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| ***1. Project Title*** | Expanding Resilience Knowledge and Stewardship in K12 Students and Local Officials |

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| ***2a. Primary Contact or Project Manager1*** | | | | | |
| Name | Rachel Bisesi | | | | |
| Title | Coastal Education Coordinator | | | | |
| Organization Name | North Carolina Coastal Federation | | | | |
| Organization Tax ID Number | 58-1494098 | | | | |
| E-mail address | rachelb@nccoast.org | | | | |
| Mailing Address | 3609 N.C. 24 | | | | |
| City | Newport | State | NC | Zip | 28557 |
| Telephone | 252-393-8185 | Fax Number | | 252-393-7508 | |

**1****A paragraph or Statement of Qualifications must be provided in Section 4 of the application form to confirm that**

**anyone designing, installing, or monitoring the proposed project is qualified to do so.**

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| 2b. Execution Address (where contract will be mailed for signature) | | | | | |
| Name | Todd Miller | | | | |
| Title | Executive Director | | | | |
| Organization Name | North Carolina Coastal Federation | | | | |
| E-mail Address | toddm@nccoast.org | | | | |
| Mailing Address | 3609 N.C. 24 | | | | |
| City | Newport | State | NC | Zip | 28570 |
| Telephone | 252-393-8185 | Fax Number | | 252-393-7508 | |
| Federal Tax ID Number | 58-1494098 | | | | |

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| 2c. Payment Address (where invoice payments will be mailed) | | | | | |
| Name | Brittany Ellenberger | | | | |
| Title | Business Manager | | | | |
| Organization Name | North Carolina Coastal Federation | | | | |
| E-mail Address | brittanye@nccoast.org | | | | |
| Mailing Address | 3609 N.C. 24 | | | | |
| City | Newport | State | NC | Zip | 28570 |
| Telephone | 252-393-8185 | Fax Number | | 252-393-7508 | |

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| ***3. Project Description (provide a short summary of the project).*** |
| This project has two components that will increase the capacity of the North Carolina Coastal Federation and its partners, including the Albemarle-Pamlico National Estuary Partnership (APNEP), to work with students, teachers and local government officials to encourage more informed environmental stewardship to enhance water quality, submerged aquatic vegetation and other coastal habitats. It will also increase the APNEP region’s resiliency to extreme weather and other coastal hazards brought on by climate change by engaging coastal officials in cutting-edge policy and best management practice. The hands-on, real-world materials developed and refined in the federation’s environmental education curriculum materials and the federation/Duke University Marine Laboratory’s Coastal Leadership Institute will further community resilience goals and capacity in particular. While this project will meet specific milestones, the materials developed will provide education and develop capacity well beyond the project period.    Component one of this project is focused on training K12 educators to spread awareness about coastal habitats and stewardship opportunities in classrooms across the state. In 2000, the federation published a supplemental classroom curriculum called Coastal Connections. Throughout the last two decades, the federation has adapted and expanded lesson plans within and outside of the original curriculum, as organizational goals have shifted to meet the needs of coastal communities and education standards have evolved. These materials align with the N.C. Standards of Excellence, and provide teachers with relevant exercises and information to prepare their students to be effective coastal stewards.  This project will enable the federation to refine and expand the previously published curriculum to advance professional development efforts for North Carolina teachers, in particular adding further lessons about coastal resilience, drawing from materials from the US EPA, NOAA, N.C. Sea Grant and the N.C. Office of Recovery and Resiliency. Project funds will also support the continued involvement of federation educators in teacher workshops to share the expanded guide. The federation participates in education institutes with the North Carolina Center for the Advancement of Teaching, UNC-Institute of the Environment and APNEP, the Kenan Fellows Program, and shares its teaching strategies at the annual statewide conferences for the state’s certified environmental educators. Additionally, hundreds other formal and informal educators within the APNEP region and beyond will have access to the curriculum on the federation’s [Distance Learning Lab](https://www.nccoast.org/distance-learning-lab/) website and through outreach events such as [SciREN Coast](https://sciren.org/networking-events/sciren-coast/).  The second component of this project will help the federation and Duke University Marine Laboratory initiate a new program to train local government decision-makers, staff and professional consultants on water quality and habitat issues, and how to protect and restore them through their local efforts. In 2022, we will launch the new Coastal Leadership Institute (CLI). The mission of the CLI is to “educate, motivate and empower local governments to become effective stewards of their coastal resources so that they may better provide for the resiliency, public health, safety, and welfare of their communities.” Many options exist for local government officials and employees to take courses or attend conferences about leadership, environmental management, planning, government training, finance, and other topics. What’s missing is intentional networking for coastal officials and employees, expertise in specific coastal management challenges and solutions, peer-to-peer collaboration and sharing lessons learned. The CLI is an opportunity to link these topics in the context of being more resilient and facing climate issues. Funding from APENEP will make it a sponsor of this new program, and be combined with other funds so the program can be launched in 2022. This will allow APNEP’s CCMP goals and information to be put before a new and expanded audience, broadening APNEP’s reach. |

