IRL COUNCIL
CITIZENS' ADVISORY COMMITTEE

This meeting is open to the public.

Thursday, February 9, 2023

1:30 PM – 4:30 PM

Sebastian City Hall, Council Chambers, 1225 Main Street, Sebastian, FL 32958

The order of items appearing on the agenda is subject to change during the meeting and is at the discretion of the presiding officer. Anyone wishing to speak on any item is requested to complete a speaker's card.

1. **Call to Order and Pledge of Allegiance** (Frank Catino, Chair)
2. **Introductions & Public Comments** (Frank Catino, Chair)
3. **Elections of Officers** (Kathy Hill)
   Requested Action: Elect Chair and Vice Chair for Calendar Year 2023 for the Citizen's Advisory Committee.
4. **Agenda Revisions** (Chair)
   Note any known changes and inquire if any members have suggested revisions.
5. **Approval of Minutes** (Chair)
   Requested Action: Approval of Minutes from the CAC meeting on November 17, 2023.
6. **Presentation**
   Why We Should Focus on the Science of Equity, Diversity and Inclusion
   (David Jones)
7. **Old Business**
   None
8. **New Business**
   a. Review and Accept Small Grants Application Packet (Kathy Hill)
      Requested Action: Recommend that the IRL Council Board of Directors authorize staff to release FY 2023 Small Grants application.

b. Fiscal Year 2024 RFPs (Daniel Kolodny)

Requested Action: Motion to recommend that the IRL Council Board of Directors accept the IRLNEP Citizen's Advisory Committee recommendations and approve the final ranked list of proposals; fund the top proposals contingent and consistent with available funds and budgetary authority; and authorize staff to negotiate and enter into contracts with those applicants.

c. Fiscal Year 2024 Tentative Budget (Daniel Kolodny)

Requested Action: Recommend that the IRL Council Board of Directors review and adopt the tentative budget for FY 2024 by Resolution 2023-01, pursuant to Florida Statutes.

9. IRLNEP Staff Reports

a. Communications Report (Kathy Hill)
b. Information Technology and Data Science Update (KJ Ayres)
c. IRL Project Update (Daniel Kolodny)
d. Executive Director Report (Kathy Hill)

Requested Action: No motion is required. Information only.

10. Final Comments (Committee, Staff, Public)

11. Next Meeting

Next IRL Council Meeting will be held on:

Thursday, May 4, 2023, at 1:30 p.m. Sebastian City Hall, Council Chambers 1225 Main Street, Sebastian, Fl 32958

12. Adjourn

NOTE: If a person decides to appeal any decision made by the Board with respect to any matter considered at such meeting or hearing, he or she will need a record of the proceedings, and that, for such purpose, he or she may need to ensure that a verbatim record of the proceedings is made, which record includes the testimony and evidence upon which the appeal is to be based. Section 286.0105, Florida Statutes (2014).

Pursuant to the provisions of the Americans with Disabilities Act, any person requiring special accommodations to participate in this workshop/meeting is asked to advise the agency at least 48 hours before the workshop/meeting by contacting: Erin Bergman at (314) 347-5854. If you are hearing or speech impaired, please contact the agency using the Florida Relay Service, 1(800) 955-8771 (TDD) or 1(800) 955-8770 (Voice). For more information, you may contact: Erin Bergman, IRL Council, 1235 Main St, Sebastian, FL 32958, (314) 347-5854, or by email at bergman@irlcouncil.org .

INDIAN RIVER LAGOON
NATIONAL ESTUARY PROGRAM
2023 Small Grant Application Kit

IRLNEP Small Grants Program at a Glance:
The Indian River Lagoon National Estuary Program (IRLNEP) is accepting grant applications from schools, local citizen groups and non-profit organizations for projects that support community engagement/education and restoration projects focused on the Indian River Lagoon (IRL). The guiding objective of the small grants program is to mobilize as many segments of the public as possible to focus on IRL protection and restoration. Projects selected for funding are those that help foster a Lagoon-Friendly ethic and promote community stewardship of the IRL. Projects must engage local communities located within the IRL watershed and may involve engagement/education activities, restoration activities, or both.

Goal:
The IRLNEP Small Grants Program supports action plans of the *IRLNEP Comprehensive Conservation and Management Plan (CCMP) – Looking ahead to 2030* through community-based education and small restoration projects focusing on the Indian River Lagoon. Empowering citizens through programs such as this helps foster an environmental ethic and promotes community stewardship of the IRL. The CCMP is available online at: https://onelagoon.org/management-plan/

Funding available: $500 - $5,000 per grant. $25,000 budgeted for FY 2023.

Deadline for submissions: April 7, 2023 by 5pm.

Award Date: Funding will be made available on or after **May 12, 2023**

Eligibility:
Community groups and organizations from within the IRLNEP watershed planning boundary are eligible to apply for funding. All projects must be implemented within IRLNEP watershed planning boundary (see map, page 8). Eligible applicants include:

- Teachers, school districts, student clubs (as sponsored by a school);
- Community clubs and organizations (scouting groups, civic groups, churches, etc.);
- Homeowner's and neighborhood associations;
- Non-profit groups;
- Small businesses, business organizations;
- Local governments, agencies and universities **if** a strong volunteer or community involvement component is outlined in the proposal **and** no indirect costs are being requested.

Proposal Limitations:
Organizations may submit no more than one (1) proposal per funding cycle. Should an organization have several proposals under consideration, it is advised that an internal competition be held to select the one to be submitted.

Implementation period:
Project must begin within 6 months of the award date and be completed within 1 year of award date.

Draft

INTRODUCTION

The Indian River Lagoon National Estuary Program: The health of estuaries is threatened by land use changes, habitat loss, pollution, resource conflicts and other issues. In 1987, Congress established the National Estuary Program (NEP) as a non-regulatory, community-based program to protect and restore the water quality of estuaries. The U.S. Environmental Protection Agency (EPA) administers the NEP.

The Indian River Lagoon was nominated as an Estuary of National Significance and joined the NEP in 1990. In 2015, the IRLNEP became sponsored by the IRL Council, an independent special district of Florida. The IRL Council includes representatives of five counties bordering the Lagoon (Volusia, Brevard, Indian River, St. Lucie and Martin counties), the St. Johns River and South Florida Water Management Districts, and the Florida Department of Environmental Protection (DEP). The U.S. EPA provides guidance to the Council.

Additional background information about the Indian River Lagoon National Estuary Program is available on-line at www.onelagoon.org.

IRLNEP Small Grants Program:

The IRLNEP Small Grants Program is intended as a means of engaging and educating local citizens and involving them in the restoration and recovery of the IRL. The Program seeks applications for projects addressing IRL education or restoration projects in Volusia, Brevard, Indian River, St. Lucie and Martin Counties. Projects must address IRL issues and priorities as identified in the Proposal Categories listed below. They should promote public involvement in solutions for Lagoon protection and restoration.

Proposals focused on restoration should:

- Be focused on IRL water or habitat quality.
- Define the restoration area clearly, including size and location. Maps and GPS coordinates are encouraged. All restoration projects must take place on the IRL watershed.
- Describe how volunteers and/or partner organizations will participate.
- Describe how and how often maintenance and monitoring of the project area will be conducted, and who will do it.
- Have letter(s) of support from the landowner of the area to be restored. All IRLNEP Small Grants Program projects must take place on community-owned, public-owned or conservation easement lands. For projects planned on public lands or facilities, applicants must obtain permission for access to or use of those lands or facilities. Projects designed to be implemented on private residential property (i.e.: a single-family home) will not be funded. However, properties such as churches or HOA properties may be considered if a strong community engagement component exists in the envisioned project. Permission for use of private property not controlled by the applicant is also required.

Proposals focused on community engagement/education should:

- Be focused on the IRL (issues, stressors, solutions).
- Clearly define target audience(s) and include a plan for how success of the project will be measured.
- Describe what activities will be performed to engage the community and what the expected educational outcomes are.

Proposal Categories:

Any of the CCMP Vital Signs may be addressed. Please refer to the IRLNEP CCMP at onelagoon.org. Some Examples are as follows:

- **Lagoon Awareness and Education:** Examples: Providing programs for schools, YMCA groups, boy scouts, girl scouts or other youth organizations; programs involving youth in finding solutions to Lagoon problems; programs for disadvantaged youth, etc.

Draft

- **Improving Water Quality/Reducing Nutrient Loading from Urban Landscapes:** Examples: Fertilizer reduction campaign, native plant gardening, rain gardens, rain barrels, citizen science to monitor ponds and outfalls, etc.
- **Habitat Restoration and Protection:** Examples: Restoration of natural shorelines, oyster restoration, enhancement of seawalls, projects addressing seagrasses, mangroves, coastal and freshwater wetlands, and marine debris and microplastics reduction/recycling initiatives.
- **Trash Free Waters and Wildlife Conservation:** Examples: Improving awareness of threats to wildlife from monofilament line; coastal cleanups, protection of seagrass beds; education about fish and wildlife habitats, etc.
- **Invasive Species:** Examples: Eradication of invasive plants or animals; education about harmful aquatic invasive species and how to prevent their spread; discouraging release of unwanted exotic pets, etc.

Grant Eligibility:
IRLNEP Small Grants are directed toward schools, businesses, community groups and organizations wishing to involve the public in IRL education and restoration programs. An organization's tax identification number is used by the IRLNEP to issue a contract for the awarded grant funds. Individuals are not eligible to receive grants funded under this program and are encouraged to partner with an appropriate organization to submit a proposal for funding consideration.

