VIII. Project Idea Submission Form

Contents

VIII. Project Idea Submission Form – FY 2017 EPA GIT Funding

Proposal 1.

Your Name:	Stephanie Westby (NOAA)
Goal Implementation Team:	Sustainable Fisheries GIT
Project Title:	Development of a Long-Term Oyster Monitoring Plan
Project Type (See Section IV above)**:**	Monitoring/Tracking Outcome Attainment; Data Collection; Enhancing Assessment Efficiency
Goal/Outcome:	Oyster Restoration
Estimated Cost:	$60,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The Oyster Restoration Outcome under the 2014 Chesapeake Bay Watershed Agreement states that the partnership will restore oyster reefs 10 tributaries by 2025. The implementation of oyster restoration is two-fold, constructing and seeding oyster reefs and monitoring and protecting oyster reefs to ensure success. To establish a definition of success, partners developed oyster metrics. The Chesapeake Bay Oyster Metrics report calls for restored reefs to be monitored three years, and again six years, post-restoration, to determine whether or not the reefs achieve the Oyster Metrics success criteria for restored reefs (15 oysters per square meter, presence of multiple year classes, etc.). Due to the extensive, multi-year restoration processes, each tributary has multiple cohorts of restored oyster reefs, resulting in several 3-year and 6-year monitoring efforts for a single tributary. Taking into account multiple cohorts, multiple tributaries, and the 3 and 6 year monitoring evaluations, many of which will overlap in time, there is a critical need to develop a long-term monitoring program, which can ensure efficiency and accuracy while minimizing costs.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The proposed long-term monitoring plan would 1) Incorporate solutions to challenges such as monitoring reefs constructed from stone or crushed concrete base substrate, 2) Estimate the anticipated costs and staff requirements for multiple monitoring scenarios, and 3) Assess the accuracy and feasibility of different monitoring options.
Cross-Goal Benefits: What other goals may be advanced through this work?	**Water Quality:** Expanded knowledge of oyster restoration success through efficient and accurate monitoring can inform estimations of nitrogen and phosphorus removals in the Chesapeake Bay. **Fish Habitat:** Improvements in oyster reef monitoring can contribute information on fish utilization of oyster reefs as habitat.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Suggested Project Lead: Jay Lazar (NOAA) and Stephanie Westby (NOAA)

Proposal 2.

Your Name:	Bruce Vogt (NOAA)
Goal Implementation Team:	Sustainable Fisheries GIT
Project Title:	Synthesis of Shoreline Condition Impacts on Forage and Blue Crab
Project Type (See Section IV above)**:**	Support for science needed to develop metrics, performance measure development, environmental monitoring

Goal/Outcome:	Fish Habitat, Forage, Blue Crab
Estimated Cost:	$80,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Effective aquatic resource management requires a better understanding of the impacts of shoreline and watershed development on aquatic communities. Questions addressing habitat quantity and quality and associated production of forage taxa are critical gaps hampering implementation of Ecosystem Based Fishery Management in Chesapeake Bay. A synthesis of existing long-term datasets on shoreline condition and forage fish/blue crab populations will allow examination of the effects of altered shorelines on forage species relative abundance, mean size, and biomass; effects on forage community composition can also be examined.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The proposed synthesis would involve a comprehensive review of existing long-term datasets and analysis of trends in shoreline condition and blue crab and forage populations. The awardee will calculate projections of shoreline armoring along tidal shoreline in the Chesapeake Bay and examine effects on forage community composition in different shoreline conditions.
Cross-Goal Benefits: What other goals may be advanced through this work?	**SAV, Wetlands, Forest Buffers**: Shoreline armoring can reduce area for SAV, wetlands or forest buffers. Reduced shallow water habitat, scour, disruptions in habitat connectivity and hardening can result in an overall decrease in natural nearshore habitat. A synthesis of shoreline condition can provide information on nearshore habitat including SAV, wetlands and forest buffers in the Chesapeake Bay. **Climate Resiliency and Climate Monitoring and Assessment**: Erosion caused by sea level rise and other factors can result in an alteration of shoreline condition. A synthesis of shoreline condition and the associated impacts on forage and blue crabs can inform management and monitoring approaches to protect these species or habitats critical to these species.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Suggested Project Lead: Donna Bilkovic (VIMS)

Proposal 3.

Your Name:	Bruce Vogt (NOAA)
Goal Implementation Team:	Sustainable Fisheries GIT
Project Title:	Development and Construction of Artificial Fish Spawning/Nursery Habitat and Oyster Reef Habitat for Diadromous Fish
Project Type (See Section IV above)**:**	Environmental demonstration projects, Citizen Engagement, Environmental monitoring
Goal/Outcome:	Fish Habitat, Forage, Oyster Restoration
Estimated Cost:	$75,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Native hard-bottom habitats, including oyster reefs, are linked to successful recruitment by sturgeons and other anadromous species, but have declined dramatically in regions of the Chesapeake Bay, compared to historical conditions. Construction on structural habitat, oyster reefs and artificial habitat for critical life stages of species such as Atlantic Sturgeon can potentially protect and increase populations of diadromous fish. Atlantic Sturgeon serve as a sentinel species for ongoing water quality improvements in Chesapeake Bay and new oyster reefs will provide ecosystem services related to water quality.

Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The project involves the planning, construction, and placement of artificial fish spawning/nursery habitat and restored oyster reef habitat in support of recovery efforts for federally endangered Atlantic Sturgeon and other diadromous fishes. The project includes engagement with the riverine community in reef-ball construction, spat-on-shell production, and education outreach activities, and use existing acoustic telemetry arrays to evaluate post-placement success. This project will engage students, citizen scientists, and other stakeholders on a wide range of Bay stewardship issues.
Cross-Goal Benefits: What other goals may be advanced through this work?	**Citizen Stewardship and Students:** The project includes engagement with the riverine community in reef-ball construction, spat-on-shell production, and education outreach activities **Water Quality:** Atlantic Sturgeon are a sentinel species for ongoing water quality improvements in Chesapeake Bay and new oyster reefs will provide ecosystem services related to water quality.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Suggested Project Lead: Gina Hunt (MD DNR)

Proposal 4.

Your Name:	Bruce Vogt (NOAA)
Goal Implementation Team:	Sustainable Fisheries GIT
Project Title:	Investigation of Water Quality Challenges Limiting Oyster Hatchery Production in the Chesapeake Bay
Project Type (See Section IV above)**:**	Environmental modeling, Enhancement of Workplan Implementation, Addressing Factors Influencing Outcome Attainment
Goal/Outcome:	Oyster Restoration
Estimated Cost:	$70,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Hatchery production by all hatcheries in the Bay have struggled to meet the needs of both restoration projects and the commercial industry. Continued low and inconsistent hatchery production will result in lack of success of restoration projects and a quick and irreparable decline in oyster culture industry. A general consensus among hatchery operators is that unexplained and unknown water quality factors are the underlying cause of inconsistent production. This project seeks to initiate a long-term investigation of potential water quality factors that may limit larval production by oyster hatcheries.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	This investigation will begin by inviting experts on Bay water quality and toxics and molluscan ecology to a workshop with oyster hatchery operators. From that workshop, a plan and potential experimental approach will be developed that can be implemented in shellfish hatcheries to begin identifying and potentially controlling water quality factors that may be limiting larval survival.
Cross-Goal Benefits: What other goals may be advanced through this work?	**Water Quality:** Improved understanding of water quality impairments on oyster populations and reefs.

Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Suggested Project Lead: Andrew Button (VMRC)

Proposal 5.

Your Name:	Mitch Hartley (ACJV/USFWS)
Goal Implementation Team:	Habitat
Project Title:	Targeted Outreach for Wetland Protection and Restoration
Project Type (See Section IV above)**:**	Addressing Barriers to Implementation
Goal/Outcome:	Black Duck: Increased acreage of wetlands protected/restored
Estimated Cost:	$75,000 (grant request)
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	This project will build on previous GIT investments and address the highest priorities in both the Wetland (Management Approach 5-7) and Black Duck Action Team (Key Actions 1-4) Workplans, by incorporating the Black Duck Decision Support Tool, Landowner Attitudes Survey and Outreach Materials developed under the Habitat GIT to pilot targeted outreach approaches that increase wetland protection and restoration efforts on private lands in key watershed focus areas. This project is a priority of and will benefit ongoing efforts of multiple partners in the watershed; therefore, we expect grant funds to leverage at least $25k from USFWS and $25k from The Nature Conservancy to allow for a ¾-time position for two years. Financial support (financial or in-kind) or collaboration is also expected from the state wildlife agencies, NRCS, Ducks Unlimited, and other NGO and municipal partners.

Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	We will hire a part-time (30 hrs/wk) contractor for two years to engage private landowners, and conservation partners/practitioners interested or involved in wetland protection and restoration on a subset of counties on the Delmarva Peninsula. This project will build on and put to use three products from earlier GIT projects funded by CBT: the black duck decision support tool (DST), landowner attitudes survey, and targeted outreach materials. A major goal of this project is to make better use of NRCS funding already available for wetland protection and restoration, which is currently underutilized in parts of the Bay. Because all three states (DE/MD/VA) in this portion of the watershed are part of NRCS's new "Working Lands for Wildlife" Black Ducks Initiative, we anticipate increased NRCS interest and funding for wetland projects that address black duck habitat goals. Outreach will be carried out through a research framework that will allow us to evaluate various methods of effecting landowner interest and enrollment in NRCS and other programs available, to improve efforts to address barriers to enrollment that have been identified previously. We have reached out to and expect to collaborate with a Human Dimensions researcher at Virginia Tech who specializes in studying motivation, behavior, and barriers to private landowners involvement in conservation programs. Our preliminary timeline is below:
	• January
	  ○ Hire part-time outreach specialist - January
	  ○ Form advisory group to direct efforts (USFWS, NRCS, TNC, DU, VTech, others?)

