

10. QUALITY CONTROL PLAN
Philip Williams & Associates, Ltd.

Indefinite Delivery Order Contract for Hydrologic, Hydraulic and Coastal Engineering Services
U.S. Army Corps of Engineers, San Francisco District
Solicitation Number: DACW07-99-R-0005

1. COMMUNICATIONS

- 1.1 Following a request to undertake a specific task, Philip Williams & Associates, Ltd. (PWA) will provide the project manager for U.S. Army Corps of Engineers, San Francisco, (COE) with a scope of work and budget in writing. The project manager will review the work program schedule and deliverables, to ensure that the COE objectives are met.
- 1.2 Close communications between PWA and the COE are important throughout the progress of any task. The frequency of meetings will depend on the scope and duration of the particular task and will be agreed during the scoping phase of the task.
- 1.3 PWA will adopt the organization chart submitted in the original proposal.
- 1.4 With overlapping capabilities on the project team, PWA will make specific recommendations to the COE on the best available personnel to work on a project task.
- 1.5 Each work order will be assigned a consultant manager (PWA or subconsultant) and PWA principal as key contacts for the COE manager.
- 1.6 A Quality Control Plan (QCP) will be developed for each Work Order (WO). The QCP will be outlined in the scope of the WO, based on negotiations with the COE, to ensure that the appropriate effort is programmed.

2. WORK DELIVERABLES

The following four items are contained in an internal PWA document entitled "Guidelines for Project and Proposal Management: A Quality Control Manual":

2.1 Technical Calculations and Computer Programs

The project manager is responsible for checking all calculations and computer program results for the project, as well as for obtaining peer review (or formally conducting the peer review him/herself) The Principal-in-Charge (PIC) is responsible for providing a general overall review of the calculation results and implications. A number of procedures will assist in ensuring the accuracy of the result:

- a. Know the capability of the person conducting the analysis.
- b. Discuss the overall project scope and the purpose of the analysis, as well as how the particular analysis integrates with the overall analysis/scope of PWA work with the project team, before undertaking detailed calculations.
- c. Organize the calculations:
 - Make calculations neat and legible; use formal PWA calculation sheets.
 - List all design assumptions.
 - Reference sources for data and assumptions.
 - List all formulae and define symbols.
 - Group calculations for various portions of the project.
 - Number all pages in proper order.
 - Provide index for quick reference.

- File the computation sheet for future reference when complete (the project manager should file these in the project file in a logical sequence).

d. Pay particular attention to unusual or intricate analyses.

2.2 Drawings

Project drawings should be reviewed by the project manager and PIC following COE contract and in-house guidelines. The specific graphic requirements will be defined for each work order if different from these guidelines, through discussions with the COE project manager or delegate. Particular emphasis should be placed on design drawings, grading plans, etc. If a drawing will require stamping by a registered engineer or geologist, that person should be as actively involved in the project as the project manager, PIC, or a team member.

2.3 Subconsultant's Work

If PWA has a subconsultant on the project, PWA will first review the subconsultant's quality control plan and coordinate the quality control plan procedures. If the subconsultant does not have their own quality control plan they will be asked to adopt PWA's quality control plan. The project manager is responsible for reviewing their schedule and work, and integrating the latter into the project report. The project manager should also check and approve all subconsultant's invoices prior to submission to the client.

2.4 Project Report

The final work product (generally a report, report section, or letter report) should be reviewed by the project manager after typing. It will then be reviewed by the PIC prior to delivery to the client.

2.5 QCP and Documentation

A QCP will be submitted to the COE for approval and for COE Quality Assurance activities. At completion of the WO, QCP Documentation and Contractor Statement of Quality Control, or similar, will be submitted to the COE.

3. CLIENT AND PEER REVIEW

3.1 Draft copies of work products will be submitted to the COE project manager for review. PWA or the designated subconsultant will respond to one set of comments and provide one version of the final work product.

3.2 PWA and subconsultants on this project, Noble Consultants, Inc., River and Hydraulic Engineering, Ltd., Mobile Boundary Hydraulics, Inc., Danish Hydraulic Institute, Inc., Resource Management Associates, Inc., Dr. Peter Goodwin, Dr. Ray Krone and Dr. Paul Komar, will work closely as a team. If the task to be completed is complex and has sufficient funding, any work product undertaken by PWA will be reviewed by a designated senior staff member of one of the subconsultants, following the approval of the COE project manager. Similarly, work products undertaken by one of the subconsultants will be reviewed by PWA subject to approval by the COE project manager.

4. FIELD DATA COLLECTION PROCEDURES AND LABORATORY TESTING

Field data collection procedures and laboratory testing will be in accordance with standard methods and procedures.