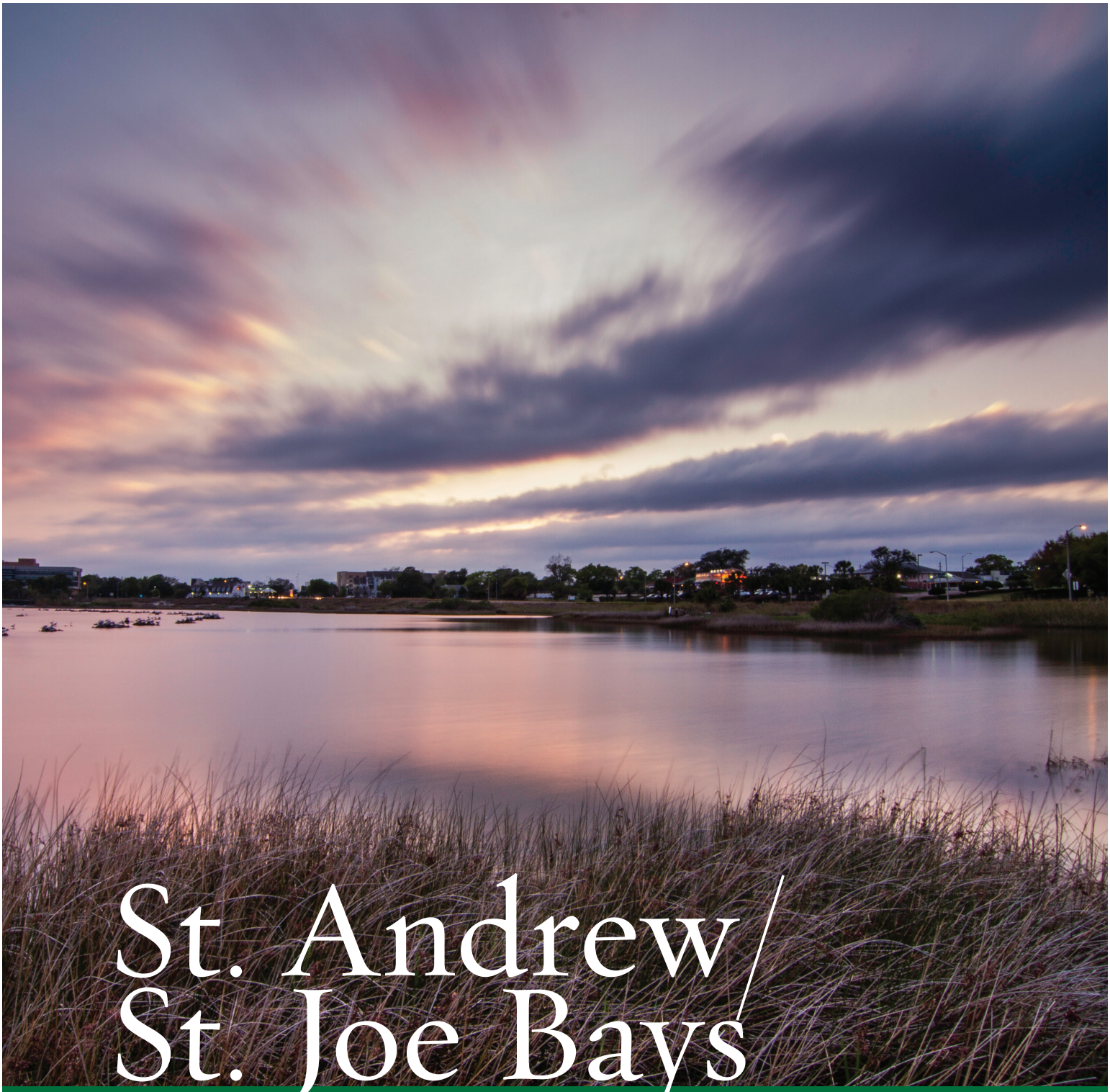

St. Andrew/ St. Joe Bays

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 St Andrew/St Joe Bays Community Based Watershed Plan documents the planning process, the initial set of priority projects, and next steps for the St Andrew/St Joe Bays Watershed

Planning Process

The Nature Conservancy organized and facilitated "watershed discussions" for the St. Andrew/St. Joe Bays 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.

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The St. Andrew/St. Joe Bays 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 St. Andrew/St. Joe Bays is the same boundary identified in the Northwest Florida Water Management District's Surface Water Improvement and Management (SWIM) Plan. It is the only watershed in the Panhandle region of Florida that is entirely within the State of Florida.
- Discuss stakeholders' vision for the watershed
- 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 St. Andrew/St. Joe Bays watershed began in July 2013 and continued through 2014. After each meeting, meeting notes were distributed to all participating stakeholders (Appendix C–Stakeholder Meetings Notes). The notes and comments received were used to develop this draft plan. This plan represents the first edition of the St. Andrew/St. Joe Bays 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 first step in the watershed planning process was to hear stakeholder perspectives on what they envisioned for their watershed's future. To do so, the following question was e-mailed to stakeholders prior to the first meeting held for the St. Andrew/St. Joe Bays watershed. It was also provided on slips of paper to be filled out during the meeting:

In a sentence, of just a word or few, what is your Vision for the St Andrew/St Joe Bays Watershed's future (land / river / estuary / Gulf)? What do you hope it looks like in 10, 20, or 50 years and beyond?

During the meeting held on August 14, 2013, TNC facilitated a short brainstorming session as an introduction for everyone to hear and understand each other's thoughts and viewpoints on their vision for the St. Andrew/St. Joe Bays watershed. A vision statement was not developed; this can be done at a later date as part of creating a long term organizational structure to manage the implementation of this plan.

The following are the unedited comments that were presented on paper and during the brainstorming and have been grouped by common themes:

- Healthy habitats and resources
  - Environmentally sustainable and economically resilient
  - Abundant coastal and marine resources
  - Watershed that proud to pass on to future generations
  - Healthy estuaries, rivers and uplands
  - Better runoff treatments

- Sustained fisheries
- Increased seagrasses
- My vision for the St. Andrew Bays is one that we will be proud to leave future generations, a healthy watershed that reflects a balanced sustainable approach to both economic development and natural resource preservation.
- Planning for Environmentally Sustainable and Economic Resilient Communities in St. Andrew and St. Joe Bays Watersheds.
- Healthy, productive and sustainable habitats for both land and marine species
- 1. Preserve 2. Protect 3. Restore

o Improved water quality – less water pollutants introduced – less septic tanks

o Improved habitat – channel markers and maps. Inflow water quality improvements

o Watershed partnerships – uplands

- Maintain naturally functioning ecosystem that balances economic growth, consumptive use that is sustainable and measurable.
- Implement a plan to share all these resources with birds and other wildlife, not just have them for use of man.
- Provide measures that will resolve issues that are a detriment to environment and economy while maintaining public access to these natural resources.
- Healthy and sustainable mosaic of estuarine, riverine and upland habitats that increase community and ecosystem resilience with an active partnership network for ongoing management restoration, conservation and monitoring.

o Clean Water

- Clean water
- Reduced frequency of swimming beach closures
- Better flushing
- Improved water quality that supports sustainable fisheries (finfish, scallops, oysters), an increase in seagrasses and a reduction in swimming beach closures.
- A bay with no wastewater or stormwater emptying into it.

- Restore and protect water quality and habitat. Significant improvement in water quality, seagrass, and other habitat.
- It is mostly about water quality, and to ensure that, we must have a continued water quality monitoring program.
- Working cooperatively to improve the water quality and water resources within the St. Andrews Bay and St. Joe Bay watersheds.
- Clean water, abundant coastal and marine resources, clean beaches, strong resilient diversified economy/uplands

o Educated and active community
- Watershed partnerships maintained
- Measures for success are in place
- Bay County – West Bay Sector Plan – final and perpetual protection. A plan similar to West Bay Sector, in East Bay. Complete elimination of untreated stormwater discharge
- Common visions – watersheds across the Gulf want the same vision

The next step was to start identifying the Priority Issues, Root Causes, Major Actions facing the St. Andrew/St. Joe Bays Watershed. Appendix D–Watershed Overview and General Issues contains a general description of the St. Andrew/St Joe Bays Watershed, a map of the watershed, and the high level issues it faces.

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 18, 2014 meeting of the St Andrew/St Joe Bays 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 Sept. 18, 2014).

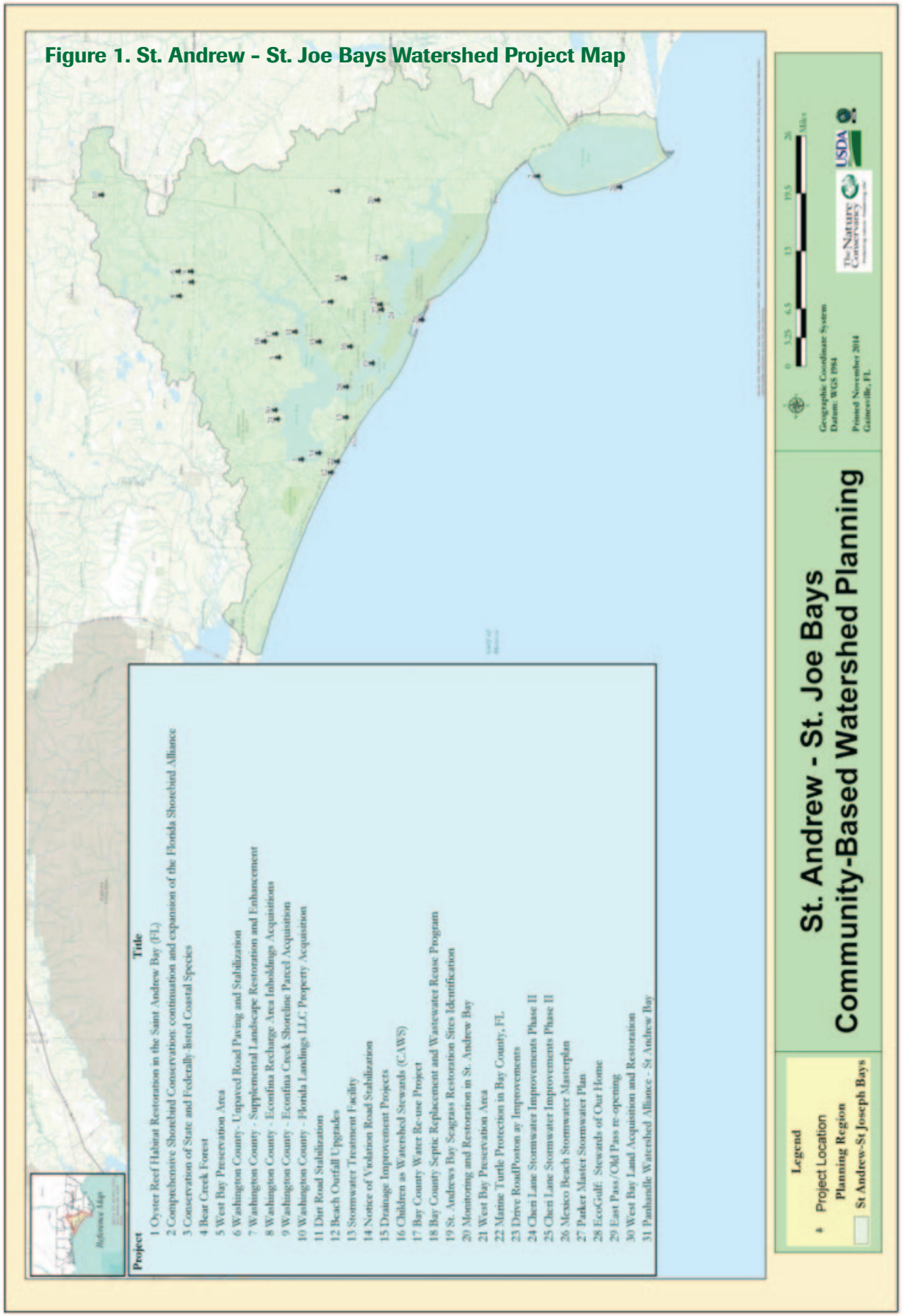
Thirty-one projects totaling 32 different actions were submitted during the first round of project nominations (Appendix F – Project Table). Projects ranged from single focus projects such as stabilizing dirt roads, to multiple projects designed to restore a sub-basin within the watershed. The following is a breakdown of suggested projects by major action:

- Protect, restore, create and/or manage natural habitat and resources and increase buffer areas – 11
- Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement – 10
- Reduce impacts to groundwater and ensure adequate fresh water availability
- Reduce and treat stormwater – 5
- Reduce nutrient loading – 2
- Reduce sedimentation – 4

Note that the above grouping is by main primary goal, 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. The idea is that once a comprehensive set of projects has been identified for each watershed, the projects can then be grouped and separated as necessary to apply for funding sources as they become available. 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, etc.). The project list will be added to over the coming year as additional watershed meetings are held.

Figure 1. St. Andrew - St. Joe Bays 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 major issues and root causes previously identified as issues of concern in the Perdido and Pensacola Bay watersheds. RIOS was designed to support this type of stakeholder process, as it 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 at the lowest cost. RIOS is a free and open source software tool developed by the Natural Capital Project (NatCap), TNC and partners. RIOS will help answer two core questions:

1. What set of investments (which activities, and where) will give the greatest returns towards multiple objectives?

2. 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 can support a stakeholder process for developing watershed plans in other Gulf coast counties and watershed groups across Florida and for informing statewide 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 with stakeholders for multiple benefits. If the model proves to be a good tool, it could be applied to the St. Andrew / St. Joe Bays watershed to aid in project identification and prioritization.

1) TNC Recommendations

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

- Northwest Florida Water Management District updates the St. Andrew Bay SWIM plan (2000) 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 the watershed process will continue to use the existing SWIM plan 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 St. Andrew Bay and other Panhandle SWIM Plans, 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. All five Florida Panhandle watersheds (Perdido, Pensacola, Choctawhatchee, St Andrew/St Joe and Apalachicola to St Marks) are included in the proposal. This proposal would satisfy the last objectives of the watershed planning process stated above by creating the long term partnerships in each watershed via the creation of Estuary Programs.

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

St Andrew/St Joe Bays Community-Based Watershed Meetings

Stakeholders who attended one or more of the following Choctawhatchee Bay watershed meetings
July 8, 2013, August 14, 2013, September 18, 2014
Note: Affiliations reflect those notes at the time of attendance and may have since changed.

ORGANIZATION	NAME
Army Corps of Engineers Panama City Regulatory Office	Lisa Lovvorn
Audubon of Florida	Mary Jean Yon
Bay County	Dan Shaw
Bay County	Ed Smith
Bay County	George B. Gainer
Bay County	Guy M. Tunnell
Bay County	Jim Muller
Bay County	Martin J. Jacobson
Bay County	Mike Thomas
Bay County	William (Bill) Dozier
Bay County	William T. Dozier
Bay County Audubon Society	Neil Lamb
Bay County Oystermens Assoc.	Jeffery Newsome (sp?)
Bay County Public Works	Josee Cyr
Bay County Public Works	Larry Hawks
Bay County RESTORE Committee	Gail Carmody
Bay County SeaGrant	Scott Jackson
Bay County Utility Services	Paul Lackemacher
Bream Fishermen Association/Panhandle Watershed Alliance	Barbara Albrecht
Capt. Anderson's Marina	Pam Anderson
Citizen	John Robert Middlemas
Defenders of Wildlife	Kent Wimmer
Ecology and Environment	Paul Johnson
Ecology and Environment	Woody Speed
Florida Department of Agriculture and Consumer Services Division of Aquaculture	Jill Fleiger
Florida Department of Agriculture and Consumer Services Division of Aquaculture	Daniel Zangari
Florida Department of Agriculture and Consumer Services Division of Aquaculture	Loanna C. Torrance
Florida Department of Environmental Protection	Becky Prado
Florida Department of Environmental Protection	Brad Hartshorn
Florida Department of Environmental Protection Coastal & Aquatic Managed Areas	Jessica L. Kanes
Florida Department of Environmental Protection	Sally Mann

Office of Intergovernmental Programs	
Florida Department of Environmental Protection St. Joe Bay Buffer Preserve	Dylan Shoemaker
Florida Department of Environmental Protection Watershed Evaluation and TMDL Section	Douglas Gilbert
Florida Fish and Wildlife Conservation Commission	Jessica Graham
Florida Fish and Wildlife Conservation Commission	Katie Konchar
Florida Fish and Wildlife Conservation Commission	Maria Merrill
Friends of the St Joseph Bay Buffer Preserve	John Ehrman
Friends of the St Joseph Bay Buffer Preserve	Penny Weining
Gulf County	David Richardson
Gulf County	Jeremy Novak
Gulf County	Warren Yeager
Gulf County	Don Butler
Gulf County	Brett Lowry
Gulf Power Company	Richard "Mike" Markey
National Wildlife Federation	Jessica Koelsch
National Wildlife Federation	Madison Walker
NSA Panama City	Jonnie Smallman
Northwest Florida Water Management District	Paul Thorpe
Northwest Florida Water Management District	Guy Gowens
Office of U.S. Representative Steve Southerland, II	Bethany Boggs
P.M. Stormwater, LLC	Phil Mount
Panama City News-Herald	Matthew Beaton
Preble-Rish, Inc.	Elizabeth Moore
Preble-Rish, Inc.	Ricky Dodd
SCG Governmental Affairs	Bill Williams
Science & Discovery Center of Northwest Florida	Linda Macbeth
Science and Discovery Center of Northwest Florida	Amy Wetzel
Seagrass Recovery	Carter Henne
St Andrew Bay Watch	Laura Paris
St Andrew Bay Watch	Lynn Cherry
St. Andrew Bay Resource Management Association	Patrice Couch
St. Andrew Bay Resource Management Association	Linda Fitzhugh
St. Andrew Baywatch Resource Management Association	L. Alan Collins
The Nature Conservancy-FL	Anne Birch
The Nature Conservancy-FL	Janet Bowman
The St. Joe Company	April Wilkes
US Congress	Helen Rigdon
US Fish and Wildlife Service	Channing St. Aubin
US Fish and Wildlife Service	Melody Ray-Culp
US Fish and Wildlife Service	Patricia Kelly
USDA-Natural Resource Conservation Service	Jeff Norville

Walton County	Larry Jones
Walton County	Sara Comander
Washington County	Mike DeRuntz
WMBB-TV News 13	Caitlin Lawrence
Citizen	John Robert Middlemas

Appendix C

Stakeholder Meetings Notes

St Andrews/St Joe Bays Community-Based Watershed Meeting

September 18, 2014 9:30-2:30 Central

Bay County Public Library

898 W. 11th Street Panama City, FL 32412-0625

Hosted By Bay 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 projects and project ideas needed to address watershed plan issues and root causes identified in the St Andrew-St Joe Bays Watershed.

