Surface Water Improvement and Management (SWIM) Program

Created through passage of the Surface Water Improvement and Management Act in 1987; Sections 451-459, Florida Statutes.

Purpose: Developed to address major watershed (coastal/surface water) issues throughout the State.

Plans will provide:

- Watershed description;
- Assessment of watershed and water resource conditions;
- Evaluation of accomplishments and improvements since previous SWIM Plan;
- Project plan to address identified watershed needs and challenges; and
- Estimate funding needs and funding alternatives.
SWIM in Northwest Florida

The District developed SWIM plans for all major watersheds/waterbodies; two (Perdido and Ochlockonee) remain in a draft status.

<table>
<thead>
<tr>
<th>Waterbody</th>
<th>Most Recent Plan/Update Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apalachicola</td>
<td>1996</td>
</tr>
<tr>
<td>Pensacola</td>
<td>1997</td>
</tr>
<tr>
<td>Choctawhatchee</td>
<td>2002</td>
</tr>
<tr>
<td>St. Marks</td>
<td>2009</td>
</tr>
<tr>
<td>St. Andrew Bay</td>
<td>2000</td>
</tr>
<tr>
<td>Lake Jackson</td>
<td>1997</td>
</tr>
<tr>
<td>Perdido</td>
<td>Draft 2011</td>
</tr>
<tr>
<td>Ochlockonee</td>
<td>Draft 2012</td>
</tr>
</tbody>
</table>
Gulf Environmental Benefit Fund (GEBF)

GEBF Restoration Strategy:

- SWIM Plan Updates (NWF & Suwannee WMDs).
- Seagrass Assessment (Fish and Wildlife Research Institute).

Goal: Prioritized Project List
Ochlockonee River And Bay Watershed
Ochlockonee River and Bay Watershed

- Approximately 1.6 million acres
- 53% in Florida
- Conservation lands encompass about 44% of the watershed in Florida, and include the Federally designated Bradwell Bay Wilderness Area
- Diverse water resources: sinkhole influenced lakes, major alluvial river, blackwater streams, tidal creeks, and coastal estuary
- 2010 watershed population estimated at over 94,500 in Florida alone
Ochlockonee River and Bay Watershed

- River flows 216 miles through Georgia and Florida
- About 116 miles of the river (including Lake Talquin) flows through Florida
- Lake Talquin is an impoundment of the Ochlockonee; covering 8,800 acres; 15 miles long and up to 1 mile wide
- Sopchoppy River headwaters are largely within the Apalachicola National Forest/Bradwell Bay Wilderness Area
- Crooked River spans the Ochlockonee and Apalachicola River Watersheds
Ochlockonee River and Bay Watershed

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Major Lakes with Sinkhole Influence

Lake Jackson

- 4,000 acres
- Designated as an Aquatic Preserve in 1974 to protect recreational, biological, and aesthetic values
- Outstanding Florida Water
- One of the few large sinkhole lakes in Florida that has not been hydrologically altered
- A “disappearing” lake, drains through sinkholes
- 43 square mile watershed
Lake Iamonia

- 5,554 acres
- Lake Iamonia Sink was hydrologically isolated in 1939, but has been allowed to fluctuate naturally since 1980
- Hydrologically connected to the Ochlockonee River and Foshalee Slough
Groundwater Contribution Area

Combined groundwater contribution area for Wakulla Springs and Spring Creek Springs Group spans portions of both the Ochlockonee River and Bay and St. Marks River watersheds.
Ochlockonee River and Bay Watershed: Coastal Features

- Extensive salt marsh ecosystem protected at St. Marks NWR, Bald Point SP, and Ochlockonee River SP
- Tidal creeks, flats, seagrasses, and oyster beds
- Freshwater lakes proximate to the coast
Watershed Challenges
Watershed Challenges

• Water quality
  o Agricultural activities, mining, and urban land uses that generate point and NPS pollution are concentrated in the upper watershed
  o Agricultural runoff and surface mining are particularly concentrated in Gadsden County
  o Urban runoff and associated NPS pollution are long-term challenges in the Tallahassee area
  o Shoreline erosion
  o Sedimentation from construction sites and dirt roads
  o Septic systems adjacent to area lakes, streams, the river and bay
Watershed Challenges
## Watershed Challenges

### Established Total Maximum Daily Loads

<table>
<thead>
<tr>
<th>Dissolved Oxygen</th>
<th>Nutrients</th>
<th>Bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Juniper Creek</td>
<td>Lake Tallavanna</td>
<td>Black Creek</td>
</tr>
<tr>
<td>Lake Talquin at Dam</td>
<td>Lake Talquin at Dam</td>
<td>Juniper Creek</td>
</tr>
<tr>
<td></td>
<td>Lake Talquin</td>
<td>Swamp Creek</td>
</tr>
</tbody>
</table>