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| ***4. Statement of qualifications (provide a brief explanation of your organization’s qualifications to complete the project)*** |
| The N.C. Coastal Federation is a 501(c)3 conservation nonprofit organization, founded in 1982. It is dedicated exclusively to protecting and restoring the coast. The federation’s mission is to empower coastal residents and visitors from all walks of life to protect and restore the water quality and critically important natural habitats of the North Carolina coast.  The federation has successfully completed hundreds of watershed restoration plans, living shorelines and oyster restorations, land and easement acquisitions and hydrologic and stormwater retrofits projects and uses this work to provide experiential, real-world examples and living classrooms in its education programs. The federation has three certified environmental educators in its three offices, who deliver proven, highly effective hands-on learning to K12 students, teachers, contractors and local officials. We have strong and deep partnerships with many national, regional, state and local organizations to leverage our collective strengths and deliver the most effective education available.  The federation’s grant management and fiscal administration capacity is strong, managing dozens of federal, state and private grants annually. We have been given the highest rating by Charity Navigator for four years running and receives clean audits annually. Our Director of Operations has been through extensive federal training on grant processes and standards.  Rachel Bisesi, Coastal Education Coordinator for the central coastal region, will serve as the project lead. She will be responsible for all project deliverables and management of the project. She has been directly involved in teacher trainings and course/curricula development throughout her nine-year tenure with the federation, including extensive work with APNEP. She has successfully led numerous state- and federally-funded environmental education projects. Federation staff sit on the APNEP Board and on several advisory committees. We are committed to furthering both our own and APNEP’s missions with this project. |
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| ***5. Project Start Date*** | 01/01/2022 | ***Project End Date*** | 12/31/2022 |

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| **6. Project Location: Important to submit as completely as possible, especially the Lat/Long coordinates. Only projects which take place within or primarily impact areas in APNEP’s management boundary will be considered for funding.** | |
| Project Location | Carteret, Dare and Hyde Counties |
| River Basin(s) | White Oak, Neuse and Tar-Pamlico |
| Position coordinates of project location | Latitude 34.6382184 (North), Longitude -77.1130048 (West) |

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| **7. List which CCMP Actions will be addressed and how the proposed activity will address them:** |
| Link to [**APNEP Comprehensive Conservation and Management Plan**](https://apnep.nc.gov/resources/publications-and-reports/ccmp) **(CCMP)** Both components of this project address CCMP Actions identified in Component D: Engage.  The K-12 curriculum guide will include several ways that teachers can engage their students in service learning opportunities and volunteerism, linking to Action D1:1. Service learning opportunities discussed will include living shoreline construction and plantings, rain garden construction and maintenance, and local cleanups. When federation educators work in partnership with teacher institutes and at educational conferences to share the new resource they will also connect to Action D2.2 and provide education training for educators within the APNEP region.  The Coastal Leadership Institute (CLI) will work to improve collaborations amongst local governments, the science community, and coastal professionals to protect and restore our estuaries, directly linking to Action D1.2. This program will increase public awareness of water quality issues (Action D2.3) by educating decision-makers in coastal communities. These decision makers will then be better informed to educate people in the communities they serve (Action D3.1). Additionally, the CLI will meet Action D3.3 by encouraging living shorelines and stormwater best management practices as coastal resiliency techniques, thus providing assistance to local governments to incorporate climate change and sea level rise considerations into their planning.  The CLI also helps address the CCMP Identify Component through actions A3.1 (Assess the effectiveness of policies and regulations to minimize wetland loss) and A3.2 (Assess the effectiveness of policies and regulations regarding riparian buffers.). It will accomplish this by providing the best available science and BMPs around wetlands and riparian buffers, and helping the participants develop or encouraging co-development of better policies during sessions or as part of homework. This will meet the results for both actions (Information to support better resource management decisions). |

