CITY OF BEVERLY HILLS
REQUEST FOR PROPOSAL
OWNER’S REPRESENTATIVE FOR THE
DESIGN-BUILD OF A PRE-TREATMENT SYSTEM FOR THE REVERSE OSMOSIS
WATER TREATMENT PLANT
SP 18-60

PUBLIC WORKS DEPARTMENT
345 FOOTHILL RD., BEVERLY HILLS, CA 90210

ISSUE DATE: JULY 10, 2018

QUESTIONS DUE: JULY 31, 2018 - 5 p.m.

SUBMITTALS DUE: AUGUST 7, 2018 - 5 p.m.
I. INTRODUCTION

The City of Beverly Hills, (referred to hereafter as “the City”) is inviting proposals from qualified persons or firms interested in the Owner’s Representative for the Design-Build Reverse Osmosis Pretreatment Project.

A. PROJECT DESCRIPTION/ SCOPE OF WORK

- Proposal Calendar

  The following is a list of key dates:

  Request for proposals issued........................................................... July 10, 2018
  Submission of inquiries......................................................... July 31, 2018, 5 p.m.
  Proposals due............................................................................. August 7, 2018, 5 p.m.
  Final candidate selection..................................................... August 21, 2018
  Staff recommendation to City Council for award of contract...... Sept. 18, 2018

- Project Description

  **Background:**

  The Reverse Osmosis Pretreatment Project came about as a solution to newly discovered water quality issues from the source groundwater Hollywood Basin wells feeding the existing Beverly Hills reverse osmosis (RO) water treatment plant (WTP). During a scheduled plant closure to perform operational upgrades on a portion of the system, it was discovered that the water quality of the feeder wells had changed from the usual norm. The discoveries leading up to this finding include:

  1. Accumulation of unusual fine black and sandy sediments in the protective cartridge filters prior to the RO membrane train;
  2. Binding or plugging of existing RO membranes in a very short amount of time (days to less than an hour – compared to a run time of 3 to 4 months without fouling historically).

  After a series of water quality investigations performed by Hazen and Sawyer with City staff members, it was concluded that the new water quality issues were the “new normal” for the water produced from the existing Hollywood Basin wells (Hollywood Wells 2, 4, 5, and 6); this includes iron sulfide, fine sand, and elevated dissolved manganese in the source water (Attachment 1 – Hazen and Sawyer report).

  In order to address these issues of membrane fouling, improve plant functionality, and accommodate for new water sources once the planned Maple Wells are added to the system, The City contracted Carollo Engineers, Inc. to perform a pilot study for pretreatment options (Attachment 2 – Carollo report executive summary). After fully studying plausible solutions, Carollo has recommended the following:
1. Install raw water blowdown structure to remove particles within the well raw water pipelines upon start-up.
2. Install a sand separator system to capture particles, such as iron sulfide and sand, which the wells produce during operation.
3. Install an oxidation/media filtration process to remove iron, manganese, hydrogen sulfide, iron sulfide, and reduce arsenic. This system will proactively remove these foulants upstream of the RO system and significantly reduce the fouling potential of RO membranes.
4. Install a new pre-treatment system within the existing WTP building without modifying the building envelope.
5. Upgrade RO system membranes to increase the overall production capacity of the facility.
6. Upgrade the existing facilities to include new chemicals required for the media filtration process and improve existing chemical systems.
7. Modify the control system to incorporate new pre-treatment processes and provide automated monitoring of RP performance.
8. Use progressive design-build as an alternative project delivery method to the conventional design/bid/build process. This has the potential to shorten the overall schedule for the implementation of pre-treatment improvements.

The City has chosen to move forward with these improvements, necessitating the need for an Owner’s Representative that will aid the City with the next phase of the project (procurement and administration of a Design/Build/Operate contract).

**Design–Build Reverse Osmosis Pretreatment Project:**

Currently, the Beverly Hills WTP runs as a double pass RO system that receives water from four (4) wells in the Hollywood Basin (Wells 2, 4, 5, and 6), and soon to be two (2) more with the addition of two shallow groundwater wells (Maple Yard Wells 1 and 2). The changing quality of the water from these feeder wells, including greater concentrations of fine sand, elevated manganese, and the presence of iron sulfide, has led to membrane fouling so severe, that plant operation times have been decreased to as little as 45 minutes. To address this issue, reduce fouling potential of the RO system, and return the plant to a reliable production facility for local water supply, the City is proposing the Reverse Osmosis Pretreatment Project.

The Reverse Osmosis Pretreatment Project is composed of three essential elements:

1. **Raw Water Blow-Down System**
   - This will remove particles within the well raw water pipelines feeding the Water Treatment Plant upon well start-up and flush out constituents with large chlorine demand.

2. **Sand Separator**
   - This proposed pre-treatment improvement will help to capture particles such as iron sulfide and sand, therefore, reduce particle loading to the RO process and prevent membrane fouling and differential pressure shutdown.
3. **Oxidation/Media Filtration**  
   This will remove several constituents of concern including iron sulfide, hydrogen sulfide, iron, manganese, and arsenic in order to stabilize the raw water, thus provide the RO system with particle-free water.

- **Scope of Work**

The selected contractor/firm will serve as the City’s (Owner’s) Representative during the design-build of a pre-treatment system for the City’s existing RO Water Treatment Plant. The duration for the design-build period is anticipated to last 14 to 18 months including plant recommissioning. The design-build period shall include planning, design, construction, and a commissioning period whereby the plant shall be commissioned, tested, permitted, and City Operations Staff trained prior to project closeout. The Owner’s Representative may perform the following but not be limited to the following tasks:

1. Assist the City in the development of a RFQ and/or RFP documents for selection of the Design-Build contractor team (DB Entity).
2. Utilizing a collaborative approach, provide technical review and assist the City to negotiate performance guarantees and determine testing protocols to be included in the GMP contract.
3. Provide overall program management, contract administration/management, cost/schedule control, project management, resident engineering oversight, and construction management to complete the project on schedule and below budget.
4. Prepare the list of required permits, comprehensive requirements for each permit and estimated cost of effort for each permit.
5. Prepare permit application and assist City to obtain required permit(s) approval from the Division of Drinking Water and other regulatory agencies as needed.
6. Provide public outreach if/as required for the permitting and during design.
7. Perform Project design review and construction oversight consisting of schedule analysis, design review and validation, payment requests, and review of quality control and quality assurance efforts by the DB Entity related to the design phase.
8. Perform technical review of optional design concepts submitted by the DB Entity and prepare review summary report.
9. Provide advice and guidance to assist staff in coordination and resolution of major project, permitting, environmental, and technical issues to accomplish efficient delivery of the Project.
10. Provide independent engineering project cost estimates, evaluate and validate design-build cost proposals, and assist City staff in the negotiations of the Guaranteed Maximum Price (“GMP”).
11. Review and comment on the commissioning plan and acceptance testing activities, as well as assist during the acceptance testing and post-construction phase.
General Requirements

1. Owner’s Representative shall assist City staff on engineering and technical issues related to oversight and management of the Project. Owner’s Representative efforts shall be led by the Owner’s Representative and supported by the Owner’s Representative’s Technical Team.

2. Throughout the term of the agreement, Owner’s Representative shall ensure the availability of qualified staff with the discipline-specific expertise and experience to provide the necessary engineering and technical support to the City.

3. As requested, Owner’s Representative shall attend, participate, and assist the City staff at Project meetings which specifically entail technical issues or need for technical issues and provide support in making decisions regarding technical matters. Owner’s Representative shall review for accuracy the minutes of such meetings prepared by either the DB Entity or others. Owner’s Representative shall clarify and report any meeting minutes discrepancies affecting the Project to City staff.

4. Owner’s Representative shall prepare the development of procedures and practices required of the DB Entity. This includes quality management, document management, scheduling systems, and project templates and forms.

5. Prepare monthly invoices in accordance with City requirements for review. Invoices shall be clearly presented in an organized manner, with costs distributed among tasks.

6. Owner’s Representative shall respond to City, DB Entity or Project-related questions.

7. Owner’s Representative shall assist the City in facilitating, preparation, and review of the following typical documents from the DB Entity anticipated for this project including but not limited to:
   a. Quality Assurance Plan
   b. Procurement Plan
   c. Safety Plan
   d. Cost Validation (Guaranteed Maximum Price)
   e. Risk Allocation Matrix
   f. Construction Contract
   g. Any other documents typically required by the City

8. Owner’s Representative shall assist in preparing all necessary documentation and reports to obtain Division of Drinking Water permits for the Project.

