CHESAPEAKE BAY TRUST

REQUEST FOR PROPOSALS

CONSULTANT SERVICES
TECHNICAL ASSISTANCE TO SUPPORT CHESAPEAKE BAY PROGRAM GOALS AND OUTCOMES

Habitat, Water Quality, Governance, Engagement, and Scientific Reporting

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SECTION I - INTRODUCTION

1.1 Purpose.

The purpose of this Request for Proposals (RFP) is to invite entities experienced in various aspects of stream health, watershed science and policy, outreach and training, shallow water habitat, and data review and development to submit proposals to the Chesapeake Bay Trust (the Trust). The Trust has been designated to receive federal funds from the U.S. Environmental Protection Agency (EPA) as part of the Chesapeake Bay Program (CBP) Goal Implementation Team (GIT) Funding Program. The work to be supported will advance specific outcomes from the 2014 Chesapeake Bay Watershed Agreement (and Amendment, dated 2022) that have been identified as top priorities to address.

This RFP includes seven "projects" that have been separated into seven individual Scopes of Work (Scopes #1 through #7). Offerors can bid on one or more of the individual scopes of work, with each scope of work addressed in a separate proposal. The seven individual scopes of work are listed below, and scope details and qualifications of Offerors are described in more detail in Appendix A. A maximum bid amount is listed for each project scope. Cost will be a factor in the evaluation of bids as described in Section IV.

The Trust has been designated to receive federal funds from the United States EPA as part of the GIT Funding Program to advance specific outcomes from the 2014 Chesapeake Bay Watershed Agreement. Awards under this RFP will be issued as "contracts." The Trust will establish and manage the contracts in compliance with Title 2 Code of Federal Regulations (CFR) 200 and the terms of the federal funding by the United States EPA, Catalog of Federal Domestic Assistance (CFDA) # 66.466, through the Cooperative Agreement (Federal Award Identification Number) CB-96374201-4, dated 8/27/2024.

The source of the GIT Funding Program is federal funding. Therefore, awarded projects must adhere to federal requirements regarding contracting, including contracts with consultants and the purchase of supplies and equipment. For example, contractors shall obtain multiple estimates or put the work out for competitive bid (e.g., in a RFP) for subcontracted services over $10,000 and use good-faith efforts to engage Disadvantaged Business Enterprises (DBEs), including Minority Business Enterprises (MBEs), Women Business Enterprises (WBEs), and Small Business Enterprises (SBEs).

Each GIT has designated Work Groups and Action Teams that are responsible for coordinating CBP activities under the Chesapeake Bay Watershed Agreement. This includes the development of management strategies for reaching programmatic goals and *Outcomes*. The management strategies require data collection and analysis, metrics development, measurement, economic analysis, meeting facilitation, and other types of work. The work funded under the GIT Funding Program therefore, supports the seven watershed jurisdictions and other non-federal partners. The seven watershed jurisdictions include Delaware, the District of Columbia, Maryland, New York, Pennsylvania, Virginia, and West Virginia.

There are six GITs as well as the Scientific, Technical Assessment and Reporting (STAR) Team and the Strategic Engagement Team (SET):

- Sustainable Fisheries Goal Implementation Team (GIT 1)
- Habitat Goal Implementation Team (GIT 2)
- Water Quality Goal Implementation Team (GIT 3)
- Maintain Healthy Watersheds Goal Implementation Team (GIT 4)
- Fostering Chesapeake Stewardship Goal Implementation Team (GIT 5)
- Enhance Partnering, Leadership and Management Goal Implementation Team (GIT 6)
- Scientific, Technical Assessment and Reporting (STAR) Team
- Strategic Engagement Team (SET)

Both SET and STAR work with the GITs and workgroups to provide them with guidance and assistance in advancing their outcomes. STAR works with science needs, while SET works with people-oriented needs, such as diversity, stewardship, communications and local engagement. In addition, the Chesapeake Bay Program has Communications, Geographic Information Systems (GIS) and Web teams to assist GITs and workgroups with their outcome progress.

1.2 Scopes of Work and Goal Implementation Teams (GITs).

A list of the Scopes of Work is provided below with details for each scope of work, including the maximum bid and minimum qualifications provided in Appendix A; an overview of each GIT with Scopes included in this RFP follows the table below:

Scope of Work	FFY24 Scope Title	Maximum Bid Amount
Scope #1:	Data Review and Development of Multi-Metric Stream Health Indicators (Phase 3B: Physiochemical Metric Analysis)	$75,000
Scope #2:	Development of a Chesapeake Bay Shallow Water Habitat Sentinel Site Program	$85,000
Scope #3:	Increasing Effectiveness of Landowner Engagement to Accelerate Wetland Restoration Across the Chesapeake Bay Watershed	$95,000
Scope #4:	Beyond Bean Counting: Assessment of Best Management Practices (BMP) Tracking and Accounting Procedures for More Holistic Restoration Goals	$100,000
Scope #5:	Local Government Technical Assistance Inventory and Gap Analysis	$45,000
Scope #6:	Training and Technical Assistance on Network Science	$90,000
Scope #7:	Hypoxia Collaborative: Sampling Strategy and Design for Chesapeake Bay Habitat Assessment	$100,000

GIT 2 – Habitat – Scopes # 1, 2, and 3

The goal of the Habitat GIT is to restore, enhance and protect the network of land and water habitat to support fish and wildlife and to afford other public benefits, including water quality, recreational uses, and scenic value across the watershed. To learn more about the Habitat GIT visit their website at https://www.chesapeakebay.net/who/group/habitat-goal-implementation-team.

GIT 3 – Water Quality – Scope # 4

The goal of the Water Quality GIT is to evaluate, focus, and accelerate the implementation of practices, policies, and programs that will restore water quality in the Chesapeake Bay and its tributaries to conditions that support living resources and protect human health. To learn more about the Water Quality GIT visit their website at https://www.chesapeakebay.net/who/group/water-quality-goal-implementation-team.

GIT 6 – Enhance Partnering, Leadership, and Management – Scope # 5

The goal of the Enhance Partnering, Leadership, and Management GIT is to improve the leadership and management of the Chesapeake Bay Program and assist watershed partners and stakeholders in building their capacity to become environmental leaders in their community. To learn more about the Enhance Partnering, Leadership, and Management GIT visit their website at https://www.chesapeakebay.net/who/group/enhancing-partnering-leadership-and-management-goal-implementation-team. Within GIT 6, the Local Leadership outcome, outlined in the Chesapeake Bay Watershed Agreement, is to "continually increase the knowledge and capacity of local officials on

issues related to water resources and in the implementation of economic and policy incentives that will support local conservation actions." To learn more about Local Leadership visit their website at https://www.chesapeakebay.net/who/group/local-leadership-workgroup.

Strategic Engagement Team (SET) – Scope # 6

The goal of the SET is to provide strategic planning and expert advice to the Bay Program Communications Office with focus on people-oriented actions, such as local engagement, communications, social science, stewardship, diversity, and education. To learn more about the SET visit their website at https://www.chesapeakebay.net/who/group/strategic-engagement-team.