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| **8. Brief explanation of linkage to APNEP priority areas (1)water quality, (2)submerged aquatic vegetation, (3)coastal habitats, (4)increasing resiliency:** |
| The health, safety and productivity of the estuaries within the APNEP region are mostly influenced by the way we use and manage land uses. Many of these land use decisions are made by landowners (homeowners, farmers, developers, etc.) as well as hundreds of local governments that already do more than federal or state agencies to manage and plan existing and future land uses. This project aims to help these stakeholders better understand and engage in practices that will benefit the environment, and provides training opportunities that aren’t consistently provided at the scale and schedule as needed. In addition, statistics show that 20 percent of local government officials turnover each year, meaning that continuing education is a never ending need. This project is designed to build strong and lasting partnerships with critical stakeholders around the environmental management needs of our coast.  The K-12 curriculum guide will follow the federation’s main goals, which focus on oysters, living shorelines and estuaries, stormwater and water quality, and marine debris. These goals align with the APNEP priority areas of water quality, coastal habitats, and increasing resiliency. Each lesson will incorporate NC Essential Learning Standards and reinforce concepts being taught in the classroom. Example lessons that meet the APNEP priority areas include “Rain Garden Plant Detective”, “Stormwater Maze”, “Shifting Shorelines”, “Estuary Biocriteria” and “Oysters 101”.  Each unit within the curriculum (Living Shorelines and Estuaries, Reducing Marine Debris, Oysters, and Stormwater Solutions) will include activities and extension guides on how teachers can directly engage students in environmental stewardship opportunities. A sample lesson, “Shifting Shorelines” focuses on shoreline erosion and living shorelines. Students explore how various shoreline stabilization methods influence coastal erosion and the surrounding habitat. They rotate through four hands-on stations with water and sand containers: a bare sand station, a hard structure protection method, a living shoreline with planted marsh grasses, and a living shoreline with a constructed oyster reef. While rotating through the stations in small groups, students simulate wave energy and make observations on which method works best to protect shorelines and provide habitat at the same time. Potential extension activities for this lesson include participating in a shoreline restoration project by planting marsh grasses, helping to collect recycled oyster shells in their community, constructing an oyster reef with the federation, or educating friends and families about nature based solutions such as living shorelines. Similar extension activities are included within the other units as well. One example is the mention of several stormwater best management practices that students can help encourage at their own school such as school rain gardens or downspout disconnectors. |

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| ***9. List activities that will be used to monitor or indicate the success of the proposed activity/project by listing one or more output and/or outcome metrics that will be measured, documented, and reported after project completion, as well as the expected target for each metric. Please also include a short explanation for how each listed metric assists in measurement of a CCMP Action being implemented by the project. Please see the proposal guidelines RFP*** [***output/outcome example document***](https://apnep.nc.gov/documents/engagement-outputsoutcomes-guidance) ***for details.*** |
| **K12 Curriculum Guide**  Federation educators will meet monthly and work to update and select lesson plans to include in the current curriculum. This will also include any necessary lesson plan development. Metric: number of partners involved and consulted: 7.  Metric: 100 guides will be printed to share with educators at teacher institutes and partner teachers.  Metric: Approximately 60 educators will participate in hands-on professional development sessions with federation staff during teacher institutes and workshops.  Hundreds of educators will have access to the updated curriculum through larger outreach events and online sources. The guide will be published on the federation’s website, and shared on social media. It will also be shared via the federation’s Distance Learning Lab newsletter and on the following listserves: NC Environmental Educators and ScuttleButt (for ocean education and conservation).  Federation staff will solicit feedback via a post-workshop survey for educators involved in teacher institutes, and at educational conferences to gauge success and gather information on possible areas for improvement. Since the guide will be available electronically, suggested updates can easily be made when necessary. Metric: 1 post-workshop survey developed. 60 post-workshop survey responses. Summary of revisions/additions to be made.  **Coastal Leadership Institute**  A survey to address specific needs will be shared with local government officials to receive feedback on the CLI concept and used to help guide program development. Metric: development of survey instrument: Metric: At least 40 responses to survey  Curriculum development will begin with insight from partner organizations. Metric: partners engaged. 20  Draft curriculum will be set. Metric: Curriculum developed: 1  Communications staff will work to advertise the Institute to local government officials. Metric: listservs included and social media statistics. Responses. Number TBD in communications plan development.  A launch event will take place and engage at least 25 government officials and professionals.  At least 25 participants will take part in the CLI.  A post-survey will be sent to participants to measure satisfaction and gauge success. This survey will also be used to identify future needs or areas of weakness in order to improve programming during future terms. The partners will apply adaptive management framework toward revising curriculums and activities based on the participants’ evaluations and suggestions.  Outcomes:  K12 Curriculum Medium: 60 teachers with expanded knowledge of hands-on experiential learning techniques and lessons aligned with the NC Standards. Long: Students have greater understanding of resilience and habitat issues in North Carolina and take action to address them.  Coastal Leadership Institute Medium: Coastal officials and staff have expanded knowledge of best management practices and policies for coastal resilience and habitat protection and restoration. Long: Officials put in place said policies and procedures. And habitat quality and coastal resilience to climate change improves. |