9. Provide other services as reasonably assigned by the City in support of the Project.

10. By performing this scope of services, Owner’s Representative shall not have any authority or responsibility to supervise, direct, or control the DB Entity’s work or the DB Entity’s means, methods, techniques, sequences, or procedures of construction. Owner’s Representative shall not have authority or responsibility for safety precautions and programs incident to the DB Entity’s work or for any failure of the DB Entity to comply with laws, regulations, rules, ordinances, codes or orders applicable to the DB Entity furnishing and performing the Work.
B. CITY CONTACT

- The City has designated Vince Damasse, as its contact (the “City Contact”) for this request for proposals (this “RFP”). The City Contact’s information is listed below:

  Vince Damasse, P.E., Water Resources Manager  
  City of Beverly Hills,  
  Public Works Department  
  345 Foothill Rd  
  Beverly Hills, CA 90210  
  Telephone: (310) 285-2491  
  Email: vdamasse@beverlyhills.org

  Office Hours:  
  Monday through Thursday, 7:30 AM to 5:30 PM  
  Fridays 8:00 AM to 5:00 PM

  Any inquiries or requests regarding this procurement should be submitted to the City Contact in writing. Proposers may contact ONLY the City Contact regarding this solicitation. Other City officers, agents, employees or representatives do not have authority to respond on behalf of the City. Contact with unauthorized City personnel during the selection process may result in disqualification.

- City’s Online RFP Access

  The RFP and related documents will be available on the City’s website at www.beverlyhills.org. All project correspondence including RFIs, addenda, etc. shall be issued in writing to each proposer. Proposers are responsible for ensuring they receive and acknowledge information updates and RFP clarifications, as well as any RFP addenda.

C. ORIGINAL DOCUMENTS

- Proposer shall complete and return the following documents:
  1. Proposal (including cost proposal)  
  2. RFP Addenda if issued

- You must also obtain a business license, or provide your current business license number.
D. BEST QUALIFIED PERSON OR FIRM

- The award, if any, will be made to the best qualified person or firm(s). In evaluating whether a proposer(s) is (are) the best qualified person or firm(s) pursuant to the Beverly Hills Municipal Code, City staff may utilize some or all of the following criteria:

1. The training, credentials and experience of the person or firm;
2. The demonstrated competence, ability, capacity and skill of the person or firm to perform the contract or provide the services;
3. The capacity of the person or firm to perform the contract or provide the service promptly, within the time specified, and without delay;
4. The sufficiency of the person’s or firm’s financial and other resources;
5. The character, integrity, reputation and judgment of the person or firm;
6. The ability of the person or firm to provide such future service as may be needed;
7. The price which the person or firm proposes to charge, including whether the price is fair, reasonable and competitive.

- The City shall have absolute discretion in determining the applicability and weight or relative weight of some or all of the criteria listed above and is not required to select the lowest monetary proposer.

II. CONDITIONS GOVERNING THE RFP PROCUREMENT

A. GENERAL REQUIREMENTS

- This RFP procurement will be conducted in accordance with the City of Beverly Hills procurement codes and procedures.

1. Receiving Time / Late Proposals
   It is the responsibility of proposer to see that their proposal is submitted with sufficient time to be received by the City prior to the proposal closing time. The receiving time in the City Office will be the governing time for acceptability of proposals.

   **Late proposals are not accepted regardless of postmark and will be returned unopened to the sender.**

2. Acceptance of Conditions Governing this RFP
   Submission of a proposal constitutes acceptance of the Evaluation Factors contained in this RFP.

3. Incurring Cost
   Any cost incurred by the proposer in preparation, transmittal, presentation of any proposal or material submitted in response to this RFP shall be borne solely by the proposer.
4. **Prime Consultant Responsibility**
   Any agreement that may result from the RFP shall specify that the prime consultant is solely responsible for fulfillment of the agreement with the City. The City will make agreement payments only to the prime consultant.

5. **Sub-consultants**
   Use of sub-consultants must be clearly explained in the proposal, and major sub-consultants must be identified by name. Prime consultants shall be wholly responsible for the entire performance whether or not sub-consultants are used.

6. **Amended Proposals**
   A proposer may submit an amended proposal before the deadline for receipt of proposals. Such amended proposals must be complete replacements for a previously submitted proposal and must be clearly identified as such in the transmittal letter. City personnel will not merge, collate, or assemble proposal materials.

7. **Proposer’s Rights to Withdraw Proposal**
   Proposers will be allowed to withdraw their proposals at any time prior to the deadline for receipt of proposals. The proposer must submit a written withdrawal request signed by the proposer’s duly authorized representative addressed to the City Contact.

8. **Proposal Offer Firm**
   Responses to this RFP, including proposal prices, will be considered firm for ninety (90) days after the due date for receipt of proposals or sixty (60) days after receipt of a best and final offer, if one is requested.

9. **Best and Final Offer**
   The City reserves the right to request Best and Final Offers from any or all proposers. This will be the only opportunity to amend or modify proposals based on feedback from the City. Information from competing proposals will not be disclosed to other proposers prior to submission of a Best and Final Offer.

10. **Disclosure of Proposal Contents**
    All proposals are subject to the provisions of the California Public Records Act, California Government Code section 6250 *et seq.*, and any information submitted with a response is a public record subject to disclosure, unless a specific exemption applies.

11. **No Obligation**
    This RFP in no manner obligates the City to the eventual rental, lease, purchase, etc., of any goods or services offered until a valid written agreement is executed by the City and the selected proposer.
12. **Termination**
   This RFP may be canceled at any time and any and all proposals may be rejected in whole or in part when the City determines such action to be in the best interest of the City of Beverly Hills.

13. **Sufficient Appropriation**
   Any agreement awarded for multiple years as a result of this RFP may be terminated if sufficient appropriations or authorizations do not exist. Such termination will be effected by sending written notice to the selected proposer. The City’s decision as to whether sufficient appropriations and authorizations are available will be accepted by the selected proposer as final.

14. **Errors and Restrictive Specifications**
   If a proposer discovers any ambiguity, conflict, discrepancy, omission, or other error in the RFP, the proposer should immediately notify the City Contact designated in Section I, B. Without disclosing the source of the request, the City may issue a written addendum to clarify the ambiguity, or to correct the problem, omission, or other error.

   If prior to the submission date, a proposer knows of or should have known of an error in the RFP but fails to notify the City Contact of the error, the proposer shall submit their proposal at his, her or its own risk, and, if awarded an agreement, shall not be entitled to additional compensation or time by reason of error or its later correction.

15. **Legal Review**
   The City requires that all proposers agree to be bound by the General Requirements contained in this RFP.

16. **Governing Law**
   This RFP, and any agreement entered into pursuant to this RFP, are governed by the laws of the State of California.

17. **Oral Changes and Basis for Proposal**
   Proposers may not rely upon oral explanations. All changes and addenda will be issued in writing. Only information supplied by the City in writing through the City’s Contact, or in this RFP should be used as the basis for the preparation of proposals.

18. **Agreement Terms and Conditions**
   The agreement between the City and the selected proposer(s) will follow the format specified by the City and contain the terms and conditions set forth in Attachment 1, Sample Professional Services Agreement. However, the City reserves the right to negotiate with a successful proposer the final provisions or provisions in addition to those contained in this RFP. The contents of this RFP, as revised and/or supplemented, and the successful proposal will be incorporated into and become part of the agreement.
Should a proposer object to any of the City’s terms and conditions, as contained in this Section or in Exhibit A, that proposer must propose specific alternative language in his, her, or its proposal. Proposer must provide a brief discussion of the purpose and impact, if any, of each proposed changed followed by the specific proposed alternate wording. The City may or may not accept the alternative language. General references to the proposer’s terms and conditions or attempts at complete substitutions are not acceptable to the City and may result in disqualification of the proposer.

19. **Proposer’s Terms and Conditions**
   Proposers must submit with the proposal a complete set of any additional terms and conditions that they expect to have included in an agreement negotiated with the City.

20. **Proposer Qualifications**
   The City may make such investigations as necessary to determine the ability of the proposer to adhere to the requirements specified within this RFP.

21. **Right to Waive Minor Irregularities**
   The City reserves the right to waive minor irregularities and the right to waive mandatory requirements, provided that all of the otherwise responsive proposals fail to meet the same mandatory requirements and/or doing so does not otherwise materially affect the procurement. This right is at the sole discretion of the City.

