**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_VIII. Project Idea Submission Form\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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**Fiscal Year 2016 Project Proposal Forms for EPA GIT-Funding**

**\_Proposal 1.\_**

**Table 1.**

|  |  |
| --- | --- |
| **Project Title:** | Shell/habitat loss rates in oyster restoration and fishery management |
| **Project Type** (See Section IV of guidelines document)**:** | Barrier to effectively meeting outcome, Monitoring/tracking program development, assessments of data to evaluate progress on metrics |
| **Goal/Outcome:** | Oyster Restoration |
| **Estimated Cost:** | $60K |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Oyster shell is an essential component of oyster restoration efforts and supports healthy oyster reef ecosystems that provide habitat for many fish and shellfish species. Shell is also listed as a limiting factor or barrier in the CBP oyster management strategy. The dynamics of the shell budget (accumulation and loss) in the Bay is complex and poorly quantified. Shell is an increasingly expensive, very limited resource that is insufficient in availability to support current bi-state restoration and fishery management goals.  This project seeks to (1) develop salinity (upbay-downbay) dependent shell budgets for both high density (3D structures) restoration reefs and large area coverage shell plants (2D structures) in support of fisheries including rotational harvest; (2) from these shell budgets set critical baseline population demographics to sustain shell presence and reef/habitat integrity; and (3) project future shell needs under various restoration and fishery scenarios. Developing estimates of future shell resource availability and resource needs is important to support ongoing investment in and success of oyster restoration and other oyster activities in the Bay. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | The project should build on previous research funded by NCBO and will use historical survey and replenishment data, revisit a time series of restoration sites, and include current short-term studies at new shell plants to generate shell dynamics data. Findings can be utilized to make inferences about applications in current and potential oyster restoration sites.  Data sources include the VMRC-VIMS VA stock assessment (1993-present) archive, VMRC replenishment archives (1995-present) and the MD DNR stock assessment (1995-present) archive. Analysis will provide annual census of shell (standing stock), addition through mortality (from live oyster density and demographics) and loss rates (from difference by methods cited). Reef area estimates provide scaling functions. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | Sustainable Fisheries, Vital Habitats, STAR |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI) If no, suggest other GIT lead | Stephanie Westby (NOAA) |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Stephanie Westby (NOAA) |
| **Goal Implementation Team:** | Sustainable Fisheries Goal Implementation Team |
| **Project Title:** | Shell/habitat dynamics in oyster restoration and fishery management |
| **Refined Cost Estimate:** | $60,000 |
| **Estimated Project Duration:** | 12-15 month project duration, exact timeline TBD in coordination with Awardee; target March 2017 – February 28, 2018 |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | Specific dates for intermediate products are TBD in coordination with Awardee, however, all work is to be completed and final analysis to be written in form of a final report by February 28, 2018.  Bi-monthly meetings concerning project status will be conducted with Stephanie Westby on specific dates TBD in coordination with Awardee. |
| **List specific deliverables/products to be provided by the contractor:** | This project should develop a tool or application for the Chesapeake Bay that includes but is not limited to:  (1) salinity dependent shell budgets for tributary –scale restoration sites in Maryland and Virginia under the 2014 Chesapeake Bay Program Agreement and for actively fished and rotational harvest reefs in Maryland and Virginia;    (2) analysis of shell amounts required to maintain sufficient shell and reef habitat based shell budgets derived from deliverable #1;  (3) estimates of future shell resource needs for different areas and/or management types.  (4) a framework to apply this methodology to other areas in the Bay.  These deliverables should produce applications to guide shell planting and reef restoration, developing population sustainability targets, fishery management tools such as reef or tributary level reference points, and evaluating and managing rotational harvest. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications:** List skills and experience required of winning bidder: | * >5 years experience working with Chesapeake Bay (Maryland or Virginia) oyster data * Knowledge of Chesapeake Bay oyster management and restoration efforts * Understanding of Chesapeake Bay benthic ecology and the role of oyster shell in the Bay ecosystem |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | University of Maryland  Virginia Institute of Marine Science  University of Maryland Center for Environmental Science  Smithsonian Environmental Research Center |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Stephanie Westby (NOAA)  Susan Conner (USACE)  Ward Slacum (ORP)  Jay Lazar (NOAA) |

**\_Proposal 2.\_**

**Table 1.**

|  |  |
| --- | --- |
| **Project Title:** | Evaluating ecosystem-based consideration for the blue crab stock |
| **Project Type** (See Section IV of guidelines document)**:** | Support for science needed to develop metrics, metric/indicator development, performance measure development, data collection program development, assessments of data to evaluate progress on metrics |
| **Goal/Outcome:** | Blue Crab Abundance  Blue Crab Management |
| **Estimated Cost:** | $50k |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | The blue crab (*Callinectes sapidus*) is an icon for the Chesapeake Bay region and the commercial fishery for blue crab remains one of the most valuable fisheries in the Bay. Ecologically, the blue crab can serve as an important indicator of Bay health because of its significant role in the ecosystem.  This study will evaluate which ecosystem factors, including habitat, climate change effects, water quality and predator/prey dynamics are most important to blue crab populations and apply findings to explain past fishery performance and project future stock variability. Detailed understanding of the relative significance of factors influencing this species can help identify where restoration and conservation efforts of other GITs can be focused to improve blue crab sustainability. It can also yield valuable information for the upcoming stock assessment and provide the foundation for building a theoretical framework for ecosystem based fisheries management for blue crab in Chesapeake Bay which has been a long term objective of the CBP and fishery managers.  The study would leverage previous projects by building on the research compilation and ecosystem summary produced for blue crab under the Maryland Sea Grant Ecosystem Based Fisheries Management Project <http://www.mdsg.umd.edu/topics/ecosystem-based-fisheries-management/ecosystem-based-fisheries-management>. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | This evaluation will be conducted using fishery data from all three Bay jurisdictions, Winter Dredge survey data, landings data, climate change projections, and water quality data to develop a synthesis of ecosystem effects on blue crab. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | Sustainable Fisheries, Vital Habitats, STAR, Water Quality |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI) If no, suggest other GIT lead | Emilie Franke (ERT/NOAA) and Bruce Vogt (NOAA) |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Bruce Vogt (NOAA) and Emilie Franke (ERT/NOAA) |
| **Goal Implementation Team:** | Sustainable Fisheries Goal Implementation Team |
| **Project Title:** | Evaluation of environmental factors influencing blue crab populations |
| **Refined Cost Estimate:** | $50,000 |
| **Estimated Project Duration:** | 12-15 month project duration, exact timeline TBD in coordination with Awardee; target March 2017 – February 2018 |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | Specific dates for intermediate products are TBD in coordination with Awardee; however, all work is to be completed and final analysis to be written in form of a final report by February 28, 2018.  Bi-monthly meetings concerning project status will be conducted with Bruce Vogt (NOAA) and other staff supporting Sustainable Fisheries GIT on specific dates TBD in coordination with Awardee. The Awardee will present a project status update and/or initial project findings to the Sustainable Fisheries Goal Implementation Team at least once during the project duration on a specific date(s) TBD in coordination with the Awardee. |
| **List specific deliverables/products to be provided by the contractor:** | This project should utilize fishery survey data from all three Bay jurisdictions, Winter Dredge survey data, habitat data, climate change projections, water quality data, and oceanographic data (using systems such as the Chesapeake Bay Interpretive Buoy System) from NOAA and the Chesapeake Bay Program to develop a synthesis and evaluation of the relative importance of each factor on blue crab populations to:  1) Synthesize and evaluate the impact of various ecosystem factors including, but not limited to, habitat suitability, climate change effects, water quality and predator/prey dynamics on the blue crab stock and specify impacts at stages of the individual blue crab life cycle and/or impacts on population dynamics;  2) Among the ecosystem factors explored, propose a framework that ranks the factors in terms of which have the most significant impact on the blue crab stock, and under which conditions certain factors could have the most impact;  3) Use the above deliverables to investigate the connection between these factors and past fishery performance and/or population estimates, especially for past events that raised significant management and/or stakeholder questions about what is impacting the blue crab population;  4) Suggest how project findings could be applied to blue crab management strategies by fishery managers and Chesapeake Bay Program partners. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications:** List skills and experience required of winning bidder: | - Expertise in blue crab life history and population dynamics;  - Experience investigating food web dynamics and potential connections between living resources and environmental/habitat conditions;  - Experience studying and/or surveying blue crabs in the Chesapeake Bay;  - Experience using available fisheries, habitat and environmental datasets for the Chesapeake Bay. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Virginia Institute of Marine Science  University of Maryland Center for Environmental Science  Smithsonian Environmental Research Center |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Glenn Davis (MD DNR)  Rob O’Reilly (VMRC)  Marty Gary (PRFC)  Bruce Vogt (NOAA)  Emilie Franke (ERT/NOAA) |

**\_Proposal 3.\_**

**Table 1.**

|  |  |
| --- | --- |
| **Your Name:** | Mary Andrews |
| **Goal Implementation Team:** | Habitat |
| **Project Title:** | Updates to the Chesapeake Fish Passage Tool |
| **Project Type** (See Section IV above)**:** | * Data collection program development * Assessments of data to evaluate progress on metrics * Database development * Mapping, lands assessment |
| **Goal/Outcome:** | Fish Passage |
| **Estimated Cost:** | $70,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | The Fish Passage Work Group (FPWG) has an online tool called the Chesapeake Fish Passage Prioritization Tool (<http://maps.tnc.org/EROF_ChesapeakeFPP/>) that assists the group in identifying high priority projects.  In addition, the tool serves as the FPWG’s database to track progress towards meeting the CBP goals (i.e. it calculates the "miles opened" for each project we complete).  The FPWG agreed periodic upgrades and updates are needed every 2 years as technology quickly changes and is improved. The tasks below outline the needed improvements to the tool:  (1) Moving the tool from "flash" to "java script."  Our tool is written in flash and this script is no longer supported (i.e. you cannot use the tool on iPad for example).  The Flash platform will be completely phased out in the coming months/years rendering our Fish Passage Tool unusable.  (2) Performing updates including updating the dam database. Our dam database is the most comprehensive database in the watershed; however, changes are needed in the database as field assessments identify new dams and fish blockages. In addition, updated climate data layers related to impacts to anadromous fish (example: modeled stream temperature changes) would be added to the tool and used for future project prioritization, as available. Brook Trout data is currently housed in the database. Updates to the tool would also include updated information from the Brook Trout Joint Venture.  (3) The North Atlantic Aquatic Connectivity Collaborative data being collected on culverts (for which HGIT received funding in current cycle to expand to PA/VA) will be added to the database to show a more comprehensive picture of fish blockages in each watershed.  (4) Updating the mileage calculations to account for "fish projects" versus "dam removals" to tell a better story on fish passage efforts in the Chesapeake.  Please note that without switching the program platform from "flash" to "java script" soon, we will be left without a functional tool.  The miles opened calculations we provide the CBP each year are derived directly from this tool - without an upgrade that calculation will not be possible.  The data layers developed by this tool have been provided to other partnerships and efforts to support their individual prioritization efforts. For example, the dam database was supplied to NFWF for use in the development of the River Herring Business Plan and selection of priority watersheds. The FPWG has also supplied data to the Atlantic Coast Fish Habitat Partnership and assisted in the development of their decision support tools. By providing the FPWG’s priority list of projects, we ensure all partners working on fish passage efforts are all focused on the highest priority projects. This allows multiple funding partners to allocate needed finds to the highest priority fish passage projects. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | The FPWG would develop of scope of work and request qualified bidders submit proposals. The proposals would be selected based on a combination of the bidder’s qualifications and cost. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | Brook Trout, Climate |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Mary Andrews (yes, I am willing to serve.) |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Mary Andrews |
| **Goal Implementation Team:** | Habitat |
| **Project Title:** | Updates to the Chesapeake Fish Passage Tool |
| **Refined Cost Estimate:** | $70,000 |
| **Estimated Project Duration:** | 12 months |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | The Fish Passage Work Group (FPWG) has an online tool called the Chesapeake Fish Passage Prioritization (CFPP) Tool (<http://maps.tnc.org/EROF_ChesapeakeFPP/>) that assists the group in identifying high priority projects.  In addition, the tool serves as the FPWG’s database to track progress towards meeting the CBP goals (i.e. it calculates the "miles opened" for each project we complete).  The FPWG agreed periodic upgrades and updates are needed every 2 years as technology quickly changes and is improved. The Contractor will complete the following:  (1) Move the CFPP tool from "flash" to "java script."  Our tool is written in flash and this script is no longer supported (i.e. you cannot use the tool on iPad for example).  The Flash platform will be completely phased out in the coming months/years rendering it unusable. CFPP Tool must be recoded from “flash” to “java script.” If funding allows, develop an automated work flow so data changes are reflected in the tool in near-real time.  (2) Perform updates to the existing data layers: these include:  - The current dam database is the most comprehensive database in the watershed; however, changes are needed in the database as field assessments identify new dams and fish blockages. Updates will be provided from the Chesapeake Bay Fish Passage Coordinators to the Contractor for inclusion in the new tool.  - Include climate data layers related to impacts to anadromous fish (example: modeled stream temperature changes), as available, for future project prioritization by users. The Contractor will seek out this information from the Chesapeake Bay Working Groups (more specifically the Climate Working Group) to determine if this data exists in GIS format. No new data will be collected for this task and no new data layers will be developed. Existing data will be used.  - Brook Trout data is currently housed in the database. Updates to the tool would also include updated information from the Brook Trout Joint Venture.  (3) The North Atlantic Aquatic Connectivity Collaborative data being collected on culverts (for which HGIT received funding in current cycle to expand to PA/VA) will be added to the database to show a more comprehensive picture of fish blockages in each watershed. The Contractor will hold two conferences calls in which the Contractor will suggest cost effective ways to include this information and show examples of how others states and watersheds are including culverts in habitat prioritization efforts.  (4) Updating the mileage calculations to account for "fish passage projects" versus "dam removals" to tell a better story on fish passage efforts in the Chesapeake. |
| **List specific deliverables/products to be provided by the contractor:** | * Updated Chesapeake Fish Passage Tool in java script. * Updated to dam database – dam database to be provided in ArcGIS formats * Climate data layers to be provided in ArcGIS formats * Culvert database and layers to be provided in ArcGIS formats * Meeting minutes from (2) conference calls * New Mileage Calculations for fish passage projects and dam removals. ArcGIS layers showing each. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications:** List skills and experience required of winning bidder: | * Experience in GIS tool development for the purpose of habitat prioritization * Experience with “flash” and “java script” * Prior experience with the Chesapeake Bay Fish Passage Tool preferred however not required |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | The Nature Conservancy – Erik Martin  American Rivers – Serena McClain  Chesapeake Environmental Communications – Paula Jasinski |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Mary Andrews – NOAA  Jim Thompson – Maryland DNR  Alan Weaver – VA Fish and Boat  Julie Devers- USFWS |

