PASCO COUNTY MYIP 2019

ATTACHMENT F – KEY VISTA SHORELINE STABILIZATION PROJECT

Project Summary

Perform Restoration Project at Key Vista Nature Park. This project will stabilize the banks along Rocky Creek, improve access to the trails in that area, improve the shoreline kayak launch, dredge material from the creek that has accumulated due to erosion of the shoreline, and improve water flow into and out of the Sleepy Lagoon Bayou. It will also add a couple of amenities to the shoreline for the public to use, such as observation piers and improved trails.

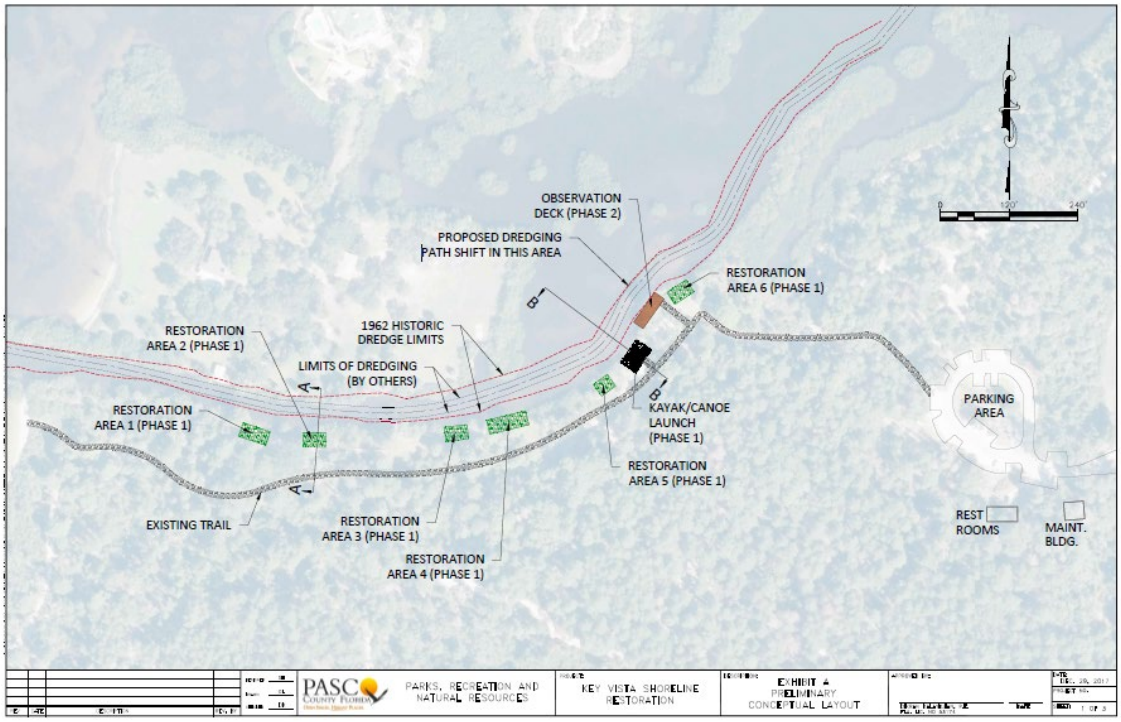
Background

Key Vista is a park in southwest Pasco County that is adjacent to the Gulf of Mexico on the western border of the park. The park's northern border is defined by Rocky Creek, a shallow tidal creek that connects Sleepy Lagoon Bayou and the Gulf of Mexico. The original channel was dredged in 1962. Since that time, erosion primarily from the Key Vista Nature Park has slowly filled in the channel. Continued erosion likely could cause the bayou to be cut off from the Gulf of Mexico completely. This project encompasses three primary phases to correct the issue. The first phase would be to stop the erosion from the shoreline. The primary method of doing this would be to install gabion baskets filled with stone to prevent the erosion and promote the growth of native species along the south border of the creek. Access points for fishing and recreation would be identified so that future erosion would be mitigated. The second phase would be to dredge the channel and restore flow to the bayou. Dredging would occur along the park's border. The final phase would be to install park improvements for items such as the kayak launch, observation platforms on the creek, and trail improvements such as the use of crushed shell or other suitable materials.

