2.5 SUMMARY

"Trails in the 21st Century will be built through creative partnerships, relying heavily on citizen initiation, while combining the resources of nonprofit organizations, pubic agencies, foundations and private corporations."

– 12th National Trails Symposium, 1994

Introduction

The region being studied as part of the ROGG Study Area is a complex environmental, social and cultural region that has a long history of human use and occupation, including dramatic changes in the last 50 to 100 years. It is this unique environment that over one million visitors come to the region to experience each year. Building on the allure of a long-distance hiking and biking experience for a variety of users, the ROGG is envisioned to bring awareness to the Greater Everglades ecosystem, including the ongoing ecological restoration in the region.

The concept of the ROGG comes at a time when there are growing concerns about the environmental impacts of providing vehicle-only access to our National Parks. Multi-use trails and alternative transportation access have proven to be effective means at reducing natural resource impacts, while still encouraging access to sensitive natural areas. Well-planned, multi-use trails such as the ROGG allow access to natural areas, promote economic growth, provide pathways for alternative modes of transportation and enhance opportunities for improved fitness.

This review and analysis of context and conditions does not occur in isolation from the extensive array of previous regional guiding documents and other influencing documents, research of existing conditions, and documentation and analysis of other successful greenways across the world. The subsequent chapters of this report document determination of feasibility and implementation strategies for those segments found feasible. The follow is a summary of the research and analysis chapter.

Corridor Context

History, Development and Alterations

Florida's Everglades were one of the final frontiers for European settlers in the United States as the subtropical climate, hydrology, and conflicts with indigenous populations limited extensive settlement until late in the 19th century. Beginning in the 1880s, large-scale drainage projects were implemented to lower natural water levels and drain the vast Central and South Florida wetlands. The populations of Miami and other existing south Florida cities rapidly increased as did nature-based tourism. As populations increased on both coasts, the concept of and need for a roadway connecting the coasts through the Everglades became a regional goal. This was realized in 1928 with the construction of the Tamiami Trail. While an engineering feat, the Tamiami Trail had the effect of damming the flow of water into the Everglades and Florida Bay despite later additions of bridges and culverts to assist in movement of hydrological flow.

Beginning in the 1970s, several initiatives began to address the deterioration of the south Florida ecosystem caused by the C&SF Project. As part of the 1989 federal Everglades Expansion Act, the Mod Waters project was identified to modify the C&SF Project to improve water deliveries to the ENP. In 1992, Congress authorized the Water Resources Development Act that included approval to re-evaluate the C&SF Project performance, provide improvements to restore south Florida ecosystems and provide other water resource needs. In addition, the State of Florida enacted the Everglades Forever Act in 1994 to address water quality issues. Elements of the restoration efforts relevant to the feasibility assessment of ROGG include the removal and/or modification of existing infrastructure that would not be available for future trail options, the necessity for ROGG to be consistent with regional restoration efforts, and opportunities to incorporate ROGG elements on future bridges.

Conservation

In the midst of the drainage and development activities, protection and conservation of the natural systems of the Everglades and Big Cypress also occurred. Substantial public conservation lands within the ROGG Study Area affected feasibility assessments for potential alignment selection, considerations for public and regulatory coordination, the identification of destinations and amenities that could be co-located, connections to existing infrastructure, and post-construction operation options.

Public Draft - December 2014

Native Americans

In addition to conservation and restoration efforts, the ROGG Study Area includes reservation trust lands for the Miccosukee Tribe and several significant cultural sites, including those used for the Corn Dance ceremonies. Relevant elements of the Seminole and Miccosukee historical period considered in the feasibility assessment include considerations for tribal trust lands, the Battle of Turner River battlefield from the Seminole Wars, historical monuments from tribal and government interactions, and avoidance of significant ceremonial sites for the tribe.

Climate

Climate characteristics are an important aspect of evaluating a outdoor facility for use by humans. The ROGG Study Area occurs in south Florida at the interface between subtropical and temperate climate conditions within the climate classification of Tropical Savannah. The region exhibits two distinct seasons based on rainfall and temperatures. Significant elements of climate relevant to the design and operations for ROGG considered for the feasibility assessment include afternoon thunderstorms, tropical storms, and intense sunlight and high summer temperatures.

Hydrology

Hydrology implication are a primary consideration for this study. The ROGG Study Area occurs within the Everglades and Big Cypress Swamp watersheds, both of which have been subjected to extensive hydrological alterations. Regional hydrology is one of the most significant elements affecting the character and ecology of the ROGG Study Area and a primary consideration for the design and implementation of ROGG. Any aspects of ROGG that would compromise the fundamental objectives or implementation of regional hydrological restoration efforts are considered infeasible for this study. The post-restoration future conditions for infrastructure, water levels, and/or flows were considered the baseline condition for feasibility evaluations of routing alternatives and design options for ROGG. Other elements with specific relevance to ROGG include maintaining or enhancing existing sheetflow, incorporating water related recreation opportunities, and opportunities to restore historical patterns of tidal exchange.