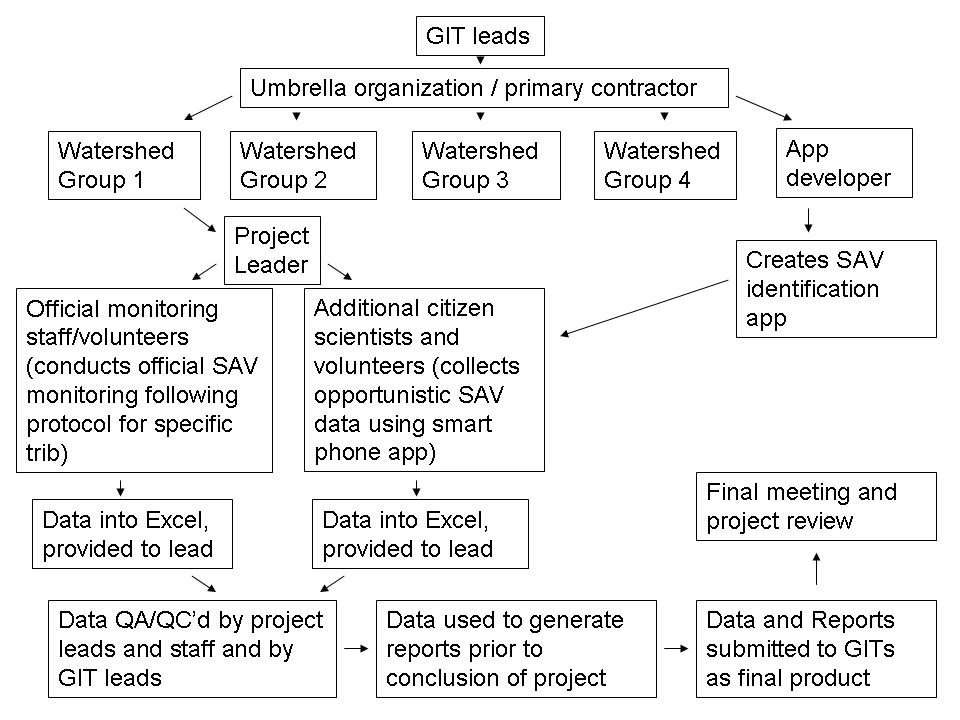
**\_Proposal 4.\_**

**Table 1.**

|  |  |
| --- | --- |
| **Your Name:** | Brooke Landry, Tom Ihde |
| **Goal Implementation Team:** | Habitat, Fish |
| **Project Title:** | Watershed group and Citizen Monitoring of Fish Habitat |
| **Project Type** (See Section IV above)**:** | Workplan implementation; Database development; Training; Mapping; Watershed assessment; Environmental monitoring; Citizen engagement |
| **Goal/Outcome:** | SAV / Sustainable Fisheries (as well as Climate Resiliency, Citizen Stewardship and Local Leadership) |
| **Estimated Cost:** | $52,000  ($10,000 for each watershed group to monitor SAV x 4 watershed groups, $2000 for each watershed group to test fish and invertebrate sampling equipment, $4000 for further development of smartphone app that would allow citizen scientists to collect and convey SAV data in real-time) |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | SAV is a vital component of the Chesapeake Bay’s ecosystem. SAV provides food and habitat for a number of commercially and ecologically important fish and shellfish. It reduces wave energy which decreases shoreline erosion. It acts as a carbon sink and has been identified as an extensively valuable form of “blue carbon” that prevents and reduces the effects of climate change. And it locks sediments in place to increase water clarity, which is used as an indicator and measure towards achievement of the Bay Program’s water quality goals.  In 2015, STAR’s Indicator Action Team identified indicator support needs associated with outcomes of the new Bay Agreement. In 2016, STAR’s Integrated Monitoring Networks Workgroup held a STAC sponsored workshop to pilot a process for networking across GIT needs. Workshop participants ranged from having well-developed monitoring programs to those in need of new monitoring efforts, and to groups willing to collaborate on new or enhanced monitoring efforts. The final workshop mapping exercises highlighted opportunities for collaboration with an evolving Citizen Science program effort, enhancements to the annual SAV aerial survey, and opportunities to build out forage fish assessment strategies.  While the annual SAV aerial survey conducted by the Virginia Institute of Marine Science (VIMS) provides location and density data for SAV beds throughout the Chesapeake Bay and its tributaries, it is unable to capture species data and SAV extent farther up tributaries where aerial imagery is difficult to collect. The primary objective of this project is to give Riverkeeper and Watershed groups the knowledge, training, and equipment necessary to establish SAV monitoring programs that collect species diversity data in areas monitored by the VIMS survey as well as SAV abundance and diversity data in those areas not monitored. By collaborating with citizen-lead groups such as the Riverkeeper organizations, all of the Bay Program partners will benefit from an enhanced network of individuals with local knowledge and broader geographic extent.  Creating an advanced version of the Water Reporter App, specifically designed for Chesapeake Bay SAV, will allow the grantees and their staff/citizen scientists (and anyone with a smartphone) to take pictures of SAV observed in their tributary, identify it using features in the app, and submit it along with their geographic location (which would be grabbed from the GPS in their phone) to the tributary’s Riverkeeper/watershed group/MD DNR/VIMS. |
|  | While surveying for SAV, additional habitat data would also be collected (ie. various water quality parameters, wetland data, shoreline type, and invasive species data).  A secondary objective of the project is to test the suitability of various types of fish traps and benthic grabs in a variety of fish habitats including both submerged and emergent vegetation. SAV and emergent marsh wetlands both provide habitat and forage to fish and shellfish throughout the Bay, but sampling for fish and invertebrates with traditional equipment in SAV beds or marshes is difficult and destructive to both.  This data will fill monitoring needs and data gaps from shallow water habitats around the Bay. Data collected as a result of this project will supplement existing SAV ground-truthing programs (in which only SAV presence/absence and species ID are necessary), and will be made available for use in future trends analyses and ultimately help guide restoration and management of Bay resources. SAV diversity data will be particularly necessary when managing for the effects of climate change. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | Grantees will be selected based on the following criteria: adequate staffing, a proven ability to organize, train, and mobilize citizen scientists, an adequate number of citizen scientists throughout the watershed, and geographic location and data monitoring needs in the proposed watershed. Ideally, tributaries throughout the Chesapeake Bay watershed in both Virginia and Maryland will be represented.  Scientists from the SAV Workgroup (Brooke Landry) and Fisheries GIT (Tom Ihde/Bruce Vogt) will provide and train grantees (in-kind funding from respective institutions for training) on specific protocols for monitoring SAV habitat and collecting forage/equipment data. Grantees would in turn train their staff and volunteers.  Water quality monitoring will follow the Mid-Atlantic Tributary Assessment Coalition’s protocols, which deem data acceptable to the Chesapeake Bay Program if accompanied by a QAPP.  Funds awarded from this grant should be considered “seed” money for each grantee/organization to establish long-term SAV monitoring programs. Funds would be used to travel to training exercises, hire seasonal staff, or purchase necessary equipment. Necessary equipment may include SAV keys, SAV rakes, underwater paper or field notebooks, handheld GPS units, small boats such as kayaks or canoes, GoPros, secchi disks, snorkel gear, fish traps, benthic grabs, and any other equipment deemed relevant.  Grantees will be responsible for data collection, data entry and management (of their data and data collected by their citizen volunteers), QA/QC, data reporting (to the appropriate agency), and a final report for each tributary monitored. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | Sustainable Fisheries, Climate Resiliency, Citizen Stewardship, Local Leadership, Wetlands. I see this as the first step in truly mobilizing the watershed groups by getting them some of the resources they need to collect and contribute significant data to the Bay’s recovery efforts. All of the CBP goals could eventually benefit from their increased participation. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Brooke Landry (Habitat); Tom Idhe (Fisheries) |
| **Goal Implementation Team:** | Habitat and Fisheries |
| **Project Title:** | Watershed group and Citizen Monitoring of Fish Habitat/SAV |
| **Refined Cost Estimate:** | $52,000  ($10,000 for each watershed group to monitor SAV x 4 watershed groups, $2000 for each watershed group to test fish and invertebrate sampling equipment x 4 watershed groups, $4000 for further development of Smart Phone App. Funds not used for fish gear sampling may go towards SAV monitoring). |
| **Estimated Project Duration:** | 12 months |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | **Overview and Purpose:**  Ideally this project will: 1) provide essential SAV and forage gear data to local/state/federal and academic institutions in the Chesapeake Bay watershed, 2) foster a relationship between multiple watershed groups and the Chesapeake Bay Program partners, and 3) encourage/allow watershed groups to meet their own local conservation and restoration objectives.  Background and importance of the work: Submerged Aquatic Vegetation (SAV) is a vital component of the Chesapeake Bay ecosystem. SAV provides food, habitat, and nursery grounds for a number of commercially and ecologically important fish and shellfish. It reduces wave energy which decreases shoreline erosion. It acts as a carbon sink and has been identified as an extensively valuable form of “blue carbon” that mitigates the effects of climate change. And it locks sediments in place to increase water clarity, which is used as an indicator and measure towards achievement of the Chesapeake Bay Program’s water quality goals.  While the annual SAV aerial survey conducted by the Virginia Institute of Marine Science (VIMS) provides location and density data for SAV beds throughout the Chesapeake Bay and its tributaries, it is unable to capture species data and SAV extent farther up tributaries where aerial imagery is difficult to collect. More detailed information about the geographic extent, density, and species composition of SAV in tributaries throughout the watershed will allow Bay scientists and managers to more accurately assess the need for targeted conservation and restoration efforts, as well as the impacts of and vulnerability to the effects of climate change on SAV.  Anticipated Outcomes: The awarded contractor will serve as an umbrella organization that coordinates with four watershed organizations (sub-contractors) chosen based on adequate staffing, a proven ability to organize, train, and mobilize citizen scientists, an adequate number of citizen scientists throughout their watershed, and geographic location and data monitoring needs in the proposed watershed. Ideally, tributaries throughout the Chesapeake Bay watershed in both Virginia and Maryland will be represented. Each watershed group, in coordination with the GIT lead for this project, will develop SAV monitoring programs appropriate to their tributary and collect SAV data during the growing season. Basic water quality measurements will be taken while monitoring for SAV. This data will be entered, analyzed, and reported prior to the conclusion of this contract.  Additionally, each watershed group will conduct a pilot forage (vertebrate and invertebrate) monitoring and identification study. Essential for an effective and quantifiable forage (animal) monitoring program is a complete understanding of the effectiveness of a particular gear to capture the target organisms in a variety of tidal environments (e.g., SAV, emergent marsh, rip rap, mud). During this pilot study, each selected watershed group will aid the Chesapeake Bay Program by testing the effectiveness of a range of equipment (designed to collect targeted forage organisms) in a range of different fish habitats.  The awarded contractor will oversee a fifth sub-contractor that will be responsible for developing a Smart Phone App that will aid citizen scientists, volunteer monitors, and Bay scientists in the identification of SAV species, allow users to take pictures of SAV sample, and record the geographic location at which the species was observed. In addition to field data, this data will be incorporated into the VIMS ground survey dataset and will be used for quality assurance when reviewing field data (the pictures will help verify the species were identified correctly).  Funds awarded for this RFP should be considered “seed” money for each watershed organization to establish long-term SAV monitoring programs in their tributaries. Funds may be used to travel to training exercises, hire seasonal staff, or purchase necessary equipment. Necessary equipment may include SAV keys, SAV rakes, underwater paper or field notebooks, handheld GPS units, small boats such as kayaks or canoes, GoPros, secchi disks, snorkel gear, fish traps, benthic grabs, and any other equipment deemed relevant.  This data will fill monitoring needs and data gaps from shallow water habitats around the Bay. Data collected as a result of this project will supplement existing SAV ground-truthing programs (in which only SAV presence/absence and species ID are necessary), and will be made available for use in future trends analyses and ultimately help guide restoration and management of Bay resources. SAV diversity data will be particularly necessary when managing for the effects of climate change.  **Methods**  What methods do you want the contractor to use? Each Chesapeake Bay tributary is different, so a sampling design appropriate for one may not be appropriate for another. Consequently, the four watershed groups (sub-contractors) will use SAV sampling protocols that will be tributary-specific and established in coordination with the Habitat GIT lead for this project. Transects surveys, systematic random sampling, or shoreline surveys will be the most likely method of sampling. Sub-contractors should be willing to physically get in the water to complete the SAV monitoring in their tributary. Each monitoring program established will also include data collected from citizen scientists and monitoring volunteers that collect data from shore or boats, using rakes, and are not required to get in the water. The Smart Phone App will be particularly important for this type of data collected.  For the pilot forage monitoring and identification study, the sub-contractors will work with the Fisheries GIT lead to develop a study design and gear sampling protocol. As the purpose of this portion of the project is to test a variety of gear types in a variety of habitats, there is no previously determined methodology. Gear and habitat design and selection will be based on the tributaries chosen and represented in this study.  How do you expect this project to be completed? : The awardee must be willing to work with the watershed groups selected by the Habitat and Fisheries GIT leads, as well as with Chesapeake Commons, for Smart Phone App development. The GIT leads will provide and train watershed group project leaders (in-kind funding from respective institutions for training) on specific protocols for monitoring SAV habitat and collecting forage/equipment data. Project leaders would in turn train their staff and volunteers.  Specifically, each project leader will be required to the following regarding SAV:  1) work with the Habitat GIT lead to design an SAV monitoring program in their tributary; 2) attend and successfully complete a training session on SAV sampling and identification; 3) conduct SAV monitoring and collect SAV distribution, abundance, and species composition data during the growing season; 4) enter data into an excel file; 5) review data for quality assurance/control – both data collected during organized monitoring program and data collected by citizen scientists and volunteer monitors from shore or boats 5) share data with interested parties/organizations, and 6) write and submit a tributary-specific SAV status report prior to the conclusion of project.  Each project leader will be required to the following regarding forage gear testing and sampling: 1) work with the Fisheries GIT lead to design forage sampling/gear testing program in their tributary; 2) attend and successfully complete a training session on gear handling and identification of targeted forage species, including both benthic invertebrates and small fish; 3) test a range of gears (benthic corers, sieves, and minnow traps) designed to capture invertebrate and vertebrate forage, as per designated protocols (currently under development); 4) identify and record numbers of different target organisms captured in these gears; 5) successfully record a range of required site-specific data, including: physical characteristics (e.g., depth, secchi depth, temperature, tidal movement, weather conditions), temporal (e.g., time, day), and spatial (i.e., gps coordinates) for each test site sampled; 6) enter data and transfer collected information to database.  Will data be collected? If so, list what kind of data will be gathered and what type of protocols should be used for data compilation and analysis? Will this data gathering effort require a Quality Assurance Project Plan (QAPP)? Yes. SAV distribution, abundance, and species composition data will be collected. Fish and benthic data as well as gear functionality data will be collected. All data will be entered into an excel database and QA/QC’d by the project leader for each watershed group and again by the GIT leads prior to official use. QAPP plans for both are currently being developed.  Stakeholder participants   * Habitat and Fisheries GITs |
|  | * an organization familiar with Chesapeake Bay fish habitat conservation and restoration that is willing to work with watershed groups and serve as the umbrella coordinator for this project * Riverkeeper and watershed organizations with local objectives regarding fish habitat conservation and restoration and with the capacity to establish scientific monitoring programs using staff and volunteers * Citizen scientists and volunteer monitors.   **Due dates:**  January 2017: GIT leads meet with awardee and sub-contractors for overall project meeting  February 2017: GIT leads work with sub-contractors/watershed groups to design SAV and forage monitoring and testing programs; advise on gear purchase  March: 1st status report and invoice due for review and approval  April: Prep for SAV monitoring and build forage gear  May: Prep for SAV monitoring and begin monitoring depending on tributary; build forage gear and begin sampling depending on tributary  June: SAV monitoring and gear sampling begins/continues; 2nd status report and invoice due for review and approval  July: SAV monitoring and gear sampling  August: SAV monitoring and gear sampling  September: SAV monitoring and gear sampling; 3rd status report and invoice due for review and approval  October: SAV data entry, QA/QC, write report; gear and forage data entry, QA/QC, write report  November 15th: Submit SAV and forage gear reports for review and return (1 report for SAV and 1 report for forage gear from each watershed organization).  December 15th: Submit SAV and forage gear final reports, conclude project at final meeting.  Intended uses of the products  The data and final report will be presented to the Habitat and Fisheries GITS to inform them of SAV conservation and restoration needs in specific tributaries, and of the effectiveness of particular gear in capturing target organisms in a variety of tidal environments (e.g., SAV, emergent marsh, rip rap, mud). |
| **List specific deliverables/products to be provided by the contractor:** | As the coordinator, the awardee will be responsible for providing or ensuring the sub-contractors provide the following:   * Itemized budget and justification from each sub-contractor * Quarterly progress reports and invoices (covering each sub-contractor) * All SAV and forage gear data entered into excel spreadsheet/database * Final report for both SAV data and a report of the effectiveness of fish and benthic traps tested * Smart Phone App for SAV identification and reporting |
| **QAPP:** Will environmental data be generated, and will a quality assurance plan be required? | Sub-contractors will be responsible for attending training workshops on SAV species identification, monitoring techniques and data collection and on fish gear testing and fish and benthic vertebrate and invertebrate identification. They will follow proven methods to collect and report SAV data and will be responsible for data collection, data entry and data management. Water quality monitoring must follow the Mid-Atlantic Tributary Assessment Coalition’s protocols, which deem data acceptable to the Chesapeake Bay Program if accompanied by a QAPP. A QAPP for SAV is being developed and will be used for this project. Prior to submittal of data and the final report, SAV species observations will be reviewed by project leaders and SAV experts for accuracy. SAV observations will also be submitted to VIMS for incorporation into the ground-truthing section of the annual SAV report and subject to established VIMS QA/QC policies.  Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications:** List skills and experience required of winning bidder: | The awardee will act as an “umbrella coordinator” for up to four citizen science/watershed organizations. The awardee will also work closely with the GIT leads throughout the duration of the project. Therefore the awardee should have experience working with state agencies, as well as citizen science groups and watershed/riverkeeper organizations. The awardee should also have experience managing multiple, simultaneous grants/contracts (invoicing, reimbursables, contracts), and have the capability to receive direct federal funds.  Sub-contractors will be selected (by GIT leads) based on the following criteria: adequate staffing, a proven ability to organize, train, and mobilize citizen scientists, an adequate number of citizen scientists throughout the watershed, and geographic location and data monitoring needs in the proposed tributary. Ideally, tributaries throughout the Chesapeake Bay watershed in both Virginia and Maryland will be represented. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Betsy Nicholas  Waterkeepers Chesapeake  PO Box 11075  Takoma Park, MD 20913  202-423-0504  [betsy@waterkeeperschesapeake.org](mailto:betsy@waterkeeperschesapeake.org)  Al Todd  Alliance for the Chesapeake Bay  501 Sixth St.  Annapolis, MD 21403  443-949-0575  [contact@allianceforthebay.org](mailto:contact@allianceforthebay.org)  **Scott Kovarovics**  Maryland Division Izaak Walton League of America  707 Conservation Lane, Suite 110  Gaithersburg, MD 20878  (301)548-0150 x 223  [skovarovics@iwla.org](mailto:jeff.deschamps@verizon.net) |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Peter Tango  USGS, Chesapeake Bay Program Office 410 Severn Ave. Suite 109 Annapolis, MD 21403  Email:   [ptango@chesapeakebay.net](mailto:ptango@chesapeakebay.net)  Phone:  (410) 267-9875  Cassie Gurbisz  National Socio-Environmental Synthesis Center  1 Park Place, Suite 300  Annapolis, MD 21403  Email: [cgurbisz@sesync.org](mailto:cgurbisz@sesync.org)  Phone: (410) 919-9138  Nancy Rybicki  USGS  12201 Sunrise Valley Dr  Reston, VA 20192  Email: nrybicki@usgs.gov  Phone: (703) 648-5728  Becky Golden  Maryland DNR  580 Taylor Ave, D-2  Annapolis, MD 21401  Email: [Rebecca.golden@maryland.gov](mailto:Rebecca.golden@maryland.gov)  Phone: (410) 260-8698 |