Scientific, Technical Assessment, and Reporting (STAR) – Scope # 7

The goal of STAR is to coordinate the monitoring, modeling and analysis needed to explain and communicate the health of and changes in the Chesapeake Bay ecosystem. To learn more about STAR visit their website at https://www.chesapeakebay.net/who/group/scientific-and-technical-analysis-and-reporting.

SECTION II – BUDGET AND ADDITIONAL SERVICES

2.1 **Amount Available.** It is anticipated that as a result of this procurement action, one contract will be awarded for each Scope and that varies in maximum bid amount. Each successful bidder for each Scope may be engaged in one additional phase of work through this procurement action. Awards will be managed as firm-fixed-price contracts

2.2 **Additional Services.** The Contract Officer may request ancillary or additional services within the capacity of the Contractor as may be useful or necessary in the interests of the Trust and the Project for the above Scopes.

2.3 **Add/Deduct.** The Trust reserves the right to add or remove items from the base bid proposal during the contract and modify or adjust Scope of Work and payment as needed.

SECTION III – SUBMISSION INFORMATION

3.1 **Principal Solicitation Officer and Issuing Office.**

Contract Officer:	Kayleigh Katzenberger
Telephone Number:	410-974-2941, ext. 127
E-Mail	kkatzenberger@cbtrust.org
Address:	Chesapeake Bay Trust 108 Severn Avenue Annapolis, MD 21403

The sole point of contact for the purpose of this RFP is the Contract Officer.

3.2 **Prospective Offerors.** An "Offeror" is a person or entity that submits a proposal in response to this RFP.

3.3 **Cancellation; Discretion of Contract Officer.** This RFP may be canceled in whole or in part and any proposal may be rejected in whole or in part at the discretion of the Contract Officer. In addition, the Contract Officer has the right to negotiate separately with any Offeror in any manner which will best serve the interests of the Trust. The Contract Officer may waive any mandatory condition or minimum qualification if the Contract Officer determines that such action is in the best interest of the Trust.

3.4 **Submission Instructions/Proposal Closing Date.** Offerors must submit proposals using our Online Application System, located at: https://us.grantrequest.com/Login.aspx?sid=1520 no later than 4:00 p.m. EST on Monday, November 4, 2024 (the "Closing Date"). Requests for extensions will not be granted, late applications will not be accepted, and the online funding opportunity will close promptly at 4:00 p.m. EST. **Offerors are strongly encouraged to submit at least a few days prior to the deadline** given potential for high website traffic on the due date. The Trust cannot guarantee availability of Online Application System technical assistance on the deadline date. If email confirmation of submission is not received within two business days, please contact the Principal Solicitation Officer listed in Section 3.1.

Proposals are irrevocable for 90 days following the Closing Date.

3.5 **Professional Liability Insurance.** The Offeror shall agree to maintain in full force and effect during the term of the Contract usual and customary amounts of liability insurance coverage in connection with the performance or failure to perform services under the Contract.

3.6 **Eligible Organizations.** No entity may enter into a Contract with the Chesapeake Bay Trust under this funding opportunity unless the entity has provided its Unique Entity ID (UEI) number to the Trust. The federal government has transitioned from a DUNS (Dun & Bradstreet) number to a UEI.

3.7 **Subcontracting Opportunities and Procurement.** This solicitation will result in one "contract" per Scope of Work. The Offeror should specify the intent to procure subcontracting services and demonstrate compliance with federal procurement guidelines for all subcontracting services greater than $10,000 and less than $250,000, including:

a. Obtain three estimates for subcontracted work or
b. Obtain subcontracted services through a competitive bid process.

For all subcontracted work, the Offeror shall be able to demonstrate that Good Faith Efforts were used to engage minority/disadvantaged/women/small business enterprises (MBE/DBE/WBE/SBE) by reaching out to MBE/DBE/WBE/SBE firms to obtain estimates or bids. The following websites may be helpful in identifying MBE/DBE/WBE/SBE firms in states/districts within the Chesapeake Bay Watershed:

DC	https://dslbd.secure.force.com/public/
DE	https://deldotcivilrights.dbesystem.com/FrontEnd/searchcertifieddirectory.asp
MD	https://marylandmdbe.mdbecert.com/
NY	https://ny.newnycontracts.com/frontend/searchcertifieddirectory.asp?
PA	http://www.dgs.internet.state.pa.us/suppliersearch

VA	https://www.sbsd.virginia.gov/directory/
WV	http://apps.sos.wv.gov/business/corporations/searchadvanced.aspx

All subcontractors must be verified by checking at https://sam.gov/content/home to ensure that they have not been suspended, debarred, excluded, or disqualified to do work with federal government resources.

SECTION IV - EVALUATION PROCEDURE

4.1 **Qualifying Proposals**. The Contract Officer will review each proposal for compliance with the minimum qualifications set forth in Appendix A.

4.2 **Deviations and Negotiation**. The Contract Officer shall have the sole right to determine whether any deviation from the requirements of this RFP is substantial in nature, and the Contract Officer may reject non-conforming proposals. In addition, the Contract Officer may waive minor irregularities in proposals, allow an Offeror to correct minor irregularities, and negotiate with responsible Offerors in any manner deemed necessary or desirable to serve the best interests of the Project.

4.3 **Evaluation.** Proposals shall be evaluated by a review committee composed of technical experts and facilitated by the Contract Officer. Evaluation will be made on the basis of the evaluation criteria discussed below and may include any oral presentation that may be required by the Contract Officer, through a recommendation by the technical review committee, at his or her discretion. The Contract Officer reserves the right to recommend an Offeror for contract award based upon the Offeror's proposal without oral presentations or further discussion. However, the Contract Officer may engage in further discussion if he or she determines that it might be beneficial. In such case, the Contract Officer will notify those responsible Offerors with whom further discussion is desired. In addition, the Contract Officer may permit qualified Offerors to revise their proposals by submitting "best and final" offers.

4.4 **Evaluation Considerations**. Proposals and any oral presentation by Offerors who meet the minimum qualifications set forth in Appendix A and will be evaluated by the technical review committee on the basis of the following factors:

a. Proposed Approach. Evaluation of the work to be performed to accomplish the goals outlined in the Scopes of Work in Appendix A.
b. Proposed Team (Specific Individual(s) Responsible for Performance of Contract). Evaluation of the qualifications, reputation, and compatibility with needs of the Trust and the Project of the individual or individuals who will perform the Contract.
c. Experience of Offeror. Evaluation of the quality and quantity of the Offeror's (and subcontractor's) experience and expertise in the areas proposed, supported by references.
d. Capacity. Evaluation of the Offeror's ability and commitment to meet timeline for the Project.

e. Cost Effectiveness/Budget. Hourly rate, number of hours to be devoted to the project, and indirect rate. Budget line items and associated costs per line item must: a) support the Scope of Work and b) be appropriate and cost-effective. Ensure compliance with federal procurement guidelines (Federal funds will support this work), including Title 2 CFR 200. Cash and in-kind match are not required but leveraging funds to make a project more robust is encouraged.