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| 10. Description of funds (Combined APNEP and leveraged funds. | | | | |
| Description of Service | APNEP | Contract Applicant  (Cash, In-Kind, Other)  (e.g. In-kind - staff assistance 5hrs/wk\*$13/hr\*10wks=$650) | Other Contributions  (Organization, Cash, In-Kind, Other)  (e.g. NC DMF - In-kind – staff assistance 5hrs/wk\*$13/hr\*10wks=$650) | Total |
| Personnel/Salary  Rachel Bisesi, Coastal Env. Coordinator, Project Lead 6 weeks. Responsible for all project deliverables and reports. Will lead the K12 curriculum expansion and development and deliver several teacher workshops. Will present the curriculum at the NC EE conference. Sara Hallas, Coastal Env. Coordinator. 2 weeks. Will assist with the K12 Curriculum expansion and development and deliver the NCCAT teacher workshops  Bonnie Mitchell, Coastal Env. Coordinator. 1 week. Will provide feedback and information on the curriculum expansion and development.  Todd Miller, Executive Director (Match) Will provide general oversight and project dissemination on a regional/national level through his involvement with Restore America’s Estuaries.  Rachael Carlyle, (Match)Director of Finance and Operations, 1 week. Will oversee reporting and contract.  Brittany Ellenberger, Business Manager (Match). 1 week. Will handle accounts and invoicing. | 9,838 | 6,624 |  | 16,462 |
| Fringe Benefits 15% of salaries, includes FICA, 4% SEP, medical, etc. | 1,476 | 994 |  | 2,470 |
| Project Supplies  100 curriculum guides, bound and printed | 1,500 | 0 |  | 1,500 |
| Equipment | 0 | 0 |  | 0 |
| Transportation/Travel Travel to NCCAT (x2 RT 60 miles), to Trinity Center (x5 RT 25 miles) x .565/mi., Project team meeting (RT 200 mi) NC EE Conference—state per diem rates (3 days, $150/day | 690 |  |  | 690 |
| Sub-contract Services Private funding toward the development and delivery of the CLI | 0 |  | 3,000 | 3,000 |
| Other Direct Costs In-kind use of DUML facilities and private funding toward CLI | 0 | 2,000 |  | 2,000 |
| Total Direct Cost | 13,504 | 9,618 | 3,000 | 26,122 |
| \*Indirect Cost (F&A) (not to exceed 10%)  (e.g. 10% of the total direct costs $10,000 = $1,000) | 0 | 1,350 |  | 1,350 |
| Total Cost | 13,504 | 10,968 | 3,000 | 27,472 |

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| ***11. Describe leveraging of funds from project partners (Optional):*** |
| \*Check with Heather Jennings for more information at 919-707-8632  In addition to the federation’s in-kind contribution, the federation, DUML and its partners are pledging $5,000 in private donations raised for the CLI. DUML is also using its campus for the CLI and the federation is using several of its restoration and resilience project sites as venues for the CLI and the teacher trainings. |

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| 12. Project Partners (may add more if needed) | | | |
| Agency Name | Duke University Marine Lab | | |
| Agency Address | 135 Duke Marine Lab Rd, Beaufort, NC 28516 | | |
| Role/contribution to Project | Partner in development and execution of the Coastal Leadership Institute | | |
| Contact Person | Andy Read | Phone No. | 252-504-7503 |
| E-mail address | aread@duke.edu | | |
| Agency Name | Trinity Center | | |
| Agency Address | 618 Salter Path Rd, Pine Knoll Shores, NC 28512 | | |
| Role/contribution to Project | Venue of teacher trainings, will assist in the evaluation of the expanded K12 teacher guide | | |
| Contact Person | Mary Beth Bradberry | Phone No. | 252-247-5600 |
| E-mail address | trinityctrassistantdirector@gmail.com | | |
| Agency Name | Sheila Moore, Croatan High School | | | | |
| Agency Address | 3355 NC-24, Newport, NC 28570 | | | | |
| Role/contribution to Project | Sheila is an environmental science and marine science teacher at Croatan High School.  Her classes work with the federation each year. Sheila has agreed to help review the draft  curriculum and give feedback before publishing. | | | | |
| Contact Person | Sheila Moore | | | Phone No. | 252-393-7022 |
| E-mail address | [sheila.moore@carteretk12.org](mailto:sheila.moore@carteretk12.org) | | | | |