**\_Proposal 5.\_**

**Table 1.**

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| **Your Name:** | Wetland Workgroup Co-Chairs  Amy Jacobs and Erin McLaughlin |
| **Goal Implementation Team:** | Habitat GIT |
| **Project Title:** | Increasing landowner participation in wetland programs through improved information access and program staff cross-training. |
| **Project Type** (See Section IV above)**:** | Workplan Implementation |
| **Goal/Outcome:** | To further enhance outreach to landowners and increase implementation of wetland restoration projects |
| **Estimated Cost:** | $50,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | In support of our workplan to advance and accelerate wetland restoration in the Bay Watershed, the Wetland Workgroup has collaborated with partners to identify major obstacles to implementing wetland restoration projects. Multiple studies and facilitated discussions have identified obstacles from the perspective of both landowners and practitioners including a The Nature Conservancy and Ducks Unlimited NFWF-funded survey of wetland practitioners, FY14 GIT-funded survey of agricultural landowners, and the Delaware Wetland Conference workshop on marketing to private landowners. This proposal was developed from the results and recommendations of these efforts. One of the key obstacles identified was a universal understanding of all the programs available to private landowners who are interested in restoring wetlands. Often, individual agencies interact with landowners, but are only knowledgeable about their program and if it does not meet the needs of the landowner, an opportunity to restore a wetland may be lost. Having a central location/website for each region would allow practitioners from any organization or private landowners to review all the available options for a property and identify a program that works best for individual landowner interests. Additionally, training on the use of the website, program eligibility requirements, specifications, and enrollment process would be critical to bring awareness to the new tool and direct practitioners to broaden their knowledge about the variety of programs.  To bridge the gaps identified by the Wetland Workgroup efforts, we propose to hire a contractor to establish a website with all available wetland programs per region, develop a marketing and outreach plan for each region, and provide training to wetland practitioners including Soil Conservation District and other implementation staff. These objectives will help the Wetland Workgroup achieve Key Action Four (Develop solutions to address barriers and improve outreach), under Management Approach Two (Identify barriers to wetland restoration and develop solutions to address them) in the Wetland Outcome Two-Year Work Plan. Our goal is to provide accurate wetland program information to both landowners and restoration implementation staff, and to develop marketing and outreach plans for each region in the Chesapeake Bay Watershed to increase participation in wetland restoration programs and thus increase the number of acres restored. In the landowner surveys completed last year, 31% of landowners were definitely or probably interested in restoring wetlands on their property illustrating the untapped opportunity if they have access to more information on programs that match their interests. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | Using the recommendations from the OpinionWorks survey and the TNC/ DU Stakeholder report, the contractor will advance a marketing and outreach strategy to increase participation in wetland restoration programs.   1. The contractor will develop a website that provides information and a decision support tool on wetland restoration programs by jurisdiction/watershed in an easy to follow format for practitioners and landowners to determine their eligibility, program requirements, and associated incentives. Contacts for each area will be provided for more information. 2. The contractor will develop printed brochures (identified as the preferred way to receive information in landowner survey) that appeal to landowners in different regions on the opportunities to restore wetlands and programs and other assistance that is available. 3. The contractor will facilitate regional training opportunities via webinar trainings or in person for wetland practitioners and implementation staff (i.e. Soil Conservation District employees, etc.). These trainings will also be used to gain feedback on the regional brochures and the audience to send the information. 4. The contractor will finalize and distribute the brochures through multiple media outlets (mail, offices, farmer groups etc.). |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | We have received strong support from the Forestry Work Group and the Black Duck Working Team that this work would support their goals. The forestry workgroup has been focused on increasing riparian buffers and the majority of wetlands in PA are associated with streams. Additionally, the landowner survey found that landowners in PA associated with streams more than wetlands and aligning these efforts would be beneficial. Increasing participation in wetland restoration programs will also directly support the Black Duck goal by enhancing and increasing habitat for this species. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes. |

**Table 2.**

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| **GIT Lead Name:** | Amy Jacobs |
| **Goal Implementation Team:** | Habitat/ Wetland Workgroup |
| **Project Title:** | Increasing landowner participation in wetland restoration programs – information access and program cross-training. |
| **Refined Cost Estimate:** | $50,000 - $60,000 |
| **Estimated Project Duration:** | 1 year |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | Background: The Wetland Workgroup under the Chesapeake Bay Program is working to accelerate the implementation of wetland restoration projects in the Chesapeake Bay watershed to meet the goal of restoring 85,000 and enhancing 100,000 acres by 2025. Multiple studies and facilitated discussions have identified obstacles to restoring wetlands from the perspective of both landowners and practitioners including a The Nature Conservancy and Ducks Unlimited NFWF-funded survey of wetland practitioners, FY14 GIT-funded survey of agricultural landowners, and the Delaware Wetland Conference workshop on marketing to private landowners. One of the key obstacles identified is a universal understanding of all the programs available to private landowners who are interested in restoring wetlands. In the landowner surveys completed last year, 31% of landowners were definitely or probably interested in restoring wetlands on their property illustrating the untapped opportunity if they have access to more information on programs that match their interests.  However, individual agency and conservation staff that interact with landowners are only knowledgeable about their program or a limited number of programs. If these programs do not meet the needs of the landowner, an opportunity to restore a wetland may be lost. Having a central location/website would allow practitioners from any organization or private landowners to review all the available options for a property and identify a program that works best for individual landowner interests. Additionally, training on the use of the website, program eligibility requirements, specifications, and enrollment process would be critical to bring awareness to the new tool and direct practitioners to broaden their knowledge about the variety of programs to better serve landowners in their area.  Scope of Work   1. Develop a website with all available wetland programs by state.   1.a. Gather content for website on the available programs (federal, state, and local) that are available to fund wetland restoration projects, eligibility of each program, incentive payments, ranking criteria, geographic focus, etc. The project steering committee will assist with providing contacts in each state and a preliminary list of programs.  1.b. Develop a website that provides program information by state and a decision support tool on wetland restoration programs in an easy to follow format for practitioners and landowners to determine their eligibility, program requirements, and associated incentives that may be available.   1. Develop a marketing and outreach plan for each state on the opportunity to restore wetlands.   2.a. The contractor will develop outreach materials including but not limited to printed brochures (identified as the preferred way to receive information in landowner survey) that appeal to landowners in different regions on the opportunities to restore wetlands and programs and other assistance that is available.   1. Perform education/ marketing of the website and materials to wetland practitioners and other conservation program staff including Soil Conservation District, local watershed groups, and private consultants.   3.a. Facilitate regional workshop opportunities via webinar trainings and in person for wetland practitioners and implementation staff (i.e. Soil Conservation District employees, etc.). At least 3 in-person trainings are required (located in PA, MD/DE, and VA at minimum) and at least one webinar that can be recorded for future viewing. These workshops will also be used to gain feedback on the regional brochures and the audience to send the information. |
| **List specific deliverables/products to be provided by the contractor:** | * Website * Printed brochure on wetland restoration opportunities * 3 in-person workshops (located in PA, MD/DE, and VA) on the website and brochure * 1 webinar (and recording) to provide training on the website and brochure |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | No |
| **Qualifications:** List skills and experience required of winning bidder: | Website development with interactive tools and aimed toward the public and technical program staff   * Succinctly presenting complex materials * Engaging interface * Easy navigation of information   Coordinating and facilitating trainings in person and remotely  High quality products delivered on time |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Need help here! |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Amy Jacobs  Melissa Yearick  Sally Claggett  Brittany Haywood |

**\_Proposal 6.\_**

**Table 1.**

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| **Your Name:** | Matt Keefer |
| **Goal Implementation Team:** | Water Quality GIT; Forestry Workgroup |
| **Project Title:** | Assessing Multifunctional Riparian Forest Buffer Benefits |
| **Project Type** (See Section IV above)**:** | Work plan implementation Project: Includes components of Economic modeling, Baseline analyses, Environmental monitoring, and Environmental demonstration and assessment project |
| **Goal/Outcome:** | Vital Habitats Goal; Forest Buffer Outcome |
| **Estimated Cost:** | $65,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Riparian forest buffers are a key BMP identified in each jurisdiction’s watershed improvement plan. Recent enrollments of riparian forest buffers in have declined across the Bay watershed. Without additional tools beyond the current offerings, Pennsylvania is unlikely to meet its goal. Adding greater flexibility in landowner eligibility, riparian forest buffer designs, allowable plant materials, and other elements, without compromising water quality, will help to reinvigorate interest in riparian forest buffers and accelerate participation across the Bay watershed. Allowing landowners to harvest products and produce an income from woody plants provides additional incentives to landowners to establish riparian forest buffers, to maintain them, and to retain them for the long-term. Virginia Tech has had some success with multifunctional buffer establishment. |
|  | As previously mentioned, this project directly addresses several management approaches and key actions identified in the Forestry Workgroup’s 2-year RFB work plan; including Leadership through establishing pilot projects; RFB Enhancements by establishing need for alternative funding options; RFB Technical Assistance by appealing to landowners’ preferences and addressing their concerns; and more. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | Funding would be provided to install multi-functional RFBs on private and/or public land in PA. These pilot sites would include several planting/buffer designs on a number of different sites/environmental conditions including a core, conventional buffer of at least 15 to 35 feet wide, and then alternative designs for a multifunctional buffer.  Funding would also support an accompanying monitoring program to assess water quality improvements and tree and shrub species success and survivability.  Our current assumption is that these designs and plantings would meet the definition of and receive the same level of credit as “Forest Buffers” in the Bay Model. Additionally, the project would explore potential markets for products produced from the buffers. Data would be compiled, analyzed, and reported to the Forestry Workgroup and other appropriate Goal Teams. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | This project can help to advance the work of several Management Strategies:   * Tree Canopy: these alternative buffers could be planted on non-farmland; thus increasing tree canopy in developed areas * Stream Health: by providing baseline data * Healthy Watersheds: relates to several key actions related to forest cover * 2017 and 2025 WIPs: Forest Buffers are a key BMP identified in each jurisdiction’s watershed implementation plan. * Citizen Stewardship: by providing potential volunteer opportunities in the form of planting or maintenance; and also supporting community engagement in watershed improvement activities and understanding local food markets |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes. Matt Keefer or Tracey Coulter from PA DCNR are willing to serve as GIT lead. |

**Table 2.**

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| --- | --- |
| **GIT Lead Name:** | Matt Keefer |
| **Goal Implementation Team:** | Water Quality GIT; Forestry Workgroup |
| **Project Title:** | Assessing Multifunctional Riparian Forest Buffer Benefits |
| **Refined Cost Estimate:** | $65,000 |
| **Estimated Project Duration:** | 4 years |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | **Project Goals**   1. The project will result in the establishment of a demonstration multifunctional riparian forest buffer site in Pennsylvania that meets the Chesapeake Bay Program’s definition of a riparian forest buffer. 2. The demonstration site will include several (3-5) MFRFB designs to showcase various arrangements and species mixes that represent a practical approach for a landowner to replicate, considering product production, management, harvesting, and maintenance needs. 3. Based on the buffer designs, PA DCNR will develop templates and communications tools for outreach to interested landowners and farmers. 4. These sites will provide opportunities to study and track several components of MFRFBs, including various designs, species survivability, maintenance requirements, pollutant reduction capacity (N, P, and sediment), change over time, income generation and product production potential, and acceptance into the Bay model. 5. The established sites will be available for demonstration and educational opportunities to promote both traditional and MFRFBs. 6. The data and information produced will contribute to the dialogue of refining and/or expanding existing state and Federal RFB programs.   **Background and importance of the work**  Riparian forest buffers are a key BMP identified in each jurisdiction’s watershed improvement plan. They are an efficient and cost-effective BMP for reducing pollutant loading into streams by filtering and removing nitrogen, phosphorus, and sediment. Additionally, forest buffers provide wildlife habitat and clean air, provide cooling benefits for streams, and sequester carbon. Installation of riparian forest buffers has declined across the Bay watershed in recent years. Fluctuations in commodity prices, taking farmland out of production, and dissatisfaction with Federal cost-share programs are often cited as reasons for the decline. Without additional tools beyond the current offerings, Pennsylvania is unlikely to meet its goal.  Multifunctional riparian forest buffers are similar to traditional forest buffers, where trees are planted with the goal of establishing a streamside forest. What is unique about MFRFBs, is that they provide opportunities for landowners to harvest products and generate income from the buffer. The first 15 feet of the buffer are planted and managed as a traditional RFB. Beyond this inner zone, fruit- and nut-producing trees and shrubs along with woody florals and potentially biomass species are planted in the outer zones and managed for production. MFRFBs work like traditional riparian forest buffers, but offer opportunities for landowners to harvest crops such as fruits, nuts, and woody florals for income generation or personal use. These buffers also provide significant wildlife habitat value and have the potential to be aesthetically pleasing, which is often cited as a major concern by landowners.  Adding greater flexibility in landowner eligibility, riparian forest buffer designs, allowable plant materials, and other elements, without compromising water quality, will help to reinvigorate interest in riparian forest buffers and accelerate participation across the Bay watershed. Allowing landowners to harvest products and produce an income from woody plants provides additional incentives to landowners to establish riparian forest buffers, to maintain them, and to retain them for the long-term.  This work will help to fill gaps in the current understanding of MFRFBs, particularly with proven designs, load reductions, income generation potential, and management and maintenance requirements.  A group of partners in Virginia including the National Agroforestry Center, VA Department of Forestry, Virginia Tech, and Appalachian Sustainable Development has begun similar work in Virginia. This project seeks to build on this existing work.  **References**  ***Working Trees:******Why add edible and floral plants to riparian forest buffers?*** <http://nac.unl.edu/documents/workingtrees/infosheets/WTInfoSheet-MultiFunctionalBuffer.pdf>  ***Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways*** [http://www.srs.fs.usda.gov/ pubs/gtr/gtr\_srs109.pdf](http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs109.pdf)  ***How to Plan for and Plant Streamside Conservation Buffers with Native Fruit and Nut Trees and Woody Floral Shrubs*** Trozzo, Munsell and Chamberlain<http://pubs.ext.vt.edu/ANR/ANR-69/ANR-69.html>  ***Native Fruit and Nut Trees and Shrubs of the Virginia Mountains and Piedmont***Trozzo, Munsell and Chamberlain[**http://pubs.ext.vt.edu/ANR/ANR-23/ANR-23NP.html**](http://pubs.ext.vt.edu/ANR/ANR-23/ANR-23NP.html)  ***Woody Florals for Income and Conservation***Trozzo, Munsell and Chamberlain<http://pubs.ext.vt.edu/ANR/ANR-22/ANR-22NP.html>  **Barriers or obstacles**   1. Identifying a landowner who would be willing to host the project. This could be a public or private landowner. 2. Procuring suitable planting stock of adequate quality for the plantings. 3. Designing a planting plan with tree and shrub species that could be easily replicated and installed across Pennsylvania and other Bay states. 4. Forecasting and understanding product markets and potential end consumers. 5. Designing the buffer to meet the Chesapeake Bay Program’s definition of a “riparian forest buffer.”   **Methods (organized by Deliverables)**   1. Establishment of a demonstration multifunctional riparian forest buffer site in Pennsylvania that meets the Chesapeake Bay Program’s definition of a riparian forest buffer. The demonstration site will include several (3-5) MFRFB designs to showcase various arrangements and species mixes that represent a practical approach for a landowner to replicate, considering product production, management, harvesting, and maintenance needs. 2. The demonstration buffers will meet the Chesapeake Bay Program’s definition of a “riparian forest buffer.” 3. The demonstration buffers will be designed in a manner that considers the silvics of species selected, management and maintenance needs, and harvesting of the products. 4. The designs of the buffers should be replicable and represent a practical approach for installing and managing a MFRFB. 5. The designs will consider recommendations for multi-story cropping contained in: ***Conservation Buffers: Design Guidelines for Buffers, Corridors, and Greenways*** [http://www.srs.fs.usda.gov/ pubs/gtr/gtr\_srs109.pdf](http://www.srs.fs.usda.gov/pubs/gtr/gtr_srs109.pdf) 6. The buffer will include mostly native species that have the potential to grow well in Pennsylvania and most of the Chesapeake Bay watershed. 7. The contractor will develop a species list and planting plan for PA DCNR approval. 8. The designs will include a 15-foot natural RFB for zone 1 with alternative planting designs in an outer zone or segmented further into zones 2 and 3. 9. One of the designs should include a woody biomass crop. 10. The designs should consider aesthetic values of the buffer. 11. The sites should be of sufficient size to represent a realistic planting project. 12. The sites can be planted on the same ownership and stream reach or on separate locations to consider the variation among the design templates and site conditions. 13. The sites should be planted according to current BMPs. 14. The sites must accommodate groups for tours and other educational or research events. 15. After initial planting, annual maintenance for three years to ensure successful establishment. Maintenance activities include but are not limited to: replacement planting, invasive species control, tree tube and stake maintenance, etc.     1. Contractor must receive PA DCNR approval for any chemical use, including herbicides, pesticides, and fertilizer.     2. Maintenance will follow current BMPs. 16. An agreement with the landowner to address longer-term considerations beyond the initial 4-year grant period including:     1. Contractor must demonstrate that they or the landowner will commit to maintaining the MFRFB for a minimum of 15 years.     2. The landowner agrees to grant access to PA DCNR for continued monitoring and use of the site for education programming and events. 17. For three years after the initial planting, an annual assessment of species survivability and “lessons learned” for the trees and shrubs planted specifically for income/product generation.     1. The contractor will produce an annual report summarizing species survivability and “lessons learned” on maintenance and success of the trees and shrubs planted specifically for income/product generation.     2. Species survivability can be expressed as a simple percentage of stems planted.     3. “Lessons Learned” can be a qualitative assessment.     4. There should be a report for each design, unless it’s appropriate to generalize findings across the designs. 18. An assessment of the potential financial performance of each of the MFRFB designs.     1. Contractor will produce a report that details the potential financial performance of each of the MFRFB designs.     2. The report will consider potential markets and outlets for products, including wholesalers, restaurants, local consumers, and large urban centers such as Philadelphia and Baltimore/Washington DC.     3. The assessment should utilize existing tools such as USDA’s “NTFP Calculator” <http://nac.unl.edu/tools/ntfp.htm> as part of the analysis.     4. The assessment will include a set of recommendations or “tips” for farmers and landowners considering installing a MFRFB.   **Stakeholder Participants (potential)**   * Pennsylvania Departments of Conservation and Natural Resources, Environmental Protection, and Agriculture * PA Riparian Forest Buffer Advisory Committee * Chesapeake Bay Program/ Forestry Workgroup * Conservation NGOs * Farmers * Penn State, multiple entities * Local municipalities   **Due Dates (after awarded the grant)**  6 months: design 3-5 MFRFBs  6 months: landowners/sites identified and agreement secured  1 year to 18 months: Buffers established  2-4 years: species survivability assessments and lessons-learned  2-4 years: maintenance performed  2 years: assessment of potential financial performance completed  **Intended Uses of Products**   1. Promote both traditional and multifunctional riparian forest buffers to farmers and other landowners based on the success and lessons learned from the demonstrations sites and the financial performance assessment. 2. Provide education opportunities. 3. Provide data to Chesapeake Bay Program and other partners for continued refinement and expansion of riparian forest buffer programs. |
| **List specific deliverables/products to be provided by the contractor:** | 1. Establishment of a demonstration multifunctional riparian forest buffer site in Pennsylvania that meets the Chesapeake Bay Program’s definition of a riparian forest buffer. The demonstration site will include several (3-5) MFRFB designs to showcase various arrangements and species mixes that represent a practical approach for a landowner to replicate, considering product production, management, harvesting, and maintenance needs. 2. After initial planting, annual maintenance for three years to ensure successful establishment. Maintenance activities include but are not limited: to replacement planting, invasive species control, tree tube and stake maintenance, etc. 3. An agreement with the landowner to address longer-term considerations beyond the initial 4-year grant period including: 4. Continued maintenance of the site 5. Access granted to PA DCNR for continued monitoring and use of the site for education programming and events. 6. For three years after the initial planting, an annual assessment of species survivability and “lessons learned” for the trees and shrubs planted specifically for income/product generation 7. An assessment of the potential financial performance of each of the MFRFB designs. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications:** List skills and experience required of winning bidder: | 1. Riparian forest buffer design, installation, and maintenance. 2. Understanding of economic markets for potential forest products such as nuts, fruits, woody florals, and biomass. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Stroud Water Research Center  Penn State, Agricultural and Environment Center  Penn State/USDA Ag Research Service  Chesapeake Bay Foundation  The Nature Conservancy, Pennsylvania Office  Western Pennsylvania Conservancy  Land Studies, Inc. |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Katie Commender, Appalachian Sustainable Development  Kate MacFarland, USDA National Agroforestry Center  Gary Bentrup, US Forest Service |

