Springs Coast

Community-Based Watershed Plan

The Nature Conservancy in Florida

December 2014

The Nature Conservancy

Protecting nature. Preserving life.™

The Nature Conservancy would like to thank all of the stakeholders from local, state and federal governments, NGOs, community groups and citizens who devoted their time, resources and support for this watershed planning process. Your desire and commitment to come together in the spirit of building a watershed community that will achieve more together than individually has created a solid foundation and legacy of collaboration and conservation for the Gulf. In particular, we would like to recognize the leadership demonstrated by the county governments in the Panhandle and Springs Coast to invest in a process that reaches across political and organizational boundaries and focuses on improving and protecting the watersheds today and for future generations.

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Executive Summary

The Deepwater Horizon Oil Spill has focused attention on opportunities to restore and enhance Gulf Coast ecosystems and communities. In Florida, funding opportunities associated with civil and criminal settlements of the Deepwater Horizon Spill provide an opportunity to address direct damage from the spill as well as long-standing water quality, habitat and coastal resilience restoration needs. A healthy environment is the foundation of healthy economies and communities. The Nature Conservancy (TNC) believes that identifying restoration needs and projects by watershed in collaboration with diverse community stakeholders is essential for achieving comprehensive and long-term success for Gulf Restoration.

In 2013 TNC initiated a facilitated community-based watershed planning process along Florida's Gulf Coast for the following six watersheds: Perdido Bay, Pensacola Bay, Choctawhatchee Bay, St Andrew and St Joe Bays, Apalachicola to St. Marks, and the Springs Coast. The Perdido, Pensacola and Choctawhatchee Bay watersheds also involved Alabama stakeholders. Similar planning efforts in the remaining Florida gulf coast areas have been led by other partners.

The community-based watershed planning provides a process for making thoughtful science-based decisions that help to both to assess already proposed projects and identify new projects that help solve recognized and documented problems in the watershed. Such a process involves understanding the priority issues facing each watershed (threats), the root causes creating each issue, and the major actions needed to address the root causes (solutions). Specifically, the process was designed to:

- **Develop watershed-based plans that identify the most pressing environmental issues affecting each watershed and solutions that address the issues, regardless of political jurisdiction and funding source.** Ideally, the plans will be 'living' documents used by all stakeholders to identify priority projects for funding that specifically address solutions to the identified issues and their root causes, documenting results to measure success, and updated as needed to help inform future activities needed to address watershed issues. The project list is designed to provide maximum flexibility for grouping projects to meet specific funding opportunity requirements and can be used to pursue project funding for RESTORE and non-RESTORE related funding programs (e.g., grants, Public Private Partnerships, etc.). The current project list is not comprehensive and further stakeholder input is needed to identify solutions necessary to resolve the watershed issues.

- **Create long term partnerships among stakeholders in each watershed and across the regions to maximize effectiveness of project implementation and funding efforts.** The stakeholders in each of the six watershed regions have voiced their desire to continue the coordination and outreach among diverse partners that this watershed planning process has supported and enhanced.
- **Provide a screening tool to evaluate the project priorities of these watershed plans for potential RESTORE funding by the communities, Florida Department of Environmental Protection (FDEP), Florida Fish and Wildlife Conservation Commission (FWC), National Fish and Wildlife Foundation (NFWF) and the Gulf Coast Restoration Council.** The project list can be used to pursue project funding for RESTORE and non-RESTORE related grants programs by clearly documenting the need for the projects in the context of how they will address solutions to critical watershed issues.

This first edition of the Springs Coast community-based watershed plan documents the results of the watershed planning process to date - the priority issues, root causes, major actions and initial set of priority projects - identified by the Springs Coast watershed stakeholders. The National Wildlife Federation was a partner with TNC in this watershed planning region, assisting in the planning and facilitation of the meetings. The next steps are to identify additional projects to fill in gaps identified during the September 10, 2014 watershed meeting, refine the project maps as needed to more clearly define geographic extent of the projects (polygons rather than points), develop a science based selection process that prioritizes the projects proposed through this watershed process, and create a stakeholder organizational structure that will serve to continue the watershed planning and implementation work.

Introduction

As a result of the Deepwater Horizon oil spill, potentially billions of dollars will be coming to Gulf of Mexico communities for environmental and economic restoration. These funds will be coming through various pathways – Resources and Ecosystems Sustainability, Tourist Opportunities, and Revived Economies of the Gulf Coast Act (RESTORE), National Fish and Wildlife Foundation's (NFWF) Gulf Environmental Benefit Fund (GEBF), and the Natural Resource Damage Assessment (NRDA). Each of these pathways has its own particular process, goals and objectives. A brief overview of each is provided in Appendix A-Deepwater Horizon Related Funding Opportunities.

In 2013 Florida opened an online portal to receive project suggestions based on their stated priorities and, to date, has received over 1,200 suggested projects totaling over $16 billion worth of work. As this was occurring, TNC and partners recognized the need for a thoughtful and strategic decision-making process to help assess existing and future projects in the context of addressing issues that are negatively impacting the environmental integrity of the landscape. In southwest Florida this context is being provided by the three National Estuary Programs (NEPs) in that area. In the Big Bend area, the process is being led by the Suwanee River Water Management District and partners. In the Panhandle and Springs Coast, this context is being provided by the Community Based Watershed Planning process facilitated by TNC. The process involves understanding the priority issues facing each watershed, the root causes creating each issue, and the major actions needed to address the root causes (solutions).

One of the core principles in the watershed planning process is that, although the Deepwater Horizon related funding was the spark for community discussions and information sharing, the priorities and projects identified through the process can be funded by non-Deepwater Horizon related sources as well. In addition, there is a need for integration and coordination between projects and funding sources to maximize the effectiveness and results of Gulf investments. This is recognized during public meetings at every level of government regarding the implementation of RESTORE and the other Gulf related funding opportunities. By harnessing all applicable funding sources and applying them to the most appropriate project, each community will maximize the number of projects that can be completed and, therefore, make the most progress in improving and protecting the long-term health of their watershed.

The community-based watershed process has been designed and adapted to facilitate communication among the diverse stakeholders. The process identifies a priority suite of projects necessary to improve and maintain the health of Gulf watersheds and matches priority projects with the most appropriate funding source(s). In addition to the Deepwater Horizon related

funding sources detailed in Appendix A, there are numerous other funding opportunities that could and should be leveraged as the Gulf of Mexico watersheds are restored that include, but are not limited to:

- Federal/State Grants – stormwater projects, habitat creation and restoration, land acquisition, etc.
- Public Private Partnerships (P3) – public infrastructure projects that include cost recovery mechanisms (e.g., sewer projects)
- Wetland mitigation opportunities
- Private foundations and contributors

The Springs Coast Community Based Watershed Plan documents the planning process, the initial set of priority projects, and next steps for the Springs Coast Watershed.

Planning Process

The Nature Conservancy organized and facilitated "watershed discussions" for the Springs Coast watershed with a variety of diverse community stakeholders that included federal, state and local governments, Non-Governmental Organizations (NGOs) and interested businesses, community groups and citizens. Several meetings were held during the development of this plan and the meeting dates and participants can be found in Appendix B–Stakeholder Participants.

The motivation for the community watershed planning is to help ensure a healthy and protected natural environment that supports a vibrant economy and community. The key objectives of this process are to:

- **Develop watershed-based plans that identify the most pressing environmental issues affecting each watershed and solutions that address the issues, regardless of political jurisdiction and funding source.** Ideally, the plans will be 'living' documents used by all stakeholders to identify priority projects for funding that specifically address solutions to the identified issues and their root causes, documenting results to measure success, and updated as needed to help inform future activities needed to address watershed issues. The project list is designed to provide maximum flexibility for grouping projects to meet specific funding opportunity requirements and can be used to pursue project funding for RESTORE and non-RESTORE related funding programs (e.g., grants, Public Private Partnerships, etc.). The current project list is not comprehensive and further stakeholder input is needed to identify solutions necessary to resolve the watershed issues.

- **Create long term partnerships among stakeholders in each watershed and across the regions to maximize effectiveness of project implementation and funding efforts.** The stakeholders in each of the six watershed regions have voiced their desire to continue the coordination and outreach among diverse partners that this watershed planning process has supported and enhanced.
- **Provide a screening tool to evaluate the project priorities of these watershed plans for potential RESTORE funding by the communities, Florida Department of Environmental Protection (FDEP), Florida Fish and Wildlife Conservation Commission (FWC), and the Gulf Coast Ecosystem Restoration Council and non-RESTORE funding programs such as the NFWF.** The project list can be used to pursue project funding for RESTORE and non-RESTORE related grants programs by clearly documenting the need for the projects in the context of how they will address solutions to critical watershed issues.

The Springs Coast Community-Based Watershed Plan was developed using the following process. The process is ongoing and future steps are detailed in the Recommended Next Steps section. This process was not meant to duplicate the state's process for soliciting project ideas via their online portal. Rather it is specifically tailored to address the needs of the watershed as identified by the stakeholders during the community meetings facilitated by TNC.

- Convene key stakeholders and determine the boundary of the watershed for the purposes of this planning effort. The boundary identified by the stakeholders for the Springs Coast includes portions of Levy, Citrus, Hernando and Pasco Counties. This watershed is entirely within the boundaries of the State of Florida.
- Identify the priority issues that must be addressed, the root causes of the priority issues, and the major actions necessary to implement solutions for the root causes
- Develop a suite of priority projects that will help resolve identified issues and root causes. TNC developed an online form to solicit projects from stakeholders. Stakeholders were also asked to identify performance metrics that can be applied to monitor and track success of the project, once implemented, as well as changes in the overall health of the watershed (e.g., improved water quality, increase in seagrass habitat, etc.).
- Identify remaining needs and new projects to address gaps that are not addressed by the current proposed projects.
- Integrate results of the plans into the stakeholder's processes implemented by their respective affiliations, i.e., RESTORE processes, County comprehensive plan implementation, NGO restoration plans.