22. **Change in Agreement or Representatives**
   The City reserves the right to require a change in the selected proposer or representatives if the assigned representatives are not, in the opinion of the City, meeting its needs adequately.

23. **City Rights**
   The City reserves the right to award the proposal to separate proposers on any of the services as set forth in the proposer’s proposal. It is further understood that if the proposer to whom any recommended award is made fails to enter into an agreement with the City, award may be made to the next best qualified person or firm, who shall be bound to perform as if she, he or it received the award in the first instance.

24. **Right to Publish**
   Throughout the duration of this procurement process and agreement term, potential proposers, and proposers, must secure from the City written approval prior to the release of any information that pertains to the potential work or activities covered by this procurement or the subsequent agreement. Failure to adhere to this requirement may result in disqualification of the proposer or termination of the agreement.

25. **Ownership of Proposals**
   All documents submitted in response to the RFP shall be become the property of the City of Beverly Hills and are subject to the provisions of the California Public Records Act, as described in Section II. A. 11. herein.
26. **Agreement Award**
Proposal will be evaluated by a committee comprised of City staff and may include outside consultants (the “Evaluation Committee”). The Evaluation Committee will make an award recommendation to City staff. City Council may give approval of the agreement and/or direct staff to negotiate the final terms and execute the agreement.

This agreement shall be awarded to the proposer or proposers whose proposal is best qualified, taking into consideration the evaluation factors set forth in the RFP. The most qualified proposal may or may not have received the most points or be the lowest cost proposal. Proposers will be notified when the award is being made or an award recommendation goes to the City Council for approval.

### III. SUBMISSION FORMAT AND ORGANIZATION

#### A. NUMBER OF RESPONSES

Proposers may submit multiple proposals, if desired. The City is not recommending or suggesting that proposers submit multiple proposals. The City is merely stating an available option. If a proposer chooses to submit multiple proposals, each must be entirely separate from the others. The Evaluation Committee will not collate, merge, or otherwise manipulate the proposer’s proposals.

#### B. NUMBER OF COPIES

Proposers shall provide eight (8) identical hard copies of their proposal to the location specified in Section I. B on or before the closing date and time for receipt of proposals.

#### C. PROPOSAL FORMAT

- **Letter of Transmittal**
  1. Identify the submitting organization;
  2. Identify the name, title, telephone and fax numbers, and e-mail address of the person authorized by the organization to contractually obligate the organization;
  3. Identify the name, title, telephone and fax numbers, and e-mail address of the person authorized to negotiate the contract on behalf of the organization;
  4. Identify the names, titles, telephone and fax numbers, and e-mail addresses of persons to be contacted for clarification;
  5. Be signed by the person authorized to contractually obligate the organization;
  6. Acknowledge receipt of any and all amendments to this RFP.
• **Qualifications**

Provide a brief summary of your firm’s history, its capabilities, and its recent relevant experience (last five years). Also, describe your demonstrated experience with similar projects and qualification including professional licenses and certifications.

• **Key Personnel**

Describe the project team composition and include resumes of key personnel. Proposed members should be available for ninety (90) days from the proposal due date. The City must be promptly notified of any changes in key personnel prior to award.

• **References**

List a minimum of five (5) references for whom comparable services were provided to in the last five (5) years. Include the name of the firm, name of the contact, telephone number of the contact, email address of contact (if available), brief description of the services provided and your firm’s role, and the start and completion date.

• **Project Work Plan**

Describe your understanding of the project and approach. Include deliverables, milestones, assumptions, and identify potential risks that could delay the project. List any resources you expect the City to provide.

• **Cost Proposal**

Provide a separate sealed proposed total fee outlining the proposal and identify the hourly fee schedule for all personnel to be involved in the project. The hourly rates should include fringe benefits, indirect costs and profit. The Consultant should also indicate what percentage of the scope of work is expected to be completed by each individual or pay classification included in fee proposal. Additionally, if applicable, a schedule of reimbursable expenses should be included.

IV. **EVALUATION**

A. **EVALUATION POINT SUMMARY**

All proposals meeting the requirements will be further evaluated using the same criteria and point structure. Evaluations will be based on the weighted criteria listed below, which correspond to information requested in various sections of the proposal:

Note: Only those that achieve a score of 70 points or more will be eligible for consideration and evaluation under this proposal.
### B. EVALUATION FACTORS

- **Experience and Technical Competence**

  Up to 30 points may be awarded based on the evaluation of the proposer’s knowledge and prior experience. Evaluation will be based on relevant experience of key personnel based on resumes showing technical knowledge and experience on similar projects. Evaluation will also be based on level of the firm’s previous projects of comparable complexity, scale and nature; training and proven expertise in the area of work required; experience in projects completed for public entities; and the completeness firm’s proposed work plan.

- **Ability to Meet Project Work Plan and Timeliness**

  Up to 20 points may be awarded based on the consultant’s ability to perform the work within the desired time frame. The ability and past experience in assembling a highly qualified staff. The ability to provide the City with approval of management and representatives assigned to the engagement and provide assurance of resources to accommodate changes or turnover in staff. Efficiency and timeliness in completion of projects; specifically note where required reporting deadlines were not met.

- **Quality Control**

  Up to 10 points may be awarded based on whether the distinctive goals established for each component are met. Brief descriptions of previous project experiences should be used as examples of how quality control was achieved with former clients.

- **Cost of Services, Cost Control**

  Up to 20 points that may be awarded for the best price, fixed or blended hourly rate or annual not to exceed fee listed separately for each contract term. The consultant’s overall cost proposal for the project should reflect cost effective work and services. Cost control, performance within budget allocations, prudent auditing practices, management and clear and constant communication with City staff are essential to the success of this project. Brief descriptions of previous project experiences should be used as examples of how this was

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### CRITERIA

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<td>Ability to Meet Work Plan / Timelines</td>
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<td>Quality Control</td>
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<td>Stability / References</td>
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<td><strong>TOTAL POINTS</strong></td>
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achieved with former clients, along with key examples of the firm’s accuracy in cost estimating.

- **Stability/References**

Up to 10 points may be awarded upon an evaluation of proposer’s work for similar engagements. Please submit at least five references from public entities of similar size and scope. Additionally, provide evidence of insurance; description of firm size and structure, including number of partners and owners; and confirmation of firm’s independence and license to practice in California.

- **Value Add/Breadth of Service**

Up to 10 points may be awarded based on the consultant’s ability to provide insight and information, industry best practices and the ability to effectively communicate information to management and provide technical training or resources.

C. **CONSULTANT SELECTION PROCESS**

- **Selection**

The City of Beverly Hills, through either the City Council or the City Manager (or his designee) has the sole authority to select the consulting firm and reserves the right to reject any and all proposals. The City reserves the right to approve or reject all sub-consultants and engineers proposed to be retained by the prime consultant. Upon signing of the agreement, no change in proposed personnel or sub-consultants can be made without the City’s review and written authorization.

By submitting a response to this RFP, prospective consultants waive the right to protest after award or seek any legal remedies whatsoever regarding any aspect of this RFP. The City reserves the right to select or interview any number of finalists. In addition, the City reserves the right to issue written notice to all prospective consultants of any changes in the RFP terms or proposal submission schedule, should the City determine in its sole and absolute discretion that such changes are necessary. The City reserves the right to request additional information from any proposing consultant and to reject any and all proposals. All original work products, including computer files, shall remain the property of the City.

The City reserves the right to retain an expert to evaluate the proposing consultant’s work or qualifications at all stages in the selection process. Additionally, any contract entered into will be subject to termination at any stage if in the judgment of the City, such termination is in the best interest of the City. In the event such decision is made, appropriate written notice would be given before any termination and the consultant would be compensated on a pro-rata basis for work performed.
The responsible proposer whose proposal is the most advantageous to the City, taking to consideration all the evaluation factors will be recommended for the contract award. Notwithstanding the Evaluation Team’s selection, the City reserves the right to award this RFP and the resultant Contract in any manner it deems to be in the best interest of the City and make the selection based on its sole discretion. The City is the sole and exclusive judge of quality and compliance with proposal specifications in any of the matters pertaining to this RFP.

**Contract Award and Execution**

Selection of a proposer with whom the City enters into contract negotiations with, or a recommendation of an award by the Evaluation Committee or any other party, does not constitute an award of Contract. Once the City formally awards the contract, the successful consultant will be notified to enter into an agreement. If the selected consultant does not enter into the agreement, the City will begin negotiations with the second highest ranking proposing consultant.

