The optimal solution will be integrated into the design for the new primary treatment facilities, now underway.

Influent Pumping Compliance Reliability Improvements

The existing influent pump station is powered by digester gas-driven engines which are exempt from certain BAAQMD air quality regulations until December 31, 2015, by which time the influent engines will need to be taken out of service, replaced, or otherwise modified so that ongoing air quality regulations are met. An exemption extension to allow operation of the current engines may be possible, but this is neither guaranteed nor optimal.

Improvements to influent pumping could take several forms, including converting the current engines from digester gas to natural gas, installing new electric-driven pumps, or utilizing the existing (but unused) Auxiliary Pump Station (APS) facility. These improvements would need to be in place until construction completion of the new headworks and primary facilities. The scope of work for this portion is to provide an alternatives analysis and basis of design report for the selected option. It should be noted that any option other than converting the existing engines to natural gas will need to make accommodations to supplement the heat load requirements as the main engines are the primary source of heat for the Plant.

Improvements to the Power Reliability and Stand-by Power Provisions

The Power Generation Facility (PGF) at the WPCP consists of two engines which generate an average of 1.2 megawatts (MW) of electricity used in normal plant operations. These engines, which are in operation around the clock, provide for

the majority of the WPCP's power needs through the use of a combination of digester gas, landfill gas from the adjacent landfill, and air-blended natural gas. The PGF was commissioned in 1997, mainly to offset purchased power costs. Due to the instability associated with varying digester and landfill gas quality, the operation has become less stable and it has become challenging to meet regulatory requirements. An additional issue is that the PGF cannot supply stand-by power to the WPCP in the event of a PG&E power outage (and the Plant has continually struggled with the stability of the power system when outages occur).

The work scope associated with this particular segment of the contract involves the development of an implementation strategy for power generation facility improvements needed to address the issues identified above, including construction cost estimates, conceptual schematics, and permit compliance evaluation. Also included is engineering design and related services for the back-up power facilities and associated operational improvements.

RFP Process for Emergency Flow Management Improvements

Request for Proposal (RFP) specifications for the project were prepared by Public Works, Environmental Services and Purchasing staff. RFP No. F13-62 was directly distributed to twelve engineering firms and posted to the Onvia DemandStar public procurement network on June 12, 2013. Twenty eight (28) firms requested the RFP documents. Sealed proposals were received on July 10, 2013. Two responsive proposals were received as follows:

Waterworks Engineers, of Redding	\$414,000
CDM Smith, of Walnut Creek	\$554,086

An evaluation team consisting of Public Works and Environmental Services staff rated the written proposals based on their proposed management teams, qualifications, experience, references, project overview, detailed approach, and demonstrated ability to keep projects on time and under budget. Both consultants were also invited for interviews as part of the evaluation process. Based on the results of both the written proposal evaluations and the interviews, staff unanimously identified the CDM Smith team as the highest ranked proposer.

The CDM Smith project team was selected for their significant experience with the types of operational challenges faced by the City, especially with hydraulic/pipe design, and for their clearly delineated and thorough approach to all aspects of the work scope.

Subsequent scoping meetings with CDM Smith produced both fee reductions and additions for portions of the work, resulting in a base contract of \$466,339, reduced from \$554,086, and optional services in the amount of \$153,220. The not-to-exceed total is \$619,559. The optional services are

related to the alternatives analysis for improvements to the digester gas-driven engines, potential automation and programming services for the gas management improvements, and a condition assessment of the 66-inch primary effluent line.

At this time, staff cannot ascertain the level of optional services that may or may not be required pending completion of the alternatives analyses for the emergency bypass and influent pumping improvements, and completion of the design for the PGF improvements. If the work is not required for a particular portion of the optional services, expenses will not be incurred.

FISCAL IMPACT

Project costs are as follows:

Project design (base services)	\$466,339
Optional services (if required)	\$153,220
Design contingency (15% on base services)	<u>\$69,951</u>
Total cost	\$689,510

Budgeted funds are available in Capital Projects 827020 (Emergency Flow Management Infrastructure) and 830210 (Repairs to the Power Generation Facility), funded by the Wastewater Management Fund.

PUBLIC CONTACT

Public contact was made by posting the Council agenda on the City's official-notice bulletin board outside City Hall, at the Sunnyvale Senior Center, Community Center and Department of Public Safety; and by making the agenda and report available at the Sunnyvale Public Library, the Office of the City Clerk and on the City's Web site.

RECOMMENDATION

It is recommended that Council:

1. Award a design contract, in substantially the same format as the attached draft, and an amount not-to-exceed \$619,559, to CDM Smith for the subject project, and authorize the City Manager to execute the contract when all necessary conditions have been met; and
2. Approve a 15% contract contingency in the amount of \$69,951.

Reviewed by:

Grace Leung, Director of Finance
Prepared by: Pete Gonda, Purchasing Officer

Reviewed by:

John Stufflebean, Director, Environmental Services

Reviewed by:

Kent Steffens, Director, Public Works

Approved by:

Gary M. Luebbers
City Manager

Attachments

- A. Draft Consultant Service Agreement

ATTACHMENT A

DRAFT

CONSULTANT SERVICES AGREEMENT BETWEEN CITY OF SUNNYVALE AND CDM SMITH FOR DESIGN AND CONSTRUCTION SUPPORT SERVICES FOR EMERGENCY FLOW MANAGEMENT IMPROVEMENTS AT THE WATER POLLUTION CONTROL PLANT

THIS AGREEMENT dated _____ is by and between the CITY OF SUNNYVALE, a municipal corporation ("CITY"), and CDM SMITH ("CONSULTANT").

WHEREAS, CITY desires to secure professional services necessary for investigation, analysis, contract specifications, consultation, services during construction and other services for a project known as Emergency Flow Management Improvements at the Water Pollution Control Plant and

WHEREAS, CONSULTANT represents that it, and its sub-consultants, if any, possess the professional qualifications and expertise to provide the required services and are licensed by the State of California to practice engineering in the required disciplines;

NOW, THEREFORE, THE PARTIES ENTER INTO THIS AGREEMENT.

1. Services by CONSULTANT

CONSULTANT shall provide services in accordance with Exhibit "A" entitled "Scope of Work." All exhibits referenced in this Agreement are attached hereto and are incorporated herein by reference. To accomplish that end, CONSULTANT agrees to assign Arvind Akela to this project, to act in the capacity of Project Manager and personally direct the professional services to be provided by CONSULTANT.

Except as specified in this Agreement, CONSULTANT shall furnish all technical and professional services, including labor, material, equipment, transportation, supervision and expertise to perform all operations necessary and required to satisfactorily complete the services required in this Agreement.

2. Notice to Proceed/Completion of Services

(a) CONSULTANT shall commence services upon receipt of a Notice to Proceed from CITY. Notice shall be deemed to have occurred three (3) calendar days after deposit in the regular course of the United States mail.

(b) When CITY determines that CONSULTANT has satisfactorily completed the services defined in Exhibit "A," CITY shall give CONSULTANT written Notice of Final Acceptance, and CONSULTANT shall not incur any further costs hereunder. CONSULTANT may request this determination of completion when, in its opinion, it has satisfactorily completed the Scope of Work (Exhibit "A"), and if so requested, CITY shall make this determination within fourteen (14) days of such request.

3. Project Schedule

The Project Schedule is set forth in the attached Exhibit "A-1"

4. Payment of Fees and Expenses

Payments shall be made to CONSULTANT on a monthly basis as set forth in the attached Exhibit "B" entitled "Compensation Schedule." All compensation will be based on monthly billings as provided in Exhibit "B." Compensation will not be due until said detailed billing is submitted to CITY within a reasonable time before

payment is expected to allow for normal CITY processing. An estimate of the percent of total completion associated with the various categories of the services shall be furnished by CONSULTANT with said billing. When applicable, copies of pertinent financial records will be included with the submission of billing(s) for all direct reimbursables. Compensation shall not exceed the amounts set forth in Exhibit "B" for each phase. Base services shall not exceed the sum of Four Hundred Sixty Six Thousand Three Hundred Thirty Nine and No/100 Dollars (\$466,339.00) and Optional Services shall not exceed the sum of One Hundred Fifty Three Thousand Two Hundred Twenty and No/100 Dollars (\$153,220.00). In no event shall the total amount of compensation payable under this agreement exceed the sum of Six Hundred Nineteen Thousand Five Hundred Fifty Nine and No/100 Dollars (\$619,559.00) unless upon written modification of this Agreement. All invoices, including detailed backup, shall be sent to City of Sunnyvale, attention Accounts Payable, P.O. Box 3707, Sunnyvale, CA 94088-3707.

5. No Assignment of Agreement

CONSULTANT bind themselves, their partners, successors, assigns, executors, and administrators to all covenants of this Agreement. Except as otherwise set forth in this Agreement, no interest in this Agreement or any of the work provided for under this Agreement shall be assigned or transferred, either voluntarily or by operation of law, without the prior written approval of CITY. However, claims for money due to or to become due to CONSULTANT from CITY under this Agreement may be assigned to a bank, trust company or other financial institutions, or to a trustee in bankruptcy, provided that written notice of any such assignment or transfer shall be first furnished to CITY. In case of the death of one or more members of CONSULTANT's firm, the surviving member or members shall complete the services covered by this Agreement. Any such assignment shall not relieve CONSULTANT from any liability under the terms of this Agreement.