	○ Identify focus areas and landowners/ parcels of interest (i.e. greater than x acres, landscape position, restoration opportunity, etc.) • February/March ○ Review wetland programs available to landowners in our focus area as identified through current GIT-funded project under Wetland Workgroup ○ Work with social scientist to develop testable outreach strategies • April ○ Develop Outreach materials and associated outreach plan and track tools • May (Year 1) – September (Year 2) ○ Perform outreach to priority landowners and track progress ○ Have bi-monthly review meetings with advisory group to assess progress and adapt approaches as needed • Oct/Nov (Year 2) ○ Evaluate progress and lessons learned ○ Share outcomes with other partners and Bay Program workgroups
Cross-Goal Benefits: What other goals may be advanced through this work?	The main goal is to increase the enrollment of private landowners in wetland conservation programs, both for permanent protection (e.g., conservation easements) and restoration, to meet primary goals of both the Black Duck Action Team and Wetlands Working group. Whenever possible, we will emphasize and prioritize projects that improve water quality in the Bay, and to the extent that private lands shift from crops to wetlands and buffer, we expect to provide concrete, measurable benefits to water quality, which could ultimately benefit several working groups, including brook trout, SAV, etc.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes

Proposal 6.

Your Name:	Brooke Landry, Becky Golden
Goal Implementation Team:	Habitat
Project Title:	Monitor and Protect Chesapeake Bay SAV
Project Type (See Section IV above)**:**	Monitoring/tracking program development, Data collection program development, Policy research and recommendations
Goal/Outcome:	Submerged Aquatic Vegetation
Estimated Cost:	$50,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	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. In 2016, 97,433 acres of SAV were mapped in the Chesapeake Bay, exceeding the 2017 baywide restoration target by 7,433 acres. A recent

	study indicated that SAV recovery in Chesapeake Bay is directly correlated with management actions and specifically with the Chesapeake Bay TMDL (Lefcheck et al. Nature, in review). With the continuation of the Bay TMDL, and barring catastrophic weather events, it is expected that SAV will continue to recover in areas throughout the Bay. With the recovery of SAV facilitated by water quality improvements, it is prudent to shift some of our focus and resources from restoration and research to monitoring and protection. Monitoring data allow for adaptive management of a resource should it become necessary, and it is the only way to show with certainty that efforts to protect and restore it are effective. The protection of existing SAV is a priority management strategy for increasing and sustaining the habitat benefits of SAV in the Chesapeake Bay, with SAV protection achieved through Bay state statutes and regulations, as well as good stewardship from visitors and residents of the Chesapeake Bay watershed. This project will consist of two components. Component 1 will establish a tool for citizen-based monitoring of SAV that will make restoration, protection, and stewardship easier in the future and Component 2 will provide a thorough review and analysis of current statutes and regulations that protect SAV in the Chesapeake Bay. Component 1 of this project is meant to build on the SAV Workgroup's existing effort to expand SAV monitoring in the Bay by incorporating Riverkeepers, Watershed groups, and their volunteers into the SAV monitoring process. With input from the Riverkeepers and Watershed group leads that collected and organized volunteers to collect SAV data in 2017, this project will use the lessons learned from that effort to establish a single SAV monitoring protocol appropriate for volunteers, as well as establish an SAV data collector certification program. Data collection by citizens and volunteers not only provides local, state, and federal organizations with needed data, it is also an opportunity for outreach and education to the public. Studies in environmental sociology have shown that this type of activity and involvement increases one's commitment to protect the natural world. Establishing an SAV monitoring protocol appropriate for volunteers as well as a data collector certification program will make restoration, protection, and stewardship of SAV easier in the future. More detailed information about the geographic extent, density, and species composition of SAV in tributaries throughout the watershed, as well as observations of water clarity and shoreline type, 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. Component 2 of this project will address the need to examine Bay state statutes and regulations that protect existing SAV in the Bay. While the TMDL facilitates recovery and resilience of SAV through increases in water clarity, water clarity alone does not protect SAV from other threats once it has recovered. For example, in some of the Bay's tributaries, SAV has already exceeded its target restoration acreage and become what is perceived as a nuisance to waterfront homeowners. Rather than seeing it as a sentinel of water quality and fish habitat, it is viewed as an encumbrance to recreation. In Maryland, for example, current statutes (COMAR 4-213) allow for SAV to be removed in 60' swaths for navigational purposes. If every waterfront landowner with a dock has the right to remove a 60' wide

	swath of SAV to the navigable channel, the SAV beds that have recovered may succumb to the stress of extensive fragmentation and collapse regardless of water clarity. Other activities that may become obstacles to reaching the Chesapeake Bay Program's SAV restoration goal include but are not limited to shoreline armoring (which will most likely accelerate due to climate change and sea level rise), resource trade-offs with living shorelines and aquaculture, hydraulic clam dredging and other fishing activities, dock and marina construction, and propeller scarring. This project will entail a thorough examination of current Bay state statutes and regulations that protect existing SAV. An analysis will be completed that determines if the regulations are adequate to protect SAV to the extent that we may eventually reach our Bay-wide SAV restoration goal (if water quality conditions are met that would otherwise allow the expansion of SAV to its historic maximum). Recommendations for additional regulations to protect SAV will be made in the absence of adequate existing regulations, possibly using other state laws, regulations, and success as a model for the Chesapeake Bay states (ie. Florida).
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	***Component 1:*** The project lead* will work with the Bay's Riverkeepers and other watershed organizations to establish SAV survey methods and protocols appropriate to the level of volunteer and citizen scientists but which meets minimum requirements for use as a federally identified indicator of water quality. The project lead* will work with various groups to develop a volunteer training and certification program for SAV data collection. Only data collected by certified volunteers will be used in analyses. Riverkeepers and watershed organizations will then enlist volunteers to use established SAV data collection protocols and collect SAV data in their tributaries. This will allow for the testing and tweaking of protocols, and will provide essential SAV data to local/state/federal and academic institutions in the Chesapeake Bay watershed, foster a relationship between multiple watershed groups and the Chesapeake Bay Program partners, and encourage/allow watershed groups to meet their own local conservation and restoration objectives. ***Component 2:*** The project lead* will examine existing regulatory programs to determine if they are adequate for protecting SAV. Current Bay state and federal regulations will be compared to reveal "loop-holes" and/or inconsistent SAV protection measures. State management and regulatory agencies may need to alter current regulations by repealing, adopting or changing regulations or statutes that do not provide adequate SAV protection. *this work can either be done by the project lead or contracted out
Cross-Goal Benefits: What other goals may be advanced through this work?	Vital Habitats, Water Quality, Sustainable Fisheries, Climate Resiliency.
Anticipated Outcomes	Ideally this project will: 1) Establish an SAV monitoring protocol appropriate to the level of volunteer and citizen scientists but which meets minimum requirements for use as federally identified indicator of water quality,

	2) Develop SAV certification program similar to the Water Quality certification program in which volunteers must have CMC training and certification to collect data that is usable by state and federal partners (it lives up to federal QAPPs), 3) Provide essential SAV data to local/state/federal and academic institutions in the Chesapeake Bay watershed, 4) Foster a relationship between multiple watershed groups and the Chesapeake Bay Program partners, 5) Review statutes and regulations currently in place to protect existing SAV in the Chesapeake Bay 6) Determine if these regulations are adequate to protect existing and expanding SAV in the Bay 7) Recommend new statutes and regulations, or changes to current regulations, that will more effectively protect SAV in the Bay if deemed necessary.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes (Brooke Landry for Component 1, Becky Golden for Component 2)

Proposal 7.

Your Name:	Mary Andrews
Goal Implementation Team:	Habitat (GIT 2)
Project Title:	Improving River Herring Access to Spawning Habitats Through Prioritization and eDNA Analysis of Culvert Retrofit Projects
Project Type (See Section IV above)**:**	• Baseline analyses • Environmental monitoring • Environmental demonstration projects • Performance measure development • Monitoring/tracking program development
Goal/Outcome:	Fish Passage
Estimated Cost:	$95,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Additional culverts assessments would be conducted in VA, MD and PA and would include assessing fish utilization of habitats upstream and downstream of each crossing to determine the degree of blockage using environmental DNA and traditional fish sampling methods. The team would provide a prioritized list of crossings for improvement, and provide preliminary assessment of the effectiveness of North Atlantic Aquatic Connectivity Collaborative Aquatic Organism Passage scores used by the three target species. While a very small proportion of road crossings have been assessed in the Chesapeake Bay to determine if there are passage issues, we have no data on the presence on river herring at that fine scale. The eDNA analysis, if effective, would be a revolutionary and very cost effective way for the work group to prioritize culvert replacement projects that have both fish passage issues and the highest river herring abundance.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	*Objective 1: Conduct NAACC road-stream crossing assessments for the dual purposes of determining the severity of crossings as barriers to fish passage and modelling the potential for flooding.* *Objective 2: Develop an environmental DNA (eDNA) assay to determine the*

	presence and relative abundance of Hickory Shad, adding to the assay for Alewife and Blueback Herring previously developed by SERC and UMCES. *Objective 3: Conduct detailed assessments of the ability of target anadromous fish species to access habitat upstream of six NAACC-assessed road-stream crossings to prioritize the most critical crossings for removal and replacement.*
Cross-Goal Benefits: What other goals may be advanced through this work?	Culverts assessment would benefit the brook trout action team by assessing culverts for fish passage that may result in priority projects for the action team. Fish habitat work group would benefit by having a very cost effective way to determine the presence or absence of river herring in various habitat types.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes

Proposal 8.

