



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

***DEVELOPMENT OF TOOLS FOR HYDROMODIFICATION ASSESSMENT AND
MANAGEMENT - SURVEY AND ENGINEERING SUPPORT***

I. INSTRUCTIONS TO BIDDERS

Three copies Bidder's complete Proposal to provide the services detailed are to be enclosed in a sealed envelope marked "Hydromodification Study" and addressed to:

Bryan Nece
Administrative Officer
3535 Harbor Blvd., Suite 110
Costa Mesa, CA 92626-1437

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 **11:00 am on July 9, 2007**, 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 **June 18, 2007** via email (bryann@sccwrp.org), FAX (714.438.1016) 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 July 2, 2007, at SCCWRP's office in Costa Mesa. This meeting is intended to provide Bidders the opportunity to ask questions and request clarifications about this document. SCCWRP's responses to will be sent to the Bidders by E-mail and posted on the SCCWRP web site (www.sccwrp.org).

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 AND GOALS OF STUDY

The process of urbanization has the potential to affect stream courses by altering watershed hydrology. Development and redevelopment can increase impervious surfaces on formerly undeveloped landscapes and reduce the capacity of remaining pervious surfaces to capture and

infiltrate rainfall. The result is that as a watershed develops, a larger percentage of rainfall becomes runoff during any given storm. In addition, runoff reaches the stream channel much more efficiently, so that the peak discharge rates for floods are higher for an equivalent rainfall than they were prior to development. This process has been termed *hydromodification*.

Hydromodification can result in adverse effects to stream habitat, surface water quality, and water supply, and stream erosion can threaten infrastructure, homes, and businesses. Intermittent and ephemeral streams that possess riparian and wetland habitat are at particular risk from effects of hydromodification. In response to the effects of hydromodification, state and local agencies are developing standards and management approaches to control and/or mitigate the effects of hydromodification on natural and semi-natural stream courses. Successful implementation of these regulatory programs requires development of tools to better assess hydromodification effects and develop appropriate mitigation and management strategies.

The goal of this project is to develop a series of tools for implementation of hydromodification management measures that could be used to better protect the physical, chemical, and biological integrity of streams and the associated beneficial uses. This project will provide tools to answer the following questions: 1) Which streams are at the greatest risk of effects of hydromodification? 2) What are the anticipated effects in terms of increased erosion, sedimentation, or habitat loss, associated with increases in impervious cover? 3) What are some potential management measures that could be implemented to offset hydromodification effects and how effective are they likely to be?

The Southern California Coastal Water Research Project (working in collaboration with Colorado State University (CSU), Fort Collins) was recently awarded a Prop 50 grant from the State Water Resources Control Board to develop a series of predictive models that could be applied to a range of stream types to assess potential effects of hydromodification. These models could also be used to investigate the efficacy of proposed BMPs or other management measures. The project consists of four technical tasks.

1. Develop a mapping and classification system for streams based on their susceptibility to the effects of hydromodification.
2. Establish protocols for ongoing monitoring that is carefully designed to assess the effects of hydromodification.
3. Develop and calibrate dynamic models to assess the effects of hydromodification on stream condition. These models would likely couple hydrologic simulations, physical process models, and risk-based modeling.
4. Develop a series of tools that managers can easily apply to make recommendations or set requirements relative to hydromodification for new development and redevelopment. It is envisioned that tools for three different levels of analysis would be developed:
 - Screening tools to allow planners and managers to evaluate whether or not a project is likely to be of concern for hydromodification;
 - Effects tools to evaluate the expected magnitude or intensity of effect associated with a particular project;
 - Mitigation tools to guide recommended mitigation and management measures.

III. CONTRACTOR SCOPE OF WORK

SCCWRP is requesting proposals from potential consultants to conduct stream channel cross-section and longitudinal surveys, and to provide general engineering & modeling technical support, as described below. These tasks will support the larger SCCWRP/CSU hydromodification project described above. The consultant's work would be divided into two phases. Phase 1 would consist of conducting channel surveys at a series of sites throughout southern California as identified by the SCCWRP Project Manager. Phase 2 would consist of as-needed technical support on subsequent portions of the larger project that may include data analysis, GIS analysis, or modeling.

Phase 1 – Channel Surveys

SCCWRP staff will identify between 10 and 30 stream reaches to be surveyed. These reaches will be distributed throughout southern California between Ventura and San Diego counties. The watershed areas draining to these reaches will be less than approximately 20 km² and the vast majority of channel widths will be less than ca. 10-20 m. Sites may include relatively remote locations that require off-road vehicle access. Access permissions and agreements will be obtained by SCCWRP prior to the consultant initiating their work.

At each location, the consultant will conduct both cross-section and longitudinal profiles in accordance with the "Standard Operating Procedures" attached to this RFP. In brief, between three and six cross sections will be shot at each site; however, the SCCWRP Project Manager has the authority to require more as they see necessary. The maximum longitudinal spacing for each cross-section will be five bankfull widths, and closer at key locations such as heads of riffles, bends, confluences, and other key locations identified by the Project Manager. The cross sections shall extend well into the adjacent floodplain to an elevation that would contain flood flows for modeling purposes (i.e. valley walls, abandoned terraces, etc.). Shots across the cross section shall be taken at a maximum spacing of every 3 meters. Shots will be spaced closer as required to capture grade breaks, depositional surfaces, etc.

