DELAWARE CENTER FOR THE INLAND BAYS

REQUEST FOR PROPOSALS TO PROVIDE HYDRODYNAMIC MODELLING, INCLUDING SEA LEVEL RISE, IN THE INLAND BAYS, DELAWARE

Date of Advertisement: December 19, 2024

Deadline for Receipt of Proposals: January 30, 2025, 3:00 pm

The Delaware Center for Inland Bays ("Center") seeks qualified vendors to provide professional services for the development of a hydrodynamic model to aid in management of Delaware's Inland Bays watershed, estuaries, and habitats. This Request for Proposals (RFP) is issued pursuant to OMB circular A-122 and 40 Code of Federal Regulations (CFR), parts 30.40 through 30.48. All applicants must comply with 40 CFR part 33, participation by Disadvantaged Business Enterprises in the United States.

Project Description

For over 30 years, nutrient pollution, long residence times, and shallow depths have plagued efforts to improve water quality in the Inland Bays. A recent numerical model predicted the slowing of the increasing trend of the inlet tidal prism between 2004-2009 (Shi, 2022: https://inlandbays.org/wp-content/uploads/2022/04/shi_tidal_prism-STAC-Meeting-04.13.2022.pdf); a critical control on the hydrodynamics of the Indian River and Rehoboth Bay estuaries. If true, one of the strongest local controls of the hydrodynamics may be approaching an equilibrium condition not shown in prior models. However, construction in the inlet, begun summer 2024, may have additional effects not accounted for in earlier models. Recent analysis of water quality data shows little to no measured improvement, with several metrics trending toward degrading conditions (https://inlandbays.org/about-the-bays/2021-state-of-the-bays-report/). Watershed development and a changing climate continue to affect the hydrodynamics as storm frequency (wind), sea level, and sediment and stormwater inputs vary.

Like most coastal areas, there are several unknowns that will impact the bays' sustainability: What effect does change in the hydrodynamics have on the shoreline communities and salt marshes? What is the fate of particles transported into the bays through the inlet (e.g. oyster spat and/or microplastics are thought to be primarily from outside the Inland Bays)? What are the spatial patterns and timing of low dissolved oxygen (DO) events in the tributaries? Where might nature-based restoration approaches result in resilience and water quality recovery given the existing conditions and likely predicted future scenarios? This model will provide the foundation to answer these questions, and should be compatible with additional resources to allow for these, and other questions, to be addressed in the future.

The Center and the Center's Scientific and Advisory Committee (STAC) is initiating a project to develop an updated hydrodynamic model that is calibrated and validated with field data as the first step of a multiple-phase project to understand water quality and nutrient dynamics within the Inland Bays. The scope of this project is from the inlet to head of tide in the Indian River and Rehoboth Bay estuaries.

The Center's Scientific Technical and Advisory Committee (STAC) is accepting proposals to complete the following scope of work:

Task 1: Draft and finalize all project-specific Quality Assurance Project Plans (QAPP). The Center will provide a template, background materials, etc.; the QAPP will not be a 'from scratch' document. Propose and finalize an acceptable timeline, milestone deliverables, and schedule of progress meetings with the STAC and Center's team.

- All EPA projects that collect data shall have an approved QAPP before project implementation.
- This task should not reflect greater than 5% of the effort of the whole project.

Task 2: Place this modeling effort in context for the lay audience. Identify issues related to hydrodynamics, hydrology, water quality, and sedimentation in the Inland Bays. Products of this item will be used to generate Center web pages and fact sheets.

Task 3: Compile information on available data sources and existing hydrodynamic models for the Inland Bays. Appropriate data may be available from local, state, and national sources.

Task 4: Identify data gaps and/or additional data collection for the Center or partners to collect (e.g. additional gage data, tide height or velocity, wind, bathymetry). This may include efforts that are not included in this scope of work. The Center and partners can work to collect this data to use in future model updates after the duration of this contract (see Task 8).

Task 5: Prepare an Inland Bays hydrodynamic model with existing resources that can be used as a basis for future water quality, particle modeling, sediment analysis, etc. models.

The proposal may include the collection of data specifically for use in calibration, but should not be dependent on this data to function; data needs should be included in Task 4 and/or Task 6

- At a minimum, the model products should address wind wave energy, current velocity, dissolved oxygen, temperature, salinity, and sediment concentration, density, and transport.
- The computation mesh of the model is not expected to have a uniform granularity throughout the Bays, for example the tributaries may need a finer scale than the open water segments.
- At a minimum, the model products should identify locations where there is an elevated risk of erosion due to currents and sea level rise to support management questions about salt marsh and living shoreline conditions.

The model must be compatible with the needs of future phases of Inland Bays modeling and management, to include water quality, particle tracking, sediment transport, and deposition.

The model must also be placed into a scientific contact and:

- Maintain comparability: Clearly identify the sources of geomorphology, sea level rise and climate change estimates, and flood risk assessment information used in the model.