**\_Proposal 7.\_**

**Table 1.**

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| --- | --- |
| **Your Name:** | Normand Goulet, Urban Stormwater Workgroup Chair |
| **Goal Implementation Team:** | Water Quality |
| **Project Title:** | Development of Chesapeake Bay Chesapeake Bay Technology Assessment Protocol for Manufactured Stormwater Treatment Devices |
| **Project Type** (See Section IV above)**:** | Performance Measure Development |
| **Goal/Outcome:** | Water Quality/ 2017 and 2025 WIP Outcomes |
| **Estimated Cost:** | $50,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Develop a stormwater manufactured treatment devices (MTD) testing protocol designed to quantify the nutrient and sediment reduction efficiencies for proprietary devices completing the testing protocol. Upon completion of the testing protocol and approval of the USWG, these BMPs would be approved for incorporation in the Chesapeake Bay modeling tools.  In March of last year a Chesapeake Bay Science and Technology Advisory Committee (STAC) Workshop was held to discuss the challenges of incorporating MTDs into the Chesapeake Bay TMDL framework. |
|  | Currently the Chesapeake Bay Program (CBP) does not provide water quality nutrient or sediment credit to the States for MTDs installed in its modeling for TMDL attainment. Workshop participants reached an overwhelming consensus that an MTD evaluation program is necessary, and that because of the water quality treatment needs associated with the Chesapeake Bay TMDL, the CBP may provide an excellent venue for such a program. Workshop participants strongly recommended that an advisory panel be formed through the leadership of the CBP’s Urban Stormwater Workgroup (USWG) to design this program.  Clearly a challenge exists in balancing the need to monitor and verify nutrient removal performance of MTDs and the need to establish a reasonable process that continues to encourage innovation and MTD product development. Some may argue that testing is too expensive and presents a barrier to enter into a competitive industry, or that monitoring may stifle design innovation. The counterargument is that testing and verification is not new to industry at all and that it sets a bar and levels the playing field for all.  Within the regulated community, there is a clear need for a rigorous, consistent, and scientifically defensible process that is both transparent and affords manufacturers a clear path towards approval.  The private companies that have invested hundreds of thousands of dollars into research and design are hopeful that the Chesapeake Bay Program and its partnership can reach a consensus. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | As with all Chesapeake Bay partnership actions, it will start with the development of an advisory panel. Ideally, this panel would be represented by members of the various MTD sectors; including the MTD industry, regulatory community, engineering consultant, academic research and practitioners. To benefit from work in the prior development of existing MTD protocols such as TARP and TAPE, the panel will establish lines of communication with the respective agencies to involve them in the discussion and coordinate efforts.  The Panel will need to determine a specific protocol framework, its programmatic depth and how the process will be administered. For programmatic depth, options range in complexity from self-verification to 3rd Party to certification.  It is anticipated that the initial approach of the Panel might be to start the development of Chesapeake Bay Technology Assessment Protocol (CBTAP) utilizing the framework of the recently withdrawn Virginia Technology Acceptance Protocol (VTAP). The previously described limitations and concerns in regard to existing protocols lead to Virginia’s effort to develop the VTAP as a means of addressing MTDs within the Commonwealth. Unfortunately, this protocol was withdrawn by the Virginia Department of Environmental Quality (DEQ). While the existing protocol will need to be refined, and certainly to accommodate the Bay Watershed as a whole, the framework should serve as an excellent starting point.  Ideally, the final protocol would result in a manufacturer’s testing protocol which will produce nitrogen/phosphorus/sediment removal efficiencies which can then be incorporated into the Chesapeake Bay modeling framework with a degree of confidence. Successful completion of the testing protocol will also |
|  | enable the manufacture to market the device throughout the watershed and be able to claim an associated load reduction that a developer/local government can then claim credit for in a TMDL Action Plan. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? |  |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Normand Goulet, Urban Stormwater Workgroup Chair |
| **Goal Implementation Team:** | Water Quality |
| **Project Title:** | Development of Chesapeake Bay Chesapeake Bay Technology Assessment Protocol for Manufactured Stormwater Treatment Devices |
| **Refined Cost Estimate:** | $50,000 |
| **Estimated Project Duration:** | 1 year |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | **Development of Chesapeake Bay Technology Assessment Protocol (CBTAP)**  Develop a stormwater manufactured treatment devices (MTD) testing protocol designed to quantify the nutrient and sediment reduction efficiencies for proprietary devices completing the testing protocol for inclusion into the Chesapeake Bay modeling suite.  **MTD Sizing Criteria linked to Performance Verification**  Stormwater manufactured treatment devices (MTD’s) are utilized on development sites of differing sizes and conditions. However, to ensure a relatively consistent level of performance for any given type of MTD critical sizing variables must be held constant. For practices that treat incoming runoff as it enters the BMP and then discharges the treated runoff without providing volume storage it is common to establish a consistent hydraulic loading rate (unit of flow per unit of filtering surface area) that is not to be exceeded regardless of the size of the drainage area being treated. For volumetric practices that capture and retain a volume of runoff and slowly release it, specific criteria are established for the amount of storage required and the amount of area the volume must be spread over to achieve the target level of performance. The lack of sizing criteria linked to the performance data for MTDs places the burden of trying to determine if a MTD is properly sized on local and state reviewers, many of whom do not have the time or expertise to address this issue. There are a number of different evaluation programs for MTDs that utilize field and/or laboratory testing to establish performance capabilities. These programs document the appropriate hydraulic loading rate for a given MTD to meet water quality criteria within a suitable maintenance period.  **Task 1**: Develop detailed scope of work to support the development of the Chesapeake Bay Technology Assessment Protocol  **Task 2**: Protocol Framework: Utilizing the recently withdrawn Virginia Technology Acceptance Protocol (VTAP) and other relevant protocols such as TAPE and TARP, document a recommended protocol framework which takes into account the programmatic goals of the Chesapeake Bay Program.  **Task 3**: Sizing Criteria: Perform and document review of relevant literature to include at the minimum, the assessment protocols TAPE, TARP, VTAP, and any other State programs which specify or describe sizing criteria linked to performance verification for MTDs.  **Task 4**: Develop and document a recommended sizing criterion for various MTD classes based on Task 3.  **Task 5**: Perform secretariat and support function for the recently assembled MTD Advisory Panel.  **Task 6**: Assist in development of final report and recommendations to the Urban Stormwater Workgroup. |
| **List specific deliverables/products to be provided by the contractor:** | Detailed scope of work  Recommended sizing criterion document  Recommended Protocol document |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | No |
| **Qualifications:** List skills and experience required of winning bidder: | Knowledge of stormwater treatment devices  Knowledge of environmental engineering concepts to include hydraulics and hydrology  Professional Engineer |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Center for Watershed Protection  ([center@cwp.org](mailto:center@cwp.org))  Carmine C. Balascio, Ph.D., P.E., University of Delaware  ([carmine@udel.edu](mailto:carmine@udel.edu))  Mark Sievers, Tetra Tech  ([mark.sievers2@tetratech.com](mailto:mark.sievers2@tetratech.com)) |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | James Davis Martin, Chairman WQGIT  ([James.Davis-Martin@deq.virginia.gov](mailto:James.Davis-Martin@deq.virginia.gov))  Tom Schueler, USWG Coordinator ([watershedguy@hotmail.com](mailto:watershedguy@hotmail.com))  Whitney Katchmark, HRPDC ([wkatchmark@hrpdcva.gov](mailto:wkatchmark@hrpdcva.gov)) |

**\_Proposal 8.\_**

**Table 1.**

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| --- | --- |
| **Your Name:** | Toxic Contaminants Workgroup (Allen and Phillips) |
| **Goal Implementation Team:** | Water Quality |
| **Project Title:** | Assessing Benefits of Wastewater Treatment Plant Nutrient Control Upgrades on Toxic Contaminants |
| **Project Type** (See Section IV above)**:** | Policy Research and Recommendations; Environmental Monitoring |
| **Goal/Outcome:** | Toxic Contaminants Goal; Research Outcome and Policy/Prevention Outcome |
| **Estimated Cost:** | $40,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Enhanced nutrient controls implemented at wastewater treatment facilities for the Bay nutrient and sediment TMDL are expected to provide co-benefits of reducing toxic contaminants in effluent. However, additional data are needed to demonstrate the manner and extent of those co-benefits.  This project will provide information to address Toxics Policy and Prevention |
|  | Management Strategy item to better characterize reductions of PCBs from WWTP. The information will help inform potential co-benefits of nutrient and toxic contaminants reductions (with an emphasis on PCBs) from WWTP. Finally, the findings will also help design monitoring of PCB concentrations in wastewater effluent as a strategy for measuring progress towards achievement of the Toxic Contaminant Reduction Goal. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | Perform a review of published scientific literature on toxic contaminant reductions achieved through the implementation of nutrient controls at wastewater treatment facilities.  Obtain and analyze available wastewater treatment facility influent and effluent data for a range of toxic contaminants. Summarize the potential benefits of the nutrient upgrades to WWTP on toxic contaminant loads based upon the literature review and available data. Recommend a study design to monitor toxic contaminant reductions from nutrient control measures at wastewater treatment facilities. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | 2017 and 2025 WIPs and Water Quality Standards Attainment; Fish Habitat (e.g. improving water and sediment quality for fish health); Stream Health (e.g. providing information on PCBs related to stream health and condition.) |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes |

**Table 2.**

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| **GIT Lead Name:** | Greg Allen |
| **Goal Implementation Team:** | Water Quality Goal Implementation Team/Toxic Contaminants Workgroup |
| **Project Title:** | Assessing Benefits of Wastewater Treatment Plant Nutrient Control Upgrades on Toxic Contaminants |
| **Refined Cost Estimate:** | $40,000 |
| **Estimated Project Duration:** | 1 year |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | **Project Goal:** Provide the Chesapeake Bay Program partnership (CBP) with available data on the toxic contaminant reduction benefits (emphasis on PCB reductions) that can be achieved through the installation of nutrient control upgrades at WWTPs in order to facilitate the Partnership’s goal of considering multiple benefits when planning management scenarios. Also characterize the amount (% of total in influent) and environmental fate of PCBs partitioned to solids.  **Background:** The Chesapeake Bay Program’s Water Quality Goal Implementation Team is charged with identifying, defining, quantifying, and incorporating nutrient, sediment, and chemical pollutant reduction and conservation practices into the CBP decision support system.  In 2015, the CBP funded a project to evaluate the potential toxic reduction benefits that could be achieved through the implementation of traditional nutrient and sediment nonpoint source BMPs. This complementary information about wastewater treatment benefits is intended to help local planners make more efficient implementation decisions that provide multiple ecosystem and human health benefits.  The CBP has an interest in better quantifying the potential toxic contaminant reductions, with a focus on PCBs that can be achieved through the installation of nutrient control upgrades at WWTPs. In the Toxic Contaminants Policy and Prevention Work Plan for 2016/2017, the Maryland Department of the Environment (MDE) committed to conducting a PCB monitoring survey on pre and post-ENR WWTPs in Maryland to determine if there is an increase in removal efficiency from the ENR treatment technology. The CBP would like to build upon the data collected by MDE by compiling any other data available in the literature, or collected by WWTPs in the Chesapeake Bay watershed.  **Anticipated Outcomes:** The final product of this work will be a summary report that includes the following:   * Summary of data on PCB reductions resulting from WWTP upgrades available in peer-reviewed or government-sponsored literature (including the MDE study if the data is available in time for this effort) * Summary of PCB data reported by permitted dischargers that demonstrates changes in concentrations of PCBs in effluent both within the Chesapeake Bay Watershed and in at least one other watershed in the US * Estimate the amount of PCB that is partitioned to solids and describe the disposal activities that are used for WWTP solids * Recommendation for how best to estimate future potential PCB reductions achieved by WWTP upgrades. * Identification of data gaps and future research needs including additional monitoring studies if needed.   **Methods:** Request data from the Bay watershed jurisdictions; literature review; requests to organizations in other watersheds (e.g. Delaware estuary)  **Stakeholder Participants:** Environmental agencies in the Bay watershed; municipal associations that focus on WWTP operation and performance.  **Due Dates:** Work plan within 30 days; progress summary in 90 days; draft report in 6 months; final draft in response to comments in 9 months; final report in 12 months  **Intended Uses of the Product:** Disseminate to jurisdiction agencies with responsibility for PCB TMDLs to allow effective implementation of waste load allocations to achieve meaningful reductions; integrate into CBPO efforts to optimize BMP activities within the nutrient/sediment TMDL |
| **List specific deliverables/products to be provided by the contractor:** | **Phase I:** Workplan submitted for comment and statement of approach to quality assurance;perform literature search, assess availability of data reported by permitted WWTPs before and after plant upgrades; present on findings of the volume of available data to the Toxic Contaminants Workgroup prior to performing analysis  **Phase II:** Analyze available data and report on pre and post-upgrade performance including categorizing changes in performance by the type of upgrade; include descriptive statistics and statistics that determine whether there is a statistically significant difference both within and across- groups of upgrade types; estimate the amount of PCB that is retained in solids and describe the methods of solids disposal  **Phase III:** Report preliminary findings to the Toxic Contaminants Workgroup; revise as needed and submit final report |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications:** List skills and experience required of winning bidder: | Experience in reviewing scientific literature and synthesizing findings into summary reports. Familiarity with waste water treatment design and operation is preferred. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Hampton Roads Sanitation District  Washington Council of Governments  Tera Tech Inc. |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Greg Allen EPA CBPO  Mark Richards VaDEQ  Len Schugam MDE  John Schneider DeNREC |

