STATE OF FLORIDA

FY2021 SECTION 319(h) GRANT WORK PLAN

Submitted September 2020

Florida Department of Environmental Protection (Department)
Division of Water Restoration Assistance (DWRA)
Nonpoint Source Management Program (NPS)
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Table of Contents

INTRODUCTION TO FLORIDA'S FY2021 SECTION 319(h) WORKPLAN 3
PROGRAM PROJECTS 4
Outcomes for DEP Administrative Projects (Projects 1 & 2) 6
WATERSHED PROJECTS 6
Outputs for all Local Grantee Recipients (Project #s: 3-14) 6
Outcomes for all Local Grantee Recipients (Project #s: 3-14) 7
TABLE 1. FY21 Grant Funding Request, Project Selection- Program Projects 7
TABLE 2. FY21 Grant Funding Request, Project Selection -Watershed 8
FLORIDA'S FY2021 SECTION 319(h) Workplan 10
PROJECT 1: NPS/Watershed Program Administration 10
PROJECT 2: Bioassessment Development and Quality Assurance 13
PROJECT 3: Living Shorelines Training for Marine Contractors 15
PROJECT 4: Integrating Educational and Research Activities to Promote Stormwater Pond Plantings as a BMP 18
PROJECT 5: W Linger Longer Road Sediment Reduction Project 24
PROJECT 6: Continued Expansion and Sustainability of the Florida-Friendly Landscaping ™ Program to Protect Water Quality From Stormwater Runoff and Nonpoint Souce Pollution 28
PROJECT 7: Burris Way Stormwater LID Improvement 37
PROJECT 8: St. Lucie River/C-23 Water Quality Project– Areas 5 and 6 40
PROJECT 9: Veteran's Park Green Infrastructure Installation 43
PROJECT 10: Martin County Connect to Protect Septic to Sewer Conversion Nutrient Removal Program 46
PROJECT 11: Haines City Stormwater Quality Improvements 49
PROJECT 12: E. Longwood Phase IV 53
PROJECT 13: Blue Spring Nutrient Reduction Septic to Sewer Project - East Graves/Holly Ave and Community Redevelopment Area 56
PROJECT 14: Florida Stakeholder Watershed BMAP Implementation Placeholder Project 59

INTRODUCTION TO FLORIDA'S FY2021 SECTION 319(h) WORKPLAN

This FY2021 Section 319(h) Draft Work Plan consists of 14 projects that were selected for Section 319 grant funding. In the fall of 2019 and spring of 2020, grant solicitation packages were sent out statewide and placed upon the Department's website. Department staff reviewed and evaluated the 43 proposals submitted. Projects were prioritized for grant funding using the Project Evaluation Criteria included in the grant solicitation package. The selected projects were then presented to the DWRA's senior managers for final funding approval.

The selected projects contribute to the implementation of the Department's NPS Management Plan. There are two Department program projects and three projects with local government entities under the Program Funding category.

- The two Department program projects are the NPS, Total Maximum Daily Load (TMDL) and Basin Management Action Plan (BMAP) Administration activities and the Bioassessment program. Section 1 of the NPS Management Plan describes the TMDL and BMAP watershed assessment and restoration processes, Section 2 of the NPS Management Plan describes the NPS Grant and Funding Administrative activities and Section 10 of the Plan describes the bioassessment program activities.
- Program Funding will be assigned to two education projects, one focusing on living shoreline education and one focusing on stormwater pond planting education.
- Program Funding will be assigned to a sediment reduction through stabilization project.

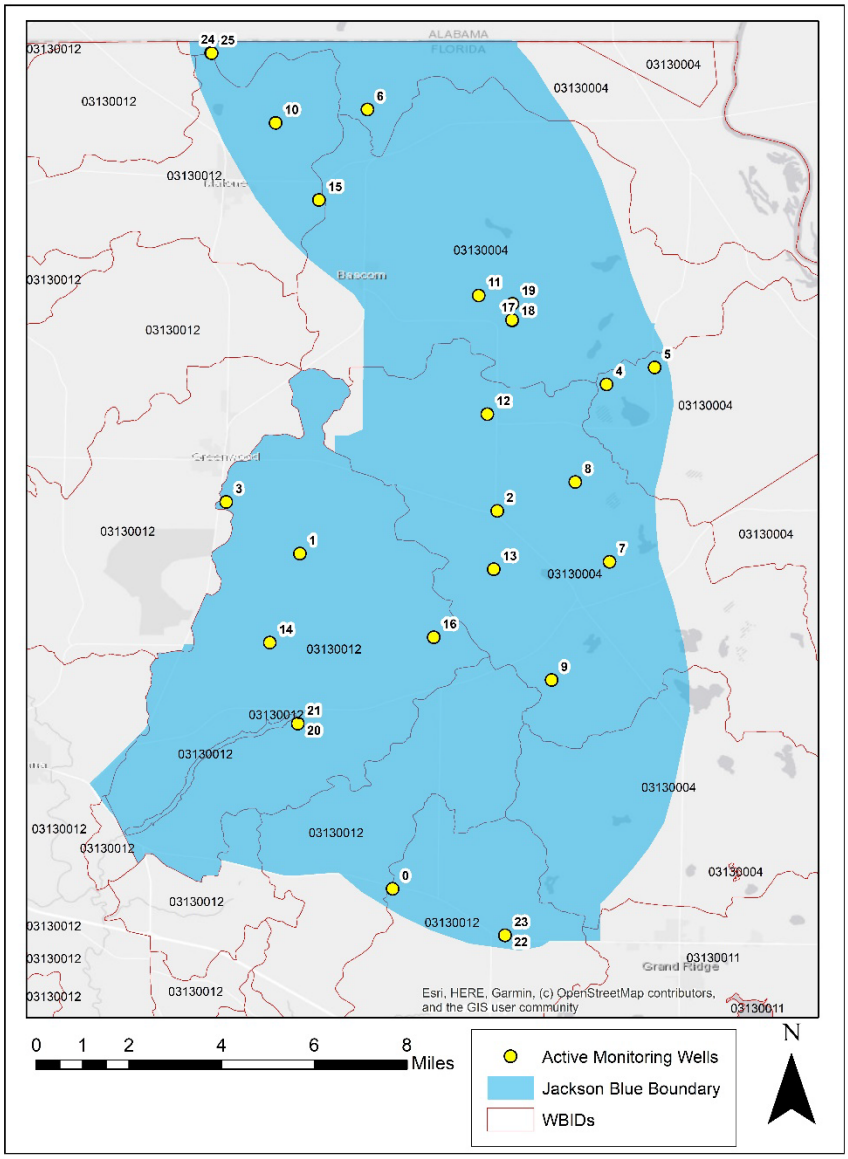
There are 9 projects with other government entities, local and state level, under the Watershed funding category. All of the watershed projects address nonpoint source pollution in priority BMAP areas identified in the 2015 NPS Management Plan.

- Four of the workplan projects are targeted at reducing nutrients from urban stormwater which is identified in the Plan as a high priority for the Department.
- There is one agriculture BMP project under the Watershed funding category.
- There are three septic to sewer projects abandoning septic tanks in their respective areas.
- There is one placeholder Watershed funding project that will be allocated towards a local government implementing an eligible project at a later date.

The specific references on how the projects are linked to the NPS Management Plan are provided in Table 1.

NATIONAL WATER QUALITY INITATIVE

The Department continues to work with the National Resource Conservation Service (NRCS) on the National Water Quality Initiative (NWQI). For the July 2020 NWQI submissions, the decision was finalized to move forward with the Jackson Blue Spring watershed. There are plans to submit the Wacissa Spring watershed for the next round. The Department is not requesting funding at this time for the NWQI but DEP staff coordinates with NRCS on the NWQI watershed selection and monitoring activities.



Jackson Blue Watershed

PROGRAM PROJECTS

Over the past 25+ years, the state has implemented a wide variety of nonpoint source management programs involving numerous state agencies, the water management districts, and local governments. These programs include non-regulatory and regulatory components, technical assistance, education, technology transfer, extensive interagency coordination and monitoring. The programs include both surface water and groundwater elements.

The Department's FY2021 program undertakes projects that will increase the environmental effectiveness of our NPS programs, expand our knowledge about the potential effects of various nonpoint sources on ground and surface waters, and expand our knowledge about the effectiveness of Best Management Practices (BMPs) in protecting ground and surface waters.

The projects described in this section of the Work Plan for program funding provide for:

- Administration of the program and management of selected sub-grantee projects;
- Development and Implementation of TMDLs and BMAPs;
- Improvement to the state's surface water NPS bioassessment program;

Project 1, NPS/Watershed Program Administration. Support of the Nonpoint Source Management Section includes managing the restoration contracts associated with the program and watershed funding, overseeing the NWQI program, and additional tasks such as updating the EPA Grants Reporting Tracking System. This funding provides support for staff, travel, and other expenses that are otherwise unavailable. In addition, the Division of Environmental Assistance and Restoration (DEAR) staff coordinates with state, regional, and local governmental agencies, local watershed groups, and nongovernmental organizations and other interested stakeholders to develop and implement Total Maximum Daily Loads, Basin Management Action Plans, and Reasonable Assurance Plans (9-Element Watershed Plans). This project addresses activities identified in Section 1 and 2 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Project 2, Bioassessment Program. The responsibility for monitoring the condition of Florida's surface and ground water resources lies with the Department and its restoration partners, including the Water Management Districts (WMDs) and local governments. The Department has developed biological monitoring tools and associated quality assurance (QA) for more than 25 years. The Department currently uses the Stream Condition Index (SCI), Habitat Assessment (HA), Lake Vegetation Index (LVI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) to determine biological impairment due to nonpoint source pollution of nutrients, sediment, metals, and other pollutants. These biological assessment methods are included in Florida's Water Quality Standards and Impaired Waters Rules (62-302 and 62-303, Florida Administrative Code). This project is designed to increase our ability to monitor and assess the effects of NPS pollutants, the effectiveness of BMPs, and the effectiveness of the NPS management program. This project addresses activities identified in Section 10 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Project 3, Living Shorelines Training for Marine Contractors. This project will reduce nonpoint source pollution through education of marine contractors to implement best management practices for green infrastructure (i.e., living shorelines). Training will be provided to marine contractors in 12 target cities throughout all regions of Florida, with the goal of increasing the number of professionals statewide who can install living shorelines to meet the increasing demand as property owners become more aware of this option. This project addresses activities identified in Section 1 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Project 4, Integrating Educational and Research Activities to Promote Stormwater Pond Plantings as a BMP. This project integrates educational workshops/site visits, surveys, and water quality monitoring to promote shoreline and aquatic plantings of stormwater ponds (SWPs). SWPs used in this project will have either turfgrass banks, ornamental/landscaped plantings, or natural looking native plantings—enabling us to determine how planting style affects water quality and stakeholder attitudes about SWP plantings. We will also determine how planting age affects stakeholder attitudes. This information will be used to promote SWP plantings as a Best Management Practice. This project addresses activities identified in Section 1 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Project 5, W Linger Longer Road Sediment Reduction Project. The purpose of this project is to improve water quality of upper tributaries of Little Bear Creek, St Andrews Bay System by eliminating the source of sedimentation and reducing nitrification of Little Bear Creek through stabilization of the dirt road with pervious open grade asphalt pavement and installation of adequate roadside drainage system. This project addresses activities identified in Section 1 of the 2015 NPS Management Plan and implements milestones set forth in Appendix 1 of the Plan.

Outcomes for DEP Administrative Projects (Projects 1 & 2)

The Nonpoint Source Management Program staff are charged with managing the projects that are funded through the 319(h) grant program and those that are funded through the State Water-quality Assistance Grant program. The projects implemented in these programs improve water quality benefits, and the project managers ensure the projects are kept on time and on budget. The program staff also work with stakeholders to implement nonpoint source education throughout the state.

The individuals funded by this grant are tasked with the overall coordination of TMDL implementation activities throughout the state of Florida. This coordination includes the development of TMDL implementation plans (through the state Basin Management Action Plan [BMAP] Program), working with stakeholders to develop and implement the plans, developing and assessing both structural and non-structural projects that target pollutant reductions required by the TMDLs, and overall assessing and reporting on progress.

The Department's Bioassessment Training is an essential element of the bioassessment program, including field sampling method training for new employees and training for all staff on new tools and approaches to be used in conjunction with bioassessment methods.

Project evaluation elements include number of staff within and outside of the Department who are trained annually on Bioassessment sampling methods, number of participants in Biocriteria meetings, and assessment decisions made with the support of bioassessment data.

WATERSHED PROJECTS

The remaining nine projects selected for funding will meet a variety of urban, education and agricultural related stormwater needs. All these selected projects implement Best Management Practices (BMP) in Basin Management Action Plans (BMAPs) or Reasonable Assurance Plans (RAPs) and are identified as Watershed projects. Additionally, these projects all meet the goals set out in the NPS Management Plan for NPS Management Program 2015 Program Update. More detailed scopes for the selected projects are included later in this document.

Outputs for all Local Grantee Recipients (Project #s: 3-14)

Output: Final Report
Final Reports include the following information:

- Project location and background, project description and timeline, grant award amount and anticipated benefits.

- Financial summary of actual costs versus the budget, along with any changes required to the budget. Include any match provided, along with other related project work performed outside of this Agreement to identify the overall project cost.
- Discussion of project schedule versus actual completion, including changes required to the schedule, unexpected site conditions and adjustments, significant unexpected delays and corrections, and/or other significant deviations from the original project plan.
- Summary of activities completed as well as those not completed and why, as well as a brief summary of any additional phases yet to be completed.
- Dated color photo documentation of work performed (representative of the entire project), appropriate figures (site location, site plan(s), etc.), appropriate tables summarizing data/information relevant to Grant Work Plan tasks, and appropriate attachments relevant to the project.
- Discussion of whether the anticipated benefits have been/will be realized (e.g., why a BMP did or did not exceed the expected removal efficiency)
- Summary of monitoring activities completed and any not completed and why, monitoring results, and an interpretation of data based on planned versus realized results
- Documented environmental results
- Description of any partnerships related to the project

Outcomes for all Local Grantee Recipients (Project #s: 3-14)

Outcomes include expected environmental results (load reductions and other water quality improvement information), partnerships, and any general BMAP and/or RAP information. Details on outcomes are included in the project information.