SECTION V: OTHER INFORMATION

5.1 **Disclosure**. Proposals submitted in response to this RFP may be provided to government agencies and be subject to disclosure pursuant to the provisions of the Access to Public Records Act of the State Government Article of the Annotated Code of Maryland (the "Public Information Act") or equivalent for your area. Offerors must specifically identify those portions of their proposals, if any, which they deem to contain confidential or proprietary information and must provide justification why such materials should not, upon request, be disclosed by the State under the Public Information Act.

5.2 **Quality Assurance Project Plan.** Several of the Scopes of work listed in Appendix A will require a Quality Assurance Project Plan (QAPP). General guidance on QAPP's can be found on the EPA QAPP website: https://www.epa.gov/osa/elements-quality-assurance-project-plan-qapp-collecting-identifying-and-evaluating-existing. If data originates from sources other than federal reports and peer reviewed journals, a statement on data quality suitability will be required in the final report. When submitting a proposal for a Scope of Work that requires a QAPP, the Offeror should understand and account for any costs associated with completing this component of the work.

5.3 **Expenses**. The Trust and the Contract Officer are not responsible for any direct or indirect expenses which an Offeror may incur in preparing and submitting a proposal, participating in the evaluation process, or in consequence of this solicitation process for any reason.

5.4 **Acceptance of Terms and Conditions**. By submitting a proposal in response to this RFP, (A) the Offeror accepts all of the terms and conditions set forth in this RFP; (B) the Offeror, if selected for award, agrees that it will comply with all federal, State, and local laws applicable to its activities and obligations under the Contract; (C) the Offeror shall be deemed to represent that it is not in arrears in the payment of any obligation due and owing the United States Government or the State or any department or unit thereof, including, without limitation, the payment of taxes and employee benefits, and, if selected for award, that it shall not become so in arrears during the term of the Contract; and (D) the Offeror, acknowledges that they are compliant with federal employment and non-discrimination laws and have not been debarred, convicted, charged or had civil judgment rendered against them for fraud or related offense by any government agency (federal, State, or local) or been terminated for cause or default by any government agency (federal, State, or local).

5.5 **Minority Business Enterprise (MBE) Program, the Disadvantaged Business Enterprise (DBE) Program, Women Business Enterprise (WBE), and Small Business Enterprise (SBE) Program Participation**. This RFP encourages the participation of DBE/MBE firms (members of a group as defined in the State Finance and Procurement Article of the Annotated Code of Maryland (the "Procurement Article"), Section 14-301(f)(i)(ii)). The

Trust encourages DBE/MBE firms who meet the minimum qualifications in Appendix A to respond to this RFP.

5.6 **Parties to the Contract**. The contract to be entered into as a result of this RFP (the "Contract") shall be between the successful Offeror (the "Contractor") and the Trust.

5.7 **Contract Documents**. The Contract shall include the following documents: this RFP, the Contractor's Proposal (to the extent not inconsistent with the RFP or the Contract), and the Contract. In the event of an inconsistency, the Contract shall have priority over the other documents and specific conditions of the Contract shall have priority over General Conditions.

5.8 **Contract Term**. The Contract term shall commence as of a date to be specified in the Contract and, unless sooner terminated in accordance with the Contract, shall end when all work authorized under the Contract has been successfully completed, unless the Contract is renewed or extended at the sole option of the Contract Officer.

5.9 **Billing Procedures and Compensation.**

a. Method: The Contracts to be entered into as a result of this RFP will not exceed the small procurement threshold fixed at 41 U.S.C. 403 (11) (currently $250,000). The Contractor(s) must comply with billing procedures as may be required by the Contract Officer and US EPA. These may entail monthly reporting of time and eligible expenses or may be based upon satisfactory completion of benchmark tasks.
b. Records: The Contractor(s) shall submit invoices in a form acceptable to the Contract Officer and maintain records relating to the costs and expenses incurred by the Contractor(s) in the performance of the Contracts for a period of three years from the date of final Project payment under the Contracts.

5.10 **Certification.** The Offeror shall certify that, to the best of its knowledge, the price information submitted is accurate, complete, and correct as of the Closing Date, and if negotiations are conducted as of the date of "best and final offer."

5.11 **Branding.** All products (outreach materials, events) will be branded with United States EPA, Chesapeake Bay Program, and Chesapeake Bay Trust logos.

SECTION VI - PROPOSAL FORMAT AND SUBMISSION INFORMATION

6.1 **Proposal Format.** A project narrative and a project budget are required, as described below.

a. Project Narrative. You will be asked to submit a project narrative. Answer the project narrative questions below and upload the MS Word or PDF file. The project narrative should not exceed five (5) pages of text. You may add photos/graphs, resumes, Letter(s) of Commitment, and other materials to support your project proposal in addition to the project narrative questions and submitted as one file (i.e., combine the project narrative answers with additional materials excluding the budget for submission). There is a file

attachment size limit of 1 gig for the entire application. Each proposal (i.e., a submission in response to each Scope of Work) must include responses to items one (1) through seven (7) in a concise description. Organize your Project Narrative as follows:

1. Scope Number and Title. List the Scope number and title of your application.

2. Requesting Organization and Individuals Providing the Services.
    i. Describe your organization and experience.
    ii. Provide the names of individuals providing the services and number of years of experience in such areas.

3. Proposed Approach. Your proposal for how to accomplish the goals and outcomes/deliverables for the Scope(s) of Work (Appendix A).

4. Deliverables. Provide a deliverables schedule using the table format below, including details for each deliverable format (e.g., excel spreadsheet). A template is provided for the first two deliverables. Add rows for additional deliverables and include total cost in the last row. **Awards will be managed as firm-fixed-price contracts.**

Table X. Project deliverables and timeline.			
Report # and Reporting Period	**Project Deliverables**	**Date of Delivery**	**Amount**
Report #1: MM/DD/20YY to MM/DD/20YY	The deliverables include: • (add name of deliverables here, along with format of each deliverable)	MM/DD/20YY	$
Report #2: MM/DD/20YY to MM/DD/20YY	The deliverables include: • (add name of deliverables here, along with format of each deliverable)	MM/DD/20YY	$

5. Will a subcontractor be used in this Project: Yes or No? If Yes, describe the subcontracting process. If a subcontractor is proposed for services over $10,000, describe how you will or have met the criteria for subcontractual work as described in items "5i" or "5ii" below (whichever is appropriate for your project, and is consistent with Section 3.7 above):
    i. If the subcontractor has already been identified by attaining at least three estimates or through a competitive bid process and using good faith efforts to reach MBE/WBE/DBE firms, describe the process and results, e.g., describe the bid process used to obtain bids, including length of time the bid was open for responses, a description of the selection process/criteria used to select the winning bidder (e.g., low bidder, qualifications, criteria, etc.), and reason(s) for selection of the winning subcontractor (lowest qualified bid, etc.).
    ii. If the subcontractor has not already been identified describe the process you will take to secure the subcontractor, e.g., describe the bid process to be used to obtain bids, including length of time the bid was open for responses, a description of the selection process/criteria used to select the winning bidder (e.g., low bidder, qualifications, criteria, etc.), and reason(s) for selection of the winning subcontractor (lowest qualified bid, etc.).

