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WASTEWATER ENGINEERING SERVICES DIV.
2714 MEDIA CENTER DRIVE
LOS ANGELES, CA 90065
FAX: (323) 342-6210 OR 342-6211

October 5, 2011

To: Bureau of Sanitation Pre-Qualified On-call Contract Consultants

File: TOS-S33-INI

Subject: Issuance of Task Order Solicitation TOS-S33
Hyperion Treatment Plant (HTP) Secondary Effluent Evaluation and Study

The City is soliciting responses from the entire Pre-Qualified On-Call Consultant List. Attached are details of the Task Order Solicitation (TOS) required services.

The Pre-proposal meeting will be held on October 11, 2011, at 2 p.m, in the LA-Environmental Learning Center auditorium at 12000 Vista Del Mar, Playa Del Rey, CA 90293.

Questions regarding this TOS must be submitted before or at the Pre-proposal meeting to the Task Manager, Mark Starr, at *Mark.Starr@lacity.org.*

For Pre-proposal attendance, please RSVP by e-mailing Mark Starr the names of attendees and the company for the security at the Main Gate (Gate C).

Proposal shall be submitted by November 2, 2011, no later than 2:00 p.m., to:
Wastewater Engineering Services Division
2714 Media Center Drive, Los Angeles, CA 90065
Attention: Debbie Pham

Thank you for your interest and we look forward to receiving your response to this Task Order Solicitation.

Sincerely,

D Pham

for Ali Poosti, Acting Division Manager
Wastewater Engineering Services Division
Bureau of Sanitation

cc: Stevan Fan, HTP
Thu-Van Ho, WESD
Mark Starr, HTP
Debbie Pham, WESD

City of Los Angeles
Department of Public Works
Bureau of Sanitation

Pre-Qualified Sanitation On-call Consultant Services Contract

Task Order Solicitation for Comprehensive Study and Evaluation of Hyperion Treatment Plant Secondary Effluent Water – TOS-S33

October 2011

Introduction

The City of Los Angeles Bureau of Sanitation, in cooperation with the West Basin Municipal Water District, wish to retain the services of a consultant or consultant team to conduct a comprehensive study and evaluation of HTP's secondary effluent water with the overall goal of enhancing performance and production at the West Basin's treatment facilities of HTP's secondary effluent water. The parties to which this study will affect, acknowledge that current and as yet to be identified modifications to the HTP have the potential to improve performance of West Basin's treatment of HTP secondary effluent water to meet future water recycling needs.

The parties hereto recognize that the Hyperion Treatment Plant is an ocean discharge plant. Under existing Memorandum of Understanding (MOU) with West Basin, the Hyperion plant is required to provide West Basin with secondary effluent that conforms to legal requirements established for ocean discharge standards under the jurisdiction of the California Regional Water Quality Control Board – Los Angeles Region and described in Hyperion's National Pollutant Discharge Elimination System (NPDES) permit. However, there exists certain modification(s) to HTP's processes that may enhance plant performance while also improving West Basin's ability to further treat HTPs secondary effluent. The goal of this study is to determine if such modifications can improve the performance and production of West Basin's treatment of secondary effluent water to meet West Basin's water recycling needs, as well as to assess the impacts of these modifications on HTP operational efficiency. For reference, Exhibit A provides a background sheet describing West Basin's water recycling facilities and water treatment issues at each of the individual sites.

Scope of Work

This scope of work describes the tasks the selected consultant will be responsible for during the study.

Task 1: Planning and Review Phase

This task includes the review of all pertinent documents, reports, assignments, permits, discharge requirements, water quality reports, etc, including but not limited to:

A. Review HTP secondary clarifier loading data.
B. Review operational strategies of the HTP.
C. Review characteristics of the different sources of wastewater to the HTP, including draft Coastal Interceptor Sewer (CIS) Conductivity Analysis prepared by the Bureau's Wastewater Engineering Services Division.
D. Review historic water quality data from HTP to determine how water conservation and seasonal changes affect water quality.
E. Review existing water quality data from Hyperion's secondary effluent delivered to West Basin
F. Review existing and pertinent water quality data within the Hyperion Treatment Plant.