Longitudinal profiles of the channel thalweg shall be shot along each reach according to the following specifications: For streams greater than 3 meters wide, a maximum spacing of five bankfull widths or 50 meters (whichever is smaller). For streams less than 3 meters wide, a maximum profile shot interval of 15 meters will be used. The longitudinal profiles shall extend at least 25 meters upstream of the most upstream cross section and beyond the most downstream cross section to the nearest hard point or for 150 meters (whatever comes first). The precise location of cross-section and longitudinal profiles for each site will be verified in the field with the SCCWRP Project Manager prior to initiation of the survey work.

Survey results will be provided to SCCWRP in GIS format (ESRI ArcGIS 9.2 preferred). Results should include Quality Control data, metadata, and data on all appropriate vertical and horizontal control points. Precision and accuracy shall be in accordance with all objectives specified in the SCCWRP's Quality Assurance Project Plan (QAPP) for this project.

It is expected that all survey work will be completed prior to October 31, 2007. However, the SCCWRP Project Manager may request that specific reaches be resurveyed during Winter 2007-08 if there are storms that have the potential to result in substantial alteration of channel geometry. Deliverables for Phase 1 will include:

1. A detailed work plan for completing channel surveys that is consistent with SCCWRP's QAPP and Standard Operating Procedures for the project. The work plan will include recommended equipment, details of the survey methodology, and quality control procedures.
2. Survey results for each site in GIS format (ESRI ArcGIS 9.2 preferred), including all Quality Control data, and metadata.
3. Three copies of a summary report of completed field work that should include copies of all field data sheets, logs, and relevant notes taken while completing the surveys.

Phase 2 – As-needed Technical Support

Subsequent portions of this project may require additional technical or engineering support. This support may include additional field data collection, GIS analysis, assistance in development or calibration of dynamic models, or support in compiling BMP specifications.

This work would be conducted on a time and materials basis. If such assistance is necessary, the SCCWRP Project Manager would request a task order and price quote for review and approval prior to initiation of the requested work. However, there are no guarantees that such work would be needed, and award of a contract by SCCWRP would not constitute a commitment to request additional work.

As part of their proposal package, prospective consultants should provide a Statement of Qualifications, including descriptions of past clients and projects, that demonstrates expertise and technical excellence in performing the range of services that may be requested under Phase 2 of this scope.

II. 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, certifications, assurances, provisions, laws, and regulations of State Water Resources Control Board Contracts.

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

The term under this contract will be approximately 32 months. Initial field surveys must be completed by October 31st, 2007. The proposal selected has to be finished by March 2010. However, SCCWRP, at their sole discretion, retains the right to terminate this contract prior to March 2010.

V. PROPOSAL SUBMISSION

Length and Content of Proposal

Proposals are limited to 10 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, including how the proposed approach meets the goals described in “Contractor Scope of Work.” The technical approach should discuss recommended equipment, details of the survey methodology, and quality control procedures.
- 2) **Qualifications and experience** of the personnel that will be working on the proposed project. Minimum qualifications include experience in conducting channel surveys for use in design and engineering studies (Phase 1), and in developing and calibrating watershed and/or sediment transport models (Phase 2).

Additional Information to Accompany Proposal Form

Budget

For Phase 1, bidders should submit costs on a *per-site basis*. The per-site cost should include all labor and expenses associated with conducting initial field reconnaissance with the SCCWRP Project Manager, completing required channel surveys, and compiling and producing electronic data files for that site.

For Phase 2, bidders should submit a *rate sheet* for key project personnel that may be involved in completing as-needed tasks. If additional services are requested under Phase 2, the contractor would submit a task-budget, on a time and materials basis, consistent with this rate sheet.

Qualifications and Team Organization

Include resumes for principal personnel who will participate in the study approach.

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. Study approach. Each study approach will be rated based on the likelihood that it will meet the requirements of the study described in **Contractor Scope of Work**. (15 pts.)
2. Qualifications and experience. Proposals will be rated based upon each bidder’s qualifications and experience. (45 pts)
3. Cost. Each Bidder will be rated on its proposed cost of the study approach. (35 pts)
4. Schedule. Each bidder will be rated on how realistic its proposed schedule is for the completion of the study. (5 pts)

APPENDIX A – STANDARD OPERATING PROCEDURES FOR DETAILED FIELD SURVEY

Survey Equipment

Total Station – A minimum manufacturers’ accuracy of 3 mm is required with regular maintenance and calibration by trained professionals at a minimum interval of that of the manufacturers’ specifications.

Data Collector – Capacity for both point and line codes to delineate such lines as thalweg, toe of bank, top of bank, and so forth. The data collector must collect, code, and store the points/lines in a manner such that the final survey deliverable is post-processed data in GIS format. As a check, the final survey data must match/tie in accurately with existing GIS mapping in the same coordinate system.