6. Qualifications. Respond to the qualifications section in the Scope of Work. Resumes of key personnel should be included in the application package but will not be considered in the Project Narrative's five-page limit.

7. References. Names, phone numbers, and email addresses of three references.

8. Additional information. Any other information which the Offeror considers relevant to a fair evaluation of its experience and capabilities.

b. Project Budget. You will be asked to upload your budget using the "Application Budget" worksheet of the Chesapeake Bay Trust's Financial Management Spreadsheet (FMS), an excel file template. The template can be downloaded from https://cbtrust.org/grants/applicant-resources-forms-policies/ where you can also watch a video with instructions on how to complete the FMS. The budget is a spreadsheet that is uploaded separately into the online application. For your budget request:

1. The resources requested in your budget should be able to accomplish the body of work described in your proposal; be as detailed as possible.

2. The Offeror shall submit a budget including total number of hours and hourly rate of compensation for the services to be performed during the term of the contract broken down by direct rate, benefit rate, indirect rate, profit, and direct expenses; any additional costs required to complete the project; and total compensation. Under this program, food and beverage costs will not be supported.

3. **If your proposed indirect rate is higher than 10% of the direct costs, please provide the Negotiated Indirect Cost Rate Agreement (NICRA) documentation in your proposal**.

4. Matching/leveraged resources are encouraged but not required. Indicate whether each match entry is applied for, pledged, or in-hand. Indicate in the narrative whether your organization has requested financial support from any other sources for the project not listed as match in the budget submitted.

5. Use the "Additional Budget Justification" section in the online application to justify and explain costs. Budgets that are detailed, justified, and itemized are ideal.

6. The proposed rates of compensation will be irrevocable for a period of 90 days from the Closing Date, or if modified during negotiations, for a period of 90 days from the date such modified rates are proposed by the Offeror.

FFY24 GOAL IMPLEMENTATION TEAM (GIT) PROJECTS

APPENDIX A: SCOPES OF WORK

The following Scopes of Work are organized by Goal Implementation Team (GIT):

Scope #1 - Data Review and Development of Multi-Metric Stream Health Indicators (Phase 3B: Physicochemical Metric Analysis)

Maximum Bid Amount of Scope #1: $75,000

Timeline of Scope #1: 12 months

Purpose and Outcome of Scope #1: The Data Review and Development of Multi-Metric Stream Health Indicators is part two (B) of the final phase (Phase 3) of the three-phase Action Item targets in the Stream Health Workgroup's (SHWG) 2019 Work Plan (see page 7 of 13 in this Plan). The SHWG's Work Plan includes action items to identify additional parameters or metrics to describe and quantify stream health to complement existing biological indicators. This Scope #1 will continue to address the question: *Following the implementation of management efforts, how is stream health changing, and how can we better characterize the response through non-biological measures?* Phase 3A, which was completed in August 2023, resulted in the creation of a matrix of stream health metrics that may be used as additional indicators for the Stream Health Workgroup outcome. Phase 3A focused on metrics within two of the lower levels of the stream function pyramid: geomorphology and hydraulics. ***The overall outcome of Phase 3B (this Scope #1) is to extend analyses to include physiochemical parameters that complement the Chesapeake Basin-wide Indicator of Biological Integrity, also referred to as "Chessie BIBI," to further narrow down the recommended metrics for use as indicators of stream health.***

Focusing this Scope #1 on the physiochemical tier will allow the contractor to explore the associated metrics in more detail. Information for each identified metric will include, but is not limited to, availability of data, collection timeframe, regional coverage, and type of data (measured versus modeled).

Stakeholder/Participants of Scope #1: Stream Health Workgroup; Healthy Watershed GIT; Habitat GIT; Toxic Contaminants Workgroup; Urban Stormwater Workgroup

Audience/End User of Scope #1: This Scope #1 should reflect the same level of information that has been created in previous phases and should appeal to the broadest audience possible. The audience should include other Chesapeake Bay Program (CBP) workgroups, Bay jurisdictions, BMP implementation practitioners, and interested parties.

Key Tasks of Scope #1:

1. Creation and approval of a Quality Assurance Project Plan (QAPP).
2. Identify potential stream health metrics and data sources available to be included in the analysis for physicochemical metrics of streams. The contractor should identify practical, measurable, and repeatable data that may be developed into additional indicator metrics for stream health.
3. Perform data mining based on the identified sources for the purpose of identifying a preliminary suite of physicochemical variables that could be used as metrics to measure stream health. The contractor will utilize the format of the data inventory matrix created in the previous project, Phase 3A, and this data will be provided. Additionally, the contractor will perform exploratory analyses to narrow down the list of variables/indicators and rank as high,

medium, or low potential as an indicator based on data quality, availability, and scale (local or watershed-wide), and other factors as deemed relevant.

4. Provide a report, including written recommendations on the indicators that best meet the identified criteria and recommendations for further evaluation and their development Bay-wide. The report will include an executive summary, purpose of the analysis and selection of indicators, description of methods and information sources, data inventory matrix, summary of data analyses, key findings and recommendations for potential indicators, and next steps for further analysis and refinement. The contractor will present findings to the SHWG via a virtual meeting.

QAPP Requirement for Scope #1: Yes

High Level Deliverables of Scope #1:

- Kickoff Meeting for project initiation, including meeting notes.
- Signed/Approved QAPP
- Identification of Technical Advisory Group (TAG) for this Scope #1
- Draft and Final framework and data sources for proposed work
- Presentation of Final framework and data sources to TAG and Stream Health Workgroup (SHWG)
- Data review and consolidation of an evaluation of existing metrics
- Presentation of preliminary results to TAG and SHWG
- Draft Report and review of report from TAG and SHWG
- Revised report based on comments received
- Final report/deliverable and presentation to a combined TAG and SHWG

Bidder Qualifications of Scope #1:

- Experience in riverine science and knowledge of the Chesapeake Bay Program partnership
- Experience with data analytics and business intelligence tools like Tableau and RShiny
- Experience in physicochemical analysis
- Competency in secondary data analyses and statistical expertise
- Experience collecting, assembling, quality assuring, analyzing, and disseminating data from disparate sources
- Experience facilitating discussions amongst wide-ranging groups; developing strategic plans to achieve objectives; estimating costs of completing data collection, analysis, tool development; developing data visualization and decision-support tools
- Ability to translate scientific data into relevant management recommendations
- Experience developing comprehensive metadata and metadata standards
- Experience developing data reports and incorporating edits from multiple reviewers
- Relevant experience completing projects of similar size and scope; Bidder must list three examples of similar projects completed in the past five years.