Current Status

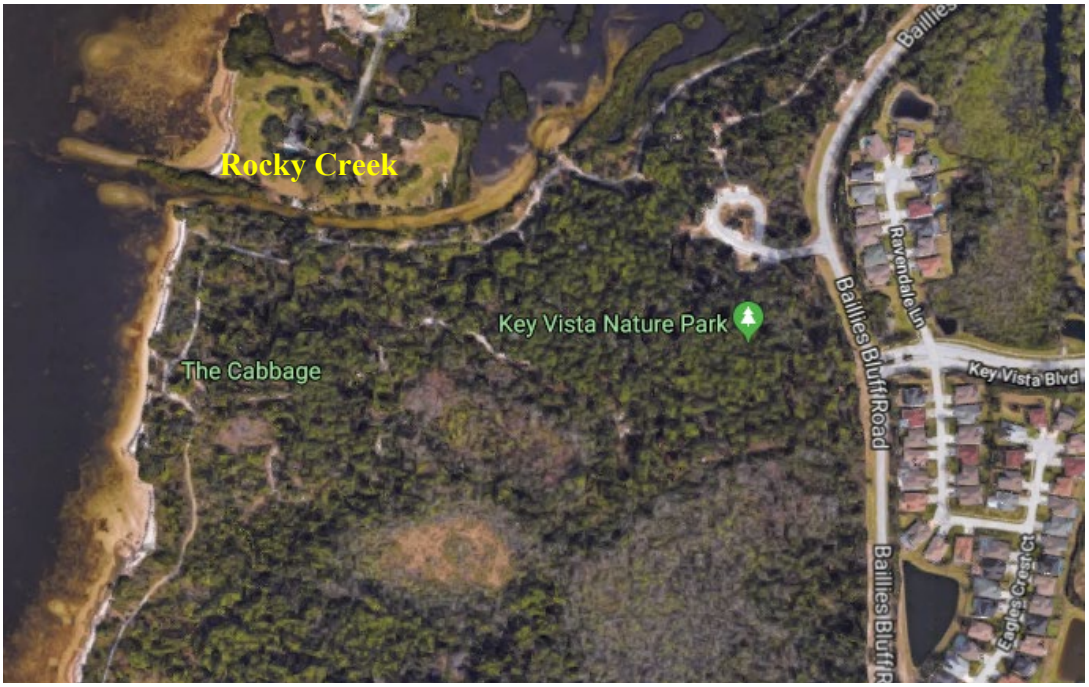
N/A

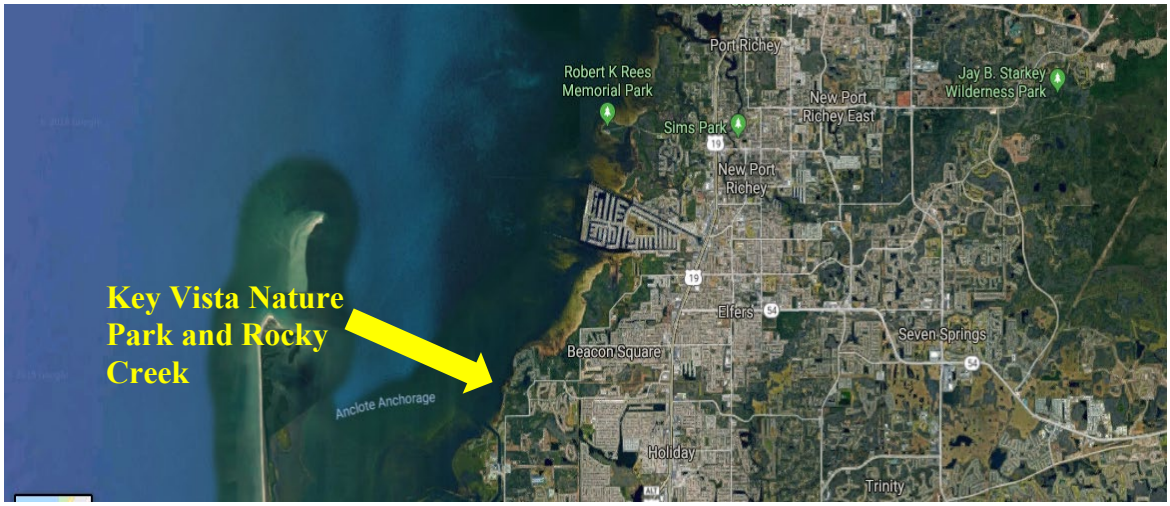
Example improvements to the area. Exact amenities and dredge areas may be modified as required by engineering assessments and permitting.