Meetings for the Springs Coast watershed began in January 2014 and continued through September 2014. Meeting notes were distributed to all participating stakeholders (Appendix C– Stakeholder Meetings Notes). The National Wildlife Federation was a partner with TNC in this watershed planning region, assisting in the planning and facilitation of the meetings. The notes and comments received were used to develop this draft plan. This plan represents the first edition of the Springs Coast Community-based Watershed Plan. The plan will be updated as future meetings are conducted and to recognize progress on implementation of solutions.

1) Identifying Priority Issues, Root Causes, and Major Actions:

The following are the terms and definitions used for the watershed planning process:

- Priority Issues: main themes of problems that were universal across the watersheds and need to be addressed
- Root Cause: source(s) of the priority issues
- Major Action: essential activity(ies) that needs to be accomplished to address the root causes of the priority issues.

During this portion of the process there was much discussion and numerous issues, root causes and major actions were identified. For purposes of facilitating the discussion, it was explicitly recognized that there is considerable overlap and inter-relationships between issues, root causes and major actions. As such, there is no one correct way to categorize them and the groupings that were made were done in order to present the information in a logical fashion. The following list is the high level groupings for the Priority Issues and Major Actions. For a complete listing of these, and their relationships with the Root Causes, please see Appendix E–Stakeholder Identified Priority Issues, Root Causes, Major Actions and Project Types.

The Priority Issues identified by the watershed stakeholders, each having one or more root cause, are:

- Water Quality
- Natural Resource Protection and Management
- Education and Outreach
- Coastal Community Resilience

The Major Actions identified by the watershed stakeholders are:

- Protect, restore, create and/or manage natural habitat and resources and increase buffer areas

- Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement
- Reduce impacts to groundwater and ensure adequate fresh water availability
- Reduce and treat stormwater
- Reduce nutrient loading
- Reduce sedimentation
- Increase economic diversification

2) Project Identification and Performance Measurement

The next step in the process was to begin to identify the priority projects that would initiate the implementation of major actions needed to address the identified root causes and priority issues. The process of identifying priority projects involves understanding and documenting how a project relates to identified root causes and priority issues. To aid in the prioritization of projects, each proposed project should include specific performance metrics that identify the expected results and quantify, if feasible, how those results relate to and address a root cause(s) and priority issue(s) identified in the watershed. Documented results will help inform future decision making and prioritization activities by tracking actual versus predicted results. These results will help inform communities and decision makers in the selection of future projects that show the most promise for return on investment based on desired outcomes.

Both short and long-term metrics must be identified to effectively monitor and evaluate the impact from implemented projects on the critical watershed issues they were designed to address. Short-term metrics focus on monitoring the success and effectiveness of the individual project efforts at addressing root causes (e.g., for a sediment stabilization project, what percent of the project area was successfully stabilized). Long-term metrics will focus on the impact of those projects on the priority watershed issues (e.g., return of stream channels, increase in water clarity/quality, increase in seagrass coverage, improved fish landings, etc.) It should be noted that direct correlations between specific projects and improvement in a priority issue or issues may sometimes not be possible, particularly when several projects need to be implemented to adequately address a priority issue. However, these longer-term measures are important since they track the ultimate results the community and funders are seeking to achieve. Including effective metrics will also facilitate adaptive management as the predicted versus actual results can be evaluated to ensure implemented projects are achieving expected outcomes.

In order to be methodical and ensure that the highest priority projects were submitted, the following process was used:

- In advance of the watershed meeting, stakeholders were asked to submit their top three priority projects using an online form developed by TNC specifically for this watershed planning process.
  - Each project submission included fields which tied the project to identified root causes and major actions, and
  - Each project submitter was asked to include specific performance measures that could be used to evaluate the success of the project itself as well as success of the project on addressing a root cause(s) and priority issue(s).
- Jean-Paul Calixte with the Natural Resources Conservation Service partnered with TNC to develop a GIS-based map showing a point location of each project (Figure 1). The project locations were identified using latitude and longitude coordinates provided by the stakeholder proposing a project. It is important to note that many projects are not adequately represented by a single point since they span larger geographic areas and, in some cases, multiple projects within a proposed project. Future work on the watershed planning should strive to create accurate boundaries of each project represented by polygons on the map. The map was distributed to all stakeholders prior to the September 22, 2014 meeting of the Springs Coast stakeholders.
- At the watershed meeting, attendees broke out into groups to review the maps and spreadsheet of the proposed projects, to identify geographic and project type gaps, and to reconcile any questions on project locations. The attendees reconvened into one group and reported on their break out group findings regarding project gaps and next steps (Appendix C–Meeting Notes dated September 22, 2014).

Ten projects totaling 12 different actions were submitted during the first round of project nominations (Appendix F–Project Table). Projects ranged from single focus projects such as stabilizing dirt roads, to multiple projects designed to restore a sub-basin within the watershed. The following is a breakdown of suggested projects by major action:

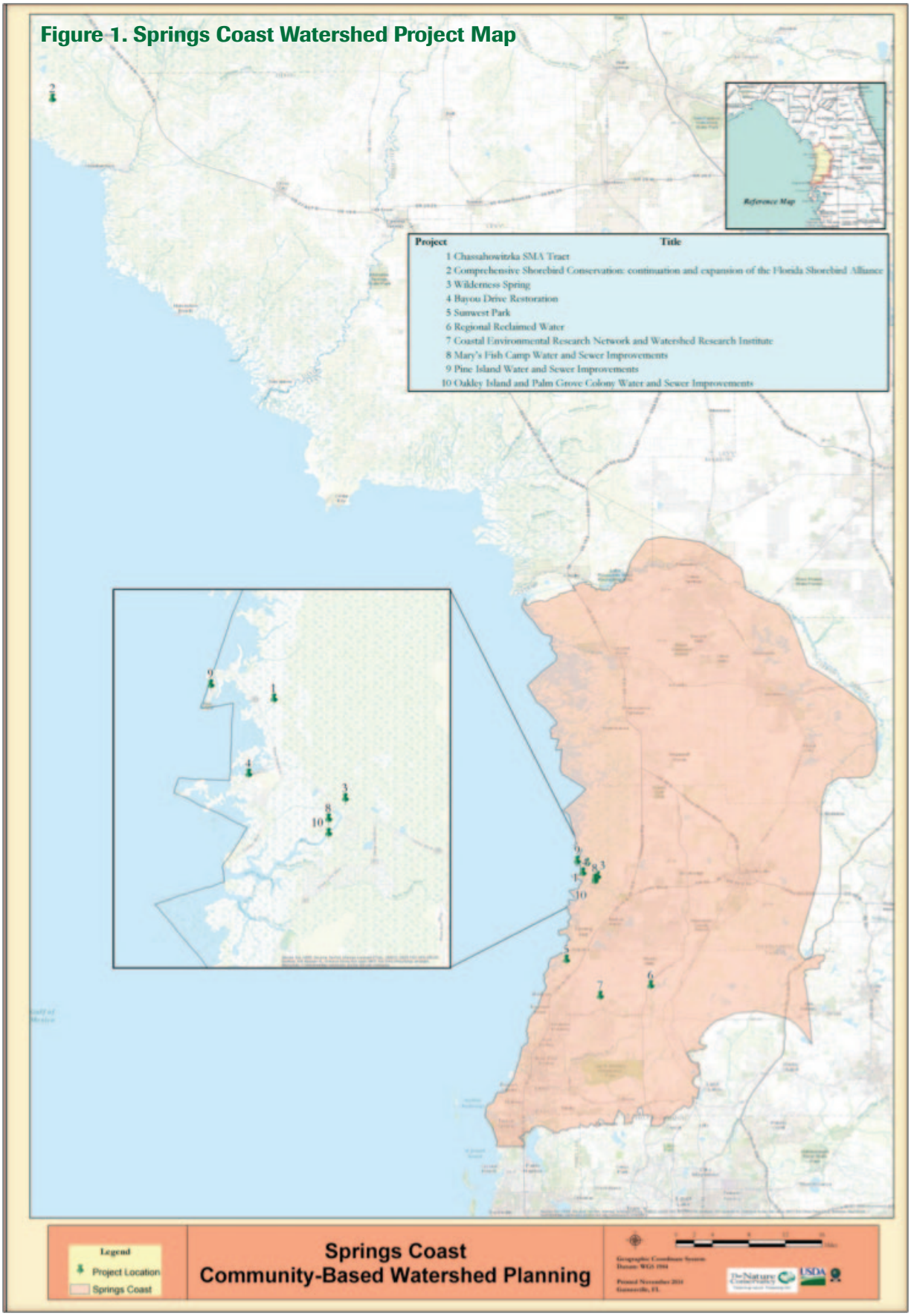
- Protect, restore, create and/or manage natural habitat and resources and increase buffer areas – 3
- Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement – 3
- Reduce impacts to groundwater and ensure adequate fresh water availability – 1

- Reduce and treat stormwater
- Reduce nutrient loading – 4
- Reduce sedimentation – 1

Note that the above grouping is by Major Action, but numerous proposed projects would have positive impact on more than one Major Action.

One of the key principles behind the watershed planning effort is to develop the suite of projects necessary to improve the health of the watershed and protect it for future generations, regardless of potential funding sources. Once a comprehensive set of projects has been identified for each watershed, the projects can then be grouped, separated, and/or phased as necessary to apply for relevant funding sources. Potential funding sources include RESTORE, NFWF's Gulf Environmental Benefit Fund and other NFWF grants, federal and state grants (e.g., EPA 319, FEMA, NRCS, Florida Wildlife Legacy Initiative, and others). The project list will be refined as additional watershed meetings are held.