6. Consultant is an Independent Contractor

CONSULTANT is not an agent or employee of CITY but is an independent contractor with full rights to manage its employees subject to the requirements of the law. All persons employed by CONSULTANT in connection with this Agreement will be employees of CONSULTANT and not employees of CITY in any respect. CONSULTANT is responsible for obtaining statutory Workers' Compensation coverage for its employees.

7. Consultant's Services to be Approved by a Registered Professional

All reports, costs estimates, plans and other documents which may be submitted or furnished by CONSULTANT shall be approved and signed by a qualified registered professional in the State of California. The title sheet for calculations, specifications and reports, and each sheet of plans, shall bear the professional seal, certificate number, registration classification, expiration date of certificate and signature of the professional responsible for their preparation.

8. Standard of Workmanship

CONSULTANT represents and maintains that it is skilled in the professional calling necessary to perform the services and its duties and obligations, expressed and implied, contained herein, and CITY expressly relies upon CONSULTANT's representations regarding its skills and knowledge. CONSULTANT shall perform such services and duties in conformance to and consistent with the standards generally recognized as being employed by professionals in the same discipline in the State of California.

The plans, designs, specifications, estimates, calculations reports and other documents furnished under the Scope of Work (Exhibit "A") shall be of a quality acceptable to CITY. The criteria for acceptance of the work provided under this Agreement shall be a product of neat appearance, well-organized, technically and grammatically correct, checked and having the maker and checker identified. The minimum standard of appearance, organization and content of the drawings shall be that used by CITY for similar projects.

9. Responsibility of CONSULTANT

CONSULTANT shall be responsible for the professional quality, technical accuracy and the coordination of the services furnished by it under this Agreement. Neither CITY's review, acceptance nor payment for any of the services required under this Agreement shall be construed to operate as a waiver of any rights under this Agreement or of any cause of action arising out of the performance of this Agreement and CONSULTANT shall be and remain liable to CITY in accordance with applicable law for all damages to CITY caused by CONSULTANT's negligent performance of any of the services furnished under this Agreement.

Any acceptance by CITY of plans, specifications, calculations, construction contract documents, reports, diagrams, maps and other material prepared by CONSULTANT shall not, in any respect, absolve CONSULTANT for the responsibility CONSULTANT has in accordance with customary standards of good engineering practice in compliance with applicable Federal, State, County and/or municipal laws, ordinances, regulations, rules and orders.

10. Right of CITY to Inspect Records of CONSULTANT

CITY, through its authorized employees, representatives, or agents, shall have the right, at any and all reasonable times, to audit the books and records including, but not limited to, invoices, vouchers, canceled checks, time cards of CONSULTANT for the purpose of verifying any and all charges made by CONSULTANT in connection with this Agreement. CONSULTANT shall maintain for a minimum period of three (3) years from the date of final payment to CONSULTANT or for any longer period required by law, sufficient books and records in accordance with generally accepted accounting practices to establish the correctness of all charges submitted to CITY by CONSULTANT. Any expenses not so recorded shall be disallowed by CITY.

11. Confidentiality of Material

All ideas, memoranda, specifications, plans, calculations, manufacturing procedures, data, drawings, descriptions, documents, discussions or other information developed or received by or for CONSULTANT and all other written information submitted to CONSULTANT in connection with the performance of this Agreement shall be held confidential by CONSULTANT and shall not, without the prior written consent of CITY be used for any purposes other than the performance of the Project services, nor be disclosed to an entity not connected with the performance of the Project services. Nothing furnished to CONSULTANT which is otherwise known to CONSULTANT or is or becomes generally known to the related industry shall be deemed confidential. CONSULTANT shall not use CITY's name, insignia or distribute exploitative publicity pertaining to the services rendered under this Agreement in any magazine, trade paper, newspaper or other medium without the express written consent of CITY.

12. No Pledging of CITY's Credit

Under no circumstances shall CONSULTANT have the authority or power to pledge the credit of CITY or incur any obligation in the name of CITY.

13. Ownership of Material

All material, including information developed on computer(s), which shall include, but not be limited to, data, sketches, tracings, drawings, plans, diagrams, quantities, estimates, specifications, proposals, tests, maps, calculations, photographs, reports and other material developed, collected, prepared or caused to be prepared, under this Agreement shall be the property of CITY, but CONSULTANT may retain and use copies thereof.

CITY shall not be limited, in any way, in its use of said material, at any time, for work associated with Project. However, CONSULTANT shall not be responsible for damages resulting from the use of said material for work other than Project, including, but not limited to the release of this material to third parties for work other than on Project.

18. Waiver

CONSULTANT agrees that waiver by CITY of any one or more of the conditions of performance under this Agreement shall not be construed as waiver(s) of any other condition of performance under this Agreement.

19. Amendments

No alterations or changes to the terms of this Agreement shall be valid unless made in writing and signed by both parties.

20. Integrated Agreement

This Agreement embodies the agreement between CITY and CONSULTANT and its terms and conditions. No verbal agreements or conversation with any officer, agent or employee of CITY prior to execution of this Agreement shall affect or modify any of the terms or obligations contained in any documents comprising this Agreement. Any such verbal agreement shall be considered as unofficial information and in no way binding upon CITY.

21. Conflict of Interest

No officer of CITY shall have any interest, direct or indirect, in this Agreement or in the proceeds thereof. During the term of this Agreement CONSULTANT shall not accept employment or an obligation which is inconsistent or incompatible with CONSULTANT'S obligations under this Agreement.

22. California Agreement

This Agreement has been entered into in the State of California and this Agreement shall be governed by California law.

23. Records, Reports and Documentation

CONSULTANT shall maintain complete and accurate records of its operation, including any and all additional records required by CITY in writing. CONSULTANT shall submit to CITY any and all reports concerning its performance under this Agreement that may be requested by CITY in writing. CONSULTANT agrees to assist CITY in meeting CITY's reporting requirements to the state and other agencies with respect to CONSULTANT's work hereunder. All records, reports and documentation relating to the work performed under this Agreement shall be made available to City during the term of this Agreement.

24. Termination of Agreement

If CONSULTANT defaults in the performance of this Agreement, or materially breaches any of its provisions, CITY at its option may terminate this Agreement by giving written notice to CONSULTANT. If CITY fails to pay CONSULTANT, CONSULTANT at its option may terminate this Agreement if the failure is not remedied by CITY within thirty (30) days after written notification of failure to pay.

Without limitation to such rights or remedies as CITY shall otherwise have by law, CITY also shall have the right to terminate this Agreement for any reason upon ten (10) days' written notice to CONSULTANT. In the event of such termination, CONSULTANT shall be compensated in proportion to the percentage of services performed or materials furnished (in relation to the total which would have been performed or furnished) through the date of receipt of notification from CITY to terminate. CONSULTANT shall present CITY with any work product completed at that point in time.

25. Subcontracting

None of the services covered by this Agreement shall be subcontracted without the prior written consent of CITY. Such consent may be issued with notice to proceed if subcontract consultants are listed in the project work plan.

26. Fair Employment

CONSULTANT shall not discriminate against any employee or applicant for employment because of race, color, creed, national origin, sex, age, condition of physical handicap, religion, ethnic background or marital status, in violation of state or federal law.

27. Changes

CITY or CONSULTANT may, from time to time, request changes in the terms and conditions of this Agreement. Such changes, which are mutually agreed upon by CITY and CONSULTANT, shall be incorporated in amendments to this Agreement.

28. Other Agreements

This Agreement shall not prevent either Party from entering into similar agreements with others.

29. Severability Clause

In case any one or more of the provisions contained herein shall, for any reason, be held invalid, illegal or unenforceable in any respect, it shall not affect the validity of the other provisions which shall remain in full force and effect.

30. Captions

The captions of the various sections, paragraphs and subparagraphs, of the contract are for convenience only and shall not be considered nor referred to for resolving questions of interpretation.

31. Entire Agreement; Amendment

This writing constitutes the entire agreement between the parties relating to the services to be performed or materials to be furnished hereunder. No modification of this Agreement shall be effective unless and until such modification is evidenced by writing signed by all parties.

32. Miscellaneous

Time shall be of the essence in this Agreement. Failure on the part of either party to enforce any provision of this Agreement shall not be construed as a waiver of the right to compel enforcement of such provision or any other provision. This Agreement shall be governed and construed in accordance with the laws of the State of California.

IN WITNESS WHEREOF, the parties have executed this Agreement.

ATTEST:

CITY OF SUNNYVALE ("CITY")

By _____
City Clerk

By _____
City Manager

CDM SMITH ("CONSULTANT")

By _____

APPROVED AS TO FORM:

Name/Title

City Attorney

By _____

Name/Title

Exhibit A

SCOPE OF SERVICES Emergency Flow Management Improvements

BACKGROUND

The City is currently beginning the implementation process of long range improvements to the WPCP under the Strategic Infrastructure Plan (SIP). The City will be hiring consultants through separate RFP processes for Program Management, Master Planning, and the design and construction of a new headworks and primaries. Current design and construction projects at the WPCP include rehabilitating the four air flotation tanks, rehabilitating digesters 1 & 2, the conversion from gaseous chlorine to liquid chlorine and other maintenance projects. CDM Smith (Consultant) shall coordinate with other consultants and contractors working at the WPCP. The Consultant shall also incorporate piping and other connections, to the extent possible, to accommodate future plant modifications.