Procurement:
The IRLNEP will issue a contract to grant recipients that reimburses expenses awarded under the Small Grants Program. Funding is reimbursable only. Recipients may purchase only items listed in the approved budget for the project. The IRLNEP will reimburse only the organization listed on the contract. At the conclusion of the project, recipient will submit a single invoice and receipts for all expenses to be reimbursed. Grant recipients must submit an invoice on their organization's stationary (letterhead) and include receipts as documentation for the full amount of the invoice. Only direct expenses are eligible for reimbursement. NO indirect costs are eligible. Any reimbursement of expenses will be in accordance with Florida Statutes. Grant recipients may not begin purchasing items for their projects, print materials to publicize the project, or begin spending money in any way (such as postage, supplies, etc.) until the IRLNEP's contract is fully executed.

Expenses:
Items the IRLNEP may pay for include (but are not limited to):

- tool rentals
- native landscaping plants
- meeting room rentals
- film and photo processing
- postage
- project-related printing
- portable toilet rentals
- project-related signage
- materials (i.e. water quality sampling kits, supplies to produce educational materials)
- volunteer food within reason (i.e. light lunches, refreshments, bottled water)

Draft

If the Small Grant project includes printing of materials (brochures, flyers, signage, etc.), an IRLNEP representative must review all printed materials, including signage **prior** to printing. The IRLNEP logo must appear on all print or web materials distributed in association with the funded project.

Unbudgeted expenses:
Purchases for items, other than those specified in the line-item budget, will require the IRLNEP grants administrator's approval **before** they are incurred.

OTHER INFORMATION:

Public Entity Crimes:
As provided in the IRL Council Operating Procedures Manual, a person or affiliate who has been placed on the Convicted Proposers list following a conviction for a public entity crime may not submit a proposal on a contract to provide any goods or services to a public entity; may not submit a proposal on a contract with a public entity for the construction or repair of a public building or public work; may not submit proposals on leases of real property to a public entity; may not be successful or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity.

Non-Lobbying:
Pursuant to section 216.347, Fla. Stat., as amended, funds received from the IRL Council under this Agreement shall not be used for the purpose of lobbying the Legislature or any other state agency.

Right to Protest:
Any actual proposer aggrieved in connection with the solicitation or award of a contract may file a written protest in accordance with the procedures outlined in the IRL Council Operating Procedures Manual.

Right to Accept or Reject:
The IRL Council reserves the right to accept or reject any or all proposals, in whole or in part, with or without cause, to waive any irregularities and/or technicalities, and to award the contracts on such coverage and terms it deems will best serve the interests of the Board.

Funding Contingencies and Restrictions:
Project funding from the IRL Council is subject to annual funding received from IRL Council local stakeholder contributions, Congressional appropriation to the U.S. EPA under Section 320 of the Clean Water Act for the National Estuary Program, and projected revenues from the sales of Indian River Lagoon license plates.

Strategic decisions related to IRLNEP work plan funding are determined annually by the IRLNEP Management Conference with final decision for project priorities and budget allocations by the IRL Council Board of Directors (Board).

Funding of proposals selected under this Request for Proposals (RFP) is contingent upon availability of funds. There is no guarantee that sufficient funds will be available to make awards for all qualified projects. The exact amount of funds awarded for each project will be determined in pre-award negotiations between the applicant and IRL Council staff with final award decisions by the IRL Council Board of Directors.

Proposals accepted for funding may have their requested amounts reduced based on Management Conference recommendations or availability of funding. In the event that a proposal is selected for funding but becomes subject to funding reduction, IRLNEP staff will notify applicants in advance of any reductions and will meet with proposers to provide an opportunity to consider the effect(s) funding reduction will have on the project scope and deliverables.

Draft

Projects will only be considered IF the project has secured any and all additional funding in addition to this request to the IRL Council that is needed to complete the project.

The IRL Council is under no obligation to expend all funds allocated within a proposal category.

Proposal Submission Instructions:

Complete an Application Form using the form provided beginning on page 9 of this document. Include a line-item budget form, provided on page 12, that includes:

a. All estimated expenditures.

b. All sources and amounts of funding (include if you are applying to other funding agencies for the same project, and if so, who you are applying to and the status of that grant).

Attachment A- Budget Examples provide sample budgets having, and lacking, adequate detail. Please craft the budget for your proposal with enough detail that it can be properly evaluated by the reviewing team.

Save these documents in PDF format and email your complete proposal to:
Erin Bergman, Administrative Coordinator, Indian River Lagoon National Estuary Program Malcolm@irlcouncil.org with a copy to Daniel Kolodny, kolodny@irlcouncil.org. Questions may be directed to Erin Bergman at bergman@irlcouncil.org until the proposal deadline.

Submission Checklist:

- Proposals are due in IRLNEP offices by **April 7, 2023**.
- Proposals will be accepted only as PDFs submitted via email.
- Proposals must be completed in their entirety.
- Late proposals and materials submitted after the deadline will not be accepted.

Reporting Requirements:
IRLNEP Small Grants Program award recipients will be required to submit a written final report upon completion of the project. Final reports must include: (1) digital copy and (1) hard copy of all final products of print and/or web publications (i.e., brochures, videos, manuals, signage, etc.).

If your project is restoration-oriented and does not have a final product, "before and after photos" and/or a video must be submitted with the final report.

If your project is educational in nature and does not have a final product, a copy of all training materials, manuals, information, etc. must be submitted with your report.

Deliverables, including the final report, must be submitted before final payment is made unless authorized by the IRLNEP Small Grants Program administrator.

All projects, concepts, artwork, photos, videos and other products of these grants may be reproduced at the discretion of the IRLNEP for possible use with future educational programs, at no cost to the IRLNEP, and must carry an approved IRLNEP logo and/or credit line acknowledging Program funding of the project.

Selection Criteria:
Proposals submitted to the IRLNEP Small Grants Program will be evaluated according to the following criteria.

Draft

a) ***Strength of Proposal (30%)*** -- Specifically, the strength of the project will be evaluated on how well the project contributes towards restoring or improving the IRL, or advancing education, and the extent to which it addresses a need based on health concern level as identified in the CCMP. Applicant's proposal must meet one or more of the CCMP Vital Signs.

b) ***Ability of the Applicant*** **(20%)** -- The project team must demonstrate a reasonable ability to successfully complete the proposed project.

c) ***Cost Justification (10%)*** -- Cost justification means that the proposal and the budget must give enough detail to show that costs are appropriate to the scope of work.

d) ***Demonstration of How Project Will Help the IRL (20%)*** -- The project's goals and objectives must explicitly state how the project will target lagoon issues that result in the education of community members, restoration outcomes, or protection of the IRL. Achievable measures of success must clearly be identified.

e) ***Demonstration of Community Support*** **(15%)** -- All proposals, regardless of scope, should reflect some measure of community support through either implementation, maintenance and/or monitoring of the project (Example: if a rain garden is funded, how will it be maintained, by whom, and for how long?).

f) **Demonstration of Benefits to Priority Populations (5%)** -- If the project will benefit underserved or overburdened communities, the proposal should outline any benefits and potential outcomes expected in the community.

Selection Process:
The IRLNEP Citizens' Advisory Committee will review each proposal. Recommendations will be forwarded to the Program's Management and Policy Boards for final approval. IRLNEP staff will be assigned to serve as grant administrators. IRLNEP's grant administrator or its representative, may request to visit the recipient or the project location during or after the grant is completed.

Draft

[REMAINDER OF PAGE INTENTIONALLY LEFT BLANK]

FAQ's (Frequently Asked Questions)

Q. What is the implementation period?

A. Funding for awarded projects will be made available on or after **May 12, 2023** via a contract that authorizes reimbursement of approved expenses for the project. The project must begin within six months of the execution date of the contract and must be completed within one year of the execution date. Upon awarding of the grant, recipients will submit a "Scope of Work." Upon receipt and approval of the scope, applicants will then be issued a contract. After the contract has been fully executed, work may begin on the project.

Q. Who can apply? Can a government agency apply?

A. Groups and organizations from within the IRLNEP watershed planning boundary may apply. Both non-profit and for-profit organizations are eligible. Individuals are not eligible but are encouraged to partner with an appropriate organization to develop and implement projects for funding. Projects must take place within the IRL watershed. Local governments and government agencies may apply if there is strong volunteer or community involvement that supports the spirit of the program. The IRLNEP Small Grants Program is not designed as a funding source for government projects.

Q. What kind of projects will be funded?

A. Projects must address lagoon issues and problems as identified in the *IRLNEP Comprehensive C Conservation and Management Plan (CCMP) – Looking ahead to 2030.* Priority areas include: water quality, habitat restoration, fish and wildlife conservation, lagoon awareness/education, reducing nitrogen loading from urban landscapes, or removing invasive species. The CCMP is available on the IRLNEP website at: https://onelagoon.org/wp-content/uploads/IRLNEP_Final-Draft-CCMP-REVISION_2018-12-07_LowRes__20200204.pdf.

Projects involving installation of plants must use plants that are native to Florida or considered "Florida-Friendly" by the University of Florida IFAS Florida-Friendly Landscaping™ Program. Plants should be installed according to the Nine Principles of Florida-Friendly Landscaping™ found at: http://fyn.ifas.ufl.edu/homeowners/nine_principles.htm

Information about native and Florida-Friendly plants can be found at:

- Florida Yards: http://floridayards.org/
- Florida Native Plant Society: http://fnps.org/plants and www.floridata.com
- Waterwise Landscaping: https://www.sjrwmd.com/water-conservation/waterwise-landscaping/

Plants listed on the noxious weed list: http://plants.usda.gov/java/noxious?rptType=Federal or the Florida Exotic Pest Plant Council's list https://www.fleppc.org/ may **not** be installed using funds from IRLNEP Small Grants:

Q. What project types won't be funded?

A. Proposals seeking funds for ongoing administrative support of established programs will not receive consideration. Costs not allowed include but are not limited to: reimbursement for costs outside the grant's scope of work, purchase of commercial software and hardware, indirect costs, contingency funds, depreciation, entertainment, purchase or printing of T-shirts or other clothing, fines and penalties, bad debts, interest and financial costs of borrowing, attendance at conferences and meetings, lobbying expenses. Grant funds will not fund projects on private residential property. Faith-based organizations are eligible to apply for small grants. However, funding may not be used to support religious worship, instruction, or proselytization activities.

