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| ***1. Project Title*** | SAV Nautical Map for the Currituck Sound |

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| ***2a. Primary Contact or Project Manager1*** | | | | | |
| Name | Dylan Lloyd | | | | |
| Title | Soil and Stormwater Manager | | | | |
| Organization Name | Currituck Soil and Water Conservation District | | | | |
| Organization Tax ID Number | 566000292 | | | | |
| E-mail address | Dylan.lloyd@currituckcountync.gov | | | | |
| Mailing Address | 153 Courthouse Rd Suite 501 | | | | |
| City | Currituck | State | NC | Zip | 27929 |
| Telephone | 252-232-3360 | Fax Number | |  | |

**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 | Dylan Lloyd | | | | |
| Title | Soil and Stormwater Manager | | | | |
| Organization Name | County of Currituck | | | | |
| E-mail Address | Dylan.lloyd@currituckcountync.gov | | | | |
| Mailing Address | 153 Courthouse Rd Suite 501 | | | | |
| City | Currituck | State | NC | Zip | 27929 |
| Telephone | 252-232-3360 | Fax Number | |  | |
| Federal Tax ID Number | 566000292 | | | | |

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| 2c. Payment Address (where invoice payments will be mailed) | | | | | |
| Name | Sandra Hill | | | | |
| Title | Finance Director | | | | |
| Organization Name | County of Currituck | | | | |
| E-mail Address | Sandra.Hill@CurrituckCountyNC.gov | | | | |
| Mailing Address | 153 Courthouse Rd Suite 501 | | | | |
| City | Currituck | State | NC | Zip | 27929 |
| Telephone | 252-232-2381 | Fax Number | |  | |

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| ***3. Project Description (provide a short summary of the project).*** |
| Sub-Aquatic Vegetation (SAV) is crucial for biodiversity and water quality, as it offers food and shelter for numerous species while filtering out excess nutrients and turbidity in the water. Furthermore, vegetated aquatic ecosystems have shown greater capacity for carbon storage and sequestration as compared to that of terrestrial species, as the world’s oceans and waters hold 16 times the amount of carbon as our atmosphere. According to subsequent studies, the Currituck Sound lost SAV coverage between 2008 and 2012. (Forte, M.F. et al., 2007)  (Fourqurean et al., 2012; Greiner et al., 2013) (McLeod et al., 2011) (Biarrieta, N. et al., 2020).  We are proposing a new round of SAV surveys to be performed in HUC-12 030102051305 (Sanders Bay / Currituck Sound) which has the highest historic concentration of SAV among HUC-12 zones in the region. The methodology will follow prior boat surveying and aerial ortho-imagery efforts from APNEP based studies and draw from the works of Dr. Reide Corbett and Natasha Biarrieta in the 2020 thesis: SAVE Currituck Sound: Submerged Aquatic Vegetation Evaluation. A new methodology will be introduced for certain scalable areas in which unmanned drone footage coupled with GPS location mapping will denote species such as Eurasian Watermilfoil and Water Celery that are visible from the top of the water column.  The project deliverables will include a map of the extension of SAV in this HUC zone, a digitized GIS layer in Arc View showing the current SAV coverage in this zone, a comparison of past data and / or mapped layers to show loss and / or gain of SAV, and a printable brochure for boaters and educators to outline and discuss the presence of aquatic vegetation. If time and funds allow, adjacent HUC zones will be included, we simply want to start where the greatest SAV concentrations are. Future funding can help expand these efforts as needed. |

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| ***4. Statement of qualifications (provide a brief explanation of your organization’s qualifications to complete the project)*** |
| The Currituck Soil and Water Conservation District (SWCD) is a state-sanctioned entity in the state of North Carolina and is part of the larger Albemarle SWCD. We have performed surveys for SAV, water quality monitoring and species identification in the Currituck Sound. Soil and Water Technician Dylan Lloyd has a masters degree in Environmental Engineering from Florida International University. Currituck Soil and Water has partnered with numerous organizations on conservation and restoration efforts such as the Albemarle Resource Conservation and Development Council and the Currituck Sound Coalition, both of which Mr. Lloyd is a standing member. |
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| ***5. Project Start Date*** | May 1, 2022 | ***Project End Date*** | July 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 | Currituck County |
| River Basin(s) | Pasquotank |
| Position coordinates of project location | Latitude 36.311877            Longitude -75.854718 |

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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)**  Action A1.1: Facilitate the mapping of significant ecological, bathymetric, geologic, demographic, and cultural features. In a dynamic natural and social environment, regional mapping efforts develop and maintain the timely information necessary to support environmental decision-making. It further provides one method by which management activities can be evaluated.  ***This proposal will map our SAV layers and assist in County and partner decisions.***  Action A1.2: Facilitate the refinement and use of online conservation planning tools. Providing accessible tools for informed decisions is critical for addressing human and ecosystem needs. Tools such as the North Carolina Conservation Planning Tool, the Green Growth Toolbox, and Strategic Habitat Areas support resource management decisions. Additionally, such tools can assist in addressing the potential impacts associated with a changing climate.  ***This proposal will create interactive online displays of aquatic and benthic environments.***  Action C3.3: Develop and implement a submerged aquatic vegetation (SAV) restoration strategy. In conjunction with strategies to protect SAV (see B2.2), APNEP will work to restore areas capable of supporting SAV. This work will require study of effective restoration techniques, bathymetric mapping, water quality monitoring, and other efforts. APNEP will continue its contributions to the SAV Partnership to develop and promote a SAV restoration strategy.  ***The key to restoration is identification through knowledge. These surveys are the start.*** |