Location

Key Vista and Rocky Creek are located in southwest Pasco County. GPS Coordinates are 28.199255 North and -82.7813666 West.





Project Objectives

1. Stabilize the Shoreline on the Park side of Rocky Creek.
2. Dredge Rocky Creek as necessary to remove accumulated sediments.
3. Improve the amenities on the trails near Rocky Creek.

Project Need, Purpose, Benefits, and RESTORE Applicability

Need:

This restoration project is needed to improve the environment around the Rocky Creek area. The project will be an ongoing effort to restore the flow of water via dredge to and from Sleepy Lagoon as well as to prevent future issues from occurring. The bank continues to erode and fill in the channel. The current kayak launch area is in poor condition and will be improved to allow a better facility for the public as well as to limit the erosion already occurring. Amenities along the creek will allow access to the creek while stopping or limiting the breakdown of the bankside.

Purpose:

The purpose of the grant is to restore bayou flow, conduct a shoreline restoration and improvement project over a three year period.

Benefits:

Sleepy Lagoon water flow improvement, shoreline hardening stabilization, improved facilities at the park to prevent future issues from occurring.

RESTORE Objectives:

RESTORE objectives addressed by this project include ecosystem restoration and mitigation of environmental damages.

Plan of Action and Milestones Associated with the Project

Timeline	Proposed Date
Specifications generated for permitting and engineering services for construction and dredging project management	Grant +2 months
Bidding processes commenced	Grant +3 months
Bidding processes completed. Contractor selected.	Grant +6 months
Ecological Services Evaluation	Grant +6 months
Commence permitting efforts	Grant +6 months
Complete permitting requirements	Grant + 18 months
Solicitation of construction services.	Grant + 20 months
Select construction contractor	Grant +24 months
Commence construction and dredging	Grant + 25 months
Complete Construction and dredging	Grant + 36 months
Project review and closeout	Grant + 40 months
Restoration of ecological services evaluation	Grant + 48 months

Once construction is complete, the ecological services of the area will be evaluated again to determine impact of the project.

Project Success Criteria

The successful restoration of flow to and from Sleepy Lagoon. Minimization of bank erosion from key areas along Rocky Creek by the use of gabion baskets. An improvement of amenities in the park along Rock Creek by projects such as trail improvements, installation of observation piers, signage, etc.

Funding

Funding from this project will be provided as follows:

RESTORE Funding	$500,000.00
Total	**$500,000.00**

Project Description

The natural resource protection objective of this project is the shoreline stabilization of Rocky Creek at Key Vista Nature Park in order to eliminate soil erosion, as well as re-establish flushing water to Sleepy Lagoon to restore the degraded habitats.

This will be accomplished through: the instillation of gabion baskets or an equivalent system that will promote mangrove growth, dredging of the channel leading to Sleepy Lagoon, and hardening the shoreline with the instillation of a concrete kayak launch. These enhancements will protect and restore these natural resources, specifically the soil and surrounding wetlands while allowing public access to the waterfront without damaging natural recourses. The figures 2 – 4 demonstrate the current conditions of the shoreline of Rocky Creek.

Figure 1- Project Location


Figure 2- Soil Erosion


Figure 3- Soil Erosion


Figure 4- Soil Erosion

Methods:

One method of this project is to utilize gabion baskets, or an equivalent installation, to stabilize the shoreline while promoting mangrove establishment. A "*common method used by designers for protecting exposed soils against erosion is to install riprap, concrete structures,* ***gabions*** *or some other hard armoring. These methods have* ***proven to be successful in controlling erosion of drainage channels and stream banks*** (State of Florida Erosion and Sediment Control)." The current condition of the shoreline, as shown in figures 2 – 4, is eroded and exposed soils buttressed by a mix of primarily Red and Black Mangroves and Sabal Palms (*Rhizophora mangle*, *Avicennia germinans, & Sabal palmetto*). The instillation of the aforementioned system "*will fill in with vegetation over time providing habitat value as well as* ***protection from erosion*** (Waterfront Property Owners Guide, FDEP)", thus further stabilizing the shoreline while providing habitat and preserving these natural resources.