TABLE 1. FY21 Grant Funding Request, Project Selection- Program Projects

Project	Type/Mgmt Plan location	Title	Lead Agency	Watershed Plan	FY21 319 Funding	FY21 319 Match Funds
1	Watershed Admin, Mgmt Plan pg. 17/Appendix 1.0; NPS Admin, Mgmt Plan pg. 31/ Appendix 2.0	NPS/Watershed Program Administration	FL DEP	Statewide	$2,057,782	$1,061,472
2	Urban, Mgmnt Plan pg. 112/ Appendix 10.0	Bioassessment	FL DEP	Statewide	$161,893	$114,509
3	Education/ Mgmt Plan Pgs. 40, Appendix I, 3.1	Living Shorelines Training for Marine Contractors	FWC	No	$153,324	$76,500
4	Education/ Mgmt Plan Pgs. 40, Appendix I, 3.1	Integrating Educational and Research Activities to Promote Stormwater Pond Plantings as a BMP	UF/IFAS	No	$196,761	$131,243
5	Other/Water Quality, Plan Pg 25/ Appendix I 3.1	W Linger Longer Road Sediment Reduction Project	Bay County	No	$747,036	$1,181,890
TOTAL PROGRAM					**$3,316,796**	**$2,565,614**

TABLE 2. FY21 Grant Funding Request, Project Selection -Watershed

Project	Type/Mgmt Plan location	Title	Lead Agency	Watershed Plan	FY21 319 Funding	FY21 319 Match Funds
6	Urban, Mgmt Plan Pg. 40/ Appendix I, 3.1	FL Friendly Yards and Landscaping	University of Florida	Statewide BMAPs	$279,463	$1,179,954
7	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.2	Burris Way Stormwater LID Improvement	Cocoa Beach	IRL, Banana River Lagoon	$123,000	$83,000
8	Other/Water Quality/Ag Mngmt Plan Pg 74/ Appendix I, 6.0	St. Lucie River/C-23 Water Quality Project– Areas 5 and 6	Port St. Lucie	St. Lucie - Loxahatchee	$682,164	$483,928
9	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.0	Veteran's Park Green Infrastructure Installation	Edgewater	Mosquito Lagoon	$82,500	$55,000
10	OSTDS/Mgmt Plan Pg 25; #8 OSTDS Program, Pg. 99/ Appendix 1 – 8.1(a)	Martin County Connect to Protect Septic to Sewer Conversion Nutrient Removal Program	Martin County	St Lucie-Loxahatchee	$750,000	$2,325,000
11	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.0	Haines City Stormwater Quality Improvements	Haines City	Lake Okeechobee	$394,500	$100,000
12	OSTDS/Mgmt Plan Pg 25; #8 OSTDS Program, Pg. 99/ Appendix 1 – 8.1(a)	E. Longwood Phase IV	Longwood	Lake Jesup Basin	$661,100	$264,440
13	OSTDS/Mgmt Plan Pg 25; #8 OSTDS Program, Pg. 99/ Appendix 1 – 8.1(a)	Blue Spring Nutrient Reduction Septic to Sewer Project - East Graves/Holly Ave and CRA Area	Orange City	Volusia Blue	$281,081	$281,081
14	Urban, Mgmt Plan Pg. 43/ Appendix I, 3.0	Florida Stakeholder Watershed BMAP Implementation Placeholder Project	TBD	TBD BMAP	$50,596	$162,211
Watershed Total					**$3,304,404**	**$4,934,614**
FY 21 Total Grant Request					**$6,621,200**	**$7,500,228**

Summary		
	Grant	**Match**
Total Salary/Personnel	$1,072,000	$587,825
Total Fringe	$801,963	$439,752
Total Travel	$20,000	$0
Total Indirect	$325,711	$148,404
Total Other	$4,401,525	$6,324,247.00
Total Grant Request	**$6,621,200**	**$7,500,228**
Total Match Required (40%)		$4,414,133.33
Total Match from State/Projects		$7,500,228
Match Percentage		**53%**
Program Total	$3,316,796.00	
Watershed Total	$3,304,404.00	
Program Percentage	**50%**	
Watershed Percentage	**50%**	

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FLORIDA'S FY2021 SECTION 319(h) Workplan

PROJECT 1: NPS/Watershed Program Administration

PROJECT FUNDING: $2,057,782 **MATCH:** $1,061,472

LEAD ORGANIZATION: Florida Department of Environmental Protection

PROJECT ABSTRACT: Florida's NPS Management Program identifies the natural resource management programs, strategies, and resources that currently are in place or that are needed to minimize or prevent nonpoint source pollution effects. The NPS Management Program identifies BMPs to control pollution from specific sources of nonpoint source pollution (e.g., agriculture, forestry, OSTDS, urban); identifies programs to assure implementation of programs, activities, and structural and nonstructural BMPs that will minimize or reduce NPS pollution; and coordinates restoration activities with other state and local entities, especially those leading to restoration of impaired waters. Section 319 grant financial support allows the NPS Management Program staff to properly administer the grant, to assure that all projects are properly completed, and to enhance the effectiveness of the state NPS/watershed management program.

In addition, the Division of Environmental Assistance and Restoration (DEAR) staff coordinates with state, regional, and local governmental agencies, local watershed groups, and nongovernmental organizations, and other interested stakeholders to develop and implement TMDLs and assists with development of the state's Best Management Practice manuals. BMAPs are developed collaboratively with local stakeholders and are designed to identify management actions and schedules to meet the pollutant load reductions required by adopted TMDLs. Section 319 grant financial support allows the DEAR staff to develop and implement TMDLs and BMAPs.

PROJECT DESCRIPTION: The funds will pay the salaries of 1) a Program Administrator to oversee management of the NPS program; 2) eight full-time NPS Environmental Specialists to manage selected projects; 3) one Deputy Director of DEAR to oversee management of the assessment, TMDL, and BMAP programs; 4) one Program Administrator to oversee management of the water quality restoration program (including BMAP development); 5) three Environmental Consultants to develop and implement BMAPs; and 6) one Program Administrator and one Environmental Consultant to develop and implement TMDLs. Requested funding also covers travel expenses of Department NPS staff to meet with project sub-grantees on-site to ensure accountability of project funding, and provide site-specific nonpoint source expertise, to travel to EPA Nonpoint Source Workshops, and to provide for travel needed in order to assist in the development and implementation of TMDLs.

The described project is implementation of the Nonpoint Source Management Program, the TMDL program and the BMAP program staff positions. The NPSM program is currently still drawing down the 319 FY18 grant so it will likely be a few years to start drawing down but anticipate to draw the staff position funds down by the end of the grant. The DEAR BMAP and TMDL coordinator staff positions funding is expected to start in October 2021 and be drawn down within a year.

GOALS:

Goal: Successfully manage the 319 grant program.
(a**) Action:** Reduce the unliquidated obligations (ULOs) by utilizing leftover funds, emphasizing the five-year time frame in the proposal and selection process and evaluating the project contracting process.
(b) Action: Evaluate and update the NPS Management Plan on an ongoing basis and at least every five years.
(c) Action: Maintain 319 project data in the GRTS system.
Goal: Develop a centralized system to track all NPS restoration projects managed by the NPS Program or geared toward BMAP implementation.
(a**) Action:** Evaluate systems for suitability
Goal: Administer an effective NPS management program.
(a**) Action:** Provide technical expertise on issues relating to NPS management through meetings and inter- and intra-agency cooperation.
(b) Action: Provide educational materials and training on NPS management.
Goal: Develop TMDLs for verified impaired waterbodies.
(a**) Action:** Prioritize the waterbodies for TMDL development utilizing appropriate tools such as the EPA Recovery Potential Screening tool.
(b**) Action:** Develop TMDLs for waterbodies based on priority listing
Goal: Develop and implement BMAPs to implement TMDLs and restore water quality.
(a**) Action:** Prioritize watersheds for BMAP development utilizing the EPA Recovery Potential Screening tool.
(b**) Action:** Work with local and regional stakeholders to develop BMAPs for adoption**.**
(c**) Action:** Support projects that are targeted at implementation of BMAPs**.**
Goal: Restore impaired waters that are not part of a BMAP.
(a**) Action:** Support local entities in the development of RA plans, Nutrient Management Plans, or other water quality restoration plans for waterbodies that are impaired but are not slated for BMAP development.
(b**) Action:** Support projects geared toward the restoration of impaired waters that are not part of a BMAP.

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PROJECT BUDGET – GRANT FUNDING

Admin Project Funding Activity	319 (h) Salary	Fringe (74.81%)	Indirect (42.65% and 22.62%)
1 Program Administrator NPS	$63,000	$47,130	$26,870
8 Environmental Specialist NPS	$352,500	$263,705	$150,341
1 Deputy Director DEAR (TMDL & BMAP)	$105,000	$78,551	$23,751
1 Program Administrator BMAP	$74,000	$55,359	$16,739
3 Environmental Consultant BMAP	$159,500	$119,322	$36,079
1 Environmental Manager BMAP	$57,000	$42,642	$12,893
1 Program Administrator TMDL	$74,000	$55,359	$16,739
1 Environmental Administrator TMDL	$56,000	$41,894	$12,667
1 Environmental Consultant TMDL	$49,000	$36,657	$11,084
Totals:	**$990,000**	**$740,619**	**$307,163**
Travel (NPS)	**$20,000**		
GRAND TOTAL:	**$2,057,782**		

*NPS Indirect rate is 42.65% and TMDL & BMAP Indirect rate is 22.62%.

MATCH FUNDED POSITIONS:

Program Match Positions	Match Salary	Fringe (74.81%)	Indirect (42.65% and 22.62%)
1/4 Director DEAR	$30,250	$22,630	$6,843
1/4 Budget Director DEAR	$14,000	$10,473	$3,167
3 Environmental Consultant BMAP	$145,000	$108,475	$32,799
1/4 Director DWRA	$28,750	$21,508	$12,262
1/4 Staff Director DWRA	$21,825	$16,327	$9,308
1/4 Budget Director DWRA	$19,000	$14,214	$8,104
1/4 Admin. Assistant DWRA	$7,500	$5,611	$3,199
3 Environmental Consultant TMDL	$139,500	$104,360	$31,555
3 Environmental Specialist III TMDL	$124,000	$92,764	$28,049
Total:	**$529,825**	**$396,362**	**$135,285**
GRAND TOTAL:	**$1,061,472**		

*NPS Indirect rate is 42.65% and TMDL & BMAP Indirect rate is 22.62%.

a. Estimated Project Start Date: October 1, 2020
b. Estimated Project End Date: September 30, 2025

PROJECT 2: Bioassessment Development and Quality Assurance

PROJECT FUNDING REQUEST: $161,893
MATCH COMMITMENT: $114,509
TOTAL PROJECT COST: $276,402

LEAD ORGANIZATION: Florida Department of Environmental Protection, Aquatic Ecology QA Section

CONTACT INFORMATION:

Name: Nijole (Nia) Wellendorf
Street Address: 2600 Blair Stone Rd., MS 6511
City, State, Zip: Tallahassee, FL 32399
Tel: (850) 245-8190
Email: nijole.wellendorf@dep.state.fl.us

Geographic Location (city and county): Statewide

PROJECT OVERVIEW:
The Florida Department of Environmental Protection (department) has a mature bioassessment program that has developed biological monitoring tools and associated quality assurance (QA) for more than 25 years. The department currently uses the Stream Condition Index (SCI), Habitat Assessment (HA), Lake Vegetation Index (LVI), Rapid Periphyton Survey (RPS), and Linear Vegetation Survey (LVS) to determine biological impairment due to nonpoint source pollution of nutrients, sediment, metals, and other pollutants. These biological assessment methods are included in Florida's Water Quality Standards and Impaired Waters Rules (62-302 and 62-303, Florida Administrative Code), and therefore numerous entities outside of the department are using these methods as well. A rigorous quality assurance component to this program is essential for accurate and scientifically defensible decision-making with bioassessment data. The requested funding would support quality assurance activities, including accurate metric calculations for external parties, and further tool development for the department's bioassessment activities.

Training is an essential element of the bioassessment program, including field sampling method training for new employees and training for all staff on new tools and approaches to be used in conjunction with bioassessment methods. Some of the requested funds would be used to cover travel costs associated with staff attendance at bioassessment sampling training (as trainers and trainees) and the annual Biocriteria meeting. The Biocriteria meeting also serves as a means of educating other private and public entities throughout the state on use of the department's biological assessment methods.

One of the QA components for the department's SCI, LVI, and LVS assessments is taxonomic verification by subject matter experts outside the department for specimens with unknown identification or those specimens to be included in reference collections.

Project evaluation elements include number of staff within and outside of the Department who are trained annually on Bioassessment sampling methods, number of participants in Biocriteria meetings, and assessment decisions made with the support of bioassessment data.

PROJECT GOALS:

Goal: Evaluate waterbodies for NPS pollution through a bioassessment program.
(a) Action: Improve integration of existing bioassessment tools into statewide monitoring and assessment programs as well as water resource programs.
(b) Action: Continue to provide technical support staff to the statewide bioassessment program to both implement and expand sampling programs and manage the flow of statewide data collection, analysis, and reporting to program managers and the public.

PROJECT FUNDING and TIMELINE:

Admin Project Funding Activity	319(h) Salary	Fringe (74.81%)	Indirect (22.62%)
2 Environmental Specialist II	$82,000	$61,344	$18,548
Total:	**$82,000**	**$61,344**	**$18,548**
GRAND TOTAL:	**$161,893**		

Program Match Positions	Match Salary	Fringe (74.81%)	Indirect (22.62%)
1 Environmental Administrator	$58,000	$43,390	$13,120
Total:	**$58,000**	**$43,390**	**$13,120**
GRAND TOTAL:	**$114,509**		

c. Estimated Project Start Date: October 1, 2020
d. Estimated Project End Date: September 30, 2025

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PROJECT 3: Living Shorelines Training for Marine Contractors

PROJECT TYPE: Education

PROJECT FUNDING REQUEST: $153,324
MATCH COMMITMENT: $76,500

ENTITY/SPONSOR NAME: Florida Fish and Wildlife Conservation Commission

CONTACT INFORMATION:

NAME: FARA ILAMI
Street Address: 3377 East U.S. Hwy 90
City, State, Zip: Lake City, FL 32055
Telephone: 386-754-1668
Email: fara.ilami@myfwc.com

SHORT PROJECT DESCRIPTION:
This project will reduce nonpoint source pollution through education of marine contractors to implement best management practices for green infrastructure (i.e., living shorelines). Training will be provided to marine contractors in 12 target cities throughout all regions of Florida, with the goal of increasing the number of professionals statewide who can install living shorelines to meet the increasing demand as property owners become more aware of this option.