- Maintain transferability: Clearly identify how the model code/language/program is transferable so that this model can be compared with other estuaries of a similar size, scale, and hydrodynamic characteristics.
- Precision and Accuracy: Identify the process and plan to ensure the model is properly verified and calibrated.
- Bias: Elements of bias should be avoided, minimized and/or clearly identified.

Task 6: Develop a robust concept model for how an integrated hydrodynamic model will interact with existing or purpose-built Water Quality models, existing and future regional resources (such as the Delaware Targeting and Planning Tool). The effort should not be limited by previous approaches in restoration planning. Identify missing data sets and recommend a strategy including equipment needs, field deployment of equipment and a data collection plan to gather the information necessary to serve as the basis of future grant applications.

- The model should be a holistic understanding of how an updated hydrodynamic model will integrate into a watershed-wide management approach resulting in improvements to water quality, coastal resilience, and target species in Delaware.
- Additional data collection that may occur during this project which may include bathymetric survey of the Indian River Inlet for tidal prism calculation.
- The recommendation for additional data collection or modeling needs extending beyond the initial model development may include a maintenance and improvement plan for up to three years after model completion.

Task 7: Prepare a well-designed and executed web-based user interface to be hosted on the Center website to inform Inland Bay residents, land managers, and decision-makers of multiple static modeling scenarios for any location in the Inland Bays.

- The interface will provide tools to view output from five sea level rise scenarios. At least, one historic storm event should be included in scenarios to demonstrate possible outcomes of future events.
- As possible, provide examples of the effect of multiple approaches to environmental restoration based on published plans and prioritizations including, but not limited to, the Center's Rapid Assessment Project Plan (RAPP), the Center's Habitat Plan.
- This model will integrate with Center priorities and outreach needs such as sustainability and resilience with expected climate change, habitat support for living resources and water quality.

Task 8: Prepare a plan for future model needs; how will it be updated, how new information will be added, where it resides, and how accessibility will be maintained. Include a data management plan. At a minimum, the plan should identify the entity(ies) that will hold the model code, input data, mesh geometry, and output data. The plan should also identify the time period that these items will be held and how they will be accessed.

Additional Optional Tasks. Provide Proposal(s) and a separate budget to complete:

Salt Marsh Expansion Suitability Model

Salt marsh acreage loss is compounded by sea level rise and erosion from physical disturbances such as waves and storm surge and lack of available migration areas. Use the hydrodynamic model to prioritize where it is possible to expand salt marshes, protect marshes in place, or support migration.

Eastern Oyster Habitat Suitability Model

Eastern oyster reefs are prioritized ecosystems for protection, enhancement, and restoration due to the desirable ecosystem services. However, the inland bays have very little of this community type. There is interest in understanding where the highest opportunity areas for restoration.

A complete proposal should address:

1) Statements supporting the project team's ability to comply with EPA requirements.

2) DEIJA, commitment to a living wage and the team's commitment to inclusion and equity.

3) Clearly identify if this is a new model or an update of an existing model.

4) Identify where the model data resides, data management plan, and duration.

5) Identify how access to the model will be maintained.

6) The proposal should provide an evaluation of the hydrodynamic modeling approaches the project team is familiar with and what is being recommended for the Inland Bays effort. 3-D models will be evaluated more favorably. Provide a decision tree for your team's preferred approach.

7) Provide evidence of your familiarity with prior modeling efforts in the Inland Bays, as well as relevant Delaware Bay, ADCIRC (USACE) models and/or FEMA models.

8) Provide evidence of your familiarity with and ability to obtain the Center and Center partner's data sources including water quality monitoring data, DEM, land use change, and the 2021 tidal prism study.

9) Provide links to at least three user interfaces (and login information if needed) to evaluate approaches that the project team has participated in, designed and/or would recommend for this project. If the team has had a role in the interface, specify the role(s).

Submittal & Selection Process

Interested firms shall submit their two-part electronic proposals (submit costs separately to the scope of work), to be received on or before 3:00 p.m. on ***January 30, 2025,*** to:

Meghan Noe Fellows
Director of Estuary Science & Restoration
Delaware Center for the Inland Bays
39375 Inlet Road
Rehoboth Beach, De 19971
mnoefellows@inlandbays.org

The proposals must be submitted in digital (i.e., PDF) format. Applicant bears the risk of timely delivery. Any proposals received after the stated time will not be opened and not considered for review.

Responses shall include the information requested on the evaluation sheet.

For specific information regarding selection process evaluation criteria, refer to the *"Center Evaluation Form"* at the end of this RFP. The submitted proposals shall be concise, not to exceed 24 pages, 8.5" x 11", printable on one side (or 12 pages double sided). The minimum font size shall be 12 point font. The 24-page limit does not include the cover page. Facsimile submittals will not be accepted.

Prospective vendors must be registered in the federal government's Central Contractor Registration (CCR) system prior to the award of a contract or service agreement. Registration can be accomplished by visiting https://www.bpn.gov/ccr/grantees.aspx

Each response will be ranked by the selection committee, based on the evaluation criteria (refer to *"Center Evaluation Form"*). The list of qualified candidates will then be narrowed to the highest-ranking firms based on the scoring results. The top-ranked firms may be interviewed individually, if deemed necessary, after which a final ranking will be made based on the interviews. Selected teams will be given notice of times and dates for scheduled interviews. Negotiations will begin with the team having the highest final ranking and will proceed until a selection or selections are made. All respondents will receive notice of contract award.

