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

March 4, 2015

ELECTRONIC MAIL

To: 25 Pre-Qualified On-Call Contract Consultants of LA Sanitation

LA SANITATION ON-CALL CONSULTANT SERVICES CONTRACTS
RE ISSUANCE OF TOS SN-4 – MIKE URBAN HYDRODYNAMIC MODEL VALIDATION

LA Sanitation is re-issuing TOS SN-4 and soliciting responses from 25 Prime 25 Prime Consultants on Pre-Qualified On-Call List again. Attached are details of the Task Order Solicitation (TOS) required services.

All questions regarding this TOS must be submitted in writing to the City Project Manager, Rowena Lau, by March 11, 2015.

The deadline for proposal submittal is **April 1, 2015**. If your firm is interested in this TOS, please submit an electronic copy of proposal via e-mail to the following LASAN's staff, no later than 2:00 P.M. on the indicated due date, to:

- Rowena Lau, rowena.senaya@lacity.org
- Manik Mohandas, manik.mohandas@lacity.org
- Thu-Van Ho, thu-van.ho@lacity.org

Thank you for your interest and we look forward to receiving your response to this TOS.

Sincerely,

Ali Poosti, Division Manager for
Wastewater Engineering Services Division
LA Sanitation

AP:tvh

Attachment: Details of required services for TOS SN-4.

c: Abdul Danishwar, WESD

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Doug Walters, WESD
Scott Hare, WESD
Thu-Van Ho, WESD
Rowena Lau, WESD
Charles Senaya, WESD
Manik Mohandas, WESD

City of Los Angeles
Department of Public Works
BUREAU OF SANITATION (LA SAN)

Pre-Qualified Sanitation On-call Consultant Services Contract

Task Order Solicitation (TOS) SN-4
For
MIKE Urban Hydrodynamic Model Validation

March 2015

1. Introduction

LA Sanitation has been utilizing a hydraulic model to analyze and plan its sanitary sewer network, pumps, flow diversion structures and related infrastructure. The latest hydrodynamic model was developed between 2008 and 2009 using MIKE URBAN hydraulic modeling software by DHI Inc. The hydraulic model was developed from GIS data for the collection system and calibrated for Dry-Weather Flow (DWF) and Wet-Weather Flow (WWF) conditions.

The MIKE Urban Model assists in the wastewater collection system planning by predicting the effects of setting changes, future growth and development in the City, and provide a better understanding of the impact of storm events on the collection system. The calibrated DWF and WWF models are important tools for the effective management of wastewater within the collection system.

In the near future, new flow monitoring gauges will be installed in the City's wastewater collection system to better understand the flow characteristics of the collection system. The calibrated models needs to be validated to ensure accuracy in flow projections and reflect changes observed from the flow monitoring program. In order to continue utilizing this planning tool effectively, it is recommended to have the models validated to ensure greater accuracy in flow projections and reliability of the hydraulic model.

2. Scope of Services

The existing DWF and WWF models were created in 2008 and 2009 respectively, representing the flows in conveyance system. With the additional flow monitors in the collection system, the models need to be validated against the latest gauging data to increase its reliability. The tasks of this project includes analysis of existing models for conformance with gauged flow, DWF model validation, WWF model validation and best modelling practices training and knowledge transfer.

Task 1 – Analyze Model Conformance: Available gauging data will be provided to the selected team for validating the Dry and Wet Weather models. Flow data will be used to compare its conformance with previously calibrated model flows. The model vs. gauged flow results needs to be statistically analyzed to determine goodness of fit. The DWF

model will be deemed validated when the simulated flow and measured flow volume error are less than 10% and a correlation coefficient of 0.8 or greater. The WWF model runs should consist of running the rainfall runoff model within the MIKE URBAN for the entire record of precipitation event. Prior to the rainfall runoff simulations, hydraulic model runs of the collection system needs to be conducted to simulate the WWF response within the collection system. The model vs. gauged flow results has to be statistically analyzed to determine goodness of fit. The WWF model will be deemed validated when the simulated flow, peak error and measured flow volume error are less than 10%, maximum positive and negative difference of 15% and a correlation coefficient of 0.8 or greater, respectively.

Deliverables: A technical report documenting both DWF and WWF model validation methodologies, validation results, and results of statistical analyses performed to compare the model time series data versus the flow gauging time series data should be delivered in an electronic format. An ArcGIS shapefile or geodatabase showing the gauge validation pass and failure locations should be delivered in an electronic format.