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
10:15-12:15 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?
12:12 - 1:00 LUNCH		
1:00-2:00 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	

St Andrews/St Joe Bays Community-Based Watershed Meeting

September 18, 2014 9:30-2:30 Central

Bay County Public Library

898 W. 11th Street Panama City, FL 32412-0625 https://goo.gl/maps/N8hcX

Hosted By Bay County and Facilitated by The Nature Conservancy

Meeting Notes

This was a meeting of the St Andrew/St Joe Bays Community-Based Watershed planning process facilitated by The Nature Conservancy (TNC) and attended by 31 stakeholders. Thank you to Bay 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. She reviewed the maps created by Jean-Paul Calixte Natural Resource Conservation Service, 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:

- Lat/Long's needed for Project #'s 6-10. Michael DeRuntz to send to Anne
- Title for #21? Ask Preston
- #17 & 18 are different projects but have nearly identical project descriptions. Jim Muller will review and edit if needed.
- Project #'s 8 & 9 look like they are the identical but they are not – Mike DeRuntz will provide new wording for #9, which is restoration and management of the acres protected through #8
- Page 2 of the draft watershed plan check on the watershed regions identified – some may be Choctawhatchee Bay

Gaps Identified:

- St Joe Bay: no projects in the populated area
- City St Joe: Opportunities to work with City St Joe on project ideas
- Issues missing from original list:
  - Sewage Outfalls
- Root Cause: nutrients form fecal coliform
  - Erosion and loss of shoreline habitat:
- Root Cause: hardened shorelines, boat wakes, Sea Level Rise
- Project: Establish baseline of the existing shoreline hardened areas, condition, and solutions
- Fecal coliform testing year round throughout bay systems to capture areas not tested by

FDCAS (FDACS tests West/East and North Bays) – proposed by St Andrew Bay Watch

- Coordination among water quality monitoring programs
- Increase flushing of East Bay
- Flood protection for properties is integral to coastal resilience
- Stormwater Management Plan for Washington County
- Update Bay County's Stormwater Management Plan and integrate into the Master Plan – this may be integrated as part of project #15 (updating the existing Master Drainage Plan and Strategic Plan)
- Invasive species removal for the watershed
  - part of Six Rivers Cooperative Invasive Species Management Area (CISMA) (terrestrial species)
  - Aquatic Invasive species removal needed as well.
- Sea Level Rise/Climate Change, including solutions
- Sediment Risk Index for the watershed – check with the WMD to see if they have conducted this anywhere
  - Critically eroding shorelines for Bays – DEP's conducted for beaches only
- Shoreline Vulnerability Index to oil spills – needed across Gulf
  - Detailed maps
  - All coastal shorelines

- Living resources

- Contaminant Study – update the St Andrew Bay Resource Management Association 2004 study

Discussion Notes:

- Understand the comprehensive needs within the watershed first then prioritize and sequence projects based on needs
- Immediate impacts/stressors to the Bay are water quality issues from:
  - Stormwater
  - Septic
  - Road stabilization
- Consider projects that address multiple stressors rather than addressing them one at a time
- Leave projects as a separate but list in plan under a project type
- Suggest priorities w/in each type
  - Look at Cost/Benefit of projects
  - Leave flexibility based on funding source, amount of funding, partnerships, changing conditions to allow projects to align with opportunities
  - Prioritize sub basins based on the issues and where they occur within the basin, especially if funding is limited
  - Bay Environmental Study Team (BEST) study identified priority sub basins (St. Andrew Bay Storm Management Plan - Collection, Organization, Options, and Prioritization (COOP) Project, May 2009. By CDM for the Bay Environmental Study Team (links to study: http://www.sabrma.org/shareddocuments.html; http://www.sabrma.org/images/ES-1_ES-3_subbasin_matrix_map.pdf)
- Washington County is missing
- Criteria and weighting need to be examined
- RMA web site
- USFWS partially funded
- Consider project phasing and sequencing needed ex. the need to fix the wastewater and sediment issues first that may be impacting seagrasses and other resources.

- Split #20 into 3: water monitoring, shoreline restoration, species management – suggested by Linda Fitzhugh, the project's sponsor
- Lump the following into the same project type:
  - Stormwater: 12, 13, 15, 26, 27
  - Water Reuse: 17 & 18
  - Habitat Restoration: 1, 19
  - Road stabilization: 6, 11, 14, 23
  - Wildlife Conservation: 2, 3, 22
  - Land protection: 4, 5, 8, 9, 10, 21, 30
  - Land Management (Public lands): 7
  - Education/Outreach: 16, 28
- Look at land protection and land management together so that land management funding is considered at the time of acquisition/protection
- Effluent discharges from City Lynn Haven into the Bay
- Panama City and Bay County working on treatment and reuse
- Can get to reuse effectively without advance level treatment
- Convene a group to bring municipalities and counties together to work on effluents and reuse
- Stormwater should include flood management protection. CWA is water quality only, not flood management so designs are water quality designs not addressing flooding. Stormwater is a subset of flood management in the regulatory context. Look at drainage basins in the larger context of the issues and as a way to help evaluate and prioritize within projects.
- One way to help prioritize is to look at what's already being funded by NFWF and NRDA, etc. and look for gaps and complementary projects
- Seagrass projects may overlap with the statewide seagrass restoration plan and should be integrated into the state's plans if feasible
- Shorebird Conservation (project #2): talk with state to see if it's feasible/makes sense to integrate it into FWC's efforts. This work is funded in some areas and includes multiple entities.
- Common interpretive signage in areas across the watershed to identify watershed boundaries such as You Are Entering the St Andrew Bay Watershed. Also consider similar style signage at boat ramps, trail signs. Requires cooperation and coordination across multiple entities.

- Include education and outreach as an essential element of all projects –
- Place specific education and coordinate efforts across other watersheds

Stakeholders Missing from the Group?

The attendees were asked to identify interest groups missing from the meetings that we could reach out to for future meetings.

- Commercial fishing community – e.g., shellfish
- Economic development interests
- County School Systems – Science Coordinator
- Gulf Coast Community College
- Florida State University
- FL Mater Naturalist
- Camp Campuche – UF
- Washington, Jackson, Calhoun Counties – include in plan on page 1 of the draft plan

Please send suggestion of stakeholder groups that may have an interest in attending future meetings to Anne Birch at abirch@tnc.org.

St Andrews/St Joe Bays Community-Based Watershed Meeting

August 14, 2013 1:00-4:00 Central

Bay County Public Library, Bay County Administration Bldg.,
Room 1030, 840 W. 11th St., Panama City, FL

Hosted By Bay County and Facilitated by The Nature Conservancy

Agenda

Meeting Objective: Create a unified holistic vision for the St Andrew Bay/St Joe Bay watershed

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

Goals for the meeting products:

1. Gulf Consortium adopts the watershed approach as part of the state's RESTORE expenditure plan, rolling up this and other watershed plans to be a critical element of the state plan

2. Stakeholders continue to collaborate within and across jurisdictions to implement the plan, seeking funding from public and private grants and other sources

3. Stakeholders establish internal priorities consistent with the plan

Agenda

1:00-1:30

- Welcome and introductions
- Overview of the meeting goals and agenda
- Vision ideas for the watershed

1:35-2:15

- Review the watershed impacts from the first meeting and agree on a list of impacts that must be addressed and use the list to help filter proposed projects (see page 2 for issues identified during the July 8 meeting).
- Identify the root causes of each impact in order to develop projects that fix the source of the problem(s).
- Identify the types/categories of projects according to root cause that will be used to filter proposed projects.

2:15-2:30

- Develop the set of metrics that will be used to monitor success for each category
  - - short term - such as number of homes hooked up to sewer, miles of dirt roads stabilized
  - - long term - such as water quality improvements

2:30-3:15

- Review the existing projects in the watershed that have already been submitted to FDEP
  - Identify applicable category
  - Quantify the impacts of the project to addressing the solution, where feasible

3:15-3:45

- Identify additional projects and/or needs that will help address the agreed on watershed mpacts

3:45-4:00

Public Comment

Wrap-up and next steps

Issues Identified by the NWFWMD:

Inclusive of West Bay, St. Andrew Bay, North Bay, East Bay, St. Joseph Bay, Lake Powell, the

Econfina Recharge Area, and tributary streams comprising the larger watershed

- Stormwater runoff and nonpoint source pollution
- Direct treated wastewater discharges into the St. Andrew Bay Estuary causing nitrogen and phosphorus loading
- Loss of shoreline and littoral habitat due to shoreline alteration, armoring, and erosion
- Degraded and lost seagrass habitats; prop scar damage to seagrass beds
- Degraded urban bayou habitats, including littoral habitat loss and sediment degradation and toxicity; includes multiple bayous and Grand Lagoon
- Untreated stormwater discharges and hydrologic impacts to coastal wetlands caused by drainage ditches
- Degradation of coastal dune lake water and habitat quality (Lake Powell)
- Potential marine invasive species in bays and estuaries

- Local outreach and stakeholder coordination

Issues identified during the July 8, 2013 St. Andrew Bay/St. Joe Bay/Choctawhatchee Bay Watershed Meeting

- Water quality – St. Andrew Bay Resource Management Association, Inc. (RMA) is monitoring this; there are higher levels of impact in some areas.
- Grand Lagoon – high levels of nutrients, turbidity
- East Bay, West Bay - sedimentation and turbidity
- West Bay – suffered sea grass losses – about 300 ac in south portion of the bay. Unsure about the sedimentation source.
- Wastewater discharge from Panama City Beach was a problem, now removed by establishing facilities include water reuse and a wetland park
- Highly urbanized bayous – in the north, sediment toxicity; in urban southwest – potential for restoration, including drainage ditches
- East Pass issues – water quality, loss of seagrasses
- Surface water/wastewater discharges – highly treated, but potential for re-use of water
- Panama City Beach stormwater discharges to Gulf
- EPA said some parts of St. Andrew Bay are nutrient-impaired water bodies, based on loading. DEP says there are problems in Parker Creek, 2 areas of the city. DEP may reevaluate TMDLs. Some areas of St. Andrew Bay are on the DEP water quality problem list – some waters are still discharged directly into the estuary. The Basin Action Management Plan process has not been used here yet, perhaps in 2013 or 2014.
- FWC hopes to restore oyster habitat in West Bay, perhaps this will help with seagrass recovery
- Development plans for north side of West Bay may be a challenge, but large portions are in conservation
- Seagrass damage from boat use is a problem. Potential avoidance by placement of seagrass buoys, signage, and rental boat operator education. Some restoration may be needed.
- Shoreline restoration is needed – soft-stabilization techniques. The US Fish and Wildlife Service (USFWS) is interested in expanding this approach.
- Sedimentation from dirt roads prevention is needed. NWFWMD no longer has Florida Forever funds for this purpose. Bay County has prohibited creation of new dirt roads, but has hundreds of miles that need to be addressed.

St Andrews/St Joe Bays Community-Based Watershed Meeting

August 14, 2013 1:00-4:00 Central

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Room 1030, 840 W. 11th St., Panama City, FL

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Meeting Notes

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1. Gulf Consortium adopts the watershed approach as part of the state's RESTORE expenditure plan, rolling up this and other watershed plans to be a critical element of the state plan

2. Stakeholders continue to collaborate within and across jurisdictions to implement the plan, seeking funding from public and private grants and other sources

3. Stakeholders establish internal priorities consistent with the plan

VISION BRAINSTORMING

A short brainstorming session was held as a way for everyone to hear and understand each other's thoughts and viewpoints on their vision for the Choctawhatchee Bay watershed. A vision statement was not developed; this can be done at a later date. The following question was emailed to stakeholders prior to the meeting and provided on slips of paper to be filled out during the meeting:

In a sentence, of just a word or few, what is your Vision for the St. Andrew Bay and St. Joe Bay watersheds' future (land / river / estuary / Gulf)? What do you hope it looks like in 10, 20, or 50 years and beyond?

The following are the ideas presented during the brainstorming:

- Environmentally sustainable and economically resilient
- Clean water
- Abundant coastal and marine resources
- Watershed that proud to pass on to future generations
- Healthy estuaries, rovers and uplands

- Reduced frequency of swimming beach closures
- Watershed partnerships maintained
- Better runoff treatments
- Sustained fisheries
- Increased seagrasses
- Better flushing
- Measures for success are in place

The following are the ideas that were presented on the slips of paper and are written verbatim as provided:

- Improved water quality that supports sustainable fisheries (finfish, scallops, oysters), an increase in seagrasses and a reduction in swimming beach closures. Patrice Couch, Director, St. Andrew Bay Watch Water Monitoring Program of St. Andrew Bay RMA.
- My vision for the St. Andrew Bay is one that we will be proud to leave future generations, a healthy watershed that reflects a balanced sustainable approach to both economic development and natural resource preservation.
- Planning for Environmentally Sustainable and Economic Resilient Communities in St. Andrew and St. Joe Bay Watersheds. Paul Johnson
- Healthy, productive and sustainable habitats for both land and marine species.
- A bay with no wastewater or stormwater emptying into it.
- Restore and protect water quality and habitat. Significant improvement in water quality, seagrass, and other habitat.
- 1. Preserve 2. Protect 3. Restore
  - Improved water quality – less water pollutants introduced – less septic tanks
  - Improved habitat – channel markers and maps. Inflow water quality improvements
  - Watershed partnerships – uplands
- Maintain naturally functioning ecosystem that balances economic growth, consumptive use that is sustainable and measurable.
- Implement a plan to share all these resources with birds and other wildlife, not just have them for use of man.

- Provide measures that will resolve issues that are a detriment to environment and economy while maintaining public access to these natural resources. Pam Anderson
- Healthy and sustainable mosaic of estuarine, riverine and upland habitats that increase community and ecosystem resilience with an active partnership network for ongoing management restoration, conservation and monitoring.
- It is mostly about water quality, and to ensure that, we must have a continued water quality monitoring program.
- Bay County – West Bay Sector Plan – final and perpetual protection. A plan similar to West Bay Sector, in East Bay. Complete elimination of untreated stormwater discharge
- Working cooperatively to improve the water quality and water resources within the St. Andrews Bay and St. Joe Bay watersheds.
- Clean water, abundant coastal and marine resources, clean beaches, strong resilient diversified economy ⚜⚜uplands
- Common visions – watersheds across the Gulf want the same vision

WATERSHED ISSUES

Watershed issues were identified for each bay using the issues identified in previous watershed meetings as a template. The group identified eight priority issues (listed in no order of importance) and used these to start to evaluate the current list of FDEP RESTORE proposed projects. The root causes of each of the 8 issues were identified and these are noted under each. Note that this does not represent all of the issues in these watersheds. Suggestions of additional issues are presented at the end of this section and these may also be added to as this process continues.

