

**SOUTHERN CALIFORNIA COASTAL WATER RESEARCH PROJECT (SCCWRP)  
REQUEST FOR PROPOSAL**

***MODELING IN SUPPORT OF LOMA ALTA SLOUGH NUTRIENT AND BACTERIA  
TMDLS***

**I. INSTRUCTIONS TO BIDDERS**

The Bidder's complete Proposal to provide the services detailed are to be enclosed in a sealed envelope marked "Loma Alta Modeling" and addressed to:

Bryan Nece  
Administrative Officer  
Southern California Coastal Water Research Project  
3535 Harbor Blvd., Suite 110  
Costa Mesa CA 92626

All supplemental materials requested within this Proposal must be attached to the Proposal. Any unauthorized conditions, limitations, or provisions attached to this Proposal may be cause for rejection.

If a Bidder wishes to withdraw its Proposal, the Bidder may do so without prejudice by delivering a written notice of withdrawal to the Administrative Officer at any time before the time fixed for the opening of bids.

Sealed bids will be received at SCCWRP's offices, 3535 Harbor Blvd., Suite 110, Costa Mesa, CA, up to the hour of **9:00 am on February 16, 2010**, at which time, the Administrative Officer will open the bids. Bids received by facsimile or E-mail will not be accepted.

All Bidders should inform SCCWRP in writing of their intention to submit a bid by January 26, 2010 via email ([bryann@sccwrp.org](mailto:bryann@sccwrp.org)), FAX (714.755.3299) or letter mail. Although this notification is not mandatory, it is necessary to ensure receipt of future updates to the bid notification. SCCWRP will hold a non-mandatory bidders meeting at 10:00 a.m. on February 2, 2010, at SCCWRP's offices in Costa Mesa. This meeting is intended to provide Bidders the opportunity to ask questions and request clarifications about this RFP. SCCWRP's responses to will be sent to the Bidders by E-mail and posted on the SCCWRP web site ([www.sccwrp.org](http://www.sccwrp.org)).

The maximum available funds under this contract shall not exceed \$105,000. This solicitation for proposals shall not be construed as obligating SCCWRP to award a contract or pay any compensation for the information solicited.

**II. BACKGROUND**

Loma Alta Slough is a 1.1 hectare estuarine wetland that serves as refuge, foraging areas, and breeding grounds for a number of terrestrial and aquatic species (Loma Alta Creek Watershed

Management Plan, MEC Analytical 2003). Land use changes in the Loma Alta Creek watershed resulted in hydrological modifications to the Slough and have led to increased amounts of nutrients, bacteria and other contaminants to the Slough.

As a result of increased macroalgal blooms and high bacterial counts, the San Diego Regional Water Quality Control Board (SDRWQCB) placed Loma Alta Slough on the federal 303(d) list of impaired water bodies for eutrophication and bacteria. The SDRWQCB issued a Monitoring Order (R9-2006-0076) requiring stakeholders to collect data necessary to develop watershed loading and estuarine water quality models. These data were collected for eutrophication TMDLs in Famosa Slough, Buena Vista Lagoon, San Elijo Lagoon, Santa Margarita Estuary, as well as Loma Alta Slough. During October 2007 through October 2008, SCCWRP and MacTech Inc., subcontractor to the Carlsbad Hydrological Unit nutrient TMDL stakeholders, conducted monitoring to address the requirements of Investigation Order R9-2006-0076. Weston Inc. collected data on watershed and lagoon hydrodynamics, continuous data on dissolved oxygen and other physiochemical parameters, wet weather and dry weather loads of nutrients and bacteria, wet and dry weather ambient nutrient and bacteria concentration in the Slough, and information on post-storm sediment quality. SCCWRP collected data on aquatic primary producer biomass and percent cover, benthic nutrient and oxygen and carbon dioxide fluxes.

SCCWRP was recently awarded a contract from the SDRWQCB to conduct modeling studies for Loma Alta Slough. A major component of this project is to conduct watershed loading and estuarine water quality modeling studies, based largely on the data collected during monitoring order R9-2006-0076. The intent of these models is to support the SDRWQCB and Carlsbad Hydrologic Unit stakeholders in development and implementation of the nutrient and bacteria TMDLs in Loma Alta Slough.

### **III. GOALS AND WORK ELEMENTS OF THE STUDY**

SCCWRP is requesting proposals from potential consultants to conduct modeling studies in Loma Alta Slough watershed and estuary. Supporting documents describing the context and data collected for modeling studies are available on the SCCWRP FTP site ([ftp://ftp.sccwrp.org/pub/download/TMP/Sutula/Loma Alta RFP.zip](ftp://ftp.sccwrp.org/pub/download/TMP/Sutula/Loma%20Alta%20RFP.zip)). These documents include: 1) the SDRWQCB monitoring order, the Monitoring Order Workplan, the MacTech data submission final report and the SCCWRP study monitoring plan.