This project has three (3) distinct scopes of work which are inter-related and shall be developed in conjunction with one another to ensure a well-coordinated implementation.

The three distinct scopes are as follows:

TASK 1: Emergency By-pass of Primary Treatment and/or Primary Effluent Pipelines

The WPCP currently relies on a single pipeline to convey primary effluent from the primary sedimentation tanks to the oxidation ponds. This pipeline is approximately 2,000 feet in length, and is comprised of 60 and 66 inch diameter reinforced concrete pipe (RCP) with 60-inch steel pipe at two inverted siphon portions. Since its construction in the late 1970's, inspection and repair activities have been limited, primarily due to a lack of redundancy in the system. According to a 2006 Condition Assessment, the primary effluent pipeline is one the most vulnerable facilities at the Plant.

The City intends to provide for an alternative by-pass conveyance system in case of failure of the primary facilities or the primary effluent pipeline. The City is currently under design for new primary treatment facilities and it is anticipated that the proposed solution for alternative by-pass would be integrated into the new facilities. In providing for alternative by-pass routing and options the City has previously engaged the consulting firm RMC to develop various alternatives and partial designs. However, construction of these efforts was not pursued because of higher than anticipated costs and logistical complications associated with such an installation. Through this scope of services the Consultant shall review the past design documentation and provide recommendations for a cost effective alternative that could be integrated into future facilities.

Staff has identified two possible alternatives to deal with an emergency associated with a primary effluent pipeline break. These include provisions for temporary piping with quick connect fittings and temporary pumping facilities to move plant influent or primary effluent to the tertiary drain line, which is normally used to return tertiary drainage and filter backwash flows to the ponds. Also identified was the potential use of the plant influent Auxiliary Pumping Station

(APS) to provide the necessary pumping capacity. (This option would entail bypassing of the primary facilities). The Consultant shall review these options and shall develop other options to achieve similar goals. As part of the analysis the Consultant shall include the evaluation of existing WPCP operations and the development of an operational response plan for such an emergency. The Consultant shall actively engage the City during the development of all deliverables through draft progress submittals and meetings as necessary.

The primary objectives of this task are to:

- Provide an alternative conveyance system in the event of failure of the primary sedimentation facilities piping and the primary effluent pipeline to the ponds.
- Develop a project that can be implemented quickly and results in constructed assets that will be usable in the future.
- Provide a basis of design for the one final alternative

Several alternatives have been developed by the City including:

- Temporary piping to the tertiary drain line
- Auxiliary pump station (APS) modifications to bypass the primary treatment and effluent line.

An additional alternative has been identified and will be considered for alternative analysis:

- Rehab of the primary effluent (PE) line in-service

To accomplish the analysis and develop a recommendation, the following tasks will be performed.

Task 1.1 - Develop Information on Alternatives

This task will develop the background needed to determine the viability of alternatives included in the Task 1.2 including continued use of the existing infrastructure.

Subtask 1.1.1 - Condition assessment of the 66-inch primary effluent pipe (Optional Task)

Objective

This subtask is intended to perform the condition assessment of a 66-inch reinforced concrete pipe

Description

This optional task will include development of a field investigation plan, implementing the in-pipe survey with the pipe full and assessment of rehab alternatives for the PE line. If the City authorizes condition assessment of primary effluent pipe, the background information on the condition of the 66-inch reinforced concrete pipe (RCP) will be developed and included in the alternative analysis. An investigation will be needed to assess the condition of these pipes to evaluate the viability of rehabilitation for primary effluent flow. The Consultant will utilize the expertise of its proposed sub-consultant, Pure Technologies, to perform the condition assessment of the existing pipe and Siegfried to conduct survey.

Consultant will CCTV the entire primary effluent (PE) line between the plant and where it daylight at the ponds. The pipelines including submerged portions will be videoed and assessed in place using modern, 2013 technology. Pure Technologies will use robotic platform PureRobotics™ to perform the condition assessment of the primary effluent line. PureRobotics™ uses a multi-sensor inspection vehicle with electromagnetic sensors and high definition (HD) CCTV to assess the joints and the condition of the lining for pipes with diameters of 18 inches or more. PureRobotics™ with the EM sensors also assesses the condition of the steel cylinder and reinforcing bars.

The seven primary clarifiers in a carefully orchestrated operation can provide 4-5 hours of storage during nighttime low flow periods – enough to inspect the pipeline. The Consultant shall utilize the information obtained from the condition assessment performed by Pure Technologies to conduct the alternative analysis and viability of repairing the line. The alternative development will include appropriate lining and rehab costs.

Deliverables

- Field testing plan
- Workshop to organize field work
- Draft Technical Memorandum (TM) with subtask results for use in the overall project assessment

Task 1.2 - Alternative Analysis

Objective

The purpose of this task is to conduct the alternative analysis and prepare a technical memorandum.

Description

This task will develop all the alternatives to an equal level of detail to allow the team to select a final approach to the bypass needs. Alternatives to be evaluated include:

- RMC-designed bypass
- Complete bypass of grit removal and primary treatment
- Reinforcement of vulnerable piping within the primary treatment facilities
- Temporary connection to the tertiary drain line
- Use of the Auxiliary Pumping Station (APS) to move flow to the ponds
- Rehabilitation of the 66-inch PE line (Analysis only which includes the results of the Task 1.1 results if work authorized by the City)
- Do nothing

Each alternative will be developed with site plans, schematics and construction costs. Accompanying each alternative there will be an implementation plan, response plan, schedule and risk assessment.

The Consultant will arrange necessary meetings with the City and master plan and primary design teams to coordinate impacts of the above mentioned alternatives on future plans. A

minimum of two meetings are expected between the master plan and primary design team and the Consultant.

Deliverables

- Technical memorandum consisting of alternatives evaluation and recommendations including cost estimates (design and construction), conceptual schematics, permit compliance evaluation, and an implementation timeline. This analysis shall include a do-nothing alternative and plans for integrating recommended infrastructure improvements into the future facilities.

Task 1.3 – Basis of Design

Objective

The purpose of this task is to develop the BOD for the alternative selected in previous task.

Description

The basis of design will be developed for the final selected alternative. The basis of design will be equivalent to 10% design. The BOD will include:

- Design criteria
- Hydraulic profile
- Draft process diagram
- Site plan
- Two drawings of sections and details
- Electrical single-line diagram
- Updated construction cost
- Updated implementation schedule

Deliverables

- Basis of design documents (10% Design) for the final selected alternative.
- Existing WPCP operations evaluation and response plan

TASK 2: Influent Pumping Compliance Reliability Improvements

The existing influent pump station is powered by digester gas driven engines which are exempt from certain emission regulations in the Title V permit. The exemption will expire on January 1, 2016 and the engines will not meet current BAAQMD air quality regulations and need to be retired by December 31st, 2015. In order to meet the BAQMD deadlines, an alternate solution for influent pumping is needed. The scope for this part of the project is to evaluate such alternatives including utilization of the Auxiliary Pump Station (APS). The APS is an open air, below grade structure located south of the primary building. This station is currently equipped with a bar screen and a submersible pump that operates in on/off mode only, with maximum capacity of 25 MGD. A 2005 condition assessment of the APS structure revealed it to be in mostly reliable condition, needing only minor rehabilitation. If this option is to be pursued, improvements to the bar screen and solids handling will need to be addressed for reliability.

Currently there is only one pump in place, but plumbing exists for a second pump to handle peak flows.

The Consultant shall explore alternative solutions to influent pumping at the WPCP. These alternatives could include: evaluating the potential for obtaining an exemption; obtaining emission credits for continued operation of the existing influent engines; the use of the APS as the duty headworks for the facility; or the modification of the existing influent engines with electric motors or other Tier IV compliant engines. These improvements would need to be in place until the construction completion of the new headworks and primary facilities.

Any option that eliminates the main engines from any proposed raw sewage pumping scenarios will need to make accommodations to supplement the heat load requirements for the facility as the main engines are the primary source of heat for the plant. A previous study done in 2007 identified options for alternative heat sources and the Consultant shall use that background study as a basis for evaluation and provide recommendations for replacement of the heat source along with costs and implementation strategy. It is anticipated that the recommended improvements would serve as a reliable heat source for the next 15 years, until new combined heat and power (CHP) facilities are built as part of the SIP implementation. The Consultant shall actively engage the City during the development of all deliverables through draft progress submittals and meetings as necessary.

Task 2.1 – Develop Compliance Alternative Technical Memorandum

Objective

The objective of this task is to develop alternatives and recommend a reliable working solution on or before the current deadline of influent pump engines.