Scope #2 - Development of a Chesapeake Bay Shallow Water Habitat Sentinel Site Program

Maximum Bid Amount of Scope #2: $85,000

Timeline of Scope #2: 18 months

Purpose and Outcome of Scope #2: ***This Scope will include developing a comprehensive Shallow Water Habitat Sentinel Site Program for the Chesapeake Bay. As part of this Scope #2, the contactors will gather multi-parameter, detailed data on a scale that is accessible and relevant to decision-making and information gathering.*** This effort will include creating a protocol for the monitoring of multiple living resources and water quality measures, as well as climate impacts on the functional value of shallow water habitats in the Chesapeake Bay and its watershed. The goal of this Scope #2 is to also develop a protocol to monitor the effectiveness of measures taken by the Chesapeake Bay Program Partnership beyond 2025. Developing a Shallow Water Habitat Sentinel Site Program will fill identified data gaps and provide the data necessary to track changes in response to climate change and management actions, assess environmental conditions, provide early warning signals for potential issues, and enhance modeling and forecasting capabilities in shallow water habitats.

Stakeholder/Participants of Scope #2: The Chesapeake Bay Program partnership

Audience/End User of Scope #2: The entirety of the Chesapeake Bay Program partnership, All Goal Implementation Teams and Outcomes related to Shallow Water Habitats

Key Tasks of Scope #2:

1. Creation and approval of a Quality Assurance Project Plan (QAPP).
2. Literature and Existing Program Review (for identification of data gaps): The first step of this project is to conduct a review of current shallow water monitoring efforts, strategies, and data gaps for shallow water habitats in Chesapeake Bay and its watershed. The review will build on other recent inventories and assessments already completed, including the Inventory & Evaluation of Environmental and Biological Response Data for Fish Habitat Assessment for the Sustainable Fisheries Goal Implementation Team (2020) and Recommendations for Conducting Fish Habitat Assessments in Tidal Waters of the Chesapeake Bay for the Fish Habitat Action Team (2021). The review will identify data gaps that need to be filled to accomplish a comprehensive understanding of shallow water habitat functionality and response to change to be considered in program development.
3. Scoping Workshop: Following the review, a Scoping Workshop will be held. Workshop participants will assess where, when, and how a Shallow Water Habitat Sentinel Site Program can be implemented within the CBP Partnership. The workshop will include a focused, diverse, and distinguished array of participants including scientists, coordinators, and resource managers to explore the development of this Shallow Water Habitat Sentinel Site Program for both non-tidal and tidal waters of the Chesapeake Bay and its watershed. Broad workshop objectives will be to determine how many sentinel sites to define, as well as the biotic (i.e., SAV, macroalgae, phytoplankton, forage fish composition, fish and shellfish, other invertebrate use, etc.) and abiotic (i.e., sediment type, water quality measurements, toxins, etc.) parameters to measure at each site, and with what frequency. Invited workshop participants will represent both non-tidal and tidal interests and will have expertise in the

biotic and abiotic parameters considered for inclusion in the program. During the workshop, participants will determine if non-tidal habitats will be included in shallow water habitat sentinel site program development, or if the program will include only tidal waters of the Bay and watershed and a non-tidal shallow water habitat sentinel site program will be developed separately, independent of this project. *The workshop will require two separate two-day events (four days total), but the workshop format and length will be determined by the contractor.*

4. Full Shallow Water Habitat Sentinel Site Program Development: With results and recommendations from the Literature Review and Scoping Workshop, the contractor will conduct full Shallow Water Habitat Sentinel Site Program development. This will include identifying locations for sentinel site placement, developing protocols and datasheets for each parameter to be measured, identifying data portal options, and identification of potential program partners and sustainable funding sources. Further, a basic feasibility assessment for implementing this Sentinel Site Program will be conducted. Feasibility of implementation will depend on several factors, such as the targeted number of sentinel sites, the number and complexity of biotic and abiotic parameters to be surveyed, the temporal frequency of monitoring recommended, and the capacity of CBP partners to participate in the effort. All these considerations will influence programmatic costs that will influence the feasibility of implementation.

QAPP Requirement for Scope #2: Yes

High Level Deliverables of Scope #2:

- Kickoff Meeting for project initiation, including meeting notes
- Signed/Approved QAPP
- A comprehensive review/report of existing shallow water habitat monitoring programs, literature, and data gap from all jurisdictions of the watershed
- Steering committee meetings
- A post-workshop report that guides program development
- A scoping workshop (50-100 participants)
- Protocols and datasheets for each parameter (biotic and abiotic)
- Recommended locations for sentinel site placement
- A comprehensive list of potential databases/applications with the pros/cons of each
- Identification of potential program partners and potential sustainable funding sources
- Basic feasibility assessment to implement the Shallow Water Habitat Sentinel Site Program
- Present to various goal teams/committees at the Chesapeake Bay Program
- Final Product: a methods manual/guidance document that includes comprehensive protocols for all parameters determined to be measured as part of the program.

Bidder Qualifications of Scope #2:

- Experience developing method manuals
- Experience running large, multi-day workshops
- In-depth knowledge of existing monitoring programs in and for the Chesapeake Bay region

Scope #3 - Increasing Effectiveness of Landowner Engagement to Accelerate Wetland Restoration Across the Chesapeake Bay Watershed

Maximum Bid Amount of Scope #3: $95,000

Timeline of Scope #3: 18 months

Purpose and Outcome of Scope #3: In a recent Delmarva Wetland Partnership project, the contractor leveraged biophysical targeting and social science research to develop an innovative restoration practice engagement strategy for the Delmarva Peninsula in Maryland and Delaware (Houser et al. 2022). Social science questionnaires were subsequently used to identify the status of priority landowners' interest in, knowledge of, and potential motivations for restoration practice adoption. This work revealed that among the surveyed landowners, the vast majority were unaware of the opportunities to implement restoration practices on their land (65%) and were interested in exploring these practices and programs (77%). The findings from the questionnaires allowed the Delmarva Wetland Partnership program to tailor engagement and deliver a social-marketing mail-based recruitment effort (Rickenbach et al. 2017), which approximately doubled the number of priority Maryland and Delaware landowners pursuing restoration programs. It is estimated to generate over five hundred acres of restored or enhanced wetlands over the next three years, in addition to adding more projects to the pipeline.

This Scope #3 will expand on the Delmarva Wetland Partnership's restoration engagement program by designing, implementing, and analyzing complementary landowner social science data canvasing in the Pennsylvania and Virginia portions of the Chesapeake Bay Watershed to understand the best ways to engage these landowners in restoration activities and expansion. Scope #3 will facilitate partnership development by collaborating with a diverse group of organizations and accelerate wetland restoration. This will be completed by 1) identifying current landowner interest and barriers and 2) generating a contact list of potential interested landowners and offering restoration program insights with both federal and state wetland program staff.

Stakeholder/Participants of Scope #3: Landowners in Pennsylvania and Virginia; Wetlands Workgroup - Selected State Members

Audience/End User of Scope #3: Restoration practitioners and outreach specialists; Virginia and Pennsylvania State/federal program staff; Wetlands Workgroup

Key Tasks of Scope #3:

1. Creation and approval of a Quality Assurance Project Plan (QAPP).
2. Questionnaire Design: To ensure generated data directly supports outreach/implementation teams, the contractor will co-produce questionnaires with state-specific restoration partners to gain insight applicable directly to partner-led outreach and broadly to state/federal restoration programs.
3. Data Collection: Following a Tailored Design Approach (Dillman et al. 2014), the contractor will design and deliver questionnaire packets via mail to approximately 3,000 landowners per state (6,000 total). Questionnaire mailings include: (1) A pre-questionnaire post-card; (2) a questionnaire mailing packet that contains a (a) Cover letter including human subjects research participant information; (b) Questionnaire; and (c) Return envelope. Non-

respondents will receive up to three "reminder" mailings, per best practice for increasing response rates (Dillman et al. 2014).