Figure 1. Springs Coast Watershed Project Map



Current Status and Recommended Next Steps

As discussed above, the stakeholders have identified the priority issues facing the watershed, their understanding of the root causes creating those issues, major actions needed to address the root causes, and have begun to identify the projects necessary to implement the major actions. In addition, TNC has been working with the stakeholders in the Perdido and Pensacola Bay watersheds to pilot the Resource Investment Optimization System (RIOS) to evaluate the model's usefulness to helping with the identification and priority setting for watershed projects. The RIOS model is being used to conduct spatial analysis to provide a science-based framework for spatially identifying what types of projects are best positioned to address multiple activities to help solve the issues of concern in the Perdido Bay and Pensacola Bay watersheds. RIOS, designed to support this type of stakeholder process, provides a planning tool to prioritize watershed and coastal projects by identifying where land protection, restoration, or improved management activities are likely to yield the greatest benefits for people and nature. RIOS is a free and open source software tool managed by the Natural Capital Project (NatCap), and co-developed by NatCap, TNC, World Wildlife Fund and the University of Minnesota. RIOS will help answer two core questions:

- What set of investments (which activities, and where) will give the greatest returns towards multiple objectives?
- How much improvement in objectives can we expect from making the set of investments identified through a scientific analysis?

Applying RIOS to the Perdido and Pensacola Bay watersheds as a pilot project will provide a demonstration for how the RIOS planning tool might support a stakeholder process for developing watershed plans in other Gulf coast counties and watershed groups across Florida and beyond to help inform priorities related to future RESTORE funds, NFWF funds, or other opportunities. These pilot projects will also test and refine the new RIOS coastal module to support integrated watershed and coastal planning processes for multiple benefits.

1) TNC Recommendations

In order to complete the planning process TNC recommends the following actions:

- South Florida Water Management District updates and/or develops SWIM plans for the Springs Coast region, as needed, to ensure all priority issues are identified and addressed. This action is dependent on funding received to update the SWIM plans. If updates are

not funded then this watershed planning process will continue to use the existing SWIM plan and other information available until such time that updates are conducted.

- In addition, a focus was placed on identifying 'priority action areas' ("hot spots") that, if prioritized and restored, would make the most difference in restoring the watershed.
- Complete the identification of priority projects by conducting a technical review of the current list of watershed projects and a "gaps" analysis to determine where and what type of projects are still needed to address the issues and root causes of each watershed.
- Develop a science-based project prioritization process that uses the best available science to help make decisions on those projects that best address the issues.
- Create a long-term organizational structure (i.e., estuary program) in each watershed to continue the watershed planning effort.
- Pursue funding for the projects by matching each project and/or group of projects to potential funding sources (e.g., RESTORE, federal/state grants, public private partnerships, etc.).

2) The Path Forward

The following two proposals were submitted in November, 2014 in response to the initial round of RESTORE Council-Selected Restoration Component (Bucket 2) funding. If funded, these projects will significantly advance the watershed planning effort.

- Florida's Northwest Florida Estuaries and Watersheds – This project will advance the watershed planning process by continuing the stakeholder outreach, updating the SWIM Plans for the Springs Coast and Panhandle watersheds, funding the design and permitting of priority project(s) in each estuary, implementation of priority project(s), and monitoring project success.
- EPA's Gulf of Mexico Estuary Program – This project will provide funding to create Estuary Programs for up to 12 estuaries in the Gulf of Mexico. Five Florida Panhandle watersheds (Perdido, Pensacola, Choctawhatchee, St. Andrew and Apalachicola) and the Suwanee are identified as having priority consideration in the proposal. The proposal does not include the Springs Coast region but this does not prevent the stakeholders from moving forward with plans to develop an estuary program as a means to establish a more formalized long term partnership process, if this is the direction desired.

Together, these proposals would create and support an effective, and much requested and needed, science and community-based process for long term restoration and management of the Gulf's remarkable natural resources and coastal communities. In addition to supporting the selection of these two proposals by the Gulf Coast Ecosystem Restoration Council, TNC will be conducting the following to continue the watershed planning process:

- Convene additional watershed meetings to identify gaps where additional science or project identification is needed to address an identified issue.
- Develop a science-based prioritization process for the projects identified by the stakeholders and detailed in each first edition of the watershed plans.
- Work with the EPA to convene a workshop for the watershed stakeholders and representatives from Florida's Gulf Coast and Mobile Bay National Estuary Programs to facilitate the discussion on creating estuary programs in each of the panhandle and Springs Coast watersheds and learn about the various organizational structures of existing NEPs and lessons learned.
- Present the results from the Resource Investment and Optimization System (RIOS) decision-support tool analyses to the watershed stakeholder groups. The results of the analyses will help to further evaluate the relative benefits and costs of the projects identified in the watershed planning process. This tool might then be used to advance project identification and implementation decisions in the other watersheds and regions in the Gulf..

Appendix A

Deepwater Horizon Related Funding Opportunities

RESTORE Act (Clean Water Act Fines) Allowed Uses of Funding:

http://www.treasury.gov/services/restore-act/Documents/Final-Restore-Act.pdf

- Restoration and protection of the natural resources, ecosystems, fisheries, marine and wildlife habitats, beaches, and coastal wetlands of the Gulf Coast region.
- Mitigation of damage to fish, wildlife, and natural resources.
- Implementation of a federally approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring.
- Workforce development and job creation.
- Improvements to or on State parks located in coastal areas affected by the Deepwater Horizon oil spill.
- Infrastructure projects benefitting the economy or ecological resources, including port infrastructure.
- Coastal flood protection and related infrastructure.
- Planning assistance.
- Administrative costs of complying with the above

The RESTORE funds are divided into five components:

1. "Bucket 1" 35% of RESTORE funds divided equally among the five states. In Florida, these funds are allocated directly to, and will be spent by, the 23 Gulf of Mexico coastal counties.
2. "Bucket 2" 30% of RESTORE funds competitively awarded by the Gulf Coast Ecosystem Restoration Council for Gulf restoration projects. In Florida, the Governor decides which projects to nominate for consideration by the Restoration Council.
3. "Bucket 3" 30% of RESTORE funds allocated by formula to fund implementation of State Expenditure Plans (SEP). In Florida, the 23 Gulf Coastal Counties formed the Gulf Consortium to draft the SEP which the Governor reviews and submits to the Council for approval.
4. "Bucket 4" 2.5% NOAA Science Program (for Gulf of Mexico research and monitoring)
5. "Bucket 5" 2.5% State Centers of Excellence (for Gulf of Mexico research and monitoring)

NFWF GEBF (Criminal Penalties) Criteria:

http://www.nfwf.org/gulf/Pages/fundingpriorities.aspx#.U6GfxPldWt4 and http://www.nfwf.org/gulf/Pages/GEBF-Florida.aspx

- Restore and maintain the ecological functions of landscape-scale coastal habitats, including barrier islands, beaches and coastal marshes, and ensure their viability and resilience against existing and future threats
- Restore and maintain the ecological integrity of priority coastal bays and estuaries
- Replenish and protect living resources including oysters, red snapper and other reef fish, Gulf Coast bird populations, sea turtles and marine mammals
- Natural resource restoration efforts on marine and coastal environments that improve water quality and other critical habitat elements, strengthen management of important fish and wildlife populations, and enhance the resiliency of coastal resources and communities by implementing outcomes-based projects that maximize environmental benefits

Natural Resource Damage Assessment (Environmental and loss of use payment):

http://www.dep.state.fl.us/deepwaterhorizon/about_restoration.htm

- The Oil Pollution Act of 1990 (OPA) makes parties responsible for oil spills liable to the public and the environment. The environment and the public have a right to be made whole again following an injury to natural resources from an oil spill incident. Natural Resource Damage Assessment (NRDA) is a legal process to determine the type and amount of restoration needed to compensate the public for harm to natural resources and their human uses that occur as a result of an oil spill incident or a hazardous substance release. Natural resources include land, air, water, fish, wildlife, biota, groundwater and drinking water supplies. Natural resources also include habitats and individual biological resources such as species or communities.