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

Geographic Location of Project (e.g. city, county, street address):
Pensacola, Crystal River, Tampa, Sarasota, Fort Myers, Miami, West Palm Beach, Stuart, Satellite Beach, Titusville, New Smyrna Beach, Jacksonville.

Provide the name of the waterbody(s) that this project addresses:
Bayou Chico Watershed. Lower St. Johns River Indian River Lagoon West Palm Beach Canal Miami River, Miami Canal, Little River, Biscayne Canal Caloosahatchee Estuary Sarasota Bay St. Lucie River Banana River, Indian River Hillsborough River Crystal River Spruce Creek

Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
846, 846A, 846B, 846CB, 848DA 2213A, 2213B, 2213C, 2213D 2963D, 2963E, 2963F 3238 3288, 3290, 3287, 3285 3240A, 3240B, 3240C 1968B 3193, 3210, 3194B 3057A, 2963B, 2963C 1443E 1341 2674A

List the parameter(s) the waterbody is impaired for that this project addresses.
Fecal Coliform, Nutrients, and Dissolved Oxygen

DETAILED PROJECT DESCRIPTION:
This project will include training activities for marine contractors to learn how to assess the feasibility of and implement living shorelines as an alternative method of shoreline stabilization. Contractors will be trained to install new living shorelines as well as green enhancements to existing seawalls. Each training course will consist of 2 days of instruction, group activities, discussion, field trips, and testing for understanding. The trainings will be conducted in 12 locations throughout Florida in order to reach as many contractors as possible. The maximum number of participants for each course will be 30, in order to ensure the most benefit to each participant. Instruction will be provided by a lead instructor and several additional instructors who have extensive experience with living shorelines. The curriculum for the course has already been developed, so the requested grant funds will only be used for implementation of the training courses. It is expected that the project will reach a large enough segment of its target population (marine contractors) within 2 years, such that it will not be necessary to renew this grant funding. This project will utilize existing, vetted, award-winning curriculum developed by FWC and many partners over the past 2 years. This includes a manual: Ilami, F., J. Wayles, T. Ries, G. Raulerson, S. Barry, Z. Schang, J. Price, K. Dietz, S. Herndon, A. Roddenberry, C. Anderson, P. Mathews, R. Kilcollins, A. Ubeda, M. Ray-Culp. 2019. Living Shorelines Training for Marine Contractors. Participant Manual and Curriculum. 172 pp. See attachments for course materials.

The project will provide a source of marine contractors capable of installing living shorelines, which property owners can utilize when determining how to best stabilize their shorelines. The use of living shorelines improves water quality by trapping sediments and organic matter and providing a filtering mechanism for nonpoint source pollutants. Oysters, in particular, as filter feeders can contribute to clean water (removing excess nutrients that tend to be an issue in estuaries).

This project will facilitate the use of green infrastructure in appropriate areas using BMPs such as putting the right plant in the right place and at the right depth, designing oyster breakwaters with the right shape and spacing and using the right consolidation material, and conducting monitoring and maintenance. There are multiple benefits that will be added by inclusion of these features, such as reduction of shoreline erosion, continuity of ecosystem processes, enhancement of wildlife habitat, nutrient reduction, absorption of wave energy, and adaptation to sea level rise. In addition, property owners will save money in the long run because these features require less maintenance and replacement than seawalls.

Many of the water bodies targeted by this project are impaired due to nutrients. The use of living shorelines, including plants and oyster shell, reduces nutrients as the plants take up excess nutrients and oysters that recruit to the shell filter nutrients from the water.

Project Effectiveness Evaluation:
The success of the project will be evaluated in the long run by following up with contractors to find out if they are installing living shorelines. During the timeframe of the project, success will be evaluated based on the results of the tests for understanding and on the course evaluations that participants complete. The course evaluations will assess effectiveness of content, methods, and whether participants are likely to add living shorelines to their suite of services as a result of the training.

Pollutant Load Reductions/Outcomes and Outputs:
This is an education project. Traditional load calculations cannot be performed for this project. Surveys will be used to assess behavior change to reduce personal pollution.

- 12 completed training courses with some recorded segments available for viewing by the grantor
- Records of the roster for each training course and records submitted to Construction Industry Licensing Board for Continuing Education
- Copies of completed site assessment forms and other projects completed by participants as part of the training course
- Copies of pre- and post-tests taken by course participants
- Completed training course evaluation forms from all participants
- Reports on the trainings and all follow-up with participants for the grantor and other interested parties
- Posting of all marine contractors who have completed the course on http://floridalivingshorelines.com
- Posting of any living shorelines projects installed by contractors to the same website.

Project Funding and Timeline:

Task Name	Grant Funding	Match Funding
Education	$153,324	$76,500

e. Estimated Project Start Date: October 1, 2020
f. Estimated Project End Date: September 30, 2022

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PROJECT 4: Integrating Educational and Research Activities to Promote Stormwater Pond Plantings as a BMP

PROJECT TYPE: Education

PROJECT FUNDING REQUEST: $196,761
MATCH COMMITMENT: $131,243

ENTITY/SPONSOR NAME: University of Florida Institute of Food and Agricultural Sciences (UF|IFAS)

CONTACT INFORMATION:
Name: Basil V. Iannone III
Street Address: PO Box 110940
City, State, Zip: Gainesville, FL, 32611-0940
Telephone: 352-294-7499; Email: biannone@ufl.edu

SHORT PROJECT DESCRIPTION:
This project integrates educational workshops/site visits, surveys, and water quality monitoring to promote shoreline and aquatic plantings of stormwater ponds (SWPs). SWPs used in this project will have either turfgrass banks, ornamental/landscaped plantings, or natural looking native plantings—enabling us to determine how planting style affects water quality and stakeholder attitudes about SWP plantings. We will also determine how planting age affects stakeholder attitudes. This information will be used to promote SWP plantings as a Best Management Practice.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address):
Multiple locations in Manatee County, FL
Latitude 27.471318° Longitude -82.298333°

Provide the name of the waterbody(s) that this project addresses:

> Proposed educational and water quality monitoring activities will occur in at least four locations within Manatee County, FL: Bradenton Area Convention Center, Rocky Bluff Library, Greenbrook Community Park, and University Place Community Park. The water bodies into which each of these locations drain are listed below. Nevertheless, the knowledge gained from this project will be transferable to the management of urban stormwater runoff in other Florida WBIDs, particularly the 147 occurring within Manatee County and other Florida counties experiencing rapid urban development. In addition to these locations, which are being planted in spring 2020, new plantings will occur in June of 2023. Stormwater ponds planted in this second planting phase will also be incorporated into educational/outreach activities. The precise locations of these second plantings is currently unknown. The project team will work with Manatee County on selecting suitable locations based on knowledge gained from the first planting efforts.

Project site	WBID
Site 1: Bradenton Area Convention Center:	Manatee River below Braden River
Site 2: Rocky Bluff Library:	Manatee River above Braden River
Site 3: Greenbrook Community Park:	Braden River above Ward Lake
Site 4: University Place Community Park:	Copper Creek

Provide the WBID number(s) for the waterbody segment(s) that this project addresses.

Waterbodies are typically divided into segments which are identified by Water Body Identification (WBID) numbers. Water quality impairments are associated with the WBIDs, not the entire waterbody. Here is a link where that information can be found: https://floridadep.gov/dear/watershed-assessment-section/content/basin-411-0 The WBIDs into which the four project sites drain are:

Project site	WBID number
Site 1: Bradenton Area Convention Center:	WBID 1848A
Site 2: Rocky Bluff Library:	WBID 1848B
Site 3: Greenbrook Community Park:	WBID 1914
Site 4: University Place Community Park:	WBID 1930A

List the parameter(s) the waterbody is impaired for that this project addresses.

WBID 1914 and WBID 1930A are both impaired for fecal coliform. However, this project will not address this issue. It instead focuses on decreasing nutrient pollution, specifically inorganic and organic forms of nitrogen and phosphorus known to impact water quality (Paerl and Scott 2010, Hobbie et al. 2017).

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

DETAILED PROJECT DESCRIPTION:

It is not an innovative idea that littoral plantings around stormwater ponds add greater water quality improvements to the ponds. In an idealistic world, the effectiveness of these littoral zones would be main consideration for managers when designing and maintaining their ponds. In the real world, property managers, utility departments, and others must factor in the aesthetics and public opinion of pond plantings. If the general public dislikes pond plantings they will eventually be mismanaged (over pruned) or removed.

The goal of this project is to develop educational materials about how pond managers can use the different aesthetic styles of stormwater ponds to meet the needs of their communities. This project aims to compare the benefits and barriers to stormwater pond plantings. The project compares “natural” style plantings (the style most commonly used in stormwater plantings) to “ornamental” plantings (that may be more aesthetically pleasing to the average Florida resident). Traditional ponds with turf planted along the edges will be used as a control.

The project will compare the water quality improvement benefits of the three different planting types. This is unique because there have not been previous studies that look at the effectiveness

of designing stormwater ponds with aesthetics as equally important as water quality improvements.

In addition to water quality benefits, this project will conduct a social science study to determine the impact public opinion and aesthetics have on stormwater pond plantings and their effectiveness. This will be conducted through workshop surveys, focus groups, random sampling of site visitors, surveys of nearby residents, and follow up phone calls. The following questions will be answered:

- Does the planting style have an impact on public opinion of stormwater pond plantings?
- How does understanding of water quality benefits affect public opinion of stormwater pond plantings?
- What are the best educational strategies for increasing the adoption of stormwater pond plantings?

Project Consistency with the NPS Program's Goals and Mission: Like many of our education projects, this proposed project will indirectly improve water quality through behavior change. We have seen that traditional education methods don't really work. If we want communities to utilize stormwater plantings to improve water quality, we need to make the behavior change as easy as possible. In this case, that means to determine if there are varying aesthetic options that can increase community acceptance and if those options have comparable water quality improvements. It also means providing that information to the responsible parties using educational/outreach strategies that will promote the adoption of stormwater pond plantings. This will be done directly through the workshops and site visits, print materials, webinar, and in-service trainings that involve both stakeholders and Extension agents. Indirectly it will be done through the extension agents and others who continue to share the information to their stakeholders.

Project Effectiveness Evaluation:
We will incorporate process and outcome evaluation tools (Patton 2011) throughout the entirety of this project, thereby having built-in mechanisms to improve upon future efforts. First, we will maintain detailed descriptions, feedback, and contact information of stakeholder attendance for our workshops/stormwater pond site visits, webinar, and in-service training. These notes will be transcribed and coded using qualitative data analysis software. Pre and post-test surveys will document changes in knowledge, attitudes, and intentional behaviors. These data-driven results will allow us to understand stakeholder perceptions, adapt messages to their needs, and identify missing stakeholder groups to include in future events. The team will debrief after each educational/outreach event to identify potential weaknesses and strengths in how the event was conducted in order to improve future iterations. In addition, when administering surveys at workshops/site visits, we will solicit attendee feedback on how to improve activities. As stated above, we will conduct follow-up phone interviews to determine the degree to which project activities led to real-world changes in stormwater management, particularly increased amounts of stormwater pond plantings. Regarding water sampling, PI Iannone, Co-PI Lusk, and Co-PI Reisinger will meet with the MS student after each sampling event to discuss ways of improving the rigor of sampling protocols. Finally, we will use the required project reports to ensure the project team is on target regarding project goals and products. In each report, we will state our accomplishments and set specific goals to meet prior to the next report's deadline.

Pollutant Load Reductions/Outcomes and Outputs:
This is an education project. Traditional load calculations cannot be performed for this project. Surveys will be used to assess behavior change to reduce personal pollution.

1. Number of outputs
   - The formation of 1 outreach liaison panel that will help to forge professional relationships among researchers and practitioners aimed at improving water quality.
   - 3 educational workshops having at least 20 attendees at each
   - 3 educational site visits having at least 20 attendees at each
   - 3 focus group aimed at identifying barriers to stormwater pond plantings and other potential BMPs
   - 2 community surveys: 1 from at least 50 random visitors to the planted stormwater ponds and 1 online survey administered to over 1,000 residents of Lakewood Ranch, FL documenting public perception about stormwater pond plantings
   - 1 Follow-up phone interview of workshop attendees (at least 60 people) to identify if they have adopted stormwater pond plantings
   - 1 Webinar open to all for at least 50 attendees reporting project findings and subsequent recommendations
   - 1 webinar recording for future viewing (of the prior stated webinar)
   - 1 In-service training aimed at educating 15-20 County Extension Agents on our findings and precise recommendations for improving water quality. This event is in the spirit of educating educators who can then go a spread the knowledge that we gain from this project.
   - 1 Set of PowerPoint slides showing study findings that can be used by all in educational activities
   - 2 peer-reviewed research papers focusing on (a) strategies to enhance stakeholder adoption of BMPs and (b) the efficacy of stormwater pond plantings at improving water quality.
   - 2 extension documents that parallel the 2 peer-reviewed research papers aimed at communicating findings to non-scientists. These documents will be available to all online through the University of Florida Institute of Food and Agricultural Sciences (UF|IFAS) Electronic Data Information Source (https://edis.ifas.ufl.edu/). They will educate on (1) strategies for increasing the adoption of BMPs and (2) on the potential water quality benefits of stormwater pond plantings
   - 1 online database containing all project data that is accessible to all web users for future efforts pertaining to water quality. This database can be found at Institutional Repository at the University of Florida (https://ufdc.ufl.edu/ufir)

2a. Direct water quality improvements
   - 5-10 planted stormwater ponds ranging in size from 0.24 to 0.85 acres will be planted helping to stabilize pond banks, thus, improving water quality via limiting nutrient-rich soil sediments from entering the ponds. These plantings will also improve water quality by preventing mowing and subsequent entry of nutrient-rich grass clippings into the planted ponds. We will quantify benefits to bank erosion by quantifying degree of bank erosion in planted vs. traditional ponds have turfgrass banks. We proposed 7 pond plantings during our first planting period, but our partner, Manatee County, received

another estimate for planting costs and labor that will allow only for 5 more well planted ponds.

- We quantify the water quality benefits of these plantings to report in proposed outputs via year-long water sampling efforts that rely on autosampling technologies. We propose to collect water samples from inflows and outflows during storm events, and to quantify inorganic and organic forms on nitrogen and phosphorus levels on collected samples. Thus, we will be able to quantify potential improvements in quality of water leaving planted ponds vs. that leaving traditional stormwater ponds having turfgrass banks. Past work in Lakewood Ranch, FL detected a 20% drop in orthophosphate levels in planted areas of ponds in ponds only having 20-50% of their banks planted, suggesting larger impacts in the denser plantings we propose.