Issues

1. Stormwater

2. Wastewater

3. Sedimentation and turbidity

4. Sediment toxicity

5. Seagrass loss/degradation

6. Oyster loss/degradation

7. Natural nearshore (submerged) habitat loss

8. Restoration uplands

St. Joe Bay Issues: Stormwater, Wastewater, Habitat loss

Issue	Root Cause	Location	Potential Projects
Stormwater runoff and nonpoint source	outfalls St Joe Beach, stormwater outfalls central part Bay; fertilizers & pesticides from residential development	central S. Part Port St Joe	Stormwater retention ponds
Wastewater discharges (nutrients)	Treatment plant; septic tanks; Chipola River discharges	Port St Joe wastewater treatment plant - manmade canal; Coastal areas east of Mexico Bch. (septic tanks)	Domestic wastewater treatment
Habitat Loss shoreline and littoral	scarring boats; erosion (esp. Gulf-side)	south end bay (seagrass); Stump Hole	Protect add'l public lands; rip rap; land use changes (low density); delineate grass beds for avoidance

St Andrew Bay Issues: Stormwater, Wastewater, Sedimentation and turbidity, Sediment toxicity, Seagrass loss/degradation, Oyster loss/degradation, Natural nearshore (submerged) habitat loss, Restoration of uplands

Issue	Root Cause	Location	Potential Projects	Notes
Stormwater discharges to Gulf = increased nutrients, turbidity, & dissolved oxygen	historic drainage ditches erosion/ sedimentation; transport stormwater as pt source discharge; road runoff; raw runoff-untreated runoff; low # pump out units, (potential future cause = platted, vested unbuilt developments & marinas); fertilizers & pesticides from residential development	older developed areas needing retrofit; St Andrews area, Grand Lagoon; Bayous (Johnson, Watson, Powell Creek East, Parker); Capt. Anderson Marina, Grand Lagoon	look at failed locations using existing data/ beach closures/study sources of bacteria (FDEP starting this) to ID hotspots and sources; continue Baywatch Program; sediment catch basins	St Andrew Bay Watch - 20 years data 1990-2006 report on web; outflows mapped by Bay Envir. Study Team (84 sampled?)
Wastewater Surface water discharges; Nutrients, turbidity	septic tanks; plant effluent discharges into aquifer and Bay, (potential future cause = platted, vested unbuilt developments & marinas)	Deer Point Lk watershed, South Port, east/ west ends Panama City Bch (unincorp areas), wastewater treatment plants; Kings Pt/St Andrews along shoreline/canals (septic); Grand Lagoon	re-use of water; Gulf Power cooling/deep well injection; repurpose for irrigation	deep well injection public hearing 9/12
Water quality		East Bay, West Bay	West Bay Sector Plan acquisition & increase size Develop similar plan for East Bay	St. Andrew Bay Resource Management Association, Inc. (RMA) is monitoring

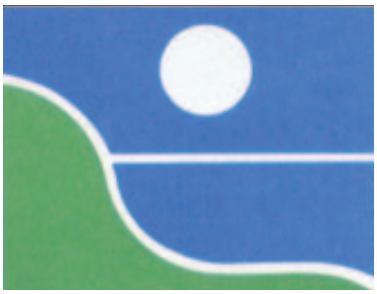
Sedimentation and turbidity	dirt roads; construction; silviculture; drainage ditches, paved roads; stormwater runoff	East Bay, West Bay, Washington Co., North Bay, Grand lagoon, Lower Fannin Bayou, Upper Johnson Bayou, Powell Creek East	prevention/prohibited creation of new dirt roads/restore existing (100's miles); erosion control, road stabilization	

Issue	Root Cause	Location	Potential Projects	Notes
Seagrass Habitat loss	boat use, anchoring, propeller, sedimentation, water quality, turbidity, less flushing	West Bay, East Bay, Shell Island/St. Andrew Sound = old East Pass?	Shoreline restoration/ soft- stabilization techniques, avoidance by placement of seagrass buoys, signage, and rental boat operator education. Some restoration may be needed; mooring buoys, walkway across dune	
Oyster Habitat Loss	drought, water quality decline, wastewater, sedimentation, nutrients, lack suitable substrate, overharvesting (during oil spill)	East, West, North Bays	Restore oyster habitat, substrate, industry BMP need	
Natural nearshore Habitat Loss	channel dredging, past commercial fishing practices, sedimentation		artificial reefs	
Restoration of uplands	consider if silviculture is converted		restoration	

Other issues were recognized as missing from the above list. These include, but are not limited to:

- Loss of other habitat types (salt marsh, uplands)
- Recreational uses/human access
- Sea turtles/shore spp
- Upland protection/upland spp
- Coastal & community resilience

The following notes were provided after the meeting by Patrice Couch with the St. Andrew Bay Resource Management Association. This is excellent information that helps further detail the issues identified during the meeting, as well as gaps in issues.



St. Andrew Bay Resource Management Association (RMA)

Post Office Box 15028

Panama City, Florida 32406

(850) 763-4303 Phone & Fax www.sabrma.org

August 30, 2013

Ann Birch

Marine Conservation Director

The Nature Conservancy, Florida Chapter

2205 Sea Avenue

Indialantic, FL 32903

Dear Ann,

I'm sorry I could not attend the St. Andrew Bay-St. Joseph Bay Meeting on August 14th. I appreciate you giving me the opportunity to send you comments after the fact. I listened to the meeting audio (issues portion) and it seemed to me that there were a few gaps in the information provided. My comments relate to St. Andrew Bay and are an attempt to supplement the information regarding specific locations for the primary issues.

Issue #1: Stormwater (Discharge Locations & "Hotspots")

Please see the report, St. Andrew Bay Storm Management Plan - Collection, Organization, Options, and Prioritization (COOP) Project, May 2009. By CDM for the Bay Environmental Study Team.

This comprehensive report documents which areas of the watershed are affected most by stormwater. A "Priority Actions Inventory" contains actions that can be taken to address water quality and water

quantity impacts from stormwater. The report also includes inventories and maps of stormwater outfalls, septic tanks, industrial and domestic wastewater discharges, pollutant loading, land use, and more.

Sub drainage basins were ranked according to the following criteria:

1. Tributary to a Potentially Impaired Water Body;

2. Deer Point Lake Protection;

3. Tributary to an Impaired Water Body;

4. Degree of Urbanization;

5. Magnitude of Anthropogenic Pollutant Load;

6. Flood Severity;

7. Evacuation/Public Safety;

8. Receiving Water and Biological Health;

9. Subbasin Area;

10. Rate of Growth;

11. Change to Future Land Use;

12. Loss of Wetlands;

13. Recreational Value; and

14. Spring Protection.

Table ES-1 shows the result of the ranking for each subbasin. The results are further summarized graphically in Figure ES-3 to show how the prioritized subbasins were distributed geographically (the "hotspots"). Based on the graphical results, those subbasins with the highest rank are concentrated in the more urbanized areas of the Cities of Panama City and Panama City Beach (subbasins PC-02 and LC-01, respectively). Other subbasins that ranked relatively high include LM-02 (Lake Martin) and GL-01 (Grand Lagoon). Table and Figure are attached.

The full report can be accessed online via these four links:
http://www.friendsofstandrewbay.org/publications/BEST_Report_2009_1.pdf
http://www.friendsofstandrewbay.org/publications/BEST_Report_2009%20_2.pdf
http://www.friendsofstandrewbay.org/publications/BEST_Report_2009%20_3.pdf
http://www.friendsofstandrewbay.org/publications/BEST_Report_2009%20_4.pdf

Issue #2: Wastewater

Domestic Wastewater Sources

Locations of Septic Tanks (data from Bay County only)
Please see attached Figure 2-43 - Septic Tank Locations
From St. Andrew Bay Storm Management Plan - Collection, Organization, Options, and Prioritization (COOP) Project, May 2009. By CDM for the Bay Environmental Study Team.

Septic Tank Issues:
nutrient loading
prohibition of shellfish harvesting (oysters) due to bacterial contamination
probable contributor to swimming beach closures (bacteria)

Facilities with effluent discharges to surface waters
Lynn Haven WWTF (to North Bay)
St. Andrews WWTF (to St. Andrew Bay) Millville WWTF (to St. Andrew Bay)
Military Point Regional AWT/Bay County Regional WWTF (to St. Andrew Bay)

WWTP Issues:
nutrient loading (especially phosphorus)
prohibition of shellfish harvesting (oysters) due to protective buffer zones
disruption of natural salinity regime
pharmaceutical & personal care product residues (not yet investigated in St. Andrew Bay)

Industrial Wastewater Sources

Facilities with significant effluent discharges to surface waters
Rock Tenn Paper Mill + Arizona Chemical (via Military Point Lagoon outfall to St. Andrew Bay) Gulf Power Lansing-Smith Plant (via Warren Bayou to West Bay)
Others exist – consult DEP for complete list.

For specific water bodies affected by wastewater, please see impaired waters lists in the stormwater section above.

Issue #3 Water Quality

Impaired Waters in Bay County (taken from Statewide Comprehensive Verified List)

Source: http://www.dep.state.fl.us/water/watersheds/assessment/a-lists.htm.
By Florida Dept. Environmental Protection (DEP), Watershed Assessment Section, Tallahassee, FL

The water bodies listed below do not meet water quality standards for their designated use.
WBID = Waterbody ID number

Parameter Assessed = Bacteria (Beach Swimming Advisories)
Water Segment Name, WBID Carl
Gray Park, 1061BB0
Beach Drive, 1061CB Delwood, 1061EB
Dupont Bridge, 1061FB Laguna Beach, 8012B
Bid-A-Wee Beach, 8013A
Beckrich Road, 8013B Rick Seltzer Park, 8013C
8th Street, 8015A

Parameter Assessed = Bacteria (in shellfish)
Water Segment Name, WBID East
Bay (E), 1061F
North Bay (North Segment1), 1061G
Sandy Creek, 1111

Parameter Assessed = Dissolved Oxygen (Due to Nutrients and BOD) or Dissolved Oxygen (Due to Nutrients)
Water Segment Name, WBID
Direct Runoff to Bay, 1060
Direct Runoff to Bay, 1184
Parker Creek, 1141A
Little Sandy Creek, 1155

Parameter Assessed = Fecal Coliform
Water Segment Name, WBID
St Andrews Bay (North Segment), 1061B Beatty Bayou, 1088
Robinson Bayou, 1123
Pretty Bayou, 1128
Johnson Bayou, 1131
Watson Bayou, 1136
Parker Bayou, 1141B
Boggy Creek, 1142
Massalina Bayou, 1144
Mule Creek, 1162
Eagle Nest Bayou, 1209

Juniper Creek, 749
Sandy Creek, 1111

Parameter Assessed = Mercury (Based on fish consumption advisory)
Water Segment Name, WBID
Parker Bayou, 1141B

Parameter Assessed = Mercury (in fish tissue)
Water Segment Name, WBID
Alligator Bayou, 1026
Direct Runoff to Gulf (estuary), 1040
Direct Runoff to Bay (estuary), 1043
Newman Bayou, 1057
West Bay, 1061A
St Andrews Bay (North Segment), 1061B
St Andrews Bay (Middle Segment), 1061C
East Bay (West Segment), 1061D
St Andrews Bay (Mouth), 1061E
East Bay (East Segment), 1061F
North Bay (North Segment1), 1061G
North Bay (North Segment2), 1061H
Direct Runoff to Bay (estuary), 1084
Mill Bayou, 1086
Beatty Bayou, 1088
Basin Bayou, 1092
Goose Bayou (Upper Segment), 1098
Botheration Bayou, 1099
Harrison Bayou, 1105
Direct Runoff to Bay (estuary), 1106
Callaway Bayou, 1110
Goose Bayou, 1113
Direct Runoff to Bay (estuary), 1114
Unnamed Bayou (estuary), 1119
Woodlawn Canal, 1120
Robinson Bayou, 1123
Laird Bayou, 1127
Pretty Bayou, 1128

Johnson Bayou, 1131
Watson Bayou, 1136
Massalina Bayou, 1144
Direct Runoff to Bay (estuary), 1161
Direct Runoff to Bay (estuary), 1170
California Bayou, 1171
Pitts Bayou, 1172
Fred Bayou, 1196
Eagle Nest Bayou, 1209
Ammo Lake Bayou, 1211
Direct Runoff to Gulf (estuary), 1212
Walker Bayou, 1230
Farmdale Bayou, 1235
Deerpoint Lake, 553A
Gulf of Mexico (Bay County), 8012
Gulf of Mexico (Bay County), 8013
Gulf of Mexico (Bay County; St Andrew Bay), 8014
Crooked Creek, 973
Panther Swamp, 1238
Gulf of Mexico (Bay County; St Andrew Bay), 8015
Direct Runoff to Bay (estuary), 1008

Parameter Assessed (cause) = Nutrients (Chlorophyll-a)
Water Segment Name, WBID
Direct Runoff to Bay (stream), 1060
Direct Runoff to Bay (stream), 1184

Waterways with Declining Water Quality (Long-term trends 17 yrs. 1990-2006)
Source: http://sabrma.org/images/RMA_BW_Data_Analysis_FINAL_Report_040511_web.pdf
By St. Andrew Bay Resource Management Association (RMA), Panama City, FL

Parameter Assessed = Nutrients
Waterbody
Grand Lagoon (increase in phosphorus)

Parameter Assessed = Turbidity & Secchi Depth (decrease in water clarity)
Waterbody
North Bay

Lower Fannin Bayou
West Bay
East Bay
Upper Johnson Bayou Powell Creek East Grand Lagoon
Lower Crooked Creek
Lower Posten Bayou

Parameter Assessed = Dissolved Oxygen (decrease)
Waterbody
Johnson Bayou
Upper Watson Bayou

Issue #4 Sedimentation/Turbidity
Regarding your question about other sources of turbidity, please add boat traffic; dredging activities; phytoplankton in nutrient enriched waters; wind induced turbidity in shallow areas of the bay due to sediment resuspension.

Add these tidal creeks which drain into West Bay: Burnt Mill Creek and Crooked Creek
Source: construction

Issue #5 Sediment Toxicity: Documented Locations
Reference: *Environmental Contaminants Evaluation of St. Andrew Bay, Florida. By Michael S. Brim, U.S. Fish and Wildlife Service, 1998.*

Parameters assessed: metals, organochlorine pesticides, PCBs, PAHs, aliphatic hydrocarbons, dioxin compounds.

Locations of contaminated sediments:

Open waters of St. Andrew Bay showed little contamination except for some sites between Dupont Bridge & Panama City Marina.

Most severely contaminated sites were within bayous: Watson Bayou
Massalina Bayou
Martin Lake (formerly Martin Bayou)
Shoal Point Bayou

Sites of concern:
Robinson Bayou
Lake Huntington
Pearl Bayou

Freshwater Bayou
Small bayou near Military Point

Dioxin compounds were found in:
St. Andrews Aquatic Preserve,
West Bay,
Watson Bayou,
Martin Lake,
east of Dupont Bridge

Generic sources of sediment contamination
Urban stormwater runoff
Atmospheric deposition
Domestic and industrial point source discharges
Unregulated marine repair facilities
Marinas/Ports
Vessel discharges
Oil spills
Petroleum storage tanks & facilities

Specific Locations
WWTP effluent outfalls to St. Andrew Bay (listed above)
Rock Tenn Paper Mill + Arizona Chemical (Military Point Lagoon outfall to St. Andrew Bay) Petroleum storage tanks & facilities (see DEP inventory): gas stations, fuel/oil storage facilities such as Chevron Products Company Terminal (Beach Drive)

Issue #6: Habitat Loss

Scallops

No one mentioned that the recreational scallop fishery is closed in St. Andrew Bay because we no longer have the scallop population to support it. Clean water and healthy seagrass beds are critical for recovery of the fishery. No one explanation exists for the decrease in scallop density, but probable causes include water quality degradation (stormwater and wastewater), habitat loss (seagrass), and red tide. Historically, scallops were harvested in all areas of the bay system that contained seagrass beds. Preservation of remaining habitat (seagrass beds) especially in St. Andrews Sound, St. Andrew Bay proper, North Bay, and East Bay will assist in recovery efforts.

Seagrass Damage and Loss: Specific Areas

West Bay: The most substantial loss of seagrass habitat in the St. Andrew Bay system has occurred in

West Bay (nearly 2,000 acres or 50% from 1953 to 1992).

Additional losses have occurred throughout the St. Andrew Bay system due to damage from boat traffic (prop scarring).

St. Andrews Sound: The 24,000 acre St. Andrews Aquatic Preserve is located adjacent to Shell Island, St. Andrews State Park, and St. Andrew Pass. Seagrass beds are a dominant feature in the preserve. This area is extremely popular for recreational and commercial vessels and as a result has experienced seagrass damage and loss from prop scarring.

Sources of Seagrass Loss:
Marifarms Shrimp Aquaculture Operations (West Bay)
Construction of the Intracoastal Waterway (West Bay)
Sedimentation from Intracoastal Waterway connection to Choctawhatchee Bay (West Bay)
WWTP effluent (City of Panama City Beach in West Bay, now removed)
Prop scarring from vessels
General decline in water quality from increased turbidity, sedimentation, nutrients, disruption of natural salinity regime (related to stormwater, wastewater, boat traffic, resuspension of sediments in areas that no longer have segrasses to stabilize the bottom)

I hope this information helps answer your questions about specific locations that are affected by the priority issues. Thanks again for allowing me to provide this supplemental information.

Sincerely,

Patrice Couch
Director, St. Andrew Bay Watch
St. Andrew Bay Resource Management Association, Inc.

St Andrews/St Joe Bays Community-Based Watershed Meeting

July 8, 2013 1:00-4:00 Central

Hosted By Bay County and Facilitated by The Nature Conservancy

Bay County Government Bldg. 840 West 11th Street, Panama City, FL

Agenda

Meeting Goals:

1. Provide an overview of the water quality/quantity and natural resource issues in the St. Andrew-St. Joe Bays Watershed.

2. Develop a unified vision for a watershed scale plan and corresponding projects in the St. Andrew-St. Joe Bays Watershed.