**\_Proposal 9.\_**

**Table 1.**

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| **Your Name:** | Regina (Suzy) Campbell |
| **Goal Implementation Team:** | Healthy Watersheds |
| **Project Title:** | Back Creek Watershed Demo – Getting Water off The Road |
| **Project Type** (See Section IV above)**:** | Environmental demonstration project |
| **Goal/Outcome:** | Reduce erosion from a dirt/gravel road, reduce amount of sediment entering Back Creek from eroding dirt/gravel roads, and provide demonstration of an Environmentally Sensitive Maintenance (ESM) practice, recommended by Penn State’s Center for Direst and Gravel Roads Studies which will be demonstrated in conjunction with a Dirt and Gravel roads training and ultimately lead to a wider adoption of ESM practices throughout the watershed. |
| **Estimated Cost:** | $45,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Back Creek originates in Virginia and ends in West Virginia, draining 274 square miles at the confluence with the Potomac River. The Back Creek Watershed is a unique and pristine watershed in the eastern panhandle that does not have any water quality impairments and has been described by WVDNR as a “High Quality Recreational Stream” for fishing, swimming, canoeing, and kayaking. In 2014, EPA approved the Back Creek Watershed Protection Plan, which references Penn State’s program and specifically identifies dirt roads as significant sediment contributors. Back Creek is a highly rural watershed and contains many miles of dirt and gravel roads that are in regular need of maintenance after heavy rain falls and could threaten the watershed. This demonstration would be installed in conjunction with a previously planned Dirt and Gravel Roads training and assessment which has |
|  | already been secured funding through the State and CWA Section 319 and will be conducted by Cacapon Institute, who have held multiple Dirt and Gravel Roads trainings/assessments with the Center for Dirt and Gravel Roads. The training will be offered to a broad audience of homeowners, watershed volunteers, contractors, etc. The demonstration will be installed on a publicly owned road and would feature the ESM practice of “Grade Breaks”, which are small intentional increases in road elevation on a downhill slope, which causes water to flow off of the road surface to both sides into ditches or dispersal areas and prevent erosion. The budget for this project assumes the worst case scenario; that the demonstration would be installed on a steep slope, where cross pipes would be installed in conjunction with the grade breaks and on a road in poor condition and in need of additional grading. In addition to the training held in conjunction with the installation of these features, education and outreach will be performed through the placement of permanent signage along with road explaining the benefits of and encouraging the use of ESM practices.  It states in the Healthy Watersheds Management Strategies that “increasing urban development, including transportation infrastructure is the most significant influence on watershed health through changing land use and other modifications” and that our collective work should include a process for educating, engaging, and involving local communities in healthy watershed protection. The installation of an ESM practice will **act as a tool** to make restoration, protection, and stewardship easier by providing local entities with the practical knowledge of how to implement practices that could reduce tons of sediment. For example, by bringing WV Division of Highways, a contributor to non-point source pollution, as a partner in this project, this entity will gain a better understanding of the Bay Program and of updated management strategies which will remove significant communication and information barrier that exists.  This project will **increase effectiveness** in encouraging the adoption of ESM practices because it uses “boots on the ground” which is shown to be the best way to engage and build dialogue with WV DOH and other local entities regarding ESM and the Chesapeake Bay. By implementing the multiple elements of this project, **local commitment and capacity to protect healthy watersheds will be strengthened** which aligns with Management Approach 2: Local Leadership- strengthen local commitment and capacity to protect their healthy watersheds. The demonstration project will not only address transportation infrastructure in a rural healthy watershed, but it will also act to educate, engage and involve the local community in the protection of the healthy watershed that it is located within. The EPA’s Nonpoint Source Program in Region 3 supports the goals of this project has also expressed willingness to work with the GIT to leverage additional 319 and other resources if the project is funded. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | This work will be accomplished using the specifications outlined in the technical bulletins hyperlinked below. Required equipment will be a bulldozer, grader, and roller. Materials will include Class 1 1 ½ inch crusher run stone, up to 24” plastic pipes, and additional fill if needed for cross pipe coverage. WV Division of Highways and the Center for Dirt and Gravel Roads will be consulted with regarding exact placement and spacing of features once final site for demonstration is selected. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | Other goals advanced through this work include the following WV WIP strategies: “Expand technical assistance for homeowners by working with university extension offices, homeowner associations, watershed groups, and others” and “Train builders and developers, etc. on runoff reduction principles.”  In addition to supporting the Healthy Watershed Management Approach 2, this project supports Stewardship GIT by involving more entities in conservation and restoration activities that achieve local streams, rivers, and a vibrant Chesapeake Bay. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead. | Yes. |

**Table 2.**

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| --- | --- |
| **GIT Lead Name:** | Suzy Campbell and Renee Thompson |
| **Goal Implementation Team:** | Healthy Watersheds |
| **Project Title:** | Back Creek Watershed Demo- Getting Water Off of the Road |
| **Refined Cost Estimate:** | $45,000.00 |
| **Estimated Project Duration:** | Completion of all earth work to be completed by August 30th 2017. This will allow us to avoid the winter months when the ground is frozen, and spring months when the ground is wet. Once work commences, contractor should be able to complete the project in no more than 2 weeks.  Final report, brochure (best practices and lessons learned for replication and CBP presentations are to be completed by December 2017). |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | **Statement of Work for Grade Break Installation**  The Back Creek Watershed is described as a “High Quality Recreational Stream” by WVDNR. These installations will reduce erosion and sediment entering Back Creek from the gravel Sleepy Creek Road, meaning this project is directly helping to maintain the health of this watershed.  Throughout the process of installation, the contractor will cooperate with the WV DOH, WV Conservation Agency and the Back Creek Project Team (members listed below) as they will highlight this project through a training offered for WV DOH employees and local HOAs on the maintenance of dirt and gravel roads. This training demonstration advances the WV WIP strategies: “Expand technical assistance for homeowners by working with university extension offices, homeowner associations, watershed groups, and others” and “Train builders and developers, etc. on runoff reduction principles.” The final deliverables are to include a brochure outlining the process, best practices and land lessons learned for potential replication in other areas, a presentation to the Healthy Watersheds GIT, as well as a final project report will be that used by the Healthy Watershed GIT in helping facilitate more projects that reduce erosion and sediment from dirt/gravel roads. All materials will be potential outreach and communication tools to meet shared CBP goals.  Prior to August 30, 2017, the earth work contractor will install a minimum of 10 grade breaks and cross pipes at intervals and locations specified by WV DOH along Sleepy Creek Road, a gravel road leading to the Sleepy Creek Wildlife Management Area. The contractor will follow the specifications outlined in the following technical bulletins:  [Grade Breaks](http://www.dirtandgravel.psu.edu/sites/default/files/General%20Resources/Technical%20Bulletins/TB_Grade_Breaks.pdf)  [Cross Pipes](http://www.dirtandgravel.psu.edu/sites/default/files/General%20Resources/Technical%20Bulletins/TB_Crosspipe_Installation.pdf)  **Equipment requirements:** bulldozer and/or grader.  **Materials:** Class 1 1 ½ inch crusher run stone, up to 24” plastic pipes, and additional fill if needed for cross pipe coverage.  In determining exact placement and spacing of features, the contractor will consult with WV Division of Highways (WVDOH), WV Department of Natural Resources (WVDNR), and the Center for Dirt and Gravel Roads.  Additional members of the Back Creek Project Team include: Eastern Panhandle Conservation District, Cacapon Institute, Region 9, WV Division of Forestry, WV Department of Environmental Protection, and Blue Heron Environmental Network  **Location:** Contractors are encouraged to visit the segment of Sleepy Creek Road in the Sleepy Creek Wildlife Management Area where work is to be performed to assess the site in order to more accurately develop their bid. The segment of road and/or approximate locations of grade breaks is marked in orange spray paint.  To access the site from Rt. 9:  Turn onto Back Creek Valley Road, travel approximately 7 miles, turn right onto Sleepy Creek Road (there is a sign for Sleepy Creek Wildlife Management Area), follow Sleepy Creek Road until it becomes a gravel road and you entire the wildlife management area (you will see a sign). After entering the Sleepy Creek Wildlife Management Area, you will eventually see markings on the road indicating where work is to be performed. Please call the Eastern Panhandle Conservation District at 304-263-4376 ext. 3 if you have any questions regarding the location. Grade breaks will be spaced along a segment of approximately 1 mile. The beginning and end of the segment will be made clear through markings.  **Statement of Work for Report/Brochure**  The service provider shall work with the Back Creek Project Team to **produce a brochure/report** on the Back Creek Dirt and Gravel Roads Demonstration Project: “Getting Water of the Road” to include best practices and lessons learned so other organizations can replicate the project in order to help facilitate more projects that reduce erosion and sediment from dirt/gravel roads. Work shall consist of coordinating with the Back Creek Project Team to ensure that brochure/report contains all necessary details regarding the project and designing a brochure/report that will be shared online through the Chesapeake Bay Program, WV Conservation Agency, Eastern Panhandle Conservation District, and potentially other project partner’s web and social media pages. This brochure/report must be developed before December 2017. This portion of the project could be done separately or by the same contractor. |
| **List specific deliverables/products to be provided by the contractor:** | * By August 30, 2017, the contractor will install 10 grade breaks (using Class 1 1 ½ inch crusher run stone) and cross pipes (using 24” plastic pipes) on Sleepy Creek Road using a bulldozer or grader following the provided specifications while cooperating with WVCA, WVDOH, WVDNR, and their partners. * A final project report will be written and given to the Healthy Watershed GIT by December 31, 2017. * A presentation will be given at a Healthy Watershed GIT meeting in no later than November of 2017. * A brochure on best practices and lessons learned will be created so other organizations can replicate the project no later than December 2017. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | No |
| **Qualifications:** List skills and experience required of winning bidder: | **Qualifications for Roadwork**  **Must have one or more of the following licenses:**  B - General Building, C - General Engineering, 002 – Excavation  **Skills and experience:**  Must be experienced in building, grading, shaping, improving, and maintaining dirt and gravel roads.  **Qualifications for brochure/report design**  Must have experience with graphic design and the production of outreach materials for environmental programs/projects/initiatives etc. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | **Roadwork Bidders**  Double T. Homes  304-258-0001  2064 Valley Road  Berkeley Springs, WV 25411  Tree Works Land Development, LLC  304-258-1991  185 Mawani Terrace  Berkeley Springs, WV  G.H.S. Inc.  304-258-9241  8872 Valley Road  Berkeley Springs, WV  **Brochure Bidders**  Cacapon Institute  304-240-2721  #10 Rock Ford Road, Great Cacapon, WV 25422  [FRodgers@CacaponInstitute.Org](mailto:FRodgers@CacaponInstitute.Org)  The Downstream Project  540-955-6066  PO Box 1000  Berryville, VA 22611  [bhoward@thedownstreamproject.org](mailto:bhoward@thedownstreamproject.org)  Water Words That Work  703-829-6732  905 West 7th Street, Suite 201 Frederick, MD 21701  [laura.ganus@waterwordsthatwork.com](mailto:laura.ganus@waterwordsthatwork.com) |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Tim Craddock, WV DEP  (304) 926-0499 x 1040  [timothy.d.craddock@wv.gov](mailto:timothy.d.craddock@wv.gov)  Sherry Duncan, WVCA/EPCD  304-263-4376 ext. 2  [sduncan@wvca.us](mailto:sduncan@wvca.us)  Steve Sites, WV DOH  304-289-2283  [Stephen.a.sites@wv.gov](mailto:Stephen.a.sites@wv.gov) |