4. Data Processing and Analysis: Upon receiving returned and completed questionnaires, the contractor will enter reported data into a raw-data file and subsequently clean and analyze the data to determine cross-cutting and geographically specific themes related to wetland restoration interest, motivations, and barriers. This analysis will be compared and combined with our existing data from Maryland and Delaware landowners.
5. Report Writing and Sharing: From the analysis of social data, the contractor will write reports summarizing the results and recommendations. The contractor will also present the results to the Wetland Workgroup and other interested organizations.

QAPP Requirement for Scope #3: Yes

High Level Deliverables of Scope #3:

- Kickoff Meeting for project initiation, including meeting notes
- Signed/Approved QAPP
- Questionnaire design
- Data collection
- Data processing and analysis
- Draft report
- Final Product: A final report summarizing the short- and long-term recommendations determined through the data collection and analysis project.

Bidder Qualifications of Scope #3:

- Experience with social science and wetlands
- Experiences with working with communities – specifically rural landowners in Pennsylvania and Virginia
- Experience with wetlands workgroup
- Familiarity with DelMarVa Wetland Partnership Study

References for Scope #3:

Dillman, Don A., Smyth, Jolene D., Christian, Leah Melani. Internet, Phone, Mail and Mixed-Mode Surveys: The Tailored Design Method, 4th edition. (2014). John Wiley: Hoboken, NJ

Houser, M., Jacobs, A., Colmorgen, C., Dryden, M., Lawson, D., Martin, D., Canick, M., McLean, C., & Mason, R. (2022, September). Delmarva Wetland Partnership Report. https://www.conservationgateway.org/Documents/Delmarva-Wetland-Partnership-Report_Final.pdf

Rickenbach, O., Reyes-García, V., Moser, G. et al. What Explains Wildlife Value Orientations? A Study among Central African Forest Dwellers. Hum Ecol 45, 293–306 (2017). https://doi.org/10.1007/s10745-016-9860-7

Scope #4 - Beyond Bean Counting: Assessment of Best Management Practices (BMP) Tracking and Accounting Procedures for More Holistic Restoration Goals

Maximum Bid Amount of Scope #4: $100,000

Timeline of Scope #4: 18 months

Purpose and Outcome of Scope #4: ***This Scope will create a detailed evaluation report of BMP tracking and reporting under the Chesapeake Bay Total Maximum Daily Load (TMDL) framework by assessing current tracking measures.*** An evaluation will be completed as part of Scope #4 that will identify opportunities to reduce process inefficiencies, strive to better integrate multiple outcomes into progress assessments, and seek ways to improve engagement with external partners and stakeholders to ensure the Chesapeake Bay Program (CBP) is working with the best available information. This Scope #4 is limited to the stormwater sector; however, the project has the potential to serve as a pilot that can be replicable for other sectors. The goals of Scope #4 are to allow partners the flexibility to innovate, while addressing key information and knowledge gaps, as well as re-structuring how state and local water quality efforts can be better integrated with objectives around living resources, human well-being, and climate resilience.

Stakeholder/Participants of Scope #4: Each Chesapeake Bay Jurisdiction; Chesapeake Assessment Scenario Tool (CAST) Team; U.S. Environmental Protection Agency (EPA); To the extent possible, other federal agencies that track and report stormwater practices (i.e. Department of Defense (DoD), National Oceanic and Atmospheric Administration (NOAA), National Park Service (NPS)); Municipal Separate Storm Sewer System (MS4) Program Staff; Large scale implementation funders (i.e. National Fish and Wildlife Foundation (NFWF), Chesapeake Bay Trust (CBT)); Community Based Organizations and NGO implementers

Audience/End User of Scope #4: Jurisdictional partners; Implementation partners; Funding partners; Chesapeake Bay Program staff responsible for assessment of TMDL outcome progress

Key Tasks of Scope #4:

1. Initial Project Scoping Meeting – The contractor will meet with leadership from the Urban Stormwater Workgroup to discuss the establishment of a project steering committee, as well as to develop a final, prioritized list of critical stakeholder groups to approach, as well as datasets to review.
2. Data review – The contractor will review **existing** CBP Grant Guidance documentation and QAPPs (note: the creation of a QAPP is not required for Scope #4) for each jurisdiction for BMP reporting and verification. Upon review, a matrix will be developed to identify common attributes and unique aspects of each program. This will inform the development of interview questions. Contractors will also collaborate with the steering committee to identify and review datasets and tracking and reporting approaches for assessing progress toward indicators outside of the CBP's TMDL accountability framework and the National Environmental Information Exchange Network (NEIEN). This may include programs targeting flood mitigation, air and water temperature, habitat restoration, and land conservation. It may also include efforts taking place outside of the Chesapeake Bay Watershed that could be used as potential future models.
3. Interviews – After the data review, the contractors will develop questions and conduct a series of 10 to 15 individual or small group interviews with partners from each jurisdiction at the

state and local level to identify strengths and weaknesses of each BMP reporting and verification approach/system. The questions will also seek to identify where data gathered, but not reported, may be valuable in assessing other outcomes. Summaries of key discussion points or findings from the interview(s) should be developed for each jurisdiction or other logical aggregation of interviewed partners, which will be included in the final deliverable.

4. Assessment – A summary assessment of findings, including the data review and interviews, will be conducted. This will inform a gap analysis, barriers, and next steps for the future of BMP reporting and progress tracking for other CBP Outcomes.
5. Outreach – Following the summary assessment, the project team will engage with the Urban Stormwater Workgroup, Water Quality GIT (WQGIT), and other stakeholder groups as needed. These will be opportunities to both inform stakeholders on the status of the project and seek input on key questions throughout the data collection and assessment phases.
6. Final report and recommendations – Following data reviews, interviews, assessment, and outreach, a final report will identify how BMP reporting and verification is working in each jurisdiction, comparisons with similar reporting and tracking efforts outside of the CBP, key findings of the interviews and assessments, and proposed next steps for the partnership. Ideally, recommendations would be prioritized, and considerate of feasibility and existing resource limitations. A final presentation of findings and next steps will be given to the Urban Stormwater Workgroup and other stakeholders upon request.