Description

This task will develop all the alternatives to an equal level of detail to allow the team to select a final approach to meet the influent pump engine permit compliance deadline. Alternatives to be evaluated include:

- Variance
- Install controls
- Utilize APS temporarily
- Utilize APS permanently
- Purchase emissions credits
- Switch influent pump engines on natural gas and install 3-way catalysts

Each alternative will be developed with site plans, schematics and construction costs. Accompanying each alternative there will be estimate of changes to annual costs, implementation plan, schedule, and risk assessment.

Deliverables

Technical memorandum consisting of alternatives evaluation and recommendations including cost estimates (design and construction), conceptual schematics, permit compliance evaluation, and implementation timeline. This analysis shall include a plan for integrating any

recommended infrastructure improvements into the future facilities.

Task 2.2 - Basis of Design

Objective

The purpose of this task is to develop the basis of design for recommended and agreed solution from previous task.

Description

The scope of the BOD will be developed based on the recommended and agreed alternative from the previous task. The scope is based on a the most conservative approaches by considering upgrade of the APS to feed primary treatment until a new headworks and primary treatment can be constructed (approximately 2018). The BOD will include:

- Design criteria
- Hydraulic profile
- Draft P&IDs
- Site plan
- Two drawings of sections and details
- Electrical sing-line diagram
- Updated construction cost
- Updated implementation schedule

Deliverables

Basis of design documents (10% Design) for the final selected alternative.

Task 2.3 – Alternative Heat Supply without Influent Pump Engine Operation (Optional Task)

Objective

The purpose of this task is to develop the BOD to supply heat if influent pump engines discontinue after December 31, 2015.

Description

If the City decides to proceed with any alternative of influent pumping other than continuing the influent pump engines, an alternative is necessary to supplement the lost heat from the influent pump engine heat recovery system. Under this task, the BOD will be developed for alternative heat supply to supplement the lost heat and meet the plant heat demand. The basis of design will include:

- Refinement of the heat supply alternative analysis
- Development of design criteria
- Preliminary layout of the new equipment and any new pipe routing

Deliverables

Basis of design documents (10% Design) for the final selected alternative

TASK 3: Improvements to the Power Reliability and Stand-by Power Provisions

The power generation facility at the WPCP consists of two engines which generate an average of 1.2 megawatts (MW) of electricity which is used in normal WPCP operations. These engines, which are in operation around the clock, provide for the majority of the WPCP's power needs through the use of a combination of digester gas, landfill gas from the adjacent landfill, and natural gas.

The WPCP commissioned the Power Generation Facility in 1997 and the goal of the original design was to offset purchased power costs and have the ability to provide back-up power, or operate separate from the PG&E Utility, while meeting the more stringent emission requirements. However, since construction, the facility and the complex controls systems, combined with the varying digester and landfill gas quality, has made operations less stable. In 2002, with the help of a consulting firm with advanced knowledge of lean-burn IC engines and advanced control systems, staff was able to make modifications and update many of the controls. However, it was also determined that the engines would not be able to run as stand-alone units to provide reliable back-up power in case of a PG&E outage. This was especially true under the scenario of the APS becoming the primary influent pumping facility as described above. Under a separate scope of work the City had the operating challenges associated with the gas management and the power generation system evaluated. A list of comprehensive recommendations, including the provision of a reliable back-up generation system, are being developed and report is being completed that will supplement the recommendations.

Under the scope of services for this task, the Consultant shall provide engineering services, design, and construction support associated with the implementation of the recommendations mentioned above. The Consultant shall actively engage the City during the development of the deliverables through draft progress submittals and meetings as necessary.

The Consultant shall be the Engineer of Record and shall be responsible for design and preparation of complete plans, reports, studies, schedules, estimates, commissioning sequencing plans, and technical specifications. The Consultant shall include the necessary plans, phasing documents, and transition/transfer plans as necessary. The Consultant shall provide all necessary geotechnical and potholing work required to successfully design and construct the project. The Consultant shall assess any existing utility or structure to be modified to confirm it is suitable for construction. Consultant shall be responsible for evaluating the project sites for hazardous materials and contaminants that may be encountered and shall provide language in the documents to address mitigation, removal and handling, and contractor reimbursement. Consultant shall obtain approval for all permits and authorizations as needed for construction and shall either obtain or prepare required permits ready for the contractor's use during construction. Consultant shall clearly provide all details necessary for contractor to construct the project complete for use as intended by the design.

Other specific components of the design include:

Mechanical and Process Design

This task includes all work necessary for completion of mechanical and process design drawings and specifications, up to and including final documents, suitable for inclusion in the contract documents for public bidding of the project. Mechanical drawings shall include Process and Instrumentation Diagrams (P&ID's), plan views, sections, and details of areas where mechanical equipment, piping, and plumbing are installed. The P&ID's shall also be suitable for inclusion in O&M manuals.

Structural Design

This task includes all work necessary for completion of structural design drawings and specifications, up to and including final drawings, suitable for inclusion in the contract documents for public bidding of the project. Structural drawings shall be based on structural calculations and existing and new geotechnical information collected as part of this agreement. The controlling code will be the 2010 California Building Code or the latest additions required by law. Structural drawings shall be prepared for walls, footings, beams slabs, structural steel, concrete reinforcement, standard details and specifications for typical anchor bolt installations, bracing, miscellaneous metals, and other structural aspects for any new facilities associated with the project.

Demolition

This task includes all work necessary for completion of demolition drawings and specifications, up to and including final drawings, suitable for inclusion in the contract documents for public bidding of the project. Demolition drawings shall be developed and may include utilizing and/or scanning available record drawings as needed. The demolition shall include necessary structures, foundations, other material, equipment, and appurtenances related to the system. All sites shall be cleaned and restored to useable condition.

Electrical Design

This task includes all work necessary for completion of electrical design drawings and specifications up to and including final documents, suitable for inclusion in the contract documents for public bidding for the project. This includes preparation of electrical diagrams, schematics, plans, sections, and details of areas where new equipment instruments, wiring, control panels, and appurtenances are to be installed. Electrical design drawings shall include electrical plans, single-line diagrams, lighting and receptacles, and electrical construction details.

Instrumentation and Controls Design

This task includes all work necessary for completion of instrumentation and control design drawings and specifications up to and including final drawings and specifications suitable for inclusion in the contract documents for public bidding. The design shall include instrumentation system control overview diagrams showing electric power and control system arrangements for this project; typical MCC control diagrams; typical instrument loop drawings; control loop descriptions; integration with existing fire and security alarms and monitoring systems; I/O cabinet general layouts, instrument schedule and I/O schedule. This approach assumes that the general contractor will furnish and install all instrumentation and control equipment and wiring and provide all programming services. Consultant has proposed programming services as an optional task. If the City desires the Consultant to perform these programming services then a separate Notice to Proceed will be issued to the Consultant. Upon approval of this

optional task, the Consultant shall provide all the programming services for the PLC and SCADA programming for the facility during the construction phase of the project.

Meetings

Consultant shall be responsible to meet with the City and other agencies as required by the work to properly coordinate and complete the design. The meetings at a minimum include design kickoff, design presentations, design and comment reviews and progress meetings. The Consultant shall also meet with the City, at the WPCP site as necessary, to review the existing conditions and to perform the necessary facility assessments. When at the WPCP, the Consultant staff shall comply with all appurtenant Standard Operating Procedures of the WPCP required of outside visiting personnel. Meetings can be coordinated as necessary but must be scheduled in advance with the WPCP through the project manager. The Consultant shall also meet with the City Building Division at the start of the design process to discuss the Building Division review process specifically how it relates to this project.

Design reviews by the City shall typically involve workshop style meetings where the design drawings and specifications are presented to City staff. The Consultant shall facilitate a design review process with City project administration, engineering, operations and maintenance staff. Where applicable the consultant shall prepare design review tools and aids (such as large scale overlays, isometric views, 3-D simulation) to help aid a thorough review of the design drawings by City staff.

The Consultant shall be responsible for setting agendas, presiding over the meetings, preparing project meeting minutes, and preparing action item summaries for all meetings and plan reviews with City staff to complete the proposed project scope of work.

Consultant shall review, evaluate, and revise plans and specifications and provide responses to City's review comments and make recommendations for any other items of work necessary to provide good value to the City.

TASK 3.1 – Preliminary and 30% Design (one submittal)

Objective

This task will directly build upon the previously completed Gas Management System Evaluation to complete the preliminary design of the recommended improvements.