#### **Description of Work Elements**

*Task 1 Project Administration and Quarterly Reporting.* The contractor shall provide quarterly written and oral updates of the progress of the study to the SCCWRP.

Task 1 Deliverables: 1) Quarterly reports, due on the 5<sup>th</sup> of January, April, July and October.

Task 2. Develop and configure water quality model for eutrophication in Shallow Coastal Lagoons and Estuaries.

Much of the published literature on modeling eutrophication has been based on estuarine systems that are deeper than those in the San Diego region and dominated by pelagic primary producers (e.g. phytoplankton). Modeling eutrophication in the shallow coastal lagoons and river mouth estuaries in the San Diego region will involve utilizing a different set of primary producer groups and will require that sediment remobilization of nutrients is accounted for in the eutrophication model.

The purpose of this task is to develop explicit conceptual models for how eutrophication should be modeled in shallow coastal lagoons and river mouths. Among the five lagoons, there are three lagoon archetypes; 1) perennially tidal lagoons (Santa Margarita River estuary, San Elijo Lagoon, and Famosa Slough), 2) seasonally tidal river mouth (Loma Alta Slough), and 3) permanently closed lagoon (Buena Vista). The contractor shall develop and configure a generalized sediment transport and eutrophication water quality models that can be applied to any of these types of systems. The model should explicitly address 1) how different groups of aquatic primary producers (macroalgae, seagrass, microphytobenthos, phytoplankton) and estuarine wetland primary producers (emergent macrophytes) will be modeled, 2) how sediment deposition, erosion, and the flux of dissolved nutrients across the sediment-water interface will be modeled.

Task 2 Deliverables: 1) process flow diagram, 2) tables listing state variables, parameters and appropriate rate constants.

Task 3. Provide technical support to select management endpoint, identify appropriate models, and identify management scenarios for modeling runs with the stakeholders.

SCCWRP will lead the Loma Alta Slough stakeholders through a process to; 1) select management endpoints, 2) identify appropriate watershed loading, sediment transport and water quality models, and 3) identify management scenarios for modeling runs. The contractor shall provide technical support to SCCWRP for this task by: 1) providing a brief written review of available watershed loading and receiving waterbody models and an analysis of the advantages and disadvantages of their use for modeling eutrophication and bacteria in the three lagoon archetypes, and 2) attending a minimum of 3 meetings with stakeholders to provide technical support.

Task 3 Deliverables: 1) brief written review of available watershed loading and receiving waterbody models appropriate for this application and an analysis of the relative advantages and disadvantages of each.

Task 4. Calibrate and Validate Watershed Loading Model

The purpose of this task is to calibrate and validate the watershed loading model. Subtasks include: 1) model set up, 2) model calibration, and 3) model validation. Model set up consists of compilation of available data, developing the physical domain, and establishing the model grid. In calibration, the contractor shall quantify accuracy, precision, and bias in how well the modeled output predicts expected values. The contractor shall also describe how the model calibration was optimized. Validation will be conducted on an independent data set and validation reporting must quantify accuracy, precision, and bias of the model output relative to the validation data set.

The contractor shall prepare a draft report that includes an executive summary, introduction, methods, results, discussion and relative appendices. The draft final report will be submitted to SCCWRP for review and distribution to the SDRWQCB and Loma Alta stakeholders. The final report shall address the feedback and comments from SCCWRP and other groups on the draft report.

Task 5 Deliverables: 1) electronic copy of all data used in the set up of the watershed loading model, 2) draft model report summarizing the results of the model set up, calibration and validation, and 3) final model report.

#### Task 5. Calibrate Sediment Transport and Water Quality Models

The purpose of this task is to calibrate and validate the sediment transport and water quality model. Sediment transport must link transport of particulate nutrients with the eutrophication model. Subtasks include; 1) model set up, 2) model calibration, and 3) model validation. Model set up consists of compilation of available data, developing the physical domain, and establishing the model grid. In calibration, the contractor shall quantify accuracy, precision, and bias in how well the modeled output predicts expected values. The contractor shall also describe how the model calibration was optimized. Validation will be conducted on an independent data set and validation reporting must quantify accuracy, precision, and bias of the model output relative to the validation data set.

The contractor shall prepare a draft report that includes an executive summary, introduction, methods, results, discussion and relative appendices. The draft final report will be submitted to SCCWRP for review and distribution to the SDRWQCB and the Loma Alta stakeholders. The final report shall address the feedback and comments from SCCWRP and other groups on the draft report.

Task 5 Deliverables: 1) electronic copy of all data used in the set up of the receiving water models, 2) draft model report summarizing the results of the model set up, calibration and validation, and 3) final model report.

#### Task 6. Conduct Modeling Runs Analyzing Management Scenarios

The contractor shall utilize the models to analyze five management scenarios identified by the stakeholder group. The contractor shall prepare a draft report describing the methods, results and discussing its implication. The draft final report will be submitted to SCCWRP for review and

distribution to the SDRWQCB and the Loma Alta stakeholders. The final report shall address the feedback and comments from SCCWRP and other groups on the draft report.