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| Agency Name | Erin Strohschein, Swansboro High School | | |
| Agency Address | 161 Queens Creek Rd, Swansboro, NC 28584 | | |
| Role/contribution to Project | Erin is a teacher at Swansboro High School. She was a Kenan Fellow Teacher and worked with the federation during 2020. Erin has agreed to help review the draft curriculum and give feedback before publishing. | | |
| Contact Person | Erin Strohschein | Phone No. | 910-326-4300 |
| E-mail address |  | | |

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| ***13. Project Milestone Schedule*** |

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| **Time Period / Date** | **Activities (List specific outputs or activities that will be achieved during each quarter.)** |
| First Quarter | K12 Curriculum: Federation educators will meet monthly and work to update and select lesson plans to include in the current curriculum. This will also include any necessary lesson plan development.  Coastal Leadership Institute: A survey to address specific needs will be shared with local government officials to receive feedback on the CLI concept and used to help guide program development. |
| Second Quarter | K12 Curriculum: Federation educators select optimum format for the curriculum, and format approved and completed lesson plans consistently.  Coastal Leadership Institute: Curriculum development will begin with insight and feedback from DUML and partner organizations. |
| Third Quarter | K12 Curriculum: Using the formatted lessons, design and publish curriculum guidebook.  Coastal Leadership Institute: A draft curriculum will be set.  Communications staff will work to advertise the Institute to local government officials in relevant listserves, social media channels and word-of-mouth. |
| Fourth Quarter | K12 Curriculum: A final version of the updated curriculum will be printed and published to share with educators within the APNEP region.  100 guides will be printed to share with educators at teacher institutes.  Approximately 60 educators will participate in hands-on professional development sessions with federation staff during teacher institutes and workshops.  Indirectly, hundreds of educators will have access to the updated curriculum through larger outreach events and online sources. Further printings can be made past the project period.  The guide will be published on the federation’s website, and shared on social media. It will also be shared via the: federation’s Distance Learning Lab and newsletter and on the following listserves: NC Environmental Educators and ScuttleButt (for ocean education and conservation).  Federation staff will solicit feedback via a post-workshop survey for educators involved in teacher institutes, and at educational conferences to gauge success and gather information on possible areas for improvement. Since the guide will be available electronically, suggested updates can easily be made when necessary.  Coastal Leadership Institute: A launch event will take place and engage approximately 40 government officials and professionals.  A post-survey will be sent to participants to measure satisfaction and gauge success. This survey will also be used to identify future needs or areas of weakness in order to improve programming during future terms. Program will be reviewed and revised based on participant and instructor feedback on an iterative cycle.  Both: Final report submitted. A copy of the K12 Curriculum Guide and all materials developed for the CLI will be submitted with the report, as will all media coverage. |

**Note: All projects must submit a detailed Final Project Report that is due by the end of the contract for APNEP review and approval. Supplemental information should include (when relevant) a file containing data collected during the project, GIS Data, brochures, outreach tools, photographs or videos taken during the project, and a summary of survey results.**

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| ***14. References and Literature Cited (if applicable)*** |
| [North Carolina Center for the Advancement of Teaching](https://www.nccat.org/home)  [North Carolina Coastal Federation](http://www.nccoast.org)  Environmental education and K-12 student outcomes: A review and analysis of research Nicole M. Ardoin, Alison W. Bowers, Noelle Wyman Roth & Nicole Holthuis (2018) Environmental education and K-12 student outcomes: A review and analysis of research, The Journal of Environmental Education, 49:1, 1-17,  [Rachel Szczytko](http://www.frontiersin.org/people/u/493139), [Sarah J. Carrier](http://www.frontiersin.org/people/u/478504) and [Kathryn T. Stevenson](http://www.frontiersin.org/people/u/535602)  Impacts of Outdoor Environmental Education on Teacher Reports of Attention, Behavior, and Learning Outcomes for Students With Emotional, Cognitive, and Behavioral Disabilities  Volk, T. L., and Cheak, M. J. (2003). the effects of an environmental education program on students, parents, and community. *J. Environ. Educ.* 34, 12–25. doi: 10.1080/00958960309603483  Danforth, P. (2005). *An evaluation of the National Wildlife Federation's Schoolyard Habitat Program in the Houston Independent School District, thesis, Environmental Education, Integrated Curriculums and Academic Standards*.  Department of Public Instruction (2015). *North Carolina Essential Standards 3-5 Science*. Raleigh, NC: Department of Public Instruction.  [North Carolina Environmental Education Plan](https://www.eenorthcarolina.org/media/1/open) |