

**Town of Bluffton
South Carolina Department of Natural Resources
Contract Agreement**

This Agreement is made and entered into by and between the Town of Bluffton ("the Town") and the South Carolina Department of Natural Resources ("SCDNR") pursuant to the following terms.

Whereas protection of the May River is of utmost priority for the Town and SCDNR is uniquely qualified and committed to diligently undertake the following project while applying its good-faith best efforts to accomplish the goal, and the further obligations of the parties set forth herein, the parties agree as follows:

1. **Project Name:** May River Project: Assessing Change After 20 Years
2. **Scope of Work** – The Scope of Work for this project is set forth in **Exhibit A** which is attached and incorporated by reference.
3. **Period of Performance** - This Agreement shall first be effective and SCDNR's performance shall begin upon the date of execution by the Town and, unless terminated sooner or amended by the parties, shall end December 31, 2024. In the event of an unforeseen delay in SCDNR's ability to complete all the work by the above-mentioned date, the Town's Technical representative (below) will be notified by SCDNR. This notification will include a new date for completion of all work and no additional cost will be incurred by the Town, in the event of a delay. Unless otherwise specified in the Budget, no pre-award expenses of SCDNR may be charged against this funding.
4. **Funds Source and Total Award** - The funds provided under this Agreement by the Town are from the Adopted Consolidated Fiscal Year 2024 (FY24) Municipal Budget and the total award to SCDNR is \$155,000. Unless this Agreement is formally amended by authorized representatives of the parties, the Town shall have no fiscal obligation to SCDNR exceeding this amount.
5. **Payment of Funds** - The funds provided by the Town to SCDNR under this Agreement are exclusively for use as contemplated in the Agreement and are provided on a cost-reimbursement basis for expenses identified in the budget which is attached as **Exhibit B** and incorporated by reference. SCDNR shall submit a quarterly invoice itemized by budget categories. Satisfactory progress reports and deliverables must be submitted when due for SCDNR to receive concurrent or subsequent payments under this Agreement. Not more than seventy-five percent (75%) of the amount obligated under this Agreement may be billed prior to the final invoice. The invoices shall reference the project name, Town contract number, and shall be submitted to the Town Technical representative (below) and to the Town's Finance Department at invoice@townofbluffton.com no later than thirty (30) days following the end of the invoice period. After receipt, the Town will process the invoice within thirty (30) days of receipt. The final invoice shall be submitted promptly by SCDNR following completion of the work, including submission of satisfactory deliverable(s) and progress report(s), and in no event later than sixty (60) days from the date of such completion as referenced in Exhibit A.
6. **Budget Modification** - Without seeking approval of but upon providing written notice to the Town, SCDNR may shift any cost category by up to 20% of the total contract so long as such changes do not alter the Scope of Work to be performed. Any proposed shift in a cost category exceeding 20% of the

total contract must be presented to the Town and be approved in writing by the Town Contracting representative.

7. Party Contacts:

SCDNR Contracting:
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8. **Assignment or Subcontracting** - Other than where stated here, SCDNR shall not assign, subcontract or subgrant the performance of this Agreement or any portion thereof to any other Party unless presented to and approved by the Town in writing. SCDNR intends to engage the National Oceanic and Atmospheric Administration (NOAA) to perform sediment contaminant analysis for this Project and the Town consents at this time.
9. **Independent Contractor** - SCDNR is an independent contractor, not a partner or joint venturer, and shall not act as an agent for the Town. Nor shall SCDNR or its agents be deemed to be employees of the Town for any purposes whatsoever. Neither Party shall have any authority, either express or implied; to enter any agreement, incur any obligations on the other party's behalf, or commit other party in any manner whatsoever without the express prior written consent of the other party's authorized representative.
10. **Records and Audits** - SCDNR shall maintain all records pertaining to performance under this Agreement. "Records" means any written or recorded information, regardless of physical form or characteristics, which is produced or acquired by the Party in the performance of this Agreement. Records produced or acquired in a machine-readable electronic format shall be maintained in that format. The records described shall be made available at reasonable times during the period of the

Agreement and for three years thereafter or for any period required by law for inspection by any authorized representatives of the Town. If any litigation, claim, or audit is started before the expiration of the three-year period, the records shall be retained until all litigation, claims or audit findings involving the records have been resolved.