Respondents are reminded that it shall be the responsibility of the prospective vendor to be current with any professional registration or certification as required by Delaware law.

Respondents are reminded that the Center, receiving funding in part from the EPA, supports the six good faith efforts (https://19january2017snapshot.epa.gov/sites/production/files/2013-09/documents/six_good_faith_efforts.pdf), and teams that demonstrate a commitment to ensuring sub awardees are also chosen following these guidelines will be reviewed more favorably.

Good faith efforts ensure that DBEs are made aware of contracting opportunities, and all teams consider DBEs in identifying potential sub awardees.

Contract Agreement Form

The awardee will be required to enter into a Professional Services Contract with the Delaware Center for the Inland Bays (standard Professional Services Contract available upon request).

Scope of Services

See Tasks 1 through 7 above. The following services may be required of the selected team:

- Conceptual model
- Compliance documents, such as a Quality Assurance Project Plan (QAPP)
- Hydrodynamic Modeling
- Public education, outreach, and coordination with other regional NGOs, specifically in regard to the final model accessibility

Licenses & Insurance

The team(s) awarded the contract will be required to submit copies of the following (if applicable):

- Applicable Professional Licenses (State of Delaware)
- Delaware Certificate of Authorization
- Current Certificate of Insurance
- Current Delaware Business License or equivalent certifications for non-business partners

THE DELAWARE CENTER FOR THE INLAND BAYS
HYDRODYNAMIC MODELLING AND SEA LEVEL RISE IN THE INLAND BAYS, DELAWARE
EVALUATION FORM

PROPOSAL:_____

RATER:_____

EVALUATION CRITERIA

1. Experience and Reputation ***(0-10 points)***

History of team, general background, experience, and reputation. 0-10 points _____

2. Expertise for This Type of Project *(0-20 points)*

Overall technical expertise in providing hydrodynamic modeling services. Applicants should include at least three references. 0-5 points _____

Project team employees' specific experience. 0-5 points _____

Project team's expertise in working with multiple partners, including public, academic, governmental and NGO. 0-5 points _____

Project organization, staffing and use of subcontractors, including DBEs. 0-5 points _____

3. Examples of previously completed projects *(0-25 points)*

Feasibility and planning. data management plan, compliance with grant parameters

0-6 points _____

Working hydrodynamic model resulting in project deliverables (e.g. peer reviewed publication, improved engineering design. 0-5 points _____

Effective interactive public-facing interpretation of complex scientific/engineering/technical data.

0-10 points _____

Delaware water quality and/or hydrodynamic projects completed. 0-2 points _____

Federal and other projects successfully completed. 0-2 points _____

4. Capacity to Meet Requirements of the Contract *(0-15 points)*

Applicants should demonstrate sufficient capacity for completing the project including access to all equipment, tools, or computers to complete this work. 0-5 points_____

Ability to complete projects on time and within budget. 0-5 points _____

Appropriate professional registration, certifications, or compliance. 0-5 points _____

5. Demonstrated Ability *(0-50 points)*

Demonstrated experience developing hydrodynamic models for coastal bay systems.

0-5 points _____

Demonstrated understanding of different model approaches and which past models will be advanced with this effort. 0-10 points _____

Concept for how this model will interact with water quality questions. 0-10 points _____

Knowledge and types of additional data that may be collected. 0-5 points _____

A satisfactory data management plan. 0-10 points _____

Demonstrated ability to construct of a well-designed and executed user interface

0-10 points_____

7. Billing Rates and Personnel (*0-30 points*)

Overall cost-effectiveness for scope and type of project 0-10 points_____

Team's billing rates are reasonable to the services that are conducted. Yes/No

For academic institutions, the set overhead rate cannot exceed 38%

Primary personnel expected to participate in contracts are diverse in knowledge and experience.

0-10 points _____

Team has demonstrated financial stability (net worth) and the most recent audited financial statement.

0-10 points _____

8. Interviews (0-50 points)

Clear and concise presentation. 0-10 points _____

Demonstrated technical expertise 0-10 points_____

Demonstrated willingness to work with staff to fine-tune deliverables. 0-20 points _____

Ability to translate technical information for public outreach. 0-10 points _____

9. <u>Questions of Interest</u>

Contractors should address the following questions:

a. Are there any civil judgments and/or criminal history among the proposing contractor's or subcontractor's principals? _____

b. Has firm ever been debarred or suspended by any governmental agency? _____

c. Has firm ever had any revocation or suspension of a license? _____

d. Has firm ever been engaged in any bankruptcy filings or proceedings? _____

e. Is firm a minority or certified woman-owned business? _____

f. Is this firm a veteran-owned business? _____

TOTAL SCORE (MAXIMUM POSSIBLE 200): _____