State of Florida Priorities:

http://www.dep.state.fl.us/deepwaterhorizon/projects_restore_act.htm

The State of Florida and its 23 Gulf Coastal Counties have a great deal of decision-making power for a significant amount of RESTORE funds. In order to provide focus for project recommendations, Florida identified the following priorities for RESTORE Act-funded projects:

- Stormwater / Wastewater infrastructure projects
- Community resilience / Living shorelines
- Water quality projects including those which achieve water quality benefits provided by the preservation of buffer lands around military bases
- Implementation of agriculture best management practices, or
- Fish and wildlife habitat and management

Appendix B

Stakeholder Participants

Springs Coast Community-Based Watershed Meetings

Stakeholders who attended one or more of the following meetings
January 23, 2013, September 22, 2014

ORGANIZATION	NAME
Army Corps of Engineers	Shannon White
Brooksville City Council	Lara Bradburn
Citizen	William H. Jordan
Citrus County	Jeffrey Gower
Citrus County	Ken Cheek
Citrus County	Jeffrey W. Rogers, P.E.
Citrus County	Rebecca Bays
Citrus County Engineering Division	Quincy D. Wylupek
City of Brooksville	Jennene Norman-Vacha
City of Brooksville	Richard Radacky
City of Dunnellon	Evan Williams
Coastal Engineering Associates Inc	Cliff Manuel
Creative Environmental Solutions, Inc.	George K. Foster, P.G.
Florida Department of Agriculture and Consumer Services	Mark DeHaven
Florida Department of Environmental Protection	Phil Coram
Florida Department of Environmental Protection	Terry J. Hansen, P.G.
Florida Department of Environmental Protection	Tim Jones
Florida Department of Environmental Protection Coastal & Aquatic Managed Areas	Jessica L. Kanes
Florida Department of Environmental Protection	Roy Ogles
Coastal & Aquatic Managed Areas	Katie Konchar
St. Martins Marsh and Big Bend Seagrasses Aquatic Preserves	Jon Brucker
Florida Fish and Wildlife Conservation Commission	Kent Smith

Florida Fish and Wildlife Conservation Commission	Kevin Kemp
Florida Fish and Wildlife Conservation Commission	Maria Merrill
Florida Fish and Wildlife Conservation Commission	Jay Liles
Center for Spatial Analysis-Information Science and Management	René D. Baumstark
Florida Fish and Wildlife Conservation Commission	Cheryl Sanders
Florida Marine Research Institute	Rene Duffy
Hernando County	Anna Lamy
Hernando County	Clay Black
Hernando County	John Burnett
Hernando County	Laura Boehmer
Hernando County	Virginia Singer
Hernando County	Brian Malmberg
Hernando County	Dawn Velsor
Hernando County	Diane Rowden
Hernando County	George Zoettlein
Hernando County	Len Sossamon
Hernando County	Wayne Dukes
Hernando County Office of Business Development	Valerie M. Pianta
Hernando County Tourism Bureau	Tammy Heon
Hernando County Utilities Department	Sylvia Durell
National Wildlife Federation	Jessica Koelsch
Nature Coast Action Team, Inc.	Forrest Bennett
Office of US Senator Nelson	Shahra Anderson
Pasco County	Curtis Franklin
Pasco County Economic Development Council, Inc.	John Hagen
Pasco County Schools Environmental Program	Josh McCart
SCG Governmental Affairs	Bill Williams
Southwest Florida Water Management District	Chris Zajac
Southwest Florida Water Management District	Veronica Craw
Southwest Florida Water Management District	Veronica Craw

Tampa Bay Times	Barbara Behrendt
The Nature Conservancy-FL	Anne Birch
U.S. Geological Survey Florida Water Science Center	Kevin Grimsley
U.S. Geological Survey Florida Water Science Center	Richard Kane
U.S. Geological Survey Southeast Ecological Science Center	Gary Mahon
US Fish and Wildlife Service	Andrew Gude
US Fish and Wildlife Service	Nicole Adimey
USDA Natural Resources Conservation Service	Daniel Oliver
USDA Natural Resources Conservation Service	Henry Burkwhat
USDA Natural Resource Conservation Service	Jean-Paul Calixte
USDA Natural Resources Conservation Service	Jessica Bentine
USDA Natural Resources Conservation Service	Walter Albarran

Appendix C

Stakeholder Meetings Notes

Springs/South Nature Coast Community-based Watershed Planning Meeting

September 22, 2015 9:30-2:30 Eastern

Pasco Hernando State College, North Campus, 11415 Ponce De Leon Blvd., Brooksville, FL

Hosted by Hernando County and Facilitated by The Nature Conservancy

AGENDA

Note times may be flexible to provide for more discussion, as needed.

Watershed Plan Objective: Create a unified holistic vision for the watersheds by collectively identifying and prioritizing a suite of projects and actions that solve the most pressing environmental issues affecting these watersheds and the Gulf, irrespective of the funding source or political jurisdiction.

Meeting Objective: Review and discuss projects submitted and propose project ideas that address the Springs Coast watershed plan issues and root causes.

Time	Topic	Objectives
9:30-10:15 Anne Birch	o Welcome/Introductions/ Public Comment	o Overview on meeting agenda, progress to date and process to finalize plans. o How this process is different from RESTORE/Deep Water Horizon funding processes
10:15-12:00 Jean-Paul Calixte, NRCS & Anne Birch	o Projects in the Springs Coast Watershed o Break out table discussions o Full group discussion	o Review projects identified by stakeholders who submitted pre-meeting information. o Identify and discuss potential project gaps based on Issues and Root Causes (Table 1 of plan) o Opportunities for project consolidation?
12:00-12:45 LUNCH		
12:45-2:00 Anne Birch	o Projects assessment	o Continue Morning Discussion on projects, if needed. o Major Actions (Issues) & Root Causes Missing? o Prioritization?
2:00 - 2:15 Anne Birch	o Moving Forward	o Review next steps in watershed planning o Q&A
2:15-2:30	o Public Comment / Adjourn	

Apalachicola Bay to St Marks Region Community-Based Watershed Meeting

Springs/South Nature Coast Community-based Watershed Planning Meeting

September 22, 2015 9:30-2:30 Eastern

Pasco Hernando State College, North Campus, 11415 Ponce De Leon Blvd., Brooksville, FL

Hosted by Hernando County and Facilitated by The Nature Conservancy

MEETING NOTES

This was a meeting of the Springs Coast Community-Based Watershed planning process facilitated by The Nature Conservancy (TNC), attended by 20 stakeholders. Thank you to Hernando County for their assistance with the meeting logistics. The meeting objective was to review the proposed projects stakeholders submitted to TNC's online form specifically for this phase of the watershed planning process (not RESTORE) and identify gaps in projects, look for opportunities for project consolidation, and discuss a project prioritization process. The proposed projects were to address the watershed's issues and root causes identified by the stakeholders during past meetings.

Anne Birch provided a PowerPoint that described the watershed planning process and status to date and reviewed the agenda for the meeting. Jean-Paul Calixte, Natural Resource Conservation Service, reviewed the maps he created showing the locations of the proposed projects submitted. The attendees broke out into groups to review the maps and spreadsheet of the proposed projects to identify geographic and project type gaps and reconcile any questions on project locations. The attendees reconvened into one group and reported on their break out group findings. The following are notes from the break out groups and follow-up discussion with the full group. The meeting attendees are listed on the last page of these notes.

The following are the notes from the meeting's discussions.

Project Corrections/Edits:

- Move #3 to #4 location
- Move #1 to correct location

Gaps identified:

- Chassahowitzka – should be referenced as a "Wildlife Management Area" – check with the project sponsor, Gary Cochran, to make sure it is in the correct location
- Accurate identification and mapping of high density septic tanks – need Dept. of Health engaged (regulatory) – old information and not mapped

- Landscape Ordinance to address inorganics (N2, fertilizer) – ex. funding for FL Friendly Landscapes program (create incentives for Homeowner Associations, etc. to adopt)
- Enforcement of ordinances, ex. invasive species
- Assessments
  - Fish community assessments
  - Habitat Assessments
  - Stream assessment for all of the Springs Coast
- Sediment risk index on unpaved roads throughout the entire watershed
- Evaluate degradation of ephemeral wetlands due to reduced hydroperiods
- Evaluate streams for fish passage blockages and design projects for removal
- Regional marketing and education plan
  - Citizen/community/residential education (fertilizer, golf courses)
- Hernando Bend stormwater retrofit
- Land acquisition projects
- (ex. Fleamasters)
- Monitoring programs
- Invasive removal (flora & fauna) (coastal & terrestrial) – Brazilian pepper, whitehead tree, Lyngbya sp., Australian pine, lionfish
- Septic nutrient loading
- Identify areas of greatest need – look at density & proximity ot springs and coasts
- Recreational infrastructure
- Issues missing from original list:
  - Mercury: Hernando County – Root Cause: atmospheric deposition, cement plants
- New project to add = Spring Hill septic to sewer
- New project to add = Oakley Island & Palm Grove

Discussion Notes:

- #6 SWFWMD funded but not all phases – design is funded, construction phases currently unfunded
- Prioritization of Projects:
  - Group types of projects together

    and/or
  - Batch projects together based on a High, Medium, or Low prioritization scheme
  - WMD has criteria for evaluating projects for funding
  - Developing an approach for how to prioritize is difficult
  - Funding sources also have their own prioritization process
  - Make recommendations on how to sequence projects and which ones need to be implemented first
- Water quality is a priority issue with urbanization as a major Root Cause (turf grass fertilizers and water use)
- Prioritize ineffective or unused BMP', regulatory, and development codes
- Drivers in West Marion are agriculture – animal waste and inorganics.
  - Citrus County - 13%
  - Hernando County – 20% (free range cattle)
  - Pasco County – 25%
  - Marion – major influence – 48% cattle and horses
- Basin Management Action Plans (BMAP) are being developed for Crystal River, Kings Bay, Weeki Wachee, Chassahowitzka, and Homosassa
- Look at how this process complements the he project being implemented for BMAP and by the WMD
- WMD approves multi-year projects annually
  - Priority is shovel ready projects and already identified as part of the Capital Improvements Plan

- WMD approves multi-year projects annually
- WMD projections to 2030 for Minimum Flow calculates that the system will not be stressed based on existing and projected water use so water quantity is not a pressing issue in this region – this is unique to Springs Coast region
- Reference the BMAP lost but do not include that list as part of this watershed plan list
  - Completed, currently funded, proposed for funding, unfunded
  - Projects identified for this watershed plan should be those that the stakeholders would like to do but not needed as part of the BMAP process
  - Nutrient source inventory is part of BMAP and septic loading is one variable
- identify built out areas with septic – older neighborhoods and those near wastewater facilities

Boundary Clarification Discussion:

- Discussion regarding the boundary of the watershed planning region:
  - Move the south boundary up to the northern boundary of Pinellas County – this coincides with the Basin Management Action Plan boundary that includes Marion, Citrus, Pasco and Hernando Counties only. Pinellas County has different suite of socio-economic issues and is more highly urbanized than the rest of the watershed region.
  - Include part of Marion County – west half is within the SWFWMD and has different issues than the east half, which is in the SJRWMD.
  - Include Levy County and continue to reach out to them
  - Look at bringing the eastern boundary to I-75
- Following the meeting the watershed boundary on the attached map showing the project locations was determined using the following criteria:
  - Use the HUC 8 watershed boundary and the 5 springshed boundaries that fall within this watershed
  - North boundary: used the watershed until it intersects with the northernmost springshed boundary
  - East boundary: used the springsheds boundaries until it intersects again with the watershed boundary

- South boundary: used the watershed boundary until it intersects with Pasco County and follow the County line west; exception = south boundary will encompass the Anclote River on the SW corner of Pasco County and NW corner of Pinellas County
- West boundary: used the watershed boundary

Stakeholders Missing from the Group

During the course of the meeting discussions the group identified the a couple of stakeholder groups that have not attended meetings and may have an interest in the process and attending future meetings. Who else is missing? Please send suggestions to Anne Birch @ abirch@tnc.org

- City of Dunnellon
- Dept. of Health

Springs/South Nature Coast Community-based Watershed Planning Meeting

January 23, 2014 10:30-1:30 Eastern

Brooksville City Hall Council Chambers, 201 Howell Avenue Brooksville, FL 34601

Hosted by Hernando County and the City of Brooksville

Facilitated by The Nature Conservancy and National Wildlife Federation

AGENDA

Welcome and Introductions

Hosting County, National Wildlife Federation, and The Nature Conservancy

Overview of the Community-Based Watershed Plan approach

1. Environmental Process:
    - Identify key issues and their root causes
    - Identifying priority projects based on key issues and root causes
    - Integrating similar projects
    - Regionalize projects across landscape
2. Proposed Economic Process:
    - Identify key economic targets based on environmental resources, human capital, and natural/ manmade infrastructure (sustainable community)
    - Identify key needs to be successful (workforce development, infrastructure improvements, etc.)

Discussions

1. How to proceed for this watershed
2. Key environmental issues and root causes round table discussion
3. Key economic issues and root causes round table discussion
4. Integration of Environment and Economy discussion

Next Steps:

- Economic issues and root causes
- Identify additional stakeholders
- Technical geospatial information and expertise meeting

Public Comment

Adjourn

Watershed Plan Goal

Create a unified holistic vision for the Springs/S. Nature Coast watershed by collectively identifying and prioritizing a suite of projects and actions that solve the most pressing environmental issues affecting these watersheds and the Gulf to help stabilize, diversify and protect our the economic and environmental health of our coastal communities, irrespective of the funding source or political jurisdiction.

Watershed Plan Objectives

- Fully meet the RESTORE objectives of restoring and increasing the economic and environmental resilience of our coastal communities
- Gulf Consortium adopts the watershed approach being used in the Panhandle and S. Nature Coast as part of the state's RESTORE expenditure plan, rolling up the watershed plans as essential elements of the state plan
- Stakeholders implement the watershed plan through continued collaboration within and across jurisdictions, seeking funding from public and private funding, grants and other sources
- Stakeholders establish internal priorities consistent with the watershed plan

Springs/South Nature Coast Community-based Watershed Planning Meeting

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Hosted by Hernando County and the City of Brooksville

Facilitated by The Nature Conservancy and National Wildlife Federation

MEETING NOTES

Hosts: The meeting was hosted by Hernando County and the City of Brooksville. The Nature Conservancy (TNC) and National Wildlife Federation (NWF) co-facilitated the meeting.

Meeting Purpose: Begin the process of creating a unified holistic vision for the Springs/S. Nature Coast watershed by collectively identifying issues and root causes. The end product will be a watershed plan that

prioritizes a suite of projects and actions that solve the most pressing environmental issues affecting this watershed and the Gulf, irrespective of the funding source or political jurisdiction.

Goals for the watershed planning process:

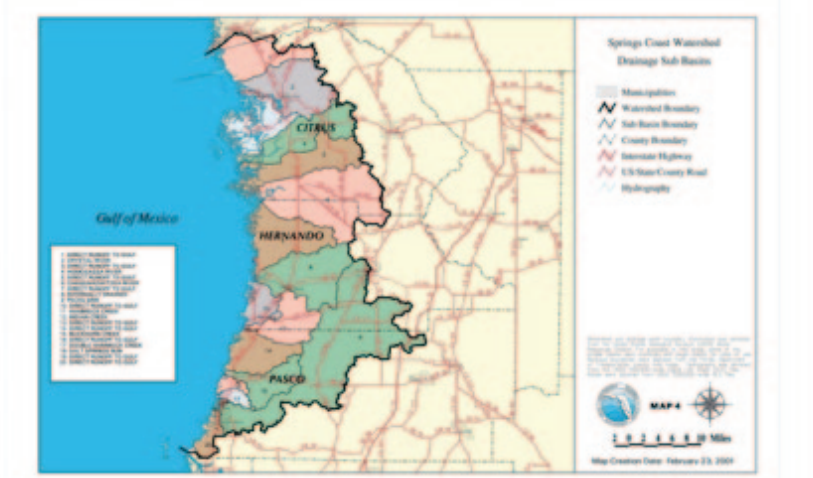
- Gulf Consortium adopts the watershed approach as part of the state's RESTORE expenditure plan, rolling up this and other watershed plans as an essential element of the state plan
- Stakeholders continue to collaborate within and across jurisdictions to implement the watershed plan, seeking funding from public and private funding, grants and other sources
- Stakeholders establish internal priorities that are consistent with and help implement the watershed plan

Attendance: 45 people signed-in representing federal, state and local agencies, economic agencies and organizations, non-profit organizations, private businesses and individuals. This watershed meeting purposefully brought together community environmental and economic interests. A list of stakeholders in attendance is provided at the end of this document.

Anne Birch presented on the process and progress of the Panhandle Community-Based Watershed Meetings being facilitated by The Nature Conservancy for five watershed regions: Perdido Bay, Pensacola Bay, Choctawhatchee Bay, St Andrew/St Joe Bay and Apalachicola Bay to St Marks.

The stakeholders then agreed on a geographic delineation of the watershed, using the Southwest Florida Water Management District's geographic area that encompasses Citrus, Hernando and Pasco Counties (see figure, top of next page).

The remainder of the meeting was an open discussion, facilitated by Anne Birch, TNC and Jessica Koelsch, NWF, in which participants were asked to identify the Issues and Root Causes of each Issue affecting the environment and economy of the Springs Coast Watershed region.



Springs Coast Watershed Drainage Sub Basins. February 23, 2001

The discussions were stimulating and the stakeholders in this region understand and appreciate the interdependence of the economy and environment and the importance of sustaining a healthy environment that can support a vibrant economy and resilient community. The table below is separated into environmental and economic issues and root causes for the purposes of understanding the issues in this watershed region and they will be combined in future meeting discussions.

At the end of the meeting participants agreed that it would be beneficial to include other stakeholders in future meetings and continue the conversations on mutually beneficial environmental and economic issues and solutions. The participants were asked to identify stakeholders and send their contact information to Anne. It was also suggested that the Counties consider televising future meetings on the host County's broadcast station.

Thank You to the following for making the meeting so successful!

- Virginia Singer and Len Sossamon with Hernando County for taking care of the meeting logistics,
- City of Brooksville for opening their doors and making their a wonderful facility available,
- Greater Hernando Chamber of Commerce and Hernando progress for sponsoring the breakfast,
- The Coffee Barn and Bakery for an amazing breakfast spread and gracious staff,
- Participants for taking the time to attend and not being shy about contributing your expertise and insights!

Appendix D

Watershed Overview and General Issues

Springs Coast Watershed Overview

This Appendix is excerpts from the Florida Department of Environmental Protection's "Learn about your Watershed" website http://www.protectingourwater.org/watersheds/map/springs_coast. Figure 2 is a map of the Springs Coast watershed from the Southwest Florida Water Management District's Comprehensive Watershed Management Plan Atlas (2001), downloaded from Maps ETC, on the web at: http://etc.usf.edu/maps - map number f11836. Note that for the purposes of the watershed planning process the boundaries used for project identification were revised by the stakeholders – see Figure 1 on page 8 of this report. There are four different SWIM priority water bodies that are within the Springs Coast watershed region: Crystal River/Kings Bay, Weeki Wachee River, Chassahowitzka River, and Homosassa River. A copy of the Crystal River/Kings Bay SWIM Plan can be downloaded from this web site http://www.swfwmd.state.fl.us/projects/swim.

Springs Coast Watershed

- Size of Basin: About 1,052 square miles plus an estuarine ecosystem that covers approximately 97,911 acres
- Major Water Features:
  - Crystal River, Kings Bay, Homosassa Springs, Chassahowitzka Springs, Weeki Wachee Spring, Anclote River, and Pithlachascotee River, their springs, and associated coastal aquatic resources
  - Four major springs areas discharge some 900 million gallons of water each day into the watershed's rivers, streams and estuaries.

Overview

The watershed encompasses parts of Pasco, Hernando, Citrus, and Pinellas Counties in west-central Florida. It is bounded on the west by the Gulf of Mexico and on the east by the Brooksville Ridge, a sandy remnant of previous higher sea levels that is characterized by porous limestone geology, with wetlands in low-lying areas and scattered sinkhole lakes.

The watershed covers about 1,052 square miles, not including an estuarine ecosystem that extends in a nearly unbroken swath along the entire shoreline. The estuary's bays, rivers, salt marshes, seagrass meadows, oyster bars, and tidal flats cover approximately 15 percent of the total watershed area.