Additionally, the SCDNR agrees that the Town may conduct audits during normal business hours for the purpose of inspecting projects, equipment, or products, which have been funded in whole or in part under this Agreement.

11. **Work Product / Intellectual Property** - The SCDNR grants to the Town, as applicable, a royalty-free, nonexclusive and irrevocable right to reproduce, publish, or otherwise use the final report of SCDNR for governmental purposes. Otherwise SCDNR shall own the work product and intellectual property rights developed in association with the project.
12. **Acknowledgement of Funding** – SCDNR will make reasonable efforts to acknowledgement the fiscal support of the Town through this Agreement in any press releases, research reports, or similar communications related to the project.
13. **Notices** - Any notice required under this Agreement shall be in writing and addressed to the contracting representatives identified above or to such other addresses as the party to be notified may designate from time to time in writing by like notice to the other party.
14. **Severability** - If any provision of this Agreement, as applied to either party or to any circumstance, shall be adjudged by a court to be void or unenforceable, the same shall in no way affect any other provision of this Agreement or the validity or enforceability of this Agreement.
15. **Lawful Actions** - SCDNR is responsible for obtaining all permits, licenses, certificates, or authorizations otherwise required for the Project and shall comply with all applicable federal, state, and local laws in performing under this Agreement.
16. **Governing Law, Jurisdiction and Venue; No Waiver of Jury Trial** - This Agreement will be governed by the laws of the State of South Carolina. Any action or proceeding brought by either party in connection with this Agreement shall be brought and enforced in the Circuit Court of the State of South Carolina.
17. **Freedom of Information Act** - The parties acknowledges and agrees that this Agreement and any and all information obtained in connection with this Agreement are subject to the South Carolina Freedom of Information Act (FOIA) (S.C. Code Ann. § 30-4-10, *et seq.* (1976)).
18. **Force Majeure** - Neither party shall be liable to the other for any failure or delay of performance of any obligations under this Agreement to the extent such failure or delay shall have been wholly or principally caused by acts or events beyond its reasonable control rendering performance illegal or impossible (“Force Majeure”). Where Force Majeure is asserted, the nonperforming party must prove that it made all reasonable efforts to remove, eliminate or minimize such cause of delay or damages, diligently pursued performance of its obligations under this Agreement, substantially fulfilled all non-excused obligations, and timely notified the other party of the likelihood or actual occurrence of an event described in this paragraph.
19. **Termination** - Either party may terminate this Agreement if a party materially breaches its obligations

under this Agreement, and such breach is not cured within thirty (30) days after delivery of the non-breaching party's notice or such longer time as the non-breaching party may specify in the notice.

In case of termination, SCDNR shall be reimbursed for all allowable costs incurred and non-cancelable commitments made under the terms of this Agreement prior to such termination. Payment shall be made upon submission to the Town of an invoice covering the aforementioned performance and submission of any and all results achieved to the time of termination and acceptance thereof by the Town..

20. **Entire Agreement and Amendment** - This Agreement supersedes any previous oral or written agreements made by the parties regarding the subject matter of this Agreement. With respect to any discrepancy between the terms of this Agreement and any attachments or exhibits, the terms of this Agreement control. The parties acknowledge that this Agreement shall not be amended, modified, or revised except in writing and signed by authorized representatives of both parties.

{Signature Page(s) Follow}

The parties have caused this Agreement to be executed as of the date set forth herein by their duly authorized representatives.