Vegetative Communities

The ROGG Study Area contains unique landscapes for the region. A vital component to the preservation of these vegetation communities is to consider potential influences, including routing alternatives in the vicinity of rare vegetation communities and areas requiring intensive management, previously altered sites, and the need for additional shade features due to limited available tree canopy, access to water features, design and management considerations to address shrub management and tidal communities, regulatory requirements for wetlands, and vegetation that could be incorporated into a landscape palette for the ROGG.

Listed and Exotic Species

The presence of listed species influenced the analysis for the ROGG through evaluations of routing alternatives that could affect Florida panther habitat within the Panther Focus Area and Critical Habitat for other listed wildlife species, opportunities to incorporate design elements that could minimize impacts to Florida panthers such as enhancement to the Roadway Animal Detection System, accommodations to minimize wildlife use of trail facilities that would be adverse for wildlife or trail users, and permitting requirements for future ROGG facilities relative to listed species.

Exotic invasive species influenced the analysis for the ROGG through evaluations of opportunities to route the trail through exotic invasive vegetation areas to remove those species and limit impacts to higher quality natural systems, the use of exotic species removal to mitigate for other natural resource impacts, and design options to minimize the introduction of exotic species as a result of ROGG through design, implementation, and long-term operations.

Ecological Process

In south Florida, ecological processes with the strongest influences on the ecology of the region include fire, hydrology, wind, tidal influences, sea level rise, and succession. Specific influences on analysis for the ROGG relative to ecological processes included accommodating fire management through incorporation of fire-resistant materials and maintenance of access by appropriate trail design, reviewing ROGG compatibility with regional hydrological restoration projects, incorporating design options to address wind effects, assessing effects of sea level rise, and managing succession.

Natural Resource Regulatory Context

Impacts to natural resources in the ROGG Study Area would require authorization from several agencies having jurisdiction over wetlands and water bodies and protected wildlife and plant species. The review and authorization for proposed impacts would be coordinated through a variety of regulatory mechanisms, ranging from NEPA coordination to application and approval of various environmental permits. Construction of the ROGG may require coordination with the USACE, USFWS, EPA, SHPO, SFWMD, FDEP, FFWCC and MDRER, among others, to address natural resource issues.

Public and Tribal Lands

Lands held in public and tribal ownership within the ROGG Study Area affected feasibility assessments for routing options and regulatory review as well as opportunities for long-term partnerships for operation and maintenance. Specific influences on analyses for the ROGG included an assessment of potential partnerships, regulatory review from facilities that would occur in these ownerships, and requirements associated with tribal holdings.

Transportation

Considerations for motorized vehicular traffic relevant to ROGG include the influence of the volume of traffic using U.S. 41 as well as the speed of traffic for trail experience and safety, the potential location of the trail relative to traffic lanes, modifications to road design or speed limits that would be subject to intense public scrutiny, limited availability of defined parking facilities, and accommodations for temporary parking in the ROW on future ROGG uses.

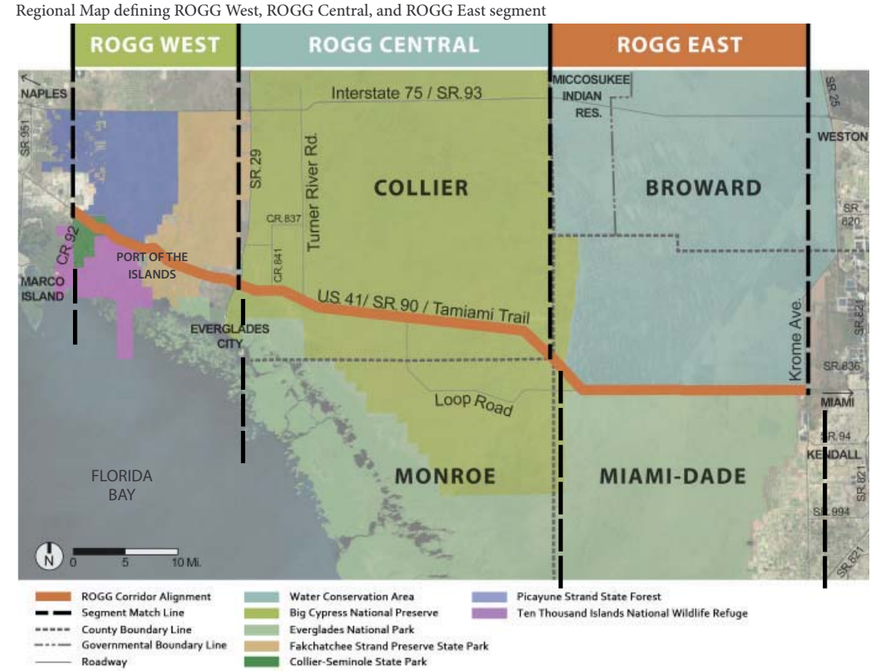
Considerations for non-motorized transportation within the ROGG Study Area included evaluations of current and future facilities on existing and proposed bridges for U.S. 41, options for transit connections, and accommodations or facilities to separate motorized vehicular and non-motorized users.