3. Begin the identification of specific projects to meet this vision that direct resources to improve the system's water quality and quantity, restore and conserve habitats and living marine resources, and help to support and increase the region's economy and jobs.

Draft Agenda

- Welcome and introductions – Bay County Commissioner Mike Thomas and Anne Birch
- Overview of the planning goal and process - Anne
- Watershed status and overview of natural resource-related issues by NWFWMD, FDEP, & FWC on:
  - St Joe Bay
  - St Andrew Bay
  - Choctawhatchee Bay
- NRCS + other agencies watershed planning effort – Jeff Norville, NRCS
- Discussion of the issues and potential scope of solutions
- Depending on time, start identifying projects that will address the needs and achieve the unified vision of the watershed
  - Attendees' project ideas and discussion of how projects integrate with watershed needs
  - Projects submitted to DEP for NRDA/RESTORE/NFWF funding (identify/eliminate duplicates)

- Plan development process
- Other entities to invite to the table at subsequent meetings
- Public Comment
- Next Steps

St Andrews/St Joe Bays Community-Based Watershed Meeting

July 8, 2013 1:00-4:00 Central

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Summary Notes

prepared by Jim Muller, Bay County RESTORE Act Coordinator

Brief summary of decisions from the July 8 meeting - meeting participants agreed to continue the watershed planning process. Each meeting needs to make progress, with landmarks and goals. The meeting invitation

list will be expanded. The next step will be to start identifying projects that will address the needs and achieve the unified vision of the watershed.

St. Joe Bay

Overview

- A unique water body in Florida – it is not dominated by river influence
- Largest extent of seagrass relative to water body size in NW FL - 5 species of seagrass, indicative of a stable system with good water quality and diverse ecology
- Important to recreation and commercial fisheries, tourism
- Not affected by shore armoring, has diverse and intact coastal system from upland to bay

Challenges

- Overall water quality, water delivery into the estuary
- Stormwater runoff, non-point pollution

Potential projects

- Domestic wastewater treatment
- Stormwater retention ponds
- Additional public lands

Additional comments:

- One area of interest is water delivery into the estuary and the opportunity for conservation actions, including shellfish habitat improvement.
- Port of St. Joe expansion – working on obtaining dredging funds and funds for environmental impact studies
- DEP is not working on Total Maximum Daily Load (TMDL) for St. Joe Bay
- St. Joe Bay Buffer Preserve is working on 6 more low water crossings to help with sheet flow into the bay. The Preserve is monitoring water quality on the land portion of the preserve.
- Coastal erosion is an issue along the Gulf shoreline of the Bay, especially near the Cape.
- The state and fed lands along the bay help to protect it.
- DEP has a project for prop scars restoration
- The St. Joe Bay Aquatic Preserve management plan outlines many of the resources and issues of the Bay.
- Gulf-side issues also need attention.

St Andrew Bay

Overview

- Only major watershed in FL that is entirely in FL
- Components - St Andrew Bay, West Bay, East Bay, North bay, Grand Lagoon, St. Andrew Sound
- Approximately 750K ac watershed – portions of Bay, Washington, Jackson, Calhoun and Gulf Counties
- Deer Point Lake – dammed Econfina Creek – source for drinking water - 355M gallons per day
- Land Use - upland forest, wetlands, urban development near the estuary. Quickly growing areas – Panama City Beach, Lynn Haven, South Port
- Several mitigation banks in the watershed
- Planning efforts – West Bay sector plan – only about 5 sector plans in FL
- Regional General Permit – West Bay and Lake Powell drainage to Walton County – joint planning and permitting process with local gov't and the St. Joe Company
- Sandhill lakes area – S Washington County and N Bay County – important for water quality, biological diversity, recharge for the Econfina, flow from a series of springs, greater than 300 lakes in the area

- Much of the area is protected by Water Management District acquisitions

Other comments:

- Important document - Ecosystem Management Plan for St. Andrew Bay. Completed about 2008 – a comprehensive look and the estuary and watershed and management strategies. St. Andrew State Aquatic Preserve
- Water quality and seagrass studies – one of longest-running programs in the state
- West Pass is the major pass; East Pass has closed up. There is interest in re-opening East Pass.
- St. Andrew Bay has the largest expanse of seagrasses in FL west of Apalachee Bay. St. Andrew Bay is a diverse, generally stable system with stable salinity and good water quality. The bay is important for public use, including recreational and commercial fisheries, tourism and military bases.
- Lake Powell, to the west, is the largest coastal dune lake – a unique system in the northern Gulf of Mexico. The lake can be estuarine in nature and is open to the Gulf of Mexico at times. Septic tanks can be a problem. The water level of the lake is artificially controlled.

Challenges for St. Andrew Bay include:

- Water quality – St. Andrew Bay Resource Management Association, Inc. (RMA) is monitoring this; there are higher levels of impact in some areas.
- Grand Lagoon – high levels of nutrients, turbidity
- East Bay, West Bay - sedimentation and turbidity
- West Bay – suffered sea grass losses – about 300 ac in south portion of the bay. Unsure about the sedimentation source.
- Wastewater discharge from Panama City Beach was a problem, now removed by establishing facilities include water reuse and a wetland park
- Highly urbanized bayous – in the north, sediment toxicity; in urban southwest – potential for restoration, including drainage ditches
- East Pass issues – water quality, loss of seagrasses
- Surface water/wastewater discharges – highly treated, but potential for re-use of water
- Panama City Beach stormwater discharges to Gulf
- EPA said some parts of St. Andrew Bay are nutrient-impaired water bodies, based on loading. DEP says there are problems in Parker Creek, 2 areas of the city. DEP may reevaluate TMDLs. Some areas of St. Andrew Bay are on the DEP water quality problem list – some waters are still

discharged directly into the estuary. The Basin Action Management Plan process has not been used here yet, perhaps in 2013 or 2014.

- FWC hopes to restore oyster habitat in West Bay, perhaps this will help with seagrass recovery
- Development plans for north side of West Bay may be a challenge, but large portions are in conservation
- Seagrass damage from boat use is a problem. Potential avoidance by placement of seagrass buoys, signage, and rental boat operator education. Some restoration may be needed.
- Shoreline restoration is needed – soft-stabilization techniques. The US Fish and Wildlife Service (USFWS) is interested in expanding this approach.
- Sedimentation from dirt roads prevention is needed. NWFWMD no longer has Florida Forever funds for this purpose. Bay County has prohibited creation of new dirt roads, but has hundreds of miles that need to be addressed.

Choctawhatchee Bay

Overview

- 3.4M ac watershed, about 50% within Alabama
- Bay is dominated by flow from Choctawhatchee River, 3rd largest river by flow in state
- Land use - mostly forested, also ag in north portion, even more ag in AL
- Unpaved roads is severe problem
- One pass within the bay – East Pass – artificial, created about 1929
- Seagrass beds are present, especially in the west part of bay, extending to east, primarily 1 species – shoal grass, pioneering. Bay highly variable re salinity, turbidity. Concerns about declining seagrass; coverage varies from year to year.
- Extensive salt marshes. Oyster beds are present – natural and artificial. There are a number of bayous, especially on the west side, most are highly impacted regarding water quality from nutrients and runoff.
- Choctawhatchee River is a large alluvial river with species Gulf sturgeon, American eel, and listed freshwater mussels.
- Holmes Creek is a major tributary with 51 identified springs, many of which are large
- Sturgeon winter in the bay and gulf waters
- Bayous on the north side of the bay are the only habitat of the threatened Okaloosa darter
- Many conservation efforts have addressed the bay including acquisition of much of the

floodplain, establishment of a State Aquatic Preserve, more than 100 monitoring sites in the bay by the Choctawhatchee Basin Alliance. Okaloosa and Walton Counties also have water monitoring projects with DEP.

- About 14 large coastal dune lakes are in the watershed, some in state parks.

Challenges for Choctawhatchee Bay include:

- Stormwater runoff, including sediments– expensive fix, because some areas were developed without stormwater infrastructure
- Unpaved roads – some work has been accomplished in the past.
- Red tide problems about 10 years
- Mosquito control [structures/ditching?]
- Wastewater treatment/septic tanks – sewer is not always available, and connections to sewer have not been required even when the sewer system is in place.
- Culverts causing problems with coastal dune lakes, insufficient to allow natural flow
- Problem with foot traffic-caused sediment along Holmes Creek

Additional comments:

- May be potential for floodplain re-connection in flood control district/mosquito lands
- Choctawhatchee Bay Alliance has lots of info, volunteers, network
- USFWS did dirt road threat assessment in AL
- Suggest a joint proposal from multiple counties to identify the most important dirt road threats in the watershed. Washington County will be working with Walton County on this
- Perhaps can use NRDA/RESTORE funds to help people connect to sewer
- Working with FL DOT on coastal dune lake culverts, especially along CR 30A. USFWS is also concerned about culverts
- Must have scientific data to back up projects proposed to the Gulf Coast Ecosystem Restoration Council.

Does the Choctawhatchee watershed deserve a separate planning effort? Comm. Comander said that Walton is working with Okaloosa County on the Choctawhatchee watershed. It is up to the three counties [Walton, Bay and Gulf] as to whether the three counties want to continue to work together on the Choctawhatchee.

Post-Meeting Note from Anne Birch: There is a separate Choctawhatchee Bay watershed planning effort underway so including the bay in the St Andrew Bay-St Joe Bay watershed process would not be necessary, if the counties agree.

NRCS plus other agencies watershed planning effort – Jeff Norville, NRCS

NRCS uses a voluntary approach. They originally looked at this from a Farm Bill prospective. The last bill focused on watershed approach, so NRCS came up with water quality initiatives. Did not see a lot of consistent data across Panhandle. NRCS working to find out what info does who have, how to target priorities. Taking lead (Paul Medley) re what data are/are not available.

What has NRCS done re water quality, sedimentation? NRCS is coordinating regarding threats, impacts, and opportunities for restoration. Paul Medley is setting up the meeting for Aug/Sept.

Additional comments:

- USFWS has the Landscape Conservation Cooperative initiative – NRCS should check this out
- Coastal resiliency is getting attention these days – prevention of and recovery from environmental and economic damages after storms and disasters.
- Don't just think of RESTORE money, think of other potential funding sources as well. The Florida legislature funded more regional, rather than local, projects.
- Setting priorities is a big part of the discussion. We need partnerships, it may take that to attract funding.
- We need a discussion of the issues and potential scope of solutions.
- Regional scale projects will get more attention from DEP.
- What do we as a collective body want to put forward as projects? Projects should address the heart of issues that affect watersheds.
- How to tackle this today, and in subsequent meetings? It was suggested to identify categories of issues, types of projects, and programs to address the issues. Categories could include water quality, stormwater, wastewater and sedimentation.
- Area non-governmental organizations (NGOs) got together previously and proposed a regional community foundation to support regional water quality monitoring. The group would address water quality in each county, but also pool resources and educate the public about resiliency, etc.
- We need to establish bullet points for criteria to define what will move a project to top of list.
- We need bullet points about each project that quantify impacts/benefits - this approach will be more persuasive.

- Best available science must be used for natural resource and restoration projects.
- Example of a work force grant – relocation of oysters. Resulted in improved oyster beds while hiring unemployed oystermen.

Attendees' project ideas and discussion of how projects integrate with watershed needs

- Projects submitted to DEP for NRDA/RESTORE/NFWF funding (identify/eliminate duplicates)
- Depending on time, the next step will be to start identifying projects that will address the needs and achieve the unified vision of the watershed.
- Plan development process

Other entities to invite to the table

- BEST, Friends of St. Joe Bay
- Parks along the coast
- National Marine Fisheries Service – seagrasses plus
- Naval Support Activity – Panama City
- Tyndall – Wendy Gearhart
- FL Trail Association
- Washington County – potential development could impact water quality

Comm. Dozier suggested that this process be continued. Meetings need to make progress, have landmarks and goals. Comm. Yeager concurred.

Appendix D

Watershed Overview and General Issues

St. Andrew/St. Joe Bays Watershed Overview

This Appendix is excerpts from the Northwest Florida Water Management District's St. Andrew Bay SWIM Plan (2000). Figure 2 is a map of the St. Andrew Bay watershed from this plan. The SWIM Plan can be downloaded at this web site: http://www.nwfwmd.state.fl.us/system/assets/70/original/St.AndrewBay_SWIM_Plan.pdf.

The St. Andrew Bay watershed is the only major estuarine drainage basin entirely within the Florida Panhandle. For management purposes, this watershed is defined as incorporating the interconnected St. Andrew, West, East, and North bays; St. Joseph Bay; and Deer Point Reservoir, as well as the respective surface water basins of each of these waterbodies. This is consistent with the St. Andrew Bay watershed described in the Florida 305(b) report (Hand and Lord 1996) and U.S. Geological Survey Hydrologic Unit 03140101. St. Andrew Sound, formed by Crooked Island, is a smaller embayment located between St. Andrew and St. Joseph bays. The overall watershed covers approximately 749,663 acres in six Florida counties. Approximately 61 percent of the watershed is located in Bay County, with 20 percent in Gulf County, 9 percent in Washington County, 4 percent in Calhoun County, 4 percent in Walton County, and 2 percent in Jackson County.

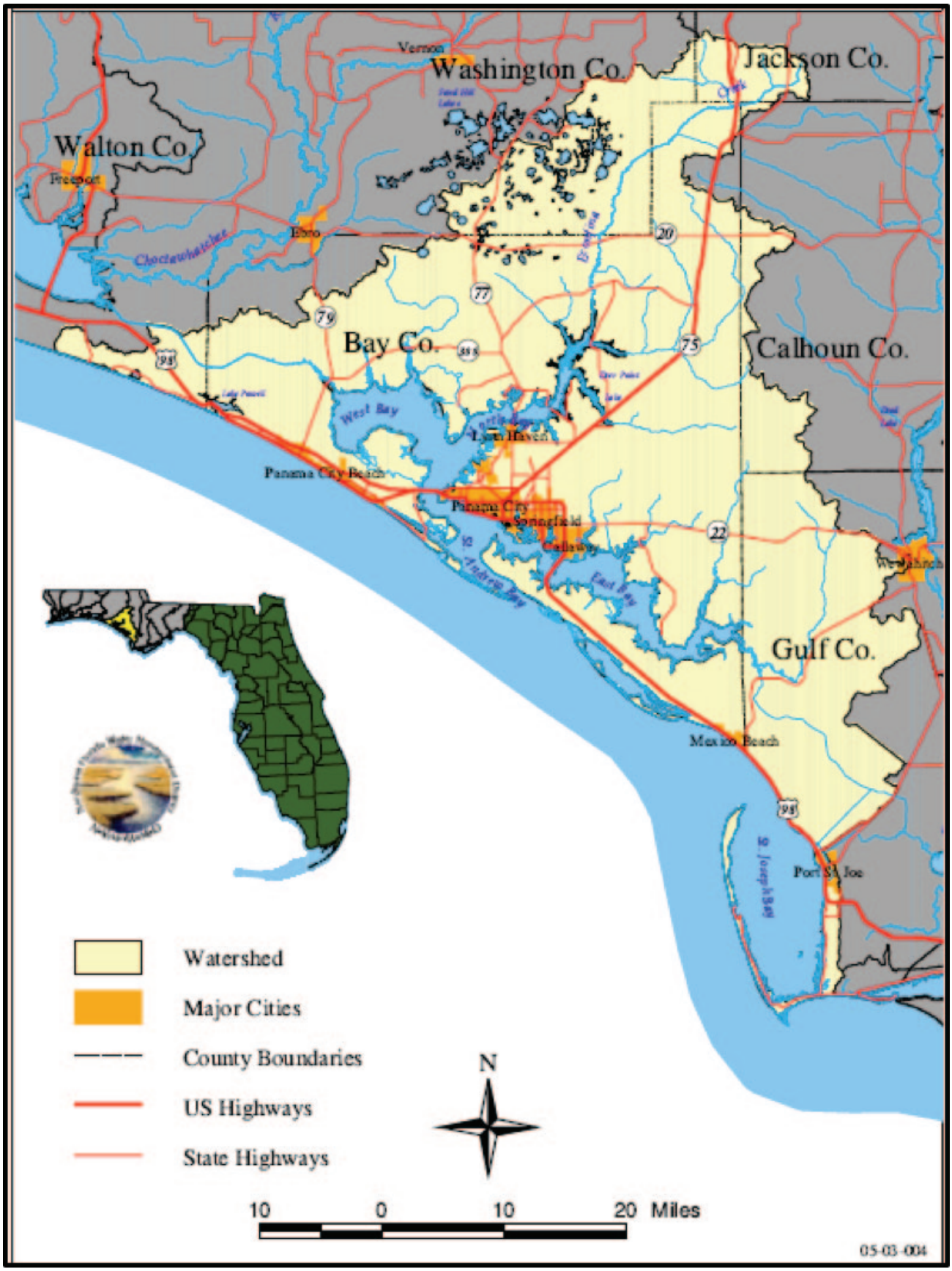
St. Andrew, North, West and East bays have a combined surface area of approximately 59,568 acres. Econfina Creek, through Deer Point Reservoir, provides the major freshwater inflow into the estuary, along with a number of smaller creeks. East Pass and West Pass have provided surface water communication with the Gulf of Mexico at each end of Shell Island. West Pass was artificially cut in 1934 as the primary navigation channel to the Gulf, while most exchange between the estuary and the Gulf historically occurred through East Pass. East Pass recently closed, however, and a permit application for dredging and reopening the pass is under review at the time of this writing. Also prominent in the St. Andrew Bay estuary area are Tyndall Air Force Base (AFB) and the cities of Panama City, Panama City Beach, Lynn Haven, Springfield, Callaway, Parker, and Cedar Grove.