Field Book & Instrument Set Ups

A detailed sketch of each site should be drawn in the field book. The sketch shall include:

- Stream Name
- Latitude and longitude as determined by mapping grade global positioning system (GPS)
- Surveyor names
- Date
- North arrow, scale, and legend
- Location of benchmarks, landmarks and other prominent features
- Direction of streamflow
- Valley cross-section sketch
- Terrace characteristics
- General observations on riparian and floodplain plant community composition, cover, age structure, dominant species
- Instream features such as protruding boulders, woody debris, etc.
- Pool / riffle sequences
- Abandoned channels
- Floodplain boundaries
- Cross-section locations

Additionally, each instrument set up shall be recorded in the field book. At a minimum, each set up description should include the following:

- Site/Stream Name
- Surveyor Names (instrument operator and rod operator)
- Control Point of instrument and coordinates
- Control Point for backsight and coordinates
- Azimuth angle and distance between set up control point and backsight
- Control Point of foresight and coordinates (if a foresight is used)
- Date and Time
- Weather (temperature, cloud cover, wind, and so forth)
- Notes from the set up or individual shots

Control Points

Control points will be set in locations with optimum site distance as well as in proximity to permanent benchmarks where possible. Location maps of each control point will be drawn in the project field book with horizontal distance measurements to a minimum of three permanent benchmarks (such as telephone poles, well established trees, fire hydrants, etc.) For rural locations with limited permanent benchmarks, crews will find the best semi-permanent benchmarks and stray away from locations likely to move, such as the edge of bank. GPS coordinates of control points will also be collected. The survey crew shall take whatever additional measures they feel necessary to ensure to the maximum extent possible that controls can be found during future site investigations.

Quality Control

Control points will be accurate to 5 mm. This will be checked by running a loop across all established control and closing within 5 mm. If only two control points are needed, accuracy will be established by individual setups on each control point with backsight closure within 5mm

On all shots other than control points, horizontal accuracy will be maintained at 1 cm or smaller, while vertical accuracy will be within 3 cm. The increased window for the vertical accuracy is justified by the fact that the survey rod can slightly sink in fine substrate and boot heights are adjusted when necessary by hand.

During each set up, the level bubble on the instrument will be periodically checked by the operator to ensure levelness on the order of once every 30 minutes. Should the instrument fall out of level, it will be re-leveled and the backsight will be reshot. If the turning angle to the backsight, the distance, or elevation is off by greater than 1 minute (1/60 of a degree), 1cm, or 1cm respectively, the data logged since the time of the previous level check will be discarded.

All set ups will be closed with a final backsight shot to ensure the accuracy protocols were maintained during the setup. Should the operator of the instrument leave the instrument at any time during the set up (i.e. a lunch break), the instrument shall be level checked and re-leveled with a new backsight as needed.

Collection of Channel and Floodplain Geometry

The detailed channel survey will be guided by the field protocol of Harrelson et al. (1994). The locations, orientation, and extent of each cross section will be specified by and coordinated with a member of the primary project research team. This can be done by in-field coordination, field markers, or delineation of cross section locations/orientation on aerial photography or detailed hand sketches. If a project team member is not physically present in the field during the time of the survey, a designated contact will be available via telephone during regular business hours.

Cross Section Specifications

A minimum of three cross sections will be shot at each site; however, the project team has the authority to require more as they see necessary, or as the specifications in this SOP prescribe.

- Longitudinal Spacing – maximum spacing of five bankfull widths, and closer at key locations such as:
 - heads of riffles
 - bends
 - confluences
 - other key locations identified by the project team
- Orientation – oriented perpendicularly to the channel thalweg. On wide cross sections, the orientation may be bent such that the cross sections are oriented to the best ability perpendicularly to the general flow direction at each part of the cross section. Should such a bent orientation be required, it will be delineated by the project team.
- Extents – the cross sections shall extend well into the adjacent floodplain to an elevation that would contain flood flows for modeling purposes (i.e. valley walls, abandoned terraces, and so forth).
- Lateral Spacing of Shots - shots across the cross section shall be taken at a maximum spacing of every 3 meters. Shots will be spaced closer as required to capture:
 - grade breaks
 - depositional surfaces
 - toe of slopes
 - toe of bank
 - top of bank
 - channel thalweg

Channel Profile

The thalweg profile of the channel shall be shot along the reach according to the following specifications:

- Longitudinal Spacing
 - For streams greater than 3 meters wide – maximum spacing of five bankfull widths or 50 meters (whatever is smaller)
 - For streams less than 3 meters wide – maximum profile shot interval of 15 meters
 - For all streams, profile shots will be taken more frequently to ensure all key horizontal and vertical features are captured such as:
 - Every vertical break in slope:
 - head/toe of riffles
 - nickpoints/headcuts
 - other key locations identified by the project team
 - Every horizontal change/planform feature
 - meander bends
 - crossings
 - other key locations identified by the project team
- Extent
 - At least 25 meters upstream of the most upstream cross section

- Beyond the most downstream cross section to the nearest hard point or for 150 meters (whatever comes first). A hard point could include both natural and human-made fixed points along the profile such as:
 - bedrock
 - drop structure
 - roadway crossing
 - other hard/fixed point