QAPP Requirement for Scope #4: No

High Level Deliverables of Scope #4:

- Kickoff Meeting for project initiation, including meeting notes
- Stakeholder interviews
- Review of existing QAPPs for Best Management Practice (BMP) reporting and verification
- Review of existing tracking and reporting tools outside of WQGIT – Outside of CAST and NEIEN
- Assessment of individual State data tracking systems and internal data management processes
- Identification of barriers to more holistic process accounting
- Presentations to Chesapeake Bay Program workgroups and Teams regarding findings
- Final report and recommendations
- Quarterly check-ins with project steering committee

Bidder Qualifications of Scope #4:

- Familiarity with data systems and asset management tools
- Familiarity with Chesapeake Bay Program grant guidance, tools, and data sets
- Experience in Facilitation skills

Scope #5 - Local Government Technical Assistance Inventory and Gap Analysis

Maximum Bid Amount of Scope #5: $45,000

Timeline of Scope #5: 12 months

Purpose and Outcome of Scope #5: ***This Scope will identify, assess, and inventory current local government assistance programs across the Chesapeake Bay region, conduct a gap analysis of the identified programs, and create recommendations to expand the programs to fill those gaps***. This project supports a need to expand local government technical assistance programs (e.g. The Delaware Grant Assistance Program, and West Virginia's Region 8 and 9 Planning and Development Councils) that was identified by the Local Government Advisory Committee's (LGAC) 2023 Annual Recommendations to the Chesapeake Bay Program Executive Council. The overarching goal of this project is to provide detailed information on existing local government technical assistance programs, as well as the current gaps in the system, to empower decision makers at state and federal levels to more effectively focus limited resources to fill the gaps.

Stakeholder/Participants of Scope #5: Local Leadership Workgroup; Local Government Advisory Committee; Management Board and Principals' Staff committee members from the Watershed Agreement Signatories

Audience/End User of Scope #5: Local Leadership Workgroup; Local Government Advisory Committee; Management Board and Principals' Staff committee members from the Watershed Agreement Signatories

Key Tasks of Scope #5:

1. Identify and inventory existing local government technical assistance programs that align with the *Chesapeake Bay Watershed Agreement* outcomes.
2. Compile standardized information about each technical assistance program (geographic scope, funding source, types of local governments served, type of services offered, costs, and key watershed agreement outcomes the technical assistance addresses).
3. Define and analyze gaps (regions, types of local governments, types of services offered, watershed agreement outcomes covered) in existing technical assistance programs.
4. Recommend approach to fill gaps in technical assistance to local governments to drive increased implementation towards meeting watershed agreement outcomes.

QAPP Requirement for Scope #5: No

High Level Deliverables of Scope #5:

- Kick off meeting for project initiation, including meeting notes
- Interview with each Chesapeake Bay watershed state (MD, VA, WV, DE, PA, and NY) and the District of Columbia for development of list of Technical Assistance programs
- An inventory of existing local government technical assistance programs
- Compilation of standardized information about each technical assistance program
- Meeting notes from regular meetings with technical lead and steering committee
- Report that defines and analyzes gaps
- Final Report: Short written report with recommendations to fill gaps, including inventory as appendix.

Bidder Qualifications of Scope #5:

- Understanding of Chesapeake Bay watershed local governments
- Understanding of the Bay Program goals and outcomes
- Understanding of Chesapeake Bay watershed technical assistance landscape
- Understanding of the Chesapeake Bay Watershed region

Scope #6 - Training and Technical Assistance on Network Science

Maximum Bid Amount of Scope #6: $90,000

Timeline of Scope #6: 12-18 months

Purpose and Outcome of Scope #6: ***This Scope will provide training and technical assistance on network science to build the necessary collaborative infrastructure to advance shared goals and enhance the existing capacity of the Chesapeake Bay Program (CBP) partnership (the partnership) to accelerate achievement of Watershed Agreement goals and outcomes.*** The trainings and technical assistance included in this Scope #6 will increase the partnership impact and collaborative capacity through the adoption of network science principles that will enable the partnership to intentionally design, cultivate, and sustain relationships and connections among the CBP partners and stakeholders who have shared goals. One of the overarching goals of this project will be to ensure that the partnership's enhanced collaborative infrastructure created through this Scope #6 will allow the Goal Implementation Teams to successfully be able to adapt and strategically fulfill the challenges of the future of the partnership. The adoption of network science best practices will improve the partnership's ability to coordinate work around different organizations, enable the CBP partnership to be more resilient to changes in goals, outcomes, and structure, respond to urgent needs and opportunities, and integrate diverse perspectives into the organization.

Stakeholder/Participants of Scope #6: Chesapeake Bay Program partners; Chesapeake Bay Program goal teams and workgroups; Chesapeake Bay Program advisory committees (i.e. the Stakeholders' Advisory Committee, the Local Government Advisory Committee, and the Scientific & Technical Advisory Committee); Chesapeake Bay Program management

Audience/End User of Scope #6: Chesapeake Bay Program coordinators; Chesapeake Bay Program staffers; U.S. Environmental Protection Agency (EPA) CBP Management Board; Chesapeake Bay Program goal team/workgroups

Key Tasks of Scope #6:

1. Pre-Phase: Analysis and conversations with project steering committee, to be determined in collaboration with GIT Leads, and GITs to gather information on current issues and challenges to inform Phase 1: Training.
2. Phase 1: Training. This phase centers around providing education and training for the partnership of healthy collaborative network characteristics and keys to functioning as a network.
3. Phase 2: Technical Assistance and Evaluation. This phase includes identifying a process and criteria to select and then deliver organizational/network potential evaluation alongside technical assistance on removing barriers to increasing effective collaboration and key topics related to network science for 3-5 goal team/workgroups.

QAPP Requirement for Scope #6: No

High Level Deliverables of Scope #6:

- Kick off meeting for project initiation, including meeting notes
- Finalized data from data collection
- Training materials, including recording of trainings
- Criteria document for Phase 2
- Summary of Technical Assistance process
- Delivery of evaluation, guidance, and technical assistance for (3-5 groups)
- Findings and recommendations reports from groups receiving technical assistance
- Recommendations to the partnership for future work/investment and how to apply more broadly
- At least two presentations of results
- Final Report that includes a summary of all completed tasks, including data collection results, training materials, criteria document, findings, and recommendations.

Bidder Qualifications of Scope #6:

- Experience in collaborative science and network science
- Experience in providing trainings
- Familiarity working with Chesapeake Bay Program partners
- Experience in providing technical assistance
- Understanding of Mid-Atlantic/Chesapeake Bay Watershed region
- Understanding of Bay Program goals and outcomes

Scope #7 - Hypoxia Collaborative: Sampling Strategy and Design for Chesapeake Bay Habitat Assessment

Maximum Bid Amount of Scope #7: $100,000

Timeline of Scope #7: 18 months

Purpose and Outcome of Scope #7: Since 2003, cost-effective, robust, continuous, and real-time water quality monitoring asset development suitable for extended deployments in the open waters of the tidal Chesapeake Bay estuarine has been needed. This enhanced data will address the data needs that can inform the criteria assessment for short duration criteria (i.e., less than the 30-day mean).