St. Joseph Bay is located on the southwest coast of Gulf County, bounded by Cape San Blas and St. Joseph Peninsula. This bay is notable in that it is the only embayment in the eastern Gulf of Mexico lacking a major source of surface fresh water inflow. It is connected to the Intracoastal Waterway, however, by Gulf County Canal. The bay has a surface area of approximately 42,826 acres. In recognition of its outstanding resource value, most of St. Joseph Bay was designated an Aquatic Preserve in 1969 for the purpose of preserving the biological resources in the bay and maintaining them in an essentially natural condition.

Prominent in the vicinity of the bay are the city of Port St. Joe, T.H. Stone Memorial St. Joseph Peninsula State Park, the St. Joseph Bay Buffer Preserve, and Eglin AFB lands.

Another, smaller system in the St. Andrew Bay watershed is Lake Powell, located in southwest Bay County and southeast Walton County. Lake Powell is a large interdunal lake that periodically opens to the Gulf of Mexico through a shallow, intermittent inlet. The lake's watershed covers approximately 8,612 acres, with a surface water area of approximately 666 acres. The excellent resource value of this lake has been recognized by the state of Florida through its designation of Lake Powell as an Outstanding Florida Water. Keppner and Keppner (2000) provides an overview of information about the lake and issues relating to it.

Figure 2. St. Andrew – St. Joe Bays Watershed Project Map



Issues

About 59 bayous in the St. Andrew Bay system are affected by stormwater runoff and sedimentation. For example, Watson Bayou was impacted by a sawmill beginning in 1835, a paper mill beginning in 1931, and fuel storage, wastewater treatment plants, boat construction, commercial fishing, runoff, and habitat loss due to residential development. Other bayous, such as Massalina Bayou, Martin Lake, and Fred Bayou, have been similarly affected.

St. Andrew Bay proper, which receives water from the other bays in the system, is connected directly to the Gulf of Mexico. It also receives almost all the stormwater runoff and discharges from industry and public water treatment facilities. Urban development and industrial development occur along most of the shoreline and bayous of the bay system. Fresh water comes from the creeks entering the many bayous. However, most of these creeks serve as stormwater conduits from developed areas.

A comparison of 1992 aerial photography with historical aerial photography indicates that overall seagrass coverage in St. Andrew proper and West, North, and East Bays appears to have declined by approximately 17 percent between 1953 and 1992. Two likely causes of this decline are increasing shoreline development and stormwater runoff. Reduced freshwater inflow to the St. Andrew Bay estuarine system, because of increased withdrawal from the Deer Point Reservoir to meet the drinking water and industrial water needs of Bay County, further affect estuarine conditions in North Bay.

Studies of sediment quality in the St. Andrew Bay estuarine system during the late 1980s and early 1990s revealed that sediments in the open bay were mostly free of chemical contaminants. However, urban stormwater runoff, municipal and industrial point source discharges, historical oil spills, marine repair operations, and pollution associated with commercial vessels and recreational boats do affect sediment and water quality in the bayous and bay.

Intensive land use can be found in and around the Panama City metropolitan area, with additional concentrations in and around Tyndall Air Force Base, Mexico Beach, and Port St. Joe. Considerable development is also ongoing at the urban-rural fringe.

Priority issues identified in the NWFWMD SWIM plan are:

- Growth Management
- Nonpoint source pollution
- Point Source pollution
- Chemical contamination
- Biological diversity
- Public outreach
- Deer Point Reservoir basin management

Appendix E

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

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**
Reduce sedimentation	o Erosion o dirt /paved roads o gullies o drainage ditches Ineffective or unused BMPs, regulations & development codes o silviculture o commercial/residential development o dredging o redistribution of sedimentation o wind induced turbidity o boat wakes Ineffective stormwater systems o East Bay, West Bay, Washington Co., North Bay, Grand lagoon, Lower Fannin Bayou, Upper Johnson Bayou, Powell Creek East Contamination o phytoplankton in nutrient enriched waters	o prevention/prohibited creation of new dirt roads/restore existing (100's miles); erosion control, road stabilization

Reduce nutrient loading	Domestic Waste o septic tanks o plant effluent discharges into aquifer and Bay, o potential future cause = platted, vested unbuilt developments & marinas) Deer Point Lk watershed, South Port, east/west ends Panama City Bch (unincorp areas) o wastewater treatment plants; Kings Pt/St Andrews along shoreline/canals (septic); Grand Lagoon o Lynn Haven WWTF (to North Bay) o St. Andrews WWTF (to St. Andrew Bay) o Millville WWTF (to St. Andrew Bay) o Military Point Regional AWT/Bay County Regional WWTF (to St. Andrew Bay) Ineffective stormwater systems (also a major action) o road runoff; raw runoff-untreated runoff; o low # pump out units, (potential future cause = platted, vested unbuilt developments & marinas); fertilizers & pesticides from residential development older developed areas needing retrofit; o St Andrews area, Grand Lagoon; Bayous (Johnson, Watson, Powell Creek East, Parker); Capt. Anderson Marina, Grand Lagoon	o re-use of water; Gulf Power cooling/ deep well injection; repurpose for irrigation deep well injection public hearing 9/12 o Locations of Septic Tanks (data from Bay County only) Please see attached Figure 2-43 - Septic Tank Locations St. Andrew Bay Storm Management Plan - Collection, Organization, Options, and Prioritization (COOP) Project, May 2009 http://www.friendsofstandrewbay.org/publications/BEST_Report_2009_1.pdf
Reduce and treat stormwater	Ineffective stormwater systems o historic drainage ditch erosion/sedimentation transport stormwater as pt source discharge; o road runoff; raw runoff-untreated runoff; o low # pump out units, (potential future cause = platted, vested unbuilt developments & marinas); fertilizers & pesticides from residential development older developed areas needing retrofit; o St Andrews area, Grand Lagoon; Bayous (Johnson, Watson, Powell Creek East, Parker); Capt. Anderson Marina, Grand Lagoon	o look at failed locations using existing data/beach closures/study sources of bacteria (FDEP starting this) to ID hotspots and sources; continue Baywatch Program; sediment catch basins o St Andrew Bay Watch - 20 years data 1990-2006 report on web; outflows mapped by Bay Envir. Study Team (84 sampled?) o Please see the report, noted above

Protect, Restore, Create and Manage natural resources and increase buffer areas	Contamination o sedimentation o turbidity o less flushing West Bay, East Bay, Shell Island/St. Andrew Sound = old East Pass? Ineffective or unused BMPs, regulations & development codes o recreation impacts loss of seagrass - boat use, o anchoring o propeller scars o human impacts on oyster habitat - water quality decline, wastewater, sedimentation, nutrients, o lack suitable oyster substrate, o oyster overharvesting (during oil spill) East, West, North Bays o channel dredging, o past commercial fishing practices o sedimentation o restore and protect uplands consider if silviculture is converted o loss of Scallop fishery in St. Andrew Bay because we no longer have the scallop population to support it. Clean water and healthy seagrass beds are critical for recovery of the fishery. No one explanation exists for the decrease in scallop density, but probable causes include water quality degradation (stormwater and wastewater), habitat loss (seagrass), and red tide. Historically, scallops were harvested in all areas of the bay system that contained seagrass beds.	o Shoreline restoration/soft-stabilization techniques, avoidance by placement of seagrass buoys, signage, and rental boat operator education. Some restoration may be needed; mooring buoys, walkway across dune o Restore oyster habitat, substrate, industry BMP need o artificial reefs o Preservation of remaining habitat (seagrass beds) especially in St. Andrews Sound, St. Andrew Bay proper, North Bay, and East Bay will assist in scallop fishery recovery efforts.
Increase cooperation and coordination for management, monitoring, funding, implementation, outreach, enforcement	Lack of environmental awareness	
Increase economic diversity	Note: this Major Action was identified during other watershed meetings and are inserted here as a placeholder in the event the stakeholders address this Major Action as they identify projects	

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	30.259597
Longitude	-85.849047
Project Title	Oyster Reef Habitat Restoration in the Saint Andrew Bay (FL)
Location Description	The St. Andrew Bay estuary system has four hydrologically connected bays: St. Andrew Bay proper, East Bay, North Bay, and West Bay. The restoration site begins approximately 2 km south of the Gulf Intra-Coastal Waterway along the western shoreline of West Bay and continues south along the deep edge of historic seagrass cover for approximately 2.5 km.
Project Description	This project will result in the creation of ~2.5 km of non-contiguous oyster reef habitat, which will in turn protect and promote the expansion of ~250 acres of degraded seagrass habitat. Key objectives of the proposed 5-year oyster restoration project are to improve water quality, replenish and protect the oyster population, enhance fisheries habitat, and create conditions more suitable for seagrass recruitment into historic habitat. West Bay has experienced a variety of anthropogenic impacts ranging from the construction of the Gulf Intra-Coastal Waterway in 1938 to a commercial shrimp farming operation in the 1970's and the discharge of wastewater effluent into the bay from the City of Panama City Beach from 1971 to 2011. As a result, West Bay has suffered the greatest seagrass loss in the Saint Andrew Bay estuary system; approximately 1,853 acres since 1953. However, the elimination of two of these significant impacts to water quality, the shrimp farming operation and the wastewater discharge, has created more favorable conditions for estuarine habitat restoration and enhancement efforts in West Bay.

	Because oysters can function in similar ecological and structural capacities as seagrass meadows, reduce turbidity and erosion in shallow, nearshore waters, improve water quality, increase biodiversity, and create conditions more suitable for seagrass growth and survival, we propose an oyster reef restoration project along the western shoreline of West Bay. By strategically placing subtidal oyster reef networks along the deep edge of historic seagrass beds, the project will attenuate wave energy, improve water quality, increase the oyster population, enhance fisheries habitat, and create conditions more suitable for seagrass recruitment into historic habitat. Seagrass and oyster reef habitats are critical for coastal fish nurseries and support a wide diversity of protected birds and wildlife. In addition, the project will offer significant educational and public outreach opportunities. Community volunteers will be engaged to participate in filling and transporting oyster bags and mats. We also hope to engage undergraduate and graduate students in monitoring the effectiveness of the restoration. Oyster reefs will be constructed using two techniques: (1) use of bagged oyster shell or large fossilized shell conglomerate to create an outer "wall" with clean shell forming the inside of the reef, and (2) use of coir fiber oyster mats with clean shell attached, held in place with metal stakes. Constructed reefs will be curvilinear, mimicking natural reef profiles with gaps between reefs to help create beneficial benthic hydrodynamic flow and aquatic wildlife passage corridors between them.
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	Environmental changes / issues, Erosion, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Monitoring will be conducted following the universal and restoration goal-based metrics detailed in the "Oyster Reef Restoration Monitoring and Assessment Handbook" (Baggett et al., 2014) to determine whether reefs are achieving restoration goals and allow for adaptive management. Among these metrics, we will measure (1) reef height, (2) reef areal dimension, (3) oyster density, (4) oyster size-frequency distribution, (5) water quality measurements (i.e., temperature, salinity, and dissolved oxygen), (6) habitat enhancement for resident and transient species (i.e., density of epifaunal sessile invertebrates species and catch per unit effort of transient fish species), and (7) changes in adjacent seagrass coverage.
Project Contact Name	Katie Konchar
Project Cost	⚜$1 million

Project Map #	2
Latitude	29.8749
Longitude	-85.38701
Project Title	Comprehensive Shorebird Conservation: continuation and expansion of the Florida Shorebird Alliance
Location Description	St. Andrews State Park Aquatic Preserved south to St. Joseph Bay State Buffer Preserve & Aquatic Preserves
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	30.211831
Longitude	-85.592165
Project Title	Conservation of State and Federally_listed Coastal Species
Location Description	St. Andrews/St. Joe Bays watershed
Project Description	This program would include multiple projects to address the management, survey, monitoring, restoration, and research needs for Florida's State- and Federal-listed species identified in State's Imperiled Species Management Plan, other management plans, and Federal recovery plans. Projects would occur in multiple counties of the St. Andrews/St. Joe Bays watershed. Projects would include research activities to determine extent of impact to fish and wildlife resources; life history information, including habitat requirements; development of survey, monitoring, and management techniques require to restore and/or manage listed species and their habitats; and evaluation of economic impact of fish and wildlife resources. Projects also would include activities to restore and manage impacted listed species habitats and populations; survey listed species and associated species populations and their habitats; and short-term and long-term monitoring of species and habitats. Replenish and Protect Living Coastal and Marine resources. Develop and enact prioritized species management, monitoring, research, and recovery plans.
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	Environmental changes / issues, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Projects would be focused on state- and federally-listed species within the Choctawhatchee Bay watershed and would seek to address the root causes/issues by: - research activities to determine extent of impact to fish and wildlife resources - development of monitoring and management techniques required to restore and/or manage listed species and their habitats - evaluate economic impact to fish and wildlife resources - restore and managed impacted listed species habitats and populations - short and long-term monitoring of species and habitats
Project Contact Name	Brad Gruver
Project Cost	=$1 million, $1 million

Project Map #	4
Latitude	30.200947
Longitude	-85.411322
Project Title	Bear Creek Forest
Location Description	Spread across portions of three counties: Bay, Calhoun and Gulf, but generally northwest of Wewahitchka, Florida. Lat/long point represents approximate mid-point of project.
Project Description	The project consists of 100,425 acres in Calhoun, Bay and Gulf counties, Florida. The property consists mostly of off-site pine plantations interspersed with disturbed wet prairies and forested wetlands, as well as several upland forest types. Protection and restoration of this watershed-based project will compensate for impacts to the Gulf by promoting seasonally appropriate freshwater flows with high water quality to several estuarine systems along Florida's panhandle. The basically flat lands of the project support forests that receive, collect, store and drain into a complex system of tributary streams flowing primarily into the St. Andrew Bay estuary. St. Andrew Bay is unique in the Florida panhandle because it is the only estuarine system whose entire basin is located within the boundaries of the State of Florida. It is also highly diverse with a recent study suggesting it is one of the most diverse estuaries in North America, with more than 2,900 species. Protection of the project will help establish a system of natural areas forming an important corridor connecting State and Federal conservation lands in the central Florida panhandle. Such an interconnected system of managed landscapes and watersheds will provide critical habitat for numerous waterfowl and other migratory bird species. The project is of great significance to the military as part of a long-envisioned Northwest Florida Greenway that both Eglin AFB and Tyndall AFB are currently utilizing for training and weapons development testing missions. Benefits of protection include increased protection of Florida biodiversity at the species, natural community and landscape levels, protection, restoration and maintenance of the quality and natural functions of Florida's land, water and wetland ecosystems, and ensure that sufficient quantities of water are available to meet the current and future needs of natural ecosystems – including estuaries – and the public. The project is near a major urban area (Panama City) that will benefit from water quality and supply (the Deer Point Lake reservoir is partially fed from the project), recreation and varied ecosystem services. With restoration much of the project will be converted to historically-occurring longleaf pine and hardwood/cypress forests providing myriad ecological and hydrological benefits. Conserving the Gulf coast's natural resources and coastal communities requires protecting and restoring the health of its riverine/estuarine habitats and the upland and wetland systems of working forestlands that ultimately benefit the Gulf's water quality, habitats and species. By protecting watersheds and enhancing water quality and regional connectivity, the conservation and restoration of these lands and waters will increase the Gulf's resilience to future natural and human-made disasters.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Contamination, Environmental changes / issues, Erosion, Invasive species, Lack of adequate funding, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Monitor yearly for improved water quality using established parameters; Determine species/community change, track sea level rise and other climate related change, CO2 sequestration by forestlands; Measure turbidity and monitor yearly; EPPC Category 1 invasive exotics, treatment of infestations. Monitor by regional CISMAs; Increase in acres protected/year vs. previous five years (2009-2013); Number of visitors to environmental education programs and informational/interpretive signs installed. Conduct surveys on visitor experiences; New jobs added/maintained (e.g., military bases), hunting/ fishing licenses sold, fisheries productivity (e.g., shellfish harvesting), acres of timberland with forest product revenue, ecotourism expenditure; Base line of vegetative cover, riparian corridors, seagrass beds, etc. Monitor yearly for changes. Number/size of clear cuts and forest restoration on working lands and Silvicultural BMPs; Use flow (cubic feet/second) and stream velocity devices. Aerial and remote imagery to measure variability in seasonal and headwater wetlands; Acres of recharge lands for Floridan, intermediate and surficial aquifers. Recharge rate (inches/year) multiplied by acres of variable recharge type (soil, geology, depth to aquifer) estimate gallons of water recharged. Acres of total watershed/headwater wetlands and riparian areas for municipal water supply. District plans for well fields and areas targeted for alternative water supply.
Project Contact Name	Richard A. Hilsenbeck
Project Cost	❧$1 million