In addition to gabion baskets or an equivalent, dredging of approximately 600 feet of Rocky Creek will be required to restore natural hydrology to Sleepy Lagoon, thus promoting further habitat restoration. Currently, due to the eroding of the surrounding shoreline, the channel of Rocky Creek has undergone a significant amount of sedimentation. This has affected the hydrologic connectivity of the lagoon and the tides resulting in habitat degradation. A method of restoring this natural resource is to remove the accumulated sediments by dredging the affected area. "*The Corps of Engineers, Bureau of Reclamation, and their state counterparts have undertaken many* ***habitat restoration projects as part of maintenance dredging****…* (Dr. Jon Kusher, Ph.D.)." Similar efforts, on a larger scale, have been undertaken in New York City by the New York City Department of Environmental Protection involving the dredging of Flushing Bay. "*The proposed project would not result in any long-term or significant adverse impacts to water quality... The proposed* ***project would likely improve water circulation and improve water quality*** (NYCDEP Flushing Bay Environmental Assessment Statement)." Once the sediment is removed and hydrologic connectivity is restored, the biodiversity of the area is likely to increase; "*The proposed project would* ***incrementally improve the benthic community, due to projected improved water quality and tidal circulation*** (NYCDEP Flushing Bay Environmental Assessment Statement)." Such results were observed in the Flushing Bay project in New York. "*Some species are coming back … horseshoe crabs, turtles and birds we had* ***never seen before*** *said Shrinivasan Sewgobind, the DEP's project manager* (Lisa L. Colangelo, 2018)."

Figure 5- Proposed dredging location (low tide)

The final method to protect the shoreline from further erosion and maintain the integrity of the surrounding habitats would the hardening of the shoreline by installing a concrete kayak launch on the shoreline. This would give the public access to the water while still preserving natural recourses. "*A properly designed and constructed structure [shore hardening] will protect the upland from wave attack and stop shore erosion* (National Academies Press, Mitigation Shore Erosion along Sheltered Coasts)."

Figure 6- Future Location of Kayak Launch

In order to mitigate risk of the project, proven engineering practices will be utilized; furthermore, flow rates will be used to determine where to install shore stabilizing fixtures. These strategies will increase the likelihood of success and minimize risk to the public and natural resources.

Conclusion:

The proposed projects will address the outlined objectives by combining multiple elements in order to eliminate or greatly reducing soil erosion via gabion baskets (or an equivalent) and the hardening of the shore for the purposes of a kayak launch. Additionally, hydrologic connectivity will be restored to Rocky Creek by removing sediment via dredging thus restoring surrounding wetlands. In order to obtain the permits to complete this project wildlife and vegetation surveys must be conducted in order to understand impacts and provide data for comparison upon completion of the project.

Resources:

1. **"State of Florida Erosion and Sediment Control, Designer and Reviewer Manual"**; Prepared for Florida Department of Transportation & Florida Department of Environmental Protection, Tallahassee, FL; Prepared by State Erosion and Sediment Control Task Force, In cooperation with: Hydro Dynamics Incorporated Parker CO & Stormwater Management Academy, University of Central Florida, Orlando, FL. (2013): (https://fdotwww.blob.core.windows.net/sitefinity/docs/default-source/content2/roadway/drainage/files/erosion-sediment-control.pdf?sfvrsn=719d1965_0).

2. **"Waterfront Property Owners Guide"**, Florida Department of Environmental Protection; Prepared by: Michael M. Scheinkman, Eric H. Livingston, Greg Knecht (2008): (https://www.monroecounty-fl.gov/DocumentCenter/View/8822/DEP-Best-Management-Practices?bidId=).

3. Association of State Wetland Managers and the International Institute for Wetland Science and Public Policy; "**Multi-Objective Wetland Restoration in Watershed" Context**; Dr. Jon Kusler, Ph.D. (2004): (https://www.aswm.org/pdf_lib/restoration.pdf).

4. **“Proposed Environmental Dredging of Flushing Bay, Per Administrative Order of Consent** (CO2-20110512-25) **Environmental Assessment Statement”**; New York City Department of Environmental Protection (2012): (https://www1.nyc.gov/html/dep/pdf/reviews/flushing_bay/13DEP012Q_environmental_assessment_statement.pdf).

5. Colangelo, Lisa L. **“Bid Farewell to Flushing Bay's Infamous Stench**.” Am New York, Am New York, 29 June 2018, (www.amny.com/news/flushing-bay-queens-1.19481585).

National Research Council. 2007. “**Mitigating Shore Erosion Along Sheltered Coasts”**. Washington, DC: The National Academies Press. (https://doi.org/10.17226/11764