Your Name:	Christopher K. Williams, Ph.D.
Goal Implementation Team:	Protect and Restore Vital Habitats
Project Title:	Quantifying Wintering Mid-Atlantic Black Duck Occupancy Dynamics as a Function of Landscape Composition
Project Type (See Section IV above)**:**	Metric Development and Tracking: 1) Support for science needed to develop metrics; 2) Metric/indicator development; 3) Modeling support.
Goal/Outcome:	Black Duck
Estimated Cost:	$75,000 over 2 years
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The American black duck (*Anas rubripes*) is a species of conservation concern in eastern North America, and is a flagship species for protecting wetland habitats along the Atlantic Coast. Over the past decade, the Black Duck Joint Venture has prioritized research on the wintering ecology of Atlantic Flyway black ducks (Black Duck Joint Venture Management Board 2014). The conservation of Atlantic Coast black ducks during the nonbreeding period is of increasing concern, primarily because the salt marsh upon which these birds depend (Morton et al. 1989b) is being lost and degraded by sea level rise, severe storms, and habitat conversion (Stedman and Dahl 2008). To better understand how these salt marsh habitats are able to support black ducks throughout the winter, several coordinated studies have been conducted to quantify food abundance in Atlantic Coast salt marshes (Plattner et al. 2010, Cramer et al. 2012, Goldstein et al. 2016, Livolsi 2015), concurrent with research on the energetic demands of wintering black ducks (Cramer 2009, Jones et al. 2014, Livolsi 2016). Armed with these estimates of food supply and energetic demand, managers are better able to estimate the carrying capacity of salt marsh habitats for black ducks and other wintering waterfowl. Despite these recent advances in black duck ecology and management, we lack a synthetic understanding of black duck habitat use during the wintering period. This is important from a management perspective, because although we can quantify the amount of habitat available on the landscape, some habitats may not be used by black ducks, leading to an overestimate of carrying capacity.

	This seems especially likely given intensive urban development along the Atlantic Coast and the fact that black ducks are notoriously wary of human disturbance (Longcore et al. 2000). Ringelman et al. (2015) synthesized black duck radiotelemetry data (n = 235 birds, 17,425 total locations) to provide a broadly applicable description of black duck habitat use and determine how food abundance, weather, tidal regimes, and anthropogenic disturbance from urbanization affect this use. These results provided information on which habitats should be included in carrying capacity models, and also aided (in addition to past research) the Black Duck and Atlantic Coast Joint Ventures in development of a decision support tool (DST) to identify priority conservation areas. This DST is based on a bio-energetics model assuming that energy availability can limit population growth through direct effects on non-breeding survival, particularly from January to March, or indirectly effecting productivity through decreased body condition. The current version of the DST is driven primarily by habitat quantity (i.e., size and average energetic capacity of wetland types) with limited consideration of quality. However, the energetic capacity of individual wetlands, and thus the landscape, may be modified by characteristics such as patch size, connectivity, and isolation that influence black duck habitat selection. We assume tidally-influenced wetlands are the most important component of black duck non-breeding habitat, but recognize black ducks use a variety of freshwater wetland types (Ringelman et al. 2015). We hypothesize that black duck use of freshwater wetlands is a function of the distance from tidal systems, patch size, isolation, and wetland type. Understanding how these characteristics influence black duck habitat use and carrying capacity can improve our ability to target habitat acquisition and restoration in areas that maximize both habitat quantity and quality. Additionally, quantifying mallard use of these habitats will help to address the potential topic of black duck/mallard interspecific competition.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Between Dec-Mar, 2017-19 (although depending on funding this may need to be pushed back to 2018-2020), we will conduct three replicate surveys per year at 60 points (120 over 2 years) to sample the presence of black ducks and other dabbler species in the Chesapeake Bay Watershed. We will explore the potential of integrating eBird observations with designed based presence/absence data using hierarchical modeling techniques (Royle and Dorazio 2008). All survey points will be placed at least one kilometer apart and adjacent to freshwater or saltwater marshes. Sampling will begin at sunrise. Once we arrive at a point we will wait 30 minutes for duck species to acclimate to our initial presence. We will survey the point for 60 minutes noting presence absence of all species along with scan samples of behavior every 10 minutes to note any affects habitat effects have on behavior. We estimate to sample 2-3 points per day to finish all 60 points within approximately a 5-week time frame. We will randomly generate the order in which points are visited between the 3 replications. We will estimate site occupancy and detection probability using the modeling approach of Mackenzie et al. (2002) amd Richmond et al. (2010), which accounts for the probability of an individual occupying the site and being detected during a survey. We will model black duck occupancy using logistic regression with the covariate set of site and landscape scale metrics

	using a randomly selected subset of data from 50% (n = 60) of the survey points. The remaining 50% of the data will be used to validate model-predicted occupancy. Each model will include an apriori determined set of 1–3 site-scale and 1–3 landscape-scale covariates (totaling 2–6). We will select a maximum of three variables at each scale to prevent the development of highly complex models. Richmond et al. (2010) extended the model of Mackenzie et al. (2002) to test for effect of competition on occupancy. Using this framework, we will be able to test for competition between black ducks and mallards. We will use Akaike's Information Criterion corrected for small sample size (AICc) to evaluate and select models (Burnham and Anderson 2002). We will validate the accuracy of our best-fit occupancy model(s) by generating predicted occupancy values for the remaining 50% of data not used for fitting models. We will use a receiver operating characteristic (ROC) curve to measure model accuracy. We would then apply our model within a Geographic Information System (GIS) to produce both continuous and discrete maps of predicted black duck (and other dabbler) presence for the Chesapeake Bay Watershed.
Cross-Goal Benefits: What other goals may be advanced through this work?	Ultimately, by better predicting black duck presence and what habitat variables best predict success, we will be able to provide habitat management recommendations to the Chesapeake Bay Program for future 1) performance measure development, and 2) Assessment of data to evaluate progress on metrics.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes, I am willing to assist with GIT lead.

Proposal 9.

Your Name:	James Davis-Martin
Goal Implementation Team:	Water Quality GIT
Project Title:	Integrating Monitoring, Modeling and Trends Analyses to Inform Management Decisions
Project Type (See Section IV above)**:**	Work plan Implementation Projects: Database development, Policy research and recommendations, Mapping & lands assessment, Baseline analyses
Goal/Outcome:	Water Quality Goal; 2017 WIP, 2025 WIP, WQS Attainment & Monitoring Outcomes.
Estimated Cost:	$75,000
Justification: Provide a 1-2 paragraph description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	A large amount of new data, analyses and research have become available since the development of Phase II WIPs. However, this overwhelming amount of information has yet to be synthesized and integrated to inform management decisions across the Bay and its watershed. This project integrates newly available monitoring, modeling and trends information on nitrogen, phosphorus and sediment throughout the Chesapeake Bay watershed to analyze patterns in water quality, pollutant sources, BMP implementation and drivers in order to inform management decisions moving into the future, with a focus on Phase III WIP development and Milestones adaptive management through 2025. The project will incorporate and dynamically integrate data and trends analyses from a variety of sources, including but not limited to the Chesapeake Bay non-tidal monitoring network, the Chesapeake Bay

	Watershed Model, published literature, etc. The first phase of this project focuses on compiling and analyzing currently available monitoring and modeling data and analyses watershed-wide. The second phase will consist of more in-depth analyses for targeted locations, watersheds, or geographic regions leading to the production of story maps that can inform management decisions. This project will develop a baseline of information on water quality, sources, drivers, etc. across the watershed, which can be used along with one of the story map templates to create a detailed analysis for any area. The resulting user-friendly tools for accessing Bay information will inform Phase III WIP development, guide future implementation decisions, target additional research and support future assessments. The project addresses several management approaches and key actions in the WQGIT's 2-year work plan. This project provides baseline information, and also begins preliminary integrated analyses to explain trends and identify drivers in water quality in both tidal and non-tidal waters.
Cross-Goal Benefits: What other goals may be advanced through this work?	This project can be integrated with the Cross-GIT Mapping project to support management decisions that generate benefits in water quality, habitat and living resources outcomes all at the same time.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead	Yes, in collaboration with Emily Trentacoste.

Proposal 10.