Description

Upon final confirmation of the design assumptions, and issuance of a NTP, the Consultant shall commence design phase services for preparation of construction contract documents for the implementation of the following items:

Improvements to power reliability

The Consultant will model the gas blending system of landfill gas (LFG), digester gas (DG), air blended natural gas (ABNG) and pure natural gas (NG) to determine the following parameters:

- Develop a dynamic system analysis of the gas blending system, including modeling the response time of gas analysis system, time necessary for complete mixing and the system control delays to allow for a stable control system.
- Develop an implementation strategy which will provide preliminary details on how to sequence the improvements with minimal impacts to plant operation
- Develop preliminary design documents

Stand-by power provisions

The system will be designed as listed below:

- A load analysis will be done to confirm the portable standby generator power loads for block loading
- A detailed specification for (1) packaged portable standby generator
- The portable standby generator will be defined as “stationary” and a permit will be prepared accordingly (“stationary” meaning not to be used outside the Plant fence)
- The generator will be selected and specified to be compliant with any immediate upcoming regulation, if any
- Transfer switches will be designed for medium voltage 460V portable generator at the designated MCC
- The Consultant will work with the City to identify the all the MCCs requiring necessary upgrade for transfer switches to be more cost effective

Given the critical nature of these facilities for compliance operations as well as the mechanical/control components involved with the project, the City will be requiring significant details development as part of the 30% design. The Consultant shall provide comprehensive P&ID's and a thorough review of the control strategies and operations implications through facilitation of a reliability, operability, and process hazard analysis of the facilities being implemented and their integration with existing infrastructure and controls. The 30% submittal shall include the following:

- Preliminary plans and profiles, including cover sheet, and plan sheets with base mapping and existing utilities.
- Contractor mobilization area(s) and construction traffic routing.
- Preliminary details.
- Preliminary reports and/or technical memoranda.
- General process schematics.
- Detailed description of special construction requirements and constraints required to minimize the impacts of construction on continuous and safe operation of existing facilities.
- Survey control plan with vertical and horizontal controls description, monuments, and benchmarks.
- Sizing and number of facility improvement components including piping, mechanical, electrical, instrumentation and support equipment.
- Cut sheets, model numbers and curves for equipment/appurtenances.
- Preliminary construction schedule.
- 30% cost estimates.

- A list of any facilities belonging to PG&E, AT&T, Comcast Cable, and others. Identify utility facilities that will need to be adjusted and/or relocated as a result of the proposed construction.
- Determine how the project will be classified under CEQA and prepare an initial study as well as the necessary documents which are required to be submitted.
- Determine if the project construction activities are covered under the NPDES Construction General Permit. If covered under the NPDES Construction General Permit, determine the project type and risk level. Prepare a brief memo that summarizes the project classification.
- Determine if there are any BAAQMD requirements for the project. Complete the permit applications and prepare the necessary documents which are required to be submitted.
- 30% Specifications that include the necessary technical specifications, boilerplate specification section drafts, as well as a complete table of contents that is reflective of the 100% document.

Clearly show for the immediate project site and relevant surrounding area all the existing:

- Underground utilities:
 - sanitary lines, (laterals as necessary), manholes, or cleanouts;
 - storm drainage lines, (laterals as necessary), manholes, catch basins, or inlets;
 - water lines, laterals, valve boxes, hydrants, relief valves, irrigation lines, heads, valves, wiring, other components;
 - Electrical, communications, gas and other power lines, other underground, utilities lines, boxes, vaults;
- Surface features:
 - Existing structures;
 - Concrete pavement, driveways, and emergency access routes;
 - Survey monuments and boxes, Bench Marks;
 - Sufficient elevation contours and/or spot elevations to determine earthwork; quantities, drainage, and access;
 - Buildings, appurtenances, utility poles, other features;
 - Trees, shrubs, and other surface features;
- Overhead features in affected area:
 - Signage, benches, amenities;
 - trees canopies, vegetation;
 - overhead wires or obstructions;
 - other overhead features or obstructions;
- Contaminants either in buildings, improvements, pavement markings, or underground.
- Site access for construction.

Besides the general civil engineering components of the design the plans shall also show the following:

- Process / Mechanical
 - Standard mechanical details
 - Preliminary Process and Instrumentation Diagrams
 - Preliminary equipment list
 - General equipment arrangement plans and major sections
 - Major facility dimensions
 - Preliminary drafts of major specifications

- Preliminary control strategy narratives
- NFPA 820 Guidelines review for project specifics
- Structural/Demolition
 - Standard structural details
 - Structural foundation plans and sections
 - Final structural design criteria
 - Structural general notes and standard details
 - General demolition plans
- Electric Power
 - Review of site power system and CITY standards for electric power systems
 - Preliminary site power plans
 - Preliminary facility single line power diagrams
- Controls
 - Control system architecture and integration with existing system.
 - Primary instruments on process and instrumentation diagrams

The preliminary design phase shall include a field or topographic survey, base mapping, conceptual design and provision of options, preliminary cost estimate, and other tasks as necessary and recommended by the proposer. The Consultant shall meet with the City Building Division to discuss the project scope in detail and finalize the process and requirements to obtain the necessary building permits.

Consultant shall be responsible for development of environmental documentation as warranted by the project which is assumed to be a Mitigated Negative Declaration. Consultant shall perform field investigations to confirm existing conditions and shall also be responsible for contacting utility companies directly for their records, regulatory agencies, and other stakeholders. Consultant shall review recommendations with City staff prior to design and coordinate all applicable City, local, state, and federal standards into plans and specifications.

Deliverables

- Initial Study
- NPDES summary memo
- BAAQMD applications and documentation

- Preliminary design workshop notes
- 30% plans
- 30% specifications
- Engineer's Opinion of Probable Construction Cost (OPCC)

TASK 3.2 – Over-the-Shoulder (OTS) Design Review Submittal

Objective

This purpose of this task is to present an informal in-progress design submittal with intermediate design between 30% and 100% design to the City.

Description

Over-the-shoulder design review will be conducted by the key City staff. The Consultant project manager will bring the in-progress design, between 30% and 100%, to City for OTS design review. The key components of OTS design review include reviewing the design drawings and providing comments to the Consultant project manager. The responses to the 30% design submittal comments will be submitted to the City prior to the OTS meeting. The Consultant will distribute OTS meeting notes and summary of OTS comments to the City. The comments will be incorporated into the 100% design. The responses to the City's OTS design submittal comments will be submitted to the City with 100% design submittal.

The OTS submittal will include only technical drawings and key specifications for major equipment. No OPCC will be submitted at this submittal. The Consultant will send the OTC design review package at least two days in advance before in-person meeting with the City staff.

Deliverables

- In-progress intermediate design between 30% and 100%

TASK 3.3 – 100% Submittal

Objective

This purpose of this task is to advance the design from 30% to 100%.

Description

The Consultant shall develop the approved 30% and OTS design submittals into 100% design plans, specifications, and cost estimates. All comments from the previous submittals shall be resolved and incorporated. The 100% plans shall be suitable to submit for City Building Division review, and to prepare draft Building Permits, ready for the winning bidder. The Consultant shall be responsible for submitting the plans to the City's Building Division, meeting as necessary to go through the plans, and addressing all comments and incorporating them into the plans. Deliverables shall include but are not limited to:

Plans

- Cover Sheet – title, sheet index, vicinity map, location maps, notes, brief description of contractor's scope of work, horizontal and vertical control, graphical scale, other information
- Civil Plans – grading, drainage, utilities plans & profiles, lighting, equipment and convenience power, pavement, walks, stairs, rails, details
- Amenities plans and details
- Layout of new facilities
- Details and sections
- Yard piping and duct bank plans and profiles
- Paving & grading
- Other specialties as required
- Process / Mechanical
 - Complete Process and Instrumentation Diagrams
 - Demolition drawings
 - Equipment and piping arrangement plans, sections and details
 - Specifications
- Structural/Demolition

- Demolition drawings
- Structural plans, sections, and details
- Rebar detailing
- Specifications
- Electric Power
 - Plant power single line drawings
 - Process area single line drawings
 - Site power and lighting plans
 - Process area power, communication, and lighting plans
 - Existing electrical building and equipment elevations
 - Specifications
- Controls
 - SCADA system architecture and integration with existing system
 - Control diagrams and schematics
 - Control single line diagrams
 - I/O index
 - Control strategies and loop descriptions
 - Specifications

Specifications

- Technical specifications
- Description of each item on bid schedule with requirements
- Recommended revisions to special provisions
- List of submittals
- Bid schedule
- Engineer's OPCC

Other

- Responses to City's review comments, along with return of mark-ups
- OTS meeting minutes
- A peer review by another licensed professional in the consultant's firm other than the designer of record is required for overall constructability, coordination, and reasonable reduction in errors and omissions is to be accomplished as part of the submittal.
- In review with City, revise plans and specifications based upon Peer Review. The professional shall sign, date and seal the following Certification of Peer Review on a letterhead document with the transmittal of the final plans and specifications:
"The undersigned hereby certifies that a professional peer review of these plans and the required designs was conducted by me, a professional engineer with expertise and experience in the appropriate fields of engineering equal to or greater than the Engineer of Record, and that appropriate corrections have been made."

Deliverables

- 100% plans
- 100% specifications
- Engineer's OPCC

TASK3.4 – Final Design (Bid Package)

Objective

This purpose of this task is to develop final design documents.

Description

The Consultant shall develop the approved 100% design submittal into final design plans, specifications, and cost estimates (final bid package). All comments from the previous submittal shall be resolved and incorporated. The Consultant shall design and prepare complete plans, technical specifications, cost estimates, and revisions to the City's special provisions. Include all necessary attachments and schedules, including but not necessarily limited to: structural calculations, energy efficiency worksheets, and related work. Coordinate all applicable City standards into plans and specifications.