Please review all contract forms prior to submitting a proposal. The City of Beverly Hills intends to use these forms as the baseline agreements with the successful consultant. The City will not entertain proposals to make material changes to the contract form once the project has been awarded. If you wish to request changes to the contracting forms, you must do so during the proposal process. In addition, the City requires compliance with several other policies and ordinances, proposing consultants will need to complete these Exhibits and submit with their Proposal.

The RFP document and the successful proposal response, as amended by agreement between the City of Beverly Hills and the successful consultant, will become part of the contract documents. Additionally, the City of Beverly Hills may verify the successful consultant’s representations that appear in the proposal. Failure of the successful consultant to perform as represented may result in elimination of the successful consultant from further negotiation or in contract cancellation or termination.

No oral explanation or instruction of any kind or nature whatsoever given before the award of a contract to a consultant shall be binding. The City of Beverly Hills shall not be bound, or in any way obligated, until the City has awarded the contract and all documents have been executed. The proposing consultant may not incur any chargeable costs prior to final contract execution.
WHO NEEDS A BUSINESS LICENSE?

1. Is this vendor physically located in the City of Beverly Hills?

   ☐ Yes (Vendor must have a City of Beverly Hills business license - contact the Business License unit for the appropriate forms. Skip question 2 & continue to “ADDITIONAL REQUIREMENTS” section below)

   ☐ No (Continue to the next question)

2. Does this vendor physically come into the City of Beverly Hills to conduct business and/or make deliveries?

   ☐ Yes (Vendor must have a City of Beverly Hills Out-of City Business License. - contact the Business License unit for the appropriate forms. Continue to “ADDITIONAL REQUIREMENTS” section below)

   ☐ No (STOP, no license needed)

ADDITIONAL REQUIREMENTS:

If this vendor is located in or comes into the City of Beverly Hills to conduct business, in addition to having a CITY OF BEVERLY HILLS BUSINESS LICENSE, they will be required to have insurance (see agreement for descriptions).

The business license documentation is only required from the successful Proposer.
Attachment 1
Sample Professional Services Agreement

AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND [CONSULTANT’S NAME] FOR [BRIEFLY DESCRIBE PURPOSE OF THIS CONTRACT]

NAME OF CONSULTANT: insert name of consultant

RESPONSIBLE PRINCIPAL OF CONSULTANT: insert name, title of responsible principal

CONSULTANT’S ADDRESS: insert street address
insert city, state, zip code
Attention: insert dept. head name, title

CITY’S ADDRESS: City of Beverly Hills
455 N. Rexford Drive
Beverly Hills, CA 90210
Attention: [Dept. Head’s Name, Title]

COMMENCEMENT DATE: insert commencement date

TERMINATION DATE: insert termination date

CONSIDERATION: Not to exceed $ insert amount
AGREEMENT BETWEEN THE CITY OF BEVERLY HILLS AND
[CONSULTANT NAME] FOR [BRIEFLY DESCRIBE PURPOSE OF CONTRACT]

THIS AGREEMENT is made by and between the City of Beverly Hills (hereinafter called “CITY”), and [CONSULTANT Name], (hereinafter called “CONSULTANT”).

RECIDTALS

A. CITY desires to have certain services and/or goods provided as set forth in Exhibit A (the “Scope of Work”), attached hereto and incorporated herein.

B. CONSULTANT represents that it is qualified and able to perform the Scope of Works.

NOW, THEREFORE, the parties agree as follows:

Section 1. CONSULTANT’s Scope of Work. CONSULTANT shall perform the Scope of Work described in Exhibit A in a manner satisfactory to CITY and consistent with that level of care and skill ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. CITY shall have the right to order, in writing, changes in the Scope of Work. Any changes in the Scope of Work by CONSULTANT must be made in writing and approved by both parties. The cost of any change in the Scope of Work must be agreed to by both parties in writing.

Section 2. Time of Performance. CONSULTANT shall commence its services under this Agreement upon the Commencement Date or upon a written receipt of a notice to proceed from CITY. CONSULTANT shall complete the performance of services by the Termination Date set forth above. The City Manager or his designee may extend the time of performance in writing for two additional one-year terms or such other term not to exceed two years from the date of termination pursuant to the same terms and conditions of this Agreement.

Section 3. Compensation. (Check the Applicable Box)

(a) Compensation [check applicable provision]

If compensation is based on an hourly rate

☐ CITY agrees to compensate CONSULTANT for the services and/or goods provides under this Agreement, and CONSULTANT agrees to accept in full satisfaction for such services, a sum not to exceed the Consideration set forth above and more particularly described in Exhibit B, attached hereto and incorporated herein, based on the hourly rates set forth in Exhibit B.

If compensation is based on a flat fee
CITY agrees to compensate CONSULTANT for the services and/or goods provides under this Agreement, and CONSULTANT agrees to accept in full satisfaction for such services, a sum not to exceed the Consideration set forth above and more particularly described in Exhibit B.

(b) Expenses [check applicable provision]

If no reimbursable expenses

The amount set forth in paragraph (a) shall include reimbursement for all actual and necessary expenditures reasonably incurred in the performance of this Agreement (including, but not limited to, all labor, materials, delivery, tax, assembly, and installation, as applicable). There shall be no claims for additional compensation for reimbursable expenses.

If CITY reimburses for certain expenses in addition to compensation

CONSULTANT shall be entitled to reimbursement only for those expenses expressly set forth in Exhibit B. Any expenses incurred by CONSULTANT which are not expressly authorized by this Agreement will not be reimbursed by CITY.

(c) Additional Services. CITY may from time to time require CONSULTANT to perform additional services not included in the Scope of Services. Such requests for additional services shall be made by CITY in writing and agreed upon by both parties in writing.

Section 4. Method of Payment. CITY shall pay CONSULTANT said Consideration in accordance with the method and schedule of payment set forth in Exhibit B.

Section 5. Independent Contractor. CONSULTANT is and shall at all times remain, as to CITY, a wholly independent contractor. Neither CITY nor any of its agents shall have control over the conduct of CONSULTANT or any of CONSULTANT’s employees, except as herein set forth. CONSULTANT shall not, at any time, or in any manner, represent that it or any of its agents or employees are in any manner agents or employees of CITY.

Section 6. Assignment. This Agreement shall not be assigned in whole or in part, by CONSULTANT without the prior written approval of CITY. Any attempt by CONSULTANT to so assign this Agreement or any rights, duties or obligations arising hereunder shall be void and of no effect.

Section 7. Responsible Principal(s)

(a) CONSULTANT’s Responsible Principal set forth above shall be principally responsible for CONSULTANT’s obligations under this Agreement and shall serve as principal liaison between CITY and CONSULTANT. Designation of another Responsible by CONSULTANT shall not be made without prior written consent of CITY.

(b) CITY’s Responsible Principal shall be the City Manager or his designee set forth above who shall administer the terms of the Agreement on behalf of CITY.

Section 8. Personnel. CONSULTANT represents that it has, or shall secure at its own expense, all personnel required to perform CONSULTANT’s Scope of Work under this Agreement. All personnel engaged in the work shall be qualified to perform such Scope of Work.
Section 9. Permits and Licenses. CONSULTANT shall obtain and maintain during the Agreement term all necessary licenses, permits and certificates required by law for the provision of services under this Agreement, including a business license.

Section 10. Interests of CONSULTANT. CONSULTANT affirms that it presently has no interest and shall not have any interest, direct or indirect, which would conflict in any manner with the performance of the Scope of Work contemplated by this Agreement. No person having any such interest shall be employed by or be associated with CONSULTANT.

Section 11. Insurance.

(a) CONSULTANT shall at all times during the term of this Agreement carry, maintain, and keep in full force and effect, insurance as follows:

1. A policy or policies of Comprehensive General Liability Insurance, with minimum limits of Two Million Dollars ($2,000,000) for each occurrence, combined single limit, against any personal injury, death, loss or damage resulting from the wrongful or negligent acts by CONSULTANT.

2. A policy or policies of Comprehensive Vehicle Liability Insurance covering personal injury and property damage, with minimum limits of One Million Dollars ($1,000,000) per occurrence combined single limit, covering any vehicle utilized by CONSULTANT in performing the Scope of Work required by this Agreement.