Corridor Existing Conditions

The Corridor Existing Conditions section documented a snapshot in time for the conditions and features occurring within the ROGG Study Area and the planning implications of those conditions and features for the routing, connections, and configuration of the ROGG.

Selection of this particular segment of U.S. 41 for ROGG was made because it is the southern-most east to west transportation corridor that connects both sides of the Florida peninsula and is the main visitor travel corridor traveling connecting directly to six federal and state public lands.

Regional Map defining ROGG West, ROGG Central, and ROGG East segment



Over the span of 76 miles, the ROGG Study Area provides a diverse collection of landscape types and conditions which offer a variation in experiences. In addition, man-made barriers helped define segments that were studied and documented in further detail. In the case of the ROGG Study Area three distinct segments were defined using geographical borders and man-made features. Following are descriptions of each opportunities and constraints for each segment:

ROGG West

Observation tower along Marsh Trail in Ten Island Islands NWR

The ROGG West segment of the Study Area exhibits an abundance of existing destinations and activities for future trail users to enjoy. Existing conditions are favorable for the implementation of an alternate mode of transportation, which would allow for large influxes of visitors to access destinations while also managing access to the natural wonders of the landscape between the destinations.

The biggest opportunity observed for ROGG West was an abundance of existing facilities that could serve as trailheads with minimum improvements needed. Additional opportunities include providing connections into three communities (Naples, San Marco and Everglades City) and connections to existing trails and boardwalks at Collier-Seminole State Park, Ten Thousand Islands NWR and Fakahatchee Strand Preserve State Park.

Constraints along the ROGG West segment consist primarily of three items; bridges, wetlands and Florida panther habitat. A total of 36 bridges exist along the ROGG West segment. These bridges have an average width of 32 feet, which does not allow for an appropriate bike lane of five feet per FDOT standards for roadway with posted speed limits of 45 mph. The second major constraint is existing wetlands. The south side of the ROW contains most of the designated ROW, but the majority of that designated ROW is characterized as wetlands. The third major constraint is the location of the corridor within the Panther Focus Area. While not considered Critical Habitat under the terms of the ESA, the USFWS has designated the Panther Focus Area as part of the core habitat for Florida panthers within the state. Construction within the Panther Focus Area is allowed, but mitigation is required for impacts to habitats identified in guidelines by the USFWS. This mitigation can add substantial costs to the implementation of any project requiring impacts to both uplands and wetlands within the area. Though these constraints present a number of challenging situations, the ROGG has the ability to remain flexible in routing and design with a number of innovative solutions.

ROGG Central

Boardwalk at Kirby S. Storter Roadside Park in the Big Cypress National Preserve

Spanning the longest length of the three segments, ROGG Central offers a number of opportunities and constraints which makes this area unique. This portion of the Study Area is dominated by the presence of the Big Cypress National Preserve for the entire length of the segment.

Opportunities within ROGG Central are primarily focused on providing additional access to existing facilities. Within this 32-mile segment, eight existing destinations can serve as trailheads and provide existing parking, restrooms, boardwalks and educational opportunities for trail users. Access to existing trails such as the Fire Prairie Trail and the Florida National Scenic Trail provide connectivity to a state-wide network and allows users to experience the landscape away from U.S. 41. Access also includes water routes with launch points at three existing facilities. When connected by ROGG these existing facilities would allow users to explore deep within the Preserve and provide unique opportunities to experience the Everglades region. Many of the constraints for ROGG Central are similar to those of ROGG West and include; bridges, wetlands, Florida panther habitat, Critical Habitat for manatees and the presence of Radar Animal Detection System (RADS). Although there are fewer existing bridges within this segment, the design of the bridges are similar to those in ROGG West, which do not accommodate bike lanes or separated facilities.