Project Map #	5
Latitude	30.297155
Longitude	-85.682994
Project Title	West Bay Preservation Area
Location Description	NW of Panama City, W of Southport and SE of Northwest Florida Beaches International Airport. Lat/long points are near mid-point of project area.
Project Description	Note: This material was adapted from that in the Florida Forever Five Year Plan. The West Bay Preservation Area encompasses ca. 4,494 acres in Bay County, Florida, and will be managed to buffer and enhance the West Bay estuary. The three parcels comprising the project border the 9,600-acre Panama City Airport Conservation Easement managed by the Florida Department of Environmental Protection. The property is owned by the St. Joe Company. The primary purpose of the project is to protect, restore, and maintain the quality and natural functions of the land, water, and wetlands systems of Florida and to increase natural resource-based public recreational and educational opportunities. Protection of the project area, whether in fee or less-than-fee will help protect the natural shoreline, water quality and aquatic resources of West Bay. The project supports ca. 6 miles of direct West Bay frontage and ca. 1.7 miles on North Bay, as well as 6.1 miles of creek banks along Crooked and Burnt Mill creeks. Both creeks are major sources of fresh water flows into West Bay. Protection of the project, when added to the Panama City Airport Conservation Easement and Breakfast Point Mitigation Bank (on the south shore of West Bay), would preserve in natural condition roughly 14.4 miles of the total 30-mile West Bay shoreline. About 60% of the project is in pine plantation with the remainder in a mostly natural condition. Most of the land in recognizable natural communities is concentrated near the coast and along the creek banks with extensive salt pans/terns and estuarine tidal marshes comprising the largest acreage. Numerous freshwater wetlands are embedded throughout the pine plantations. An approximately 100 foot wide band of sea grasses was observed in the bay during 2011 between the mouths of Burnt Mill and Crooked creeks. There are hunting leases and timbering agreements on the property. Numerous dirt roads provide access to the project parcels, however easement rights would be needed to cross St. Joe Company land and access the project parcels. Gulf Power owns a 200 foot wide utility corridor extending west from their nearby power plant that divides the three portions of the project and establishes the northerly boundaries for several of the project parcels. The lands in the project have been designated by Bay County to have a Future Land Use of Conservation and are bound by a Stipulated Settlement Agreement requiring the St. Joe Company to make the properties available for purchase for preservation and to assist Bay County with the acquisition for preservation. The Department of Defense has expressed support for the project and a possibility exists for matching funds through a Readiness and Environmental Protection Initiative (REPI) grant from the DOD. This project overlaps with the military's need to protect land, water and habitat to ensure the sustainability of military missions by protecting areas underlying low-level military operating areas.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce nutrient loading., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach., Reduce impacts to groundwater.
Root Causes	Contamination, Environmental changes / issues, Erosion, Invasive species, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness, Limited economic diversity, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow, Water supply
Proposed Metric(s)	Monitor yearly for improved water quality using established parameters; Determine species/community change, track sea level rise and other climate related change, CO2 sequestration by forestlands; Measure turbidity and monitor yearly; EPPC Category 1 invasive exotics, treatment of infestations. Monitor by regional CISMAs; Increase in acres protected/year vs. previous five years (2009-2013); Number of visitors to environmental education programs and informational/interpretive signs installed. Conduct surveys on visitor experiences; New jobs added/maintained (e.g., military bases), hunting/ fishing licenses sold, fisheries productivity (e.g., shellfish harvesting), acres of timberland with forest product revenue, ecotourism expenditure; Base line of vegetative cover, riparian corridors, seagrass beds, etc. Monitor yearly for changes. Number/size of clear cuts and forest restoration on working lands and Silvicultural BMPs; Use flow (cubic feet/second) and stream velocity devices. Aerial and remote imagery to measure variability in seasonal and headwater wetlands; Acres of recharge lands for Floridan, intermediate and surficial aquifers. Recharge rate (inches/year) multiplied by acres of variable recharge type (soil, geology, depth to aquifer) estimate gallons of water recharged. Acres of total watershed/headwater wetlands and riparian areas for municipal water supply. District plans for well fields and areas targeted for alternative water supply.
Project Contact Name	Richard A. Hilsenbeck
Project Cost	$1 million

Project Map #	6
Latitude	30.4583
Longitude	-85.5416
Project Title	Washington County Unpaved Road Paving Stabilization
Location Description	Buckhorn Boulevard (16,422' - $975,000), Porter Pond (15,840' - $1077,120)
Project Description	Paving of 32,262 LF (approx. 6.1 miles) along two currently unpaved roads proximate to creeks within the St. Andrews Bay basin to prevent sedimentation into the creeks and wetlands.
Major Actions	· Stormwater· Wastewater· Sedimentation and Turbidity· Sediment Toxicity· Seagrass Loss / Degradation· Oyster Loss / Degradation· Natural Nearshore (submerged) habitat loss· Restoration Uplands· Loss of other habitat types (Uplands)· Recreational Use / Human Access· Upland Protection · Community Resilience
Root Causes	· Protect, restore, create and/or manage nature 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
Proposed Metric(s)	· % surface waters meeting designated use· Decrease in turbidity· Decease in nutrient loadingH2O/sediment Quality/Quantity· Economic impact of polluted water body· Return of loss uses· Percent of priority habitat areas created, restored, managed, and/or protected
Project Contact Name	Michael J. DeRuntz
Project Cost	$1M

Project Map #	7
Latitude	30.4416
Longitude	-85.5583
Project Title	Washington County - Supplemental Landscape Restoration and Enhancement
Location Description	Econfina Creek and Tributaries
Project Description	Supports unfunded restoration and landscape enhancement on water management area lands, acquired to protect and restore watershed resources in perpetuity while providing public access and use. $550,000 annually over five years.
Major Actions	· Stormwater· Wastewater· Sedimentation and Turbidity· Sediment Toxicity· Seagrass Loss / Degradation· Oyster Loss / Degradation· Natural Nearshore (submerged) habitat loss· Restoration Uplands· Loss of other habitat types (Uplands)· Recreational Use / Human Access· Upland Protection · Community Resilience
Root Causes	· Protect, restore, create and/or manage nature 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
Proposed Metric(s)	· % surface waters meeting designated use· Decrease in turbidity· Decease in nutrient loadingH2O/sediment Quality/Quantity· Economic impact of polluted water body· Return of loss uses· Percent of priority habitat areas created, restored, managed, and/or protected
Project Contact Name	Michael J. DeRuntz
Project Cost	$1M

Project Map #	8
Latitude	30.4583
Longitude	-85.5833
Project Title	Washington County - Ecofina Recharge Area Inholdings Acquisitions
Location Description	NORTHWEST FLORIDA WATER MANAGEMENT ECONFINA RECHARGE AREA
Project Description	Acquisition of approximately 2,762 acres within the Econfina Recharge Area; protecting the quality and quantity of recharge within the Econfina Creek and St. Andrew Bay watershed.
Major Actions	· Stormwater· Wastewater· Sedimentation and Turbidity· Sediment Toxicity· Seagrass Loss / Degradation· Oyster Loss / Degradation· Natural Nearshore (submerged) habitat loss· Restoration Uplands· Loss of other habitat types (Uplands)· Recreational Use / Human Access· Upland Protection · Community Resilience
Root Causes	· Protect, restore, create and/or manage nature 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
Proposed Metric(s)	· % surface waters meeting designated use· Decrease in turbidity· Decease in nutrient loadingH2O/sediment Quality/Quantity· Economic impact of polluted water body· Return of loss uses· Percent of priority habitat areas created, restored, managed, and/or protected
Project Contact Name	Michael J. DeRuntz
Project Cost	$1M

Project Map #	9
Latitude	30.4416
Longitude	-85.5416
Project Title	Washington County - Ecofina Creek Shoreline Parcel Acquisition
Location Description	Econfina Creek and Tributaries
Project Description	Acquisition of approximately 2,762 acres within the Econfina Recharge Area; protecting the quality and quantity of recharge within the Econfina Creek and St. Andrew Bay watershed.
Major Actions	· Stormwater· Wastewater· Sedimentation and Turbidity· Sediment Toxicity· Seagrass Loss / Degradation· Oyster Loss / Degradation· Natural Nearshore (submerged) habitat loss· Restoration Uplands· Loss of other habitat types (Uplands)· Recreational Use / Human Access· Upland Protection · Community Resilience
Root Causes	· Protect, restore, create and/or manage nature 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
Proposed Metric(s)	· % surface waters meeting designated use· Decrease in turbidity· Decease in nutrient loadingH2O/sediment Quality/Quantity· Economic impact of polluted water body· Return of loss uses· Percent of priority habitat areas created, restored, managed, and/or protected
Project Contact Name	Michael J. DeRuntz
Project Cost	$100K

Project Map #	10
Latitude	30.5833
Longitude	-85.4166
Project Title	Washington County - Florida Landings LLC Property Acquisition
Location Description	3 Sections of Land off of Buckhorn Boulevard - upper watershed of Econfina Creek
Project Description	Lands within Econfina Creek watershed and recharge area. Acquisition provides water quality protection and recharge protection. Cost estimated at $2,000 per acre for 1,900 acres.
Major Actions	· Stormwater· Wastewater· Sedimentation and Turbidity· Sediment Toxicity· Seagrass Loss / Degradation· Oyster Loss / Degradation· Natural Nearshore (submerged) habitat loss· Restoration Uplands· Loss of other habitat types (Uplands)· Recreational Use / Human Access· Upland Protection · Community Resilience
Root Causes	· Protect, restore, create and/or manage nature 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
Proposed Metric(s)	· % surface waters meeting designated use· Decrease in turbidity· Decease in nutrient loadingH2O/sediment Quality/Quantity· Economic impact of polluted water body· Return of loss uses· Percent of priority habitat areas created, restored, managed, and/or protected
Project Contact Name	Michael J. DeRuntz
Project Cost	$1M

Project Map #	11
Latitude	30.27
Longitude	-85.64083333
Project Title	Dirt Road Stabilization
Location Description	Dirt roads within the county. Point represents the middle of the project.
Project Description	The significance of sedimentation from unpaved roads has been recognized in many watershed management plans, including SWIM plans and Florida Department of Environmental Protection (FDEP) Ecosystem Management Plans. Effectively addressing the issue, however, has proven problematic due to the scope of the problem with thousands of potential sites spread throughout the region and the potential cost to local governments of addressing the problem to a significant degree.Since 1991, Bay County has been committed to the reduction of pollution associated from dirt roads by first passing an ordinance that no longer allows the creation of new dirt roads in the County. Since then, Bay County has continued its commitment to reducing pollution from its dirt roads by stabilizing over 40% of its dirt roads. This project is an effort to continue this endeavor. Since the remaining dirt roads are still numerous, the project include multiple phases in order of priority to include discharging directly into the bay, into waters of the state and into wetlands. Phase I - Southport $1,750,000Phase II - Old Southport $2,000,000Phase II - Remaining Southport $2,200,000Phase IV - E.Panama City Beach Area - $750,000Phase V - W. Panama City Beach Area - $1,250,000 Phase VI - West Bay $1,550,000Phase VII - Discharging to Surface Waters - $10,000,000Phase VIII - Discharge to wetlands - $30,000,000
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.
Root Causes	Erosion, Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	Non-point source (NPS) pollution from dirt roads is generated when stormwater runoff collects sediments and pollutants from these roads and carries them into receiving waters. The root cause is the dirt roads and often inadequate drainage system which results in the dirt road being the drainage system. Success is measured from the stabilization of the root cause the dirt roadway and proper design and stabilization of the roadside drainage system. EMC from previous studies are used to compare pre and post pollutant loads.
Project Contact Name	Josee Cyr, P.E.
Project Cost	⚜$1 million

Project Map #	12
Latitude	30.2116666
Longitude	-85.87055555
Project Title	Beach Outfall Upgrades
Location Description	Panama City Beach middle of Project
Project Description	This is a joint project between the City of Panama City Beach and Bay County. The project provides upgrades to the existing stormwater outfall to the beach. They will provide stormwater quality improvements to the existing continuous outfalls and upgrades to reduce erosion of the beach shoreline from both the continuous and exfiltration systems. Due to the magnitude of the project, it is divided in two phases in order of priority. Phase I - Continuous Outfalls - $16,500,000 Phase II - Non Continuous outfalls - $5,500,000
Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Erosion, Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	Presently the existing continuous outfall discharge directly to the beach without any stormwater treatment. Success will be measured based on scientific data for the chosen treatment system. In addition, modification shall be made to all structures to reduce erosion of the beach shoreline at these location.
Project Contact Name	Josee Cyr, P.E.
Project Cost	⚜$1 million

Project Map #	13
Latitude	30.18722222
Longitude	-85.78055555
Project Title	Stormwater Treatment Facility
Location Description	GPS point of the first site
Project Description	The project includes stormwater treatment facilities in critical watersheds. The proposed projects are: 1. Allison Avenue Treatment Facility $4,291,000 2. Davenport Ave Treatment Facility $ 500,000 3. Transmitter Rd Treatment Facility $ 2,500,000 4. East Callaway Heights Treatment Facility $ 5,000,000
Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	The project will improve water quality through annual reductions in nutrients, phosphorous and sediments. The actual reduction will be based on latest scientific and engineering analysis for each facility based on the incoming watershed area and size of the facility.
Project Contact Name	Josee Cyr, P.E.
Project Cost	⚜$1 million

Project Map #	14
Latitude	30.19027777
Longitude	-85.55325
Project Title	Notice of Violation Road Stabilization
Location Description	Various locations GIS coordinates of the first priority
Project Description	Non-point source (NPS) pollution from dirt roads is generated when stormwater runoff collects sediments and pollutants from these roads and carries them into receiving waters. The significance of sedimentation from unpaved roads has been recognized in many watershed management plans, including SWIM plans and Florida Department of Environmental Protection (FDEP) Ecosystem Management Plans. Effectively addressing the issue, however, has proven problematic due to the scope of the problem with thousands of potential sites spread throughout the region and the potential cost to local governments of addressing the problem to a significant degree. The project identified are present Notice of Violation (NOV) with the Department of Environmental Protection. The NOV initially included 60 locations. To date 49 locations have been completed. This project includes the remaining sites in order of priority. Tram Road (NOV39) - $460,000; Webber Road (NOV 35,36,37,38) - $1,000,000; Linger Longer Road (NOV33,34) - $1,000,000; Alvie Homes Road (NOV 27,28) - $750,000; Old Allentown Road (NOV 24,25) - $750,000
Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Erosion, Lack of adequate funding
Proposed Metric(s)	The root cause of the problem is the dirt roadway and often times the lack of proper road side drainage systems. This causes the roadbed to be the drainage system. By eliminating the root cause of the sedimentation, the dirt roads, and providing adequate and stabilized roadside drainage, then the sedimentation and all its pollutants are greatly eliminated. The success will be measured using scientific model using EMC for TSS, TP and DP of pre and post specific project conditions. In general, stabilizing dirt roads reduces TSS by approximately 95%, 88% for TP and DP by 16%.
Project Contact Name	Natasha Lithway, P.E.
Project Cost	⚜$1 million

Project Map #	15
Latitude	30.2311111
Longitude	-85.65694444
Project Title	Drainage Improvement Projects
Location Description	various location central GIS coordinates
Project Description	The project includes improvements to the county drainage system by first updating the existing Master Drainage Plan and Strategic Plan. These documents even though great documents were done in the early 1990's. These document require updating to reflect the progress done to date and add new emphasis on water quality component of the plan. In addition to the updating of the master plan, the project includes a number of drainage improvement projects in order of priority. These locations have inadequate drainage which cause flooding and erosion when the system fails. The project in order of priority are: 1. Master Drainage Plan and Strategic Plan for bay County $150,000; 2. Transmitter Road Box Culvert $300,000; 3. S. Shore of Grand Lagoon Outfalls $5,000,000; 4. CR 390 and Clara Ln Drainage Improvements $ 500,000; 5. Industrial Dr and Redwood Outfall $1,200,000; 6. State Ave Box Culvert $400,000; 7. Gulf Dr Stormwater Outfall $450,000
Major Actions	Reduce sedimentation.
Root Causes	Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	The project will measure success through eliminating failure of the drainage system which results in road closures, major erosion and sedimentation.
Project Contact Name	Natasha Lithway, P.E.
Project Cost	$1 million

