

**Council Meeting: February 26, 2013****SUBJECT: Award of a Contract for the Design of a Sodium Hypochlorite Disinfection System for the Water Pollution Control Plant (F13-14)****BACKGROUND**

Approval is requested to award a contract to HDR Engineering, Inc. of Cupertino in an amount of \$360,180 to design a new Sodium Hypochlorite Disinfection System for the Water Pollution Control Plant (WPCP). Approval is also requested for a 15% design contingency in the amount of \$54,027.

The final treatment process at the WPCP currently disinfects wastewater using gaseous chlorine and then neutralizes the chlorine with bi-sulfate prior to Bay discharge. The recycled water production process also uses gaseous chlorine for disinfection and residual chlorine. Gaseous chlorine has been used at the WPCP for decades and was historically the disinfectant of choice due to its effectiveness and low cost. However, gaseous chlorine is a very dangerous chemical and as a result many treatment plants are eliminating its use in favor of liquid chlorine (technically sodium hypochlorite or bleach). This product is much less dangerous and therefore reduces the potential hazards to plant workers and the surrounding community.

Additionally, it has become increasingly difficult to competitively bid gaseous chlorine due to liability concerns and regulatory issues related to the production and distribution of this material. Based on these issues, as well as the existing delivery system nearing the end of its useful life, staff recommends moving forward to replace the gaseous system with a liquid chlorine system. This project will result in a new disinfection system that also allows for the removal of old gaseous chlorine containers and associated process equipment, which will ultimately reduce risk and improve safety at the WPCP.

The concept for this conversion project was discussed with Council at the February 10, 2012 Strategic Planning Workshop, followed by Council action to appropriate funding in March and August 2012 (RTC Nos. 12-057 and 12-189).

DISCUSSION

The scope of work for this project is to provide design and construction support services related to the conversion from gaseous chlorine to liquid chlorine. The design phase of the project will also include the preparation of several preliminary studies for other WPCP functions related to the disinfection process. These items will include evaluating alternate de-chlorination points along the wastewater outfall to minimize compliance infractions, researching options to simultaneously produce recycled water while discharging to the Bay (currently this cannot be accomplished),

and reducing the total dissolved solids (TDS) in the recycled water being produced as to meet the requirements of more potential commercial users. Once these studies are completed, staff will review the results and develop design work scopes for any additional projects that may be identified. The actual design work for these additional projects is not included in the scope for this contract (the studies must be completed before design scope(s) are finalized), but the City has the option of amending this contract to include the work in the future if desired, or seek additional competitive proposals.

Request for Proposal (RFP) specifications were prepared by Public Works, Environmental Services Division (ESD) and Purchasing staff. RFP No.F13-14 was posted to the Onvia DemandStar public procurement network. Thirty (30) firms requested RFP documents. Eight responsive proposals were received as follows:

HydroScience Engineers, Inc. of San Jose	\$255,652
Black & Veatch Corporation, of Walnut Creek	\$484,300
West Yost Associates, of Davis	\$352,548
Lee & Ro, Inc., of Walnut Creek	\$409,724
CDM Smith, of Walnut Creek	\$493,790
Kennedy/Jenks Consultants, of Palo Alto	\$495,026
HDR Engineering, Inc., of Cupertino	\$365,653
Malcolm Pirnie/Arcadis, of Walnut Creek	\$854,448

Proposals were evaluated and ranked by an evaluation team consisting of Public Works Engineering and ESD staff. Proposals were evaluated on qualifications, experience, project understanding and approach, and overall value. Following evaluation of the written proposals, the top ranked were invited to interview with the evaluation team.

Based on the content of both the written proposal and interview, staff identified HDR Engineering, Inc. as the top ranked firm. The key members identified on the HDR team have a great deal of knowledge in the wastewater treatment industry and have been involved in various disinfection projects in the past. Their overview and detailed project approach showed a clear understanding of the Sunnyvale project as well as its potential solutions. HDR can utilize their knowledge and experience gained on previous, similar projects to assist the City in meeting its goal of converting from gaseous chlorine to liquid chlorine. Subsequent negotiations with City staff resulted in a reduction of fees from \$365,653 to \$360,180 with no reduction in project scope.