Your Name:	Tom Schueler and David Wood
Goal Implementation Team:	Water Quality (GIT 3)
Project Title:	Crafting Guidance for Enhanced Treatment by Roadside Ditch Management Practices
Project Type (See Section IV above)**:**	(1) Practice Research and Recommendations (2) Training
Goal/Outcome:	Water Quality/2025 Watershed Implementation Plans
Estimated Cost:	$60,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The Scientific and Technical Advisory Committee (STAC) released a research report on improving roadside ditch management practices to help meet water quality goals in the Bay watershed (Schneider and Boomer, 2016). One of the key report findings was that improved management of the roadside ditch network could be an effective pollutant reduction strategy in many rural and/or unregulated portions of the Bay watershed. The CBP director requested that Chesapeake Stormwater Network (CSN) form a short-term, cross-sector team to discuss how to define, credit and verify roadside ditch management (RDM) practices this group of practices in January of 2017. The RDM team came to consensus on how to classify and credit seven categories of roadside ditch management practices in the context of existing BMP expert panel reports (CSN, 2017). They include ditch: 1. Buffers 2. Elimination 3. Slope reduction 4. Stabilization 5. Maintenance

	6. Treatment (including PEDs to boost nutrient removal) 7. Retrofits The team recommendations were reviewed by both the Agricultural and Urban Stormwater Workgroups earlier this summer, who generally supported the technical approach. The Workgroups also agreed that additional work was needed to craft more detailed crediting protocols, design guidelines and verification techniques for the RDM practices. Local and state highway agencies expressed a critical need for RDM technical resources so they can implement the proposed credit more broadly across the watershed. The additional work could be integrated with a recent research synthesis on design enhancements to boost nutrient removal in roadside ditches and swales (Hirschman, 2017). More detailed design and inspection guidelines would help promote greater adoption of these new and innovative roadside practices. This format enables state stormwater agencies and soil conservation districts to rapidly append RDM guidelines to their existing stormwater manuals and design review processes. The draft guidelines would also be subject to the review and approval of the Agricultural, Forestry and Urban Stormwater Workgroups.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The project will be conducted in three phases. In the first phase, the project lead will form a small, cross-sector technical team composed of researchers, practitioners and regulators to help craft the design guidance. The project team will then draft the design guidance for the range of practices. Guidance will include: practice feasibility, minimum design specifications, construction sequence, construction inspection, project acceptance, ongoing maintenance, routine inspection, remediation and verification. The Bay-wide Stormwater BMP Design Specifications (CSN and CWP, 2010) would serve as the basic template for the proposed RDM guidelines. In the second phase, the project team will work with Bay stormwater stakeholders to review and approve the design guidelines. Specifically, the guidelines will be subject to the review of all three work groups (AGWG, USWG, FWG), the existing RDM team, state stormwater agencies and local and state highway maintenance departments. CSN will help facilitate the review process for the RDM design guide through the CBP partnership, and solicit input from our 12,000-member network of stormwater professionals across the Bay. In the third and final phase, the project team will develop outreach materials on the new RDM design guidelines for local and state highway agencies. The team will deliver the stormwater training materials to a wide group of road, highway and stormwater professionals across the Bay watershed via webcasts, fact sheets, and on-line training modules.
Cross-Goal Benefits: What other goals may be advanced through this work?	The proposed project has a lot of cross-sector appeal as roadside ditches run through forest, farm, rural, suburban and even urban land uses across the watershed. Improved RDM practices have the potential to improve stream health and fish habitat, contributing to healthy watersheds. The STAC report noted that the existing roadside ditch network degrades habitat quality and food

	web structures in headwater streams in the Bay watershed, due to increased runoff volumes and velocities, sediment erosion and stormwater pollution (Schneider and Boomer, 2016). RDM practices would be particularly appropriate to protect trout streams in rural and forested sub-watersheds. The project also has potential to improve community engagement by involving new stakeholders in the Bay restoration effort. Training and outreach resources will be targeted to local and state highway maintenance agencies located in un-regulated rural areas in the headwater states who have been underrepresented in past Bay restoration efforts. Lastly, prior expert panels have concluded that roads and streets are a hotspot for toxic contaminants, including PAHs, hydrocarbons and trace metals. Improved treatment at roadside ditches could help achieve goals for toxic reductions in the Bay watershed. **References:** Chesapeake Stormwater Network (CSN) and Center for Watershed Protection (CWP). 2010. Bay-wide Stormwater Design Specifications (12 different urban BMPs). www.chesapeakestormwater.net. Ellicott City, MD. Chesapeake Stormwater Network (CSN). 2017. Draft options for crediting pollutant reduction from roadside ditch management (RDM) practices in the Chesapeake Bay watershed. Technical memo to agricultural and urban stormwater workgroups. management practices. Revised May 22, 2017. Hirschman, D., Brian Seipp and T. Schueler. 2017. Performance enhancing devices for stormwater best management practices. Final Technical Report. Chesapeake Stormwater Network and Center for Watershed Protection. Schneider, R. and K. Boomer. 2016. Re-plumbing the Chesapeake Watershed: Improving roadside ditch management to meet TMDL water quality goals. STAC Publication No. 16-001. Edgewater, MD
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes.

Proposal 11.

Your Name:	Fred Pinkney
Goal Implementation Team:	Water Quality GIT
Project Title:	Feasibility Study for Voluntary Phase-Out of PCBs in Current Use
Project Type (See Section IV above)**:**	Work Plan Implementation Project
Goal/Outcome:	Toxic Contaminants Goal, Toxic Contaminants Policy and Prevention Outcome
Estimated Cost:	$40,000

Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The strategy for the Toxic Contaminants Policy and Prevention Outcome includes a major element that relates to voluntary removal of PCB-containing equipment and other current uses (e.g. electrical equipment, other industrial equipment, caulk, paint). This strategy element is needed to complement the regulatory strategy element. To date, the Toxic Contaminants Workgroup has not been able to address the voluntary removal strategy element due to resource constraints. Essential questions remain about the potential effectiveness of such a program. Therefore, assistance is needed in determining program feasibility (e.g. cost, estimate of PCB loads that can be addressed, other national programs and levels of success, ideas for sustainable implementation of a voluntary removal program).
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Review of published literature from other watershed programs that have implemented voluntary removal programs. Interviews with staff leads for similar programs. Cost-benefit analyses and estimates (e.g. cost of removal and retrofit of PCB-containing equipment and materials). Identification of stakeholders and incentives for participation in such a program (e.g. models for sustaining the program). Assessment of a public facility-only scope, a public schools-only scope or a broader scope to involve a substantial range of participants such as public utilities. Examples of voluntary programs to be investigated include the Great Lakes Binational Strategy for PCB Risk Management, the State of Washington PCB Chemical Action Plan, and the Spokane River (WA) Regional Toxics Task Force. Areas of possible emphasis include assessing the value of conducting public education campaigns and identifying and replacing PCB containing materials (including lamp ballasts and caulks) in schools and other public buildings.
Cross-Goal Benefits: What other goals may be advanced through this work?	• Forage fish outcome, Sustainable Fisheries Goal • Stream Health outcome, vital Habitats Goal • Healthy Watersheds • Local Leadership outcome, Stewardship goal • Sustainable Schools outcome
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes

Proposal 12.

Your Name:	Chris French
Goal Implementation Team:	Water Quality GIT
Project Title:	Quantifying Atmospheric Polychlorinated Biphenyls (PCBs) Deposition in the Chesapeake Bay Watershed
Project Type (See Section IV above)**:**	Work Plan Implementation Project
Goal/Outcome:	• Toxic Contaminants Goal, Research Outcome • Toxic Contaminants Goal, Policy and Prevention Outcome
Estimated Cost:	$75,000

Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	A modern day study of PCB atmospheric deposition rates within the Chesapeake Bay watershed that will facilitate more robust and accurate PCB TMDLs and future source identification studies & reduction strategies. The primary goal of this study is to determine the extent of PCB atmospheric deposition that contributes to PCBs in storm water runoff into impaired water bodies. The objectives of this study are to 1) spatially determine air depositional PCB concentrations (or fluxes) that are applicable to different land uses (suburban, urban, industrial, and rural) and 2) establish temporal PCB concentrations (fluxes) from those land uses. At the present time, reliable estimates are available for PCB loadings in the Chesapeake Bay from all but one of these potential sources: atmospheric deposition. There is currently a very limited number of atmospheric PCB loading studies within the Chesapeake Bay watershed (Leister & Baker, 1994; Offenberg & Baker, 1999; Brunciak et al, 2001). In the process of creating the Potomac PCB TMDL, atmospheric deposition was found to account for almost 10% of the total PCB loadings to the system. However, this may be an underestimate because the simulation was based solely on literature values (previously noted) and because those former studies relied on less-sensitive analytical methodologies. This results in PCB TMDL studies that may not be as accurate as they should be; restricting the resulting implementation efforts of states and localities to reduce PCBs in the Chesapeake Bay watershed. The potential impact of atmospheric PCBs on NPDES Municipal Separate Storm Sewer System (MS4) permitees is unknown, but expected to be significant given that many will have TMDL Waste Load Allocations and are expected to show some level of progress towards achieving restoration goals and objectives. This proposal will achieve forward progress in meeting the CBP Toxic Contaminants Workgroup's 2016-2017 Toxic Contaminants Research Work Plan, Management Approach 1, Key Action 6: • "**Better delineate PCB sources from** diffuse sources of land, release from deposits in stormwater pipes, and **atmospheric deposition**." Furthermore, this proposal will also advance the CBP Toxic Contaminants Workgroup's 2016-2017 Toxic Contaminants Policy and Prevention Work Plan, Management Approach 4, Key Action 5: • "…determine the need for **further investigation of atmospheric sources of PCBs and characterization of PCB concentrations in atmospheric deposition in the Bay,** and determine the significance of these sources for bioaccumulation in fish."
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The successful researcher will develop a study based on a designated geographical area (determined by the GIT prior to the RFP release) and include four different land-use categories: suburban, urban, industrial, and rural. Urban atmospheres often contain PCB levels ten times the rural air concentrations (Offenberg & Baker, 1999; Van Ry et al., 2002) and it has been observed that urban areas contain higher molecular weight PCBs suggesting that secondary sources (e.g., re-emission) are important (Du et al., 2009).