Project Map #	16
Latitude	30.180495
Longitude	-85.664906
Project Title	Children as Watershed Stewards (CAWS)
Location Description	Middle of the proposed project -- including coordination between all of the Florida Panhandle
Project Description	We propose to create an endowment for environmental education in the northwest Florida regional area, especially as it pertains to watersheds, water use and educational outreach for school aged children. There is a critical ongoing need for effective, targeted environmental education to combat the lack of environmental awareness of watersheds and water conservation in local communities. Attached is an example of a relevant proposed environmental education curriculum set forth by the Science and Discovery Center of North West Florida and recently awarded an $98,000 grant from the NOAA. A key component of our plan is to coordinate existing facilities and curricula to maximize space, local expertise and existing place-specific educational concepts when they exist. New resources or curricula may be developed as needed once our existing cumulative capabilities are evaluated. The culmination of these resources, ranging from local regulatory agencies (NOAA, DEP, NWFWMD), local nonprofits (SDCNWF, Audubon, Native Plant Society, Florida Trail) to city and county initiatives (City of a Panama City Beach's Gayle's Trails program, our local examples) and ecological offices of local military installations (Eglin AFB, Tyndall AFB, Pensacola NAS and NSWCPC) will allow for more effective communication among diverse local shareholders and resources. The endowment will promote natural resource stewardship and improve the science based decision-making processes of tomorrow's leaders. We propose to develop regional education programs, utilizing local experts and existing facilities and curricula to educate our local children about the ecological function and teach stewardship of the rich local ecosystems here on the Emerald Coast.
Major Actions	Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Lack of environmental awareness
Proposed Metric(s)	Through such a proposed endowment, our goal would be to reach 100 percent of primary school students in our collective Panhandle Counties promoting Natural Resource Conservation, Stewardship, and Environmental Education specifically about our respective Northwest Florida watersheds. Through this process of collaboration and resource leveraging (community opportunities and existing site specific curricula) we would improve Science based decision making processes that are specific to our individual and unique Northwest Florida ecological systems. All with with the intention to build the number and encourage trends of active and engaged citizens involved in environmental restoration, projects and activities throughout the region.
Project Contact Name	Linda Macbeth
Project Cost	=$1 million"

Project Map #	17This project is integrated 100% into #18 below"
Latitude	30.302057
Longitude	-85.644093
Project Title	Bay County Water Re-use Project
Location Description	Between Hwy 20 (north), Deer Point Lake (East), St. Andrews Bay (South) and Highway 79 West
Project Description	In order to improve water quality in groundwater and surface waters in Bay County, the water re-use project between Bay County and Gulf Power is being proposed. This project will also help protect existing springs in the area. The project will initially involve the North Bay Wastewater Treatment Facility (NBWWTF), and collection of wastewater and delivery systems. The proposed Bay County projects are envisioned to increase centralized collection and treatment of sewage in a rural area adjacent to the Deer Point Reservoir recharge area in a multiphase approach thereby reducing discharges to ground water and surface waters. There are three phases (phase I being proposed by Gulf);1) North Bay Hwy 77 and 2300 Reuse line. Project overview: Install 75 miles of reuse line from the NBWWTF to Gulf Power's regional power plant in order to beneficially utilize NBWWTF's effluent. The proposed reclaimed water will be used and then injected from the cooling tower into a underground injection control system. Benefit: Making reuse water available to the regional power plant would reduce environmental impacts from stormwater and reclaimed water being discharged into the St. Andrews Bay system. This project would also 1) improved WQ in St. Andrews Bay and 2) reduce nitrogen loading being discharged to ground water. The use of reuse water, instead of discharging effluent from the Wastewater Treatment plant, would provide additional natural resource protection. The reuse line will be sized to accept additional flow, potentially from other utilities.2) North Bay Wastewater Collection System Improvements.Project overview: To remove the areas high density of Septic Tanks. This phase is for an initial removal of 220 septic tanks (0.055 MGD). A long term plan is to remove over 4,000 septic tanks (1 MGD) over the next 10 to 20 years. Benefits: Septic tank removal will protect Class I and Class II water bodies that currently allow nutrients and bacteriological impacts into the water bodies. With their removal, water quality of Deer Point Reservoir and St. Andrews Bay will be improved by reducing a potential nutrient (nitrogen) loading, with the initial (220 septic tanks), by 10,045 pounds per year and at build out in excess of 200,000 pounds per year. 3) HWY 388 Force Main. Project overview: To decommission the River Camps package plant and divert flow (0.072 MGD) to the North Bay Wastewater Treatment Plant. Reuse water can be made available to customers also. Benefits: This project is part of a Master Planning effort to protect Class I and Class II water ways and Bayous with Advanced Wastewater Treatment methods and future reuse. Reducing nutrient (nitrogen) loading to waters by 2,628 pounds per year. Status: Design and permitting is completed.
Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Reduce impacts to groundwater.

Root Causes	Contamination, Domestic wastewater, Environmental changes / issues, Lack of adequate funding, Lack of environmental awareness, Water reuse
Proposed Metric(s)	1) the pounds of nutrients reduced from groundwater and surface waters surrounding the project and 2) % and gallons of domestic wastewater reused. Other metrics that can be utilized are 3) % of septic tanks converted into a centralized force main.
Project Contact Name	Mike Markey
Project Cost	$1 million

Project Map #	18
Latitude	30.32073
Longitude	-85.656624
Project Title	Bay County Septic Replacement and Wastewater Reuse Program
Location Description	The geographical boundaries of the project and lat/long of center of the project: The geographical boundaries are to the North (Highway 20), to the East (Deer Point Lake), to the South (St. Andrews Bay) and to the West (Highway 79) within the boundaries of Bay County Florida.
Project Description	In order to improve water quality in groundwater and surface waters in Bay County, the Bay County Septic Replacement and Wastewater Reuse Program project is being proposed. This project will also help protect existing springs in the area. The project will initially involve the North Bay Wastewater Treatment Facility (NBWWTF), as well as further centralized collection and treatment of wastewater. In a rural area adjacent to the Deer Point Reservoir recharge area through a multiphase approach thereby reducing discharges to ground water and surface waters. Initial Phases; 1) North Bay Wastewater Collection System Improvements. Project overview: To remove the area's high density of Septic Tanks as many do not meet present day construction standards in the Southport Community. This phase is for an initial removal of 220 septic tanks (0.055 MGD). A long term plan is remove over 4,000 septic tanks (1 MGD) over the next 10 to 20 years. Septic tank removal will forward protection of Class I and Class II water bodies that currently allow nutrients and bacteriological pollution into the water bodies. There by water quality of Deer Point Reservoir and St. Andrews Bay will be greatly improved by reducing a potential toxic nutrient (nitrogen) loading, with the initial (220 septic tanks), by 10,045 pounds per year and at build out in excess of 200,000 pounds per year. 2) HWY 388 Force Main. Project overview: To decommission the River Camps package plant and divert flow (0.072 MGD) to the North Bay Wastewater Treatment Plant. The impaired West Bay area would have a greater environmental impact on resources than diverting flow to an already constructed North Bay Wastewater Treatment Facility that has available capacity and the current ability to delivery reuse quality water. Reuse water can be made available to customers at the same time which would result in further reducing development impacts to protect Class I and Class II water ways and Bayous with Advanced Wastewater Treatment methods and future reuse. 3) North Bay Hwy 77 and 2300 Reuse line. Project overview: Install 7.5 miles of reuse line from the NBWWTF to Gulf Power's regional power plant in order to beneficially utilize NBWWTF's effluent. By making reuse water available to the regional power plant we would be reducing environmental impacts to the Bay from cooling water discharge from Southern Power's Smith Plant. This project would result in 1) improved WQ in St. Andrews Bay and 2) reduce toxic nutrient (nitrogen) loading being discharged to ground water.
Major Actions	Reduce nutrient loading., Reduce sedimentation., Reduce impacts to groundwater.

Root Causes	Contamination, Lack of adequate funding, Water reuse
Proposed Metric(s)	The proposed metrics will be: 1) The pounds of nutrients reduction from groundwater and surface waters surrounding the project and 2) Percent and gallons of domestic wastewater reused. Other metrics that can be utilized are 3) Percent of septic tanks converted to centralized collection and treatment.
Project Contact Name	Paul Lackemacher
Project Cost	❧$1 million

Project Map #	19
Latitude	30.144639
Longitude	-85.692414
Project Title	St. Andrews Bay Seagrass Restoration Sites Identification
Location Description	St. Andrew Bay Watershed
Project Description	Sea and Shoreline LLC: Seagrass have been identified in this watershed plan as being a high valued target for restoration. The health of this estuary is directly dependent on healthy seagrass habitats. Seagrass meadows provide many ecosystem services, and are one of the most productive habitats on the planet. The important ecological and economic functions of seagrass beds have been widely acknowledged, notably to their importance to fisheries (Bell and Pollard, 1989). The FDEP estimates that up to 90% of all commercial and recreational important marine species are dependent on seagrass habitat at some point in their lifespan. Many of the projects that have and will be proposed for funding will specifically address projects that affect seagrass. Decreasing storm water pollutants and sedimentation will increase water quality. Improvement in water clarity will in turn increase available seagrass habitat much in the same way it has in Tampa Bay. In addition educating boaters with signage will decrease the frequency of propeller scarring. However, few projects have addressed the need to restore large depressions to increase suitable seagrass habitat. These depressions may have been caused as a result of old dredging activities or large vessel groundings. Depressions caused from dredging cause a tremendous amounts of damage to the waterbody. The depressions often act as nutrient sinks similar to storm water retention ponds. The lack of vegetation in the bottom of the depressions do not sequester the nutrients nor stabilize the muck substrate. Phytoplankton blooms can stimulate from the nutrient source, and hydrogen sulfides are released from the bacteria that break down the organics in the mucky substrate. Seagrasses are dependent on a high quantity of light to survive. Previously dredged sites create conditions that make seagrass recolonization impossible due to the water depth alone. However, after filling the feature back to grade the site would make prime seagrass habitat. It is the intent of the project to identify multiple areas that were historically seagrass habitat then dredged or heavily damaged. The sites would be ranked on their potential for seagrass restoration success and cost analysis. Included is an example of site that would greatly benefit if restoration occurred. The basin wide review would include detailed specs for individual features that identified: 1. size of feature (volume and area)2. location in relation to a sediment source 3. estimated cost for restoration4. expected species of emergent and submerged vegetation that could be supported. Works Cited: Bell, J.D., Pollard, D.A., 1989. Ecology of fish assemblages and fisheries associated with seagrasses. In: Larkum, A.W.D., McComb, A.J., Sheperd, S.A. (Eds.), Biology of Seagrasses. A Treatise on the Biology of Seagrasses with Spatial Relevance to the Austrailian Region, Aquatic Plant Studies 2. Elsevier, Amsterdam, pp. 565-609.
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.

Root Causes	Environmental changes / issues, Ineffective or unused BMPs, regulations & development codes, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	The project will be deemed successful if sites are identified that will be prime seagrass restoration sites.
Project Contact Name	Carter Henne
Project Cost	$100,000

Project Map #	20
Latitude	30.136002
Longitude	-85.426
Project Title	Monitoring and Restoration in St. Andrew Bay
Location Description	One of the stations in St. Andrew Bay, Panama City, FL
Project Description	The St. Andrew Bay Resource Management Association, Inc. (www.sabrma.org) is a local, non-government agency (501(c)3) that organizes the citizen science activities associated with monitoring and restoration. RMA has a superb record of completing projects and engaging members of the community. RMA also has a superb record of working very closely with scientists at DEP, FWCC, NOAA, FWS, CORPS, etc. Volunteers have been monitoring water quality since 1990, turtle nesting on local beaches since 1991, and seagrass habitat since 2000. Restoration projects include saltmarsh/shoreline restoration and stabilization (which often involves bulkhead removal) and seagrass restoration. RMA Board members write grants to maintain these projects, but more work needs to be done to protect the resources in St. Andrew Bay. RMA currently employs two part-time individuals. With more funding, RMA could hire a total of three individuals on a full-time basis in order to expand its programs. For example, funding is needed to start a fisheries monitoring project as well as an oyster bed monitoring and restoration project. With the removal of the treated wastewater from West Bay, this area is now open to oyster harvesting and seagrass restoration. Oyster habitat needs to be mapped, monitored and restored. Although FWCC is tasked with some oyster work, our bay needs local people to maintain its resources. RMA is dedicated to monitoring the entire bay system and identifying the areas in the bay that need seagrass, shoreline, or oyster bed restoration. Out-of-town agencies do not have the watershed level focus that RMA has, so funding is needed for RMA to continue and expand its monitoring and restoration projects. This proposal would cost approximately $250,000 per year. So the total project cost would be determined by how many years of funding RMA could get. Therefore, $1,000,000 would be needed for four years of funding. RMA proposes to hire three full time individuals ($180,000/year). These individuals would continue the current monitoring and restoration projects but they would expand citizen involvement by creating a fisheries monitoring project and an oyster bed monitoring and restoration project. Furthermore, tests for coliforms would be added to the current water quality monitoring protocol as this testing is only completed at three locations in the bay. Too many individuals use the bay in other locations yet no one knows if coliform levels are elevated since monitoring is not done. Approximately $60,000/year would be needed for data collection (boat gas, insurance, boat maintenance), chemical reagents, and sample processing. $10,000 is needed to rent our current laboratory space and pay utilities. RMA has the track record, expertise, and community presence needed to complete watershed level monitoring and restoration of St. Andrew Bay.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Erosion, Lack of adequate funding, Lack of environmental awareness, Loss of vegetation, riparian buffers, and/or wetlands
Proposed Metric(s)	Percent of seagrass restored that was destroyed in West Bay between 1964 and 2003. Seagrass loss based on aerial maps.Percent of currently eroded shoreline restored in the bay system.Amount of funding that can be obtained to monitor and restore water quality and essential fish habitat in St. Andrew Bay and to provide workshops and training opportunities to individuals in the community.Number of citizens engaged in monitoring and restoration.Number of students engaged in monitoring and restoration.
Project Contact Name	Linda Fitzhugh
Project Cost	=$1 million

Project Map #	21
Latitude	30.299234
Longitude	-85.783261°
Project Title	West Bay Preservation Area
Location Description	Location is middle of project. It is bounded on the north by CR 388, on the south by West Bay and CR 2300, on the west by Crooked Creek, and on the east by North Bay and the west boundary of the Fanning Creek Water Basin
Project Description	The West Bay Preservation Area, an approved Florida Forever project, includes approximately 4,502 acres in Bay County. About 40 percent of the project is in natural condition and concentrated near the coast and along the creek shores. The remainder of the land is comprised of inland freshwater wetlands and pines. Of the natural communities, salt marsh makes up the largest acreage. Extensive tidal flats are found in the upper portion of the salt marshes, and an approximately 100 foot wide band of sea grasses has been observed between Crooked and Burnt Mill Creeks.Conservation of the tract would secure water quality and quantity into West Bay and outwards to the Gulf of Mexico, thereby improving water quality and fisheries. After the Barbier ruling, BP came out saying they are going to appeal. If they appeal it would go to the Supreme Court. Experts feel there is a very low chance of gross negligence being overturned, but the real question is if they could get punitive damages?
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas.
Root Causes	Environmental changes / issues, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	Conservation of the tract would secure water quality and quantity into West Bay and outwards to the Gulf of Mexico, thereby improving water quality and fisheries. Protection of the project lands, when added to the existing Panama City Airport Conservation Easement and Breakfast Point Mitigation Bank lands, would preserve in natural condition a total of roughly 14.4 miles of the 30-mile West Bay shorefront
Project Contact Name	Preston Robertson
Project Cost	⚜$1 million

Project Map #	22
Latitude	30.20158
Longitude	-85.85253
Project Title	Marine Turtle Protection in Bay County, FL
Location Description	Panama City Beach
Project Description	Street lighting. Three candidate sites within the project area have been identified at Bid-a-Wee Beach, Laguna Beach, and Sunnyside Beach. Street lights in these areas have contributed to hatchling disorientation incidents for several years. Lights will be shielded and/or replaced in these areas with fixtures that provide appropriate roadway illumination without harming sea turtles. Residential lighting. Light fixtures and bulbs will be purchased for distribution to beachfront property owners in the project area. We will work with local code enforcement officers to identify appropriate fixtures and coordinate the selection of properties. Education. Panama City Beach is one of the most popular tourist destinations on the Gulf coast, attracting several million visitors annually. Furthermore, the summer tourist season coincides with the sea turtle nesting season, so the educational opportunities are significant. We will create educational handouts for distribution to homes and businesses, educational signs at walkways accessing the beach, and a video for local television with information on the lighting ordinance.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas.
Root Causes	Ineffective or unused BMPs, regulations & development codes, Lack of adequate funding, Lack of environmental awareness
Proposed Metric(s)	We will show project benefits through measured reductions in sea turtle mortality caused by street lights and beachfront residential lights. The project area has been monitored continuously for sea turtle activity since 1991, and records of lighting impacts have been documented in disorientation reports submitted to the Florida Fish and Wildlife Conservation Commission. These reports provide a solid baseline to measure effects of the proposed improvements to beachfront lighting along the coastal highway.
Project Contact Name	Kennard Watson
Project Cost	=$500,000

Project Map #	23
Latitude	30.123719
Longitude	-85.5199778
Project Title	Drive RoadPoston ay Improvements
Location Description	This point is located on the middle of Poston Drive which is the project area.
Project Description	This project consists of the paving and stabilization of an existing dirt roadway (Poston Drive) for the purpose of improving water runoff quality within the St. Andrew Bay System. A roadside swale system is also proposed in an effort to convey stormwater runoff to the point(s) of discharge. The roadway is located within the limits of the City of Callaway (City). The intent of this project is to reduce the impact of sedimentation and pollutant discharge into East Bay which part of the St. Andrew Bay System. Water quality is an important concern in and around the St Andrew Bay Watershed. As land development continues to progress within the watershed, increasing measures to prevent uncontrolled runoff and sedimentation are necessary to protect our environmental resources. Furthermore, continued maintenance and upgrades to existing infrastructure are of utmost importance to reduce and prevent further degradation. Poston Drive is a good example of existing infrastructure that is in need of upgrades to reduce environmental impacts. The roadway is approximately 2,600 linear feet and connects to an existing paved roadway (Primrose Lane). Other than overland sheet flow, there are two (2) distinct outfall locations into East Bay and these areas appear to be collecting sedimentation from roadway runoff. The lack of stabilization and treatment methods compounds the problem when water runoff makes its way to the final outfall locations. The extent of deficient water quality within the St Andrew Bay Watershed cannot be addressed by any single project. The intent of this project is to address as much water quality as possible using the available resources (i.e., City-owned right of way). The City currently owns the Poston Drive right of way where the roadway paving and roadside swale project is being proposed. By constructing the improvements on the City-owned property, the City hopes to provide direct relief to the areas mentioned in by treating the runoff before it reaches the final outfall locations to East Bay. The City proposes to pave and stabilize the existing dirt road and construct roadside swales in order to treat and adequately convey stormwater runoff from Poston Drive to controlled outfall locations to East Bay. The outfalls will include a baffle box designed to reduce sediment transport in the area as it reaches the outfall. The City will own the facilities and may opt to oversee maintenance and operations in lieu of contracting these services to Bay County. The proposed project described will include paving and earthwork operations. A preliminary cost of construction, engineering, and surveying has been laid out to facilitate the required planning for funding sources. The anticipated total project cost, including surveying, engineering, inspection, and contingencies, is $583,300.00. The estimate was made using the Florida Department of Transportation (FDOT) Pay Item costs for 2012 and can be reviewed upon request.

Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Environmental changes / issues, Erosion, Ineffective stormwater systems, Lack of adequate funding
Proposed Metric(s)	The proposed project helps to improve the East Bay water quality. This project will meet long term metrics such as:· H2O/Sediment Quality/Quantity· Treatment Volume - Calculation of impact (N/P) reduction· Percent of priority habitat areas created, restored, and/or protected - SeagrassThis project will meet short term metrics such as:· Percent of sub-basins where streams were characterized, unpaved road crossings were mapped, site assessments were conducted and road paving priority list were developed. · % of critical stormwater infrastructure needing upgrades addressed · Acreage of previously untreated stormwater receiving treatment (number and trend)· Acres of priority habitat created , restored, managed, and/or protected- Seagrass
Project Contact Name	Jonathan Sklarski
Project Cost	=$1 million

Project Map #	24
Latitude	30.1313889
Longitude	-85.5964944
Project Title	Cheri Lane Stormwater Improvements Phase II
Location Description	The coordinates given above are the proposed pond location. This project is located between 11th Street North and Arrow Street in the City of Parker.
Project Description	This project is located between 11th Street North and Arrow Street in the City of Parker. The City has seen an increasing problem with failing stormwater facility on Cheri Lane. Cheri Lane is a dead end road located between 11th Street North and Arrow Street. One of the largest stormwater basins in Parker discharges into this area and eventually into the St. Andrews Bay. This area provides no treatment to the stormwater before it enters the bay. The stormwater does collect sediment, trash, oil, grease and other pollutants from this area. The best way to provide some relief for the area is to obtain adjacent property for a new storm water management facility and improved conveyance system. In order to get the problem water flowing to the storm water pond the ditches will need to need to be regraded and the some of the pipes will need to be replaced. A map of the proposed project is available upon request. The estimated cost for this project is $1,275,029.77. A more detailed cost opinion please is available upon request The City is in the process of upgrading several components of its storm water system. This project will help the City reach its goal of eliminating one of its major stormwater issues. This will be the second phase of the stormwater project. This project promotes improving East Bay which has been identified as a need through Northwest Florida Water Management District Surface Water Improvement and Management Program (SWIM). To help promote stormwater education and awareness within the City all new drainage structures will be labeled with "Drains to East Bay" notices. The main goal of this project is to help improve the St. Andrew Bay watershed specifically, East Bay which is designed as an impaired watershed. The City of Parker is listed as one of the "prominent contributors" to the East Bay watershed according to the SWIM program. The City's stormwater contributes to the Callaway Bayou and the Lake Martin Sub basins. On a scale of 1 to 10 with 10 being the highest level of pollutants, according to the SWIM report the Lake Martins Basin is an 8 and the Callaway Bayou Basin is a 6. Some of the current roadways in this area are beginning to wash away causing more pollution to be received by the watershed. Also with the flooding issues storm water is getting into the sewer line causing additional environmental issues. Another one of the goals of this project is to prevent flooding along the Business Highway 98 Corridor area and improve the quality of East Bay watershed. Citizens are reluctant to live in the area due to flooding that occurs with every rain event, and the inadequate existing stormwater system is causing a gradual degradation of receiving waters. Providing flood and water quality relief will make the East Bay more appealing to the residents and help protect the valuable resources in our bay system.

Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Environmental changes / issues, Erosion, Ineffective stormwater systems, Lack of adequate funding, Lack of environmental awareness
Proposed Metric(s)	The proposed project helps to improve the East Bay water quality. This project will meet long term metrics such as:· Treatment Volume o Calculation of impact (N/P) reduction· Number of guides describing BMP's for homeowners distributed· Number of "Drains to Bay" notices posted on stormdrain inletsThis project will meet short term metrics such as:· % of critical stormwater infrastructure needing upgrades addressed · Acreage of previously untreated stormwater receiving treatment (number and trend)· % of stormwater infrastructure under a maintenance program · Acres of land managed using Best Management Practices (BMP's) (effective educational efforts will hopefully increase BMP adoption)
Project Contact Name	Elizabeth Moore
Project Cost	$1 million

Project Map #	25
Latitude	30.1313889
Longitude	-85.5964944
Project Title	Cheri Lane Stormwater Improvements Phase II
Location Description	The coordinates given above are the proposed pond location. This project is located between 11th Street North and Arrow Street in the City of Parker.
Project Description	This project is located between 11th Street North and Arrow Street in the City of Parker. The City has seen an increasing problem with failing stormwater facility on Cheri Lane. Cheri Lane is a dead end road located between 11th Street North and Arrow Street. One of the largest stormwater basins in Parker discharges into this area and eventually into the St. Andrews Bay. This area provides no treatment to the stormwater before it enters the bay. The stormwater does collect sediment, trash, oil, grease and other pollutants from this area. The best way to provide some relief for the area is to obtain adjacent property for a new storm water management facility and improved conveyance system. In order to get the problem water flowing to the storm water pond the ditches will need to need to be regraded and the some of the pipes will need to be replaced. A map of the proposed project is available upon request. The estimated cost for this project is $1,275,029.77. A more detailed cost opinion please is available upon requestThe City is in the process of upgrading several components of its storm water system. This project will help the City reach its goal of eliminating one of its major stormwater issues. This will be the second phase of the stormwater project. This project promotes improving East Bay which has been identified as a need through Northwest Florida Water Management District Surface Water Improvement and Management Program (SWIM). To help promote stormwater education and awareness within the City all new drainage structures will be labeled with "Drains to East Bay" notices. The main goal of this project is to help improve the St. Andrew Bay watershed specifically, East Bay which is designed as an impaired watershed. The City of Parker is listed as one of the "prominent contributors" to the East Bay watershed according to the SWIM program. The City's stormwater contributes to the Callaway Bayou and the Lake Martin Sub basins. On a scale of 1 to 10 with 10 being the highest level of pollutants, according to the SWIM report the Lake Martins Basin is an 8 and the Callaway Bayou Basin is a 6. Some of the current roadways in this area are beginning to wash away causing more pollution to be received by the watershed. Also with the flooding issues storm water is getting into the sewer line causing additional environmental issues. Another one of the goals of this project is to prevent flooding along the Business Highway 98 Corridor area and improve the quality of East Bay watershed. Citizens are reluctant to live in the area due to flooding that occurs with every rain event, and the inadequate existing stormwater system is causing a gradual degradation of receiving waters. Providing flood and water quality relief will make the East Bay more appealing to the residents and help protect the valuable resources in our bay system.

Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation.
Root Causes	Environmental changes / issues, Erosion, Ineffective stormwater systems, Lack of adequate funding, Lack of environmental awareness
Proposed Metric(s)	The proposed project helps to improve the East Bay water quality. This project will meet long term metrics such as:· Treatment Volume o Calculation of impact (N/P) reduction· Number of guides describing BMP's for homeowners distributed· Number of "Drains to Bay" notices posted on stormdrain inletsThis project will meet short term metrics such as:· % of critical stormwater infrastructure needing upgrades addressed · Acreage of previously untreated stormwater receiving treatment (number and trend)· % of stormwater infrastructure under a maintenance program · Acres of land managed using Best Management Practices (BMP's) (effective educational efforts will hopefully increase BMP adoption)
Project Contact Name	Elizabeth Moore
Project Cost	$1 million

Project Map #	26
Latitude	29.74132
Longitude	-85.405083
Project Title	Mexico Beach Stormwater Masterplan
Location Description	City of Mexico Beach, City Hall
Project Description	This project will consider the area within the City limits to determine city wide needs in regard to stormwater improvements. The Stormwater Master Plan will provide a systematic approach for future stormwater improvements. Also, the Master Plan will provide a prioritized list of conceptual projects for future design and construction. This project will improve the water quality by defining projects that will treat the stormwater before it is released into the bay. This will help to eliminate the surface contaminants which will normally runoff into the natural water bodies, including the Bay. The existing stormwater system will be inspected and reviewed to determine which projects are most cost beneficial for the City. A brief overview of the project tasks are listed below. This project also promotes improving the Bay which has been identified as a need through Northwest Florida Water Management District Surface Water Improvement and Management Program (SWIM). TASK 1.0 – Data Collection and Review ; TASK 2.0 – Survey; TASK 3.0 – Stormwater Modeling; TASK 4.0 – Alternatives Analysis; TASK 4.1 – Delineate Conveyances; TASK 4.2 – Determine Required/Proposed Improvements ; TASK 4.3 – Improvements Analysis ; TASK 4.4 – Prepare Cost Opinions for Improvements
Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness
Proposed Metric(s)	The proposed project helps to improve the East Bay water quality. This project will meet long term metrics such as:· Treatment Volume - Calculation of impact (N/P) reductionThis project will meet short term metrics such as:· % of critical stormwater infrastructure needing upgrades addressed · Acreage of previously untreated stormwater receiving treatment (number and trend)· % of stormwater infrastructure under a maintenance program
Project Contact Name	Elizabeth Moore
Project Cost	$100,000

Project Map #	27
Latitude	30.129442
Longitude	-85.604786
Project Title	Parker Master Stormwater Plan
Location Description	City of Parker, City Hall
Project Description	This project will consider the area within the City limits to determine city wide needs in regard to stormwater improvements. The Stormwater Master Plan will provide a systematic approach for future stormwater improvements. Also, the Master Plan will provide a prioritized list of conceptual projects for future design and construction. This project will improve the water quality by defining projects that will treat the stormwater before it is released into the bay. This will help to eliminate the surface contaminants which will normally runoff into the natural water bodies, including the Bay. The existing stormwater system will be inspected and reviewed to determine which projects are most cost beneficial for the City. A brief overview of the project tasks are listed below. This project also promotes improving the Bay which has been identified as a need through Northwest Florida Water Management District Surface Water Improvement and Management Program (SWIM). The main goal of this project is to help improve the St. Andrew Bay watershed specifically, East Bay which is designed as an impaired watershed. The City of Parker is listed as one of the "prominent contributors" to the East Bay watershed according to the SWIM program. The City's stormwater contributes to the Callaway Bayou and the Lake Martin Sub basins. On a scale of 1 to 10 with 10 being the highest level of pollutants, according to the SWIM report the Lake Martins Basin is an 8 and the Callaway Bayou Basin is a 6. Some of the current roadways in this area are beginning to wash away causing more pollution to be received by the watershed. Also with the flooding issues storm water is getting into the sewer line causing additional environmental issues. TASK 1.0 – Data Collection and Review ; TASK 2.0 – Survey; TASK 3.0 – Stormwater Modeling; TASK 4.0 – Alternatives Analysis; TASK 4.1 – Delineate Conveyances; TASK 4.2 – Determine Required/Proposed Improvements; TASK 4.3 – Improvements Analysis; TASK 4.4 – Prepare Cost Opinions for Improvements
Major Actions	Reduce nutrient loading., Reduce and treat stormwater., Reduce sedimentation., Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Environmental changes / issues, Erosion, Ineffective or unused BMPs, regulations & development codes, Ineffective stormwater systems, Lack of adequate funding, Lack of communication among diverse stakeholders, Lack of environmental awareness

Proposed Metric(s)	The proposed project helps to improve the East Bay water quality. This project will meet long term metrics such as:· Treatment Volume -Calculation of impact (N/P) reduction· Number of guides describing BMP's for homeowners distributed· Number of "Drains to Bay" notices posted on stormdrain inletsThis project will meet short term metrics such as:· % of critical stormwater infrastructure needing upgrades addressed · Acreage of previously untreated stormwater receiving treatment (number and trend)· % of stormwater infrastructure under a maintenance program · Acres of land managed using Best Management Practices (BMP's) (effective educational efforts will hopefully increase BMP adoption)
Project Contact Name	Elizabeth Moore
Project Cost	$100,000

Project Map #	28
Latitude	30.186624
Longitude	-85.730823
Project Title	EcoGulf: Stewards of Our Home
Location Description	Florida State University Panama City
Project Description	The primary goal of EcoGulf is to test innovative ways do develop integrated science and economics curricula for Florida C-PALMS and the National Core Standards Databases. The end result will be curricular materials that teach stewardship in local communities that will be readily available to all teachers. A follow-on project will be to find ways to integrate this approach in undergraduate teacher training. The initial project will integrate state standards for science and economics to develop citizens who will become stewards of the Gulf of Mexico, understand its economic and ecological importance and consider STEM related careers. Selected teachers with the assistance of marine professionals will develop and deliver an integrated curriculum to connect students with St. Andrew Bay. The strategy is to host a one week summer immersion camp for 30 4th and 5th grade students. It will be taught by three elementary teachers along with three STEM professionals in order to raise awareness of the importance of our Gulf resources on the local economy. The camp will focus on the importance of St. Andrew Bay to the local economy related to fishing and shellfish and will include service projects. The pilot will be evaluated by conducting pre-camp and post-camp assessments of the students and by documenting changes that the teachers make in their school-year lesson plans to integrate science and economics with lessons in the outdoors. As funds are available, the camp will be expanded and similar approaches in the classroom developed. Ultimately, training of this integrated stewardship approach for undergraduate students of education is proposed to be implemented.
Major Actions	Increase cooperation and coordination for monitoring, funding, implementation, outreach.
Root Causes	Lack of communication among diverse stakeholders, Lack of environmental awareness
Proposed Metric(s)	D. Evaluation Plana. Students will be given a pre and a post-test covering the standards used for the camp. Scores before camp and after camp will be compared to determine growth. b. An attitude survey will be administered to determine if student attitudes toward math and science have changed as well as how girls are viewed as moving toward STEM careers. c. Participating teachers will be given pre-and post-surveys to ascertain the extent of integration of science and economics standards into their lesson plans. An additional survey three months following the camp will further assess the degree of integration. d. Lessons plans submitted to C-PALMS, the online database, will be carefully reviewed. Each must meet high standards based on the standards and benchmarks, content, presentation and pedagogy. Courses are reviewed by at least two reviewers, one an educator and one a content expert. Lessons which meet the review criteria are then posted to the C-PALMS database for use throughout Florida.
Project Contact Name	Ginger Littleton
Project Cost	$100,000

Project Map #	29
Latitude	30.063603
Longitude	-85.62143
Project Title	East Pass/Old Pass re-opening
Location Description	E end Shell Island
Project Description	East Pass, or Old Pass, was the former entry to the St. Andrew Bay System from the Gulf. The proposed project is to re-open East Pass along the path of the historic channel linking St Andrew Bay and the Gulf of Mexico. The proposed project is expected to result in improved water quality and clarity for 4,000 or more acres of St Andrew Bay lying between Shell Island and Tyndall Air Force Base.
Major Actions	Protect, restore, create and/or manage natural habitat and resources, and increase buffer areas.
Root Causes	Erosion
Proposed Metric(s)	increase in seagrass extent
Project Contact Name	Jim Muller
Project Cost	~$1 million

Project Map #	30
Latitude	30.30273
Longitude	-85.768544
Project Title	West Bay Land Acquisition and Restoration
Location Description	North side of West Bay
Project Description	Much of the area north of West Bay is undeveloped; most is owned by St. Joe. Some of this land is owned in fee-simple by St. Joe, other areas have conservation easements over them. This project would acquire fee-simple lands and the underlying fee of conservation easement lands. Lands would be restored, thereby increasing the amount of native habitat and improving the quality of water flowing into the bay system. The property would also be managed for low-impact natural resource-based recreation, such as hiking, biking, nature observation, paddling.
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.
Root Causes	Environmental changes / issues, Erosion, Lack of adequate funding, Loss of vegetation, riparian buffers, and/or wetlands, Quantity and timing of freshwater flow
Proposed Metric(s)	percent of habitat areas restored/managed/protected
Project Contact Name	Jim Muller
Project Cost	~$1 million

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