2b. Indirect water quality improvements

- 1 MS-level and 2 undergraduate-level professionals (total = 3) trained in stormwater pond ecology and management, as well as in social dimensions regarding how to promote the adoption of BMPs
- 5-10 stormwater pond plantings that can serve as demonstration sites to educate a diversity of stakeholders about aesthetic aspects and potential water quality benefits of stormwater pond plantings
- Identify the degree to which workshops vs. site visits help to increase the adoption of stormwater pond plantings and other potential BMPs
- Determine which style of planting, natural vs. ornamental, are more acceptable to stakeholders
    - We will quantify differences in educational approaches, as well as in perceptions of natural vs. ornamental plantings using standard repeated survey methodology designed to quantify changes in perception and willingness to change behavior.
- Quantify perceptions of general community members regarding stormwater pond plantings styles and age via site visitor and online surveys

Project Funding and Timeline:

Task No.	Task Title	Budget Category	Grant Amount	Match Amount
1	Public Education	Contractual Services	$33,115	
		Miscellaneous/Other Expenses	$30,800	$44,860
		Salary	$99,946	$14,036
		Fringe Benefits	$7,493	$4,169
		Indirect Costs (52%)	$17,887	$9,557
		Unrecovered Indirect Costs		$58,636
		Travel	$7,520	
		Total	**$196,761**	**131,243**

Task No.	Position Title	Hourly Rate	Fringe Rate (%)
1	Graduate Assistant*	$18.04	10.5
	Technician I	$12	5.2
	Technician II	$20	5.2
	PI Iannone	$59.81	29.7
	PI Monaghan	$52.82	29.7
	PI Atkinson	$17.74	29.7
	PI Lusk	$58.68	29.7

*Note: The graduate student costs are broken down between salary/fringe and contractual costs. The hourly rate of the graduate assistant was determined based on the standard amount that the university gives graduate students for a living stipend, divided by 25hrs, which is the fewest hours the student will work on any given week. The applicant is only requesting up to the cost of the living stipend for salary/fringe. The contractual costs assigned to the graduate assistant are for the tuition fees for the two years associated with the position. Although this does increase the total cost of the project, it is still less than the cost of having the UF faculty members leading the project conduct the day-to-day work themselves. The project cannot be completed without the graduate student.

Estimated Project Start Date: Summer/Fall 2021
Estimated Project End Date: December 2023

PROJECT 5: W Linger Longer Road Sediment Reduction Project

PROJECT TYPE: Other (Sediment Reduction Project)

PROJECT FUNDING REQUEST: $747,036
MATCH COMMITMENT: $1,181,890

LEAD ORGANIZATION: Bay County Board of County Commissioners

CONTACT INFORMATION:

Name:	Natasha Lithway, P.E.
Street Address:	Bay County Engineering Division, 840 West 11th Street
City, State, Zip:	Panama City, Florida 32401
Tel:	850-248-8301
Fax:	850-248-8343
Email:	nlithway@baycountyfl.gov

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:

Geographic Location, City and County (include street address if available): Panama City, Florida, Bay County
Size of Project Impact (area needed to build project): 10.36 acres
Size of Area Being Treated: 10.36 acres
Latitude (decimal degrees): 85.447
Longitude (decimal degrees): 30.415
Name of Impaired Waterbody Affected: N/A
Waterbody ID of Impaired Waterbody Affected (WBID): N/A
TMDL Status and Name, if Applicable: No TMDL listed
TMDL Impairment; indicate the parameters in the TMDL, if applicable: No TMDL listed
Impairments To Be Addressed by Project: Total Suspended Solids (TSS), Total Phosphorus (TP), Total Nitrogen (TN)

Does this project fall within the boundaries of a developing or adopted basin management action plan (BMAP) or within an adopted reasonable assurance plan (RAP)? No developed BMAP in the project area.

Are the activities in this project required under a permit or does it implement permit application requirements (e.g., municipal separate storm sewer system [MS4], National Pollutant Discharge Elimination System [NPDES])?
No

PROJECT OVERVIEW

The purpose of this project is to improve water quality of upper tributaries of Little Bear Creek, St Andrews Bay System by eliminating the source of sedimentation and reducing nitrification of

Little Bear Creek through stabilization of the dirt road with pervious open grade asphalt pavement and installation of adequate roadside drainage system.
Construction will be completed by a qualified firm working with approved subcontractors. The construction contract will required the contractor to obtain NPDES construction activity permit for the construction phase of the project. Construction management and construction inspection will be performed by in-house inspectors.

Objective:
The primary objective of this project is to improve water quality of upper tributaries of Little Bear Creek, St Andrews Bay System by eliminating sedimentation through the dirt road stabilization and roadside drainage systems installation. Little Bear Creek is one of tributaries of Deer Point Lake Reservoir which supplies Bay County's primary source of drinking water. Water discharged from the Deer Point Lake Reservoir also provides fresh water flows to North Bay, which is critical for maintaining the bay's natural estuarine character. Bay County has been proactive in reduction of sedimentation into Bear Creek Watershed from major road sediment contributors by stabilizing these roadbed, eliminating sedimentation, reducing nitrification and improving roadside drainage. Some of these stabilization projects included Scotts Ferry Road, Ed Lee Road, N Bear Creek Road, Davenport Road. Currently, Cowels Road is under construction to include drainage improvements and dirt road stabilization. In addition, Veal Road is under design to be stabilized and to improve drainage, with construction to follow in early 2020.

Few activities cause more long term damage to water quality and ecosystems than construction and maintenance of roads. Across the landscape, the effects of road building and maintenance have dramatically altered the form and function of ecosystems. The adverse effects of dirt roads on water quality and habitats are well documented (Clinton and Bosa, 2002; Crawford and Lenat, 1989; Forman and Alexander, 1998; Grace et al., 1998; Gucinski et.al., 2000; Reid and Dunne, 1984). The interface of unpaved roads and streams create runoff conditions that frequently result in erosion of road prism materials and right of way soils that are conveyed directly to receiving streams and bayous as sediment. Stream and bayou sedimentation reduces the quality and availability of aquatic habitats, impairs water quality, increases flooding, impairs navigations and recreation, and alters alluvial and fluvial geomorphology.

The St. Andrews Bay system is one of the most biologically diverse estuarine systems, rivaling the much larger Indian River Lagoon. Its watershed provides habitat for more than 2900 species, including a large number of rare, endemic and protected plants and animals. The bay has the greatest expanse of seagrass beds in the Florida panhandle. The low freshwater input system is overall in good condition, but seagrasses, oyster reefs and water quality have suffered some decline and action is needed to improve these habitats. Taking action now to improve water quality through reduction of sedimentation and nitrification is more cost effective than waiting until the waters are officially impaired. Delay will result in more aquatic habitat destruction and impact on species and a greater restoration cost.

Bay County's approach to minimize soil erosion and sedimentation delivery from unpaved road surface and roadside drainage system is by design and construction of adequately stabilized roadside drainage and stabilization of the dirt road with pervious open grade asphalt pavement. Pervious open grade pavement BMP is not a traditional surface treatment like regular asphalt

surfaces where no additional stormwater conveyance is provided. Pervious open grade roads are designed with two concepts in mind: 1). Since sedimentation and nitrification reduction is the main goal, the most effective method of eliminating this is to eliminate the dirt road itself. This is done by stabilization of the dirt road with pervious open grade pavement. 2). Since the next goal is to provide adequate drainage system, the design includes engineering analysis to ensure that the roadside drainage system has adequate capacity to route stormwater without erosion.
Pervious open grade pavement captures runoff from the source into its matrix, some of which infiltrates into the base matrix and some travels to the edge of the roadway pavement and slowly discharges over sodded shoulder into the roadside conveyance system.

Emphasis will be given during design phase to allow for installation of sodded roadside shoulders and vegetated swales for the treatment and conveyance of stormwater runoff. These BMPs will allow for elimination of roadside erosion and sedimentation, reduction of nitrification, reduction of velocities of the roadway runoff, improved infiltration of the stormwater runoff through vegetation.

The proposed BMPs will allow for:
- Reduction of sediment loading and reduction of nitrification of upper tributaries of Little Bear Creek
- Improvement of water quality of upper tributaries of Little Bear Creek
- Protection and increase in aquatic diversity
- Protection and restoration in aquatic habitat.

Project Effectiveness Evaluation:
The County has performed a number of similar projects in the last 20 years with great success. Since the source of the sedimentation is eliminated through the roadway stabilization and installation of roadside drainage system, it is very easy to monitor the progress. The project will be visually monitored for 12 months after the completion of construction to see if the improvements show any signs of erosion.

Pollutant Load Reductions/Outcomes:

BMP #1 Name:

BMPs Installed	TSS lbs/yr	TP lbs/yr	TN lbs/yr
EMC*	**	**	**
Pre-Project (3.4 mi of dirt road)	**75,475**	**113**	**174**
Post-Project (3.4 mi of stabilized road)	**6,914**	**33**	**136**
Load Reduction	**68,561**	**80**	**38**
% Reduction	**90.84%**	**70.8%**	**21.84%**

** WMM model was used to estimate the pollution loads for this project.

There are a number of methods that can be used to assist in defining the pollution load from dirt roads such as USFWC SRI method, WMM model with EMC parameters for dirt roads, actual long term historical monitoring, etc. Like any other application, the user needs to understand the

limitation of each method and choose the most applicable method to the problem at hand. In this case, the project did not fit the typical SRI approach with long steep approaches that erode to a creek crossing at the bottom low point. What we had was flatter road with intermittent outfalls. In addition, we had some documentation of a number of historical events that could provide a reality check for the empirical numbers generated by the models. Based on this, it was found that WMM model estimate even though more conservative, were more indicative of the erosion loss observed during past historical events.

Project Funding and Timeline

Description	Grant Funding	Match Funding	Number of Months To Complete Task
Data Collection	N/A (not eligible for grant funds)	In-house*	2 month
Engineering Design and Plans Preparation	N/A (not eligible for grant funds)	In-house*	12 months
Permitting	N/A (not eligible for grant funds)	In-house*	5 months
Bidding	N/A (not eligible for grant funds)	In-house*	3 months
Construction	$747,036	$1,181,890	6 months
Monitoring	-	In-house*	12 months

Estimated Start Date: Oct 1, 2020
Estimated End Date: September 30, 2025

Total Number of Months for the Project: 28 months (excluding monitoring phase)

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PROJECT 6: Continued Expansion and Sustainability of the Florida-Friendly Landscaping ™ Program to Protect Water Quality From Stormwater Runoff and Nonpoint Souce Pollution

PROJECT TYPE: Education

PROJECT FUNDING REQUEST: $279,463
MATCH COMMITMENT: $1,179,954

LEAD ORGANIZATION:
Florida Cooperative Extension Service,
University of Florida, Institute of Food and Agricultural Sciences (UF/IFAS)

CONTACT:
Esengul Momol, Director
Florida-Friendly Landscaping™ Program
University of Florida
Environmental Horticulture Department
PO Box 110675, Gainesville, FL 32611-0675
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eam@ufl.edu

FINANCIAL COOPERATING PARTNERS: FDEP and UF/IFAS

OTHER COOPERATING PARTNERS:
The Florida-Friendly Landscaping™ (FFL) Program has grown to become a cooperative effort involving many organizations including the state's water management districts, utilities, city and county governments, the Suwannee River Partnership, the Department, Florida Nursery, Growers, and Landscape Association (FNGLA) and many other industry and civic groups, along with other UF/IFAS programs (Program for Resource Efficient Communities-PREC, Florida Master Gardener Program, Integrated Pest Management Florida, and the UF Water Institute).

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
FFL is an educational outreach program that covers the entire State of Florida.

PROJECT ABSTRACT: This project is a continuation of the FFL program, a statewide Extension outreach program run for over twenty years as a partnership between the University of Florida Institute of Food and Agricultural Sciences (UF/IFAS), the Florida Department of Environmental Protection (FDEP) and the EPA. The program's top priority is to prevent nonpoint source pollution associated with urban landscaping and landscape maintenance, specifically by minimizing potential runoff/leaching of landscaping and turfgrass fertilizers (especially nitrogen), as well as pesticides. FFL educational outreach promotes nine principles of urban landscape design and maintenance that decrease fertilizer and pesticide use, and facilitates substantial water savings through more efficient home irrigation.

PROJECT OBJECTIVE(S): The primary focus for FFL is public education on the nine FFL principles delivered statewide through UF/IFAS Extension; and training and certification of landscaping professionals through the Green Industries Best Management Practices Program. The nine principles are:

1. Right Plant, Right Place -- promotes landscaping plant selection that matches a site's soil, light, water, and climatic conditions so that, once established, they will require little to no supplemental water, fertilizer, or pesticides.
2. Water Efficiently -- emphasizes landscape design that groups together plants with similar water needs; install zoned irrigation systems with rain shutoff devices or soil moisture sensors.
3. Fertilize Appropriately – provides UF/IFAS recommendations for proper fertilizer application rates and methodology to minimize potential nutrient runoff and leaching.
4. Mulch – promotes proper use of mulch to retain soil moisture, protect plants, and inhibit weed growth.
5. Attract Wildlife – promotes landscaping plants used for food, water, and shelter by birds, butterflies, bats, and others.
6. Manage Yard Pests Responsibly – promotes Integrated Pest Management (IPM), a strategy that helps gardeners manage pests with as few chemicals as possible.
7. Recycle Yard Waste – promotes composting of yard waste for subsequent use as a soil amendment.
8. Reduce Stormwater Runoff – promotes landscape design features such as rain gardens, berms, or swales that slow runoff from heavy rains and allow the water time to soak into the ground.
9. Protect the Waterfront – promotes a 10-ft wide "maintenance free zone" around lake, river, and stream shorelines within which no fertilizer is applied.

FFL has served Florida citizens as a nonpoint source pollution prevention and water conservation program for more than 20 years. During that time the program has evolved to reach multiple target audiences that include residential homeowners, community builders/developers/property managers, and landscaping professionals in the green industries. Effective public outreach to these diverse audiences requires multiple outreach methods.