Task 2 - Dry Weather Model Validation: Gauges failing to meet the DWF validation criteria and the model parameterization will be updated to deem the model results and measured flow data as validated.

a. Diurnal Pattern Processing – Gauging sites that fail to meet the DWF validation criteria need to be checked for a change in the diurnal pattern as a contributing factor. Under such circumstances the newly collected flow gauging data will have to be processed into a representative DWF pattern for use in the model validation. The diurnal patterns developed from each gauge may be used to represent the DWF network loading boundary conditions within the hydraulic model.
b. DWF Load Boundary Condition Assignment – The diurnal patterns developed in 2a will be assigned to the corresponding SFEM load locations within the hydraulic model.
c. DWF Model Validation – The DWF model parameters should be adjusted until a good agreement between the simulated DWF results and the flow gauging timeseries data is achieved. The DWF model will be deemed validated when the simulated flow and measured flow volume error is less than 10% and a correlation coefficient of 0.8 or greater has been achieved.
d. DWF Model Validation Reporting – The results of the DWF model validation and the quality of such efforts should be reported via a technical report.

Deliverables: An updated DWF model, in the form of a MIKE URBAN geodatabase, with all changes made during the Data Assembly and Analysis Task. A technical report, in electronic format, describing the model changes required to achieve the DWF revalidation is expected.

Task 3 - Wet Weather Model Validation: Incase the analysis of model conformance in Task 1 results in gauges that fail to meet the WWF validation criteria, the rainfall runoff model parameterization should be updated to bring the model results and measured flow data into agreement.

a. Basin Specific Rainfall Data – Rainfall data has to be collected for running the hydrologic model, RDII, within MIKE URBAN platform. Basin specific rainfall data should be developed and QA/QC'd in support of the wet weather flow model revalidation. Gauge verified radar rainfall data has to be collected and processed to support the WWF model validation. The QA/QC'd basin specific rainfall data has to be applied as boundary conditions to each delineated sub-basin.
b. WWF Model Validation – The RDI model should run for the entire wet weather season with at least three wet weather events. Subsequent to the RDI simulation, a pipe flow model simulation needs to be performed for the selected rainfall events. The existing sub-basin parameters should be adjusted, and the RDI and pipe flow models executed again until a good agreement between the volume and timing of the simulated and observed hydrograph is achieved. Good agreement in volume and timing is defined by meeting the validation criteria of a total volumetric error and peak error of 10% or less, maximum and negative difference of 15% and a correlation coefficient of 0.8 or greater. Basins where the validation criteria are determined to be unachievable will be further reviewed under the anomaly management task to determine potential causes and reasons that prevented validation. Network changes may be required to achieve validation criteria.
c. WWF Anomaly Management – Despite the model validation efforts, some gauges may be difficult to validate, or there may be specific rainfall events that cannot be validated. Anomaly management has to identify the outlier gauges, basins or events that cannot be validated and determine the cause.
d. WWF Model Validation Reporting – The results of the WWF model validation has to be reported via technical report documenting the quality of the revalidation and anomalous gauges.

Deliverables: An updated WWF model in the form of a MIKE URBAN geodatabase, with all changes made during the WWF validation Task has to be delivered. A technical report, in electronic format, has to be delivered describing the model changes required to achieve the WWF validation. The memorandum should also document the findings of the WWF anomaly management efforts if necessary.

Task 4 - Best Modelling Practices Training and Knowledge Transfer: Recommend best modelling strategies for complex situation and methods to improve skill set of the City's modeling group for maintaining and updating the model continually. Conduct a multi-day training and knowledge transfer workshop on model validation methodologies and recommended modeling practices.

a. Model Management Practices has to be developed to provide a secure framework for managing software-based models and other supporting files in single or multiple user environments. Allow for simple tracking of model changes for both the master model and individual project models.
b. Validation Practices – Train the City's modeling staff to prepare external flow gauging data, execute model simulations, compare model results against observed flow gauging data, and perform statistical analyses used during the model validation tasks.
c. DWF Model Validation Practices – The transfer of knowledge to the City's modeling staff regarding how to validate a model, develop diurnal patterns,

average daily flow determination, distribution of DWF flow loading from SFEM, SFEM volume correction, and comparison of model results to flow gauging data.

d. WWF Model Validation Practices – Knowledge transfer on precipitation data processing, WWF boundary condition assignment, RDII model validation procedures, and comparison of model results to flow gauging data. In addition to the full process procedure in validating a WWF model.