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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 Currituck Soil and Water office is currently in the process of a major update for the county Stormwater Management Plan. This plan is being reorganized under a greater Watershed Protection Plan; in which a chapter on SAV extent and protective measures is being authored. Water quality will be addressed through recognizing and delineating where these SAV growths are, which as established in the summary of this application, SAV can filter excess nutrients, filter harmful particulates, enhance biodiversity, and decrease turbidity in the water. Coastal habitats are addressed in the creation of these data layers and maps, which will outline many nesting areas and feeding pools for avian species. Turtles, fish and aquatic mammals utilize these SAV beds as well, and in creation of our online and / or physical brochure maps, these educational points will be highlighted. Resiliency will occur if we can maintain and curb the losses of our SAVs, yet we need a solid footing to start. This surveying / mapping project gives us that footing. |

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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.*** | | | |
| Output 1: Web-Based GIS Map Layer   * Number of unique visitors to the county GIS SAV Mapping layer * Citing of our layer by educational and research platforms * Number of hits to website by originating sources   Output 2: Print materials:   * Number of products and materials distributed (1000) * Number of requests made for materials (TBD) * Description or list of audiences receiving materials (Grade School, Boaters)   Short Term Outcomes   * Increase awareness of where our SAV is and why it is important * More citation in scholarly work of our GIS layers   ***These objectives can be measured with future self-responding surveys***  Long Term Outcomes   * Increased appreciation and basis for protection of our vital aquatic vegetation habitats * Growth / expansion of our SAV to pre-1960s levels by 10% | | | |
| 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 | |  | Staff Assistance  5 hrs/wk \*$20hr\*12wks=$1,200 |  | |  |
| Fringe Benefits | |  |  |  | |  |
| Project Supplies | |  |  | Currituck SWCD Boat & Drone Use | |  |
| Equipment | |  | Mavic Pro 2 extra battery pack = $399 |  | |  |
| Transportation/Travel | |  | Gas = $20/wk \*12wks=$240  Outboard Motor = $2,299 |  | |  |
| Sub-contract Services | |  | Aerial Photography (drone footage)  $150 per hour \*20 hrs = $3,000  Screen Printing (brochure maps)  1000 color 11x17 trifold = $3,000 |  | |  |
| Other Direct Costs | |  | GIS Layer mapping in ArcView  2hrs/wk \*$20hr\*12wks=$480 |  | |  |
| Total Direct Cost | |  | $10,618 |  | |  |
| \*Indirect Cost (F&A) (not to exceed 10%)  (e.g. 10% of the total direct costs $10,000 = $1,000) | |  | 5% = $531 |  | |  |
| Total Cost | |  | $11,149 |  | |  |

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| ***11. Describe leveraging of funds from project partners (Optional):*** |
| \*Check with Heather Jennings for more information at 919-707-8632 |

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| 12. Project Partners (may add more if needed) | | | |
| Agency Name | Currituck Sound Coalition (Audubon) | | |
| Agency Address | 807 E. Main St. Suite 2-220 Durham, NC 27701 | | |
| Role/contribution to Project | Advisor | | |
| Contact Person | Cat Bowler | Phone No. | 843.276.7620 |
| E-mail address | cat.bowler@audubon.org | | |
| Agency Name | Currituck County Planning & GIS | | |
| Agency Address | 2801 Caratoke Hwy Suite 410 Currituck, NC 27929 | | |
| Role/contribution to Project | GIS Mapping Specialist | | |
| Contact Person | Harry Lee | Phone No. | 252.232.2034 |
| E-mail address | Harry.lee@currituckcountync.gov | | |

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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 | Set schedule and assign quadrants for mapping, identify main plant species |
| Second Quarter | Complete boat and drone surveys |
| Third Quarter | Create ArcView shapefiles and perform comparison analysis with past SAV data |
| Fourth Quarter | Integrate shapefile layer into county GIS site for public viewing;  Create education brochures with map layer |

**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)*** |
| Forte, M.F., 2007. Currituck Sound Hydrographic and Submerged Aquatic Vegetation Survey.  US. Army Corps of Engineers Field Research Facility, Duck, NC.  Fourqurean, J.W., Duarte, C.M., Kennedy, H., Marba, N., Holmer, M., Mateo, M.A.  2012. Seagrass ecosystems as a globally significant carbon stock. Nature Geoscience. Doi:10.1038/NGEO1477  Greiner, J.T., McGlathery, K.J., Gunnell, J., McKee, B.A., 2013. Seagrass restoration “blue carbon” sequestration in coastal waters. PLOS ONE 8 (8), e72469  Biarrieta, N., 2020. SAVE Currituck Sound: Submerged aquatic vegetation evaluation in Currituck Sound, NC. Geological Sciences, ECU |
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