

**STATEMENTS OF INTEREST
PACIFIC NORTHWEST CESU
NUMBER W912HZ-17-SOI-0015
PROJECT TO BE INITIATED IN 2017**

Project Title: CE-QUAL W2 Model Support for Columbia and Snake River System

Responses to this Request for Statements of Interest will be used to identify potential investigators for a project to be funded by the U.S. Army Corps of Engineers (USACE) Portland District. Approximately \$80,000 is expected to be available to support this project for one (1) year. Additional funding maybe available at a rate of \$80K/yr for up to 2 additional option years based on future R&D needs for a total of \$240K for the full project.

Background:

In accordance with the National Environmental Policy Act, the U.S. Army Corps of Engineers, Bureau of Reclamation, and the Bonneville Power Administration (Action Agencies) are preparing an Environmental Impact Statement (EIS) on the system operation and maintenance of fourteen Federal multiple purpose dams and related facilities located throughout the Columbia River basin. The Action Agencies will use this EIS process to assess and update their approach for long-term system operations and configuration through the analysis of alternatives and evaluation of potential effects to the human and natural environments, including effects to socio-economics and species listed under the Endangered Species Act (ESA). The Action Agencies will serve as joint lead agencies in developing the EIS.

The Columbia River System Operations (CRSO) EIS will evaluate and compare a range of alternatives, including a no-action alternative, defined as the current system operations and configuration. Other alternatives will be developed through public input and the Action Agencies' expertise. Alternatives will likely include changes to hydrosystem operation, project configuration changes, and the breaching of one or more lower Snake River dams. The EIS will also identify measures to avoid, minimize, and mitigate impacts associated with the system operations and configuration, where feasible. The level of analyses to compare trade-offs and potential mitigation measures requires a robust understanding of existing water quality and aquatic habitat conditions and the development and assessment of models and methods for predicting effects on resources, such as water/sediment quality, fish, and flood risk, hydropower, irrigation, and navigation from the proposed alternatives is necessary.

Most of the existing system water quality models were designed for real-time water management and are not suitable for large planning studies. It is anticipated that approximately 15 alternatives will be analyzed under a range of hydrologic

and meteorologic conditions for this EIS effort. Therefore, there is a need to upgrade existing water quality models and/or develop new models that run quickly, are robust, and that directly tie in to reservoir regulation (HEC-ResSim) and river hydraulic models (HEC-RAS).

One of the primary models that will be used for water quality assessments under the CRSO EIS project is CE-QUAL W2. This model will be used to capture the thermal stratification that occurs in the reservoirs each summer and identify potential operational changes for improved downstream water temperature management and total dissolved gas abatement. This model will also predict water quality impacts under dam breach scenarios.

Brief Description of Anticipated Work:

The Corps is seeking technical support for code updates and enhancements to the CE-QUAL W2 models as they are needed for model integration issues in the Columbia–Snake system. Some of these support tasks will include:

- Improve model documentation
- Work with ERDC’s version of CE-QUAL-W2 and integrate into one code base
- Assist with calibration of the Portland District’s existing Chief Joseph CE-QUAL-W2 model and incorporation into CRSO system model.
- Develop algorithms to improve the speed of model execution for a large system such as the Columbia Snake system model
- Develop algorithms for automating the model to reach targets for TDG and temperature
- Provide technical support and guidance for integration of CE-QUAL-W2 with HEC-RAS
- Provide support for bugs, work arounds, or training on different aspects of the CE-QUAL-W2 code to support the EIS water quality technical team

Public Benefit:

The socio-economic health of Columbia River communities and tribes depends on the viability and sustainability of anadromous fish species such as salmon, steelhead and lamprey. They are economically and culturally significant fish and the management actions analyzed under the CRSO EIS will directly impact the operation of the Columbia system and the protection of these fish species. A solid scientific approach and thorough understanding of the potential impacts resulting from EIS actions is critical. Water quality model upgrades will benefit EIS analysis, and in turn the public, by ensuring that results are accurate, and that Columbia River managers are making well informed decisions for the protection of salmonid species.

Objectives:

The objectives of the proposed effort include:

Objective 1: Participate on the CRSO EIS Water Quality Technical Team.

Objective 2: Provide technical support for the further development and improvement of Columbia and Snake River CE-QUAL W2 models.

Vendor Requirements:

Vendor must be a non-federal partner of the Pacific Northwest CESU Unit (PNW CESU) willing to accept the negotiated CESU indirect cost rate of 17.5%. Successful applicants should have expert knowledge and work experience in CE-QUAL W2 modeling, and preferably HEC-RAS modeling as well. The candidates should have prior experience working in the Columbia Basin and have a good understanding of CRSO federal dam operations.

Government Participation:

The Government will work in cooperation with the candidate on the CRSO EIS Water Quality Technical Team and collaborate on all aspects regarding upgrade to the Columbia and Snake CE-QUAL W2 models.

Materials Requested for Statement of Interest/Qualifications:

Please provide the following via e-mail attachment to:
Deberay.R.Carmichael@usace.army.mil Maximum length: 2 pages, single-spaced 12 pt. font).

1. Name, Organization and Contact Information
2. Brief Statement of Qualifications (including):
 - a. Biographical Sketch,
 - b. Relevant past projects and clients with brief descriptions of these projects,
 - c. Staff, faculty or students available to work on this project and their areas of expertise,
 - d. Any brief description of capabilities to successfully complete the project you may wish to add (e.g. equipment, laboratory facilities, greenhouse facilities, field facilities, etc.).

Note: A proposed budget is NOT requested at this time.

Review of Statements Received: Based on a review of the Statements of Interest received, an investigator or investigators will be invited to prepare a full study

proposal. Statements will be evaluated based on the investigator's specific experience and capabilities in areas related to the study requirements. Additionally, the evaluation method and selection criteria for research and development awards must be: (1) The Technical merits of the proposed research and development; and (2) Potential relationship of the proposed research and development to the Department of Defense missions.

Please send responses or direct questions to:

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Timeline for Review of Statements of Interest: Review of Statements of Interest will begin after the SOI has been posted on the CESU website for 10 working days.