Q. Are matching funds required?

Draft

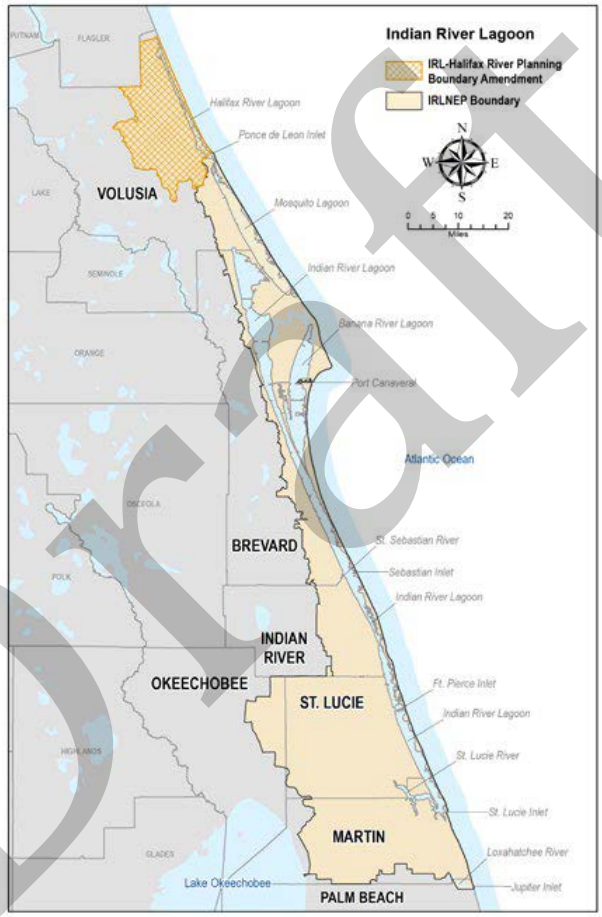
A. No; matching funds are not required, but proposals showing matching fund commitment through in-kind services will receive special consideration. An example of in-kind services are volunteer hours.

Q. What if I'm not sure how much it will cost to do the project?

A. Talk to potential suppliers of the items or services you think you will need for the project. Get the best estimates possible to include in the proposal. If the project is approved, the grant award you receive will be based on the budget as outlined in the proposal.

Q. What is the maximum amount an applicant can request?

A. Grant requests may not exceed $5,000. The IRLNEP may choose to fund a project at less than 100 percent of the requested budget.



Map of IRLNEP watershed. Only projects located in the watershed and northern planning boundary (orange outline) will be considered for funding.

If you have questions about your project location, you may contact Erin Bergman at bergman@irlcouncil.org.

Draft

Indian River Lagoon National Estuary Program
2023 Small Grants Program Application

Project Name:	
Organization Name:	
Street Address:	
City/County/Zip:	
Organization Executive Director Name:	
Phone:	E-mail:
Project Lead/Manager:	
Phone:	E-mail:
Organization Type (School, Business, HOA, etc.):	
Other participating organizations:	
Total Amount Requested (not to exceed $5,000):	
The IRLNEP receives more grant requests than we have available money to fund. Briefly explain how partial funding might impact or affect this project:	
Planned Project Beginning and Completion Dates:	
Have you applied to any other organizations to receive grant funds for this project? ☐ Yes ☐No	
If yes, please provide organization(s) name, amount requested, and status (awarded/declined).	
What city and county will the project take place in?	
Where is the physical location of your project (address or GPS coordinates)?	

Return completed applications as PDFs via email by 5pm on April 7, 2023 to Erin Bergman
Bergman@irlcouncil.org with a copy to Daniel Kolodny, Kolodny@irlcouncil.org
Indian River Lagoon National Estuary Program

IRLNEP recommends letters of support from all partners/cooperators in the project.

Answer the following questions clearly and completely.

1. How did you hear about the Small Grants Program?

Draft

2. Does this proposal address:

☐ EDUCATION ☐ RESTORATION ☐ BOTH

3. Summarize the proposed project in **300 words or less**. Please include in the summary how your project will contribute towards restoring or improving the IRL.

4. List organizations, groups, volunteers and/or partners that will participate in the activities and how you will recruit them.

5. Describe **(300 words or less)** why you and/or your organization will be successful at implementing your proposal. What are your organization's qualifications?

6. How many people do you estimate your project will reach?

Draft

7. How will you measure the success of your project? Please be specific (e.g., follow-up monitoring of a habitat restoration site).

8. What will participants learn from participating in this project? How will they use that knowledge to benefit the Lagoon?

9. What materials or supplies (if applicable) will you provide to the people participating in your project?

10. Is your project part of an ongoing project?
    - If yes, how does this grant project fit into the overall effort?

    - If no, do you plan to continue this project in the future?

Draft

Budget for_____

ITEM	IRLNEP SHARE	* MATCH (include source)	TOTAL

Attachment A – Budget Examples

Sample Budget With Adequate Detail:

ITEM	IRLNEP Funds	*MATCH	TOTAL
Bus Transportation (2 buses @ $150 per trip x 10 trips)	$ 1,500.00	$ 1,500.00	$ 3,000.00
Instructor Costs ($50 per day x 10 days)	$ 250.00	$250.00	500.00
Teaching Materials and Supplies (Native plant handbook, pocket folders 30 students/day x 10 days @ $5 ea.)	$ 1,500.00	$0.00	$ 1,500.00
65 - 1 gal. beautyberry @ $2.00 ea.	$ 65.00	$65.00	$ 130.00
600 - gopher apple @ $1.25 ea.	$ 750.00	$0.00	$ 750.00
230 - Florida paintbrush @ $1.25 ea.	$ 187.50	$100.00	$ 287.50
TOTAL Project Costs	**$ 4,252.50**	**$ 1,915.00**	**$ 6,167.50**

*** Please indicate if matching funds listed above are federal, local, state or private.**

Matching funds of $1,915.00 provided in cash by the Local Neighborhood Association.

Sample Budget Lacking Adequate Detail:

ITEM	IRLNEP Funds	*MATCH	TOTAL
Transportation	$ 1,500.00	$ 1,500.00	$ 3,000.00
Administration	$ 250.00	$250.00	500.00
Supplies	$ 1,500.00	$0.00	$ 1,500.00
Plants	1002.50	$165.00	$ 1167.50
TOTAL Project Costs	**$ 4,252.50**	**$ 1,915.00**	**$ 6,167.50**

*** Please indicate if matching funds listed above are federal, local, state or private.**

Draft

CATEGORY 1: WATER QUALITY RESTORATION										Funding Amount	Category Total Remaining
Rank	Applicant	Project	Requested Funding	Cost Share Match	Match %	Total Project Cost	Score	Above 70%?	Eligible?		$450,000.00
1	Martin County	Reduction of TN and TP Using Floating Treatment Wetlands.	$35,360	$40,000	53	$75,360	181	82%	Y	$35,360	$414,640
2	City of Port Saint Lucie	Septic to Sewer Conversion to Reduce Nitrogen Pollution Along the Monterrey Waterway.	$50,000	$50,000	50	$100,000	173	79%	Y	$50,000	$364,640
3	Fort Pierce Utilities Authority	Protecting the Indian River Lagoon and Reducing Nutrient Loads Caused by Septic Systems & Aging Wastewater Infrastructure.	$450,000	$981,415	69	$1,431,415	172	78%	Y	$364,640	$0

Martin County – Reduction of TN and TP Using Floating Treatment Wetlands	
Lead Organization and Partners:	Martin County Board of County Commissioners
Project Locations:	1. Golden Gate STA, Stuart, Fl. Lat: 27.164616°, Long: -80.205309° 2. Old Palm City STA, Old Palm City, FL. Lat: 27.162275°, Long: -80.262927°
Key CCMP Vital Signs:	Impaired Waters, Stormwater
IRLNEP Contribution and Source:	$35,360, IRL Council
Partner Match:	$40,000 [53%]
Total Project Cost:	$75,360

Project Description: The St. Lucie River Estuary Basin includes impaired waters that do not currently meet state water quality standards. This project seeks to reduce nutrient loading into the St. Lucie Estuary and greater IRL by replacing existing dilapidated floating treatment wetlands within two stormwater treatment areas with new floating treatment wetlands of an improved design. A total of 12 floating treatment wetlands will be installed within the Golden Gate and Old Palm City STAs, comprising a total of 6,280 ft^2 of surface area. The improved design will reduce TN and TP discharged into the St. Lucie Estuary and Indian River Lagoon by 412 lbs/year and 140 lbs/year respectively. This improved design will yield a significant cost savings of 52% for annual maintenance and harvesting.

Key Outputs:

1. Remove and replace existing floating treatment wetland foam mats with new mats of improved design.
2. Annual average nutrient reduction of 412 lbs total nitrogen and 140 lbs total phosphorus discharged into the Indian River Lagoon. Expected outputs were quantified by averaging values of nutrients from lab reports from past harvests.