	Researchers will build upon the successfully implemented atmospheric deposition studies that have been piloted within the Delaware Bay Watershed in Pennsylvania and New Jersey over the past 15+ years. The successful candidate will utilize modern day PCB collection and analytical methods such as EPA Method 1668; ensuring proper Quality Assurance & Quality Control (QA/QC) via implementing a Quality Assurance Project Plan (QAPP). Pending funding, analysis for other pollutants of concern - such as polycyclic aromatic hydrocarbons (PAHs) - may be considered by the GIT.
Cross-Goal Benefits: What other goals may be advanced through this work?	• Sustainable Fisheries Goal, forage fish outcome • Vital Habitats Goal, stream health outcome • Stewardship Goal, local leadership outcome: "information that increases the knowledge and capacity of local officials related to water resources…that will support local conservation actions." • Quantifiable effort to identify pollutant loadings linked to environmental justice issues within the Chesapeake Bay region
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes, as a co-lead with another GIT member who has direct experience with coordinating and implementing PCB TMDLs (e.g., a state TMDL Coordinator).

Proposal 13.

Your Name:	Greg Evans
Goal Implementation Team:	Healthy Watersheds
Project Title:	Healthy Watersheds Forestry TMDL Forest Retention Study: Phase 3
Project Type (See Section IV above)**:**	Workplan Implementation: Training and Environmental Demonstration project
Goal/Outcome:	Healthy Watersheds Goal
Estimated Cost:	$50,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	**Objective:** Develop and pilot model to monetize forestland retention values in TMDL 6.0 model so land use planning decisions can be optimized to address environmental and economic priorities simultaneously; then train localities and other in use. As outlined in the Healthy Watersheds key management approach #2, this project will assist in increasing local commitment and capacity at the local level as well as further articulating economic value and to protect healthy watersheds. In addition, Management Action #3 outlines the need to support regional and state based efforts related to developing information resources and promoting science that helps to recognize important activities and model tools that can be meet multiple healthy watershed objectives. Finally, this project addresses MB SRS request: "Provide a pathway to communicate tools and information". Balancing CB water quality clean up objectives with economic requirements of localities so a win/win situation is created is essential to meeting Bay cleanup goals but an injection of funding other than through grants, etc. is needed. A means to monetizes incentives for landowners and localities so they will make land use decisions that retain forestland, result in healthy watersheds, and reduce TMDL model loadings as projected if the TMDL model changes from a 2010 baseline to a 2025 baseline as expected

	is needed. The financial incentive driver is the potential avoided BMP infrastructure cost to the state and developers if development actions/strategies result in less development by 2025 and beyond than the TMDL model projects. A TMDL credit for making land use decisions that reduce a state's projected TMDL obligations coupled with a carbon trading component that is already done elsewhere on a commercial basis offers the potential for a market driven funding source to incentivize landowners and localities to action and creates a long-term funding source for Bay cleanup.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Two elements: (1) **provide training to local officials*, soil and water conservation districts, the forestry community and conservation NGOs such as land trusts to enhance implementation of toolbox elements** identified and described in HWF/TMDL project final report submitted to HWGIT 6/30/17 while also working with the Virginia General Assembly as a technical resource to make legislative changes identified and described in HWF/TMDL project final report submitted to HWGIT 6/30/17. (2) Design, develop and pilot test in collaboration with the **Virginia state government and designated Chesapeake Bay Program Goal Implementation Teams and Workgroups, a credit mechanism that encourages optimization of land use planning decisions such as forest retention actions that reduce projected future TMDL requirements.** The approach will consider credits as a unit of value that measures "functional lift", and/or in some cases protection of current ecological condition (preservation). Taking a page from stream and wetlands credit assessment methods, first, a range will be developed - say 0.0 to 1.0. Next, a baseline assessment would be made of the defined area of interest - for instance a stand of trees. This assessment could be made using a relative basis, meaning a biophysical geography (reference domain) in which has been established a range of conditions that can be expected in the region. The specific characteristics of the "best" (equals 1) and degraded or "worst" (equals 0). The area of interest would then be "fit to the scale" based on the specific criteria used to establish the reference domain. This would be factored into the Chesapeake Bay TMDL model. This approach would serve the purpose of a baseline score, and it also guides the management /restoration plan and provides guidance for the expected increase in functions and value - the so called functional lift. It also sets the value of the credits. For instance, suppose an area of interest (forestland at risk of development as an example) has a baseline value of 0.25, and a state's land use goal is to reduce its overall TMDL obligation so it intends to incentivize localities, developers, etc. to move it up the scale to 0.75. It would then have 0.5 credit (generally per acre) to work with. The workplan would be fitted with specific measurement criteria to be monitored over time, and credits would be "released" as performance criteria are met. Challenges will be to create a demand market large enough to meet the supply market up and downstream from MS4 areas and also assure that MS4 local stream water quality is maintained.

Cross-Goal Benefits: What other goals may be advanced through this work?	• Land Conservation Goal • Stewardship Goal: Local Leadership Outcome, increase knowledge and capacity of local officials. (*close coordination to reduce potential duplication of efforts and sync with existing efforts related to local outreach will be required) • Riparian Forest Buffer and Urban Tree Canopy Strategies • Vital Habitat Goal: maintaining a network of land and water habitats. • Potential to assist in meeting WIP requirements
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Renee Thompson rthompson@chesapeakebay.net 410-267-5749

Proposal 14.

Your Name:	Darius Stanton, Diversity Workgroup
Goal Implementation Team:	Fostering Chesapeake Stewardship (GIT 5)
Project Title:	Implementation Support for Chesapeake Bay Program Cultural Competency, Diversity Equity and Inclusion (DEI) Training and Tools Development
Project Type:	Workplan Implementation
Goal/Outcome:	Stewardship, Diversity
Estimated Cost:	$75,000
Justification:	**Goals of this project:** Launch Chesapeake Bay-wide cultural competency training and workshop for internal CBP staff. **Background and Importance of the work:** The summer of 2017, Green 2.0 released its diversity scorecard which included diversity data from the top 40 environmental NGOs across the United States. This data illustrated that organizations such as the River Network, Resources Legacy Fund and World Wildlife Fund (WWF) have achieved racial and ethnic diversity of 30% or more among the organization's leadership and staff. While the current racial make-up of the Chesapeake Bay Partnership includes 13% communities of color (2016 Chesapeake Bay Demographic Profile, Alliance for the Chesapeake Bay), the diversity outcome leaders and stakeholders are promoting the goal of 35% communities of color to reflect the demographics of the watershed. While the 2016 profile was pivotal in identifying where the CBP demographic stands statistically, this profile does not take into account the attitudes regarding diversity from various entities of the partnership. Conducting a baseline cultural awareness assessment, along with developing a set of Chesapeake Program specific training and cultural competency tools and modules would first assess the current attitudes on diversity at various levels of leadership. Secondly this project would provide tools, training, and approaches for addressing diversity of the context of the unique work done by the bay program partnership. A cultural competency and diversity inclusion baseline assessment and training program would enhance the workplan priorities of several outcomes and workplans, in addition to the diversity and citizen stewardship. This project will greatly enhance the workplans for tree canopy, climate resilience, toxics, and environmental literacy among several

	others which include priorities for outreach and inclusion of diverse populations. Several workplans committed to engaging diverse communities and this training will directly address the barrier of meaningful communicating with, engaging and developing solutions that include diverse community perspectives. These actions are best implemented by CBP staff and leaders who are well versed and trained using tools and approaches for cultural competency and diversity and inclusion. A diverse workforce should reflect the society it serves in terms of race, gender, physical and mental ability, ethnicity, age, faith and spiritual practice, and sexual orientation. Employing a diverse workforce in the environmental sector can assist in developing solutions and problem solving from multiple perspectives, increased focus on environmental justice and increased support for the movement by widening its constituents. In order to build this diverse and culturally competent workforce, the Chesapeake Bay Partnership and many other organizations must assess its current level of cultural competency and develop tools and approaches to increase this competency. **Anticipated outcome:** This will identify areas of emphasis to enhance ongoing work within components of the partnership and create strategies for internal diversity programs. These systemic programs will help develop a culture that further implements diversity across all the work the Chesapeake Bay Partnership undergoes. This project will increase the level of cultural competency and understanding of approaches for connecting with diverse communities across the watershed with specific focus on the unique work processes for the Chesapeake Bay Program. These baseline assessment and development of tools and approaches will be designed for CBP all partners including: staffers, coordinators, chairs, management board and other leaders in the program. The project will result in a tool and modules that provide fundamentals of cultural competency which can be part of more individualized programs that partners may choose to develop.
Methodology:	The Contractor will: 1. The contractor will interact with workgroups, goal teams, leadership to better understand unique work processes and 2. Conduct an assessment to evaluate the attitude relating to diversity by components of the CBP, including: workgroups, GITs, MB, EC, advisory committees, jurisdictional and federal partners, etc. 3. Create a strategy to execute the diversity outcome internally for our existing members in the Chesapeake Bay Partnership. 4. From the information gathered from the assessment and strategy, conduct the most effective cultural-competency and diversity training series during various Bay Partnership meetings/events (management board meetings, workgroup meetings, etc.) a. Intended audiences (which component of the partnership: agency, workgroup, jurisdiction, GIT, etc.) b. Exercises c. Benefits / reasons of the prescribed exercises within the training sessions. Develop modules that include fundamental tools and approaches to cultural competency and diversity and inclusion that can be tailed to address needs of various federal, state, NGO partners.

	This project may serve as the foundation of a longer term strategy by the Chesapeake Bay Program Partners to develop as leaders who truly understand, respect, and embrace cultural diversity. Practicing these tools and approaches which will occur thru this assessment and training sessions. In order to truly be effective, this project needs to be a long term effort to not only establish tools approaches, train leaders but to continually assess progress in how leaders remain culturally competent. The task of establishing ways to measure progress would require additional resources.
Cross-Goal Benefits	This project will advance work towards all goals, however will have a strong emphasis on diversity, local leader engagement and fostering citizen stewardship. An abundance of research produced over the past twenty-plus years has demonstrated the benefits of diversity for organizations, including improved problem-solving, creativity within teams, as well as expanded audience bases and effective public outreach.
Are you willing to serve as GIT Lead?	Yes

Proposal 15.