FISCAL IMPACT

Project costs are as follows:

Project design (including bidding and construction support)	\$360,180
Design contingency (15%)	<u>\$54,027</u>
Total cost	\$414,207

Budgeted funds are available in Capital Project 829430 (WPCP Chlorine Conversion). Project funding is a combination of proceeds from the 2010 Wastewater Revenue Bonds and ongoing rate revenue, which is accounted for in the Fund's reserves.

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 contract, in substantially the same form as the attached draft and in the amount of \$360,180 to HDR Engineering, Inc., and authorize the City Manager to execute the contract when all the necessary conditions have been met; and
2. Approve a 15% design contingency in the amount of \$54,027.

Reviewed by:

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

Reviewed by:

John Stufflebean, Director, Department of Environmental Services

Reviewed by:

Kent Steffens, Director, Department of Public Works

Approved by:

Gary M. Luebbbers
City Manager

Attachments

- A. Draft Consulting Services Agreement

**ATTACHMENT A
DRAFT**

**CONSULTANT SERVICES AGREEMENT BETWEEN CITY OF SUNNYVALE AND HDR
ENGINEERING, INC. FOR DESIGN AND CONSTRUCTION SUPPORT SERVICES FOR A
SODIUM HYPOCHLORITE DISINFECTION SYSTEM AT THE
WATER POLLUTION CONTROL PLANT**

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

WHEREAS, CITY desires to secure professional services necessary for investigation, analysis, design specifications, consultation, services during construction and other services for a project known as Sodium Hypochlorite Disinfection System 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 Joe Wojslaw, P.E. 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. Time for Performance

The term of this Agreement will be from contract execution through the completion of project construction, unless otherwise terminated. The project schedule is set forth in the attached as Exhibit "A-1". CONSULTANT shall deliver the agreed upon services to CITY as specified in Exhibit "A". Extensions of time may be authorized by the City Manager.

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. In no event shall the total amount of compensation payable under this agreement exceed the sum of Three Hundred Sixty Thousand One Hundred Eighty and No/100 Dollars (\$360,180.00) 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.

It is hereby agreed that the following information is not considered to be confidential under this Agreement: information already in the public domain; information disclosed to CONSULTANT by a third party who is not under a confidentially obligation; information developed by or in the custody of CONSULTANT before entering into this Agreement; information developed by CONSULTANT through its work with other clients; and information required to be disclosed by law or regulation, including, but not limited to , subpoena, court order or administrative order, upon notification of the 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.

14. Hold Harmless/Indemnification

To the extent permitted by law (including, without limitation, California Civil Code section 2782.8), CONSULTANT agrees to indemnify, defend and hold harmless CITY, its officers and employees from any and all claims, demands, actions, causes of action, losses, damages, liabilities, known or unknown, and all costs and expenses, including reasonable attorneys' fees in connection with any injury or damage to persons or property to the extent arising out of any negligence, recklessness or willful misconduct of CONSULTANT, its officers, employees, agents, contractor, subcontractors or any officer, agent or employee thereof in relation to CONSULTANT's performance under this Agreement. Such defense and indemnification shall not apply in any instance of and to the extent caused by the sole negligence, recklessness or willful misconduct of CITY, its officers, employees, agents or representatives.

15. Insurance Requirements

CONSULTANT shall take out and maintain during the life of this Agreement policies of insurance as specified in Exhibit "C" attached and incorporated by reference, and shall provide all certificates and/or endorsements as specified in Exhibit "C."

16. No Third Party Beneficiary

This Agreement shall not be construed or deemed to be an agreement for the benefit of any third party or parties and no third party or parties shall have any claim or right of action hereunder for any cause whatsoever.

17. Notices

All notices required by this Agreement, other than invoices for payment which shall be sent directly to Accounts Payable, shall be in writing, and shall be personally delivered, sent by first class with postage prepaid, or sent by commercial courier, addressed as follows:

To CITY: Craig Mobeck, Senior Engineer
Department of Public Works
CITY OF SUNNYVALE
P. O. Box 3707
Sunnyvale, CA 94088-3707

To CONSULTANT: HDR Engineering, Inc.
Attn: Joe Wojslaw
19925 Stevens Creek Blvd., #100
Cupertino, CA 95014

Nothing in this provision shall be construed to prohibit communication by more expedient means, such as by telephone or facsimile transmission, to accomplish timely communication. However, to constitute effective notice, written confirmation of a telephone conversation or an original of a facsimile transmission must be sent by first class mail, by commercial carrier, or hand-delivered. Each party may change the address by written notice in accordance with this paragraph. Notices delivered personally shall be deemed communicated as of actual receipt; mailed notices shall be deemed communicated as of three days after mailing, unless such date is a date on which there is no mail service. In that event communication is deemed to occur on the next mail service day.