**\_Proposal 10.\_**

**Table 1.**

|  |  |
| --- | --- |
| **Your Name:** | Peter Claggett |
| **Goal Implementation Team:** | Healthy Watersheds |
| **Project Title:** | Methodology for developing high-resolution stream and waterbody datasets for the Chesapeake Bay watershed |
| **Project Type** (See Section IV above)**:** | Workplan Implementation Project with relevance to Monitoring and Tracking Progress |
| **Goal/Outcome:** | Healthy Watersheds/ Healthy Watersheds |
| **Estimated Cost:** | $75,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed.  It is recommended that you draw upon one or more work plans. | The CBP Partners recently spent ~ $3.5 million to produce high-resolution (1-meter) land cover data for the entire Chesapeake Bay watershed and intersecting counties. These data will be used to inform the next generation (Phase 6) of watershed models and serve as a baseline for tracking changes in land use backwards and forwards through time.  The data will also inform new baseline measures for tracking changes tree canopy, impervious surfaces, and other important land cover/use types. Unfortunately, the majority of streams (1st to 3rd order) are under-represented in the high-resolution land cover data due to their narrow width, concealment beneath tree canopy and roads, or concealment due to sun glint, shadows, suspended sediment, low flow conditions, or aquatic vegetation and algae.  No one currently knows how many stream miles there are in the Bay watershed. The extent of stream miles increases with scale and the most spatially accurate regional stream dataset that exists for the Chesapeake Bay watershed is the National Hydrography Dataset- High Resolution (NHD-H 1:24,000 scale). The NHD-H was derived from USGS Digital Line Graph (DLG) data developed over the past 30-40 years (e.g., the USGS 7.5” Quadrangle Maps). Some of the DLG data in the Bay watershed have not been updated since the late 1970’s and even the more recent data- updated in the late 1990’s- has an average horizontal position accuracy of +/- 12m. |
|  | When overlaid on 1-m land cover data, the NHD-H streams may run through structures and parking lots and have bends or segments that no longer exist or never existed. Spatially accurate stream maps are necessary for defining the universe of streams that have or could be buffered by trees or otherwise restored to achieve habitat and water quality outcomes. As we develop a better understanding of how terrestrial and aquatic systems are connected through stream networks, having a better spatial map of those networks will improve our ability to forecast responses to environmental change and the most appropriate spatial scales for fish conservation and management. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | LiDAR imagery holds great potential for mapping streams at high-resolution because channels carved by running water are readily apparent in the Digital Elevation Models (DEM) derived from LiDAR. A variety of techniques have been developed to identify and extract stream channels from LiDAR. The most common approaches require hydrologically conditioning the DEMs to fill sinks, compute flow directions, and accumulate contributing areas. Streams can then be identified by identifying cells exceeding a particular contributing area threshold. While able to depict stream channel location and stream banks at much higher resolution than coarse-scale DEMs, fine-scale LiDAR-derived DEMs present some unique challenges for drainage delineation using flow accumulation techniques. Hidden culverts under road and railways present apparent obstacles to flow that are not present in 10-meter or coarser models. Fortunately, techniques have been developed for dealing with these issues so that maximum value can be derived from LiDAR-based DEMS for updating the NHD with fine scale hydrology (Poppenga et al., 2013). While spatial delineation of stream channel locations is relatively straightforward, identification of stream origination from even high resolution LiDAR imagery is complex. True drainage area thresholds vary spatially based on climate, soils, physiography, geology and other factors requiring their customization for particular areas. Even in the field, biologists, geographers, and geomorphologists may disagree on the mapping threshold used to determine where streams begin.  Finally, to incorporate streams into land cover datasets, they need to be represented in two dimensions as areas rather than in one dimension as lines. Worstell et al., (2014) have shown that the intensities of LiDAR returns are useful for mapping the areas of streams and waterbodies but these areas must be separated from other level surfaces (e.g., roads, parking lots, etc.). Fortunately, these impervious surfaces have already been identified in the high-res land cover data for the Bay watershed.  This project will investigate and evaluate existing and novel methods for deriving streams from LiDAR imagery and prototype and recommend a mapping approach that is customized by physiographic province and to urban areas and meets the management needs of the CBP Partners for tracking riparian forest buffers, monitoring stream health, assessing habitat for brook trout, and modeling hydrology and sediment. The approach will be prototyped in select watersheds within each major physiographic province of the Chesapeake Bay Watershed and within both urban and rural watersheds. A detailed product workflow will be designed for broad-scale implementation of the methods throughout the Chesapeake Bay watershed. This project will be provide the necessary foundation for mapping streams and surface waters at high-resolution in all parts of the Chesapeake Bay watershed where LiDAR imagery is available. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | This project will assist in better tracking and identification of streams which essential to the Healthy Watersheds GIT’s management strategy and to the Vital Habitats Goal and its stream health, brook trout, and forest buffer outcomes. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes. |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Peter Claggett |
| **Goal Implementation Team:** | Healthy Watersheds |
| **Project Title:** | Methodology for developing high-resolution stream and waterbody datasets for the Chesapeake Bay watershed |
| **Refined Cost Estimate:** | $75,000 |
| **Estimated Project Duration:** | 18 months (Project to be completed by June 30, 2018) |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | The CBP Partners recently spent ~$3.5 million to produce high-resolution (1-meter) land cover data for the entire Chesapeake Bay watershed and intersecting counties (~ 100,000 mi2 area). These data will be used to inform the next generation (Phase 6) of watershed and land change models and serve as a baseline for tracking changes in land use backwards and forwards through time. The data will also inform new baseline measures for tracking changes to tree canopy, impervious surfaces, and other important land cover/use types. Unfortunately, the majority of streams (1st to 3rd order) are under-represented in the high-resolution land cover data due to their narrow width, concealment beneath trees, or concealment due to sun glint, shadows, suspended sediment, low flow conditions, or aquatic vegetation and algae. No one currently knows how many stream miles exist in the Bay watershed and any estimates need to be heavily caveated with the scale of analysis. The extent of stream miles increases with scale of observation. The most spatially accurate stream dataset that exists for the Chesapeake Bay watershed is the National Hydrography Dataset – High Resolution (NHD-H 1:24,000 scale). The NHD-H was derived from USGS Digital Line Graph (DLG) data developed over the past 30-40 years (e.g., the USGS 7.5” Quadrangle Maps). Some of the DLG data in the Bay watershed have not been updated since the late 1970’s and even the more recent data, updated in the late 1990’s, has an average horizontal position accuracy of +/- 12m. When overlaid on 1-m land cover data, the NHD-H streams may run through structures and parking lots and have bends or segments that no longer exist or never existed. Spatially accurate stream maps are necessary for defining the universe of streams that have or could be buffered by trees or otherwise restored to achieve habitat and water quality outcomes. As we develop a better understanding of how terrestrial and aquatic systems are connected through stream networks, having a better spatial map of those networks will improve our ability to forecast responses to environmental change and the most appropriate spatial scales for fish conservation and management.  LiDAR imagery holds great potential for mapping streams at high-resolution because channels carved by running water are readily apparent in the Digital Elevation Models (DEM) derived from LiDAR. A variety of techniques have been developed to identify and extract stream channels from LiDAR. The most common approaches require hydrologically conditioning the DEMs to fill sinks, compute flow directions, and accumulate contributing areas. Streams can then be identified by identifying cells exceeding a particular contributing area threshold. While able to depict stream channel location and stream banks at much higher resolution than coarse-scale DEMs, fine-scale LiDAR-derived DEMs present some unique challenges for drainage delineation using flow accumulation techniques. Hidden culverts under roads and railways present apparent obstacles to overland flow that are not present in 10-meter or coarser models. Stream origins vary spatially based on climate, soils, physiography, geology and other factors requiring the customization of drainage area thresholds for particular areas. Moreover, the definition of a “stream” varies by discipline such that biologists, geographers, and geomorphologists may disagree on what features should be considered a “stream”. In addition, regulatory agencies such as the Army Corps of Engineers and US Environmental Protection Agency rely on regulatory definitions of “streams”.  To incorporate streams into land cover datasets, they also need to be represented in two dimensions as areas rather than in just one dimension as lines. Worstell et al., (2014) have shown that the intensities of LiDAR returns are useful for mapping the areas of streams and waterbodies but these areas must be separated from other level surfaces (e.g., roads, parking lots, etc.). Fortunately, impervious surfaces have already been identified in the high-resolution land cover data produced for the Bay watershed.  This project will investigate and evaluate existing and novel methods for deriving streams (areas and lines) from LiDAR imagery, based on both published and unpublished methodologies and expert opinions. While regulatory definitions of streams should be considered by the contractor, the goal of this project is to develop a method for mapping 1:2400 scale streams defined based on ecological, biogeochemical, and hydro-geomorphic characteristics. The contractor will also produce a detailed workflow designed for broad-scale implementation of the proposed methods throughout the Chesapeake Bay watershed.  The literature review portion of the project should be completed in a report or informal white paper format and provided to the GIT Lead for review and input before proceeding. Once the awarded contractor and Lead have agreed on an approach, the contractor will prototype and recommend a mapping approach that meets project objectives and the management needs of the CBP Partners for tracking riparian forest buffers, monitoring stream health, assessing habitat for brook trout, and modeling hydrology and sediment. The Lead will work with the contractor to assure that the management needs related to this project are well understood. At a minimum, the proposed mapping approach should be prototyped in select forested, agricultural, and developed watersheds within each major physiographic province of the Chesapeake Bay Watershed with emphasis given to places with available field data for use in validation. The contractor is expected to work closely with the Lead and the Land Use Workgroup to identify appropriate pilot areas. |
| **List specific deliverables/products to be provided by the contractor:** | Products and Timeline:   1. Literature review of high-resolution stream mapping methods (written report, April 2017) 2. Presentation to the Healthy Watershed GIT on recommended stream definitions, mapping methods, and pilot areas (June 2017) 3. Implementation of methods in pilot watersheds (June 2017 – March 2018) 4. Draft report (March 2018) 5. Final report, Spatial Data, and Implementation Workflow (June 2018) 6. Final presentation of findings and recommendations to the Healthy Watershed GIT (June 2018)   Deliverable Format:  All input and output spatial datasets will be provided in ESRI compatible vector and raster formats (e.g., ESRI GRID, GeoTIFF, etc., USGS Albers Equal Area Projection, NAD’83, meters) with FGDC compliant metadata. Maps of sample sites, including stream layers derived from LiDAR imagery and associated GIS files are required with final deliverables. Geoprocessing models (e.g. ArcGIS ModelBuilder) and scripts (e.g. Python, R) sufficient to implement the methodology will also be provided as a deliverable such that the CBP Partners can implement the methodology in other areas and/or re-create results as needed or desired. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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.  Note: this is a prototype project and the final data will not be published but rather used to inform a broader scale data creation for the whole watershed. |
| **Qualifications:** List skills and experience required of winning bidder: | Strong working knowledge of GIS software, familiarity building spatial models and working with LiDAR imagery. Background in ecology, hydrology, and geomorphology preferred. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | Andrew Elmore, Assoc. Professor, University of Maryland, Center for Environmental Science, 301-689-7124, [aelmore@umces.edu](mailto:aelmore@umces.edu)  Keith Eshleman, Professor, University of Maryland, Center for Environmental Science, 301-689-7170, [keshleman@umces.edu](mailto:keshleman@umces.edu)  Matthew Baker, Professor, University of Maryland, Baltimore County, 410-455-3759, [mbaker@umbc.edu](mailto:mbaker@umbc.edu)  Kathy Boomer, Watershed Scientist, The Nature Conservancy, 607-280-3720, [kboomer@tnc.org](mailto:kboomer@tnc.org) |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Scott Stranko, MD Department of Natural Resources, 410-260-8603, [sstranko@dnr.state.md.us](mailto:sstranko@dnr.state.md.us)  John Young, Research Biologist, U.S. Geological Survey,  304-724-4469, [jyoung@usgs.gov](mailto:jyoung@usgs.gov)  Roger Barlow, National Map Liaison, U.S. Geological Survey, 703-648-5189, [rbarlow@usgs.gov](mailto:rbarlow@usgs.gov)  Richard Starr, Division Chief, Habitat Restoration Division, US Fish and Wildlife Service, 410-573-4583, [rich\_starr@fws.gov](mailto:rich_starr@fws.gov) |

**\_Proposal 11.\_**

**Table 1.**

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| **Your Name:** | Shannon Sprague |
| **Goal Implementation Team:** | Stewardship |
| **Project Title:** | Stormwater on Urban/Suburban School Grounds |
| **Project Type** (See Section IV above)**:** | Work plan Implementation Projects |
| **Goal/Outcome:** | Environmental Literacy/ Sustainable Schools |
| **Estimated Cost:** | $70,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Schools occupy significant amounts of land in urban and suburban watersheds. However, in many areas they are an underutilized partner in reducing stormwater runoff pollution. Implementing BMPs on school grounds can not only stem the tide of pollution, they can beautify urban neighbors and provide an opportunity for meaningful, real-world student engagement in Science, Technology, Engineering, and Math (STEM) subjects. Long-term monitoring and maintenance of BMPs such as rain gardens, green roofs, rain barrels, impervious surface removal, tree plantings, and more, also provide opportunities to enrich job skills.  Successful implementation of urban stormwater projects on school grounds requires coordination among stormwater managers, education professionals, and urban community leaders to ensure projects meet environmental objectives while also providing sustained, authentic learning. Some organizations have successfully implemented stormwater management projects on urban schools grounds, but large-scale implementation across multiple watershed sites requires development of training and outreach materials to broadly disseminate best practices for designing, implementing, and sustaining these complex projects. Many jurisdictions include development of similar training materials and “how-to” guides in their management strategy actions. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | The Education Workgroup seeks to partner with the Diversity and Urban Stormwater workgroups to develop comprehensive, user-friendly resources for implementing stormwater management projects on school grounds in urban and suburban areas. This project targets stormwater managers, school administrators, and local community leaders, and requires the coordination of multiple GIT workgroups. The emphasis is on both improving water quality (particularly for MS4 permittees) and engaging students in local stormwater projects. A focal point will be ensuring urban students and their communities have an active role in planning, implementing, and monitoring stormwater BMPs on their school grounds and surrounding neighborhoods.  Specific activities will include the development of an online guide and outreach materials for planning implementing, and sustaining BMPs, as well as a dissemination strategy that may include in-person or online training for a range of audiences (school building administrators, stormwater managers, etc.). Case studies of completed or planned projects, such as an EPA demonstration project in Newport News, will be documented to highlight best practices and lessons learned. The Chesapeake Bay Program’s Bay Backpack website is the likely host the training guides, webpages, and videos that will be developed under this project. Partners include EPA Region 3, National Wildlife Federation, and Maryland Association for Environmental and Outdoor Education. |
|  | The latter partners are the potential fiscal agents for this work, and will sub-contract with experts they currently work with to develop materials. We envision the Diversity workgroup will be involved to identify relevant members of local communities for consultation in materials development and training. Similarly, the urban stormwater workgroup will be engaged for technical input on material as well as identifying appropriate stromwater managers. Both workgroups will be heavily consulted during all phases of this project. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | The Diversity Goal, and specifically the “Enhancing Communication and Outreach” management approach could both benefit from and inform this project. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes. |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Kevin Schabow |
| **Goal Implementation Team:** | Stewardship |
| **Project Title:** | Promoting Meaningful Stormwater Mitigation on Urban/Suburban School Grounds |
| **Refined Cost Estimate:** | $50,000 |
| **Estimated Project Duration:** | 12 months |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | The contractor will develop an online “how-to” guide and accompanying web content for implementing Stormwater BMP projects on urban/suburban school grounds that improve water quality, meet local community needs, and allow for meaningful student engagement before, during, and after construction. This project should promote the use of stormwater BMPs to K-12 school officials and emphasize school-based projects roles in stormwater compliance to municipalities. Therefore, the contractor will develop a dissemination strategy that should include in-person or online training for a range of audiences (school building administrators, stormwater managers, etc.)  The contractor will also coordinate with representatives from the Chesapeake Bay Program’s Diversity Workgroup to ensure materials are developed with the needs of urban communities strongly considered such as the need for community green space, outdoor learning for students, and student job training.  To capitalize on the existing work on this topic, the contractor will work in partnership with the Chesapeake Bay Program’s Education Workgroup to identify initiatives and organizations that are successfully implementing stormwater BMP projects with schools. Existing initiatives include, but are not limited to, EPA’s Storm Smart School project and Prince George’s County’s Stormwater Stewardship  We envision a final product will be web content on the existing Bay Backpack website. |
| **List specific deliverables/products to be provided by the contractor:** | * Web content and online “how to” guide * Case studies and related videos * Dissemination trainings and meetings in designated urban/suburban areas |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? |  |
| **Qualifications:** List skills and experience required of winning bidder: | * Previous experience developing web content and in-person trainings for best practices related to environmental education and school sustainability. * Familiarity with school-based stormwater mitigation projects and organizations currently implementing stormwater BMPs on school grounds * Demonstrated project coordination experience with formal education and natural resource stakeholders * Demonstrated experience working with urban schools |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | * National Wildlife Federation [martinezk@nwf.org](mailto:martinezk@nwf.org) * Maryland Association for Environmental and Outdoor Education [director@maeoe.org](mailto:director@maeoe.org) * Willow Oak Group [karen.willowoak@gmail.com](mailto:karen.willowoak@gmail.com) |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | Shannon Sprague (NOAA), Lorna Rosenberg (EPA), Reggie Parrish (EPA), Kevin Schabow (NOAA), Kyle Zieba (EPA) |