Your Name:	Kacey Wetzel, Al Todd
Goal Implementation Team:	Stewardship
Project Title:	Interactive Tool for Citizen Stewardship Data Use and Analysis
Project Type (See Section IV above)**:**	Metric Development and Tracking; Communications and Outreach; Workplan Implementation
Goal/Outcome:	Stewardship Goal/Citizen Stewardship Outcome
Estimated Cost:	$50,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The Chesapeake Bay Program has completed the first comprehensive survey of stewardship behaviors and attitudes; behaviors being adopted in the Chesapeake Bay Region now and the likelihood that behaviors will be adopted in the future. This information represents a significant and extensive database representing the responses of nearly 6000 watershed residents. We are proposing the development of a question driven/scenario-based interactive tool that would enable watershed groups and local governments to scale and segment data, create correlations, and customize reports in order to use the data for the development of campaigns and program delivery related to behavior change, volunteerism and community leadership development. Currently, stakeholders would only be able to acquire data aggregated to the state level by behavior. This tool would enable stakeholders to customize the data to their local need and perform analysis using the behaviors and audiences they are planning to target. By a more extensive understanding stewardship behaviors and potential behavior adoption, we will better able to address gaps in our ability to reach these audiences, a significant barrier identified in our management strategy. Future versions of the Citizen Stewardship Workplan will thus include tasks to address these gaps such as improved local outreach program design.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	A contractor would work with the Citizen Stewardship Work Group and other stakeholders in the watershed to identify and define the anticipated users and uses of the tool and determine the best framework for analysis, preparation and presentation of data and information that would facilitate effective targeting of stewardship practices and various audiences.

	The contractor would develop an open source interactive system that would enable watershed groups, local governments and others to access, sort, correlate, and download analysis of the stewardship survey data for use in developing local behavior change and outreach activities.
Cross-Goal Benefits: What other goals may be advanced through this work?	There are several cross-goal benefits for this project. The tool will enable local officials to target areas or demographics that are less engaged and connect them to communities already active in promoting behavior change and local volunteerism. The tool will allow local groups to better understand the factors influencing stewardship behavior and action in their communities or watersheds and improve the effectiveness of local campaigns. Targeting outreach related to water access, stormwater practices, fisheries, and diverse or underserved communities will be a potential. This project would increase the number and diversity of local citizen stewards and local governments by strategically informing watershed groups and volunteers of best practices tied to conservation and restoration activities that achieve a healthy Chesapeake Bay.
Are you willing to serve as GIT lead	Yes.

Proposal 16.

Your Name:	Shannon Sprague
Goal Implementation Team:	Stewardship
Project Title:	MWEE 2.0 Online Guide
Project Type (See Section IV above)**:**	Workplan Implementation Project
Goal/Outcome:	Environmental Literacy Goal/Student Outcome
Estimated Cost:	$40,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	We are proposing the redesign of *Bay Backpack* as an online presence for the newly released *Educators Guide for Meaningful Watershed Educational Experiences*. This would include examples, how-to videos, tutorials, and tools for designing, implementing, and evaluating Meaningful Watershed Educational Experiences. While the CBP has long had a MWEE education goal, there has never been a comprehensive resource available for teachers, non-formal educators, and administrators to assist them in the development of these experiences. Because we are asking every school district in the watershed to do this work, this resource will be extremely valuable in advancing this work. As noted in the Environmental Literacy Management Strategy, the ultimate success of this effort hinges upon local update and implementation. This redesigned site will make understanding and developing MWEEs easier, thereby increasing the likelihood that school districts, teachers, and non-formal educators will develop high quality programming for students.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Funding is needed to hire a web team to develop a comprehensive redesign strategy for *Bay Backpack* that follows the newly developed Guide. Videography services will also be required to create new videos showcasing successful programs and strategies for developing the elements of a MWEE. Note: The Education Workgroup has worked with the web team to support an intern this year, which has resulted in the School Grounds section of the website being completed in a timely manner. This has been a very successful model.

Cross-Goal Benefits: What other goals may be advanced through this work?	This work will live on Bay Backpack (the partnership's education website and make intentional connections to the Collections section (http://baybackpack.com/teaching_resources) and the School Grounds section of Bay Backpack (currently in development -- http://test.baybackpack.com/schoolyard_projects/topic/289). These sections have information designed to increase classroom learning and meaningful outdoor projects related to clean water, wildlife habitat, climate, land use, and many other topics, thereby advancing education related to all goals.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes.

Proposal 17.

Your Name:	Rachel Felver
Goal Implementation Team:	Stewardship (GIT 5)
Project Title:	Social Marketing Campaign to Influence Behaviors Associated with Stewardship Index
Project Type (See Section IV above)**:**	Communications and Outreach
Goal/Outcome:	Stewardship Goal/Citizen Stewardship Outcome
Estimated Cost:	$45,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	This collaboration with the Communications Workgroup will focus on behavior change and social marketing as it relates to the behaviors listed in the Stewardship Index. Social marketing allows one to target the audiences you want to reach, customize those messages and inspire a change in behavior. As the Stewardship Index is ready to be communicated to the public this fall, this is a prime opportunity to target specific audiences and use this methodology to influence a change in behavior beyond our typical communications methods. In the Citizen Stewardship workplan, this proposal would directly meet the action of advancing programs that foster the continuum of citizen steward: individual citizen action, volunteerism and citizen leadership. Each goal team and workgroup have expressed the need (and associated road blocks) to deliver messages to audiences across the watershed to inspire them to take actions to protect and restore the Chesapeake Bay watershed. Working with a social marketing expert will assist the Communications Office and Workgroup with gaining the necessary expertise with behavior change that will be able to fulfill a knowledge gap for running future social marketing campaigns for the partnership.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The selected contractor will use input from the Citizen Stewardship Workgroup, Communications Workgroup, CBP Communications Office, other stakeholders and the Stewardship Index to complete the following: conducting a review of existing social marketing campaigns related to these behaviors, auditing those campaigns for effectiveness, compiling a guide of best practices for social marketing and behavior change campaigns (based on that audit) and a social marketing campaign specifically targeted to one (or more) of the Stewardship Index behaviors. The campaign directed at the specific Stewardship Index behavior(s) should take into account different audiences that the Bay Program serves, like local governments.

Cross-Goal Benefits: What other goals may be advanced through this work?	This would be a joint effort with the Communications Workgroup to identify best practices and priorities for targeted behaviors where penetration is low and likelihood of adoption is high. At the completion of the project, the Communications Workgroup would have guide to aid in the creation of subsequent campaigns, which would could be used by any of the other GITs, workgroups or partners to influence behaviors across the watershed and enhance communications.
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes.

Proposal 18.

Your Name:	John Griffin
Goal Implementation Team:	Stewardship (GIT 5)
Project Title:	Developing a Menu of Policy Options to Incent Permanent Land Protection with Appropriate Water Quality Best Management Practices
Project Type (See Section IV above)**:**	Communications and Outreach
Goal/Outcome:	Stewardship Goal/Citizen Stewardship Outcome
Estimated Cost:	$35,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Since 2009 when the Chesapeake Conservation Partnership was organized, its partner members and the CBP have been assessing various ways to "credit conservation" in the updated Bay models. While these assessments have more recently focused on the inner connectedness of permanent land conservation and other state and local land use policies as cost effective alternatives to meeting WIPS (see eg the recently published CBP funded "pilots" in VA and PA), another key part of the equation is developing a set of incentive options which increase land conservation and the effectiveness of BMPs on those lands. The incentives Include the EPA technical advisory guidance to states on offset policies recommending that offsets on permanently conserved lands should be 1:1 because of the increased certainty of durability, etc. This proposal seeks to develop: incentives to permanently conserve more land with BMPs at the right places, at right times and with the right science.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	We recommend that proposals be solicited from organizations such as the Environmental Law Institute and the World Resource Institute to undertake a "best practices" review of other states and local governments elsewhere to determine if there are existing policies of a similar nature being implemented successfully; to consult with those companies bringing private capital to bear with full service delivery of mitigation and restoration projects to seek their recommendations on how to achieve these objectives; and to develop their own recommendations on these objectives. We would also recommend a work group of federal and state/ local representatives be assembled by the GIT lead to work with the selected company in the execution of these assessments.
Cross-Goal Benefits: What other goals may be advanced through this work?	As was established at the Management Board meeting when the Protected Lands update was presented, the permanent protection of land going forward is and can be a strategic driver in assisting virtually all CBP goals.

Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes.

Proposal 19.