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

HDR ENGINEERING, INC. ("CONSULTANT")

By _____

APPROVED AS TO FORM:

Name/Title

City Attorney

By _____

Name/Title

EXHIBIT A

Scope of Services for Design of the City of Sunnyvale Water Pollution Control Plant Sodium Hypochlorite Disinfection System Project Number UY-12/09-15

1. General

This scope provides for professional services to the City of Sunnyvale (City) for the design and construction of a Sodium Hypochlorite Disinfection System. The scope of services includes but is not limited to the following: development of Concept Feasibility studies; alternatives evaluation; development of basis of design reports; preparation of plans, specifications, estimates, and bid documents for Public Works competitive bidding; schedules; and compliance with all applicable rules, regulations, codes and laws. Related work consists of complying with the CEQA, BAAQMD, NPDES, and any other applicable local, state or federal requirements and includes obtaining or preparing all other necessary permits and authorizations ready for use by the construction general contractor.

The Consultant shall also provide support during bidding and construction. After construction the Consultant shall prepare "as-built" record drawings, based upon plans marked up by the contractor, and the Consultant's field visits. The reports, recommendations, and design shall comply with all applicable rules, regulations, code, law and good practice, for public facilities. The Consultant shall incorporate "green" building/construction practices, sustainability, energy efficiency, and low operational and maintenance costs into the recommendations and design. The intent of the design documents is for construction to be complete, in place, and suitable for its intended use.

2. Project Background

Conversion from Gaseous Chlorine to Liquid Chlorine

The final treatment process at the Sunnyvale Water Pollution Control Plant (WPCP) currently includes disinfecting wastewater using gaseous chlorine and then neutralizing the chlorine with bi-sulfate prior to Bay discharge. The recycled water production process also uses gaseous chlorine for disinfection and residual chlorine. Gaseous chlorine has been used at the Sunnyvale WPCP for decades. However, due to safety concerns as well as the system reaching the end of its useful life, the City would like to replace it with a system that utilizes liquid chlorine. This project would result in a new disinfection system that also allows for the removal of gaseous chlorine containers and associated equipment to reduce risk and improve safety at the WPCP.

The Consultant shall be responsible for preparing a complete pre-design study and basis of design report (BODR) including construction cost estimates and schedules. The Consultant shall also be responsible for providing complete project design and construction support services.

Operational Improvements

There are several disinfection related operational improvements that the City would also like to explore in conjunction with the disinfection work. The City desires to improve the reliability of the chlorination/de-chlorination system through better monitoring and compliance tools. The proximity of the compliance point to the current bi-sulfite dosing location is very close making for an unreliable system for monitoring and corrective action implementation. The City is interested in exploring alternatives for changing operational procedures and making infrastructure modifications to address this issue. The consultant shall investigate the feasibility of moving the de-chlorination compliance point to a new structure located on the outfall alignment within the plant site property.

The Consultant shall be responsible for preparing a condition assessment on the existing outfall (from the chlorine contact chambers to the Bay). This will include a confined space entry of the outfall during a period of time that plant operations staff can discontinue discharge through the outfall. During the walk through investigation the following tasks shall be performed:

- Document the pipe condition corrosion during the walk through. Photographs and/or handheld video of defective areas of the pipe surfaces will be taken to document conditions
- Document locations of visually identified defective areas. Particular attention will be given to the concrete transition wall between the reinforced concrete pipe and the steel pipe.
- Monitor and record the levels of atmospheric H₂S as indicated by the gas meters used for confined space entry.
- Measure the depth of sediment (if present) at 100-foot intervals through the outfall.
- If present, assess the condition of protective linings applied to the steel and/or concrete pipe surfaces
- Rate concrete conditions using the VANDA™ Reinforced Concrete Condition Index.
- Measure and document offset or separated joints.
- Measure the pH at the surface and at sound concrete at 100-foot intervals. The pH of concrete can substantiate the levels of biogenic corrosion attack or carbonation prevalent within the outfall.
- Determine the concrete cover over the reinforcing steel at four equally spaced clock positions at 100-foot intervals along the length of the outfall. The presence of water may prevent a measurement at the pipe invert.
- Assess concrete condition by sounding to listen for discontinuities and by penetration measurements with a chipping hammer (determine depth to sound concrete).
- Perform ultrasonic thickness (UT) measurements on the steel pipe portion of the outfall. The UT measurements will be taken at eight equally spaced clock positions around the circumference of the pipe at 50-foot intervals. UT measurements require contact with the metal surfaces. UT measurements may not be possible if the surfaces are coated with mortar or if the surface profile is too rough from corrosion. The presence of water may prevent a measurement near the pipe invert.
- In lieu of UT measurements, take corrosion pit depth measurements at areas of corrosion inside the outfall.
- Rate steel pipe conditions using the VANDA™ Metal Condition Index.

The Consultant shall also perform potholing at 3 locations to access the exterior condition of the outfall and determine its material of construction.

The Consultant shall prepare a concept feasibility study for these operational improvements containing description of alternatives, analysis of alternatives, illustrative sketches, cost estimates (design and construction) and recommendations. Design services for these operational improvements are currently not part of the scope of work. The City may or may not elect to add these services including construction support at a later date.

Simultaneous Production of Recycled Water

The City wants to improve the ability to simultaneously produce recycled water and Bay discharge. Currently recycled water cannot be produced simultaneously with Bay discharge at the Sunnyvale WPCP. For Bay discharge, the effluent must be chlorinated to remove pathogens, and then de-chlorinated to remove the chlorine that is harmful to Bay aquatic life. For the recycled water system, the turbidity (cloudiness) of the water must be reduced, and optimal residual chlorine must remain in the water (to prevent regrowth of pathogens in the distribution system). Although the chlorine requirements are different for the two processes, the same chlorine contact basins are used during each process. Therefore each process must be done as a batch rather than simultaneously. When the WPCP is producing recycled water the operators have to switch back and forth from Bay discharge to recycled water production daily, a process that is inefficient and difficult to control. Additionally, the normal operation of the treatment plant does not easily produce filtered effluent with a turbidity of 2 TU or less as required by Title 22 regulations. Thus not only does chlorination require batch operation to produce reclaimed water, the entire treatment system operation must also be modified. This normally involves reducing the flow rate from the ponds to 8mgd and increasing DAF polymer dosage. The Consultant shall complete an analysis of alternatives for evaluation of concurrent production of recycled water. Two alternatives will be explored. One alternative involves segregating, one trickling filter, one DAF, one filter cell and one chlorine contact chamber to serve as a separate recycled water treatment train. The second alternative also involves creating a segregated treatment train for recycled water. This segregated train involves, one trickling filter, one DAF, adding a new filter better suited to this application and chlorination in a segregated chlorine contact chamber.

The Consultant shall be responsible for preparing a concept feasibility study for Simultaneous Production of Recycled Water containing description of alternatives, analysis of alternatives, illustrative sketches, cost estimates (design and construction) and recommendations. Design services for the simultaneous production of recycled water are currently not part of the scope of work. The City may or may not elect to add these services including construction support at a later date.

Reduction of TDS in Recycled Water

The City desires to improve the total dissolved solids (TDS) concentration of the recycled water stream. The recycled water produced at the Sunnyvale WPCP must meet the regulatory requirements for non-potable recycled (purple pipe) water, however, the salt concentration in the recycled water is high. Typical potable water has a salt content (TDS) of 300 to 500 ppm (parts per million). The salt content of recycled water produced at the Sunnyvale WPCP ranges from 800 to 850 ppm. While this is acceptable for most irrigation, it is problematic for salt-intolerant plant species, and undesirable for most industrial uses

since additional treatment is required. The sources are likely to include infiltration of Bay water into the sanitary sewer collection system, industrial sources in the City, and residential water softener discharges. The Consultant shall make 50 conductivity measurements at manholes in the collection system in an attempt to determine if there are discreet locations where high TDS is being introduced such as an industrial discharger or segment of leaky sewer pipe that can be easily mitigated.