Clearly provide all details necessary for contractor to construct the project. Review, evaluate, revise plans and specifications and provide responses to City's review comments. Verify that the design is in compliance with all applicable laws, regulations, City Standards, CEQA, and other applicable requirements. Recommend any other items of work necessary to provide good value to the City to complete the project. Deliverables shall include but are not limited to:

Plans

- Cover Sheet – Title, Sheet Index, Vicinity Map, Location Maps, Notes, Brief Description of contractor's scope of work, horizontal and vertical control, graphical scale, other information
- Civil Plans – grading, drainage, utilities plans & profiles, lighting, equipment and convenience power, pavement, walks, stairs, rails, details
- Amenities plans and details
- Layout of new facilities
- Details and sections
- Yard piping and duct bank plans and profiles
- Paving & grading
- Other specialties as required
- Process / Mechanical
 - Process and Instrumentation Diagrams
 - Demolition drawings
 - Equipment and piping plans, sections and details
 - Specifications
- Structural/Demolition
 - Demolition drawings
 - Structural plans, sections, and details
 - Specifications
- Electric Power
 - Plant power single lines
 - Process area single lines
 - Site power and lighting plans
 - Process area power, communication, and lighting plans
 - Electrical building and equipment elevations

- Specifications
- Controls
 - SCADA architecture
 - Control diagrams and schematics
 - Control single line diagrams
 - Control strategies and loop descriptions
 - Specifications

Specifications

- Technical Specifications
- Description of each item on bid schedule with requirements for payment (*i.e.* ...complete, in place, and suitable for its intended use.)
- Final revisions to special specifications
- Complete revised Special Provisions and reviewed Supplemental General Provisions, and bid instructions including:
 - Final bid schedule
 - Final engineer's construction cost estimate in the form of the bid schedule, (along with supporting documents not part of the bid package)
 - Final list of submittals
 - Final list of information available to bidders with disclaimer

Other

- Based on City comments from the 100% design review, input received during any public meeting as interpreted by the City, and the Consultant's design judgment and peer review, Consultant shall prepare the final plans for submittal to the City.
- Responses to City's previous review comments, along with return of mark-ups
- Coordinate plans and technical specifications with the City's (front end) bid instructions, standard provisions, and revised special provisions ready for Public Works bidding.
- The Assistant Director of Public Works/City Engineer statement on the plans shall be on the title sheet of the project plans:
"The City of Sunnyvale hereby accepts these plans for construction, as being in general compliance with plans preparation requirements of this agency. Responsibility for the completeness and accuracy of the plans and related designs resides with the Engineer and Engineering Firm of Record."

Deliverables

- Complete set of Plans, stamped and signed on each sheet by the Engineer of Record.
- Complete Technical Specifications and Special Provisions stamped and signed on the table-of-contents sheet by the Engineer of Record. If there are more than one Engineer of Record, stamp and sign the table of contents sheet for only that/those section(s) that applies to each engineering discipline.
- The headers and footers of the Technical Specifications shall be formatted per the example provided by the Project Administration Section and include the Invitation for Bids number provided by Purchasing. The final version of the Technical Specifications shall be submitted as a PDF.
- Revised bid schedule and/or schedule of values.

- Revised project engineers cost estimate prepared in the bid schedule format.
- Revised project time schedule.
- Tabulation of quantities of all work items and materials.
- Recommendation for allowed construction time period.
- Revised list of all required submittals.
- Reviewed City's Standard Construction Contract with completion of blanks that are determined by the work (time of construction).
- Certification of Peer Review signed that the entire Bid Package was reviewed and is recommended for Public Works bidding.
- Digital copy of all work products and supporting work.

TASK 3.5 – Bidding Services

Objective

This purpose of this task is to provide engineering services during bid.

Description

Respond to all Requests for Information, attend pre-bid meeting, and prepare addenda as necessary and provide information to Purchasing to inform plan-holders of significant responses to Requests for Information. All communications shall be directed through the City (Purchasing Officer).

If addenda are extensive on bid documents, Conformed Documents shall be prepared by the Consultant at no expense to the City. Contractor must sign off on Conformed Documents as part of the Conformed Document process. City will provide reproduction services.

Assumptions

- The conformed set will be issued electronically via email or CD to the City.
- The conformed set will be issued within two weeks after end of bid period.

Deliverables

- Prompt response to all Requests for Information
- Minutes of pre-bid meeting
- Addenda as necessary
- Conformed set of plans and specifications

TASK 3.6 – Construction Services

Objective

This purpose of this task is to provide engineering services during construction.

Description

City's Public Works staff will have primary responsibility for construction management and inspection. The Consultant's point of contact shall be the City, not the contractor. The Consultant shall provide the following services at a minimum:

Subtask 3.6.1: Submittal Review

The Consultant will review of submittals, shop drawings, product data, and samples submitted by the general construction contractor to City's construction manager. City's construction manager will review the general construction contractor's submittal log and individual submittals and determine which submittals are to be reviewed by the Consultant.

City's construction management staff will review all construction methods, scheduling, construction change requests, payment requests, and construction sequencing submittals. The Consultant will review submittals and provide review status selected from the review categories listed in the project construction specifications for the type of submittal. The Consultant will maintain a log of submittals in a Microsoft Excel® spreadsheet for internal management and coordination with the construction manager. The deliverables listed below will be prepared and submitted by the Consultant.

Assumptions

- The budget for this work item is based on Contractor design engineers reviewing up to 15 submittals and 13 resubmittals.
- The goal is for the Consultant to review and return submittals to the construction manager within 10 working days of receipt by the Consultant (or within timeframes in the specifications, whichever is less).

Deliverables

- No more than two paper copies and one PDF copy (where applicable) of review comments will be returned to the construction manager. Whenever possible, review submittal and review comments will be transmitted electronically – such transmittal shall be considered the completion of the submittal review. The Consultant will retain no more than 1 paper copy for its files.

Subtask 3.6.2: Requests for Information (RFI)

The Consultant will review the general construction contractor's requests for information (RFIs) as well as respond to questions from construction management and City staff and provide written clarifications only for those improvement areas designed by the Consultant. The Consultant will maintain a listing of RFIs and clarifications in a Microsoft Excel® spreadsheet for internal management and coordination with the construction manager. The deliverables listed below will be prepared and submitted by the Consultant.

Assumptions

- The budget for this work item is based on design engineers reviewing approximately 15 RFIs and clarifications during this period.
- For budgeting purposes, each RFI response is estimated for 3 hours. A total of **45** hours is budgeted for RFI response.
- Clarification requests related to the general construction contractor's means and methods will be returned with the comment that the general construction contractor is responsible for means and methods.
- The goal is to respond to RFIs and clarification requests within an average of 5 working days. A small percentage of RFIs clarifications will be identified by the construction manager to be expedited and to be answered within 2 working days. Responses will typically be emailed, uploaded, or faxed to the construction manager.

No special software licensing will be required to be provided by the Consultant to receive RFIs or clarifications or to respond to or manage RFIs and clarifications. Paper copies will not be mailed, express delivered, or couriered.

Deliverables

- Memoranda or forms with responses to RFIs and clarifications will be emailed to the construction manager.

Subtask 3.6.3: Change Order Assistance

During the construction period, construction change orders may be required to address unforeseen conditions, new information, and resolve inconsistencies or mistakes within the contract documents. The City may also wish to add or modify work in a limited fashion. The purpose of this work item is to provide support for construction issues, construction change orders, and related activities.

Assumptions

- The budget for this work item is based on reviewing and/or preparing approximately **40** hours of construction change and field orders.

Deliverables

- Emails and memoranda responses on general construction contractor requests that work be considered as extra work or limited work added by the City.
- Construction change order documentation – description, annotated drawings, sketches, and supplemental specifications.
- Supporting documentation of reasons to accept, modify, or deny contractor-requested construction changes.

Subtask 3.6.4: Construction/Coordination Meetings/Field Services

The Consultant's project manager and design engineers will attend construction project meetings to keep apprised of construction progress and issues, and to answer questions. Only one staff member from the Consultant will attend the meetings. For budgeting purposes, the Consultant is assuming that they will attend 6 construction meetings. The Consultant will also provide field services, which are based on one staff member conducting site visits, for a total of 8 additional site visits throughout the duration of the project. Site visits are assumed to be independent of monthly meetings.

Assumptions

- The budget for this work item is based on attending 6 construction meetings and 8 site visits. Each construction meeting and site visits are budgeted for a maximum of 5 hours. A total of **70** hours is budgeted for meetings and field services.
- The construction manager will prepare the agenda and meeting minutes.

Deliverables

- None

Subtask 3.6.5: Commissioning and Start-up Assistance

The Consultant will prepare the commissioning work plan. The Consultant will participate with the Contractor and will attend the weekly commissioning meeting during commissioning and startup period. Only one staff member from the Consultant will attend the meetings. For budgeting purposes, a 4 weeks commissioning period has been assumed and the Consultant has budgeted 32 hours of effort. In addition, to the attendance at the site and field meetings, this task includes 20 hours to answer questions and e-mails related to startup and commissioning activities.

Assumptions

- The budget for this work item is based on **52** hours.
- The Consultant will prepare the agenda and meeting minutes.

Deliverables

- Commissioning work plan
- Responses to questions
- Meeting minutes

Subtask 3.6.6: Record Drawings

The Consultant will prepare as-built drawings based upon red-lines provided by contractor and field review.