TOWN OF BLUFFTON

By: _____

Date: _____

Name: _____

Title: _____

SC DEPARTMENT OF NATURAL RESOURCES

By: _____

Date: _____

Name: _____

Title: _____

**Exhibit A
Scope of Work**

Project Name: May River Project: Assessing Change After 20 Years

Please see Exhibit A. *May River Project: Assessing Change after 20 Years* Below



May River Project: Assessing Change After 20 Years

Andrew Tweel, Ph.D.
Denise Sanger, Ph.D.
Pamela Marcum
Environmental Research Section

Peter Kingsley-Smith, Ph.D.
Gary Sundin
Molluscan Research and Monitoring Section

Marine Resources Research Institute
Marine Resources Division
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June 2023

Background and Rationale for Study

In 2022, the Town of Bluffton expressed interest in revisiting the original 2002 May River Project. The original study was implemented to characterize environmental quality in the ecologically, culturally, and economically important May River and its watershed (MRD 2004). At the time, rapid development was beginning in the watershed and there was concern that the environmental quality of the May River could be altered. Now, two decades following the original research, significant development has and is still occurring, and these changes may interact with other changes in sea level, weather patterns, and climate that have also occurred during this time period. Furthermore, increased use of the waterways has also occurred. During the interval from 2002 to 2018, the May River headwater impervious cover has increased from 6% to 15%.

The effort outlined below is designed to revisit the original study as closely as possible, while maintaining an efficient and focused approach. The resulting analysis will compare the original data to the new data in the context of the various changes that have occurred in the area over the last two decades.

Project Approach

General Study Design

The proposed effort is designed to capture a variety of habitat types, provide broad spatial coverage, and to represent areas sampled in the original effort. As in the original 2002 study, three general zones representing the upper (zone 1), middle (zone 2) and lower (zone 3) portions of the river (approximately 7-kilometer-long segments of the May River) will be sampled (Figure 2). Within Zone 1, the following sampling sites will be identified: (1) two subtidal stations will be randomly located in the mainstem of the river for open-water sampling and oyster bar investigations, (2) one subtidal station will be randomly located in the headwater portions of the river for large tidal creek sampling; (3) three headwater tidal creeks will be sampled. Within Zone 2, the following sampling sites will be identified: (1) two subtidal stations will be randomly located in the mainstem of the river for open-water sampling and oyster bar investigations, (2) one subtidal station will be randomly located in a smaller branch of the river for open-water sampling, and (3) two headwater tidal creeks will be sampled. Within Zone 3, the following sampling sites will be identified: (1) two subtidal stations will be randomly located in the mainstem of the river for open-water sampling and oyster bar investigations, (2) two subtidal stations will be randomly located in the tidal creeks branching off the river for large tidal creek sampling; and (3) three headwater tidal creeks will be sampled.

For the purposes of this study and the SCECAP program, a large tidal creek represents estuarine water bodies of less than 100 meters (m) in width from marsh bank to marsh bank. In addition, two headwater tidal creeks will be intertidally sampled within each zone. For the purposes of this study and the TCP, a headwater tidal creek is defined as the point where water depth in the channel is approximately 1 m deep at mean high water and continuing down the creek for 600 m. This sampling regime yields 16 sampling areas (Fig. 2). All stations will be located using GPS coordinates from the original sampling effort.

Biological, sediment, and water quality sampling will be conducted by SCDNR during the summer of 2023. Sampling of the biota (fish, benthic invertebrates), and sediments, as well as water quality monitoring will be conducted once at each of the 16 sites. Oyster bed sampling will be conducted in representative beds in each zone of the mainstem of the May River. All sampling will be coordinated among groups where possible to ensure maximum cost savings. A general description of the methods to be used is provided for each major program element.



Figure 1. Proposed sampling sites and zones. Green lines indicate tidal creek sites, yellow dots indicate tidal creek sites, and the fuschia dots indicate open water sites. Yellow lines delineate sampling zones from left (1) to right (3).
Proposed Tidal Creek and Open Water Assessments

The water quality, biological, and sediment monitoring conducted by SCDNR will occur in the summer 2023. Sampling at the six subtidal sites in the mainstem of the estuary and the four sites in the subtidal portions of the tidal creeks in each zone will follow standardized SCECAP sampling protocols and are shown in Figure 1 and outlined in greater detail in SCDNR publications (Sanger et al 2022 and references therein). These procedures are based on the EPA's National Coastal Condition Assessment (<https://www.epa.gov/national-aquatic-resource-surveys/manuals-used-national-aquatic-resource-surveys#National%20Coastal%20Condition%20Assessment>). These protocols are briefly described below:

Water quality

Water-quality measurements will be collected at all stations prior to deployment of other sampling gear. Instantaneous measurements will include near-surface, mid-depth and near-bottom measurements of dissolved oxygen, salinity, and temperature using a Yellow Springs Instrument (YSI®) Inc. water-quality meter. The near-surface measurements will be collected approximately 0.3 m below the surface and the near-bottom measurements will be collected from approximately 0.3 m above the substrate. More complete time-profile measurements of all four parameters also will be obtained from the near-bottom waters of each site using YSI® Model 6920 multiprobes. Measurements will be logged at 15-min intervals for a minimum of 25 hours (hrs) to record readings over two complete tidal cycles. If possible, longer 96-hr time series may be used. Secchi disk readings will be collected during water quality sampling. All readings will be taken to the nearest 0.1 m using a solid white disk with measurement protocols standardized to reduce or eliminate readings that may be affected by glare or surface wave chop.

Water samples will be collected to be analyzed for Total Phosphorus, Total Nitrogen, nitrate/nitrite, and fecal coliform. These will be handled and processed using methods applied in the SCECAP program (Sanger et al. 2022).

Sediment Quality

Several replicate grab samples of sediments will be collected, by SCDNR personnel, at each station to evaluate sediment characteristics, sediment contaminant levels, and benthic community composition. A total of 4 to 6 grab samples will be collected at each site using a stainless steel 0.04 square meter (m²) [or 400 square centimeters (cm²)] Young grab sampler from an anchored boat. The boat will be repositioned after each sample to ensure that the same bottom is not sampled twice and to spread the samples over a 10-20 m² bottom area. All grab samplers will be thoroughly cleaned prior to field sampling and rinsed with isopropyl alcohol and seawater between stations.

Three of the grab samples will be collected by SCDNR personnel for analysis of benthic community composition. These samples will be washed through a 0.5 millimeter (mm) sieve to collect the benthic fauna and preserved in a 10 percent buffered formalin-seawater solution containing rose bengal stain. The remaining grab samples will be used to obtain a sediment-composite sample for analysis of sediment composition, contaminants, and sediment toxicity. Only the surficial sediments [upper 5 centimeters (cm)] will be collected from these grabs and combined to produce a composite sediment sample, which will be thoroughly stirred and subdivided into separate containers for use in sediment bioassay (Microtox® tests), sediment characterization analyses (sand and silt/clay composition), total organic carbon, porewater analyses (pH, salinity, and ammonia), and analyses of sediment contaminants (metals, organics). The composited samples will be kept on ice until taken to the collaborating laboratory, and stored, either at 4°C (toxicity, porewater) or frozen (contaminants, sediment composition, TOC), until analyzed.

Particle size analyses will be performed using a modification of the pipette method described by Plumb (1981). Percentages of sand, grain size greater than or equal to 63 µm in diameter will be determined by separation through a 63 µm sieve. Silt/clay, grain size less than 63 µm, will be determined by timed pipette extractions. Pore water ammonia will be measured using a Hach Model 700 colorimeter and TOC is measured on a Perkin Elmer Model 2400 CHNS Analyzer.

All contaminants will be sampled, handled, and analyzed by NOAA's NCCOS using the same protocols as the SCECAP program (Sanger et al 2022 and references therein). The primary methods are described by Balthis et al (2012), Chen et al (2012), Kucklick et al (1997), and Long et al (1997).

Sediment toxicity will be measured using the Microtox assay, consistent with SCDNR's SCECAP effort. The Microtox® assay utilizes the photoluminescent bacterium, *Vibrio fischeri*, to provide a sublethal toxicity measure that is based on the attenuation of light production by the bacterial cells when they are exposed to a toxic material. Solid-Phase Microtox® assays follow the protocols described by the Microbics Corporation (1992).

Biological Quality

Benthic samples will be collected at the same sites using the same grab sampling gear and sorted in the laboratory to remove the organisms from sediments remaining in the sample. All organisms will be identified to the species level,

or the lowest practical level possible if the specimen is damaged or incomplete. A reference collection is maintained at the SCDNR Marine Resources Research Institute.