While seasonal to multi-season fixed station deployments of high temporal density water quality monitoring infrastructure was integrated into nearshore shallow water environments (i.e., shallow water designated waters are defined by USEPA 2003 as ≤ 2m) in the early 2000s, offshore (i.e., habitats typically associated with mid-channel regions of the Bay and its tidal tributaries located away from the nearshore, shallow water zone) open water water-column environments in the tidal bay and tributary system were not represented in those monitoring technologies. Efforts to address the challenges of continuous monitoring in the open-water water-column has ensued (e.g., https://cbos.org/ and https://buoybay.noaa.gov/); however, deployments had limited vertical resolution

to inform habitat assessments or limited deployment durations compared to the data collection timeframes outlined in the Chesapeake Bay water quality criteria (USEPA 2003).

Successful offshore water column water quality assessment was made for several years by Virginia Institute of Marine Science (e.g., York and Rappahannock Rivers) and Maryland Department of Natural Resources (i.e., Harris Creek, MD, oyster restoration site) in more protected, relatively shallow water environments. In 2018, a pilot study was conducted to address the shortcomings of all previous monitoring efforts by developing robust, easily deployable high temporal frequency water quality data collection infrastructure that could operate in the open waters of Chesapeake Bay and its larger tidal tributaries. Project success was demonstrated using vertical arrays of a chain of sensors (Caribbean Wind, 2020) setting the stage for investable infrastructure that could address the two decades-long gap in criteria assessment.

This project aims to use a Chesapeake Bay water quality model and/or select tributary water quality models calibrated to Chesapeake Bay water quality monitoring data and interpolation of the model data at potential monitoring sites to 1) inform and evaluate monitoring site location effectiveness to accurately inform assessments of water quality (i.e., dissolved oxygen conditions at 1-day mean, 7-day mean and 30- day mean) habitat conditions in defined regions (e.g., Bay segment, tributary), 2) consider monitoring resource availability and resource limitations in creating an accurate assessment of the habitat conditions with monitoring suite options that express tradeoffs in accuracy and bias to match dissolved oxygen conditions in order to inform considerations of optimizing monitoring resource choices, 3) work with monitoring community practitioners across the CBP partnership in a small series of meetings to understand and document field work limitations that represent filters on where monitoring activities and infrastructure can be effectively implemented, 4) use the deployment specific limitations of the partners as a rule set to provide a scenario- based approach for illustrating site selection options for up to 2-3 segments that are used to engage partners during the meetings in value of output to inform utility of site selection, and make adjustments in the rule set based on pilot work discussions with partners in collaboration meetings, 5) use the information on monitoring location limitation filters to inform development of an automated protocol and 6) demonstrate the automated protocol application in 10 segments that represent a spectrum of geographies and sizes among the 92 Bay segments as informed by the community.

Final outputs of segment sampling strategy options and the approach rule set and algorithms used to derive the segment site selection options will be made available to inform future use of the approach by Chesapeake Bay partners when further evaluating site selection options and tradeoffs for optimizing resource allocation in monitoring strategies across all 92 Bay segments.

Stakeholder/Participants of Scope #7: Scientific, Technical Assessment and Reporting (STAR), Hypoxia Collaborative (HC), Criteria Assessment Protocol Workgroup (CAP WG), Bay Oxygen Research Group (BORG), National Oceanic and Atmospheric Administration (NOAA), Chesapeake Bay Program partners and workgroups

Audience/End User of Scope #7: Scope #7 is envisioned to support efficient and strategic decision-making using science-based evaluation of site options for deployment planning with monitoring assets when engaging partners with allocation of limited yet diverse monitoring resources. Therefore,

the audience includes decision makers including, but not limited to, the CBP and relevant workgroups and Chesapeake Bay jurisdictions.

Key Tasks of Scope #7:

1. A table identifying 10 segments used during this study as informed by community input to address a spectrum of geographic, size, and potentially other sets of considerations.
2. A rule set that is community-informed to create GIS or masking layers of areas informing choices on unsuitable/suitable sites for deploying nearshore and offshore monitoring infrastructure.
3. An algorithm that automates masking effects that could then be applied in a GIS style evaluation for creating monitoring siting suitability maps in the future for any of the 92 segments.
4. At least 10 maps with site options derived from application of the algorithm in the 10 community-based segment selection informing deployment location options
5. Statistical summary outputs of interpolation scenario runs that use at least a decadal time series of model data to inform and create scenario tables that express a set of monitoring suite options linked with their site options, and statistics of accuracy and bias from the model-based assessments of performance (e.g., a progression of monitoring options may reflect optimal combinations of 1-3 offshore vertical arrays placed in deeper waters coupled with 1-6 nearshore continuous monitoring instruments (potentially 18 combinations in this set of resources)).
6. Final Report summary that explores the impacts of long-term monitoring and community science-based data collection in a subset of 10 segments to further inform value in site selections of continuous monitoring resources in an area or segment.

QAPP Requirement for Scope #7: No

High Level Deliverables of Scope #7:

- Kickoff Meeting for project initiation, including meeting notes.
- Planning meeting with the principal investigators and relevant communities
    - Select segments of interest for the project; review model capacities and limitations to information site selection; review forms of outputs to assist with site selection and resource allocation guidance, determine masking filters for which GIS layers can be derived or retrieved when informing suitability of locating monitoring sites; define what factors limit site selection; discuss monitoring asset application scenarios
- Develop and conduct a day-long (4 to 6 hours) planning meeting with CAPWG to address factor assessment affecting site selection and monitoring site suitability that informs planning of time, operations, maintenance, and distribution of monitoring assets
- Quarterly check-in meetings with the projects leads, CAPWG, BORG, and HC and six-month progress updates with larger community to be identified by the project leads
- A draft of the final report for review and comments
- A final report with statistical summary tables indicating options in accuracy with different resource allocations and maps summarizing recommended options connected with a set of resource options (e.g., what if you have 1 array and 2 continuous monitoring up to 3 arrays

and 6 continuous monitoring for a segment assessment, differences in DO assessments). Reporting includes but is not limited to:

- A table identifying 10 segments to be used during this study as informed by community input to address a spectrum of geographic, size, and potentially other sets of considerations.
- A rule set that is community-informed to create masking of areas unsuitable/suitable for deploying nearshore and offshore monitoring infrastructure.
- An algorithm to employ, that automates masking effects that could then be applied for any of the 92 segments in the future.
- 10 maps with site options for deployment depicted showing the effect of community-informed site selection limitations on masking locations unsuitable for deployments of existing monitoring resources
- Outputs of interpolation scenario runs that use at least a decadal time series of model data to create scenario tables that express a set of monitoring suite options linked with their site options, and statistics of accuracy and bias, e.g., a progression of monitoring options may reflect optimal combinations of 1-3 offshore vertical arrays placed in deeper waters coupled with 1-6 nearshore continuous monitoring instruments (potentially 18 combinations in this set of resources).
- Expression of work exploring the impacts of long-term monitoring and community science-based data collection in a subset of 12 segments to further inform value in site selections of continuous monitoring resources in an area or segment.

Bidder Qualifications of Scope #7:

- Understanding of habitat assessment based on environmental thresholds for water quality characterization
- Experience with environmental monitoring and modeling
- Experience in statistical analysis including spatial statistics
- Experience with decision-support tool design and development
- Expertise in meeting facilitation and coordination
- Familiarity with the Bay Program, including the partnership and monitoring programs