Key Outcomes:

1. Significant reduction in maintenance costs from $\$4.00/ft^2$ to $\$1.40/ft^2$ (52%).
2. Increase in lifespan of floating treatment wetlands from 4-6 years to 8-10 years.
3. In alignment with the St. Lucie River and Estuary TMDL/BMAP program, and the *Impaired Waters* and *Stormwater* Vital Signs within the CCMP, this project will provide water quality benefits by reducing nitrogen and phosphorus loadings discharged into the Indian River Lagoon.
4. The long-term goal is to meet 5-10 year BMAP TMDL targets for total nitrogen and total phosphorus entering the St. Lucie Estuary and greater IRL.

Title of Project	Septic to Sewer Conversion to Reduce Nitrogen Pollution Along the Monterrey Waterway
Lead Organization and Partners	City of Port St. Lucie (lead organization), Harbor Branch Oceanographic Institute-Florida Atlantic University (partner)
Project Location	The project location is in central Port St. Lucie along the Monterrey Waterway, which empties into the C-24 Canal that empties into the North Fork of the St. Lucie River. The project area is approximately 2,042 acres. Latitude: 33.7930341, Longitude: 073.8963078.
Key CCMP Vital Sign(s)	Impaired Waters, Wastewater, Monitoring and Data Sharing, Citizen Engagement and Education
IRLNEP Contribution and Source	$50,000, IRL Council
Partner Match	$50,000 cash (from Monterrey Hot Spot property owners)
Total Project Cost	$100,000

Project Description

The North Fork of the St. Lucie Estuary has experienced degraded water quality leading to recurring closures of the water body for recreational use. To determine the sources of this impairment, the City of Port St. Lucie contracted with Harbor Branch Oceanographic Institute-Florida Atlantic University to conduct a microbial source tracking study. That study confirmed elevated fecal coliform levels. The greatest concentrations consistently occurred in five dense urbanized areas of the City, including along the Monterrey Waterway which directly drains into the North Fork of the St. Lucie River. Older septic tanks near the Monterrey Waterway are believed to be contributing to this pollution.

IRLNEP funding will enable the City of Port St. Lucie to expand its septic-to-sewer program. The proposed Monterrey Septic Hot Spot Grant Program will support the conversion of 16 residential septic tanks in the target area to Port St. Lucie's low-pressure, centralized sewer system. Property owners within 50' of the Monterrey Waterway or a ditch that discharges into the Monterey Waterway will be eligible to participate in the septic grant program, which covers 50% of the sewer conversion cost. The City will also offer 10-year interest-free connection fee loans to all participating septic owners. The project is expected to benefit the Indian River Lagoon by removing 6.15 pounds of total nitrogen per septic tank annually. Nutrient pollution is the main cause of toxic algal blooms in the Indian River Lagoon system. Fewer algal blooms will protect marine life and preserve key habitat.

Map and Photos

See attached.

Key Outputs (Deliverables)

16 homes converted from septic tanks to sewer system; elimination of a combined total of 98.4 pounds annually of nitrogen

Key Outcomes (Benefits to the IRL)

Short-term benefits: Enhanced community understanding in Monterrey area; initial nutrient reductions
Mid-term benefits: Incentivizing the conversion of 16 septic tanks in the Monterrey Hot Spot area; significant nutrient reductions; better Indian River Lagoon protection
Long-term benefits: Fewer algal blooms; habitat improvements; restoration of biological diversity

Executive Summary

Title of Project:	Protecting the Indian River Lagoon and Reducing Nutrient Loads Caused by Septic Systems & Aging Wastewater Infrastructure
Lead Organization and Partners:	Fort Pierce Utilities Authority
Project Location:	This project will be carried out throughout FPUA's wastewater territory in Fort Pierce, Florida - 27° 27' 0.9576'' N 80° 20' 23.8236'' W
Key CCMP Vital Sign(s):	Wastewater, Impaired Waters, Stormwater
IRLNEP Contribution and Source:	$450,000, IRL Council
FPUA Match:	$956,415, FPUA (sewer lining grant funds) $25,000, FPUA (septic to sewer conversion grant funds)
Total Project Cost:	$1,431,415

Project Description:

This project aims to improve the overall environmental health of our community by eliminating **850** lbs. of nitrogen/year from reaching the Indian River Lagoon. This particular project consists of eliminating **50** septic systems throughout FPUA's wastewater service territory. Additionally, FPUA will enhance its wastewater infrastructure by lining **4.23 miles** of wastewater pipes with Cured-in-Place PVC lining. This PVC lining will rectify the problems caused by untreated sewage leaking into the soil and groundwater flows to the IRL, caused by cracks in the aging, vitrified clay pipes.

Key Outputs (Deliverables)

1. The removal of **50** aging septic systems.
2. Reduction of **850** lbs. of nitrogen/year[1] and **10** lbs./gallon of phosphorus/year[2] leached into the environment by septic systems.
3. The addition of **4.23** miles of sewer lined by Cured-in-Place-Piping PVC lining.

Key Outcomes (Benefits)

1. The short-term benefit aligns with the IRL CCMP and is to reduce the density of septic systems in the IRL watershed. Reducing the use of septic system infrastructure will also reduce nutrient and other pollutant loads, caused by aging and failing septic systems. In addition, the Cured-in-Place PVC lining will seal and restore the sewer pipes' infrastructure, and eliminate the risk of untreated sewage from entering the IRL.
2. The medium-term benefit is continued reduction of septic system density, and reduction in nutrient and pollutant loads discharges into the IRL caused by aging and failing septic systems and wastewater infrastructure, therefore increasing the water quality in the IRL.
3. The long-term benefit is an improvement to the health of the IRL as pollutant loads, caused in part by failing septic systems, are drastically reduced. Lining the pipes will eliminate sewer seepage to groundwater and the IRL, and improve public and environmental health conditions for residents, tourists, avian and aquatic animals. This project will contribute to the broader collaborative effort to remove the IRL from the Impaired Waters list.

[1] Wakulla County Septic Tank Study, Task 2-Evaluate the Ground Water Flow Pathway from the Woodville Area (floridadep.gov)
[2] The Groundwater Project, 7.3 Phosphorus Fate – Septic System Impacts on Groundwater Quality (gw-project.org)

CATEGORY 2: HABITAT RESTORATION										Funding Amount	Category Total Remaining
Rank	Applicant	Project	Requested Funding	Cost Share Match	Match %	Total Project Cost	Score	Above 70%?	Eligible ?		$100,000.00
1	Florida Oceanographic Society	Optimizing Syringodium filiforme (manatee grass) production factors in a subtropical seagrass nursery for restoration applications	$15,783	$26,896	63	$42,679	190	87%	Y	$15,783	$84,217
2	City of Stuart	SE Illinois Avenue Living Shoreline Project	$90,000	$90,000	50	$180,000	159	72%	Y	$84,217	$0

Title of Project	Optimizing *Syringodium filiforme* (manatee grass) production factors in a subtropical seagrass nursery for restoration applications
Lead Organization and Partners:	Florida Oceanographic Society (lead), University of Florida
Project Location:	Florida Oceanographic Society (FOS), 27°12'56.2"N, 80°10'43.2"W
Key CCMP Vital Sign(s):	Seagrasses, biodiversity, science, technology, and innovation, monitoring and data sharing, wastewater
IRLNEP Contribution and Source:	$15,783
Match:	FOS- $10,649 (25 %), UF- $16,250 (38 %) = 63 % total
Total Project Cost:	$42,681

Project Description

Recent declines of valuable seagrass ecosystems in the Indian River Lagoon (IRL) have necessitated restoration as a component of returning lost acreage. *Syringodium filiforme* (manatee grass) is not commonly used as stock in seagrass restoration, possibly due to a practical preference for *Halodule wrightii* (shoal grass) by restoration practitioners, but it may have important applications in future efforts. To our knowledge, there are limited resources detailing methods to grow *S. filiforme* in a nursery setting and few available sources of the plant outside of harvesting declining natural beds. To increase the availability of *S. filiforme* for use in restoration activities, multiple planting methods will be tested in nursery based mesocosm studies, which aim to tease apart the drivers of successful *S. filiforme* propagation and growth. We will quantify *S. filiforme* growth under various biomass assemblage, nutrient, and sediment treatments, which will increase our knowledge on successful propagation techniques. In general, the first study will compare survival and growth of planting units after plant division in different substrates (coarse vs. fine sand). The second study will test the effects of fertilizers (Osmocote, a common fertilizer, and struvite, a wastewater derived fertilizer) to determine the effect of nutrient addition on *S. filiforme* development. This work will culminate in a planting guide which will form the foundation for nursery propagation of *S. filiforme*. The experiments will not directly increase seagrass acreage in the IRL, but the knowledge gathered from studying nursery grown *S. filiforme* will be valuable to restoration practitioners locally and globally.

Key Outputs and Outcomes

Multiple key outputs and outcomes will be synthesized from the results of this project. Firstly, a nursery planting guide for *S. filiforme* will be published (*short-term outcome*). To our knowledge, this would be the first nursery related planting guide for *S. filiforme,* an important seagrass species in the IRL. Additionally, 1-2 peer reviewed scientific publications will be prepared that will disseminate additional study insights potentially applicable to future efforts (*short-term outcome*). The effects of nutrient addition, particularly struvite, a wastewater derived fertilizer, will be tested for nursery applications, which may increase the growth of *S. filiforme*. If successful, struvite could be applied to nursery environments to improve growth (*medium-term outcome*). If widely adopted, wastewater treatment plants could integrate struvite as a component of advanced wastewater treatment strategies, providing a locally sourced, sustainable fertilizer that could reduce nutrient loads into the IRL (*long-term outcome*). Finally, optimizing and standardizing *S. filiforme* nursery growing techniques will likely increase the stock of the species for restoration applications and increase the biodiversity of seagrass restoration efforts (*medium- to long-term outcome*).