Fish and large crustaceans (primarily penaeid shrimp and blue crabs) will be collected, measured, and released on site at each site following the benthic sampling to evaluate community composition. Two replicate tows will be made at each site using a 4-seam trawl (18-foot (ft) rope, 15 ft head rope and 0.75-inch (in). bar mesh throughout). Trawl tow lengths will be standardized to 0.5 kilometer (km) for open-water sites and 0.25 km for creek sites. Tows will be made only during daylight hours with the current and speeds standardized as much as possible. Tows made in tidal creeks will be limited to periods when the marsh is not flooded (approx. 3 hrs + mean low water). This limitation also is generally applied to open water sites. Catches are sorted to lowest practical taxonomic level, counted, and checked for gross pathologies, deformities or external parasites. All organisms will be measured to the nearest cm. When more than 30 individuals of a species are collected, the species is subsampled to measure and assumed to represent the length distribution of the total sample which is counted.

Proposed Headwater Tidal Creek Assessments

The water quality, biological, and sediment monitoring conducted by SCDNR will occur in the summer of 2023. Alternate sampling protocols consistent with SCDNR Tidal Creek Project methods will be used for the headwater portions of the creeks because these habitats are largely intertidal (Sanger et al 1999, Lerberg et al 2000). The laboratory protocols will primarily follow the same procedures as described for the subtidal sampling and will not be reiterated below unless they differ. The intertidal sampling of the headwater tidal creeks will occur throughout the upper 600 m of each headwater creek. Within this area, six benthic community samples will be collected in each creek with a 45.6-cm² hand core at 1 m below mean high water. In addition, sediment samples will be collected for analyses of grain size, TOC, porewater ammonia, and chlorophyll-a, corresponding to each of the six benthic community samples in each creek. These ancillary data will be used to evaluate chemistry and the benthic community data. The surface sediment samples for chlorophyll-a analysis will be analyzed following standard procedures utilized in tandem efforts at SCDNR.

At the primary benthic community sampling site in each creek, the following samples also will be collected: (1) sediment samples for chemical contamination; (2) sediment samples for toxicity tests (i.e., Microtox); and (3) one water sample for fecal coliform concentrations and typing. In addition, water samples will be collected to measure nutrient concentrations, turbidity, and fecal coliform concentrations.

Water quality will be monitored in each creek for a minimum of 25 hours to capture a full tidal cycle as well as day and nighttime conditions. Water-quality measurements will be made using a YSI instrument which collects temperature, pH, salinity, dissolved oxygen, and depth data at 15 min intervals.

Table 1. Summary of parameters proposed for this effort, comparison to original study, and relevant existing monitoring efforts.

	2002-2004 study	Proposed 2023 study	Existing monitoring
Sites	Headwater TC, large TC, OW. Full length coverage.	Headwater TC, large TC, OW. Full length coverage.	
Stream gages	3 sites	No gages	
Water quality	Quarterly (16)	Summer only	
Fecal sampling	Quarterly conc. (6) and summer typing (16)	Summer only, conc.	Existing monthly sampling
Sediment quality	Summer (16)	Summer (16)	
Benthic community	Summer (16)	Summer (16)	
Fish/crustacean	Summer (16)	Summer (10)	Eric Montie, USCB in HTC
Phytoplankton	Quarterly (16)		

Proposed Shellfish Assessments

Overview

The initial baseline assessment was conducted in 2002 – 2003 (MRD 2004). Oyster size, abundance, health, and disease status were all assessed in the summer. Recruitment and associated fauna were determined from habitat trays set and collected in spring (to capture a single growing season). Staff from the Shellfish Research and Monitoring Section propose to use broadly similar approaches, with a few omissions and with a reduction in overall effort to allow the work to be accomplished based upon staff availability and existing commitments.

The original effort collected samples at 11 sites within upper (n = 3), mid (n = 5), and lower (n = 3) strata within the May River watershed during the summer. Sampling included 55 quadrat-based (5 replicates at each site) using a 0.143 m² quadrat. Quadrats were placed at randomly chosen points along a transect line parallel to the water at approximated mean sea level. Quadrats were excavated to approximately 11 cm below the substrate. All live and dead oysters were measured.