Task 2: Evaluation of Treatment Processes

<u>Subtask 2.1</u>: Technical Memorandum No. 1: Evaluate Technologies for the Treatment of HTP Digester Centrate and Thickened Waste Activated Sludge Centrate, and/or Re-routing of Internal Flows

The centrate from the Waste Activated Thickening Facility (WASTF) and Dewatering Centrifuge Facility are combined and rerouted back to headworks for further treatment. This recycle waste stream (combined centrate, in-plant sewer and Digester Screening Facility return flows) contain a high mass loading of Total Suspended Solids (TSS), Ammonia, and dissolved organic carbon (DOC). The consultant is to perform the following evaluations:

1. Visit the site to become familiar with the centrate recycle return system, tie-in points, and operational strategy for return of recycle flows back to headworks.
2. Review operational and water quality data pertaining to the centrate stream(s), constituent concentrations, flows, and mass loading rates.
3. Evaluate alternatives to reroute the centrate return back to the west side of the headworks to reduce the portion of the centrate that flows to Modules 1 & 2 (source for most influent to ECLWRF).
4. Evaluate alternative treatment strategies of the centrate stream for reducing the ammonia, TSS, and DOC levels. Suggested treatment processes could include Membrane Biological Reactor (MBR), Dissolved Air Flotation (DAF), ferric chloride injection, air stripping, ion exchange, or breakpoint chlorination. Develop 1 or 2 preferred treatment recommendations. Determine the estimated level of treatment removal for these constituents, and other relevant contaminants of concern.
5. Develop site layouts for the preferred alternative treatment systems.
6. Develop a process flow diagram with mass balances for key constituents.
7. Develop feasibility level cost estimates for the preferred treatment systems, including capital and Operations and Maintenance costs.
8. Develop a design and construction schedule for the preferred treatment systems.
9. Summarize assumptions, analyses, findings, and recommendations in Technical Memorandum No. 1.

<u>Subtask 2.2</u>: Technical Memorandum No. 2: Evaluate Treatment Operations for Secondary Treatment; Module 5

Module 5, a selector module consists of the high purity oxygen aerobic (HPOA) treatment followed by secondary clarification. The module is self contained in that Return Activated Sludge (RAS) from its clarifier set (4 clarifiers) is recycled back to only Module 5 reactor basins. Recent modifications to the module, including a by-pass feed pipe and VFD controlled mixers have provided treatment operators with useful tools for controlling the activated sludge process. Through the manipulation of the variable settings of the by-pass feed pipe and mixer VFDs, treatment operators have stabilized the secondary treatment process and significantly improved the quality of module 5's effluent. In addition, the treatment capacity has increased more than 10% in recent test results. The consultant is to perform the following evaluations:

1. Visit the site to become familiar with the operations of Module 5, the layout, site area, and method for using the by-pass pipe and mixer VFD.
2. Review operational and water quality data pertaining to the modified Module 5 system, the operational parameters (by-pass opening and VFD setting), flow, constituent concentrations, etc.

3. Evaluate the ability and impacts of installing similar by-pass feed pipe and VFD mixer equipment in Module 3.
4. Summarize assumptions, analyses, findings, and recommendations in Technical Memorandum No. 2.

Subtask 2.3: Technical Memorandum No. 3: Evaluate Treatment Options for Secondary Treatment Modules 1 & 2

Modules 1 & 2 consist of the high purity oxygen aerobic (HPOA) treatment followed by the secondary clarifiers for each module. As with all secondary reactor modules at HTP, each module is self-contained in that the RAS from each clarifier set is returned only to the corresponding aerobic basin module. Modules 1 & 2 provide most of the secondary effluent that is conveyed to West Basin. The Hyperion Treatment Plant meets all NPDES Ocean discharge requirements, and no changes to this process or the plant in general is required to meet NPDES discharge requirements. However, modifications to the secondary (biological) treatment process may improve performance and production of West Basin's treatment of HTPs secondary effluent water to meet water recycling needs. The consultant is to perform the following evaluations:

1. Visit the site to become familiar with the operation of Modules 1 & 2, the layout, site area, and method for conveying the RAS return back to the aerobic treatment system.
2. Review historical and current operational and water quality data pertaining to the Module 1 and 2 treatment system, the operational parameters, constituent concentrations, flows, and mass loading rates.
3. Evaluate the ability and impacts of utilizing selectors (anoxic zones that promote the growth of floc formers) in modules 1 and 2.
4. Evaluate the feasibility of converting modules 1 & 2 from a HPOA process to a conventional activated sludge (CAS) process, as a potential long-term modification. Develop a feasibility site layout and cost estimate, capital and O&M costs, with and without considering influent quality improvements provided under Subtask 2.1.
5. Evaluate the feasibility of converting modules 1 & 2 from a HPO process to a MBR process, as a potential long-term modification. Develop a feasibility site layout and cost estimate, capital and O&M costs, with and without considering influent quality improvements provided under Subtask 2.1.
6. Summarize assumptions, analyses, findings, and recommendations in Technical Memorandum No. 3.

Task 3: Project Management

1. Conduct a "kickoff" meeting with BOS and West Basin staff to discuss the scope and parameters of the project.
2. Prepare agendas prior to the meetings and provide follow-up meeting minutes. Record all meeting minutes and submit a copy of minutes to HTP within three (3) working days after each meeting.
3. Schedule and coordinate meetings with HTP and West Basin at the beginning of each task, as appropriate. Other than the kickoff meetings, schedule to attend meetings for monthly project meetings and review of draft TM's, at the HTP. These meetings should as a minimum include; updated project schedule, task updates, discussion of technical and technology applications; draft TMs reviews, and final reports. BOS may also request for bi-monthly progress updates. These updates will take the form of conference call, and are estimated to take no longer than one (1) our in duration. Describe the total assumed number of meetings and associated hours in the proposal.

4. Develop a project Gant Chart schedule to set forth the significant milestones and deliverables from the Notice to Proceed date. Schedule development is to apply to evaluation and technical memorandum phases.
5. Develop monthly progress reports that review budget, schedule, and work progress. Provide an electronic copy of the report prior to the monthly progress meeting.
6. Provide for internal technical QA/QC on all evaluations, reports, calculations, written documents, and other submittals, prior to submittal to HTP.
7. Identify the project manager and QA/QC roles and tasks in the written proposal.
8. Provide ten (10) hard copies of each draft TM and the Final TM reports. Provide two (2) electronic versions of each report on CD format. Each report including the Final Report shall be in color and bound appropriately.
9. Provide ten (10) hard copies of the Project Final Report. The Project Final Report shall include and executive summary, all of the Final TMs, and a conclusion or recommendation section. Use tabs to separate each section.

Term of Engagement

The term of engagement is anticipated to take up to four (4) months to complete. It is estimated that the cost ceiling for this TOS is not to exceed $190,000. The City reserves the right to cancel or modify these terms and tasks at its sole discretion.

Solicitation Schedule

- Issue Task Order Solicitation …… Date of Cover Letter
- Receive Solicitation Responses …….. As indicated in Cover Letter.
- Conduct Interviews if necessary……. 5 weeks after issuance of TOS
- Select and Negotiate…… 7 weeks after issuance of TOS
- Issue Task Work Order……12 weeks after issuance of TOS

Solicitation Response Requirements

Five (5) Copies of Solicitation Responses shall be submitted no later than 2:00 pm of proposal due date to:

Wastewater Engineering Services Division
2714 Media Center Drive
Los Angeles, CA 90065
Attention: Debbie Pham

Solicitation Responses shall include:

- Resumes demonstrating that the candidates are capable of meeting the requirements of the Scope of Work. Resumes shall include work experience history with dates, and references from past employers, owners, and/or organizations.
- Proposed Hourly Billing Rate Summary (Sample Attached).
- MBE/WBE/OBE subcontractors utilized and the percent utilization.
- Cost calculations for each individual candidate considering all direct and indirect costs.
- Proposed Project Cost Worksheet estimated cost by tasks. (all respective direct and indirect costs, markups, expenses, overhead rates and profit)