Executive Summary

Title of Project	SE Illinois Avenue Living Shoreline Project
Lead Organization and Partners:	City of Stuart, Marc Rogolino – Utilities & Engineering Project Manager
Project Location:	The project is located at the north end of SE Illinois Avenue in Stuart, Fl Latitude 27°11'57.81"N, Longitude 80°14'42.70"W
Key CCMP Vital Signs(s)	Living Shorelines, Impaired Waters, and Stormwater
IRLNEP Contribution and Source:	$85,000 Previous Award + New request $90,000 = Total $175,000
Partner Match:	$175,000
Total Project Cost:	$350,000

Project Description:

The project is in the City of Stuart, Florida, in the St. Lucie River drainage basin. With this project, a Living Shoreline will be installed to protect against erosion and to provide habitat for marine species and wading birds. The Living Shoreline plantings will also provide nutrient removal from the existing stormwater discharge entering the river at this location. A Buffered Shoreline will be constructed at the north end of SE Illinois Avenue to provide filtration for stormwater runoff from the northern portion of the SE Illinois Avenue right-of-way and adjacent properties. The project is important for the City of Stuart to continue progress towards resiliency and meeting BMAP requirements for the St. Lucie River. The conceptual design of this project is complete, and the project is underway. Indian River Lagoon Council has previously awarded $85,000 for this project. We are seeking an additional $90,000 to address increases in construction costs for equipment, materials, and labor. The City is aware that no funds awarded as a result of this application can be expended prior to October 1, 2023.

Map and Photo(s):

As instructed, a Project Location Map and Photo are attached to this application.

Key Outputs (Deliverables):

Living Shorelines-1: RESEARCH and REPORT science-based siting, planning, design, and construction criteria.
Living Shorelines-3: RESEARCH and REPORT on living shoreline information.
Impaired Waters-2: Work with BMAP Partners and DEP to support implementation of BMAPs and track progress, compliance, and implementation challenges.
Stormwater-5: Upgrade existing urban and agricultural stormwater infrastructure networks to reduce freshwater discharges, nutrient loads, and other pollutants to the IRL.

Key Outputs Benefits:

Short term (1-2 years): This project will also serve as a model project for future Living Shoreline projects within the City of Stuart and is part of the City of Stuart's continuing effort to implement strategies to improve the quality of runoff entering the St. Lucie River and to advance toward BMAP goals.
Medium-term (3-4 years): Continuing to provide erosion protection, and restoring natural shoreline habitat, and to serve as a model project for future City of Stuart Living Shoreline projects.
Long-term (5-10+ years): Continuing to provide erosion control benefits and provide shoreline habitat, in addition to serving as a model project for other City of Stuart Living Shoreline projects.

CATEGORY 4: SCIENCE AND INNOVATION										Funding Amount	Category Total Remaining
Rank	Applicant	Project	Requested Funding	Cost Share Match	Match %	Total Project Cost	Score	Above 70%?	Eligible?		$100,000.00
1	Florida Institute of Technology	Suffocating Sand: Mapping Hypoxia and its Impacts on Benthic Nutrient Fluxes in the IRL, Phase II.	$74,986.00	$71,725.00	49%	$146,711.00	187	85%	Y	$74,986.00	$25,014.00
2	Mote Marine Lab	Using genetic tools to boost seagrass restoration success in the Indian River Lagoon.	$99,847.00	$51,006.00	34%	$150,853.00	185.5	84%	Y		
3	Florida Oceanographic Society	Building ecosystem services: Can stormwater infrastructure be managed to improve water quality for the Indian River Lagoon?	$29,122.00	$92,871.00	76%	$121,993.00	183.8	84%	Y		
4	University of Central Florida	Heavy Metal Uptake by Mangroves and Marsh Grass Used in the Indian River Lagoon for Living Shoreline Stabilization.	$60,312.00	$20,897.00	26%	$81,209.00	177.33	81%	Y		
5	Brevard Zoo	Restore Our Shores: An Evaluation of the Health & Reproductive Status of Oysters in the Indian River Lagoon to Improve Native Oyster Populations.	$25,002.00	$28,687.00	53%	$53,689.00	177.25	81%	Y		
6	University of Auburn	Utilizing Unmanned Aerial Systems to Monitor Water Movement and Harmful Algal Blooms.	$50,992.00	$16,999.00	25%	$67,991.00	175.1	80%	Y		
7	University of Florida	Sediment matters: Linking field-measured living shoreline plantings, sediment type, and wave energy for optimal sediment trapping with Spartina alterniflora (Smooth cordgrass).	$99,912.00	$54,914.00	36%	$154,826.00	168.4	77%	Y		

CATEGORY 4: SCIENCE AND INNOVATION										Funding Amount	Category Total Remaining
Rank	**Applicant**	**Project**	**Requested Funding**	**Cost Share Match**	**Match %**	**Total Project Cost**	**Score**	**Above 70%?**	**Eligible?**		**$100,000.00**
8	City of Satellite Beach	Satellite Beach Manatee Warm Water Management Feasibility Study.	$20,000.00	$115,000.00	85%	$135,000.00	131.5	60%	N		
9	Martin County	Martin County Long-Term Water Quality Monitoring Program.	$100,000.00	$100,000.00	50%	$200,000.00	124.5	57%	N		
10	Florida Institute of Technology	Artificial Intelligence (AI) Based Data Assimilation for Prediction of Algal Bloom in IRL.	$65,452.00	$21,852.00	25%	$87,304.00	113.5	52%	N		

Title of Project	**Suffocating Sand: Mapping Hypoxia and its Impacts on Benthic Nutrient Fluxes in the IRL, Phase II**
Lead Organization and Partners:	**Lead Organization**: Florida Tech (Austin Fox Ph.D). **Partners:** Brevard County Department of Natural Resources (V. Barker), Brevard Zoo (A. Rearden), Cocoa Beach (K. Mack), Satellite Beach (N. Sanzone)
Project Location	This project will be carried out in the IRL/BRL between the Eau Gallie and the Cocoa Beach causeways (Figure ES1, Attachment A). Project centered at 28˚17'50"N, -80˚38'25"W.
Key CCMP Vital Signs:	Legacy Loads and Healthy Sediments, Filter Feeders, Harmful Algal Blooms, 21st Century Communities, Monitoring, Science & Technology Innovation
IRLNEP Contribution and Source:	$ 74,987, IRL Council
Partner Match:	$12,000 (FIT) + $59,725 (Brevard County) = (48% of total)
Total Project Cost:	$ 146,711.16

Project Description:

Hypoxia and hydrogen sulfide impact nutrient cycling, eutrophication, loss of ecosystem services plus virtually all restoration activities, yet, few data are available to quantify the extent of IRL hypoxia or the distribution of sediment sulfide. Year 1 identified widespread hypoxia in bottom water and raised questions about the distribution of sediment sulfide, which in other estuaries has been linked to large-scale losses of seagrasses, mortality of benthic fauna and inhibited nitrogen removal. Using a relatively low-cost network of continuous monitoring stations we will track the extent, duration and movement of bottom water dissolved oxygen (DO) adding measurements of sediment sulfide. Impacts of variable DO and sediment sulfide on nutrient fluxes will be determined using benthic flux chambers located as sites where DO and sulfide monitoring are carried out. This study will focus on degraded areas between the Eau Gallie and Cocoa Beach Causeways, supporting listed water quality monitoring efforts (nutrient and DO) within the Central IRL and Banana River BMAPs (WBID 2963C). This study will leverage and build upon partner and cost-share projects and will use collective datasets to evaluate trends for DO and sulfide against variations in lagoon morphology, muck distribution and circulation patterns. These synergistic efforts plus high-resolution data and interpretations will help project partners and other stakeholders to better select restoration sites with higher probabilities of success towards survival and nutrient removal. Improved outcomes promote greater coastal resilience and improved water quality while addressing the IRLNEP 2024 priorities, action items and the 2030 CCMP priority areas.

Key Outputs (Deliverables):

Publicly available datasets for DO, reports showing the extent and duration of hypoxia plus benthic fluxes of N and P and sediment sulfide in relation to lagoon morphology and bottom composition.

Key Outcomes (Benefits to the IRL):

Short term: Quantifying the extent and duration of hypoxia in IRL sub-basins over a multi-year period. Quantifying impacts of hypoxia and sulfide on nutrient cycling. **Medium term:** Enhanced site selection for restoration (e.g., determination of HSI) by project partners plus other stakeholders and developing mechanisms and metrics to track the success and benefits of restoration projects towards nutrient removal. **Long term:** Improved water, sediment and habitat quality resulting from informed placement and enhanced success of restoration projects. Science-based management tools that will help managers select restoration projects based on potential for success at specific sites in the IRL.

Title of Project	Using genetic tools to boost seagrass restoration success in the Indian River Lagoon
Lead Organization and Partners	Mote Marine Laboratory, University of Florida, Florida Oceanographic Society; FAU Harbor Branch Oceanographic Institute
Project Location	Mosquito Lagoon (28.86851, – 80.83648), Parish Park (28.62508, – 80.79303), Wabasso Causeway (27.75442, – 80.42804), Oslo Road (27.58686, – 80.36506), Harbor Branch (27.53131, – 80.34844), Bear Point (27.42942, – 80.2817), Herman Cove (27.30844, – 80.22234).
CCMP Vital Signs	Seagrasses; Impaired Waters; Harmful Algal Blooms; Climate Ready Estuaries; Monitoring and Data; Science, Technology, and Innovation; Biodiversity.
IRLNEP Contribution	$99,847.27
Partner Match	Mote: $44,810.80 (30%); UF: $6,195 (4%)
Total Project Cost	$150,853.07

Project Description: Seagrasses, which were historically widespread in the Indian River Lagoon (IRL), are currently declining. While seagrass restoration yields improved water quality, habitat, and protection from storms, environmental stress limits seagrass restoration success. With temperate seagrass species, maximizing genetic diversity is an established tool for increasing seagrass restoration success, resilience, and ecosystem functions. Recently, researchers also found that pre-exposing seagrasses to mild stress (i.e., priming) yields epigenetic adaptations that improve seagrass stress tolerance, providing an additional mechanism for potentially increasing restoration success.