The six major rivers in the watershed-Crystal, Homosassa, Chassahowitzka, Weeki Wachee, Anclote, and Pithlachascotee-their springs, and their associated coastal aquatic resources are dominant features. The watershed contains four major spring complexes, which occur because of the region's karst geology. A spring complex is a group of springs, often spread out over several square miles. The springs are recharged mainly by rainfall. Tidal fluctuations affect all the springs, except for Weeki Wachee.

The coastline along the basin's western edge is heavily vegetated, and low elevation creates flooding even during moderate storms. The coast contains numerous tidal creeks and salt marshes, as well as isolated islands fringed with mangroves. There are very few natural sandy beaches.

The northern portion of the watershed functions like an estuary, with its shallow waters, abundant freshwater flows, and low-energy shoreline. Seagrass beds cover almost the entire nearshore area along the northern portion of the watershed, and extensive oyster reefs are also present.

Barrier islands parallel the Gulf coast from southern Pasco County southward to Tampa Bay. These create sheltered, open saltwater areas and associated shallow-water features such as salt marshes, beaches, seagrass meadows, and tidal flats.

In the watershed, the nearshore estuarine area covers about 996 acres. Although this region is a defining surface water feature in the watershed, its significance far exceeds its size. It provides essential habitat for numerous fish and wildlife species, including nursery and juvenile habitats for many recreational and commercial fish species. The economic value of commercial seafood harvests on Florida's west coast consists of at least 95 percent estuary-dependent species.

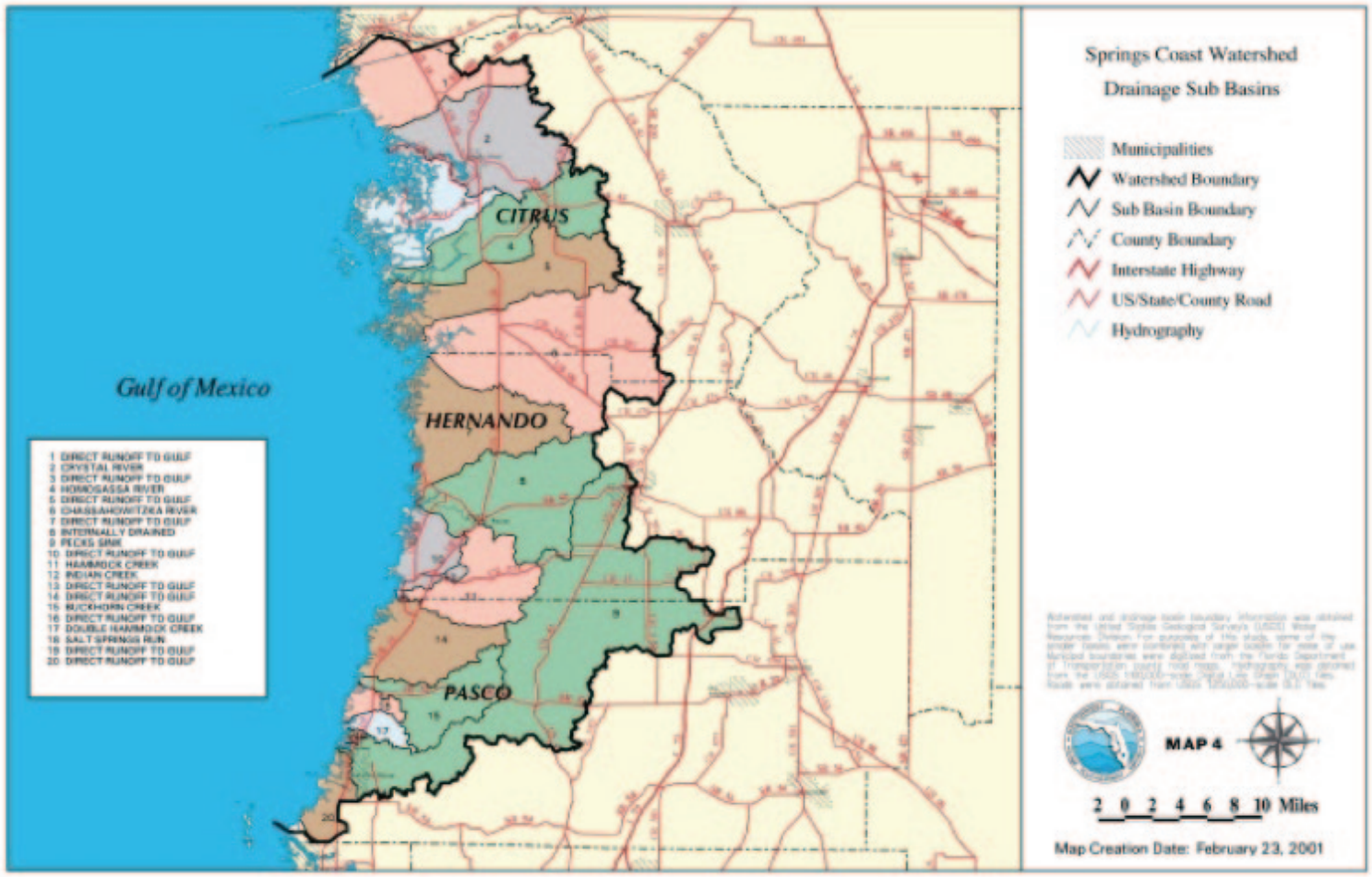
Of the 194,500 acres in the watershed dedicated to parks and conservation areas, approximately three-fourths are sandwiched between the Gulf of Mexico and U.S. Highway 19. Conservation lands include the following:

- The Chassahowitzka National Wildlife Refuge, established in 1931, comprises 31,000 acres of shallow saltwater bays, estuaries, brackish marshes, and tidal streams, with a fringe of hardwood swamps. It is accessible only by boat.
- The Crystal River National Wildlife Refuge comprises 20 islands and several small parcels of land. Six hundred million gallons of fresh water flow daily from more than 30 natural springs in the refuge. The springs are a natural warmwater refuge for the endangered West Indian manatee and provide critical habitat for the Crystal River herd, which makes up about 25 percent of the United State's manatee population.
- Anclote Key Preserve State Park is the northernmost barrier island in the watershed. Just to the east of Anclote Key lies Anclote Anchorage, a shallow area containing seagrass beds that provides breeding habitat for numerous marine species. The Anclote National Wildlife Refuge

encompasses the waters between Anclote Key and the mainland. South of Anclote Anchorage is the Pinellas County Aquatic Preserve.

- Honeymoon Island State Park, Honeymoon Island State Recreation Area, and Caladesi Island State Park contain important coastal plant communities. Honeymoon Island contains one of the few remaining south Florida stands of virgin slash pine, which provides osprey nesting sites.
- Starkey Wilderness Park, an 8,069-acre tract, encompasses a portion of the headwaters of the Anclote River and a stretch of the Pithlachascotee River.
- Weeki Wachee Preserve contains the southernmost coastal hardwood hammock in western Florida.

Additionally, waterbodies in the basin that have been given additional protection through designation as Outstanding Florida Waters (OFWs) include Crystal River and Kings Bay, Chassahowitzka River, Crab Creek, Cabbage Creek, Baird Creek, Salt Creek, Potter Creek, Crawford Creek, Blue Run, Ryle Creek, May Creek, Chub Creek, Blind Creek, Weeki Wachee River, Homosassa River System, and Pinellas County Aquatic Preserve



Springs Coast Watershed Drainage Sub Basins, February 23, 2001

Southwest Florida Water Management District, *Springs Coast Comprehensive Watershed Management Plan Atlas* (Brooksville, FL: Southwest Florida Water Management District, 2001)

Downloaded from *Maps ETC*, on the web at http://etc.usf.edu/maps [map #f11836]

Issues

The following are excerpts from the Florida Department of Environmental Protection and Southwest Florida Water Management District web sites on the Springs Coast watershed region.

Despite a great deal of growth in the last 30 years, Citrus, Hernando, and Pasco Counties- which mostly comprise coastal swamps, dense woodlands, lakes, and pastures-have retained their rural character but are rapidly changing. Agriculture was the historical economic base, but residential growth, the decreasing profitability of farming, and freezes affecting the citrus industry have had a dramatic effect. Today, these counties' economies predominantly comprise retail trade, services, government, and construction. However, a significant portion of Hernando County's economy is still based on industry, mining, cattle, and agriculture.

The population of the four counties in the watershed (Citrus, Hernando, Pasco, and Pinellas) was almost 1.02 million in 1980. By 1998, it had risen to more than 1.45 million, and by 2020 is projected to grow to more than 1.8 million. There is also a large influx of seasonal residents during the winter months.

Beginning in the 1920s, numerous waterfront areas in Pinellas County, including Clearwater Harbor and Boca Ciega Bay, were filled for residential and commercial development and contain extensive seawalls. From 1950 to 1965, about 20 percent of the surface area of Boca Ciega Bay was filled. Most aquatic systems in these areas have deep channels that restrict seagrass growth, and water quality is typically poor. The adjoining areas are also highly urbanized, with Pinellas County having the largest population per acre in the state.

Impacts to water quality in the watershed include approximately 140 active wastewater treatment facilities in the vicinity of the Crystal, Homosassa, Chassahowitzka, Weeki Wachee, and Aripeka Spring Complexes. Additionally, areas that impact both surface water quality and ground water quality in the watershed include a federal Superfund site, two state Waste Cleanup Program sites, two state brownfield sites, 77 state Dry Cleaning Solvent Cleanup Program sites, more than 1,600 petroleum contamination monitoring sites, and eight delineated areas of ground water contamination.

In recognition of these impacts, DEP, the Southwest Florida Water Management District (SWFWMD), and local governmental, scientific, educational, and citizen organizations are working to develop strategies for protecting and restoring water quality and quantity in the watershed.