The presence of a Radar Animal Detection System (RADS) in the Turner River area presents a feature that the development of ROGG itself may actually benefit. RADS are currently being tested in this area to increase awareness of wildlife activity along U.S. 41. However, due to the proximity of detection devices to the highway's shoulders, many of the system components suffer from errors caused by vehicles parking along the roadway or from vandalism. By locating the devices on the outside of the trail, the devices could be located further from vehicle traffic and in a manner which limits opportunities for errors.

This segment also includes cultural resource features that would need to be accommodated by future ROGG facilities. These include Native American ceremonial sites and historic places designated on the U.S. National Register of Historic Places. A CRAS will most likely be needed to identify properties and assess effects.

ROGG East

Gator Park Airboats tourist destination in Everglade National Park

Contained entirely within Miami-Dade County, the ROGG East segment experiences the highest volume of visitors of all the segments due to the proximity of the Shark Valley entrance to ENP, Miccosukee Indian Village, and nine private attractions near the Miami metropolitan area. Miami-Dade also has the largest existing transit network that can be connected directly to the ROGG, providing options for residents to take transit to the eastern terminus of ROGG or potentially farther west to Shark Valley and the Miccosukee Indian Village.

Shark Valley is currently one of the most popular visitor use areas of all ENP entrance points, while it is also the most constrained for expanding to meet these increased needs. A new visitor center and restroom facility is open at Shark Valley, and the facility frequently experiences parking lot capacity issues during the peak visitation season. Development of the ROGG and coordination of transit could help relieve some of the vehicle traffic congestion issues at Shark Valley, while the addition of other opportunities along the ROGG East segment could provide additional opportunities for visitors to experience the Everglades that could offset the growth in total number of visitors and their impacts at Shark Valley.

Existing facilities at a number of locations such as Shark Valley, Miccosukee Indian Village, and ValuJet Flight 592 Memorial offer potential trailhead amenities, such as parking, restrooms and educational elements. ROGG East also includes the greatest number of potential alignments, include one within the U.S. 41 maintained ROW on new or proposed bridges, within existing levee ROWs along the L-29, within the Old Tamiami Trail corridor, or Loop Road. Each potential alignment was evaluated in greater detail in order to determine all options in the feasibility of constructing the ROGG.

Environmental and cultural opportunities include a focused effort to remove exotic species to improve both habitat and viewsheds. Culturally significant lands include Native American lands in the western areas of ROGG East segment, which includes the Miccosukee Indian village area.

This segment also has the greatest amount of proposed changes to the landscape as part of the recommended restoration efforts of the CEPP and related projects. These proposed improvements include the addition of several new bridges along U.S. 41 and the removal of the existing roadbed, partial and complete removal of some levees, removal of the Old Tamiami Trail roadbed and fill, and the addition or upgrades to several water control structures. The immediate time-lines for these restoration efforts are not known and ultimately could take decades to implement. As such, the addition of the ROGG to the existing levee network, within the Old Tamiami Trail corridor, or as part of the proposed bridges could still proceed in coordination with these efforts and ultimately could be constructed as a temporary route until the time of removal, although these uses would need to not inhibit future restoration activities.

Literature Review

The Literature Review documents the extensive literature base that exists as a result of years of evaluations and studies in the region. This review includes a summary of a portion of this literature of reports and studies particularly relevant to ROGG and assess the planning implications for the feasibility and master plan of the ROGG stemming from this literature base. In an effort to build upon the works of previous adopted plans and studies and to ensure coordination with other official documents that could influence the development of ROGG, multiple sources of information were reviewed. These sources identify designated improvements, regional studies, and regulations that could influence the development of or feasibility assessment for ROGG. They can be classified into five broad categories: governing codes and ordinances, master plans and management plans, transportation studies, environmental and cultural resource documents, and design guidelines and methodologies. Significant findings from guiding documents include:

South Florida Water Management District (SFWMD) Public Use Rule

SFWMD allows for public access and use of many lands adjacent to the ROGG Study Area for outdoor recreation activities. Regulations defined by SFWMD include use of bicycles within levee right-of-ways, along maintenance berms and on levee tops. Direct implications for ROGG include the potential use of SFWMD levees, levee berms and/or levee right-of-ways for the use of hiking, biking or other outdoor recreation uses. In addition, the pedestrian and bicycle access that could occur on levees would also connect to blueway connections for the canals in the system. These canals may be used for canoeing, kayaking or other water related outdoor recreation activities. Coordination with the SFWMD and other regulatory agencies in the region is needed to address public access on private lands with SFWMD easements as well as potential issues associated with using the levees relative to regional hydrological restoration goals.