Deliverables: The Modeling Best Practices and Knowledge Transfer shall be delivered over a 3-day training course to be conducted at City facilities for up to 10 City staff. Provide training manuals, software and/or digital training exercises required to implement Best Modeling Practices.

3. Term of Engagement

The term of engagement is 36 months from the issuance date of NTP.

Statement of Costs

Proposers must provide cost estimates for each stage of the project. The cost for holding monthly status meetings should be included in the total cost. The cost estimates should include the estimated number of hours for each person involved and the extended cost based on the hourly rate for that person. This cost estimate must also include grand totals of both hours and dollars for the project as a whole. All costs to the CITY must be identified, including hourly rates, travel time, etc.

4. Solicitation Schedule

- Issue Task Order Solicitation ……..Date of Cover Letter
- Receive Solicitation Responses.....……As indicated in Cover Letter
- Conduct Interviews if necessary……5 week after issuance of TOS
- Select and Negotiate……..……7 weeks after issuance of TOS
- Issue Task Work Order……...9 weeks after issuance of TOS.

5. Solicitation Response Requirements

Solicitation Responses shall not exceed 15 pages, exclusive of cover, dividers and resumes. Solicitation Responses shall be submitted to the following LA SAN's staff via e-mail, no later than 2:00 pm of proposal due date indicated in cover letter:

- Rowena Lau, rowena.senaya@lacity.org
- Manik Mohandas, manik.mohandas@lacity.org
- Thu-Van Ho, thu-van.ho@lacity.org

Solicitation Responses shall include:

- Resume demonstrating that the candidate is capable of meeting the requirements of the Scope of Work. Resume shall include work experience history with dates, and references from past employers, owners, and/or organizations.

- Provide a proposed individual cost breakdown by tasks.
- Provide a breakdown of estimated time for completion of task.
- Proposed Hourly Billing Rate Summary for the proposed candidate with all respective direct and indirect costs, markups, expenses, overhead rates and profit. (Sample Attached).
- MBE/WBE/ SBE/EBE/DVBE/OBE subcontractors utilized and the percent utilization.
- Provide copies of valid MBE/WBE/SBE/EBE/DVBE Certifications of MBE/WBE/SBE/EBE/DVBE sub-contractors utilized.
- Statement pertaining to the candidate's availability.

6. Selection Criteria

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

- Capability, and experience in providing the Scope of Services as demonstrated by the proposal.
- Proposals overall responsiveness to the requests of this TOS.
- The value offered to the City considering cost in comparison to capabilities and experience of the team.

7. Suggested MBE/WBE/SBE/EBE/DVBE/OBE Participation Levels

The City had set anticipated participation levels (APLs) for sub-consultants as follows: 18% MBE, 4% WBE, 25% SBE, 8% EBE, and 3% DVBE.

Note: Sub-consultants that are not listed on Schedule A in your contract cannot be added and/or utilized without the performance of the outreach and approval of LASAN.

8. Task Order Manager

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

The Project Manager for this designated TOS is: Rowena Lau, Environmental Engineer, Wastewater Engineering Services Division, (323) 342-6206.

9. 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									
Prime Firm	Prime									
Prime Firm	Prime									
MBE Firm Name 1	MBE									
MBE Firm Name 2	MBE									
MBE Firm Name 3	MBE									
WBE Firm Name 1	WBE									
WBE Firm Name 2	WBE									
SBE Firm Name	SBE									
EBE Firm Name	EBE									
DVBE Firm Name	DVBE									
OBE Firm Name 1	OBE									
OBE Firm Name 2	OBE									

Firm Name	Status	Fee	%Fee
MBE Firm Name 1	MBE		
MBE Firm Name 2	MBE		
MBE Firm Name 3	MBE		
WBE Firm Name 1	WBE		
WBE Firm Name 2	WBE		
SBE Firm Name	SBE		
EBE Firm Name	EBE		
DVBE Firm Name	DVBE		
OBE Firm Name 1	OBE		
OBE Firm Name 2	OBE		

Summary	Total Fee ($)	% Fee
Prime		
MBE		
WBE		
SBE		
EBE		
DVBE		
OBE		
Total		