3. Workers’ compensation insurance as required by the State of California.

4. Professional Liability Insurance [check if applicable]  

☐ A policy or policies of Professional Liability Insurance (errors and omissions) with minimum limits of One Million Dollars ($1,000,000) per claim and in the aggregate. Any deductibles or self-insured retentions attached to such policy or policies must be declared to and be approved by CITY. Further, CONSULTANT agrees to maintain in full force and effect such insurance for one year after performance of work under this Agreement is completed.

(b) CONSULTANT shall require each of its sub-consultants to maintain insurance coverage which meets all of the requirements of this Agreement.

(c) The policy or polices required by this Agreement shall be issued by an insurer admitted in the State of California and with a rating of at least a B+;VII in the latest edition of Best’s Insurance Guide.

(d) CONSULTANT agrees that if it does not keep the aforesaid insurance in full force and effect CITY may either immediately terminate this Agreement or, if insurance is available at a reasonable cost, CITY may take out the necessary insurance and pay, at CONSULTANT’s expense, the premium thereon.

(e) At all times during the term of this Agreement, CONSULTANT shall maintain on file with the City Clerk a certificate or certificates of insurance on the form set forth in Exhibit C, attached hereto and incorporated herein, showing that the aforesaid policies are in effect in the required amounts.
CONSULTANT shall, prior to commencement of work under this Agreement, file with the City Clerk such certificate or certificates. The general liability insurance shall contain an endorsement naming the CITY as an additional insured. All of the policies required under this Agreement shall contain an endorsement providing that the policies cannot be canceled or reduced except on thirty (30) days prior written notice to CITY, and specifically stating that the coverage contained in the policies affords insurance pursuant to the terms and conditions as set forth in this Agreement.

(f) The insurance provided by CONSULTANT shall be primary to any coverage available to CITY. The policies of insurance required by this Agreement shall include provisions for waiver of subrogation.

(g) Any deductibles or self-insured retentions must be declared to and approved by CITY. At the option of CITY, CONSULTANT shall either reduce or eliminate the deductibles or self-insured retentions with respect to CITY, or CONSULTANT shall procure a bond guaranteeing payment of losses and expenses.

Section 12. Indemnification. CONSULTANT agrees to indemnify, hold harmless and defend CITY, City Council and each member thereof, and every officer, employee and agent of CITY, from any claim, liability or financial loss (including, without limitation, attorneys fees and costs) arising from any intentional, reckless, negligent, or otherwise wrongful acts, errors or omissions of CONSULTANT or any person employed by CONSULTANT in the performance of this Agreement.

Section 13. Termination.

(a) CITY shall have the right to terminate this Agreement for any reason or for no reason upon five calendar days’ written notice to CONSULTANT. CONSULTANT agrees to cease all work under this Agreement on or before the effective date of such notice.

(b) In the event of termination or cancellation of this Agreement by CITY, due to no fault or failure of performance by CONSULTANT, CONSULTANT shall be paid based on the percentage of work satisfactorily performed at the time of termination. In no event shall CONSULTANT be entitled to receive more than the amount that would be paid to CONSULTANT for the full performance of the services required by this Agreement. CONSULTANT shall have no other claim against CITY by reason of such termination, including any claim for compensation.

Section 14. CITY’s Responsibility. CITY shall provide CONSULTANT with all pertinent data, documents, and other requested information as is available for the proper performance of CONSULTANT’s Scope of Work.

Section 15. Information and Documents. All data, information, documents and drawings prepared for CITY and required to be furnished to CITY in connection with this Agreement shall become the property of CITY, and CITY may use all or any portion of the work submitted by CONSULTANT and compensated by CITY pursuant to this Agreement as CITY deems appropriate.

Section 16. Records and Inspections. CONSULTANT shall maintain full and accurate records with respect to all matters covered under this Agreement for a period of three years. CITY shall have access, without charge, during normal business hours to such records, and the right to examine and audit the same and to make copies and transcripts therefrom, and to inspect all program data, documents, proceedings and activities.
Section 17. Changes in the Scope of Work. The CITY shall have the right to order, in writing, changes in the scope of work or the services to be performed. Any changes in the scope of work requested by CONSULTANT must be made in writing and approved by both parties.

Section 18. Notice. Any notices, bills, invoices, etc. required by this Agreement shall be deemed received on (a) the day of delivery if delivered by hand during the receiving party’s regular business hours or by facsimile before or during the receiving party’s regular business hours; or (b) on the second business day following deposit in the United States mail, postage prepaid to the addresses set forth above, or to such other addresses as the parties may, from time to time, designate in writing pursuant to this section.

Section 19. Attorney’s Fees. In the event that either party commences any legal action or proceeding to enforce or interpret the provisions of this Agreement, the prevailing party in such action shall be entitled to reasonable attorney's fees, costs and necessary disbursements, in addition to such other relief as may be sought and awarded.

Section 20. Entire Agreement. This Agreement represents the entire integrated agreement between CITY and CONSULTANT, and supersedes all prior negotiations, representations or agreements, either written or oral. This Agreement may be amended only by a written instrument signed by both CITY and CONSULTANT.

Section 21. Exhibits; Precedence. All documents referenced as exhibits in this Agreement are hereby incorporated in this Agreement. In the event of any material discrepancy between the express provisions of this Agreement and the provisions of any document incorporated herein by reference, the provisions of this Agreement shall prevail.

Section 22. Governing Law. The interpretation and implementation of this Agreement shall be governed by the domestic law of the State of California.

Section 23. CITY Not Obligated to Third Parties. CITY shall not be obligated or liable under this Agreement to any party other than CONSULTANT.

Section 24. Severability. Invalidation of any provision contained herein or the application thereof to any person or entity by judgment or court order shall in no way affect any of the other covenants, conditions, restrictions, or provisions hereof, or the application thereof to any other person or entity, and the same shall remain in full force and effect.

EXECUTED the _____ day of ____________ 20___, at Beverly Hills, California.

CITY OF BEVERLY HILLS
A Municipal Corporation

Name: dept head/cfo/cm
Title

CONSULTANT:
APPROVED AS TO CONTENT:

_________________________  ____________________________  ________________________
Dept. Head  Name:
Title:

_________________________  ____________________________  ________________________
Risk Manager  Name:
Risk Manager
EXHIBIT A

SCOPE OF WORK

CONSULTANT shall perform the following services:

[Describe the services in detail. Include schedule for deliverables and/or services]
EXHIBIT B

SCHEDULE OF PAYMENT AND RATES

[Tie to deliverables where possible.]
EXHIBIT C

CERTIFICATE OF INSURANCE

This is to certify that the following endorsement is part of the policy(ies) described below:

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ADDRESS

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It is hereby understood and agreed that the City of Beverly Hills, its City Council and each member thereof and every officer and employee of the City shall be named as joint and several assureds with respect to claims arising out of the following project or agreement:

It is further agreed that the indemnity agreement between the City of Beverly Hills and the named insured is covered under the policy: CONSULTANT agrees to indemnify, hold harmless and defend City, its City Council and each member thereof and every officer and employee of City from any and all liability or financial loss resulting from any suits, claims, losses or actions brought against and from all costs and expenses of litigation brought against City, its City Council and each member thereof and any officer or employee of City which results directly or indirectly from the wrongful or negligent actions of CONSULTANT's officers, employees, agents or others employed by CONSULTANT while engaged by CONSULTANT in the (performance of this agreement) construction of this project.

It is further agreed that the inclusion of more than one assured shall not operate to increase the limit of the company's liability and that insurer waives any right of contribution with insurance which may be available to the City of Beverly Hills.

In the event of cancellation or material change in the above coverage, the company will give 30 days written notice of cancellation or material change to the certificate holder.

Except to certify that the policy(ies) described above have the above endorsement attached, this certificate or verification of insurance is not an insurance policy and does not amend, extend or alter the coverage afforded by the policies listed herein. Notwithstanding any requirement, term, or condition of any contract or other document with respect to which this certificate or verification of insurance may be issued or may pertain, the insurance afforded by the policies described herein is subject to all the terms, exclusions and conditions of such policies.