PROJECT DESCRIPTION: Outreach methods to FFL's primary target audiences are described below:

<u>Target Audience: Residential Homeowners</u>
Florida already has some 20 million residents in nearly 8 million households; however, this population is projected to grow to nearly 26 million over the next two decades. Public outreach to Florida's diverse and ever growing population is likewise an ever growing challenge for the FFL program. For this reason the FFL program has a dedicated program component called the Florida Yards & Neighborhoods (FYN) program that interfaces primarily with residential homeowners or homeowners/property associations. The FFL state office staff includes a statewide FYN coordinator who coordinates with county-based Extension agents and FFL coordinators throughout the state, ensuring that programming for the FFL nine principles is delivered in a comprehensive and consistent manner. The county-based Extension agents and FFL coordinators mean that FFL is active in 47 of Florida's 67 counties. Each year, in collaboration with the

statewide UF/IFAS Extension network, the FYN program distributes many thousands of printed copies of its two main publications:

1. The Florida-Friendly Landscaping™ Guide to Plant Selection & Landscape Design (http://ffl.ifas.ufl.edu/pdf/FYN_Plant_Selection_Guide_2015.pdf)

2. The Florida Yards & Neighborhoods Handbook (http://ffl.ifas.ufl.edu/materials/FYN_Handbook_2015_web.pdf)

The last print run for the plant selection guide was for 40,000 copies. Numerous other publications are also available online (http://ffl.ifas.ufl.edu/homeowners/publications.htm).

In addition, FFL works closely with the UF/IFAS Master Gardener (MG) program, which is a statewide network of nearly 4,700 volunteers organized through MG programs at the county level. MGs undergo extensive training on all aspects of Florida gardening, including comprehensive training on FFL. In turn, the MGs conduct myriad gardening workshops year around throughout Florida targeted at the landscaping needs of Florida residential homeowners. The MG program closely tracks all volunteer hours and interactions with the public. The state Master Gardener Coordinator estimates FFL-related activities - workshops, consultations, and public events - comprise an estimated 50% of the Master Gardener's volunteer efforts. Based on that estimate, for 2017, Florida Master Gardener volunteers spent 184,567 hours promoting FFL concepts and reached 190,219 Floridians. Further, with paraprofessional volunteer time valued at $23.33 an hour (http://independentsector.org/programs/research/volunteer_time.html), the FFL extension outreach efforts of the MG volunteers during 2018 provided $3,650,211 worth of value to Florida residents.

To facilitate statewide consistency in FFL educational outreach, the FYN state coordinator, in collaboration with the FFL team and UF/IFAS faculty advisors, recently completed an updated and revised FFL curriculum that provides consistent training in educating Extension agents about FFL practices. The curriculum update includes a new 322 page curriculum manual, *The Florida-Friendly Landscaping™ Curriculum Instructor Manual*, which provides extension professionals and FFL educators a science-based, standard training curriculum detailing the nine FFL principles. The curriculum includes ten modules, each with a lesson plan, guided learning activities, a standard PowerPoint presentation, and both a pre- and post-test. The lesson plans outline the learning objectives and activities that complement each PowerPoint presentation, while the pre- and post-tests measure knowledge gain on a county level. Educators are encouraged to use the six month follow up FFL Behavior Change Survey. This survey measures behavior change as a result of attending FFL training and is designed to help develop impact reporting. Details on how to participate in this survey can be found on the FFL FYN Educators Log in Site http://ffl.ifas.ufl.edu/educators/index.htm (password protected link). This standard training curriculum facilitates a science-based, consistent message for presenting the FFL principles statewide.

Target Audience: Builders/Developers/Property Managers:
This past year has seen a dramatic increase in construction and development. As Florida's population continues to grow and more new master-planned residential land development projects

are launched the FFL Builder & Developer (B&D) program is more important than ever. Decisions associated with these large scale projects will significantly and directly impact the availability and quality of Florida's water resources, which in turn will determine the resilience and sustainability of Florida's urban, agricultural, and natural systems. Making more resource-efficient design, construction, and management choices in residential landscapes offers the potential to significantly and measurably conserve and improve the quality of Florida's water resources.

The goal of the FYN program for builders and developers is to develop, implement and evaluate new and existing UF/IFAS programs that reduce consumptive use of water, improve water quality, and protect and conserve natural resources. FYN programs cultivate professional partnerships with builders, developers and other professionals such as land planners, community developers, home builders, landscape architects, government officials, engineers, community association managers, realtors, environmental consultants, urban planners and, utility representatives.

The B&D program encourages environmentally sensitive land planning and low impact development techniques. By collaborating with professional and trade organizations, including the Florida water management districts, Florida Green Building Coalition, Florida Irrigation Society, the B&D program encourages environmentally sensitive land planning and low impact development techniques.

The B&D program provides model code development documents including the following publications:

- FFL Model Covenants, Conditions and Restrictions for New and Existing Community Associations
- A list of considerations for FFL guidelines for architectural review boards
- Model Ordinance for Florida-Friendly Fertilizer Use on Urban Landscapes
- FFL Model Landscape Maintenance Contract

<u>Target Audience: Green Industry Professionals</u>

The Green Industries Best Management Practices (GI-BMP) Program is a major component of the overall FFL program. The GI-BMP program targets all landscape professionals within Florida who apply fertilizer commercially as a landscaping business owner or landscaping crew member. In Florida, all such persons must have a Limited Urban Commercial Fertilizer Applicator's License from the Florida Department of Agriculture. To get this license, a green industry professional must first complete the UF/IFAS GI-BMP training and pass a comprehensive certification exam.

GI-BMP training is offered year around throughout Florida through UF/IFAS Extension and affiliated partners. GI-BMP training consists of six modules covering all aspects of the FFL nine principles, but with a special emphasis on proper fertilizer application.

The six GI-BMP training modules are:

1. Introduction
2. Best Management Practices for Design and Installation of Landscapes
3. Irrigation Best Management Practices
4. Mulching, Mowing, and Pruning
5. Fertilization

6. Pest Control

GI-BMP training is delivered through multiple outreach methods including a traditional classroom setting with an in-person instructor, an online course, and a DVD-based course. In-person classes are offered in English, Spanish and Haitian Creole. The online and DVD-based courses are offered in English and Spanish. Statewide, there are some 250 active GI-BMP instructors comprised of UF/IFAS Extension agents and green industry professionals.

In-person training requires a full day in the classroom. The online and DVD-based courses are self-paced, but include the full training contents of the classroom course. During 2020, and despite the Covid-19 related disruptions, the GI-BMP program conducted 56 in-person training classes (7 in Spanish, 49 in English). These in-person training classes were held at various venues and had a total attendance of 830, with 564 passing the exam and receiving their GI-BMP certification. (Not all persons who take the in-person course take the certification exam.) An additional 1,856 persons were certified through the online option and 277 through the DVD-based course. All persons earning their GI-BMP certification are eligible to apply for their Limited Urban Commercial Fertilizer Applicator's License from the Florida Department of Agriculture. Since the GI-BMP program's inception in 2006 (and through December 2020), a total of 67,784 persons were trained through either the in-person, online, or DVD training formats and, of this number, 57,050 received their GI-BMP certification.

More Detailed Breakout of Activities funded under this Grant:

FFL Program Implementation: The Grantee will implement the FFL program to reduce nonpoint source pollution through education on the nine FFL principles through the following approved activities:

FYN Program

1. Educate and work with target audiences who affect urban landscapes. Provide training and information to the focus audience on FFL principles through workshop(s), providing material(s) through distribution location(s), upon request and online. The "focus audience" may include homeowners, homeowners associations, 4-H extension and other youth outreach, master gardeners, retail gardening stores, and parks and recreation areas.
2. Respond to County UF/IFAS Extension office(s) and public request(s) for information and material(s).
3. Provide homeowner recognition/re-recognition for incorporating the FFL principles.
4. Develop and maintain training curriculum, educational material(s), on-line material(s) and manual(s) on FFL principles for education of the focus audience.
5. Coordinate and meet with other agencies and organizations to discuss and/or present information on FFL principles to further the adoption of the FFL principles and practices.
6. Provide training, programmatic and technical support on the FFL Program to UF/IFAS Extension Service agents statewide who coordinate FFL activities.
7. Explore ways to ensure a continuation of the successful implementation of the FFL program.
8. Develop and maintain FFL demonstration gardens.

9. Develop ways to improve the FFL program and outreach, through new/updated material(s) or new modes of outreach. This can include collaboration with other UF Faculty advisors to produce science-based research on the FFL principles for publications.
10. Follow relevant research including land use and zoning practices, environmental impacts, and regulatory and Extension criteria to develop and improve outreach content.
11. Evaluate the FYN program effectiveness using tools such as surveys, nutrient pollution reduction data, and water savings data.
12. Oversee staff that implement the FFL Program and collaborate with the UF/IFAS Extension Agents that participate in the implementation of the FYN program statewide.
13. Compile reports from other entities including County UF/IFAS Extension office(s) to assess the outcomes, impacts, and successes of the FFL program.
14. Assist with preparation of reports related to program activities and outcomes.

FFC Program

1. Educate and work with target audiences who affect urban landscapes. Provide training and information to the focus audience on FFL principles through workshop(s), public meetings, providing material(s) through distribution location(s), upon request and on-line. The focus audience may include stakeholders involved in development and redevelopment including but not limited to builders, developers, planners, muncicpality staff and elected officials, special districts, landscape architects, real estate agents and professional associations.
2. Respond to County UF/IFAS Extension office(s) and public request(s) for information and material(s).
3. Provide recognition for incorporating the FFL principles.
4. Develop and maintain training curriculum, educational material(s), on-line material(s) and manual(s) on FFL principles for education of the focus audience.
5. Coordinate and meet with other agencies and organizations to discuss and/or present information on FFL principles to further the adoption of the FFL principles and practices.
6. Provide training, programmatic and technical support on the FFL Program to UF/IFAS Extension Service agents, municipality staff and elected officials, professional associations, and other stakeholders.
7. Explore ways to ensure a continuation of the successful implementation of the FFL program.
8. Develop ways to improve the FFL program and outreach, through new/updated material(s) or new modes of outreach. This can include collaboration with other UF Faculty advisors to produce science based research on the FFL principles for publications.
9. Follow relevant research including land use and zoning practices, environmental impacts, and regulatory and Extension criteria to develop and improve outreach content.
10. Evaluate the FFC program effectiveness using tools such as surveys, nutrient pollution reduction data, and water savings data.
11. Oversee staff that implement the FFL Program and collaborate with the UF/IFAS Extension Agents that participate in the implementation of the FFC program statewide.
12. Compile reports from other entities including County UF/IFAS Extension office(s) to assess the outcomes, impacts, and successes of the FFL program.
13. Assist with preparation of reports related to program activities and outcomes.

GI-BMP Program

1. Educate landscaping professionals on FFL principles and practices that protect surface and groundwater.
2. Three GI-BMP regional coordinators, one person per three strategic locations of the state, will operate under the direction of the GI-BMP state coordinator and FFL director to provide regional training programs and workshops and assist UF/IFAS County Extension agents, industry groups and local governments in meeting the education requirements of local ordinances requiring GI-BMP certification for landscaping workers. Each Regional Coordinator will have the milestone goal of teaching/coordinating 60 classes annually.
3. Assist in recruiting, training and coordinating activities of GI-BMP trainers following the guidelines set forth by the Department's "Train-the-Trainer" manual, with an emphasis on English and Spanish and Creole as needed. Provide GI-BMP training both in person and on-line to UF/IFAS extension agents, Master Gardener Green Industry Yard Advisors, other academically based GI-BMP trainers and related audiences on Principles and Application of GI-BMP and offer programmatic support whenever necessary.
4. Develop and maintain training curriculum, educational material(s), on-line material(s) and manual(s) on GI-BMPs. Provide training curriculum in other languages as appropriate based on the size and needs of the target audience.
5. Create, produce, order and/or distribute materials related to GI-BMP training including workshop announcements, web postings, letters, decals, certification materials, and other training materials as necessary.
6. Coordinate and meet with other agencies and organizations to discuss and/or present information on the GI-BMP program to further the adoption of the FFL principles and practices.
7. Develop ways to improve the GI-BMP program through new/updated materials or new modes of training. This can include collaboration with other UF Faculty advisors to produce science based research on the FFL principles for publications.
8. Assist GI-BMP trainers statewide with grading exams and issuing certificates.
9. Provide training oversight to ensure GI-BMP trainers are performing at the level needed for the successful implementation of the program. Maintain a database of certified trainers.
10. Provide GI-BMP materials to County UF/IFAS Extension office(s), to the public upon request, and through distribution locations and on-line materials.
11. Evaluate the GI-BMP program effectiveness using tools such as surveys, nutrient pollution reduction data, and water savings data.
12. Oversee staff that implement the FFL Program and collaborate with the UF/IFAS Extension Agents that participate in the implementation of the GI-BMP program statewide.
13. Compile reports from other entities including County UF/IFAS Extension office(s) to assess the outcomes, impacts, and successes of the FFL program.
14. Follow relevant research including land use and zoning practices, environmental impacts, and regulatory and Extension criteria to develop and improve outreach content.
15. Conduct pre- and post-training surveys to measure behavior change as a result of this program.
16. Identify future funding partnerships.
17. Meet regularly with program partners to accomplish project objectives and to constantly evaluate the program needs.
18. Provide additional statewide support, as needed, to the FFL and GI-BMP programs

FINAL REPORT

The Grantee will prepare a Final Report summarizing the results of the project, including all tasks in the Grant Work Plan. The Final Report must include at a minimum:

1. Project background, project description and timeline, grant award amount and anticipated benefits.
2. Financial summary of actual costs versus the budget, along with any changes required to the budget. Include any match or locally pledged contributions provided, along with other related project work performed outside of this Agreement to identify the overall project cost.
3. Discussion of project schedule versus actual completion, including changes required to the schedule, unexpected adjustments, significant unexpected delays and corrections, and/or other significant deviations from the original project plan.
4. Summary of activities completed as well as those not completed and why, as well as a summary of future goals for the FFL Program.
5. Numbers of workshops and presentations provided and/or coordinated by UF staff that deliver FFL educational materials to the public and UF/IFAS Extension communities.
6. Numbers of new Master Gardeners, Homeowner Associations, Community Association Managers, Property Managers, Landscape Architects, and others trained in FFL principles.
7. Summary of UF/IFAS County accomplishments and FFL success stories as reported by UF/IFAS County Extension agents.
8. Summary of science-based initiatives, research and development activities that are underway that have implications regarding the nine principles and benefits of FFL programming.
9. Summary of BMAP credits and load reductions due to implementation of FFL principles.
10. Summary of water savings due to implementation of FFL principles.
11. FFL Yard Recognition/re-recognion database statistics such as number of property visits, number of new yard recognitions, the results of each visit, information provided, and number of UF/IFAS Extension agents using FFL Yard Recognition database.
12. Discussion of the education campaign effectiveness, including any measurements used to evaluate the project (surveys, estimated audience size, etc.).
13. Discussion of whether the anticipated benefits have been/will be realized (e.g., why an educational approach did or did not exceed the expectation).