Seagrass restoration in the IRL relies on donor material from seagrass nurseries. However, these nurseries lack information on the current genetics of their stock. In 2018, genetic analysis of the Florida Oceanographic Society seagrass nursery revealed unexpectedly low diversity, and we hypothesize that consistently favorable nursery conditions may lead to competitive exclusion, thereby reducing diversity and subsequent resilience. We will further investigate the current genetic diversity of multiple nurseries and test methods for maintaining diversity in nurseries.

This project will analyze the genetic diversity of seagrass donor material, the genetic diversity of natural seagrass meadows in the IRL, and novel tools for improving seagrass restoration success. Specifically, we will test whether applying disturbances in the nursery setting helps maintain genetic diversity and the relative impacts of priming and genetic diversity on seagrass stability. Results will provide practitioners and managers with science-based solutions to common issues with seagrass restoration.

Key Outputs (Deliverables): (1) Genotype *Halodule wrightii* in nurseries, (2) Genotype *H. wrightii* throughout the IRL, (3) Analyze whether disturbances promote maintenance of genetic diversity, (4) Analyze how genetic diversity impacts *H. wrightii* stability, (5) Analyze how low-light priming impacts *H. wrightii* stability, (6) Form new seagrass restoration research partnerships.

Key Outcomes (Benefits to the IRL): Short-term: Provide practitioners and managers with information on seagrass genetic diversity and novel restoration techniques for increasing seagrass stability and genetic diversity, with results informing seagrass nursery practices, restoration methods, and management plans. Mid-term: Incorporation of results into seagrass management and restoration. Long-term: Increased seagrass restoration success and associated ecosystem. These services include enhanced water quality (less *Impaired Waters*, fewer *Harmful Algal Blooms*, increased *Seagrass*), nutrient cycling, erosion control, carbon sequestration, and habitat and resources for endangered species and fishery species (supporting *Biodiversity*).

EXECUTIVE SUMMARY

Title of Project	**Building ecosystem services: Can stormwater infrastructure be managed to improve water quality for the Indian River Lagoon? (Category 4 Science and Innovation Proposal)**
Lead Organization and Partners:	**Lead Organization:** Florida Oceanographic Society, *Loraé T. Simpson, Ph.D.,* **Project Partner:** UF Whitney Lab for Marine Bioscience, *Todd Z. Osborne, Ph.D.*
Project Location:	St. Lucie and Martin Counties, between the Fort Pierce Inlet (27.471107°, -80.292251°) and St. Lucie Inlet (27. 165179°, -80.157845°)
Key CCMP Vital Sign(s):	Impaired waters, stormwater, hydrology and hydrodynamics, connected waters and watersheds, and monitoring and data sharing
IRLNEP Contribution and Source:	$29,122; IRL Council
Partner Match:	$12,860 (FOS, 10 %) + $80,000 (UF, 66 %) = $ 92,871 total (76 %)
Total Project Cost:	$121,993

Project Description: The overarching objective of this proposal is to assess the nutrient removal capacity of roadside ditches in the Indian River Lagoon (IRL) watershed as these human created drainage networks are potential hotspots for nutrient processing that may improve **stormwater** quality. We will measure the nitrogen removal capacity of roadside ditches along a vegetation management gradient (vegetation maintenance from unmanaged to managed) to inform best management practices for nutrient reduction in stormwater. This study will provide a baseline assessment of roadside ditch nutrient removal potential for stormwater quality improvement in the IRL watershed and inform best management practices to enhance nutrient removal in existing stormwater infrastructure, supporting the CCMP priority of **science that supports restoration of water quality**.

Key Outputs: Deliverables will include 1) evaluation of nutrient storage and retention of ditch management scenarios along the IRL and 2) a management guidance document recommending improved mechanisms for nitrogen abatement in stormwater.

Key Outcomes: 1) Baseline quantification of the nitrogen removal capacity of roadside ditches, a widespread but understudied form of stormwater infrastructure (*short-term benefit*), 2) quantification of differences in nutrient retention between wet and dry seasons (*mid- to long-term goal*), and 3) recommendation of management strategies that promote improvement of runoff water quality, specifically by quantifying nitrogen removal rates across a range of vegetation composition and management types (l*ong-term benefit*).

EXECUTIVE SUMMARY

Title of Project: Category 4 Science and Innovation Proposal: Heavy Metal Uptake by Mangroves and Marsh Grass Used in the Indian River Lagoon for Living Shoreline Stabilization	
Lead Organization & Partners:	University of Central Florida
Project Location:	Mosquito Lagoon (28°54'24"N, 80°49'16"W)
Key CCMP Vital Sign(s):	**ONE LAGOON;** Water Quality: Contaminants of Concern, Wastewater; Habitat Quality: Living Shorelines; **ONE COMMUNITY:** Trash-Free Waters; **ONE VOICE:** Monitoring and Data Sharing
IRLNEP Contribution & Source:	$60,312; IRL Council
Partner Match:	$20,897 from UCF (25.73%)
Total Project Cost:	$81,209

Project Description: Many estuarine restoration projects, including in the Indian River Lagoon (IRL), use mangroves and marsh grass to stabilize sediments, sequester nutrients, enhance fisheries, and provide habitat for threatened/endangered species. For this proposal, we will determine the potential for these shoreline plants to undertake an additional critical ecosystem service (i.e., uptake of heavy metals) and thus become strategic for biomonitoring IRL health. Phytoremediation occurs when plants remove, degrade, or stabilize undesirable substances from the surrounding water or sediment. Some plants (e.g., sunflowers) accumulate extremely high levels of heavy metals, a phenomenon known as hyperaccumulation. To date, metal accumulation (e.g., lead, nickel, zinc) is an unquantified, potential ecosystem service of *Rhizophora mangle* (red mangrove), *Avicennia germinans* (black mangrove), *Laguncularia racemosa* (white mangrove), and *Sporobolus alterniflorus* (smooth cordgrass) in the IRL. This large information gap is primarily due to logistical and financial constraints preventing rapid, accurate heavy metal quantification in the field. X-ray fluorescence (XRF) is a new, exciting, innovative technique championed by co-PI Goolsby that will allow us to collect this urgently needed data for the first time. Our goal is to combine this cutting-edge technology with IRL restoration efforts by co-PIs Walters/Donnelly over the past decade to: 1) understand uptake potential and impact of heavy metals on survival and growth of estuarine plants in controlled, dose-response curve mesocosm studies, 2) examine heavy metal uptake in plants deployed for restoration versus naturally recruited plants, and 3) assess the utility of estuarine plants as biomonitors for detecting metal sequestration in the IRL.

Key Outputs (Deliverables): **1**: Novel chemical analysis methodology to determine heavy metal uptake potential by plants (mangroves, marsh grass) used in IRL estuarine restoration under mesocosm and field conditions. **2**: Dissemination of research findings through 2 peer-reviewed publications. **3**: Quarterly/final reports.

Key Outcomes (Benefits to the IRL): **Deliverable 1: Short,** identification of heavy metal uptake by plants used in shoreline stabilization projects in the IRL through mesocosm and field data collection; **Mid,** data-informed restoration in the IRL; **Long,** large-scale adoption of plants that are best suited for heavy metal uptake in all estuaries. **Deliverable 2: Short,** dissemination of results to scientific community; **Mid,** data-informed restoration projects in the IRL; **Long,** improved quality of water, sediments, and restored habitats. **Deliverable 3: Short,** Communication of results and progress to IRLNEP; **Mid,** New knowledge base for IRLNEP management decisions and prioritization; **Long-term Outcome:** Fuel for additional research by others about heavy metal uptake by plants used for restoration/stabilization efforts around the globe.

Title of Project:	Restore Our Shores: An Evaluation of the Health & Reproductive Status of Oysters in the Indian River Lagoon to Improve Native Oyster Populations
Lead Organization and Partners:	**Lead**: East Coast Zoological Society of Florida d/b/a Brevard Zoo (ECZS) Contact: Luke Dumas, 8225 N Wickham Rd, Melbourne, FL 32940, 321-354-9453 ext. 508, LDumas@brevardzoo.org **Partners**: Dr. Nicole I. Stacy, DVM, Dr.Med.Vet., University of Florida
Project Location:	Monthly spat collections will be taken at 15 sites focusing on the central and northern portions of the Indian River Lagoon from Sebastian River north to the 520 causeway, and the Banana River Lagoon from Dragon Point north to the 528 causeway. In-depth physical and histological monitoring and sampling will be taken at 4 of the 15 sites mentioned above.
Key CCMP Vital Sign(s):	"Impaired Waters" (Level 1: Critical); "Filter Feeders" (Level 2: Serious); "Science & Technology Innovation" (Level 3: Undetermined)
IRLNEP Contribution and Source:	$25,002.05 IRL Council
Partner Match:	ECZS - $10,111.05 (19%) Dr. Nicole Stacy, DVM - $18,576 (35%)
Total Project Cost:	$53,689.10

Project Description:

East Coast Zoological Society of Florida (ECZS) will impact regional efforts to address water quality and filter feeder habitat loss by monitoring 15 sites throughout the Brevard County portion of the Indian River Lagoon (IRL) and determining which are successfully producing oyster larvae, while also studying oyster reproductive health and potential issues through the collection and analysis of samples for histology, condition index, and histology. This survey will improve the efficiency and effectiveness of future oyster restoration projects.