Assumptions

- Contractor will be responsible for marking up all the changes during construction as a result of submittals, RFIs, change orders and field orders and will produce the complete red-lines.
- A total of **42** hours is budgeted to prepare record drawings.

Deliverables

- A Final set of as-built drawings

Subtask 3.6.7: Operation & Maintenance (O&M) Manual

The Consultant will prepare comprehensive O&M manual for the operation of the system installed. The O&M manuals for the major equipment and system will be provided by the manufacturers and will be reviewed by the Consultant. The O&M manual prepared by the Consultant will include overall system installed.

Assumptions

- A total of **40** hours is budgeted for O&M manuals.

Deliverables

- O&M manuals in printed and digital formats.
- A large scale permanent laminated presentation board of the process.

Task 3.7 Programming Services (Optional Task)

Objective

The purpose of this task is to provide the programming and integration of the new gas blending system control with the existing SCADA system. If this Optional Service item is not authorized by the City then the Consultant shall incorporate the necessary language in the construction specifications so the scope of work can be provided by the Contractor.

Description

Programming services include configuration for the addition of new I/O point for the new natural gas feed valve (NG), the new air blended natural gas (ABNG) feed valve and the new gas analyzer to an existing controller, programming to control the new natural gas feed based on the value from the new chromatograph. These services also include configuration to the existing HMI database to add additional I/O and control points and the modification of up to five graphic displays.

Deliverables

- Programming services
- Commissioning assistance with controls
- Staff training

TASK 4: Regulatory Compliance Support

Objective

The purpose of this task is to provide regulatory compliance support for task 2 and 3.

Description

The Consultant will provide the regulatory compliance related to Task 2 and Task 3.

Task 2 Support: These services include the regulatory support for the selected alternative related to the influent engine compliance scope. The Consultant will also evaluate the impacts of the alternatives evaluated under Task 2 on the existing permit and discuss with the City implications and necessary steps required to stay within compliance. The Consultant will also provide necessary support related to regulatory compliance to develop the basis of design for the selected alternative and action plan required to fully implement the alternative. However, the recommended actions necessary to implement the selected alternative is not part of this Agreement.

Task 3 Support: The services under this subtask will include the evaluation of environmental and regulatory impacts from implementation of the gas system modifications. The Consultant will notify or discuss any implications of the gas system modifications with the City and/or regulatory agency and notify the appropriate agency as necessary.

The Consultant will provide permitting assistance to obtain Authority to Construct (ATC) and Permit to Operate from Bay Area Air Quality Management District (BAAQMD). A minimum of one pre-application meeting with the BAAQMD is anticipated to complete the permitting.

Deliverables

- Regulatory compliance evaluation of influent pumping alternatives TM (Task 2)
- Permit application for standby emergency generators for (Task 3)

TASK 5: Project Management

The objective of this task is to oversee and manage the entire project. Major activities include project administration and quality assurance/quality control. The Consultant shall provide all project management within the Consultant's project team including City contract requirements and invoicing. Project management for this work will be provided for the duration of the project and shall include the following:

- Meetings – Prior to beginning substantive work on the project, Consultant shall meet with City to establish procedures, receive available data from the City and identify additional data as may be required. Additionally, this meeting will provide the opportunity to confirm the key project objectives, the format for project work products and to address any preliminary project concerns. Consultant shall prepare the agenda and distribute minutes of the meeting. Other meetings and workshops are shown in the task descriptions.
- Monthly Project Progress Report – Consultant shall submit monthly invoices and monthly progress reports to the City's Project Manager summarizing progress to date in completing the contracted scope of services.
- Quality Assurance/Quality Control – Consultant shall conduct quality assurance/quality control activities on all deliverables submitted to the City. Consultant shall engage senior professionals within the firm with qualifications and experience relevant to the specific project components not involved in routine project work to provide proper quality assurance and quality control.

Deliverables

- Meeting minutes
- Monthly project progress report with invoice

Schedule and Invoicing

Consultant shall provide a complete schedule in Microsoft Project format, including two weeks for each City review of reports/studies and three weeks for each City design review period. The City will hold the Consultant responsible to comply with the schedule submitted by the Consultant.

Monthly invoices must be accompanied with a description of the work accomplished and an update of the project schedule. Schedule updates must include a description of all changes to the schedule, reasons for the change and mitigation measures, when necessary, to bring the project back to the baseline schedule. Hourly rates shall remain constant for the duration of the contract. No mark-ups shall be allowed on reimbursable expenses and the maximum markup on subconsultants shall be 5%.

Format

The City's standard plan format shall be used. The specifications shall be in CSI format. Plans shall be organized in logical layers, including but not necessarily limited to: existing

underground, surface and overhead conditions; proposed underground by utility, proposed surfacing, proposed pavement markings, proposed overhead, etc.

All reports and design stage submittals shall include 8 sets of copies. Each set for the design stages shall include an estimate, specification, and one full size drawing set. Additionally, 4 copies of half size drawing sets shall be provided. Electronic copies of each submittal package shall also be provided in the following format: AutoCAD and PDF for plans; MS Word (.doc) and PDF for specifications or reports; MS Excel (.xls) and PDF for Cost Estimates or spread-sheets; and MS Project and PDF for time schedules. Large files shall be submitted on CD/DVD, or made available for download through an FTP site.

Project Data

The City will provide all the existing drawings, previous reports, and data requested by the Consultant if it is available. In the absence of the any such data, Consultant will make reasonable assumptions.

The following documents have been provided to Consultant:

1. 2006 Plant Condition Assessment
2. Performance and Condition assessment of the Hot Water Loop (Base Energy)
3. RMC Documents
4. CDM Gas Management and Stand-by power evaluation
5. Plant Hydraulic Profile
6. Survey and Maps

Use City bench marks for vertical control, if needed. See link below.

<http://sunnyvale.ca.gov/Departments/PublicWorks/BenchMarks,RecordMapsandRecordDrawings.aspx>

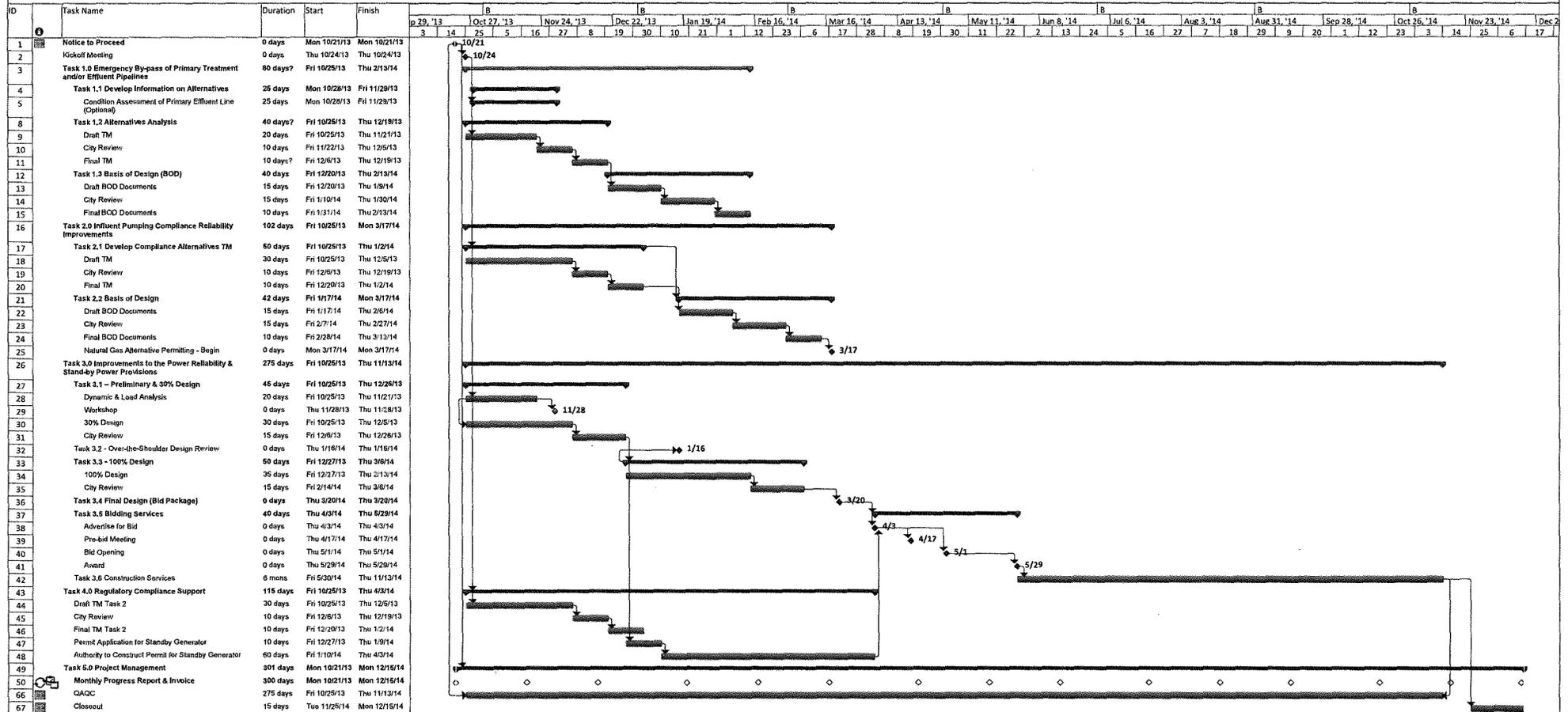
The City does not guarantee the accuracy or completeness of record drawings. Consultant shall verify all information to their professional satisfaction.