EFFECTIVENESS: The FDEP TMDL program recognizes an active FYN program within a county or municipality as an effective project component when developing nonpoint source load reduction alternatives for inclusion in BMAPs for impaired waters. For example, when calculating nitrogen load reductions for impaired waters, an active FYN program allows up to 3% of the starting nitrogen load to be credited as nitrogen removed towards meeting the TMDL nitrogen loading goal.

Pollutant Load Reductions/Outcomes and Outputs:

This is an education project. Traditional load calculations cannot be performed for this project. Surveys will be used to assess behavior change to reduce personal pollution. The project is funding implementation of the Florida-Friendly Landscaping Program for one year (estimated start date of April 2022), which has a statewide reach (covering all BMAP Watershed areas) with Extension Agents in every Florida County and has extensive outreach assisting Florida residents,

landscape professionals, and municipal workers how to change behavior to reduce nonpoint source pollution.

Projected Goals FY22	Projected Goals
GI/BMP Training (Certifications, all training formats)	2,500
FFLCP Course Completions	30
FFL CEU Course Completions (online)	200
Webinars (State Office)	
FYN for Homeowners (monthly)	1,200
FFL for Professionals (monthly)	1,100
GI-BMP Instructor Update (every other month)	180
Social Media Interactions (State Office)	
Facebook (Followers/Posts)	10,000/150
Instagram (Followers/Posts)	1,500/100
FFL Website Visits (State Office, https://ffl.ifas.ufl.edu/)	
Sessions	65,000
Webviews	140,000
Print Materials to be Distributed (State Office)	
FFL Design Guide	4,500
GI-BMP Manuals	5,000
FYN Handbook	6,000
FFL Folders	2,000
FFL Community Association Guide	150
Brochures (various)	10,000
Number of Conferences/Workshops Attended	10
County-based Attendance (All group learning formats, includes workshops/webinars)	50,000

PROJECT BUDGET:
The grant will fund eight full time salaried positions, 2 or more OPS positions (1.5 FTE), along with the associated costs, such as expenses, supplies and travel, required to carry out the activities described in the above task. The overall project funding amount is the same as previous years, with a smaller funding request to 319 and a larger portion paid out of the State DEP funds.

PROJECT GOALS:

Goal: Educate the public and industry through outreach and training.
(a) Action: Increase the use and understanding of Florida-friendly Landscaping™ (FFL) principles.
(b) Action: Educate green industry professionals about BMPs.

FFL	Grant	Match
Watershed	$ 279,463	$ 1,179,954

PROJECT 7: Burris Way Stormwater LID Improvement

PROJECT TYPE: Stormwater

PROJECT FUNDING REQUEST: $123,000
MATCH COMMITMENT: $83,000

ENTITY/SPONSOR NAME: City of Cocoa Beach Stormwater Utility

CONTACT INFORMATION:
Name: Joanie Regan, Stormwater Utility Manager
Street Address: 1600 Minutemen Causeway
City, State, Zip: Cocoa Beach, FL 32931
Telephone: 321.868.3292
Email: jregan@cityofcocoabeach.com

SHORT PROJECT DESCRIPTION:
This LID project removes impervious coverage from this old downtown highly impervious alley and replaces it with a rain garden and high performance pervious interlocking paver system. Discharge from this system is treated through a BAM denitrifying barrier wall prior to canal/lagoon discharge – if any. This system greatly reduces both the storm runoff volume – and nutrient/pollutant loading to the receiving water while also protecting the barrier island's surficial aquifer. A powerful benefit of this system is through providing an example for Cocoa Beach private development – how LID can improve both City aesthetics and Banana River Lagoon health.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address): Burris Way, Cocoa Beach, Brevard County (Alley rights-of-way, asphalt removal – LID installation) See Attachment A – Project Location Map

Stormwater LID
Size of Project Impact (area needed to build project): 6,612 square feet
Size of Area Being Treated: 1.3 acres

Latitude (decimal degrees): 28.3188694 N
Longitude (decimal degrees): 80.6125937 W

Provide the name of the waterbody(s) that this project addresses:
BMAP: Indian River Lagoon/Banana River Lagoon segment BRL B

Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
3057A

List the parameter(s) the waterbody is impaired (i.e., not achieving standards) for those WBIDs that this project addresses.

Nutrients: nitrogen, phosphorus

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

DETAILED PROJECT DESCRIPTION:

The project consists of a 1.33 acre stormbasin, primarily City roadway and pedestrian/vehicular alley, professional/commercial complexes and adjacent multi-family residences. Most of the stormwater improvement is in the City alley with a minor extension of the rain garden between diagonal parking stalls where old worn out asphalt currently exists. This rain garden and swale-extension primarily take one-half (south side) of the upstream stormbasin, overflowing onto the alley pervious interlocking pavers. The rain garden will be landscaped with coastal natives – canopy trees (live oaks) and native shrubs/tall grasses. The other half of the upstream basin will sheet flow directly onto the pervious interlocking pavers. This combined flow will move through the pervious interlocking pavers – allowing for infiltration along the path of the treatment train. This pervious interlocking system has built in runoff storage volume in the pavers themselves as well as storage in the supporting stone base (interstitial spacing). Prior to reaching the overflow control structure (existing stormdrain) this flow will be channeled through a BAM nutrient sorption barrier for discharge nutrient reduction and groundwater protection. This BAM nutrient barrier will be vehicular-rated rain tanks filled with BAM with pervious interlocking pavers above to allow the alley to continue to serve as both a highly-used pedestrian/bike back alley and a truck-loading area for business along the alley (see basic BMP treatment train configuration below). Since this project is in mid-design, the computations have not yet been performed to determine whether rain tanks need or can be incorporated into the system. Preliminary analysis appears to render the rain tanks as unnecessary.

This alley parallels another SW-LID project, Minutemen Corridor SW-LID Improvement – which received both 319 NPS and TMDL funding. This proposed project is another spin-off of this highly visible main street downtown stormwater LID improvement. The community has embraced the LID treatment train concept. Since our public rights-of-way/roadways are such as small percentage of our total land use – these public LID roadway projects serve as a template for what private redevelopment should look like within our urbanized barrier island community. The City is embarking on land development code changes that heavily encourage/incentivize LID and green infrastructure development – SW-LID roadway redevelopment is a way of being the example of positive change for a healthy lagoon. Schematic below illustrates the stormwater LID BMP treatment train.

This LID project removes impervious coverage from this old downtown highly impervious alley and replaces it with a rain garden and high performance pervious interlocking paver system. Discharge from this system is treated through a BAM denitrifying barrier wall prior to canal/lagoon discharge – if any. This system greatly reduces both the storm runoff volume – and nutrient/pollutant loading to the receiving water while also protecting the barrier island's

surficial aquifer. A powerful benefit of this system is through providing an example for Cocoa Beach private development – how LID can improve both City aesthetics and Banana River Lagoon health.

Project Effectiveness Evaluation:
Considering that this smaller project is adjacent to the 319(h) and TMDL grant-funded Minutemen Corridor SW-LID Improvement – pre/post ambient surface water and groundwater monitoring will not be performed. The monitoring component of this project will include post construction BMP treatment train monitoring of inflow untreated storm runoff, post rain garden/pervious paver monitoring and post BAM nutrient sorption barrier monitoring.

Pollutant Load Reductions/Outcomes:
BMP #1 Name:

BMPs Installed	TP lbs/yr	TN lbs/yr
Pre-Project	**.87**	**8.6**
Post-Project	**.66**	**7.3**
Load Reduction	**.21**	**1.3**

Project Funding and Timeline:

Description	Grant Funding	Match Funding
Design, Permitting	$0	$35,000
BMP Construction	$120,000	$30,000
Education (319 only)	$3,000	$0
Monitoring (319 only)	$0	$17,000
Final Report	$0	$1000

Estimated Project Start Date: Summer 2021
Estimated Project End Date: Fall 2022

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PROJECT 8: St. Lucie River/C-23 Water Quality Project– Areas 5 and 6

PROJECT TYPE: Stormwater

PROJECT FUNDING REQUEST: $682,164
MATCH COMMITMENT: $483,928

ENTITY/SPONSOR NAME: City of Port St. Lucie

CONTACT INFORMATION:
Name: John Eason, P.E.
Street Address: 900 SE Ogden Lane
City, State, Zip: Port St. Lucie, FL 34983
Telephone: 772-873-6487
Email: jeason@cityofpsl.com

SHORT PROJECT DESCRIPTION:
This project will be constructed on a fallow citrus grove and other areas of McCarty Ranch Site. The Project will consist of two shallow 4-foot water-depth retention basin constructed with above-ground totaling 117-acres that will divert flow from the C-23 Canal by pumping retention basins with a static volume of approximately 469 acre-feet. The project will treat water from the C-23 Canal by pumping water from the canal into proposed above ground infiltration basins. The water will remain in the infiltration basins until it percolates or evaporates.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address):
12525 Range Line Road, St. Lucie CountySize of Project Impact (area needed to build project):
Area 5: 77 acres
Area 6: 40 acres
Size of Area Being Treated:
Retention basins will be used to treat up to 1.3 percent of water from the C-23 Canal Basin which has
a watershed area of 112,677 acres.
Latitude (decimal degrees):
Area 5: 27.2202167
Area 6: 27.2090611
Longitude (decimal degrees):
Area 5: 80.5319361
Area 6: 80.4849278
Provide the name of the waterbody(s) that this project addresses:
The project will address the TMDL / BMAP requirements of the St. Lucie River and Estuary Basin,
more specifically, the North Fork of the St. Lucie River.
Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
The project addresses the WBIDs 3194/3194B (North Fork of the St. Lucie River) and 3200 (C-23 Canal).

List the parameter(s) the waterbody is impaired for that this project addresses.

The parameters for which the WBID is impaired are Total Nitrogen, Total Phosphorus, and BOD.

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

DETAILED PROJECT DESCRIPTION:

The objective of this project is to improve the water quality of the North Fork of the St. Lucie River by reducing the pollutant load discharging into the River from the C-23 Canal. It is anticipated that implementation of this project will lead to a reduction of total nitrogen, total phosphorus, BOD and total suspended solids that originates in the canal from runoff from agricultural and urban areas. The project will include incorporation of Best Management Practices using retention basins / infiltration basins to capture a portion of the flow in the C-23 Canal. Water will be pumped from the C-23 Canal into the infiltration basins, where it will remain until it is infiltrated directly to the groundwater or returned to the C-23 Canal with emergency overflow outlets during extreme rain events. This project is the fifth phase which will be constructed on a fallow citrus grove and other areas of McCarty Ranch. This phase will consist of the construction of two above-ground berms. **Area 5** consists of a 77-acre site that will divert flow from the C-23 Canal by pumping into a shallow 4-foot water-depth retention basin constructed with above-ground berm. **Area 6** consists of a 40-acre site that will divert flow from the C-23 Canal by pumping into a shallow 4-foot water-depth retention basin constructed with above-ground berm. The total acres of both sites equal 117-acres with a static volume of approximately **469** acre-feet. Upon completion of both **Areas 5 and 6** it is projected that more than approximately **1,685** acre-feet of water could be stored annually.

Ultimately, when all six phases of the project have been constructed it is estimated that there could be a total treatment capacity of 12,170 acre-feet annually of water pumped from the C-23 Canal. Monitoring and reporting the data for total nitrogen, total phosphorus, and total suspended solids will provide verification of the quantities of pollutants that have been removed. The project proposes to pump nutrient laden water from the impaired C-23 Canal into infiltration basins, where it will be stored until it percolates into the groundwater or evaporates. Upon completion of all 6 phases of this project, it is estimated that approximately 23,810 lbs. of nitrogen and 9,091 lbs. of phosphorus will be removed annually from the downstream system.

To promote public awareness of this project and its contribution to improving water quality in the St. Lucie River and Estuary, information will be presented at public meetings and released to news agencies, environmental groups and state and federal governmental members. It is the intention that these discussions will educate the public about the environmental problems and generate support for further projects to be implemented.

Project Effectiveness Evaluation:

Monitoring of the total phosphorus, total nitrogen, and total suspended solids will be done for a period of six months after construction of the project is complete. Sampling will occur in the when pumps areoperating. Grab samples will be taken at the point of pump intake in the C-23

Canal and analyzed at the City's laboratories to determine influent pollutant loads. Pumping records will be kept documenting the amount of water pumped into the reservoir as well as any amount returned to the C-23 Canal (emergency discharge only).

The results of the monitoring data will be evaluated to determine the quantities of nutrients removed and also, the amount of water flow from the C-23 Canal that has been reduced. The specific monitoring protocols in this analysis include surface water (rainfall, flow, and stage), water quality (TP, TN, TSS). Surface water monitoring is assumed to occur monthly and water quality reporting is estimated to occur quarterly. Evidence of compliance with the services agreement and active permits would be compiled into a report and submitted to applicable agencies.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:
BMP Name:Areas 5&6

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.
Load Reduction	9,559	921	3,059
% Reduction	75	75	50

Project Funding and Timeline:

Task Name	Grant Funding	Match Funding
Design, Permitting	$0	$180,000
BMP Construction	$682,164	$282,687
Final Report	$0	$3,750

Estimated Project Start Date: Oct. 2020
Estimated Project End Date: Oct. 2022

PROJECT 9: Veteran's Park Green Infrastructure Installation

PROJECT TYPE: Stormwater

PROJECT FUNDING REQUEST: $82,500
MATCH COMMITMENT: $55,000

ENTITY/SPONSOR NAME: City of Edgewater

CONTACT INFORMATION:
Name: Glenn Irby
Street Address: 104 N. Riverside Drive
City, State, Zip: Edgewater, FL 32132
Telephone: 386-424-2400 ext. 1203
Email: girby@cityofedgewater.org

SHORT PROJECT DESCRIPTION:
This project will install green infrastructure at Veteran's Memorial Park in Edgewater, Florida. Parking and impervious surfaces at the park drain into the Mosquito Lagoon untreated. The city and partners will create tiered plantings on the northern portion of the park to intercept polluted runoff and filter the water prior to it entering the lagoon. The city will contribute $30,000 from its tree fund and partners will contribute $25,000 in matching, in-kind funding.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address):
City: Edgewater
County: Volusia
Address: 1811 S. Riverside Dr., Edgewater, FL 32132
Size of Project Impact (area needed to build project): 10,000 sq. ft.
Size of Area Being Treated: 25,000 sq. ft.
Latitude (decimal degrees): 28°58'22" N
Longitude (decimal degrees): 80°53'29" W

Provide the name of the waterbody(s) that this project addresses:
Indian River Lagoon (Mosquito Lagoon Unit)
Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
Mosquito Lagoon Reasonable Assurance Plan
Estuary Nutrient Region 1 (ENR-1)/WBID 2924B2
Estuary Nutrient Region 2 (ENR-2)/WBID 2924B1
List the parameter(s) the waterbody is impaired for that this project addresses.
WBID 2924B2: Nutrients (Chlorophyll-a)
WBID 2924B1: Nutrients (Total Nitrogen), Nutrients (Chlorophyll-a)

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

DETAILED PROJECT DESCRIPTION:
This project will install terraced green infrastructure at Veteran's Memorial Park in Edgewater, Florida to reduce runoff pollution from parking and impervious surfaces that drain into the Mosquito Lagoon. The city and partners will create tiered plantings on the northern portion of the park to intercept polluted runoff and filter the water prior to it entering the lagoon. The project will encompass approximately 10,000 sq. ft. and treat 25,000 sq. ft. of surface runoff. The city will contribute $30,000 from its tree fund and partners will contribute $25,000 in matching, in-kind funding for design and installation of the living shoreline project. This BMP will utilize native shoreline plants. Volusia County will provide educational outreach for the project and utilize it as a demonstration project in their county-wide LID and resiliency initiatives.