The original effort collected 25 individual oysters from each of 11 sites (n = 275) in September 2022. These individual animals were analyzed for the prevalence and intensity of Dermo (*Perkinsus marinus*) and MSX (*Haplosporidium nelsoni*) infections.

The original effort deployed triplicate recruitment tray samples (0.434 m²) at each site with each tray containing 11.5 gallons of loose oyster shell. Trays were deployed in April 2002 and collected in March 2003. All oyster spat

and live oysters were measured. Key associated fauna, including crustaceans, worms, gastropods, and associated bivalves, were identified and enumerated.

Proposed Oyster Sampling

Oyster size and abundance: To reduce effort while creating a comparable data set, staff propose to collect data at 6 of the original sites, 2 from each strata (Figure XXX). Staff propose to use a similar method of positioning and excavation to collect triplicate 0.0625 m² quadrat samples at the 6 sites. Photographs will be taken of each quadrat prior to excavation. Quadrat sampling will be completed in July – September 2023. Samples will be processed by measuring the shell height of all individual live and recently dead oysters, measured from the umbo to the shell margin. Shell height data will be entered into a database using a digital caliper system. Shell height frequency histograms and other summary statistics, including mean size, observed mortality (% live), and total abundance, will be calculated and used in analyses similar to those used in the original study.

Oyster disease status: From each quadrat (n = 18), 8 individual oysters will be reserved to analyze for the prevalence and intensity of the key oyster diseases in SC, namely Dermo and MSX. These data will be compared to the findings of the original study as well as to other historical and recent efforts to examine the prevalence and intensity of these diseases in SC.

Oyster Recruitment: At each of the 6 sites, triplicate recruitment trays (0.143 m²) each containing 2 gallons of loose oyster shell will be deployed in the winter of 2022-23, during the recurring annual SC oyster demographic assessment program implemented by the SRS. Trays will be retrieved approximately 1 year later during the 2023-24 demographic sampling season. All live oysters and spat will be counted and measured in the lab using the methods previously described. Additionally, key fauna will be identified and enumerated. These data will be analyzed using methods similar to those used in the original study.



Figure 2. Locations (red circles) of sites proposed for collections of oysters for a biological assessment of the May River. Sites are a subset (6 of 11) of the sites used in the initial baseline assessment (MRD, 2004). Sites are divided into 3 strata upper (U), mid (M), and lower (L).

Table 2. Comparison of original study and proposed metrics for oyster portion of 2023 effort.

	2002-2004 study	Proposed 2023 study
Oyster demographics: <ul style="list-style-type: none"> • abundance • size (shell height) • % mortality 	11 sites in upper (3), mid (5) and lower (3) zones 5 replicates per site	6 sites in upper (2), mid (2) and lower (2) zones 3 replicates per site
Health / tissue contamination	20 per site, subcellular analyses	Not proposed
Oyster disease	25 oysters per site 11 sites Dermo and MSX Prevalence & intensity	24 oysters (8 x 3) per site 11 sites Dermo and MSX Prevalence & intensity
Oyster recruitment	3 recruitment trays at each of 11 sites Live, dead, measured and counted Key fauna identified and counted	3 recruitment trays at each of 11 sites Live, dead, measured and counted Key fauna identified and counted

Analysis and Progress and Final Report Preparation

Data analysis will include direct comparison of the original and new datasets using a variety of statistical approaches including analysis of variance and multiple regression. Other datatypes incorporating land use characteristics will also be included to explore potential relationships between development intensity and environmental quality as indicated by the various metrics.

The SCDNR will submit a quarterly progress report to the Town. Each report shall describe the status of the SCDNR’s performance since the preceding report and the progress expected to be made in the next successive period. Each report shall describe SCDNR’s activities by reference to the work specifications contained in the Scope of Work. If scheduled, a progress report is required even if there has been no activity.

A report detailing findings, including a comparative analysis to the original dataset, will be provided to the Town of Bluffton by the date specified in the agreement. The report will document conditions of the water quality, sediment quality, and living resources of the May River tidal creek ecosystem and compare those conditions with other typical, non-polluted sites in Beaufort County have been sampled through SCECAP and TCP.