Proposed Fee

See Exhibit B

Exhibit A-1

City of Sunnyvale Emergency Flow Management for Water Pollution Control Plant Project Schedule



Project: Sunnyvale Schedule_v2
Date: Mon 9/16/13

Task	Summary	External Milestone	Inactive Summary	Manual Summary Rollup	Finish-only
Split	Project Summary	Inactive Task	Manual Task	Manual Summary	Deadline
Milestone	External Tasks	Inactive Milestone	Duration-only	Start-only	Progress

Exhibit B

City of Sunnyvale

Emergency Flow Management Improvements

CDM Smith

Tasks											Subconsultants						ODCs	Total
Task #	Task Description	Project Manager	Project Engineer	Power/Conveyance QA/QC	Sr. Tech Lead	Support Engineer	CAD	Admin	Total Hours	Total Labor Costs	Survey	Condition Assessment	Title	Title	Title	Title	Other Direct Costs	Total Fee
		Akela	Craig	Parry / Corwin	Fernbach/Vandenburg h/ Allen	Various					Siegfried	PURE Technology	Conslt. Name	Conslt. Name	Conslt. Name	Conslt. Name		
		\$ 185	\$ 155	\$ 260	\$ 250	\$ 135	\$ 107	\$ 90			Fee/Hr or LS	Fee/Hr or LS	Fee/Hr or LS	Fee/Hr or LS	Fee/Hr or LS	Fee/Hr or LS		
1.0	Emergency Bypass of Primary Treatment/Effluent																	
1.1	Develop Information on Alternatives	8	-	16	24	40	8	-	96	\$17,896	-	-	-	-	-	-	\$ 2,500	\$ 20,396
1.2	Alternative Analysis	8	-	16	24	72	24	8	152	\$24,648	-	-	-	-	-	-	\$ 1,000	\$ 25,648
1.3	Basis of Design	16	-	24	40	80	40	8	208	\$35,000	-	-	-	-	-	-	\$ 2,200	\$ 37,200
2.0	Influent Pumping Compliance Reliability Improvements																	
2.1	Develop Compliance Alternative TM	8	44	16	8	72	24	8	180	\$27,468	-	-	-	-	-	-	\$ 1,600	\$ 29,068
2.2	Basis of Design	65	72	24	16	80	8	8	273	\$45,801	-	-	-	-	-	-	\$ 2,200	\$ 48,001
2.3	Alternative Heat Supply w/o IP Engines (Optional Task B)	-	-	-	-	-	-	-	-	\$0	-	-	-	-	-	-		\$ -
3.0	Improvements to Power Reliability and Standby Power																	
3.1	Preliminary and 30% Design	40	40	16	40	240	80	16	472	\$70,160	-	-	-	-	-	-	\$ 2,200	\$ 72,360
3.2	Over-the-Shoulder Design Review	4	8	2	2	4	8	-	28	\$4,396	-	-	-	-	-	-	\$ 1,000	\$ 5,396
3.3	100% Submittal	40	32	16	16	200	80	8	392	\$56,800	-	-	-	-	-	-	\$ 3,000	\$ 59,800
3.4	Final Design (Bid Package)	10	20	2	2	24	80	8	146	\$18,490	-	-	-	-	-	-	\$ 2,600	\$ 21,090
3.5	Bidding Services	16	12	4	8	16	8	-	64	\$10,876	-	-	-	-	-	-	\$ 500	\$ 11,376
3.6	Construction Services (Note 1)	47	131	18	40	112	40	-	388	\$63,080	-	-	-	-	-	-	\$ 5,500	\$ 68,580
3.7	Programming Services (Optional Task C)	-	-	-	-	-	-	-	-	\$0	-	-	-	-	-	-	\$ -	\$ -
4	Permitting and Regulatory Requirements	4	-	-	-	100	4	-	108	\$14,668	-	-	-	-	-	-	\$ -	\$ 14,668
5	Project Management	80	40	16	16	8	8	24	192	\$33,256	-	-	-	-	-	-	\$ 3,000	\$ 36,256
6	Surveying	-	-	-	-	-	-	-	-	\$0	10,000	-	-	-	-	-	\$ -	\$ 10,000
7	Potholing	-	-	-	-	-	-	-	-	\$0	-	-	6,500	-	-	-	\$ -	\$ 6,500
	Proposal Subtotal	346	399	170	236	1048	412	88	2699	\$ 422,539	\$ 10,000	\$ -	\$ 6,500	\$ -	\$ -	\$ -	\$ 27,300	\$ 466,339
	Optional Services																	
A	Condition Assessment of the 66-inch primary effluent line											\$50,000						\$50,000
B	Alternative Heat Supply w/o IP Engines	24	52	24	8	160	80	8	356	\$51,620							\$1,600	\$53,220
C	Programming Services	-	-	-	180	-	-	-	180	\$45,000	-	-	-	-	-	-	\$5,000	\$50,000
D	-----	-	-	-	-	-	-	-	-	\$0	-	-	-	-	-	-		\$0
E	-----	-	-	-	-	-	-	-	-	\$0	-	-	-	-	-	-		\$0
	Total Optional Services	24	52	24	188	160	80	8	536	96,620	0	50,000	0	0	0	0	6,600	153,220
	Total Including Optional Services	370	451	194	424	1,208	492	96	3,235	\$19,159	\$10,000	\$50,000	\$6,500	\$0	\$0	\$0	\$33,900	\$619,559
	Notes:																	
1	Breakdown of construction services level of effort is attached																	
2																		
3																		

Exhibit "C"

INSURANCE REQUIREMENTS FOR CONSULTANTS

Consultant shall procure and maintain for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work by the Consultant, his agents, representatives, or employees.

Minimum Scope and Limits of Insurance: Consultant shall maintain limits no less than:

1. **Commercial General Liability:** \$1,000,000 per occurrence and \$2,000,000 aggregate for bodily injury, personal injury and property damage. ISO Occurrence Form CG 0001 is required.
2. **Automobile Liability:** \$1,000,000 per accident for bodily injury and property damage. ISO Form CA 0001 is required.
3. **Workers' Compensation** and **Employer's Liability:** \$1,000,000 per accident for bodily injury or disease.
4. **Errors and Omissions** Liability Insurance appropriate to the Consultants Profession: \$1,000,000 per occurrence and \$2,000,000 aggregate.

Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared and approved by the City of Sunnyvale. The consultant shall guarantee payment of any losses and related investigations, claim administration and defense expenses within the deductible or self-insured retention.

Other Insurance Provisions

The **general liability** and **automobile liability** policies are to contain, or be endorsed to contain, the following provisions:

1. The City of Sunnyvale, its officials, employees, agents and volunteers are to be covered as additional insureds with respects to liability arising out of activities performed by or on behalf of the Consultant; products and completed operations of the Consultant; premises owned, occupied or used by the Consultant; or automobiles owned, leased, hired or borrowed by the Consultant. The coverage shall contain no special limitations on the scope of protection afforded to the City of Sunnyvale, its officers, employees, agents or volunteers.
2. For any claims related to this project, the Consultant's insurance shall be primary. Any insurance or self-insurance maintained by the City of Sunnyvale, its officers, officials, employees, agents and volunteers shall be excess of the Consultant's insurance and shall not contribute with it.
3. Any failure to comply with reporting or other provisions of the policies including breaches of warranties shall not affect coverage provided to the City of Sunnyvale, its officers, officials, employees, agents or volunteers.

4. The Consultant's insurance shall apply separately to each insured against whom claim is made or suit is brought, except with respect to the limits of the insurer's liability.
5. Each insurance policy required by this clause shall be endorsed to state that coverage shall not be suspended, voided, cancelled by either party, reduced in coverage or in limits except after thirty (30) days' prior written notice by certified mail, return receipt requested, has been given to the City of Sunnyvale.

Claims Made Coverage

If the General Liability and/or Errors & Omissions coverages are written on a claims-made form:

1. The retroactive date must be shown, and must be before the date of the contract or the beginning of contract work.
2. Insurance must be maintained and evidence of insurance must be provided for at least five years after completion of the contract work.
3. If coverage is canceled or non-renewed, and not replaced with another claims-made policy form with a retroactive date prior to the contract effective date, the Consultant must purchase an extended period coverage for a minimum of five years after completion of contract work.
4. A copy of the claims reporting requirements must be submitted to the City of Sunnyvale for review.

Acceptability of Insurers

Insurance is to be placed with insurers with a current A.M. Best's rating of no less than A:VII, unless otherwise acceptable to the City of Sunnyvale.

Verification of Coverage

Consultant shall furnish the City of Sunnyvale with original a Certificate of Insurance effecting the coverage required. The certificates are to be signed by a person authorized by that insurer to bind coverage on its behalf. All certificates are to be received and approved by the City of Sunnyvale prior to commencement of work.