DATE: ___________________________ BY: ___________________________

AUTHORIZED INSURANCE REPRESENTATIVE

AGENCY: ___________________________ ADDRESS: ___________________________
April 17, 2017

To:    City of Beverly Hills Public Services, Trish Rhay, PE, Assistant Director of Public Works
From: Lynn Grijalva, PE, Principal in Charge
       Troy Walker, Project Manager
       Nicole Blute, PE, PhD, West Region Drinking Water Lead
cc:    Vince Damasse, PE, Water Resources Manager

Well Water Quality at the Water Treatment Plant

Introduction

The purpose of this technical memorandum is to summarize the water quality testing, observations, and data that impact the performance of the existing Beverly Hills Water Treatment Plant. Various water quality issues emerged in the winter of 2017 during the plant wet commissioning and pre-start up testing. The analysis of the issues, the immediate troubleshooting and optimization steps taken, and some near and long-term recommendations are presented herein. This information will be useful for the city as it prepares to integrate future groundwater well supplies from Maple Yard and the La Brea Wells.

An intensive two week test program was conducted by plant staff with guidance by Hazen and Sawyer that gave the information needed to supplement the observations made during the pre-startup activities in the winter of 2016-17. This memorandum highlights the findings that guide the integration of treatment for all of the City’s wells.
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1. Background

The existing Water Treatment Plant provides the following:

- Reverse Osmosis (RO) to remove primarily hardness and Total Dissolved Solids (TDS) that causes scaling
- Although not currently equipped with iron and manganese pre-treatment, the RO system provides some level of dissolved iron and manganese removal from the groundwater depending on the concentrations
- Air Stripping to remove sulfur in the groundwater that can cause taste and odor issues
- Blending of the RO permeate stream with the bypass water to reduce corrosion and meet arsenic Maximum Contaminant Levels (MCLs). The current RO system does not treat 100% of the raw water through the RO treatment train. A portion of the water is bypassed through an air stripping tower to remove sulfur before it is chlorinated and blended back with the RO permeate water before distribution.

The current Water Treatment Plant (WTP) addresses some primary and secondary health constituents. Secondary constituents such as TDS, dissolved iron and manganese, which address primarily aesthetic concerns (taste, odor, appearance), are important to providing excellent customer service and positive public relations with the City’s customers. It is anticipated that in the next approximately 10 months to seven years, the City will integrate additional water supply wells from Maple Yard and La Brea well field. The existing WTP must be capable of treating and managing the City’s existing wells, in order to be prepared to receive additional water supplies.

1. Construction Complete

The Water Treatment Plant was taken off line for construction of a limited number of refurbishments and upgrades to a portion of the existing Water Treatment Plant that the City’s staff had identified, such as plant waste stream drain system improvements, corrosion repairs in the clearwell, new SCADA enhancements including SCADA process monitoring reports, new chemical feed pumps, replacing air stripper tower media, and eventually replacing the existing RO membranes with new membranes (currently on-hold due to the water quality analyses testing). The treatment plant rehabilitation was limited in scope and was not intended to be a full treatment system rehabilitation of the treatment system, and did not included wells and raw water pipelines leading into the WTP. The treatment plant rehabilitation was focused on specific operational improvements to approximately 20% of the plant.

2. Preparing for Operation

Hazen and Sawyer provided hands-on training in equipment testing, startup, maintenance procedures, operations, monitoring, critical controls response and reporting. Standard operating procedures have been documented for all treatment plant components and activities. The Operations, Maintenance and Management Plan has been updated and submitted to the Division of Drinking Water. Other guidance documents have been prepared including the Emergency Management Plan, Critical Control Response Plans, and Functional Control Specifications. The operations staff was involved in developing and reviewing all documents and procedures.
3. **Pre-Startup Discoveries**

During pre-startup activities a water quality change was clearly evident in the plant. The problems that occurred included:

- Accumulation of black and sandy sediment in the protective cartridge filters prior to the RO membrane train – much more than had been observed in the past
- Binding or plugging of the existing RO membranes in a very short run time (days to less than an hour – compared to run times of 3 to 4 months without fouling to that extent historically.

Staff and H &S postponed the installation of new RO membranes and started an investigation of whether this is a “new normal” in water quality, or if it was a temporary occurrence related to the extended downtime of the wells and raw water pipeline and restarting. The postponement was performed to prevent permanent fouling of the new membranes that have been purchased in preparation for the wet commissioning phase of plant startup. A series of investigative actions were taken by staff and H&S to protect the City’s investments at the treatment plant, determine options for operations and identify opportunities for system improvements.

2. **The New Normal**

The water quality from the existing Hollywood Wells is different now from the water quality that the plant experienced prior to shutdown for the plant rehab work in 2015. The constituents require attention include:

- Black particulate matter – Iron sulfide – that will clog the RO membranes and passes through some treatment processes in the bypass stream (air stripper, etc.)
- Sand – a problematic maintenance issue as it accumulates in plant processes. Fine sand passes through both the existing and new cartridge filters.
- Manganese at an elevated concentration – that becomes difficult to blend down.

Below is a description of the source of these constituents, and what we know about the system components that should control their occurrence in the Hollywood Wells and WTP.
1. **Black Particulates**

Fine black particulates were first observed with the sand, and became more noticeable as the sand diminished. Laboratory analysis of the material captured at each well, in the plant feed and passing through the cartridge filters identified and confirmed the black particles as iron sulfide that is present in all four wells. The iron sulfide is formed from iron and sulfur that are naturally occurring in the reducing environment of the Hollywood Basin.

Iron sulfide in its particulate form can cause the RO membranes to plug or bind up over time. This will lead to increased cleaning chemicals and much more frequent membrane cleanings. Based on the concentrations observed, and the frequent cleaning of the RO membranes during pre-startup, it is estimated that the frequency of Clean in Place (CIP) backwashes for the RO membranes could be on the order of once per week. A typical CIP backwash could take approximately 2-1/2 to 3 days to perform and bring the plant back on line. This would equate to approximately 36% to 43% downtime for the WTP to just address the iron sulfide issue from a maintenance standpoint. This amount of downtime would be deleterious for the existing wells as testing has shown that extended well downtimes leads to degrading water quality.

The iron sulfide particles were angular shaped, often attaching to sand particles or forming larger “clumps” that were easily broken apart. Similar particles were found in the plant inlet feed, captured on both cartridge filters, and even passing through both cartridge filters (existing and newly installed cartridge filters).

Additionally, since the plant incorporates a blend of chlorinated raw water with the treated RO permeate water in a clearwell (storage tank), iron sulfide would eventually show up in the City’s distribution system. Iron sulfide can lead to customer complaints regarding color, taste, and odor issues and equate to negative public perception issues.

2. **Sand**

Large volumes of sand came into the plant during pre-startup testing that built up inside the cartridge filters and inside the inlet end caps of the RO. The volume of sand was greater than the plant staff had observed historically and was no longer completely filtered by the WTP cartridge filters. Investigations found that sand was mostly very fine rounded silica. Coarse sand was coming from Well 5, and fine sand from all four of the wells. A well investigation for particulate intrusion documented the field tests that confirmed the sand and fine black particulate matter that was found in each well. The following photographs show the material that was collected during the investigation.
3. **Dissolved Manganese**

The existing plant was designed to remove TDS and hardness and because of the nature of RO treatment has ability to remove dissolved manganese and iron. Approximately 60% of the water is sent through the RO which removes to some extent both dissolved manganese and dissolved iron. The other 40% of the water passes only through the air stripper which does not remove either. The use of a bypass keeps sufficient minerals such as calcium in the water to minimize corrosion in the distribution system; a fully RO-treated water would require the addition of minerals back into the water. Prior to shutdown, the raw water manganese of the combined wells has been much lower in concentration that this bypass strategy has enabled the combined treated water to meet drinking water secondary standards. During the past two years, when the wells were turned on for short periods for testing and sampling, the dissolved manganese has been highly variable and can exceed the secondary MCL of 50 ppb (parts per billion). That has caused concerns about the existing treatment plant meeting water quality standards if manganese increases periodically, or has a long term trend of increasing over time. Testing of manganese levels during the recent 2-week continuous testing indicate three of the four existing Hollywood wells (with the exception of Well No. 2) have had manganese levels slightly below, at or above the regulatory secondary MCL of 50 ppb.
Additionally, future wells at the Maple Yard and the La Brea well field have higher manganese levels than the Hollywood Wells. The Preliminary Design Report (PDR) for La Brea has identified the need for pretreatment at the Water Treatment Plant. A greensand filter or other similar iron/manganese removal pretreatment process could potentially treat 100% of all plant feed to give full flexibility to use all of the City’s wells and control the manganese below the secondary MCL of 50 ppb. Additionally, the Department of Drinking Water has informed the City that if manganese concentrations are near or above the regulatory limit of 50 ppb, they would require direct manganese treatment or support a blending station to blend with MWD at the City’s existing Sunset Reservoir.