Map and Photo(s):

Please see attached.

Key Outputs (Deliverables):

- Spat monitoring conducted monthly at 15 sites.
- Monthly collection of 20 oysters from 4 sites for histological, hemolymphatic, and condition index analysis.
- Final report of findings/best practices for site selection, submission of project results to 2 peer-reviewed journals for publication to guide future oyster restoration decisions.

Key Outcomes (Benefits to the IRL):

- Short-Term (1-2 years):
  - Increased knowledge on the presence/absence of oyster spat in Brevard County.
  - Increased knowledge of reproductive health of oyster populations in Brevard and improved hatchery relationships related to the production of spat.
  - Increased knowledge on effective site selection for oyster reefs in Brevard.
- Medium-Term (3-4 years):
  - Higher efficiency of oyster restoration work conducted in Brevard.
  - Increased oyster populations.
- Long-Term (5-10+ years):
  - Reestablishment of oyster reefs throughout the Brevard portion of the IRL.
  - Reduction of anthropogenic pollutant and nutrient loading in the IRL within Brevard.
  - Increased long-term success of oyster restoration within Brevard.

Title of Project	Utilizing Unmanned Aerial Systems to Monitor Water Movement and Harmful Algal Blooms
Lead Organization and Partners:	Auburn University, Theiss Research, Florida Atlantic University
Project Location	North Indian River Lagoon: 80°48'29"W, 28°43'56"N; Banana River Lagoon: 80°38'31"W, 28°23'8"N.
Key CCMP Vital Sign(s)	Science and Innovation; Harmful Algal Blooms; Hydrology
IRLNEP Contribution and Source	$50,992.07, IRL Council
Partner Match:	$16,999.00 (25%)
Total Project Cost:	$67,991.07

Project Description:

Recurring Harmful Algal Blooms (HABs) have plagued the Indian River Lagoon (IRL) for decades. Efforts to monitor the IRL for HAB occurrence can be time consuming, costly, and hindered by environmental factors that limit data collection opportunities. Modeling the circulation patterns and transport of HABs using hydrodynamic models of the IRL can significantly improve monitoring efforts, but also depend on accurate observational data for model calibration and validation. This project pairs advanced geospatial technologies with numerical analysis to enhance HAB detection, mapping, and hydrodynamic models by leveraging a suite a sensors and associated data collected by Unmanned Aerial Vehicles (UAVs or drones). The project will provide actionable insights into HAB extent and transport in the IRL using multispectral image analysis and increase the accuracy of circulation models with high resolution measurements of direction and velocity in data sparse IRL locations.

Key Outputs (Deliverables):

The project will result in two peer-reviewed publications documenting the results of the proposed monitoring and modeling approaches. A final report and detailed methodological framework will be provided to the IRL. High resolution observational imagery of HAB extent, shoreline conditions within the study area, and current velocity and direction information for integration into circulation models will also be generated.

Key Outcomes (Benefits):

Short Term: improved data collection and analysis techniques to detect and map HAB occurrence and extent in the IRL; generalizable relationship between HAB multispectral UAV data and in-situ HAB abundance measurements; observational data and measurement techniques to derive velocity and direction of currents in data sparse IRL locations.

Medium Term: Improved understanding of the relationship between water circulation patterns and HAB transport and distribution in the IRL; improvement to IRL circulation models

Long Term: improved data on water circulation and HAB monitoring will allow for improvements in the long-term prediction of HAB movement using hydrodynamic and transport models.

EXECUTIVE SUMMARY: IRLNEP FY 2024 PROPOSAL APPLICATION

Title of Project	Sediment matters: Linking field-measured living shoreline plantings, sediment type, and wave energy for optimal sediment trapping with *Spartina alterniflora* (Smooth cordgrass)
Lead Organization and Partners:	University of Florida, FL SeaGrant, logistic support from FL Fish and Wildlife Commission (FWC) and FL Dept of Environmental Protection (FDEP)
Project Location:	Living Shorelines and natural marshes within the Indian River Lagoon Estuary Program. Potential sites: North Peninsula SPk (29.40959, -81.09899), Marine Discovery Center (29.03639, -80.91800), Edgewater (29.06775, -80.91644), Hog Point Cove (27.99216, -80.52856), Maritime Hammock Sanctuary (27.95652, -80.50287), Driftwood Motel (27.25549, -80.22997), Stuart-Flagler Park (27.20195, -80.25685)).
Key CCMP Vital Sign(s):	Project addresses several priority vital signs, including *Impaired Waters, Seagrass, and Harmful Algal Blooms*), and addresses other vital signs; *Living Shorelines, Climate Ready Estuaries, and Biodiversity*.
IRLNEP Contribution:	$99,912.00
Partner Match:	UF and FL SeaGrant: $54,914.00 (55%)
Total Project Cost:	$154,826.00

Project Description: This project will help identify best management practices for living shoreline (LSL) plantings by identifying planting designs that are appropriate for specific sediment types and wave climates that vary considerably within the IRL. Building on initial work from a 2023 IRLNEP project that revealed the potential influence of sediment type on plant establishment, we will field-measure *Spartina alterniflora* LSLs and observe sediment and wave energy parameters to field test our newly developed model of vegetation trait and planting design impact on LSL goals, particularly sediment trapping. Project locations include LSLs and natural marshes within the boundaries of the Indian River Lagoon National Estuary Program Watershed Boundary and the IRL-Halifax Buffer Planning Boundary (potential sites identified with the FDEP LSL database[1] and the Shoreline Restoration Suitability Model[2], ultimate selection will be guided by FDEP, FWC, and FL SeaGrant partners). Resulting guidance will identify LSL planting designs specific to sediment type and wave energy and will be co-developed and disseminated with practitioners.

Map and Photo(s): Potential LSLs selected for inclusion in this study within the IRL NEP for the field work for this proposal are provided; ultimate selection will be guided by the FDEP LSL database[1], the Shoreline Restoration Suitability Model[2], and with assistance from FDEP, FWC, and FL SeaGrant partners. Photos include field sites and differences in plant traits observed.

Key Outputs (Deliverables): In support of the IRLNEP's CCMP to prioritize LSLs[3], this research will provide best management practices for optimally performing LSLs.

Key Outcomes (Benefits to the IRL): Short term: needed tools to optimally implement LSLs. Medium term: increased sediment trapping, nutrient retention and habitat. Long term: improved water quality (less *Impaired Waters*, fewer *Harmful Algal Blooms*, increased *Seagrass*), improved habitat (for *Biodiversity*), and enhanced function for *Living Shorelines*.

Title of Project	Satellite Beach Manatee Warm Water Management Feasibility Study
Lead Organization and Partners	City of Satellite Beach, US Fish and Wildlife Services, Florida Fish and Wildlife Commission
Project Location	Desoto finger Canal running north and south, Desoto main canal running east and west, coordinates 28.16429 N, 80.60275 W
Key CCMP Vital Signs	Science and Technology, Species of Concern, Hydrology, Impaired Waters
IRLNEP Contribution and Source	$20,000.00, IRL Council
Partner Match	USFWS-$600 in staff time for technical assistance and a request for $70,000 in internal financial assistance is being submitted for 54% of the total project amount; FWC- is seeking $35,000 in internal funding for 23% of the total project amount
Total Project Cost	$130,000.00

Key Outputs (Deliverables): The proposed feasibility study will aid in the way agencies address future permitting on dredging within or adjacent to manatee warm water sites in the Indian River Lagoon. This study may provide better understanding on muck management in congruence with marine mammal conservation. Through science driven and technological approaches such as 2D and 3D modeling this study will look at the hydrology of the canals used by manatees for winter refuge. State and federal agencies will be able to address the importance of localized landscapes as part of the species protection plan and species management plan for the West Indian manatee, *Trichechus manatus*.

Key Outcomes (Benefits to the IRL): Short term benefits: ability to discern if dredging and muck removal will improve navigation and capacity for wintering manatees; Medium term benefits: the level of dredged material that will be of value to muck removal without degrading the thermal dynamics of the canal system; Long term benefits: if dredging is recommended then much removal will have an improvement of water quality. The City of Satellite Beach aims to attain and maintain a functioning, healthy ecosystem which supports endangered and threatened species and to achieve coordinated interagency management of the IRL ecosystem. This aligns with the IRLNEP mission of One Lagoon and One Voice. Additionally, the area to the east of the canal will have native vegetation planted along the entire length of the finger canal to aid in the reduction of stormwater runoff into the canal. This is being funded separately and in partnership with ORCA which is partially funded through previous IRL NEP grant funds. This project will tie into the Satellite Beach Aquatic Habitat Restoration project funded by FWC in which several acres of submerged aquatic vegetation will be planted in the Banana River less than 1 mile from the proposed area if study.