**\_Proposal 12.\_**

**Table 1.**

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| **Your Name:** | Kacey Wetzel, Al Todd |
| **Goal Implementation Team:** | Stewardship – GIT 5 |
| **Project Title:** | Stewardship Index |
| **Project Type** (See Section IV above)**:** | Indicator Development |
| **Goal/Outcome:** | Stewardship Goal / Stewardship Outcome |
| **Estimated Cost:** | Up to $112K |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | Building a larger, broader and more diverse community of citizen stewards for watershed restoration is needed to achieve the goals and outcomes outlined in the Chesapeake Bay Watershed Agreement. Citizen stewards bring the action element that will move work forward. More than 600 conservation and watershed organizations in our region educate and empower citizens to restore and protect local rivers and streams. Tens of thousands of local volunteers donate their time and talent to shared goals.  The Citizen Stewardship Management Strategy called for the development of a strategy to measure the extent and progress of individual and collective citizen stewardship efforts in communities across the watershed as well as some of the factors influencing achievement. When completed, this work will provide a set of indicators that the CBP can use to measure outcomes over time and data to allow evaluation by area, demography and impact.  In the first phase of the stewardship metric development process is complete. A methodology was developed and tested to quantify the extent to which the public is taking or willing to take individual actions and behaviors. The actions and behaviors targeted in this measurement tool where selected using guiding criteria such as: (1) involves individual decision-making, (2) is repetitive and can be tracked over time, (3) can be broadly adopted, and (4) has an impact on water health. Pilot level data was collected via a randomly sampled general population survey in winter of 2016 to test the viability of the survey instrument as well as provide preliminary data to inform the development of an aggregate index of citizen stewardship.  The Citizen Stewardship workgroup anticipates a number of valuable uses of this Indicator and the resulting data:  • Measuring Progress: The Indicator will provide a scientifically-sound method of measuring progress towards the Citizen Stewardship Goal embodied in the Chesapeake Bay Watershed Agreement. It can be measured and tracked Bay-wide, and on a jurisdictional level.  • Targeting Limited Resources: This effort will provide valuable guidance for local jurisdictions, NGOs, and others who are designing behavior change public outreach campaigns in pursuit of water quality goals, by quantifying the level of adoption and likelihood of future adoption of a broad suite of individual behaviors, helping these actors most effectively target their limited resources on the behaviors that are most likely to be changed and that will have the most impact.  • Reaching Focused Audiences: Through its powerful segmentation capability, the Indicator will enable interested parties to understand the level of engagement and potential for engagement for many sub-audiences within the general population, including those that are traditionally under-represented in public outreach efforts.  • Comparing Communities and Audiences: Similarly, this Indicator will give States and local communities the ability to benchmark their own progress against the Bay-wide norm, and against other similar jurisdictions and communities.  • Improving Strategic Communications: Through its design, this instrument will help identify where there are gaps in public understanding and engagement, helping to sharpen and redirect the way the Bay restoration community frames discussion with the general public around these topics.  The resulting survey instrument consists of 57 substantive questions on these topics:   * Adoption of the individual stewardship behaviors * Likelihood of future adoption of each of those behaviors * Volunteerism, both generally and for water quality * Keys to individual engagement, which are eight attitudinal and perceptions measures that help create the environment for stewardship * Civic engagement |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | This next phase will scale up implementation of the randomly sampled general population survey piloted in phase I in order have sufficient data compute a statistically significant stewardship index, e.g. baseline measure of citizen stewardship, at a state, regional, or county scale. All states will field the same question set during a similar time frame so that results can be compared and so that the Bay-wide measure has integrity. These costs include fielding the full survey questionnaire and access to the full data set for project sponsors.  Stewardship behaviors, individual engagement, volunteerism, and civic engagement would be measured as was done in the pilot survey. Stewardship behaviors to be surveyed include pet waste, fertilizer use, pesticide use, leaves/lawn clippings, rain barrels, conservation landscaping/rain gardens, tree planting, fats, grease, contaminants down the drain, septic systems, litter and downspout disconnect.  In addition to these topics, the survey instrument includes seven screening questions and twelve classification questions that serve to balance the sample, ensuring that the Indicator is measuring a true cross-section of the watershed’s population. These additional questions also allow for deep segmentation of the survey data for many population subgroups, including: geography, such as political jurisdiction and distance from the main stem of the Bay; demography, such as age, gender, and race/ethnicity; socio-economics, such as educational attainment and household income; housing type; connection to agriculture; and religious affiliation.  Following completion of the survey and data analysis, the index will and access to data will be incorporated into the CBP Indicator (Chesapeake progress) online platform for use by stakeholders and conservation organizations in the watershed. The CBP would then repeat the survey every 3 years to track trends. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | There are many cross-goal benefits as a result of this metric development. The diversity and local leadership would most directly benefit from the data collected. However, all goals would benefit as the data collected through this metric would contribute to an analysis that would generate an initial index of citizen behavior. This includes an intentional effort to collect data on demographics and social economic status that will enable the index to incorporate diversity of citizen stewardship as a key measure of progress. Understanding this behavior can assist in the development of local restoration and protection goals, design of local programs and strategies, and prioritization and targeting of future outreach and engagement actions. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Amy Handen |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Amy Handen (NPS) |
| **Goal Implementation Team:** | Stewardship Goal Implementation Team |
| **Project Title:** | Phase III: Development of Baseline Indicator of Citizen Stewardship (Stewardship Index) |
| **Refined Cost Estimate:** | $112,000 |
| **Estimated Project Duration:** | 24 months |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | In the first year of this stewardship metric development process, methodology was developed to quantify the extent to which the public is taking or willing to take individual actions and behaviors. The actions and behaviors targeted in this measurement tool where selected using guiding criteria such as: (1) involves individual decision-making, (2) is repetitive and can be tracked over time, (3) can be broadly adopted, (4) has an impact on water health, and (5) and/or will engage the public.  In the second year, pilot level data were collected via a randomly sampled general population survey in winter of 2015 to test the viability of the survey instrument as well as provide preliminary data to inform the development of an aggregate index of citizen stewardship.  The intent of third phase of this project is to scale up implementation of the randomly sampled general population survey piloted in 2015 in order to have sufficient data to compute a statistically significant stewardship index, e.g. baseline measure of citizen stewardship, at a state, regional, or county scale. The survey and methodology for the index have been developed and piloted and include stewardship behaviors, volunteerism, and civic engagement activities and which will be measured using the survey instrument developed for the pilot. Stewardship behaviors to be surveyed include pet waste, fertilizer use, pesticide use, leaves/lawn clippings, rain barrels, conservation landscaping/rain gardens, tree planting, fats, grease, contaminants down the drain, septic systems, litter and downspout disconnect.  In addition, the contractor will present data to stakeholders who will assess the extent to which the survey results provide an adequate measure of volunteerism by state and in the region. If there are gaps, they will assist with facilitation of a stakeholder process to develop a methodology to address gaps in the data. |
| **List specific deliverables/products to be provided by the contractor:** | Outputs and Due Dates:  1) Scale up implementation of the randomly sampled general population survey piloted in phase I in order have sufficient data compute a statistically significant stewardship index, e.g. baseline measure of citizen stewardship, at a state, regional, or county scale.  b. The successful bidder will utilize the survey tool developed 2015 to develop this baseline.  i. The successful bidder will work with Trust staff and advisory committee to develop a strategy and methodology to implement the survey throughout the watershed.  v. The successful bidder will provide results by state and/or county based on direction provided by the advisory committee and available funds.  v. The successful bidder will, after fielding the survey, work with Trust staff and advisory committee to further enhance the stewardship index to provide a reasonably accurate baseline of citizen stewardship for the region.  vi. The successful bidder will field the index and provide summary report and metadata by December, 2017.  vii. Work with the Bay Program to package relevant data for presentation and for user access via appropriate web based venues. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Through the methodology listed above, the intent of this project is to compute a statistically significant stewardship index |
| **Qualifications:** List skills and experience required of winning bidder: | 1. At least ten (10) years of experience in the types of market research work described herein. |
| **Bidder’s List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals. | Steve Raabe, Opinion Works |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least potential reviewers without a conflict of interest with likely bidders. | Kacey Wetzel, CBT  Al Todd, ACB  Amy Handen, NPS  Drew Pizzala, CRC  Reggie Parrish, EPA |

**\_Proposal 13.\_**

**Table 1.**

|  |  |
| --- | --- |
| **Your Name:** | Reggie Parrish |
| **Goal Implementation Team:** | Stewardship |
| **Project Title:** | EJ Screen |
| **Project Type** (See Section IV above)**:** | Workplan Implementation |
| **Goal/Outcome:** | Stewardship – Diversity |
| **Estimated Cost:** | $30,000.00 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | The goal of increasing diversity in the CBP is a cross cutting theme in the 2014 Watershed Agreement. This project will kick start the development of a comprehensive Chesapeake Bay watershed Environmental Justice Screening tool to provide jurisdictional, sub-watershed, and community level information on demographics and environmental conditions, and their relationship to selected Agreement outcomes. The tool will assist CBP (GITs, jurisdictions, etc.) as they identify workplan implementation priorities in relation to the impact of these priorities on Bay communities, especially on diverse communities. Additionally, the tool will assist community groups (including underrepresented communities) as they engage in community based environmental restoration and sustainability projects. This project is designed as a pilot for expansion, and at this stage will focus on the public access, toxic contaminants, and climate resiliency outcomes. In addition, the project will specifically help to identify those potential public access sites that could meet the needs of a diverse Bay community. These potential sites could then be targets for pre planning funding, when it becomes available, by the public access action team. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | The project will build on demographic and environmental data pulled from the national EJ Screen tool to include Bay Program-specific indicators and greater localized data. Cross-GIT and diversity stakeholder input will be used to design the ideal EJ tool with regards to inputs and capabilities. Over the past year, GIS staff have compiled sample CBP Diversity web apps that interface with EJ screen data layers.  The project will fund a programmer to assist the CBP GIS staff in designing a tool of the scale and detail necessary for use by GITs, with a customized reporting function. Funding will also be used to explore the usability of the tool for both the Bay partners and community groups. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | Public Access, Toxics, Climate Resiliency (As Pilot) Ultimately Stewardship, Environmental Literacy, Local Leadership, Tree Canopy, Land Conservation |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | Yes |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name:** | Reggie Parrish |
| **Goal Implementation Team:** | Stewardship |
| **Project Title:** | EJ Screen |
| **Refined Cost Estimate:** | $30,000 |
| **Estimated Project Duration:** |  |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | **Goals of the project:**  The goal of this project is to create a web-based Environmental Justice Screening and mapping tool which supports implementation of the Chesapeake Bay Watershed Agreement and other Bay restoration goals. This project will include the hiring of an application developer to scope and develop a screening tool which initially integrates important information from three Watershed Agreement outcomes: public access, climate resiliency, and toxic contaminants. The developer will work with the CBP diversity workgroup, diversity stakeholders and the CBP GIS team to develop application requirements (including mapping and reporting capabilities), identify and integrate data related to diversity and the other pilot outcomes, and build a screening and reporting tool which helps to identify priority areas where diversity considerations can be integrated with implementation actions associated with the other outcomes. The tool will be developed in a way that will allow expansion to address other goals and outcomes in the future.  **Background and importance of work:**  The goal of increasing diversity in the CBP is a cross cutting theme in the 2014 Watershed Agreement. This project will kick start the development of a comprehensive Chesapeake Bay watershed Environmental Justice Screening tool to provide jurisdictional, sub-watershed, and community level information on demographics and environmental conditions, and their relationship to selected Agreement outcomes. This tool is based upon a national Environmental Justice tool developed by USEPA.  **Anticipated Outcomes:**  This Chesapeake Bay tool will assist CBP (GITs, jurisdictions, etc.) as they identify workplan implementation priorities in relation to the impact of these priorities on Bay communities, especially on diverse communities. Additionally, the tool will assist community groups (including underrepresented communities) as they engage in community based environmental restoration and sustainability projects. This project is designed as a pilot for expansion, and at this stage will focus on the public access, toxic contaminants, and climate resiliency outcomes.  **Methods:**   1. In consultation with the diversity workgroup and the CBP GIS team, recipient will organize and conduct a scoping and planning session to determine more detailed outputs, timelines and process for coordinating project and deliverables. 2. Recipient, along with diversity coordinator and GIS team leads, will develop set of questions (priorities) to assist pilot outcome leaders in identifying issues and needs related to diversity. 3. Recipient, along with diversity coordinator and GIS team leads, will conduct necessary follow up discussions to clarify pilot outcome leader feedback related to data layers, outcomes diversity needs, and functionality (mapping and reporting) requirements of the screening tool. 4. Working with diversity coordinator, recipient will develop an approach for incorporating community stakeholder priorities and needs related to pilot outcomes. 5. In consultation with GIS team, the recipient will document requirements and develop the prototype application for testing by diversity outcome stakeholders. Once draft screening tool is developed, recipient will complete demonstration with pilot outcome leaders, GIS team and diversity coordinator. Recipient will respond to pilot outcome leads questions and make changes based upon discussions. The prototype application will include capability for printing reports and maps based on user preferences. 6. Finalize EJ screening tool and provide technical documentation, including instructions on how to expand the scope of the tool to include data and reporting needs of additional Watershed Agreement Outcomes.   **Stakeholder participants**  The project will engage the goal implementation teams for the three pilot areas and to some degree other goal implementation and workgroups. These teams and workgroups include state and federal agencies, NGOs, etc.  The diversity workgroup will work to engage and obtain input from community and NGO users groups that work with diverse populations throughout the watershed.  **Due dates**  See dates in deliverables section. |
| **List specific deliverables/products to be provided by the contractor:** | * Summary of scoping and planning session for deliverables – 30 days after start * List of questions to reflect data needs and priorities for the three pilot areas related to diversity – 30 days after start * Recipient response to how pilot outcome needs will be addressed thru EJ screen development and content; specific areas that cannot be addressed – 60 days after start * Summary of follow up discussions with pilot outcome leaders and recipient response to addressing feedback – 90 days after start * Detailed description of usability and utility for stakeholders based upon coordinator and recipient discussions with key diverse community stakeholders – * Draft Screening tool for 3 pilot areas – 6 months after project start * Final Screening tool (including code) and application documentation– 8 months after project start |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | No Quality Assurance project Plan required. |
| **Qualifications:** List skills and experience required of winning bidder: | * Requires knowledge of Chesapeake Bay Program web mapping practices and technologies, including expertise in web map application development using Environmental Systems Research Institute (ESRI) technologies (including web app builder templates), the ArcGIS JavaScript API, and ESRI REST services. * Requires expert knowledge of EPA’s EJ Screen Environmental Justice Screening tool, including technologies and data content (environmental justice Indices, environmental indicators, and demographic indicators). See https://www.epa.gov/sites/production/files/2016-07/documents/ejscreen\_technical\_document\_20160704\_draft.pdf. * Requires familiarity with Chesapeake Watershed Agreement Outcomes, Management Strategies, and Work Plans for Diversity, Public Access, Toxic Contaminants, and Climate Resiliency. |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | **NGOs:**   * Chesapeake Conservancy (Jeff Allenby) * Chesapeake Commons (John Dawes) * NatureServe (Lori Scott)   **Contractors:**   * Indus Corporation (Scott Kocher) * Innovate! (Phil Thomas) * SAIC (Vincent Huang) |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | John Wolf  Andy Fitch  Possibly reps from the three initial outcomes - Public Access (John Davy), Climate (Zoe Johnson), Toxics (Greg Allen) |

**\_Proposal 14.\_**

**Table 1.**

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| --- | --- |
| **Goal Implementation Team:** | GIT 6 – Enhance Partnering, Leadership & Management |
| **Project Title:** | Implementation Support for Local Official Watershed Education and Capacity Building |
| **Project Type** (See Section IV above)**:** | Workplan Implementation |
| **Goal/Outcome:** | Stewardship – Local Leadership |
| **Estimated Cost:** | $50,000 |
| **Justification:** Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans. | This project will directly support two approaches outlined in the Local Leadership Management Strategy: 1) to “develop, enhance and expand training and leadership programs” and 2) to “improve transfer of knowledge to local officials.” It will build on two previous GIT Funded projects, namely the “*Chesapeake Watershed* *Local Leadership Development Programs”* project conducted in 2015 (FY 2014 GIT funding) and “*Designing a Watershed Education Program”* project conducted in 2016 (FY2015 GIT funding, EcoLogix Inc)*.*  A need exists for coordination and implementation of the Watershed Education Program being designed by EcoLogix. The selected contractor would assist with creating the platform that results from implementing the recommendations in the EcoLogix report. The platform will likely be comprised of a variety of communication approaches (e.g., web site, peer-to-peer networks, videos, etc.). This contractor would also serve as a point of contact for the key participants in a watershed education program, including State Associations of Municipalities and Counties, American Planning Association State Chapters, and others identified as trusted sources by local officials. The contractor would also work with GIT Coordinators and Staffers and the CBP Community Outreach and Engagement Coordinator to identify resource materials and training programs that are on- the-shelf and ready for delivery, and those that need to be developed or refined. |
| **Methodology:** Provide a 1-2 paragraph description of how the work is likely to be accomplished. | This project is intended to serve as the next logical step to the FY14 and FY15 funded projects identified above and, by doing so, will begin the transition from the planning to the implementation stage of our critical efforts to increase the capacity of local, elected officials to play their role in meeting our bay restoration goals. The FY15 funded project (“*Designing a Watershed Education Program*”) is not due to be completed until Fall, 2016. The contractor will facilitate efforts to apply those findings to increasing the capacity of our local elected leaders.  The contractor will use input from the Local Leadership Workgroup, CBP GITs, other stakeholders and results of the Ecologix report, to complete two tasks: (1) create the institutional framework and a process for development of the Watershed Education Program (2) collect content to be used to advance the outcomes from the 2014 Watershed Agreement that is identified in CBP management strategies and workplans. As the content is finalized, the contractor will assist with matching content to delivery mechanisms that will effectively engage local officials and transfer the information. The Local Leadership Workgroup would be asked to serve as direct advisors. |
| **Cross-Goal Benefits:** What other goals may be advanced through this work? | This project has the potential to advance work towards all goals that place an emphasis on local leader engagement and action. |
| **Are you willing to serve as GIT lead** (see description of the role in Section VI above) If no, suggest other GIT lead | TBD |