Selection Criteria

The selection team will evaluate the proposals with the following criteria:

- Capability and experience to provide the Scope of Services as demonstrated by the proposal.
- The value offered to the City considering cost in comparison to capabilities and experience of the candidates.
- Expert knowledge and experience in secondary wastewater treatment, tertiary treatment for recycled water supply, biological nitrogen removal BNR, wastewater solids handling and water quality engineering.
- Candidates' knowledge of the West Basin Water Reclamation facilities, procedures and practices.

Anticipated MBE/WBE Participation Levels

The City had set anticipated participation levels (APLs) of 18 percent and 4 percent for MBE/WBE participation, respectively for TOS over $100,000.

For proposal with cost ceiling of less or equal to $100,000, the MBE/WBE anticipated participation levels will not apply. However, the consultant is still encouraged to utilize MBE/WBE/OBE sub-consultants wherever feasible.

Contract Manager

The City's Contract Manager is Ali Poosti, Acting Division Manager, Wastewater Engineering Services Division, (323) 342-6228.

The Task Order Manager is Mr. Mark Starr, Sr. Environmental Engineer, Hyperion Treatment Plant, (310) 648-5082.

Disclaimer

The City may or may not decide to award any or part of this task order based on its sole convenience and shall not be responsible for any solicitation response costs.

HOURLY BILLING RATES
(To be submitted for each Task Order Solicitation)

FIRM	Status	Last Name	First Name	Position	Rate ($/hr)	Approved Overhead Rate	Approved Profit	Billing Rate ($/hr)	Effective Date	Notes
PRIME FIRM	Prime	LastPrime	FirstPrime	Task Manager						
PRIME FIRM	Prime	LastPrime	FirstPrime	Sr Engineer						
PRIME FIRM	Prime	LastPrime	FirstPrime	Associate Engineer						
PRIME FIRM	Prime	LastPrime	FirstPrime	Technician						
OBE FIRM NAME1	OBE	Last	First	Position						
OBE FIRM NAME2	OBE	Last	First	Position						
MBE FIRM NAME1	MBE	Last	First	Position						
MBE FIRM NAME2	MBE	Last	First	Position						
WBE FIRM NAME	WBE	Last	First	Position						

Firm Name	Status	Fee	% Fee
OBE FIRM NAME1	OBE		
OBE FIRM NAME2	OBE		
MBE FIRM NAME1	MBE		
MBE FIRM NAME2	MBE		
WBE FIRM NAME	WBE		

Summary	Total Fee ($)	% Fee
Total OBE		
Total MBE		
Total WBE		
Prime		
Total		100%

EXHIBIT A

BACKGROUND OF WEST BASIN WATER RECYCLING FACILITIES

Water Treatment Plant Overview

West Basin currently produces approximately 30 million gallons per day (mgd) of recycled water. The source of West Basin's recycled water is secondary effluent from the City of Los Angeles' Hyperion Treatment Plant (HTP). West Basin receives this secondary effluent and treats the wastewater to produce five separate types of recycled water at four recycling facilities. An overview of West Basin water recycling facilities and their respective water qualities produced is described below:

The Edward C. Little Water Recycling Facility (ECLWRF), located in El Segundo, CA, is West Basin's main treatment facility. All of the secondary effluent is collected, treated, and distributed from this facility. The ECLWRF produces several qualities of recycled water, including:

Title 22 water – Treatment includes high rate clarification, mono media filtration, and chlorine disinfection, which is distributed to numerous industrial and irrigation customers. This Title 22 water serves as a supply to the three satellite facilities.

Seawater barrier injection water - Desalinated recycled water for use as seawater barrier injection water, which is produced by microfiltration (MF), reverse osmosis (RO) and advanced oxidation by ultraviolet (UV) disinfection and hydrogen peroxide..