Laboratory analysis of the water from each well indicated that most or all of the manganese was in dissolved form, with a noticeable fraction of non-dissolved manganese only at well startup. The reducing environment of the Hollywood Basin would likely keep manganese in a dissolved state, with particle formation of manganese oxide only in an oxidizing environment. Only trace amounts of manganese in particulate form (less than 1% of the particles) were found in some samples according to laboratory analysis of the particles captured from the Hollywood Wells and in the Treatment Plant.
4. Wells

The four Hollywood Wells are producing very fine sand in volumes greater than plant staff had experienced before. Coarse sand is greatest in the first 30 to 60 minutes after wells are turned on, then diminishes greatly, but fine sand continues to be produced from the wells during continuous pumping. The gravel pack surrounding the four Hollywood Wells may not be adequate to prevent “sanding” from the geological formation without some well rehabilitation.

Black particulate iron sulfide was also observed in the solid material in each well, heaviest in the first 30 to 60 minutes of pumping, and continuing to be produced from the wells throughout continuous pumping. Fine sand and black particulates resting on the louvered casing slots have been observed in videos of the wells, indicating that the fine material settles out of the water.

Well 6 has iron corrosion due to dissimilar metals casing materials, which may affect the remaining life of the well, although there is only a minor occurrence of rust particles in the water produced. The well casings in wells 2, 4, and 5 are constructed of stainless steel and do not exhibit corrosion. The wells have lost some of their original capacity and the well pumps are oversized for the sustainable yield.

A comprehensive hydrogeological analysis would provide advice on the specific yield and production rate of each well, and professional advice on the rehabilitation or redrilling of any of the wells. A rehab of the existing wells would likely entail both chemical and mechanical rehabbing. The rehabilitation of the existing old wells is not without risk. Rehabbing wells could damage the existing filter pack, exacerbate the sanding issues, and potentially lead to loss in well production.

5. Well Pumps

The well pumps were not designed for the lower sustainable flow rate of each well, and were not designed for the additional pressure losses of new pretreatment filters and new filtration equipment that will be required when La Brea and Maple Yard wells are brought on line. The variable speed drives help to turn the pumps down to lower flows, but the existing pumps and motors may be too large for their application. The pumps and motors should be re-evaluated as part of a well rehab project if needed.

6. Raw Water Pipeline

Sand and fine particulates were found to have accumulated during the extended stagnant period of plant construction and were flushed from the system using a prolonged period of high velocity. The pipe materials were investigated for the possibility that corrosion of the pipe interior was contributing iron and/or manganese particles into the water stream. That pipe was confirmed to be cement lined, eliminating corrosion as a source of iron or manganese particles. However, the City may want to incorporate an automatic blowoff or flush to waste piping in the existing raw water pipeline. This will enable the City to
flush the wells prior to arriving at the head of the WTP should the need arise to flush out the system before introducing raw water at the head of the WTP.

7. **Cartridge filters**

A small portion of the iron sulfide particles in the plant feed is captured on the cartridge filters, and most of the particles continue to pass through both the existing and new cartridge filters. Particles of varying size have been observed to then pass through the bypass stream to the air stripping tower and would eventually enter the distribution system if the plant was delivering water into the system. In the portion (60% of total inlet flow) that goes to RO, the particles build up on the RO membranes and can cause binding and plugging of the membranes.

Filtration equipment that can handle fine sand would need to be investigated and pilot-tested along with any pretreatment systems for iron sulfide. Even if greensand filtration was deemed to be viable to remove dissolved manganese, it is likely that sand and iron sulfide removal would have to be addressed prior to the addition of greensand filtration to protect the greensand filters.

8. **RO Membranes**

Field analysis of the Silt Density Index (SDI) throughout the two week test period gave an indication of the types of material captured and also the potential for materials to bind the RO membranes. Fine rounded sand and angular iron sulfide particles were found in the water from all four wells. The small size of the particles allowed them to actually pass through the 1 micron cartridge filters. The SDI filter disk in the photograph shows the particles that passed through the cartridge filters, accumulated over a day-long continuous operation. This material would then pass on to the RO membranes.

The operating experience in December through February 2017 showed that the fine material could build up quickly and require labor-intensive cleaning steps of opening the end caps and hosing out the deposited sand before restart. A typical clean-in place (CIP) procedure was tested and shown to not be adequate to prevent binding of the RO membranes. A more time-intensive and frequent routine, customized for iron sulfide would be required until the pretreatment is installed.

3. **Recommendations and Next Steps**

1. There are no short term solutions for the issues of sand, manganese, and iron.
2. H&S and staff are recommending to place the WTP offline in standby mode to pursue long-term pre-treatment alternatives. The next steps include a feasibility analysis and testing (bench scale and pilot testing), design, and permitting of near term and long pre-treatment alternatives. Pre-treatment analysis could include chemical treatment, new filtration equipment, and other alternatives.
EXECUTIVE SUMMARY

Historically, poor water quality from the Hollywood Basin raw water wells, which feed the City of Beverly Hills’ (City’s) Water Treatment Plant (WTP), have shown an increased propensity to foul the existing Reverse Osmosis (RO) system. Increased levels of fine sand, manganese, and iron sulfide in these wells have resulted in significantly decreased RO operation; as little as 45 minutes of operation was witnessed by operators. This extreme fouling is the result of fine particles, which both rapidly clog cartridge filters and break through the filters to the RO membranes. Ultimately, these particles lay down on RO membranes and leads to rapidly increasing feed pressures, which results in the shutdown of the process.

The overall objective of this project was to develop an RO raw water pretreatment system that would result in acceptable RO operation for potable water supply. Given the WTP’s inability to operate for extended periods of time, changes are required to return the WTP to a reliable water supply component. With the recent completion of the Maple Yard wells, additional raw water is now available to run the facility at or near capacity. Table ES 1 summarizes the range of available water supply from the City’s existing raw water wells and the capacity of the current facility.

Table ES 1 Existing Plant Capacity vs Current Well Production

<table>
<thead>
<tr>
<th>Wells</th>
<th>Raw Water Produced</th>
<th>Finished Water Produced1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hollywood Well 2</td>
<td>250 to 350 gpm</td>
<td>228 to 349 gpm</td>
</tr>
<tr>
<td>Hollywood Well 4</td>
<td>250 to 350 gpm</td>
<td>228 to 349 gpm</td>
</tr>
<tr>
<td>Hollywood Well 5</td>
<td>250 to 350 gpm</td>
<td>228 to 349 gpm</td>
</tr>
<tr>
<td>Hollywood Well 6</td>
<td>250 to 350 gpm</td>
<td>228 to 349 gpm</td>
</tr>
<tr>
<td>Maple Well 1</td>
<td>200 to 250 gpm</td>
<td>182 to 228 gpm</td>
</tr>
<tr>
<td>Maple Well 2</td>
<td>200 to 250 gpm</td>
<td>182 to 228 gpm</td>
</tr>
<tr>
<td><strong>Total:</strong></td>
<td><strong>1,150 to 1550 gpm</strong></td>
<td><strong>1,048 to 1,413 gpm = 1.51 to 2.03 mgd</strong></td>
</tr>
</tbody>
</table>

Excess Plant Capacity = 0.57 to 1.09 mgd

Notes:
1. Based on 40% by-pass and % recovery.
2. Assuming operation of 3 Hollywood wells and both Maple wells at same time, with one Hollywood well in recovery.
3. Based on Earth Tech WTP System Startup Test Plan.

The current WTP capacity is able to accommodate the four Hollywood wells, two Maple wells, and potentially one additional La Brea well, assuming that water quality of the latter is similar to the six existing wells. Any additional sources of raw groundwater would require increase in plant capacity. Therefore, pretreatment design will need to provide scalability such as blind flanges, connections to additional RO train, and equipment parallel configuration to facilitate future increase in WTP capacity.

Carollo Engineers, Inc. (Carollo) developed a testing program which included bench-scale and pilot-scale testing of various approaches to mitigate the constituents of concern in existing and future wells. Several steps of testing were conducted, with the goal being to test more easily implementable/lower cost options before moving on to more complex pretreatment solutions.