**Table 2.**

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| --- | --- |
| **GIT Lead Name:** | Dave Goshorn |
| **Goal Implementation Team:** | GIT 6 – Enhance Partnering, Leadership & Management |
| **Project Title:** | Implementation Support for Local Official Watershed Education and Capacity Building |
| **Refined Cost Estimate:** | $50,000 |
| **Estimated Project Duration:** | One year |
| **Statement of Work:** Provide a detailed scope of work to be accomplished by the contractor, including information on methods, stakeholder participants, deliverables, due dates and intended uses of the products. | Goals of the project – Launch a watershed outreach education program for local elected officials by beginning to deliver existing educational materials to elected officials through existing trusted sources.  Background and importance of the work –A contractor is needed to develop a process and begin delivery of existing watershed education materials (content) through existing mechanisms (trusted sources). Recommended approaches for delivering watershed education materials to elected officials are being developed currently by Ecologix, through an existing GIT funded project. The recommendations build on foundational research about how to reach local officials which was conducted in a 2015 project titled “Chesapeake Watershed Local Leadership Development Programs.” This project was conducted with FY 2014 GIT funding.  The contact for these two prior pieces of work is Bob Hoyt, Principal at Ecologix.  The commencement of this work is dependent upon receipt of the forthcoming report from Ecologix.  Anticipated Outcomes –This project will represent the first phase of implementation of the watershed education programming for local elected officials. It will lay the groundwork for an ongoing process for delivering watershed education materials/information through trusted sources. Upon completion of the first phase of implementation (year one), the contractor will provide a report describing the content acquired, the appropriate means for delivery (mechanisms) of specific content, details regarding all content delivered to date, including number of people reached, and future delivery opportunities identified. The contractor should also provide a preliminary list of content that needs to be developed, noting who should be/is responsible for developing it, the timeline for development, etc. This information will serve as a resource for filling gaps during subsequent years.    This report will be used by the Local Leadership Workgroup to develop a plan for ensuring ongoing delivery of watershed education to local officials.  The contractor should focus on delivering at least one content item in each of the seven jurisdictions during year one. For example, one watershed topic could be delivered in each of the seven jurisdictions, through a specific mechanism. Likewise, topics may vary by jurisdiction, resulting in more than one topic being delivered but only seven mechanisms being engaged.  The contractor will:   1. Review forthcoming report from by EcoLogix (Scope of Work #10, Designing a Strategic Outreach Education Program for Elected Officials) for recommended approaches to implementation of watershed education and training program, including content, detailed design of program, cost estimates and funding sources. 2. Launch strategic outreach education programming based on recommended approaches in EcoLogix report and input from Local Leadership Workgroup, the Chesapeake Bay Program Communications Team and Communications Workgroup. It is anticipated that this will include the following tasks:    1. Collect and assemble existing educational materials (content) in accordance with recommendations contained in EcoLogix report and in collaboration with Chesapeake Bay Program Goal Implementation Teams.    2. Match content to delivery mechanisms that will most effectively engage local officials and transfer the information. Focus should be on trusted sources such as state associations of municipalities and counties.    3. Coordinate delivery of content through existing trusted sources by developing relationships with trusted sources, identifying appropriate venues/mechanisms for specific content, e.g. webinars, in person training, fact sheets, conference panels, etc., securing commitment from trusted sources to deliver content, and monitoring delivery to help ensure desired goal of increasing knowledge is achieved. 3. Draft job description/scope of work for ongoing management/implementation of watershed outreach education for local officials program. |
| **Stakeholder Participants** | The following stakeholders will be involved in this project:   * Local Leadership Workgroup Members (individually and collectively) * Goal Implementation Team Coordinators and/or Staffers * CBP Communications Team * CBP Communications Workgroup |
| **List specific deliverables/products to be provided by the contractor:** | Deliverables for this project include:   * Commitments to deliver content from at least one trusted source in each jurisdiction (first 6 months) * Delivery of content (to be determined in consultation with trusted source and Local Leadership Workgroup) in each of the seven watershed jurisdictions (within 11 months) * A report summarizing the work completed during year one, to be used by the Local Leadership Workgroup in developing a plan for ensuring ongoing delivery of watershed education to local officials. (Due upon completion of the contract). The report shall include:   + a list and description of the content acquired to date, the appropriate means for delivery (mechanisms) of specific content;   + details regarding all content delivered to date, including number of people reached;   + any future delivery opportunities identified;   + a preliminary list of content that needs to be developed, noting who should be/is responsible for developing it;   + the timeline for development of new content, etc.;   + lessons learned to date; and   + a draft job description, or scope of work, and cost estimate for ongoing delivery of watershed outreach education for local officials. |
| **QAP:** Will environmental data be generated, and will a quality assurance plan be required? | Not applicable. |
| **Qualifications:** List skills and experience required of winning bidder: | The contractor shall possess the following skills and experience:   1. Demonstrated experience working with a wide range of stakeholders, particularly those that comprise local governments or their representatives, e.g. state associations of municipalities and counties 2. In-depth understanding of the Watershed Agreement Goals and Outcomes and familiarity with Management Strategies and Workplans 3. Experience working with local governments 4. Experience working throughout the watershed is preferred |
| **Bidders List:** Due to federal procurement guidelines, project ideas MUST be open to competitive bidding. List at least three entities to include in the request for proposals | 1. Alliance for the Chesapeake Bay 2. EcoLogix 3. Hughes Center for Agro-Ecology at UMD |
| **Reviewers List:** The Trust will use external review to evaluate bids. List at least 3 potential reviewers without a conflict of interest with likely bidders. | 1. Andy Fellows, UMD / Chair, Local Leadership Workgroup 2. Mike Foreman, Virginia DNR 3. Bevin Buchheister, CBC |

**\_Proposal 15.\_**

**Table 1.**

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| --- | --- |
| **Your Name:** | Zoë Johnson, Climate Change Coordinator (NCBO) |
| **Goal Implementation Team:** | STAR Climate Resiliency Workgroup |
| **Project Title:** | Development of Climate Change Indicators and Metrics for the Chesapeake Bay Program |
| **Project Type:** | Metric Development and Tracking  • Support for science needed to develop metrics  • Metric/indicator development  • Performance measure development |
| **Goal/Outcome:** | Climate Resiliency: Monitoring/Assessment and Adaptation |
| **Estimated Cost:** | $75,000 |
| **Justification: Provide a 2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.** | Climatological trends, which vary both spatially and temporally throughout the Watershed, are altering the ecosystems, the watershed, and the human communities of the Chesapeake Bay and will require changes in policies, programs and projects to successfully achieve restoration, sustainability, and conservation and protection goals for the Chesapeake Bay watershed. |
|  | The Climate Resiliency Goal was included in the 2014 Watershed Agreement for the first time. No framework for measuring or tracking climate trends and impacts or measuring progress toward building climate resiliency has been established. Therefore, the development of a suite of climate-related indicators that can be used to track and analyze trends, impacts and progress towards advancing “climate resiliency” is a high priority of the Climate Resiliency Workgroup.  It is envisioned that this project will be the first step in the process to develop a suite of indicators, which can be implemented over time, to measure and assess trends or “factors influencing” (i.e., physical climate drivers); ecological and societal response (i.e. impacts); and, programmatic progress toward building an effective response (i.e., adaptation).  The project will include the following four deliverables: 1) Recommended suite of climate change indictors for CBP implementation; 2) Proposed methods and analysis process for a sub-set of indicators (2-3 for each indicator types); 3) Suggested schedule for Chesapeake Bay Program implementation; and 4) implementation (data collection, analysis and methods documentation) of a Tidal Wetland Change Indicator. |
| **Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.** | Using the Chesapeake Bay Program Indicators Framework (November, 2015) as a guide, the project will focus on the developing recommendations for a suite of CBP climate-related indictors and a proposed implementation approach and schedule for three indicator types: 1) physical climate trends (e.g., sea level rise, temperature increase, precipitation change); 2) ecological and societal response (e.g., salinity change, tidal wetlands loss, societal preparedness); and, 3) “resiliency” progress measurement (e.g., metrics for evaluating programmatic progress toward making “climate-smart decisions).  The first step will involve assessing and analyzing a number of existing climate change indicator frameworks to determine suitability for application within the Chesapeake Bay Program. These include: the EPA Climate Change Indicators for the U.S.; the USGRCP Climate Change Indicators; the Department of the Interior Metrics Expert Group; and the UMCES Chesapeake Bay Report Card (2014) Climate Resilience Indicators.  The second step will involve identifying a suite of potential indicators that the CBP could use to track and measure change of key physical climate trends and assess impacts. This activity will be informed by discussions (through targeted meetings or workshops) with various CBP Goal Implementation Teams and Workgroups to evaluate and prioritize most critical “factors influencing.”  The project will also include an assessment of existing monitoring and tracking data being collected within the Chesapeake Bay Watershed, including data collected through NOAA’s Chesapeake Bay Interpretive Buoy System (CBIBS). A review of existing data and studies of past and ongoing trend and impact assessments conducted by USGS, NOAA, EPA, and the academic community will also be an element.  The exploration and recommended set of “climate resiliency” progress indicators will involve a participatory process element. The objective is to |
|  | recommend a set of indicators that are meaningful and useful to the program to not only track programmatic progress but can also be informative to decision-making processes to influence change. The participatory process will be undertaken using a combination of one-on-one interviews or facilitated or targeted workshops or meetings.  The development of the Tidal Wetland Change Indicator will involve some independent mapping, modeling and trend analysis but will also require a strong collaborative process through in-person meetings and workshops. The objective for developing a Tidal Wetland Indicator is to track the status of wetland elevation dynamics and wetland vulnerability to sea level rise across the various Bay geographies, geomorphic types, vegetation communities, etc.  The focus of the meetings and workshops will be to bring together a broad swath of researchers (including members of the Chesapeake Bay Sea Level Rise Sentinel Site Cooperative) with long-term data on marsh surface elevations, water level data and other wetland datasets (e.g. vegetation monitoring plots) to collectively work to develop the indicator, methods and analysis process, and ultimately to extract trends and synthesize data sets. |
| **Cross-Goal Benefits: What other goals may be advanced through this work?** | This project is cross-outcome in nature, as climate change has been noted a significant “factor influencing” the success of a number of other goals/outcomes in the CB Agreement. In addition to the benefits to the Climate Resiliency Outcomes, the tidal wetland pilot component of the project supports Fish Habitat, Black Duck, and Water Quality specific Goals. |
| **Are you willing to serve as GIT lead (**see description of the role in Section VI above**)** If no, suggest other GIT lead | Yes. |

**Table 2.**

|  |  |
| --- | --- |
| **GIT Lead Name** | Zoë Johnson, Climate Change Coordinator (NCBO) |
| **Goal Implementation Team** | STAR Climate Resiliency Workgroup |
| **Project Title** | Development of Climate Change Indicators and Metrics for the Chesapeake Bay Program |
| **Refined Cost Estimate** | $75,000 |
| **Estimated Project Duration** | 24- Month Duration (Anticipating March 1, 2016 award date, project would extend between March 1, 2017 – February 28, 2019) |
| **Overview and purpose of project** | Climatological trends, which vary both spatially and temporally throughout the Watershed, are altering the ecosystems, the watershed, and the human communities of the Chesapeake Bay and will require changes in policies, programs and projects to successfully achieve restoration, sustainability, and conservation and protection goals for the Chesapeake Bay watershed.  The Climate Resiliency Goal was included in the 2014 Watershed Agreement for the first time. No framework for measuring or tracking climate trends and impacts or measuring progress toward building climate resiliency has been established. Therefore, the development of a suite of climate-related indicators that can be used to track and analyze trends, impacts and progress towards advancing “climate resiliency” is a high priority of the Climate Resiliency Workgroup.  It is envisioned that this project will be the first step in the process to develop a suite of indicators, which can be implemented over time, to measure and assess trends or “factors influencing” (i.e., physical climate drivers); ecological and societal response (i.e. impacts); and, programmatic progress toward building an effective response (i.e., adaptation).  The project will include four primary deliverables: 1) Recommended suite of climate change indicators for CBP implementation; 2) Suggested schedule, including expected implementation timetable, cost estimates, and data and monitoring needs and gaps, for Chesapeake Bay Program implementation; 3) Methods and analysis documentation for a sub-set of indicators (1-2 for each indicator type); and 4) Final Synthesis and Results Report. |
| **Methods** | Using the [Chesapeake Bay Program Indicators Framework](http://www.chesapeakebay.net/channel_files/22952/approved_cbp_indicators_framework_and_management_process_november_2015.pdf) (November, 2015) as a guide, the project will focus on the development of a suite of CBP climate-related indicators and a proposed implementation approach and schedule for three indicator types: 1) physical climate trends (e.g., sea level rise, temperature increase, precipitation change); 2) ecological and societal response (e.g., salinity change, tidal wetlands loss, societal preparedness); and, 3) “resiliency” progress measurement (e.g., metrics for evaluating programmatic progress toward making “climate-smart decisions). Tasks to implement the project, are outlined below:  1. Within one week of award, hold a project kick-off call with Chesapeake Bay Program Project Lead(s).  2. Two weeks after project award, submit draft Work Plan and Quality Assurance Project Plan. Work will begin after approval of the Work Plan by Project Lead.  3. Assess and analyze existing climate change indicator frameworks to determine suitability for application within the Chesapeake Bay Program. These include but should not be limited to: the EPA Climate Change Indicators for the U.S.; the USGRCP Climate Change Indicators; the Department of the Interior Metrics Expert Group Report; IRGC’s Resilience Engineering and Indicators of Resilience; and the UMCES Chesapeake Bay Report Card (2014) Climate Resilience Indicators.  4. Analyze the existing suite of CBP Indicators and Metrics, including the Tidal Wetland Abundance Indicator and the Stream Temperature Indicator, to determine suitability or adaptability related to tracking climate trends, impacts or measuring programmatic progress.  5. Review existing data and studies of past and ongoing climate change trend and impact assessments conducted by USGS, NOAA, EPA, and the academic community.  6. Assess suitability of existing monitoring and tracking data being collected within the Chesapeake Bay Watershed, including data collected through NOAA’s Chesapeake Bay Interpretive Buoy System (CBIBS), to inform indicator development or implementation.  7. Conduct a “participatory process” to further exploration and development of a recommended set of “climate resiliency” indicators. The project objective is to solicit feedback on a recommended set of indicators that are meaningful and useful to the program to not only track programmatic progress but can also be informative to decision-making processes to influence change. The participatory process could be undertaken using a combination of meetings with select CBP GITs and Workgroups, including the Climate Resiliency Workgroup, one-on-one interviews, focus groups or small facilitated workshops.  8. Recommend a suite of indicators that the CBP could use to track and measure change of key physical climate trends and assess impacts.  9. Present a suggested schedule, including matrix of expected implementation timetable, cost estimates, and data and monitoring needs and gaps, for Chesapeake Bay Program implementation.  10. Prepare Analysis and Methods Documentation for a sub-set of indicators (1-2 for each indicator types, to be determined through the participatory process with final recommendations by the Climate Resiliency Workgroup,). One of the ecological response indicators selected for this task shall include an indicator to assess tidal wetland response.  11. Prepare a Synthesis and Results Report.  Where applicable, draft reports, data, and deliverable products should be provided to the technical leads sufficiently in advance of the end of the contract date such that an effective iterative process can take place before the contract terminates. These materials, depending on the nature of the deliverable, should be provided in draft report form or in the form of a Goal Team or workgroup summary presentation. This will allow technical leads, Goal Teams, workgroups and other CBP partners to review, provide comments, ask questions, and get clarification related to the project directly from the contractor.  The draft review process should be reflected in all RFP responses where applicable; contractor hours should be allocated to the oral presentation of final draft results to the CBP via one webinar. The appropriate CBP lead, in cooperation with the contractor, will determine when that presentation would be most advantageous. Any substantive comments, questions or edits received through this process should be incorporated into the final deliverable products. Please develop a timeline that will account for this iterative process. |
| **Stakeholder participants** | Various Chesapeake Bay Program Goal Teams and Workgroups, including the Climate Resiliency Workgroup; Status and Trends Workgroup; Integrated Monitoring Network Workgroup; STAR Team; Habitat GIT; Sustainable Fisheries GIT; Water Quality GIT. A broad swath of researchers (including members of the Chesapeake Bay Sentinel Site Cooperative) with long-term data on marsh surface elevations, water level data and other wetland datasets (e.g. vegetation monitoring plots) shall be consulted in the development of the tidal wetland response indicator. |
| **Due dates** | 1. Project kick-off call with Chesapeake Bay Program Project Lead(s). (Due: Two-weeks after project award)  2. Draft Work Plan and Quality Assurance Project Plan. Work will begin after approval of the Work Plan by Project Lead. (Due: April, 2017)  3. Assess and analyze existing climate change indicator frameworks to determine suitability for application within the Chesapeake Bay Program. (Due: May, 2017)  4. Analyze the existing suite of CBP Indicators and Metrics. (Due: August, 2017)  5. Review existing data and studies of past and ongoing trend and impact assessments. (Due: August, 2017)  6. Assess suitability of existing monitoring and tracking data being collected within the Chesapeake Bay Watershed. (Due: August, 2017)  7. Conduct a “participatory process” to further exploration and development of a recommended set of “climate resiliency” indicators. (Due: November, 2017)  8. Recommend a suite of indicators that the CBP could use to track and measure change of key physical climate trends and assess impacts. (Due: December, 2017)  9. Present a suggested schedule, including matrix of expected implementation timetable, cost estimates, and data and monitoring needs and gaps, for Chesapeake Bay Program implementation. (Due: January, 2018)  10. Prepare Analysis and Methods Documentation for a sub-set of indicators (1-2 for each indicator types, to be determined through the participatory process with final recommendations by the Climate Resiliency Workgroup). (Due: July, 2018)  11. Prepare a Draft Synthesis and Results Report. (Due; October, 2018)  12. Present Draft Report to Climate Resiliency Workgroup. (Due: November, 2018)  13. Prepare Final Report incorporating comments and feedback provided by Climate Resiliency Workgroup. (Due: January - February, 2019) |
| **Intended uses of the products** | It is envisioned that this project will be the first step in the process to develop a suite of indicators, which can be implemented over time, to measure and assess trends or “factors influencing” (i.e., physical climate drivers); ecological and societal response (i.e. impacts); and, programmatic progress toward building an effective response (i.e., adaptation). This suite of indicators will help the Program integrate climate considerations into its other projects and programs and facilitate connections among the Outcomes of the 2014 Chesapeake Bay Watershed Agreement. |
| **Deliverables** | The project will include four primary deliverables: 1) Recommended suite of climate change indicators for CBP implementation; 2) Suggested schedule, including expected implementation timetable, cost estimates, and data and monitoring needs and gaps, for Chesapeake Bay Program implementation; 3) Methods and analysis documentation for a sub-set of indicators (1-2 for each indicator type); and 4) Final Synthesis and Results Report. |
| **QAPP** | Secondary data will be used requiring a plan for ensuring data quality. Guidance for developing a QA plan for secondary data can be found at <https://www.epa.gov/quality/quality-assurance-project-plan-requirements-secondary-data-research-projects>. 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. |
| **Qualifications** | Expertise in metric and indicator development and/or implementation;  Expertise in climate change resiliency planning principles and actions;  Basic climate science experience;  Familiarity with Chesapeake Bay Program and Bay Agreement Management Strategies;  Expertise in basic ecosystem management and conservation planning relevant to the Chesapeake Bay region;  Knowledge of Chesapeake Bay program and partner monitoring networks;  Technical report writing and editing;  Facilitation skills; and  Research and analytical skills |
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