Your Name:	Julie Winters
Goal Implementation Team:	Enhance Partnering, Leadership and Management GIT, Budget & Finance Workgroup
Project Title:	SRS Financing Strategy/System Forum
Project Type (See Section IV above)**:**	Metric Development and Tracking
Goal/Outcome:	All Outcome Chesapeake Watershed Agreement 2014
Estimated Cost:	$55,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Part 1: Convene one-day forum to begin development of financing strategies/system that are tailored to the Chesapeake Bay Watershed Agreement Management Strategies for the specific outcomes. Part 2: Provide access to experts for follow up (to part 1) advice on finance for specific outcomes.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Financing Strategy Forum output: Participating Goal Implementation Teams (GIT) and Workgroups will develop initial specific/unique financing strategies specific to the Management Strategy outcomes. *The process of the Forum's working sessions on financing strategies will serve as both a learning exercise and as a start to an anticipated long process for a finance system to be developed for each outcome and/or GIT.* The process to develop the financing system is anticipated to be incorporated into the Strategy Review System for the Chesapeake Bay Program with action items to be the incorporated into the FY2018-2019 biennial work plans. The financing system will be comprised of the many and connected outcome financing strategies. Financing strategies will advance implementation the priority action items with measureable results. Planning group: Small planning group (group intended to sunset) convened to further develop and implement this day-long working session scope; includes development and distribution of advance homework materials, securing space, speakers, possible facilitators, and other logistics. Small group will work through a modified strength, weaknesses, opportunities, and threats (SWOT) analysis; identify overarching and common finance themes; and identify experts. Follow-up expert input: Experts will be available to outcomes to provide follow-up advice on finance strategy and system specifics for each outcome. The follow-up advice is to assist specific outcomes in the build out the initial concepts identified during the one-day forum. This funding will be used to pay for meeting support and then the follow-up expert input. Meeting support estimated budget is $25,000, and follow-advice honoraria for experts is $30,000. Success of this project is that each of the 31 outcomes identifies some

	elements of the financial system, and approximately 10 to 15 outcomes have 75% of the financial systems defined
Cross-Goal Benefits: What other goals may be advanced through this work?	All Outcome Chesapeake Watershed Agreement 2014
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes

Proposal 20.

Your Name:	Stephanie Smith
Goal Implementation Team:	Enhance Partnering, Leadership and Management GIT, Communications Workgroup
Project Title:	Effectively Engaging Private Landowners: Conducting Audience Research and Assessing Existing Outreach Materials
Project Type (See Section IV above)**:**	Workplan Implementation
Goal/Outcome:	To assist those GITs and Workgroups who depend on landowner engagement to meet the actions included in their workplans—for example, Fish Passage, Wetlands and Protected Lands—by researching how to effectively engage landowners and by compiling and auditing existing landowner-focused materials. In particular, this project would assist in the Fish Passage workplan (Management Approach 1, Key Action 1: "Continue dam removal activities in the Chesapeake Bay," for which private dam owners are an influencing factor), Wetlands workplan (Management Approach 2: "Identify barriers to wetland restoration and develop solutions to address them," for which landowners are listed as a priority audience) and Protected Lands workplan (Management Approach 5, Key Action 2: "Continue outreach efforts to inform landowners about land conservation").
Estimated Cost:	$50,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	In the Chesapeake Bay watershed, private landowners own and maintain hundreds of thousands of acres of land, encompassing farm fields, forests, wetlands and more. For example, three-quarters of forest land in the watershed is privately owned, dispersed among 900,000 landowners. As Goal Implementation Teams and Workgroups work toward meeting the goals and outcomes of the Chesapeake Bay Watershed Agreement, engaging with these private landowners in conservation and restoration efforts will be integral in achieving success. Many workplans list private landowners explicitly, while others list actions that could necessitate landowner engagement. In the Chesapeake Bay watershed, private landowners own and maintain hundreds of thousands of acres of land, encompassing farm fields, forests, wetlands and more. For example, three-quarters of forest land in the watershed is privately owned, dispersed among 900,000 landowners. As Goal Implementation Teams and Workgroups work toward meeting the goals and outcomes of the Chesapeake Bay Watershed Agreement, engaging with these private landowners in conservation and restoration efforts will be integral in

	achieving success. Many workplans list private landowners explicitly, while others list actions that could necessitate landowner engagement. However, not all "landowners" are created equal: the group can be subdivided in a variety of ways. Across the watershed, landowners own unique types of property, use and maintain that property in individualized ways, identify with distinct values and thus respond to different messaging. For Goal Teams and Workgroups attempting to navigate engaging with this audience, the complexities can be overwhelming. While some landowner-focused materials have been created by Chesapeake Bay Program partners, the messages contained therein may not be effectively reaching their intended audience subsets. Some outcomes that list landowners as a priority audience may not have existing related materials, while other outcomes may not list landowners as a priority audience, when perhaps they should. This project proposes assisting in the effort to engage private landowners by providing Goal Teams and Workgroups with an understanding of the landowner audience and with effective messages targeted to that audience. An inventory and audit of existing materials, as well as a gap analysis of materials that may be missing, will allow GITs and Workgroups to better utilize existing print- and web-based products targeted toward landowners and provide a baseline for the creation of new materials, if necessary. In particular, this project would assist in the Fish Passage workplan (Management Approach 1, Key Action 1: "Continue dam removal activities in the Chesapeake Bay," for which private dam owners are an influencing factor), Wetlands workplan (Management Approach 2: "Identify barriers to wetland restoration and develop solutions to address them," for which landowners are listed as a priority audience) and Protected Lands workplan (Management Approach 5, Key Action 2: "Continue outreach efforts to inform landowners about land conservation").
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Under this project, the contractor will conduct both audience research into effective landowner engagement and an assessment of existing, landowner-focused outreach materials. Specific actions include: 1. The contractor will conduct audience research into landowners in the watershed, resulting in a segmentation of landowner types; the perceptions, values, and priorities of those landowner segments; and effective messaging for engaging each segment in conservation and restoration actions. 2. The contractor will compile an inventory of existing materials created by Chesapeake Bay Program partners that are targeted to landowners, including print- and web-based products and general messaging. 3. The contractor will conduct an audit of those existing materials to see if the messages used align with the previously-conducted audience research and segmentation. Where messages do not align, the contractor will suggest alternatives. 4. The contractor will perform a gap analysis to identify Watershed Agreement outcomes for which landowners are mentioned as a priority audience but no materials currently exist to reach them, or to identify outcomes for which landowners should be mentioned as a priority audience but are not.

	At the completion of the project, the Communications Workgroup will have the information needed to (1) better tailor existing materials, if the audit finds the messages they contain are not effective, and (2) create new materials to fill in the gaps identified in the gap analysis.
Cross-Goal Benefits: What other goals may be advanced through this work?	This project will result in materials and messaging valuable to Watershed Agreement outcomes for which landowner engagement is explicitly mentioned in their workplan activities, such as Protected Lands (Stewardship GIT), and to outcomes for which landowners are not explicitly mentioned, but their engagement would assist in meeting workplan activities, such as Healthy Watersheds (Healthy Watersheds GIT).
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes

Proposal 21.

Your Name:	Mary Gattis (Alliance for the Chesapeake Bay/LGAC)
Goal Implementation Team:	Enhance Partnering, Leadership and Management GIT
Project Title:	Cross Outcome Curriculum Development
Project Type (See Section IV above)**:**	Work Plan Implementation
Goal/Outcome:	Local Leadership
Estimated Cost:	$50,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans	Funding is needed to supplement the 2017 funding for the Local Leadership Watershed Education and Capacity Building effort. Specifically, funding is needed to synthesize information goal teams and workgroups need to convey to local governments into a cohesive curriculum for delivery by trusted sources. This effort builds on the work of prior project phases. In 2015, Environmental Leadership Strategies interviewed 18 local leaders in Maryland, Virginia and Pennsylvania. In 2016, a survey consisting of 11 questions was shared with local officials, including four sessions conducted as focus groups. Over 100 local leaders and agency staff participated. In 2017, a final report was produced "Designing a Strategic Outreach Education Program for Local Elected Officials in the Chesapeake Bay Watershed." The Local Leadership Watershed Education and Capacity Building project is based upon the recommendations of this report. Cross Outcome Curriculum Development will position the Local Leadership Workgroup to further the goals in the watershed agreement by developing an educational curriculum that addresses many outcomes from the context of issues that matter to local officials. While 2017 GIT funding is in place to launch the watershed education program, it will only deliver existing educational materials which will likely mean focusing on foundational materials or one specific outcome, such as urban tree canopy. By beginning to develop a cross-outcome curriculum, this project will ensure that the local leadership watershed educational program is viable in the long-term.

Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Through this project, a contractor would be hired to coordinate and support the development of educational materials/programs across the various goal teams and workgroups. While some goal teams and workgroups are beginning to develop this material, others are not as far along. The contractor will convene subject matter experts to gather and review existing educational materials, identify gaps, oversee development of curriculum and/or synthesize information into cohesive modules for an overall watershed protection and restoration educational program for local officials (educational program). This educational program would serve as a platform for continuous learning, thereby creating a holistic approach to increasing local official's knowledge.
Cross-Goal Benefits: What other goals may be advanced through this work?	Vital Habitats, Water Quality, Healthy Watersheds, Stewardship, Sustainable Fisheries, STAR
Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes.

Proposal 22.