The Consultant shall be required to coordinate with the Recycled Water Master Plan consultant and review all the compiled data and all necessary reports/studies; explore the alternatives for operational changes and minor capital improvements to reduce the recycled water TDS (including connecting the system to a potable water source). The Consultant shall be responsible for preparing a concept feasibility study for Reduction of TDS in Recycled Water containing description of alternatives, analysis of alternatives, illustrative sketches, cost estimates (design and construction) and recommendations. Design services for the reduction of TDS in recycled water are currently not part of the scope of work. The City may or may not elect to add these services including construction support at a later date.

Project Location and Existing Conditions

The Consultant selected for this scope of work will be required to coordinate with other consultants and contractors working at the WPCP. The Consultant shall also incorporate piping and connections, to the extent possible, to accommodate future plant modifications.

3. Consultant Services

The Consultant shall be the Engineer of Record and shall be responsible for design and preparation of complete plans, reports, studies, schedules, estimates, and technical specifications. The Consultant shall include the necessary plans, phasing documents, and transition/transfer plans necessary for the demolition of the existing gaseous chlorine facility. The Consultant shall provide 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 evaluate sites of proposed excavation for hazardous materials and contaminants (performed to the standards defined by ASTM 1527-05 to evaluate the presence or likely presence of Hazardous materials or petroleum hydrocarbons) that may be encountered and provide language in the contract 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 applications for 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. All reports and design stage submittals shall include 8 sets of copies. Each set for the design stages shall include an estimate, specification, one full size drawing, and one half size drawing.

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 chlorine related buildings, foundations, tanks, and other material, equipment, and appurtenances related to the system. All demolition locations shall be specified to 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 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 required instrumentation and control equipment and wiring and the design engineer shall be involved intimately with the contractor 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, 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.

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.

Concept Feasibility Studies and Basis of Design Report

The Consultant shall complete three (3) concept feasibility studies with alternatives evaluation of the issues identified in this scope of work document or basis of design report (BODR) as indicated below. Concept feasibility studies shall include cost estimates (design & construction), schedule estimates, and conceptual schematics. These documents shall also include any implications to Title 22 and WPCP NPDES permit compliance as well as permit compliance evaluations.

The Consultant shall provide the following concept feasibility studies or basis of design reports:

1. Conversion from Gaseous Chlorine to Liquid Chlorine (Basis of Design Report)
2. Operational Improvements (Concept Feasibility Study)
3. Simultaneous Production of Recycled Water (Concept Feasibility Study)
4. Reduction of TDS in Recycled Water (Concept Feasibility Study)

The Consultant shall present the findings of the concept feasibility studies and basis of design reports in workshops with City staff and present the cost-benefit analysis of the various alternatives and facilitate the decision making process by the City. The Consultant shall incorporate all City comments into the concept feasibility studies and basis of designs and submit eight (8) final copies to the City.

Basis of Design Report (BODR) Submittal 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 Basis of

Design Report. The BODR shall represent a 30% design level. 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 Basis of Design Report 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.
- P&ID's.
- 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.
- Provide 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 a brief summary memo 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 and prepare the necessary documents which are required to be submitted.
- 30% Specifications that include the necessary technical specifications as well as a complete table of contents that is reflective of the 100% document.

Clearly show for the entire site of the work associated with the chlorine gas to liquid conversion 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
 - Specification index and boilerplate specification section drafts
- 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 BODR 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.

Preliminary Design

Upon confirmation of the basis of designs assumptions, acceptance of the basis of design report (BODR), and issuance of a NTP, the Consultant shall commence design phase services for preparation of construction contract documents for the implementation of the conversion from gaseous chlorine to liquid chlorine project. The BODR described above shall

be equivalent to the Preliminary Design (30%) phase.

As indicated previously, the BODR 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.

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.