Ultimately, the following pre-treatment approaches were tested:
1. Changes to raw water chemistry though the addition of acid
2. Testing of a sand separator screen system
3. Testing of a media filter system
4. Testing of a pilot RO system
Ultimately, it was found that pretreatment of the raw well water using a sand separator and media filter would lead to excellent feed water quality to the existing RO system. Pretreatment testing was undertaken using a pilot sand separator unit (Forsta Filters), a media filtration system (Filtronic), and a RO pilot (Carollo Engineers, Inc.). This pilot treatment train was installed and tested on water from the Hollywood Basin Well Nos. 2, 4, 5, and 6; Maple Yard Well Nos. 1 and 2; and a blend of various Hollywood and Maple Yard wells. Results indicated that:

1. All incoming iron and manganese were removed to non-detect levels, regardless of source of well and concentration.

2. All incoming arsenic was removed to 5 parts per billion (ppb) or less, which is below Division of Drinking Water's (DDW's) 8 ppb permit limit for the City.

3. Hydrogen sulfide was removed to non-detect levels, eliminating taste and odor concerns.

4. No iron sulfide particles were observed in media filter treated water.

Table ES 2 summarizes the anticipated water quality resulting from this proposed treatment process.

Table ES 2 Raw Water Quality vs Final Product Water Quality

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Units</th>
<th>Raw Water</th>
<th>RO Permeate</th>
<th>Final Water</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>TDS</td>
<td>mg/L</td>
<td>790</td>
<td>9.7</td>
<td>322</td>
<td></td>
</tr>
<tr>
<td>Hardness</td>
<td>mg/L as CaCO3</td>
<td>290</td>
<td>ND</td>
<td>116</td>
<td></td>
</tr>
<tr>
<td>Iron</td>
<td>ug/L</td>
<td>85</td>
<td>ND</td>
<td>34</td>
<td></td>
</tr>
<tr>
<td>Manganese</td>
<td>ug/L</td>
<td>115</td>
<td>ND</td>
<td>46</td>
<td></td>
</tr>
<tr>
<td>Arsenic</td>
<td>ug/L</td>
<td>5.1</td>
<td>ND</td>
<td>2.0</td>
<td></td>
</tr>
<tr>
<td>Sand/Iron Sulfide (TSS)</td>
<td>mg/L</td>
<td>70</td>
<td>ND</td>
<td>28</td>
<td></td>
</tr>
<tr>
<td>Hydrogen Sulfide</td>
<td>mg/L</td>
<td>.2</td>
<td>ND</td>
<td>.08</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>-</td>
<td>7.5</td>
<td>6.2</td>
<td>8.1</td>
<td></td>
</tr>
<tr>
<td>Alkalinity</td>
<td>mg/L as CaCO3</td>
<td>357</td>
<td>5.2</td>
<td>156</td>
<td></td>
</tr>
<tr>
<td>Calcium</td>
<td>mg/L as CaCO3</td>
<td>105</td>
<td>.7</td>
<td>42</td>
<td></td>
</tr>
<tr>
<td>Chloride</td>
<td>mg/L</td>
<td>160</td>
<td>1.3</td>
<td>65</td>
<td></td>
</tr>
<tr>
<td>Sulfate</td>
<td>mg/L</td>
<td>15</td>
<td>.1</td>
<td>6.1</td>
<td></td>
</tr>
<tr>
<td>LSI</td>
<td>-</td>
<td></td>
<td></td>
<td>.23</td>
<td></td>
</tr>
<tr>
<td>CCPP</td>
<td>mg/L</td>
<td></td>
<td></td>
<td>3.04</td>
<td></td>
</tr>
<tr>
<td>Caustic Dose</td>
<td>mg/L</td>
<td></td>
<td></td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Hypo Dose</td>
<td>mg/L</td>
<td></td>
<td></td>
<td>2.5</td>
<td></td>
</tr>
<tr>
<td>By-Pass</td>
<td>%</td>
<td></td>
<td></td>
<td>40</td>
<td></td>
</tr>
</tbody>
</table>

The project team concluded that use of a sand separator would reduce particles in raw water to the cartridge filters and would have a significant, and positive, impact on RO operations and fouling. The subsequent media filtration process would, furthermore, stabilize the raw water, remove contaminants, and provide the RO system with nearly particle-free feed water. The proposed approach was validated using the pilot RO system.
Based on testing results and evaluation of existing facilities and operations, Carollo recommends the following:

1. Install a raw water blowdown structure to remove particles within the well raw water pipelines upon start-up
2. Install a sand separator system to capture particles, such as iron sulfide and sand, which the wells produce during operation
3. Install a filtration process to remove iron, manganese, hydrogen sulfide, and iron sulfide, and to reduce arsenic
4. Install the new systems (sand separator and oxidation/media filtration) within the existing WTP building without modifying the building envelope
5. Upgrade the RO system to increase the overall production capacity of the facility
6. Upgrade the existing facilities to include new chemicals required for the media filtration process and improve existing chemical systems. Replace the sulfuric acid tank to improve safety
7. Modify the control system to incorporate new treatment processes and provide automated monitoring of RO performance

Carollo also recommends that the City deliver the project using progressive design build, with a 6 - 12 month operational phase as an alternative delivery method. This will shorten the overall schedule for the implementation of improvements. Advantages of this method of delivery include:

1. Early selection of project team and City input on design elements
2. "Open Book" estimating by the contractor, which allows the City to be involved in the development of a guaranteed maximum price (GMP) for the project
3. Availability of "off-ramps," which allows the City to abandon the contractor and engineer if an agreed upon GMP cannot be reached
4. Time savings of at least 4 months (no bidding phase, overlapping design and construction activities, and early equipment purchase etc.)

A preliminary construction schedule was developed based on the progressive design build alternative delivery option to estimate the design, construction, and start-up activities and were estimate to span from October 2018 to December 2019; a total of 14 months. A conventional design-bid-build delivery would add at least another 3 to 4 months to the schedule. Both schedules are highly dependent on Department of Drinking Water (DDW) requirements, and could increase up to six months.

Carollo developed an AACE International (AACE) Class 3 cost estimate (-10 percent to +30 percent) based on the recommendations above (Table ES 3). The anticipated probable cost for this project was $7,900,000, including engineering costs, construction costs, and contingency was estimated. Based on cost estimate uncertainty, the cost of the project would range from $7.1 to $10.3 million.

Table ES 3 Preliminary Conceptual Cost Opinion (Class 3)

<table>
<thead>
<tr>
<th>Description</th>
<th>Direct Costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw Water Blowdown</td>
<td>$76,100</td>
</tr>
<tr>
<td>Sand Separator System</td>
<td>$190,100</td>
</tr>
<tr>
<td>Media Filter System</td>
<td>$1,779,600</td>
</tr>
<tr>
<td>Chemical Systems</td>
<td>$189,300</td>
</tr>
<tr>
<td>Cartridge Filters</td>
<td>$3,800</td>
</tr>
<tr>
<td>General Conditions</td>
<td>$792,200</td>
</tr>
<tr>
<td>Civil Yard Piping</td>
<td>$38,000</td>
</tr>
<tr>
<td>RO Process and Electrical</td>
<td>$965,800</td>
</tr>
<tr>
<td><strong>Total Direct Costs</strong></td>
<td><strong>$4,034,900</strong></td>
</tr>
<tr>
<td>Contingency (30%)</td>
<td>$1,210,000</td>
</tr>
<tr>
<td>Description</td>
<td>Amount</td>
</tr>
<tr>
<td>----------------------------------------------------------------------------</td>
<td>------------</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$5,245,400</td>
</tr>
<tr>
<td>General Contractor Overhead and Profit (10%)</td>
<td>$524,600</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$5,770,000</td>
</tr>
<tr>
<td>Escalation to Mid-Point of Construction (3%)</td>
<td>$173,100</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$5,943,100</td>
</tr>
<tr>
<td>Sales Tax (50% of Direct Costs)</td>
<td>$261,500</td>
</tr>
<tr>
<td>Subtotal</td>
<td>$6,204,600</td>
</tr>
<tr>
<td>Bid Market Allowance (2%)</td>
<td>$124,100</td>
</tr>
<tr>
<td>Total Estimated Construction Cost</td>
<td>$6,328,700</td>
</tr>
<tr>
<td>Engineering (18%)</td>
<td>$1,139,200</td>
</tr>
<tr>
<td>Owner's Agent (6%)</td>
<td>$379,800</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>$7,900,000</strong></td>
</tr>
</tbody>
</table>

Refer to Appendix F of this report for a complete detailed breakdown of this cost estimate.