Your Name:	Ben Alexandro
Goal Implementation Team:	GIT 6
Project Title:	Pollution Solutions: Success Stories
Project Type (See Section IV above)**:**	Work plan implementation: Environmental demonstration projects, education, training, capacity building for local elected officials
Goal/Outcome:	Stewardship Goal, Local Leadership Outcome
Estimated Cost:	$50,000 (Includes travel cost, meeting/ venue costs and staff time)
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	**Description:** Educate elected and other local officials about the benefits of stormwater and greening projects that stop polluted runoff, including economic development, public health, and revitalizing underserved communities with the power of success stories. Arm educators with impactful tools and sleek, visually compelling success stories in a campaign developed through in-depth focus groups and market research. Create and execute a process for identifying target elected officials, learning which messages resonate with those elected officials the most, and using 'ambassadors' to find the correct messengers and messages to change elected official behavior and public opinion of pollution reduction practices. **Why:** The need for this work is identified by the Local Leadership Workgroup workplan, the Ecologix Group report, and in several focus groups that Choose Clean Water Coalition held in the last two years with NGOs, community members, and local government representatives. Some elected officials do not see the value in green infrastructure or financing pollution reduction measures in their jurisdictions. The very fact that polluted runoff fees are often referred to as 'rain taxes' shows a serious misunderstanding among the public and elected officials of what stormwater financing programs are and the myriad benefits funded projects bring their communities. Maryland in particular is seeing a backslide in urban stormwater pollution reduction programs and financing. Backslides include the repeal of the Baltimore County polluted runoff fee, the noncompliance of

	many of the phase I MS4 permits, and the lack of funding outlined in recent financial assurance plans. Several local governments and municipalities want help showcasing their stormwater mitigation projects and educating the public about the broader benefits to the community. Others need information on successful projects throughout the state which they can duplicate in their own communities. Dozens of nonprofit organizations and several local governments stated the need for a database of easily digestible one-page project descriptions and a way to use them to educate elected officials and other decision makers about the work funded by polluted runoff fees and innovative grant programs in the state. Local governments are often in one of two camps: either the public and elected officials are unaware of their projects, or they are unsure how to implement projects and want an easy way to learn how they could implement successful projects in their jurisdictions.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The contractor will create a targeted pilot educational campaign towards key elected officials in at least six counties/regions in Maryland to change perception and behavior around polluted runoff programs using the power of the best success stories from around the watershed. The contractor will train 'ambassadors' in each key region to target local elected officials that might be receptive and in a position to make an impact. These ambassadors will have local knowledge of the elected officials and the community. The contractor will arm these ambassadors with the right messages and help them find the right messengers to deliver our helpful information to elected officials. Experts are already creating toolboxes and resources that the contractor and ambassadors can tap into. However, the best tools may stay on the self and not reach their true mission impact potential unless there is training on how to use them in a targeted communications campaign. There is an innovative, interactive interface being created on the Municipal Online Stromwater Training Center that showcases dozens of the best stormwater and green infrastructure projects around Maryland. These projects showcase different elements of pollution reduction projects, such as creating jobs in underserved communities, quality of life improvements, and community beautification. This interface includes a searchable database, interactive map, one-page stories/factsheets, and more. Experts modeled elements of this toolbox from a success story campaign in Great Lakes region. This toolbox will provide a foundation for an effective communications campaign around polluted runoff and impacts on local communities. By showing the success of the best projects financed, installed, and maintained in our watershed, the contractor can convince more elected officials and local governments to fund, install, and maintain enough projects to meet our TMDL and various wider goals. By helping localities learn how to create successful projects and what their different cost effective options are, the contractor can help increase the capacity of these localities to install and maintain more and better projects. This project is most suited to be piloted in Maryland. In future years, the program could be expanded to all states.

	Under this grant, specific duties include: 1. **Research and planning:** Identify at least six target counties/regions to focus on based on current and projected outlook of their polluted runoff plans (MS4 compliance, WIPs, etc.), the presence of receptive target elected officials outside the choir, and the availability of high quality 'ambassadors' to lead the effort and the community in each of these locations. Identify specific elected officials in each region to target, ideally 12 total elected officials at a minimum. 2. **Recruit and train** an ambassador in each region on the toolbox, interface, and methods to best educate elected officials. This will be through in-person training and collaboration days. Work with the ambassadors to find which messengers and which messages would resonate most with each target elected official. a. **Hold in-person trainings** with ambassadors and target messengers as needed to prepare for meetings with elected officials. b. Train ambassadors how to use the online interface and toolbox so they will have the tools they need to present compelling stories. **Hold a workshop** with the ambassadors to ensure they are proficient in using the online interface. 3. **Elected official meetings**: The contractor in partnership with the ambassador will coordinate a meeting between messengers and each targeted elected official where the messengers will present the success stories as part of a targeted message to educate the elected official. These stories will spark conversations about the benefits of investing in polluted runoff reduction projects as a way to benefit the economy, infrastructure, health, safety, and beauty of a community. 4. **Coordinate site visits** with target elected officials to stormwater projects to see and hear firsthand the success stories in that community. The number of different sites to be visited depends on the type of messages that would resonate with the elected officials. 5. **Maintain the online interface** to ensure that it can continue to provide the ambassadors and messengers the needed resources. 6. **Support the ambassadors** to continue to educate the elected officials and turn them into experts and supporters of stormwater projects that will share their expertise with other elected officials.
Cross-Goal Benefits: What other goals may be advanced through this work?	The primary metric is the number of local elected officials and local leaders who change their opinion and priority of pollution reduction programs and projects. The additional benefits include: • Elected officials link stormwater projects to economic benefits, infrastructure, and job creation. • Elected officials link reducing polluted runoff to public health and safety. • Through training ambassadors, the project will also empower local community members and create local leaders. • Improve local stormwater and other infrastructure (e.g. green streets). • Increase chances of local jurisdictions to implement innovative funding mechanisms to finance stormwater projects. • Foster high quality collaboration and partnerships. • Create information sharing among project implementers.

	• Aid local governments and leaders in their public outreach and communications.
	• Change the perception of innovative financing mechanisms such as polluted runoff fees from 'a rain tax' to funding essential services.
	• Convince leaders to maintain polluted runoff fees.
	• Convince leaders to increase financing for green infrastructure projects in new areas which will:
	  ○ Benefit local economies.
	  ○ Reduce polluted runoff.
	  ○ Reduce occurrence of floods and other water related problems.

Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes (However, I am the Water Policy Advocate for Maryland League of Conservation Voters Education Fund, and my organization will be applying if this idea becomes a reality)

Proposal 23.

Your Name:	Zoe Johnson/John Wolf
Goal Implementation Team:	STAR: Climate Resiliency Workgroup
Project Title:	Chesapeake Bay Watershed Climate Data and Mapping Repository
Project Type (See Section IV above)**:**	Database development, mapping, data collection program development
Goal/Outcome:	Climate Resiliency: Monitoring & Assessment/Adaptation
Estimated Cost:	$30,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	The purpose of this project is twofold: 1) produce an inventory and composite/repository of existing climate data and mapping, which could be used to support any number of applications within the Chesapeake Bay Program as well as external partner efforts; and 2) creation of new climate mapping layers to fulfill identified CBP workgroup needs, including the development of GIS mapping layers to geographically portray CB climate change indicator data. The CBP is routinely responding to requests (both internal and external to the CBP) for climate change data and mapping layers. Responding to these requests takes time and resources and staff may not always have knowledge or ready access to available data and/or mapping services. Making responses to these requests along with the addition of other climate data and mapping inventories publically available will save future time and resources and be a benefit to the CBP as well as public.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	Steps to complete this project include: 1) Inventory existing climate change data and mapping available through federal, state, regional and local sources, as well as NGO's; 2) Categorize data and mapping resources by type, climate indicator (if applicable), and CB Watershed Agreement Outcome(s) it could support; 3) Document sources of climate data and create metadata records within the CBP open data or metadata catalog, including links to online geodatabases, shapefiles, etc. Where online data or services are not available, develop and document geodatabase features that can be maintained at CBP.
Cross-Goal Benefits: What other goals may be advanced through this work?	All.

Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Yes

Proposal 24.

Your Name:	Peter Tango
Goal Implementation Team:	STAR, Climate Workgroup
Project Title:	Measuring Spatial Extent of Hypoxia
Project Type (See Section IV above)**:**	Monitoring Program Development
Goal/Outcome:	Climate monitoring
Estimated Cost:	$70,000
Justification: Provide a brief description of the work and why it is needed. It is recommended that you draw upon one or more work plans.	Circulatory effects acting on the hypoxic interior volume of the Chesapeake Bay result in broad areal coverage of hypoxia. This impacts blue crab habitat, fish forage distribution and abundance, dynamics of fish habitat, oyster restoration siting, and water quality standards attainment assessments. This project will pilot an approach to quantify hypoxic bottom area, exploring the connections between hypoxic volume (as currently observed by CBP data) and spatial specificity of areal coverage. Bottom measurement of temperature, salinity and dissolved oxygen were identified as needs from the SAV, blue crab and oyster workshops.
Methodology: Provide a 1-2 paragraph description of how the work is likely to be accomplished.	The Chesapeake Bay Program typically tracks the size of the 'dead zone'. It is reported as a volume. What is missing from the messaging and links to explaining its full impact on fish habitat and living resources is the interaction of the volume with circulatory effects. Meteorological conditions create seiching, a tilting of the bay's water layers, which can transport hypoxic water into shallow regions. This and other physical effects can significantly alter the areal extent of hypoxic bottom water. We usually discuss the bay dead zone in terms of volume, however many estuaries address their dead zones with area highlighting spatial specificity to where hypoxic impacts are important. The work would require enhanced monitoring of bottom oxygen levels through a network of sensors to address lateral movement of water across the east-west shoulders of the main-stem of the bay. Monitoring results would contribute to illustrating the effective impact area of the hypoxic and anoxic volumes each year and support model calibrations that forecast affected areas as it is impacted by weather conditions. The synthesis of monitoring results that capture and illustrate the extent of hypoxic-affected area helps highlight areas susceptible to living resource impacts, explain trends in fish forage resources, and promotes decision-making through risk management. Coupled with scenarios that modeled climate influences on different size hypoxic volumes, the community could more accurately gain understanding on target thresholds in bay recovery by illustrating and explaining the hypoxia-effected area interactions.
Cross-Goal Benefits: What other goals may be advanced through this work?	Blue crab, oyster, water quality, forage fish

Are you willing to serve as GIT lead (see description of the role in Section VI above) If no, suggest other GIT lead (with contact information)	Peter Tango