High pressure and low pressure boiler feed water – High quality recycled water produced by microfiltration and reverse osmosis (single pass reverse osmosis for low pressure boiler feed and double pass reverse osmosis for high pressure boiler feed).

The **Exxon Mobil Water Treatment Facility** is a satellite treatment facility treating ECLWRF Title 22 water with MF and RO to produce boiler feed water. In addition, this facility employs a nitrification treatment process of the Title 22 water utilizing a biological aerated filter (BAF) to produce nitrified water for cooling tower makeup.

The **Carson Regional Water Recycling Plant** is a satellite treatment facility treating Title 22 water with MF, RO, and BAF processes to produce nitrified water for cooling tower makeup as well as boiler feed water. This satellite facility is similar to the Exxon Mobil Water Treatment facility.

The **Chevron Nitrification Plant** is a satellite treatment facility that only produces BAF treated nitrified water for cooling tower makeup.

Water Treatment Issues

Influent water quality to the ECLWRF from the HTP secondary effluent has changed since the original design and construction of facilities at the ECLWRF and the satellite treatment plants. Even though HTP continues to meet its own permit requirements for discharge of secondary effluent, the water quality has changed such that this effluent water is adversely impacting West Basin's and the City of Los Angeles ability to produce and serve recycled water to customers. Furthermore, in an effort to manage this change in influent water quality, West Basin has increased its chemical use which has resulted in increased solids production resulting in increased costs. In general, this change in influent water quality has resulted in the following water treatment issues for West Basin

- **Elevated levels of ammonia**. Due to ongoing water conservation efforts throughout southern California, municipal wastewater treatment plants (WWTP) are experiencing higher levels of ammonia in the sewer collection systems. Further, ammonia is generated in the wastewater treatment processes by biological oxidation of organically bound nitrogen and in the solids dewatering processes. These ammonia levels have been increasing steadily over time in the HTP (and other California WWTPs) secondary effluent.

  Impact to West Basin: West Basin MWD provides recycled water to Chevron, Exxon/Mobil and bp refineries for their cooling towers. This cooling tower water must be free of ammonia. In order to remove the ammonia, the water is nitrified in BAFs (Biofor units—trade name for a BAF unit sold by Degremont) and then any remaining ammonia is oxidized using a breakpoint chlorination reaction. Recently, the nitrification systems have been performing poorly and at reduced capacities. The Biofor systems have experienced severe scaling which also reduces their performance and capacity. The scale buildup is due to the use of sodium hydroxide for alkalinity addition; however, the system was designed to add sodium hydroxide for pH control.

- **Elevated turbidity levels**. Even though HTP secondary effluent meets the discharge limits for TSS and BOD, the secondary effluent turbidity levels have increased since the original design and construction of West Basin's facilities.

  Impact to West Basin: In order to manage these increased turbidity levels, West Basin has had to increase its use of ferric chloride addition in its production of Title 22 water. This has a downstream effect at the satellite plants. This has led to increased iron content in the Title 22 water, with subsequent iron deposition on the microfiltration membranes at the various satellite facilities, and increased iron concentrations in the nitrified effluent. Furthermore, the addition of ferric chloride at ECLWRF has contributed to the lower alkalinity levels in the influent water for nitrification treatment.

- **Elevated levels of large-chain soluble organics**. The HTP secondary treatment system consists of a high-purity oxygen treatment system, with a short 1-day mean cell residence time. Therefore, the organics are broken down quickly, but the secondary effluent retains the presence of long-chain soluble carbohydrates.

  Impact to West Basin: These compounds have been identified as the prime cause of organic fouling on the West Basin MF membranes at the ECLWRF resulting in lower production and irreversible fouling of membranes

- **Elevated Total Dissolved Solids (TDS)**. The HTP does not treat for TDS; however, the TDS levels in the ECLWRF influent have increased since the original design and construction of West Basin's facilities.

  Impact to West Basin and City of Los Angeles: Most of the industrial processes that use the recycled water are sensitive to TDS, and as the TDS increase, the cost to produce the recycled water for the industrial uses increase.