SWFWMD identified the following Issues for the watershed (see the website noted above for each issue's background and strategies:

- WQ – 1 Reduce Nitrate concentrations in spring discharge
- WQ – 2 Reduce septic leachate within the watershed
- WQ – 3 Address data gaps and monitoring needs
- WQ – 4 Develop and Implement Restoration Plans for Surface Water Bodies Having Poor Quality Water and Preservation Plans for the Protection of Waters Having Good Quality Water.
- WQ – 5 Identify potential mining impacts to the Floridan aquifer
- WQ – 6 Implement the Crystal River/Kings Bay Surface Water Improvement and Management (SWIM) Plan
- NS – 1 The destruction and fragmentation of natural systems
- NS – 2 Declining ground water and lake levels
- NS – 3 Management of publicly-owned lands
- NS – 4 Invasive exotic plant management
- NS – 5 Preserving the economic benefits of the estuarine ecosystem
- NS – 6 Mining in the Withlacoochee State Forest

Appendix E

Stakeholder Identified Priority Issues, Root Causes, Major Actions and Project Types

Environment Priority Issues: 1. Water Quality 2. Natural Resource Protection, Restoration And Management 3. Education And Outreach 4. Coastal Community Resilience	
Major Actions (formerly called Issues. Revised to Major Action needed to address a priority issue)	**Root Causes to be addressed** The root causes were grouped into the bolded bullet headings. The root causes as stated during the stakeholder meetings are under these headings and have not been altered.
Sediment Accumulation	o Untreated stormwater runoff o Roads (pre-1984 construction) o Land use change (that reduces ground cover, esp. rural areas) o Lack of vegetated buffers o Pasture Management o Native Aquatic plant degradation, local beach nourishment (sand as well as organic) o Reduced flow of springs
Inadequate capacity for stormwater drainage	o Aging infrastructure o Unmaintained waterways o Lack of funding o Inadequate or absent infrastructure (pre 1984)
Inadequate Stormwater retention & treatment	o Incomplete inventory of structures o Existing systems not designed to remove nitrates o Adequate to handle current/future issues? o Maintenance of infrastructure
Coastal Erosion, Loss of Nearshore habitat (Mangroves, oyster reef)	o Loss of mangrove? Is this an issue here? o No baseline info. on marine/estuarine habitats available
Aquifer drawdown, Springs Degradation. Inadequate Restoration, Protection, and Maintenance of Springs/Aquifer	o Lack of funding (universal for most issues) o Lack of education and awareness o Scope of large spring sheds o Legacy Issue (past activities creating issues) o Water Quantity o Consumptive use of ground water, population growth o Reduced long-term rainfall/changing weather patterns o Increase in consumptive users (golf courses) o Maintenance of existing infrastructure shifts capacity o Dependency on ground water o Inadequate use of reclaimed water o Water is too cheap

Unsustainable Water Use	o Inconsistency between local and state policies o Improper planting and watering o Permitting wells for irrigation where central water is available. Private irrigation vs. public supply o Inadequate water conservation by residents o Draw down of common water sources
Habitat Destruction (upland, coastal). Landscape conversion, Fragmentation	o Lack of habitat corridors o Population growth o Conversion of agriculture lands to built o Storm events – hurricanes fragment natural habitat o Residential development/planning o Loss of small scale agriculture(primarily converted to residential) o Lack of Cluster Development (and assoc. infrastructure)
Invasive Species	o Lack of educational awareness o Inadequate policies and regulations o Cuban tree frogs, green mussels as ex.
Shellfish Reduction: Oyster Reef Degradation, Shellfish and Blue Crab	o Salinity Regime Changes o Hydrological modifications o Over-harvesting o Drought o Lack of comprehensive state management plan o Reduction of freshwater flow
Salinity Regime Change	o Sea level rise o Reduced freshwater input (including rainfall) o Weather pattern changes o Consumptive use o SW encroachment into FW Rivers
Septic, utility infrastructure	o Need utility infrastructure to replace failing systems o Inadequate knowledge of where systems are failing
Transportation regime shifts	o Will need more roads and improved stormwater management as population increases
Lack of Conversion from aquifer to reclaimed water use	o Lack of funding and planning o Put in infrastructure (reclaimed lines) when communities are constructed o Increase reclaimed water capacity o Caveat: needs to be treated & used properly o WWTP not meeting AWTS (advanced water treatment standards)
Inappropriate Herbicide application and use	o Ineffective ordinance o Inadequate enforcement/compliance o Lack of education and respect for education

Economic Priority Issues:
1. Water Quality 2. Natural Resource Protection, Restoration And Management
3. Education And Outreach 4. Coastal Community Resilience

Major Actions (formerly called Issues. Revised to Major Action needed to address a priority issue)	Root Causes to be addressed The root causes were grouped into the bolded bullet headings. The root causes as stated during the stakeholder meetings are under these headings and have not been altered.	Project Types
Need to develop sustainable economy: principles, practices	o Lack of adequate rail-line and other transportation related issues	o Cisterns o Solar
Threats to Natural Resource Based Economies – e.g., ecotourism	o Water issues	
Biggert-Waters Act – affecting homeowner flood insurance and cost doing business		
Meeting water supply needs	o Cost to meeting needs for fundamental services (water) o Perpetuate development/increased population/tourism without true cost and payment system	o Cistern water capture
Consumer-based economy – residential growth and travel versus homegrown production economy	o Policies stimulate and not mitigate issues o Lack of economic diversification o Extraction industries (mining, fishing, timber etc.) o Extracting water to support	
Lack understanding by population how envir. and economy are connected and their impact to the envir.	o Private interest versus interest of commons o Unwillingness to pay true cost for a quality environment and economy (e.g., retirement community) o Need the service industry to support but unwillingness to pay o Not adequately valuing the economic values of ecosystem services	o Curricula to incorporate FL natural resources and how they drive economies to begin to develop generational base of knowledge
Vulnerability to economy from environmental issues	o Lack of incentives o Lack of a framework for how to understand and integrate envir./econ. needs o Currently negative vs positive incentives	
Need to attract 'industries' to develop solutions/BMP's		
Decline recreational fisheries (e.g., tarpon, scallop)	o No economic valuation study of fisheries (ck w/NOAA) o Few access/boat ramp facilities to fishery areas	

Lack of access to manatees: Clear water and manatee viewing centers	o Inadequate water quality reduces viewing experience o Seagrass loss (from nitrates) means manatees leave HC springs o Lack of sites for easy access/viewing	o Three Sisters Viewing area ($15m needed?)
Decline commercial fisheries (shellfish, crab, bait shrimp) (Note: Hernando County largest exporter live shrimp in FL, nationally?)	o No economic valuation study of fisheries (see NOAA) o Reduced economic viability due to distance needed to travel (e.g., Yankeetown) o Imported fish products versus a local-based fishery economy o Wild caught vs farmed seafood; diversify mariculture.	o Invest in diversification of commercial fisheries (to farmed) o Clam farming (Levy County) is a good example of diversification
Aquaculture industry could be developed	o Locals are competing in a global market and do not have the resources	o Develop inshore and offshore capabilities o Research institutions o More local products need to be developed o Enhance our local assets (points raised by Stu)

Appendix F

Watershed Project List

Note: Due to space limitations the following information provided by the stakeholders on their projects was omitted from the table.

- Alignment with Federal RESTORE Priorities
- Alignment with Federal RESTORE Objective
- Alignment with State RESTORE Priorities

A complete table of the information submitted for each project is available upon request to Anne Birch at abirch@tnc.org.

Project Map #	1
Latitude	28.57
Longitude	-82.64
Project Title	Chassahowitzka SMA Tract
Location Description	Located in the center of the subject parcel
Project Description	Helping to form a southern link of a nearly unbroken crescent of public conservation lands stretching 200 miles from Pasco County to the Apalachicola River, this area will help to conserve one of the largest coastal hardwood swamp forests along the Gulf of Mexico, south of the Suwannee River. Together with its intact and functioning freshwater, tidal and spring system communities, it provides significant watershed and water quality protection and important habitat for an array of imperiled and rare wildlife and plant species.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Reduce impacts to groundwater.
Root Causes	Environmental changes / issues, Erosion, Invasive species, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Project will be judged on the amount of acreage acquire therefore helping to maintain and protect the areas ecosystem.
Project Contact Name	Gary Cochran
Project Cost	>$1 million

Project Map #	2
Latitude	29.779712
Longitude	-83.487884
Project Title	Comprehensive Shorebird Conservation: continuation and expansion of the Florida Shorebird Alliance
Location Description	Coasts along Pasco, Hernando, Citrus, and Pinellas Counties
Project Description	This project will address Gulf coast seabird and shorebird populations. Coastal habitats are naturally dynamic environments that are globally stressed by human population growth and climate change, leading to increases in direct pressures to coastal environments and coastal-dependent species. In particular, the beach/surf zone (beach) is highly sought after for development and tourism because of its aesthetic and recreational values. Consequently, there is little undeveloped beach habitat remaining, and what does remain is often degraded to the detriment of coastal species such as shorebirds. While beach raking, nourishment and armoring projects, loss of food base, beach driving, predators, and pollution all contribute to habitat degradation, one of the greatest limitations to rebuilding these populations is the threats associated with human-related disturbance. Additionally, disturbance and degradation affect other sensitive, important shorebird habitat types, such as inlet and tidal flats. Consequently, sensitive coastal species (e.g., shorebirds) are primarily located on, and restricted to, public lands, including those managed by the Florida Park Service, National Park Service, Department of Defense, county and city parks departments, and non-government organizations. Shorebird populations continue to decline and degradation of habitat continues, even on public lands. Contributing factors include lack of funding for protection, inadequate management of public lands, and lack of public awareness of beach-nesting birds. This project seeks to address a number of these threats through the management of nesting sites, continued development of a strong conservation community focused on changing human behavior in these habitats, and collection of monitoring data to identify priority sites and issues for improved protection and management.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Contamination, Environmental changes / issues, Lack of adequate funding, Lack of environmental awareness
Proposed Metric(s)	· Number of miles of beach being monitored · Number of sites being monitored · Number of acres with reduced disturbance · Number of individuals reached by outreach, training, or technical assistance activities · Number of individuals demonstrating a minimum level of behavior change
Project Contact Name	Nancy Douglass
Project Cost	>$1 million