Tiered plantings of native vegetation along the steep northern shoreline of Veteran's Park will allow runoff pollution from impervious surfaces to be filtered. As rain water flows from the parking lot and other impervious surfaces at the park, the runoff will be collected one tier at a time. Excess water from each tier will flow to the next terrace below. By utilizing native plants with deep growing roots, the water will be captured and absorbed at each level, providing multiple levels of treatment along the length of the park. The City and its partners will utilize this green infrastructure project to educate residents of southeast Volusia County about the value of living shorelines for water quality improvement (as noted in the Mosquito Lagoon Reasonable Assurance Plan).

This project will install terraced green infrastructure at Veteran's Memorial Park in Edgewater, Florida to reduce runoff pollution from parking and impervious surfaces that drain into the Mosquito Lagoon. This green infrastructure project will provide added benefits including:
• Increased safety (the current waterfront is a steep slope).
• Reduce storm water flow rates thereby reducing erosion and reducing pollution/nutrients entering the Mosquito Lagoon.
• Enhanced aquatic, shoreline and upland habitat.
• Improved quality of the park by incorporating native plants that attract pollinators and enhancing recreational opportunities such as fishing, kayaking and wildlife viewing.
• Reduced need for maintenance and long-term costs (mowing/trimming/spraying).
• Increased educational opportunities to demonstrate LID and coastal resiliency (i.e. green infrastructure/living shorelines are resilient to storm damage and sea level rise.)

The Riverside Conservancy and Volusia County will provide online and on-site educationalprograms throughout the year and will document at least 100 volunteer hours on-site. Projectpartners will also produce monthly social media updates on the planting project with the goalof reaching 5,000 individuals. Project partners will also host at least one outreach eventdedicated to informing the public about LID/green infrastructure and the value of shorelineplanting to local waters. The Riverside Conservancy anticipates at least 50 people to attend thisevent. Each participant will receive FDEP approved bookmarks and other hand-outs/fact sheets.

Project Effectiveness Evaluation:
Effectiveness of the green infrastructure project will be measured in terms of project area (sq. ft), treatment area (sq. ft.), number of terraces created, elevation of terraces, number and type of plants installed, and "pre" and "post" photos of the BMP site. Further, Riverside Conservancy volunteers will conduct citizen science monitoring of the water quality adjacent to the green infrastructure project for two years. The County has monitored water quality at this site for decades and the

Riverside Conservancy will compare its data to future county samples to ensure quality control. The Riverside Conservancy will compile surveys of park visitors to measure community engagement and understanding of the value of living shoreline as it relates to water quality. Additionally, the Riverside Conservancy will also conduct "pre" and "post" tests of students it brings to the site during its educational programs.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:

BMP Name: Vegeted natural buffers/ tiered vegetated filter strips

BMPs Installed	**TP lbs./yr.**	**TN lbs./yr.**
Load Reduction	<100	<10
	.002 KG/YR	.002 KG/YR
% Reduction	80% ON-SITE	80% ON-SITE

BMP Name: Education/Outreach

BMPs Installed	**TP**	**TN**
Load Reduction	-	-
% Reduction	2%	2%

Project Funding and Timeline:

Task Name	**Grant Funding**	**Match Funding**
Design	$0	$5,000
Installation of living shoreline buffer/green infrastructure	$41,500	$35,000
Education/Water Quality Testing	$13,500	$10,000
Total	**$82,500**	**$55,000**

Estimated Project Start Date: June 2022
(The project can begin as soon as the 319 funding is approved).
Estimated Project End Date: May 2023

PROJECT 10: Martin County Connect to Protect Septic to Sewer Conversion Nutrient Removal Program

PROJECT TYPE: OSTDS

PROJECT FUNDING REQUEST: $750,000
MATCH COMMITMENT: $2,325,000

ENTITY/SPONSOR NAME: Martin County

CONTACT INFORMATION:
Name: Samuel Amerson, P.E., Utilities & Solid Waste Director
Street Address: 3473 SE Willoughby Road, Suite 102
City, State, Zip: Stuart, Florida 34997
Telephone: (772)223-7942 (o)
Email: samerson@martin.fl.us

SHORT PROJECT DESCRIPTION:
Martin County (County) is requesting 319(h) grant funding for 750 sewer connections (500 vacuum sewer and 250 grinder pump stations) and the associated 750 septic tank abandonments included in Its Connect to Protect Septic to Sewer Conversion Program. The funding request is $1000 per connection for a total of $750,000.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address):
The FY2020-2024 vacuum sewer system projects include several sewer system locations within Martin County (see Attachment B map). The FY2020-2024 grinder pump station projects include several locations within Martin County (refer back to map in Attachment B).

Size of Project Impact (area needed to build project): Vacuum Sewer System: +2291 acres; 4645 connections; Grinder Pump Stations: +741.6 acres; 2118 connections
Size of Area Being Treated: Vacuum Sewer System: +2291 acres; (residences connected to vacuum sewer); Grinder Pump Stations: +741.6 acres (residences connected to grinder system sewer)

Latitude (decimal degrees): 27.167
Longitude (decimal degrees): 80.213

Provide the name of the waterbody(s) that this project addresses:

The project area drains to the St. Lucie River and Estuary Basin and eventually discharges into the Indian River Lagoon. Both water bodies are impacted by high nutrient concentrations and are considered impaired, BMAPS.

Provide the WBID number(s) for the waterbody segment(s) that this project addresses.

WBIDs 3208B and 3193

List the parameter(s) the waterbody is impaired for that this project addresses.

St. Lucie River and Estuary Basin is impaired for TN and TP, plus BOD

Indian River Lagoon (IRL) is impaired for TN and TP

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?

No

DETAILED PROJECT DESCRIPTION:

Martin County is requesting grant funding and providing matching funds for their Connect to Protect Septic to Sewer Program for both vacuum sewer and grinder sewer systems within its Service area. The County would like grant assistance for 500 vacuum sewer connections in the FY2020-2024 Connect to Protect Septic to Sewer Program. There is a total of 4645 connections available for connection in the vacuum sewer system through 2024. The applicant, Martin County is seeking 319h grant funding to connect 500 of the potential vacuum septic to sewer applicants to the MCU sewer system. The total cost for vacuum sewer connections in Martin County ranges from $17,000 to $22,000 per connection. The estimated cost for each vacuum sewer lateral connection to the Vacuum Pit and septic tank abandonment is $2,500 per household. This request is for $1,000 per connection for these 500 connections and septic tank abandonments, for a total of $500,000. The match for this request is the 500 connections at $1,500 per connection and septic tank abandonment for a total of $750,000 in matching funds.

As part of this application Martin County (MC) is requesting grant funding and providing matching funds for 250 grinder pump station connections and related septic tank abandonments for the FY2020-2024 Connect to Protect Septic to Sewer Program. The total cost for grinder pump station connections in Martin County are estimated at $11,400 per connection. MCU currently has 2118 homes available for grinder pump station connection through 2024. The estimated cost for each sewer connection and septic tank abandonment is $7,300 per household. MCU is requesting $1000 per connection for 250 grinder pump stations and septic tank abandonments, for a total of $250,000. The local match is 250 grinder systems at $6,300 per connection for a total of $1,575,000 in matching funds.

The Martin County total 319h grant request is for $750,000, with a match commitment of $2,325,000 for 750 septic to sewer connections. The Martin County matching commitment share is 76%, and the 319h grant share is 24%; therefore, the County-Homeowner match is more than 3 times the grant request.

Project will eliminate septic tanks that will remove TN/TP/BOD/Fecal pollution sources and thereby improve water quality. Project will eliminate septic tanks and connect residents to the MCU sewer system which inherently improves the environment especially adjacent to water bodies. This Connect to Protect Septic to Sewer Conversion Program provides significant value to the community and each resident both environmentally and financially. The community and Board of County Commissioners both support this project. The project will result in significant nutrient reductions to impaired waters and will result in added safety for the community associated with removal of pollution that causes the health issues associated with algal blooms.

Project Effectiveness Evaluation:

MCU has done hundreds of septic tank conversions in the recent past resulting in a significant reduction in nutrient contributions to nearby water bodies. There is an accurate understanding that

septic tank removal equates to a significant reduction Total Nitrogen (TN), in the range from 9 to 45 lbs TN per year per septic tank based on cited documentation. There is also a significant reduction in Total Phosphorus (TP) attributed to septic tank removal, in the range 2 to 5 lbs TP per year per septic tank based on the prior studies cited in the references. The grant application basis for the Martin County calculation is 22.5 lbs TN per year per septic tank and 4.15 lbs TN per year per septic tank. MCU has significant background monitoring well data in and around these septic service areas and they will do additional sample testing after the vacuum sewer and grinder pump station connections are installed to quantify the reduction in total nitrogen and total phosphorus associated with the vacuum and grinder system connections to the County's sewer system. The reduction in nitrogen, and phosphorus will be measured in the monitoring wells and through modeling using ArcNLET to correlate the results of the septic to sewer conversion successes.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:

BMP Name: Martin County Vacuum Sewer Septic to Sewer Connections

BMPs Installed	TP lbs./yr.	TN lbs./yr.
Load Reduction	2,075	11,250
% Reduction	99%	99%

BMP Name: Martin County Grinder Pump Station Septic to Sewer Connections

BMPs Installed	TP lbs./yr.	TN lbs./yr.
Load Reduction	1,038	5,625
% Reduction	99%	99%

TOTALS

BMPs Installed	TP lbs./yr.	TN lbs./yr.
Load Reduction	3,113	16,875
% Reduction	99%	99%

Project Funding and Timeline:

Task Name	Grant Funding	Match Funding
500 Vacuum Sewer Connections 319h	$500,000	$750,000
250 Grinder Pump Station Connections 319h	$250,000	$1,575,000
	$	$
Project Totals	$750,000	$2,325,000

Estimated Project Start Date: 10/01/2021
Estimated Project End Date: 09/30/2025

PROJECT 11: Haines City Stormwater Quality Improvements

PROJECT TYPE: Stormwater

PROJECT FUNDING REQUEST: $394,500
MATCH COMMITMENT: $100,000

ENTITY/SPONSOR NAME: City of Haines City

CONTACT INFORMATION:
Name: Tracy Mercer
Street Address: 300 North 5th Street
City, State, Zip: Haines City, FL 33844
Telephone: 863-271-6995
Email: tmercer@hainescity.com

SHORT PROJECT DESCRIPTION:
This project will construct four (4) Rain Garden BMPs (see attachment 1 for locations) with low impact development components to be installed to include perimeter trees and other vegetation. The 4 BMPs provide treatment for a total of approximately 56.26 acres including the Lake Tracy BMP Project with drainage area encompassing 52.5 acres; the Ledwith Avenue BMP Project with drainage area encompassing 1.0 acres; the Johns Avenue BMP Project with drainage area encompassing 1.0 acres; and the 9th Street BMP Project with drainage area encompassing 1.76 acres (see attachment 2 for more detail). Water quality monitoring will be performed. Public nonpoint source education will be addressed through onsite signage and a social marketing campaign.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address): **300 N. 5th St., Haines City, Polk County, Florida**
Size of Project Impact (area needed to build project): **0.81 acres**
Size of Area Being Treated: **56.26 acres**
Latitude (decimal degrees): **28.111667 N**
Longitude (decimal degrees): **81.627869 W**
Provide the name of the waterbody(s) that this project addresses:
Lake Eva & Lake Tracy, Lake Okeechobee BMAP
Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
14921 & 15101
List the parameter(s) the waterbody is impaired for that this project addresses.
Nutrients & Total Phosphorous

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

DETAILED PROJECT DESCRIPTION:

Lake Tracy BMP Project

The Lake Tracy BMP Project drainage area encompasses 52.5 acres adjoining Lake Tracy on its eastern shoreline and is roughly bounded by Railroad Avenue, Ash Street, Main Street, 1st Street, Claude Holmes Road, and 8th Street N. The 0.6-acre stormwater treatment area is located at Lily Avenue and Main Street. The stormwater flows to the treatment area mainly via overland and in-street sheet flow, with some direction by drainage swales. The BMP consists of an irregularly shaped, 4-foot deep, fully landscaped, dry (based on existing seasonal high-water table) rain garden basin with a street inlet structure at the northeast corner. Stormwater treatment is provided via retention and percolation into the surficial aquifer, eliminating direct discharge into nearby surface water. In case of excessive precipitation, the rain garden has an overflow structure at the northwest corner which flows under Main Street E via culvert to Lake Tracy.

Ledwith Avenue BMP Project

The Ledwith Avenue BMP Project drainage area encompasses 1.0 acres which drains to Lake Eva and is roughly bounded by 4th Street S, Oak Avenue E, 5th Street S and Ledwith Avenue. The 0.07-acre stormwater treatment area is located at Ledwith Avenue and 5th Street S. The stormwater flows to the treatment area mainly via overland and in-street sheet flow. The BMP consists of a roughly rectangular shaped, 2½-foot deep, fully landscaped, dry (based on existing seasonal high-water table) rain garden basin with a street inlet structure on the east side which requires 28 feet of pipe to allow for sidewalk. Stormwater treatment is provided via retention, vegetative nutrient uptake, and percolation into the surficial aquifer, eliminating direct discharge into nearby surface water.