Plus an additional 17 watershed segments with TMDLs established for Mercury
Watershed Challenges

Over 22,000 septic systems identified throughout the Florida portion of the watershed in 2016 (FDOH Inventory)
Watershed Challenges

• Habitat quality
  o Biological impacts of water quality impairment, including within Lake Jackson, the Ochlockonee River, and tributaries to Lake Talquin, Lake Talquin
  o Habitat impacts due to sedimentation in Lake Jackson
  o Invasive species in Lake Jackson include hydrilla, island apple snail, alligatorweed, water hyacinth, and Chinese tallow
  o Sedimentation in the Ochlockonee River may threaten the Ochlockonee moccasinshell
Roadblocks to Seagrass Recovery

Project Update – Florida Fish and Wildlife Research Institute
Identify “umbrella” projects addressing priority issues and objectives and encompassing known specific project priorities.

- Priority Issues
- Proposed Objectives
- Proposed Approaches and Projects
Project Planning

Identify “umbrella” projects addressing priority issues and objectives and encompassing known specific project priorities.
Project Planning

Identify “umbrella” projects addressing priority issues and objectives and encompassing known specific project priorities.

- **Fords Arm Stormwater Treatment Facility**
- **Tanyard Branch Drainage Basin Project**
- **Stormwater treatment & stabilization for ditches draining to the Sopchoppy River**
- **Stormwater Retrofit Facilities in Panacea**
### Watershed Specific Priorities and Objectives

<table>
<thead>
<tr>
<th>Priority Issues</th>
<th>Conceptual Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Point and Nonpoint Source Pollution</strong></td>
<td>Improve water Lake Jackson and Lake Talquin water quality.</td>
</tr>
<tr>
<td>• Stormwater runoff</td>
<td>Invest in agricultural and silviculture BMPs.</td>
</tr>
<tr>
<td>• Basinwide nonpoint source pollution</td>
<td>Retrofit stormwater infrastructure to improve water quality treatment and hydrologic function.</td>
</tr>
<tr>
<td>• Sedimentation from unpaved roads, borrow pits, and gully erosion</td>
<td>Address sedimentation abatement from unpaved roads and erosion sites.</td>
</tr>
<tr>
<td>• Pollutant export from septic tanks</td>
<td>Connect residences and businesses to central sewer.</td>
</tr>
<tr>
<td>• Potential wastewater treatment and reclamation improvements</td>
<td>Implement advanced passive onsite sewage treatment options.</td>
</tr>
<tr>
<td>• Impacts to specific waterbodies</td>
<td>Support continuing wastewater collection and treatment improvements.</td>
</tr>
<tr>
<td>o <strong>Examples:</strong> Lake Jackson and Lake Talquin</td>
<td>Enhance monitoring programs, to identify trends, specific issues, and outcomes.</td>
</tr>
</tbody>
</table>
## Priority Issues

### Floodplains and Hydrology
- Opportunities for hydrologic and floodplain functional restoration
- Estuarine riparian buffer loss; protection of tributary riparian systems
- Sedimentation and physical impacts from unpaved roads, erosion, construction sites, and other sources
- Hydrologic effects of landscape development

## Conceptual Objectives

- Prioritize and address hydrologic alterations.
- Identify and address needs for restoration of wetland and floodplain functions.
- Identify and address needs for restoration of vegetated riparian buffers.
- Limit effective impervious surface area.
- Prevent erosion and sedimentation from construction, erosion, and unpaved roads.
## Watershed Specific Priorities and Objectives

<table>
<thead>
<tr>
<th>Priority Issues</th>
<th>Conceptual Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Aquatic and Wetland Habitat</strong></td>
<td>Reduce sedimentation and turbidity.</td>
</tr>
<tr>
<td>- Sedimentation impacts</td>
<td>Identify and address opportunities for restoration of wetland and floodplain functions.</td>
</tr>
<tr>
<td>- Habitat impacts to listed freshwater mussels</td>
<td></td>
</tr>
<tr>
<td>- Invasive species</td>
<td>Support management efforts to control, eradicate, and minimize the introduction or spread of invasive species.</td>
</tr>
<tr>
<td>- Protection/restoration of shellfish habitat</td>
<td></td>
</tr>
<tr>
<td>- Submerged aquatic vegetation (SAV) loss (Apalachee Bay)</td>
<td></td>
</tr>
</tbody>
</table>
## Watershed Specific Priorities and Objectives