75% Submittal

The Consultant shall develop the approved Basis of Design Report (30% design submittal level) into 75% design plans, specifications, and cost estimates. All comments from the previous submittal shall be resolved and incorporated. 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
- Layout of new facilities
- Details and Sections
- Yard Piping and Duct Bank plans and profiles
- Paving & Grading
- All sheets are started
- Process / Mechanical
 - Complete Process and Instrumentation Diagrams
 - Demolition Drawings
 - Equipment arrangement plans, sections and details
 - Specifications for Vendor review
- Structural/Demolition
 - Structural plans, sections and details
 - Demolition plans, sections and details
 - Preliminary rebar detailing
 - Specifications
- Electric Power
 - Plant power single line drawings
 - Process area single line drawings
 - Electrical room plans and equipment sections.
 - Schematic site power plans.
 - Specifications
- Controls
 - SCADA system architecture and integration with existing system.
 - SCADA I/O on process and instrumentation diagrams
 - Control schematics

- 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
- Bid Schedule
- Engineer's Construction Cost Estimate

Other

- Responses to City's review comments, along with return of mark-ups

100% Submittal

The Consultant shall develop the approved 75% design submittal into 100% design plans, specifications, and cost estimates. All comments from the previous submittal shall be resolved and incorporated. 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
- Layout of new facilities
- Details and Sections
- Yard Piping and Duct Bank plans and profiles
- Paving & Grading
- 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

- Control Single Line Diagrams
- Control Strategies
- Specifications

Specifications

- Technical Specifications
- Description of each item on bid schedule with requirements
- Recommended revisions to Special Provisions
- Bid Schedule
- Engineer's Construction Cost Estimate

- Responses to City's review comments, along with return of mark-ups

Final Design Submittal (Final Bid Package)

The Consultant shall develop the approved 100% design submittal into a 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. The final plans shall be suitable to submit for Building Department review, and to prepare draft Building Permits, ready for the winning bidder. Include all necessary attachments and schedules, including but not necessarily limited to: structural calculations, energy efficiency worksheets, and related work. Coordinate applicable City standards into plans and specifications.

Clearly provide 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 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
- Other specialties

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.)
- Recommended 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.
- 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 Final 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."
- 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."
- Revised project cost estimate.
- Revised project time schedule.
- Coordinate plans and technical specifications with the City's (front end) bid instructions, standard provisions, and revised special provisions ready for Public Works bidding.
- Prepare:
 - Bid schedule and/or schedule of values
 - Tabulation of quantities of all work items and materials
 - Engineer's Estimate of construction costs
 - Recommendation for allowed construction time period
- Provide list of all required submittals.

Submittals at Bid Package level:

- 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.
- 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.

Bidding Services

Respond to 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).

Submittals at Bidding Services:

- Prompt response to all Requests for Information
- Minutes of Pre-bid meeting
- Addenda as necessary

If addenda are extensive on bid documents, Conformed Documents will 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.

Construction Services

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:

- Respond to Request for Information (RFIs), clarifying the plans and specifications where appropriate, or providing revisions or additional detail where necessary.
- Review and respond to all submittals.
- Attend pre-construction meeting, and periodic construction meetings and field inspection for final completion as determined by the City. All other required on-site meetings shall be considered necessary and based on the competency and adequacy of the contract documents and therefore the responsibility of the consultant.
- Prepare As-Built Drawings based upon red-lines provided by contractor and field review.
- Review proposed substitutions for conformance to drawings and technical specifications, if any.
- Review and make recommendations on proposed changes to the contract (Request for Quotation/Contract Change Order).

- Preparation of comprehensive Operation and Maintenance (O&M) manuals in printed and digital formats. This shall include a large scale permanent laminated presentation board of the process.
- Provide coordination, oversight and services related to equipment testing, integration, commissioning (coordinate with City's third party commissioning consultant), and startup. All documentation of these events shall be submitted to the City by the Consultant.
- Participate in the final inspection and development of the punch lists.
- Optional Task – Any services beyond the originally planned construction completion date, such as extended start-up, training or any services determined by the City. Expenditure of Optional Tasks funds will be as directed by the City.

Submittals at Construction Services:

- Prompt responses to all requests for information (RFIs)
- Prompt responses to all submittals
- As-Built Drawings submitted as AutoCAD and PDF files

Schedule

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.

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.

Hard copy submittals shall be seven full-sized sets, and four reduced sets. Digital Submittals shall be in: 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 should be broken up into smaller files, submitted on CD or DVD, or made available for download through an FTP site.

Provide project management within the Proposers' project team including City contract requirements and invoicing. 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%.