Final report will be provided to the Town of Bluffton for comment no later than thirty (30) days following project close. Final report submitted no later than sixty (60) days following project close if at least two (2) weeks are allowed for incorporating feedback. All data generated will be provided to the Town of Bluffton in spreadsheet format (Excel). If requested, will present the findings of this study to Town audiences, including but not limited, to, committees and/or Town Council.

Budget

The costs for the effort outline above total \$155,000. This is detailed in appendix B of the overall agreement.

Proposed Timeline

Time Period	Project Segment
Spring 2023	Deployment of oyster trays (not Town funded)
Early July 2023	Project start
July-August 2023	Field sampling (tidal creeks, open water sites and oyster disease/demography)
Fall/Winter 2023	Laboratory analyses incl. QAQC
Winter/Spring 2023/2024	Data analyses incl. QAQC. Collection of oyster trays
Spring/Summer 2024	Writing and analysis
Fall 2024	Report complete
December 2024	Project end

References

Balthis, L., J. Hyland, C. Cooksey, E. Wirth, M. Fulton, J. Moore, and D. Hurley. 2012. Support for Integrated Ecosystem Assessments of NOAA's National Estuarine Research Reserve System (NERRS): Assessment of Ecological Condition and Stressor Impacts in Subtidal Waters of the Sapelo Island National Estuarine Research Reserve. NOAA Technical Memorandum NOS NCCOS 150. NOAA Center for Coastal Environmental Health and Biomolecular Research, Charleston, SC. 79 pp.

Chen, S., R. Torres, M. Bizimis, E.F. Wirth. 2012. Salt marsh sediment and metal fluxes in response to rainfall. *Limnology and Oceanography: Fluids and Environments* 2: 54-66.

Kucklick, J.R., S. Sivertsen, M. Sanders, and G. Scott. 1997. Factors influencing polycyclic aromatic hydrocarbon concentrations and patterns in South Carolina sediments. *Journal of Experimental Marine Biology and Ecology* 213: 13-29.

Lerberg, S.B., Holland, A.F. and Sanger, D.M., 2000. Responses of tidal creek macrobenthic communities to the effects of watershed development. *Estuaries*, 23, pp.838-853.

Long, E.R., G.I. Scott, J. Kucklick, M. Fulton, B. Thompson, R.S. Carr, K.J. Scott, G.B. Thursby, G.T. Chandler, J.W. Anderson, and G.M. Sloane. 1997. Final Report. Magnitude and extent of sediment toxicity in selected estuaries of South Carolina and Georgia. NOAA Technical Memorandum NOS ORCA: Technical Summary Report 57. 178 pp.

Marine Resources Division (MRD). 2004. A baseline assessment of environmental and biological conditions in the May River, Beaufort County, South Carolina, 225 pp.

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Sanger, D.M., Holland, A.F. and Scott, G.I., 1999. Tidal creek and salt marsh sediments in South Carolina coastal estuaries: II. Distribution of organic contaminants. *Archives of environmental contamination and toxicology*, 37, pp.458-471.

**Exhibit B
Budget**

Project Name: May River Project: Assessing Change After 20 Years

For annual breakdown please see attached Excel spreadsheet entitled May River Project_SCDNR_2023_Budget.xlsx

Project Title: May River 20 years later

Time Period: July 1, 2023-December 30, 2024

TOTAL BOTH YEARS

CATEGORY	<i>Rate</i>	<i>Time</i>	<i>Total</i>
Personnel			
PI/leadership			0
Biologist II			23488
Biologist II			3860
Biologist I			9001
Biologist II			3811
Biologist I			5695
Hourly			5760
Personnel Total			51,615
Fringe			
Salary (@ 45% sal, 28% hourly)			17663
Indirect			17034
Travel and Transport			3840
Contractual			38,208
Supplies and materials			5229
Fixed Costs			
Vehicle mileage (@ \$0.535/mile)			3125
Boat use			2,280
Other			
Boat gas+student			16,006
TOTAL			155,000