Task 6 Deliverables: 1) draft scenario analysis report summarizing the results of the model runs, and 2) final scenario analysis report summarizing the results of the model runs. Draft and final reports may combine both modeling and scenario analysis reports (Tasks 4-6) into single documents if desired.

#### **IV. SPECIAL REQUIREMENTS AND INSTRUCTIONS**

The contractor will be required to comply with the following special requirements and instructions during the performance of services rendered under this project.

##### **General**

The Contractor is required to comply with all general terms and conditions of the prime award.

##### **Insurance**

The Contractor shall, at their sole expense, maintain in effect the following insurance coverage and include SCCWRP as an additional insured on their policy:

Workers' Compensation insurance shall be held and maintained by the Bidders as required by applicable laws of the State of California with a minimum amount and limit of One Million Dollars (\$1,000,000) for each accident.

General Liability insurance shall be held and maintained by the Bidders covering all operations by or on behalf of the Bidders providing insurance for bodily injury liability and property damage liability. The combined single limits of liability for bodily injury or property damage shall be One Million Dollars (\$1,000,000) for each occurrence, and One Million Dollars (\$1,000,000) aggregate.

Automobile Liability (Bodily Injury and Property Damage Liability) insurance shall be held by the Bidders, including coverage for all owned, hired, and non-owned automobiles. The combined single limit of liability shall be Two Hundred Fifty Thousand Dollars (\$250,000) for any one accident or loss.

##### **Determination of Satisfactory Progress**

Satisfactory progress will be determined through quarterly reports. These reports may be in written form, or at the request of SCCWRP, in the form of a presentation.

##### **Billing and Retention**

The Contractor shall provide invoices for work completed on a monthly basis. SCCWRP shall have the right to retain from the Contractor's earnings for each period for which payment is made an amount equal to ten percent (10%) of such earnings, pending satisfactory completion of the agreement.

### **Ownership**

All interim, draft, and final documents, studies, graphics, maps, photographs, computer models, data sets, and reports prepared by the Contractor will be developed using public funds and are intended for public use. Public documents/products lose their status as privileged and proprietary and may not be used for proprietary development or profit.

### **Length of Contract and Deadlines for Submission of Deliverables**

The term under this contract will be one year. The following deadlines apply:

Technical memo of generalized conceptual model for eutrophication (Task 2)	Jul 1, 2010
Technical memo on analysis of available models (Task 3)	Apr 1, 2010
Draft modeling report	Oct 1, 2010
Draft scenario analysis report	Jan 1, 2011
Final modeling and scenario analysis report	Feb 1, 2011

## **V. PROPOSAL SUBMISSION**

### **Length and Content of Proposal**

Proposals are limited to 7 single spaced pages (Times New Roman, 12-point font), exclusive of team qualifications, resumes and budgets. Bidders must submit three copies of the entire proposal package.

Content should address the following:

- 1) **Technical approach** for the study. Technical approach should be a maximum of 4 pages and must include the following: 1) discussion of technical approach in evaluating the advantages and disadvantages of the available watershed loading and receiving water models, 2) discussion of technical approach for calibration and validating, specifically how accuracy, precision and bias will be quantified.
- 2) **Team Organization and Qualifications** of team in calibrating, validating and running management scenarios on watershed loading and receiving water models. Particular attention to linked models will be evaluated. A maximum of 2 pages apply.
- 3) **Experience** of the personnel that will be working on the proposed project, specifically experience in developing watershed loading and water quality models for shallow coastal lagoons in southern California. A maximum of 1 page apply.

### **Additional Information to Accompany Proposal Form**

The proposal shall contain the following information, which should be included as a separate page(s) from the technical proposal.

**Budget** Bidders should submit both a line item and task budget for their proposal. Line item personnel costs shall include labor rates. All equipment costs over \$500 should be itemized. The proposed costs will be considered firm, fixed-fee proposals.

**Qualifications** Include resumes for lead personnel who will manage this project.

**Schedule** Proposals should include the length of time required to complete the work.

## **VI. BID EVALUATION PROCESS AND CRITERIA**

Following the opening of bids, a review panel will evaluate the bids using the following criteria and scoring system. A maximum score of 100 points is possible.

1. **Technical approach** of the modeling study should be described. (40 pts.)
2. **Team Organization and Qualifications** of the team in conducting the studies should be articulated (25 pts.)
3. **Experience** of the Team in conducting studies of similar scope and geographic relevance (25 pts)
4. **Cost** of the proposed work should be explained. The maximum amount available for this project is \$105,000 (5 pts).
5. **Schedule** of the proposed work should be detailed (5 pts).

SCCWRP shall negotiate an agreement for services with the winning bidder. If a mutually acceptable agreement cannot be negotiated, SCCWRP may initiate negotiations with the second highest scoring bidder.