EXECUTIVE SUMMARY: (1-page limit)

Title of Project (Montserrat Font)	
Lead Organization and Partners:	Martin County Board of County Commissioners
Project Location	Throughout Martin County (C-44, St. Lucie River/Estuary)
Key CCMP Vital Sign(s):	Impaired Waters, Stormwater and Wastewater, Harmful Algal Blooms, Monitoring and Data, Policy Considerations, Legacy Loads, Wetlands, Filter Feeders, Biodiversity, Distinctive Lagoon Communities, State of the Lagoon
IRLNEP Contribution and	$100,000, IRL Council
Partner Match:	No Partners, $100,000 (50%) from Martin County
Total Project Cost:	$200,000

Project Description:

The proposed project is designed to establish and maintain a long-term water quality monitoring program for nutrients (TN, TKN, NOx, Ortho, TP), physical parameters (DO, turbidity, temperature, salinity, pH), and environmental and weather conditions, as well as tidal stage and seasonality. This program will provide a baseline understanding of the water quality issues throughout the rivers and in the estuarine and coastal areas. One goal of the project is to monitor a network of sites in the St. Lucie River/Estuary and the Loxahatchee River, from Lake Okeechobee to the coral reef tract. Knowledge of these issues will enable the County to plan for future projects. Predicted and expected quantitative benefits include data on urban contributions, such as septic tanks and stormwater contributions to the Indian River Lagoon; agricultural contributions; and legacy loads, as well as policy and project recommendations on Lake Okeechobee releases, land use, stormwater inputs, and the effect of seasonality, rainfall, tides, and weather conditions on water quality.

Key Outputs (Deliverables):

1. **Long-term monitoring of sites** for nutrients (TN, TKN, NOx, Ortho, TP), physical parameters (DO, turbidity, temperature, salinity, pH), environmental and weather conditions, tidal stage and seasonality.
2. **GIS Maps** of sites and nutrient levels/other parameter values of interest
3. **Database** with 2,070 unique samples (estimated) after first year (Phase 1) of the project.
4. **Statistical analysis and recommendations** for policies and projects in Martin County watersheds that contribute to the IRL.

Key Outcomes (Benefits to the IRL): Short-term benefits: data from sample analysis

Long-term:

1. Long-term database of water quality in Martin County.
2. Statistical, temporal, and spatial analysis on effects of seasonality, tidal stage, and weather/environmental conditions on water quality parameters.
3. Recommendations for policies and projects that will provide benefits to infrastructure, public and environmental health, and sustainability.

Executive Summary

Title of Project: Artificial Intelligence (AI) Based Data Assimilation for Prediction of Algal Bloom in IRL	
Lead Organization and Partners:	Florida Institute of Technology
Project Location	28.118488, -80.670372
Key CCMP Vital Sign(s):	Harmful Algal Blooms, Emergency Response, State of the Lagoon, Monitoring and Data, Science and Technology Innovation
IRLNEP Contribution and Source:	$65,452, IRL Council
Partner Match:	$21,852 (25%) Florida Institute of Technology
Total Project Cost:	$87,304

Project Description:

Harmful Algal Blooms (HABs) directly impact the water quality and health of IRL ecosystem and responding to HABs incidents and mitigating their impacts are of the priorities of CCMP. Predicting HABs based on climate and environmental factors improves the readiness to take action and allocate resources in timely fashion to control and mitigate the impacts of HABs on humans, animals, and IRL ecosystem. AI can help us building decision-support tools and technologies for predicting extreme weather events to mitigate and adapt to the impacts of climate change. An AI system will be developed by hierarchical data assimilation in conjunction with Artificial Neural Networks (ANNs) to provide a decision-support system for predicting HABs incident based on climate and water quality factors.

Key Outputs (Deliverables):

The deliverable for this effort will be comprised of three distinct sub-deliverables:

1) Code base for AI/ML model: The code will be in a modern and main stream programming language such as Python, R, or MATLAB using readily available packages or internally written methods or functions or open-source options. The model itself will use state of the art machine learning techniques to output likelihood/likelihood classes for algal blooms in the IRL based on climate and water quality indicators.
2) User Guide: The user guide will provide algorithmic and model information with regards to its construction and use, the type of inputs the user need to supply and the outputs to be expected.
3) Case Study/Application of Model to Indian River Lagoon: The case study will demonstrate via a direct application of the model to the specified region of the IRL, the capabilities of the model to predict HABs incident from the climate and water sensor data. The case study will be in the format of an academic paper with the potential for publication in a peer reviewed journal.

Key Outcomes (Benefits to the IRL):

The benefits of the project are multi-fold.

1) An AI/ML model could provide early warning of HABs incident to the community and potentially allow for early responses to mitigate the fall out to the IRL or allow for protective measures to be taken.
2) The unique construction/architecture of the neural network will add to the diversity of approaches and architectures being developed to analyze time series phenomenology like algal blooms using monitoring infrastructure currently in place.
3) It will automate the analysis of the streaming time series data from multiple sensors operated by multiple organizations providing specifically for algal blooms and provide a template/methodology to replicate in other regions with similar infrastructure in place i.e., weather and water quality sensors that stream data.

RESOLUTION NO. 2023-01

A RESOLUTION OF THE BOARD OF DIRECTORS OF THE IRL COUNCIL ADOPTING THE TENTATIVE BUDGET FOR THE 2024 FISCAL YEAR

WHEREAS, the IRL Council was created via Interlocal Agreement to carry out the goals of the Indian River Lagoon National Estuary Program; and

WHEREAS, the IRL Council held a public hearing to consider the tentative Budget;

NOW, THEREFORE, BE IT RESOLVED BY THE BOARD OF DIRECTORS OF THE IRL COUNCIL, THAT:

Section 1. The Fiscal Year 2024 Tentative Budget is attached as Exhibit "A".

Section 2. The Fiscal Year 2024 Tentative Budget is hereby adopted.

Section 3. This Resolution shall become effective immediately upon passage.

DONE at_____, Florida, this_____day of_____,2023.

By: _____
IRL Council Chair

ATTEST:

_____
IRL Council Secretary

Approved as to legal form and sufficiency:

_____
Glen J. Torcivia
IRL Council, Legal Counsel

IRL Council
FY 2024 Tentative Budget
Exhibit A

REVENUES	
Federal Section 320	$ 800,000
Federal Infrastructure Investment and Jobs Law	$ 909,800
IRL License Plate	$ 125,000
Member Contributions	$1,500,000
TOTAL REVENUES	$3,334,800
EXPENDITURES	
Other Expenditures	$2,481,009
IRL Council Strategic Program, IRLNEP 2024 EPA 320 Work Plan, IRLNEP 2024 Infrastructure Work Plan, Unplanned Contingency Reserve	
Salaries & Benefits	$ 642,386
Facilities Expenses	$ 29,500
Rent, Utilities, Equipment Maintenance, Communications	
Administrative Costs	$ 66,000
Postage, Office Supplies, Insurance, Printing, Travel, Licenses & Subscriptions, Dues, Professional Development	
Administrative Services	$ 115,905
Legal, Accounting, Auditing, IT Services, Legal Ads	
TOTAL EXPENDITURES	$3,334,800
Agency Balance Beginning of Year	$ 0
Fund Balance - Beginning of Year	$ 0
Fund Balance – End of Year	$ 0

FY 2024 Tentative Budget Expenditure Detail (Narrative)

- OTHER EXPENDITURES ($2,481,009)
    1. IRL Council Strategic Program ($700,000) includes the following:
        a. Water Quality Restoration Project(s) - $450,000
        b. Habitat Restoration Project(s) -$100,000
        c. Science and Innovation Project(s) - $100,000
        d. Small grants program - $25,000
        e. IRLNEP Technical Support of Conferences and Workshops - $25,000
    2. IRLNEP FY2024 EPA Workplan ($800,000) includes the following:
        a. Herbicide Impact Study (TOX 3 with SJRWMD) - $100,000
        b. State of the Lagoon Technical Report Y5 - $76,125
        c. Communication Support: Service contracts for web/graphics/design support, scientific and other publications, other contract support as needed, and expanded social media and support for communication intern. Includes service contracts with IDEAS, Brandt Ronat, Firefly, and O'Hara - $117,000
        d. Biodiversity Inventory Contract Y5 - $25,000
        e. Atmospheric Deposition Monitoring Central Station Y5 - $30,000
        f. North and South Atmospheric Deposition Monitoring Stations Operation and Maintenance - $60,000
        g. 3 Community Engagement coordinators (Salary Only) - $196,875
        h. Harmful Algal Bloom Monitoring Contracts - $150,000
        i. EPA Travel (mandatory) - $10,000
        j. CCMP project inventory and prioritization service contract(s) - $15,000
        k. Grant Writing Support - $20,000
    3. IRLNEP FEDERAL INFRASTRUCTURE INVESTMENT AND JOBS LAW Workplan ($909,800)
        a. Underserved and Underrepresented Community Restoration Project(s) - $111,800
        b. Seagrass Nursery Network - $500,000
        c. JEDI Support: Service Contract with Diversity of Thought - $49,000
        d. Stormwater Design and Build (SJRWMD) - $249,000
    4. Unplanned Contingency Reserve - $71,209

- SALARIES AND BENEFITS ($642,386)
    1. Salaries and 35% fringe rate for the Executive Director, Deputy Director, Chief Operating Officer, Administrative Coordinator, and GIS/IT Coordinator.
    2. 35% fringe rate only for the 3 Community engagement coordinators

- FACILITIES EXPENSES ($29,500)
    1. Utilities - $2,500
    2. Rent and Leases - $9,000
    3. Equipment Maintenance - $3,000
    4. Equipment and Communications - $15,000

- ADMINISTRATIVE COSTS ($66,000)
    1. Travel General - $20,000
    2. Postage and Mailing - $1,000
    3. Office Supplies - $5,000
    4. Dues, Licenses, and Subscriptions - $10,000
    5. Printing - $10,000
    6. Insurance - $12,000
    7. Staff Training and Professional Development - $8,000

- ADMINISTRATIVE SERVICES ($115,905)
    1. Legal - $65,000
    2. Accounting - $28,500
    3. Auditing - $19,405
    4. IT Services and Compliance - $2,500
    5. Legal Ads - $500