Johns Avenue BMP Project

The Johns Avenue BMP Project drainage area is triangular in shape encompassing 1.0 acres which drains to Lake Eva and is roughly bounded by Johns Avenue and 10th Street S. The 0.07-acre stormwater treatment area is located along the south side of Johns Avenue, west of 9th Street S. The stormwater flows to the treatment area mainly via overland and in-street sheet flow. The BMP consists of a long, linear rectangular shape, fully landscaped, dry (based on existing seasonal high-water table) bio-swale with inlet directly from the street along its length. Stormwater treatment is provided via retention, vegetative nutrient uptake, and percolation into the surficial aquifer, eliminating direct discharge into nearby surface water.

9th Street BMP Project

The 9th Street BMP Project drainage area encompasses 1.76 acres which drains to Lake Eva and is roughly bounded by Johns Avenue, 9th Street S and 10th Street S. The 0.07-acre stormwater treatment area is located along the west side of 9th Street S, south of Johns Avenue. The stormwater flows to the treatment area mainly via overland and in-street sheet flow. The BMP consists of a long, linear rectangular shape, fully landscaped, dry (based on existing seasonal high-water table) bio-swale with flow from the street along its length via three (3) curb cut flume inlets. Stormwater treatment is provided via retention, vegetative nutrient uptake, and percolation into the surficial aquifer, eliminating direct discharge into nearby surface water.

Each of the four proposed BMP's will reduce hard surfaces and create conditions to retain, percolate, reduce discharge rates, and accomplish nutrient bioretention with planted vegetation. Added value to

the community will be accomplished with vegetation, nutrient discharge reduction to lakes, decreased lake and pollution maintenance costs, and associated aesthetics.
BMP and LID project initiative benefits will be promoted with a public educational component consisting of: posted signs, City Facebook page social media posts, utility billing mailing inserts, and materials posted on existing kiosk(s). All the education and outreach efforts or activities will be focused on LID value, function, product discussion, applicability and waterbody benefits, sustainability, and resilience.

The educational component of these projects relay the value of becoming a sustainable City by integrating its landscape, roadways and stormwater management & maintenance into a LID-based community plan that considers all three components when redeveloping both the public and the private sectors within the City. These concepts provide a long-lasting community approach to watershed management and community redevelopment.

Project Effectiveness Evaluation:
Each of the four BMPs will undergo two grab samples per storm event, an initial firstflush (at approximately 15 minutes into storm event) and a mid-duration (at approximately 30 minutes in to storm event) water quality analysis for Total Suspended Solids (TSS), Total Nitrogen (TN) and Total Phosphorous (TP) during a dry season storm event and a wet season storm event for a total of 16 sampling events. As the BMP's are designed for dry retention, off-site discharge to lakes will be greatly reduced and sampling/monitoring opportunities will be limited.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:
BMP Name: Lake Tracy BMP

BMPs Installed	**TSS lbs./yr.**	**TP lbs./yr.**	**TN lbs./yr.**
Load Reduction	2238.72	16.05	105.28
% Reduction	44	44	44

BMP Name: Ledwith Avenue BMP

BMPs Installed	**TSS lbs./yr.**	**TP lbs./yr.**	**TN lbs./yr.**
Load Reduction	134.71	1.59	10.27
% Reduction	78	78	78

BMP Name: Johns Avenue BMP

BMPs Installed	**TSS lbs./yr.**	**TP lbs./yr.**	**TN lbs./yr.**
Load Reduction	71.36	0.66	4.42
% Reduction	71	71	71

BMP Name: 9th Street BMP

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.
Load Reduction	150.70	1.50	9.80
% Reduction	95.5	95.5	95.5

TOTALS

BMPs Installed	TSS lbs./yr.	TP lbs./yr.	TN lbs./yr.
Load Reduction	2595.49	19.80	129.77
% Reduction	47	48	48

Project Funding and Timeline:

Task Name	Grant Funding	Match Funding
Bidding & Technical Services	$0	$30,000
BMP Construction	$360,500	$67,500
Education	$2,000	$0
Monitoring	$32,000	$0
Final Report	$0	$2,500

Estimated Project Start Date: **10/1/2020**
Estimated Project End Date: **10/1/2022**

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PROJECT 12: E. Longwood Phase IV

PROJECT TYPE: OSTDS

PROJECT FUNDING REQUEST: $661,100
MATCH COMMITMENT: $264,440

ENTITY/SPONSOR NAME: City of Longwood

CONTACT INFORMATION:
Name: Clint Gioielli
Street Address: **175 West Warren Avenue**
City, State, Zip: Longwood, FL 32750
Telephone: 407-260-3445
Email: cgioielli@longwoodfl.org

SHORT PROJECT DESCRIPTION:
The total project proposes to eliminate 86 septic tanks and install a central sewer system. The requested grant portion is only for the abandonment of the septic tanks, installation of the individual laterals, repair of the roadway for the lateral connections only and physical connection of the homes to the sewer system. This will allow the City to connect 86 existing properties all of which are residential in the East Longwood Area, located within close proximity to Lake Evergreen and Lake Wildmere. In this area there are 86 residences, totaling 31 acres. There was also no centralized retention installed at the time of building these properties. All of the properties are served by septic tanks. The project includes installation of laterals to the vacant properties and the existing residences. It will also include abandonment of the existing septic tanks and connection to the City of Longwood sewer system. The wastewater will be pumped to Altamonte Springs for treatment where it will be treated and reused for irrigation.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address): N. Grant St. Longwood, FL 32750
Size of Project Impact (area needed to build project): 0.05 Miles
Size of Area Being Treated:32
Latitude (decimal degrees): 28.70832
Longitude (decimal degrees): -81.33824

Provide the name of the waterbody(s) that this project addresses:
Soldier Creek, in Lake Jesup Basin BMAP
Provide the WBID number(s) for the waterbody segment(s) that this project addresses.
2986
List the parameter(s) the waterbody is impaired for that this project addresses.
Fecal Coli Form, Coli form and Bacteria

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

DETAILED PROJECT DESCRIPTION:
The total project proposes to eliminate 86 septic tanks and install a central sewer system. The requested grant portion is only for the abandonment of the septic tanks, installation of the individual laterals, repair of the roadway for the lateral connections only and physical connection of the homes to the sewer system. This will allow the City to connect 86 existing properties all of which are residential in the East Longwood Area, located within close proximity to Lake Evergreen and Lake Wildmere. In this area there are 86 residences, totaling 32 acres. There was also no centralized retention installed at the time of building these properties. All of the properties are served by septic tanks. The project includes installation of laterals to the vacant properties and the existing residences. It will also include abandonment of the existing septic tanks and connection to the City of Longwood sewer system. The wastewater will be pumped to Seminole County for treatment where it will be treated and reused for irrigation.

The removal of the existing septic tanks is expected to significantly reduce the amount of nutrients and fecal coliform being contributed to the water bodies. The overall primary mission benefit from this project is Water Quality. The water quality will improve as a result of this project removing an estimated 2,666 pounds of TN and 430 pounds of TP annually. The secondary benefit will be to the natural systems surrounding Lake Evergreen and Lake Wildmere by removing nutrients and providing an additional 25,800 gallons/day of reuse water.

Project Effectiveness Evaluation:

Septic tanks may contribute significantly to the nutrients that can be carried through baseflow.
In this analysis, septic tank nutrient loadings were estimated based on septic tank GIS coverage provided to the Department by PBS&J. The analysis considered only those septic tanks located within 200 meters of any receiving waterbodies that discharge to Lake Jesup.
The nutrient loads contributed by septic tanks were calculated using the following equation:

$$W = A * D * C * (1- R)$$

Where:
A is the area (in acres) covered by septic tanks within 200 meters of any receiving waterbodies that discharge into Lake Jesup,
D is the per-acre population density,
C is the per-capita TN and TP generation rate, and
R is the nutrient removal efficiency through septic tank systems and soil.

About 789 acres of the watershed with septic tanks are located within 200 meters of receiving waters that discharge to Lake Jesup. Of the 789 acres, about 637 acres are primarily associated with single-family residential areas, and the remaining 153 acres are associated with commercial areas (occupied by institutions). Septic tank areas located in different planning areas have different population densities.

Assuming that failed septic tanks are not discovered for about 5 years, the estimated annual septic tank failure rate is about 5 times the discovery rate, or 5.3 percent. Based on Equation 4.1, the estimated fecal coliform loading from failed septic tanks in the Gee Creek, Soldier Creek, and

Smith Canal watersheds is approximately 1.28 x 1011, 4.76 x 1011, and 1.23 x 1011 counts/day, respectively.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:

BMP Name: Septic Tank Abandonment

BMPs Installed	**TP lbs./yr.**	**TN lbs./yr.**
Load Reduction	430	2666
% Reduction	100	100

Project Funding and Timeline:

Task Name	**Grant Funding**	**Match Funding**
Abandonment of Septic Tanks	$661,100	$264,440

Estimated Project Start Date: 06/05/2023
Estimated Project End Date: 03/29/2024

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PROJECT 13: Blue Spring Nutrient Reduction Septic to Sewer Project - East Graves/Holly Ave and Community Redevelopment Area

PROJECT TYPE: OSTDS

PROJECT FUNDING REQUEST: $281,081
MATCH COMMITMENT: $281,081

ENTITY/SPONSOR NAME: City of Orange City

CONTACT INFORMATION:
Migdalia Hernandez
Public Works Director
Orange City
Street Address: 426 S. Volusia Avenue
City, State, Zip: Orange City, FL 32763
Telephone: 386.775.5446
Email: mhernandez@ourorangecity.com

SHORT PROJECT DESCRIPTION:
The proposed project is to connect onsite sewage treatment and disposal systems (OSTDS or simply "septic tanks") along the corridor of the Holly Avenue and Blue Spring Avenue infrastructure project in Orange City. This grant request is only for the portion of the project for the connection of homes to the central sewer, abandonment of septic tanks, restoration, and connection fees. It is part of a larger plan to connect septic tanks where feasible in the Orange City. This first phase is in the community redevelopment area (CRA) and will bring sewer and stormwater green infrastructure to the Hwy 17/92 corridor in Orange City. The new collection system will be in operation in July 2020. By connecting septic tank customers to sewer, this project will reduce groundwater pollution in a high recharge area and priority focus area for the Volusia Blue Spring springshed. Orange City is the closest city to Blue Spring. Septic tanks are a major contribution to pollutant loading to Blue Spring. Approximately 54% of the pollutant loading to Blue Spring is from septic tanks according to the draft Volusia Blue Spring Basin Management Action Plan (BMAP). This Orange City project is one of the only projects in the Volusia Blue Spring BMAP (Project OC-7) area that will be removing septic tanks. The program will be part of a comprehensive joint education program conducted in cooperation with Volusia County and FDOH.

PROJECT LOCATION AND WATERSHED CHARACTERISTICS:
Geographic Location of Project (e.g. city, county, street address):
City of Orange City
Volusia County
205 E. Graves Avenue
Orange City, FL 32763
Size of Project Impact (area needed to build project):
Size of Area Being Treated: **27.77 acres**
Latitude (decimal degrees): 28.5655
Longitude (decimal degrees):-81.1751

Provide the name of the waterbody(s) that this project addresses: Volusia Blue Spring

Provide the WBID number(s) for the waterbody segment(s) that this project addresses:
Volusia Blue Spring- WBID – 28933
List the parameter(s) the waterbody is impaired for that this project addresses:
TMDL -Nitrate (NO3)- 0.35 mg/L (as a monthly average)

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

DETAILED PROJECT DESCRIPTION:
The proposed project is to connect customers on septic tanks in the service area of the new Holly Avenue infrastructure project in Orange City. This project will reduce groundwater pollution from septic tanks in a high recharge area and is in the Priority Focus Area of the Volusia Blue Spring springshed. It is the only project in the Blue Spring BMAP (project OC-7) that will be removing septic tanks. A gravity and force main sewer collection system is currently being constructed to bring a central sewer service to this area. The exact total is unknown, but it will be approximately 26 septic tanks that will either be converted to sewer or upgraded.

Additionally, a package plant and drainfield for a Hotel may be taken offline. The City is unable to determine the exact number because the Florida Department of Health information is incomplete. The number will also depend on the acceptance of the parcel owners. The project will be promoted and supported by a coordinated comprehensive public education program. The project is part of an overall improvement project to improve the City's CRA area and implement green infrastructure including wastewater collection, reclaimed water and stormwater treatment.

Among the components of the public education/relations:

- Develop septic tank connection policies and codes with Orange City Council
- At least Two council workshops; two public meetings
- Hire a part time temporary employee to handle public inquiries, manage program and coordinate with City staff
- Door to door visits by City staff to discuss program
- Prepare and print door hangers
- Develop flyers for sewer bill insert
- Work with the Florida Department of Health on their meetings with HOAs and business groups to educate about septic tanks
- Website development
- Staff time for the extensive use of social media to educate public
- Participation in Volusia County's public information program

Project Effectiveness Evaluation:
Project effectiveness is based on projected Nitrogen loading reductions as described in the Volusia Blue Spring BMAP for eliminating septic tanks and a wastewater package plant.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:

BMP #1 Name:

BMPs Installed	**TN lbs./yr.**
Pre-Project	626
Post-Project	0
Load Reduction	-
% Reduction	100%

Project Funding and Timeline:

Task	Grant Funding	**Match**
Planning, Design, Engineering & Permitting	$NA	$55,200
BMP Construction	$234,481	$234,481
Education (319 only)	$46,600	$46,600

Estimated Project Start Date: **10/1/2020**

Estimated Project End Date: **12/31/2024**

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PROJECT 14: Florida Stakeholder Watershed BMAP Implementation Placeholder Project

PROJECT FUNDING REQUEST AMOUNT: $50,596
MATCH COMMITMENT AMOUNT: $162,211

ENTITY/SPONSOR NAME: **TBD**

CONTACT INFORMATION: TBD

PROJECT LOCATION: TBD

Are any of the grant or match activities in this project proposal required under a municipal separate storm sewer system (MS4) or stormwater NPDES permit?
No

DETAILED PROJECT DESCRIPTION:

The project will be construction of a nonpoint stormwater project or building laterals to connect homeowners to sewer, depending on Florida Stakeholder project needs. The project will implement one or more BMAP goals or objectives.

POLLUTANT LOAD REDUCTIONS/OUTCOMES:

TBD

Project Funding and Timeline*:

*This project will be completed by September 30th, 2025.

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