South Florida Water Management District (SFWMD) Recreation Management And Partnership Plan: Land Stewardship Division

Recreation management of SFWMD lands seeks to balance access to consumptive and non-consumptive activities as well as provide connectivity to other public lands through greenway partnerships. Since the Office of Greenway and Trails has designated ROGG as a priority greenway route since 2004, options to facilitate ROGG through coordination with and use of lands managed by the SFWMD may provide opportunities to enhance regional greenway networks through the implementation of ROGG. Direct implications for ROGG includes the use of ROGG facilities to meet the plan objectives for SFWMD to provide outdoor recreation activities for both hiking and biking (non-consumptive use) and fishing and hunting (consumptive uses).

ETDM Summary Report; Project #12596 – River Of Grass Greenway; Planning Screen & Program Screen

These reports document that the reviewed portion of the ROGG (ROGG West) is included on pathways planning maps for the State of Florida Office of Greenways and Trails (highest priority level), North Dade Greenways Master Plan, the CERP Master Recreation Plan, Collier County Comprehensive Pathways Plan, and has been incorporated into the Collier MPO 2030 Long Range Transportation Plan. The reports (including the 03/11/11 Programming Screen) also noted that the FDEP Office of Greenways and Trails "supports the proposed project and has determined that the trail can be built to minimize environmental impacts while maintaining consistency with regional restoration efforts." The inclusion of ROGG on these plans provides avenues of future potential funding for improvements as well as an acknowledgment of the need and purpose for the ROGG.

Draft Integrated Project Implementation Report And Environmental Impact Statement: Central Everglades Planning Project (CEPP); 2013

The CEPP proposes the removal of a 4.3 mile long segment of the L-29 Levee, therefore removing a portion of existing infrastructure that could be used for ROGG. Dependent of the bridge design selected in Tamiami Trail Next Steps, the removal of the levee causes a gap in existing infrastructure available and/or programmed improvements other than on-road bicycle lanes that would maintain direct access along the U.S. 41 corridor for this 4.3 mile segment. The proposed Blue Shanty levee and L-67C provide a potential route separate from U.S. 41 around this gap, but this potential route would be significantly longer than a direct connection.

The recreation plan for CEPP includes several maintained, enhanced, or new improvements within the ROGG Study Area. Pedestrian trail connections would extends along the Blue Shanty flow way and the L-67A levee. This pedestrian access provides a connection point for recreation access to the northern portions of the CEPP study area and other regional greenway systems. The recreation plan for CEPP identifies trails on the proposed Blue Shanty levee and the portions of the L-29 and L-67A that would remain after the CEPP projects are completed that could be integrated into or connected to ROGG. The parking areas and improvements identified in the plan would potentially be available for trailhead facilities for ROGG.

Approximately six miles of the Old Tamiami Trail between the ENP Tram Road and the L-67 Extension Levee are identified for removal as part of CEPP, which is the majority of the former roadway east of the Miccosukee Village. The Old Tamiami Trail provides an existing piece of infrastructure with a paved surface that could be available for use by ROGG. The banks of the facility are dominated by shrubs, including exotic invasive species, which limits views into the adjacent habitats, but provides shade for people using the old roadbed. For ROGG, the Old Tamiami Trail provides an existing piece of infrastructure that could be available temporarily for trail use, although this would need to be done consistent with and in a manner that does not compromise hydrological restoration goals.

Comparables

Analysis of comparable projects throughout the world allows for the identification of best practices used in the design and implementation of comparable greenway projects and the assessment of lessons learned that can be applied to ROGG. While there is no single greenway project that replicates the exact conditions and constraints of the ROGG Study Area, there are a variety of projects around the world that offer successful solutions to issues relevant to the feasibility study and master plan for the ROGG. Comparable greenway projects within the following categories were reviewed because of similarities to conditions observed in the ROGG Study Area. These seven categories include comparables from projects that represent iconic or inspirational trails to projects that are exemplary of relatively localized issues such as low impact trails. The following are the seven categories researched followed by images of some comparable greenways:

1. Inspirational/ iconic trails,
2. Trails of significant scale,
3. Trails within two-lane highway right-of-way,
4. Trails located on retrofitted highway bridges (culverts and large length bridges),
5. Trails associated with levee rights-of way, water control structures and canals,
6. Trails in environmentally sensitive landscapes, including wetlands,
7. Heritage trails.

Lake Okeechobee Scenic Trail, FL (on top of USACE-managed levee system)

Cyclist on the Nisqually Estuary Boardwalk Trail, WA

Cyclists on the New Orleans Levee-Top Trail, LA

Multi-modal transportation connectivity along the Grand Canyon Greenway, AZ