Project Map #	3
Latitude	28.55
Longitude	-82.525
Project Title	Wilderness Spring
Location Description	center of 30 acre property. Property is bound on the south by Cortez Blvd. and by conservation lands owned by SWFWMD on the other sides. Zoning and comprehensive plan allow for at least 5 homesites on the property..
Project Description	The 30-acre parcel is surrounded on three sides by conservation land owned by SWFWMD and consists a series of high-volume brackish water springs (the main spring is named Wilderness) and disappearing streams in a setting of mixed sandy upland and hydric hammock. The run of a fresh-water spring located just offsite to the east (on SWFWMD land) passes through the north end of the parcel. Fish (especially snook, snapper, barracuda, mullet, and sheepshead) abound; the fish migrate in and out through subterranean caverns. Every summer snook bed in the shallows. Black bear, wading birds and other wildlife frequent the property. Rare Florida orchids and other air plants live in the cedar trees. The land is currently used (on a limited basis) for silviculture, and there is a shallow potable well onsite. Owner is interested in a less-than-fee simple acquisition project.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Erosion, Invasive species, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	The land is ripe for development; the 40 acres to the south (across Cortez Blvd) around Mud River Spring were recently approved for residential development by the County, and the land immediately south of that parcel was recently approved for an RV park and fish camp. A conservation easement on the subject property would protect it forever. Most of the root causes would only become active if development were to occur. The success of the project will be measurable onsite and/or offsite in contamination reduction (impacts from fertilizers and pesticides eliminated); domestic waste water (impacts from septic tanks eliminated); erosion (impacts from damage to shoreline and sedimentation related to dock and boat ramp construction, mowing, etc. eliminated); invasive species (impacts from plants introduced by homeowners averted; inability to do controlled burns due to houses eliminated); loss of vegetation, riparian buffers, and/or wetlands (impacts from dredge and fill, road construction, docks, boat ramps, etc. eliminated); quality and time of fresh water flow (impacts from potential diversion of onsite flows eliminated); and water supply (impacts from groundwater withdrawals eliminated by plugging well).
Project Contact Name	George Foster
Project Cost	=<$1 million

Project Map #	4
Latitude	28.554407
Longitude	-82.645988
Project Title	Bayou Drive Restoration
Location Description	Boundary of roadway runs from CR 550 to Pine Island Drive. Location pt is @ midpoint of project
Project Description	This project involves the repair of two miles of coastal roadway and the restoration of the adjacent coastal marshes. The site is listed in the County's Tourist Information Brochure and the site is used by birdwatchers, fishermen, and for sunset viewing by the local population and by visiting tourists. The project will restore safe sustainable public access to a popular coastal recreational property and restore environmental damage to the adjacent coastal marsh The damaged roadway and parking areas, which discharge sediments into the coastal marshes, will be repaired to current environmental and safety standards and existing parking areas will be repaired and upgraded to current ADA standards to allow greater utilization of the recreational resource by all citizens. Accumulated roadway sediments and non-native vegetation will be removed from the marsh and native plantings will be installed to improve fish and wildlife habitat. The design will include BMPs and other measures to insure protection of the improvements, limit access to environmentally sensitive areas, and reduce future maintenance costs. Hernando County has only limited coastal access and this site is important for recreational use. The County is attempting to diversify its stagnate housing development economic base and this site is an important component of the County's Tourism marketing campaign theme of Hernando County as "The Nature Coast".
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce sedimentation.
Root Causes	Erosion, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Environmental restoration will be evaluated by the volume of sediments removed and the resulting increased coverage of salt marsh vegetation one year after completion of the project. Success of the Gulf Economy and Community Resilience parameters will be evaluated by the increased number of users, as determined by auto counts one year after project completion.
Project Contact Name	Clay Black
Project Cost	=<$500,000

Project Map #	5
Latitude	28.41666667
Longitude	-82.67222
Project Title	Sunwest Park
Location Description	Middle of mine pit
Project Description	Convert Sunwest mine into a coastal park. Improve boater access to the Gulf, provide a venue for beach access and multiple sports events, construct a boardwalk with interpretive signage around the lake, encourage economic growth and tourism.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas.
Root Causes	Environmental changes / issues
Proposed Metric(s)	Economic impact can be measured by increased hotel/ motel sales, increased numbers of sports venue held in northwestern Pasco County, etc.
Project Contact Name	Curtis Franklin
Project Cost	>$1 million

Project Map #	6
Latitude	28.375789
Longitude	-82.538605
Project Title	Regional Reclaimed Water
Location Description	Crews Lake
Project Description	Collect, transfer and reuse reclaimed water into a wetland system to recharge a natural lake. Rehydrate natural systems that have been impacted by over use of groundwater for drinking purposes.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Domestic wastewater, Environmental changes / issues, Ineffective stormwater systems, Quantity and timing of freshwater flow, Water reuse, Water supply
Proposed Metric(s)	Observational studies will be conducted on wetlands being rehydrated. Ground water tables will be able to be measured for impact.
Project Contact Name	Curtis Franklin
Project Cost	>$1 million

Project Map #	7
Latitude	28.35887909
Longitude	-82.61849976
Project Title	Coastal Environmental Research Network and Watershed Research Institute
Location Description	9130 Old Post Road, New Port richey, Fl 34654
Project Description	The Coastal Environmental Research Network (C.E.R.N.) is a statewide network of research partnership facilities that collaborate with regional colleges, universities, businesses and government entities to conduct business, research and education aimed at coastal restoration. The mission of C.E.R.N. is to conduct innovative, interdisciplinary research focused on estuarine ecosystems with a focus on habitat monitoring and restoration while providing an economic engine for local, regional, and state businesses. Watershed Research Institute: The Watershed Research Institute will consist of a state of the art Stream Lab facility located at the headwaters of a river tributary. Facilities will include sampling stations, research lab, small conference rooms and learning centers, computer stations and other infrastructure necessary to conduct required research. Private industry will be encouraged to work in cooperation with the Institute to develop new methods of sustainability, water quality research and other related scientific fields. It should be stressed that this will be a public/ private partnership with involvement from local universities, schools and colleges as well.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Ineffective stormwater systems, Lack of environmental awareness, Water reuse, Water supply
Proposed Metric(s)	Impact will be measured by students and companies that successfully utilize this resource.
Project Contact Name	Curtis Franklin
Project Cost	>$1 million

Project Map #	8
Latitude	28.545
Longitude	-82.627
Project Title	Mary's Fish Camp Water and Sewer Improvements
Location Description	middle of the project
Project Description	Provide central water and sewer service and abandon septic tanks in the Mary's Fish Camp Subdivision, upgrade of water mains provides fire flow service. Elimination of septic tanks will significantly lower fecal coliform count thus improving water quality that will greatly benefit entire ecosystem at Mary's Fish Camp.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Ineffective stormwater systems, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Implementation of a Federally-approved marine, coastal, or comprehensive conservation management plan, including fisheries monitoring. Less frequent closing of beaches and parks for swimming, performing fire flow tests at new hydrants
Project Contact Name	Angel Roussel, Engineering Manager, Environmental Services.
Project Cost	>$1 million

Project Map #	9
Latitude	28.573
Longitude	-82.655
Project Title	Pine Island Water and Sewer Improvements
Location Description	middle of the project
Project Description	Provide central water and sewer service and abandon septic tanks in the Pine Island Subdivision, upgrade of water mains provides fire flow service.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Ineffective stormwater systems, Lack of adequate funding, Lack of environmental awareness, Quantity and timing of freshwater flow, Water reuse, Water supply
Proposed Metric(s)	Less frequent closing of beaches and parks for swimming, performing fire flow tests at new hydrants. Numerous failed fecal coliform tests have occurred at the Pine Island County Park over the last several years. Elimination of septic tanks will significantly lower fecal coliform count thus improving water quality that will greatly benefit entire ecosystem at Pine Island.
Project Contact Name	Angel Roussel, Engineering Manager, Environmental Services.
Project Cost	>$1 million

Project Map #	10
Latitude	28.542
Longitude	-82.627
Project Title	Oakley Island and Palm Grove Colony Water and Sewer Improvements
Location Description	middle of the project
Project Description	Provide central water and sewer service and abandon septic tanks in the Oakley Island Subdivision, upgrade of water mains to provide fire flow service for Oakley Island and Palm Grove Colony. Improve water quality of nearby coastline, mitigate impact of septic tanks on water quality, and provide adequate fire flow to nearby residents and parks.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce and treat stormwater., Reduce impacts to groundwater.
Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Ineffective stormwater systems, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness, Quantity and timing of freshwater flow, Water reuse, Water supply
Proposed Metric(s)	Less frequent closing of beaches and parks for swimming, performing fire flow tests at new hydrants. Elimination of septic tanks will significantly lower fecal coliform count thus improving water quality that will greatly benefit entire ecosystem at Oakley Island.
Project Contact Name	Angel Roussel, Engineering Manager, Environmental Services.
Project Cost	>$1 million

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