<table>
<thead>
<tr>
<th>Priority Issues</th>
<th>Conceptual Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Coastal Resiliency</strong></td>
<td>Identify opportunities to restore and protect shoreline habitats and functions.</td>
</tr>
<tr>
<td>• Shoreline destabilization/erosion</td>
<td>Evaluate and refine adaptation options in response to projected land use changes.</td>
</tr>
<tr>
<td>• Opportunities for shoreline habitat and functional restoration</td>
<td></td>
</tr>
<tr>
<td>• Sea level rise</td>
<td>Identify and implement a proactive approach to incorporating coastal resiliency concepts into planning, infrastructure, and future land uses.</td>
</tr>
<tr>
<td>• Coastal storm impacts</td>
<td></td>
</tr>
<tr>
<td>• Effects of land cover/land use changes</td>
<td></td>
</tr>
</tbody>
</table>
## Watershed Specific Priorities and Objectives

<table>
<thead>
<tr>
<th>Priority Issues</th>
<th>Conceptual Objectives</th>
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</thead>
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<tr>
<td><strong>Public Awareness and Education</strong></td>
<td>Expand watershed resource awareness and understanding through innovative, hands-on community-based restoration.</td>
</tr>
<tr>
<td>• Need for expanded community engagement opportunities</td>
<td>Build upon efforts to establish long-term partnerships among stakeholders, including government, academic institutions, non-governmental organizations, businesses, residents, and others, to maximize effectiveness of project implementation and funding efforts.</td>
</tr>
<tr>
<td>• Need for opportunities for public engagement with resource management decision-making</td>
<td>Reduce litter and debris entering waterways.</td>
</tr>
<tr>
<td>• Support and expand public awareness of basis for management programs and projects</td>
<td></td>
</tr>
<tr>
<td>• Litter and debris entering inland and coastal waters</td>
<td></td>
</tr>
</tbody>
</table>
Implementation
An Array of Funding Resources

<table>
<thead>
<tr>
<th>RESTORE Bucket 1</th>
<th>NFWF</th>
<th>Florida Legislature</th>
</tr>
</thead>
<tbody>
<tr>
<td>County MYIPs</td>
<td>Gulf Environmental Benefit Fund</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESTORE Bucket 2</th>
<th>Florida Springs Restoration Funding</th>
<th>US EPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gulf Coast Ecosystem Restoration Council</td>
<td></td>
<td>Section 319 Grants</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESTORE Bucket 3</th>
<th>NRDA</th>
<th>Triumph Gulf Coast Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Florida Gulf Consortium</td>
<td>Natural Resource Damage Assessment</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESTORE Bucket 4</th>
<th>Florida Land Acquisition Trust Fund</th>
<th>TMDL Water Quality Restoration Grants</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOAA Science Program</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>RESTORE Bucket 5</th>
<th>Clean Water State Revolving Fund</th>
<th>FL Coastal Mgt Program</th>
</tr>
</thead>
<tbody>
<tr>
<td>FL Inst. of Oceanography</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| **Urban Stormwater Retrofits** | • Water quality improvement  
                                 • Flood protection  
                                 • Hydrologic restoration  
                                 *Project examples:*  
                                 *Ford’s Arm Regional Stormwater Treatment Facility* | • Local governments |
| **Basinwide Sedimentation Abatement** | • Watershed assessment of impacts from unpaved roads and other sedimentation and erosion sites  
                                 • Prioritize sites  
                                 • Support implementation | • Local governments |
# Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| Agricultural Best Management Practices (BMPs) | • Water quality protection  
• Water use efficiency  
*FDACS agricultural BMP programs, including cost-share grants and BMP certification; cooperative efforts between public agencies and private landowners* | • FDACS  
• Gadsden County  
• NRCS  
• Private producers |
| Silviculture BMPs                         | • Water quality protection  
• Habitat protection  
*Florida's silviculture BMP program (FDACS); cooperative effort between public agencies and private landowners* | • FDACS  
• Private landowners  
• Public landowners |
| Lake Jackson Aquatic Preserve/OFW        | • Comprehensive restoration plan  
*Stormwater treatment*  
*Septic connections to centralized wastewater treatment*  
*Advanced septic systems pilot project*  
*Public education and outreach*  
*And more* | • City of Tallahassee  
• Leon County  
• NWFWMD  
• FDEP  
• FDOH  
• Talquin Electrical Coop. |
# Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| Hydrologic Restoration   | • Restoration of natural wetland and floodplain, hydrology  
• Stream channel restoration  
• Enhance resiliency through biodiversity and natural adaptation enhancement | • State and federal resource agencies  
• Local governments                                                             |
| Wetland Restoration      | • Restore wetland functions: fish and wildlife habitat, floodwater storage, discharge regulation, water quality protection, aquifer recharge, and more  
• Enhance resiliency through biodiversity and natural adaptation enhancement | • Local governments  
• State and federal resource agencies                                         |
## Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| Subbasin Plans           | • Comprehensive restoration plans for targeted basins  
                          |  
                          | Lake Jackson Management Plan – evaluation of alternatives  
                          |  
                          | - Stormwater treatment  
                          |  
                          | - Sediment quality remediation  
                          |  
                          | - Vegetation and habitat restoration  
                          |  
                          | • Local governments                                                                                                                              |                                      |
| Aquatic habitat Restoration | • Seagrass restoration  
                          |  
                          | • Oyster bed restoration  
                          |  
                          | • Tidal marsh hydrologic restoration  
                          |  
                          | • Support FWC efforts to protect, manage, and restore lacustrine and riverine aquatic vegetation communities  
                          |  
                          | • Florida FFWC/FWRI  
                          |  
                          | • Local governments                                                                                                                             |                                      |
# Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| Riparian Buffer Zones and Littoral Zone Management | • Water quality protection  
• Shoreline Stability  
• Habitat  
• Enhance resiliency through biodiversity and natural adaptation enhancement  
• Targeted living shoreline projects for altered/eroding shorelines | • Private landowners  
• Local governments  
• Public land management agencies |
| Monitoring Program Development and Enhancement | • Develop targeted monitoring program  
• Identify trends  
• Support adaptive management  
• Data analysis; identify and quantify sources of NPS pollutant loading | • Local governments  
• FDEP  
• FFWC |
# Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| **Water Reclamation and Reuse** | • Protect water quality through improved treatment and reduced discharges  
• Water conservation/demand management  
• Conserve potable water sources  
*Water reclamation and reuse within Leon, Wakulla, Gadsden, Liberty and Franklin counties* | • Utilities  
• Local governments |
| **OSTDS to Central Sewer Connections** | • Connect areas served by OSTDS to central sewer systems  
• WWTF/WRF Improvements | • Utilities  
• Local governments  
• FDOH  
• FDEP |
| **Advanced Technology OSTDS** | • Implement affordable, new technology passive OSTDS in areas where connection to central sewer is not cost-effective  
*Advanced septic systems pilot project* | • Utilities  
• Local governments  
• FDEP  
• FDOH  
• NWFWMD |
### Projects and Management Practices

<table>
<thead>
<tr>
<th>Project/Practice</th>
<th>Objectives</th>
<th>Lead Entities</th>
</tr>
</thead>
</table>
| Evaluation and Planning for Strategic Land Acquisition and Conservation | • Water resource protection for water quality, floodplain, and aquatic and wetland habitat protection | • Local governments  
• Private non-profit initiatives  
• FDEP |
| Watershed Stewardship Initiatives | Build citizen engagement opportunity and capacity, including:  
• Citizen science  
• Monitoring  
• Training and outreach | • Local Governments  
• IFAS Extension/Sea Grant |
Criteria for Project Planning and Evaluation

• Infrastructure projects (stormwater and wastewater)
  o Projects should have responsible parties that will implement, own, operate, and maintain the facilities
  o Responsible parties should have dedicated funding source for operation and maintenance

• Restoration and habitat enhancement
  o Completed project should be naturally self-sustaining; not requiring frequent human intervention
  o Restoration should reflect ecosystems or habitats that are naturally supported in the watershed and physical environment
  o Completed restoration sites should be adaptable to natural change and variability – short-term and long-term
SWIM Plan Updates – Schedule

<table>
<thead>
<tr>
<th>2015</th>
<th>2016</th>
<th>2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUG</td>
<td>SEP</td>
<td>OCT</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Designated Grant Period**
- **Watershed Characterizations**
- **Tech. Mtgs**
- **Project Planning**
- **Draft Plans**
- **Public Stakeholder Review**
- **Final Plans**
Thank you!

Ochlockonee River and Bay Resource Characterization:
http://www.nwfwater.com/Water-Resources/SWIM/SWIM-Plan-Updates

Please provide comments, recommendations, and questions to:
SWIM@nwfwater.com

Comments requested by **March 10, 2017**

For more information:

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Northwest Florida Water Management District
(850) 539-5999
Paul.Thorpe@nwfwater.com