

# Surface Water Improvement and Management (SWIM) Plan Update



## Choctawhatchee River and Bay Watershed

*January 31, 2017*



# 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.

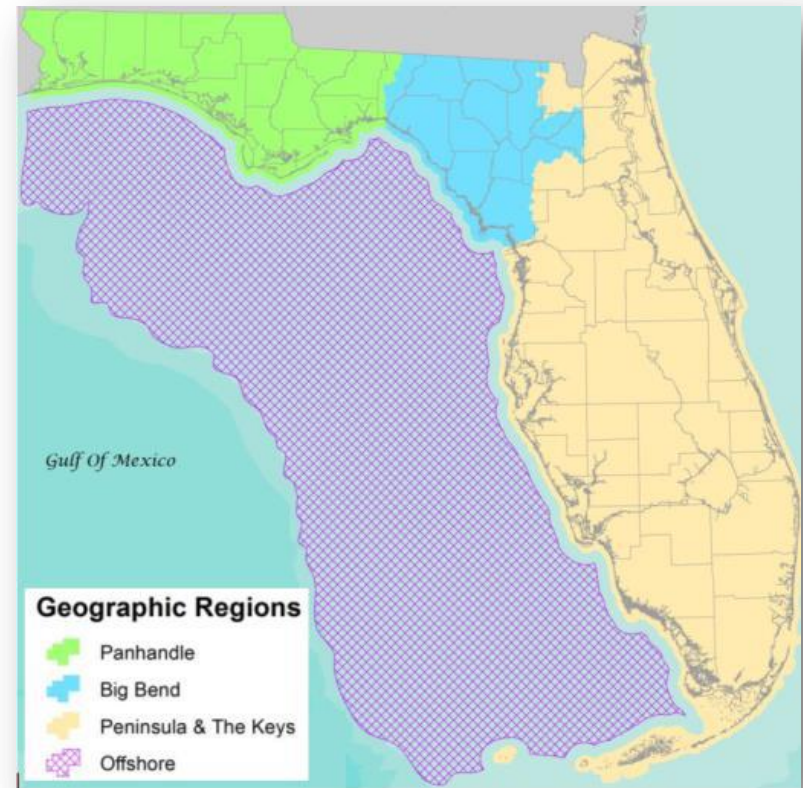
Waterbody	Most Recent Plan/ Update Date
Apalachicola	1996
Pensacola	1997
Choctawhatchee	2002
St. Marks	2009
St. Andrew Bay	2000
Lake Jackson	1997
Perdido	Draft 2011
Ochlockonee	Draft 2012

# Gulf Environmental Benefit Fund (GEBF)

## GEBF Restoration Strategy:

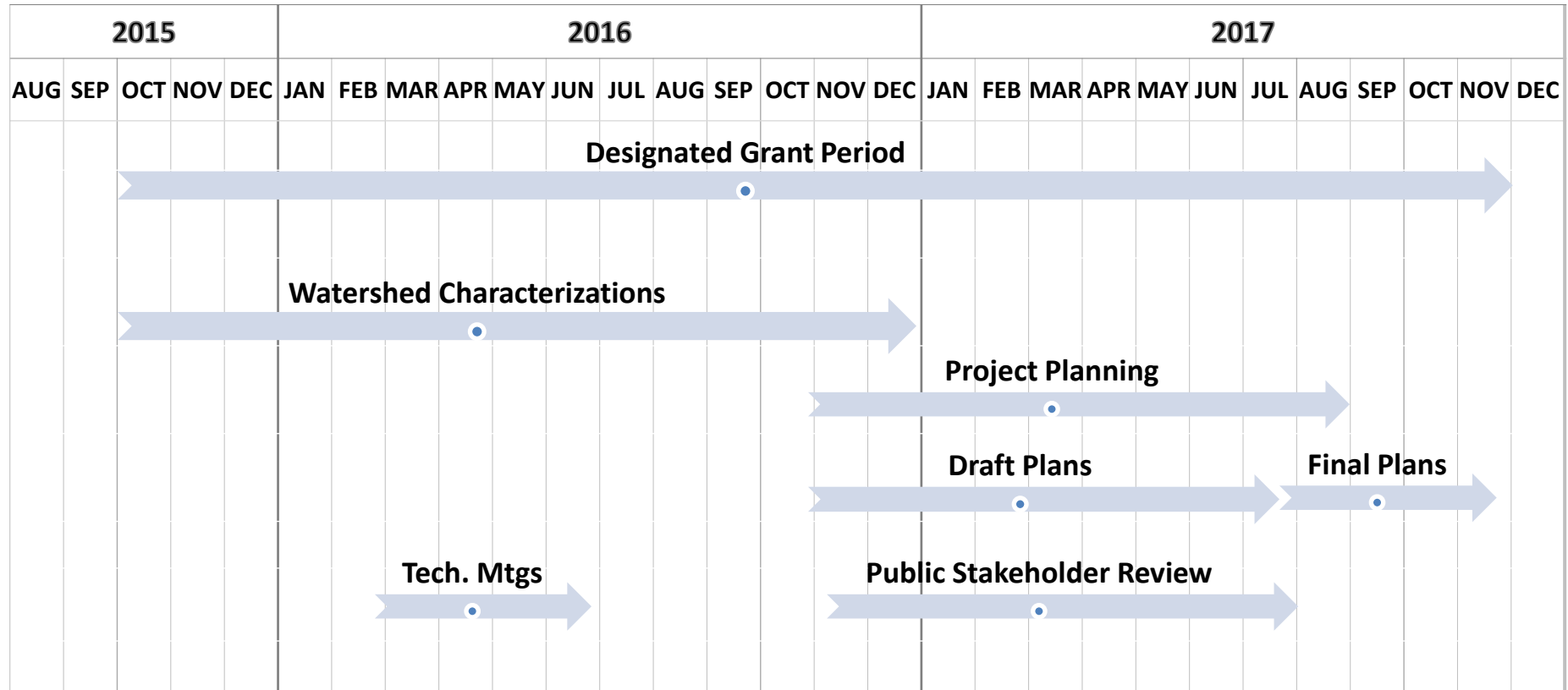
- SWIM Plan Updates (NWF & Suwannee WMDs).
- Seagrass Assessment (Fish and Wildlife Research Institute).

## Goal: Prioritized Project List





# SWIM Plan Updates – Schedule





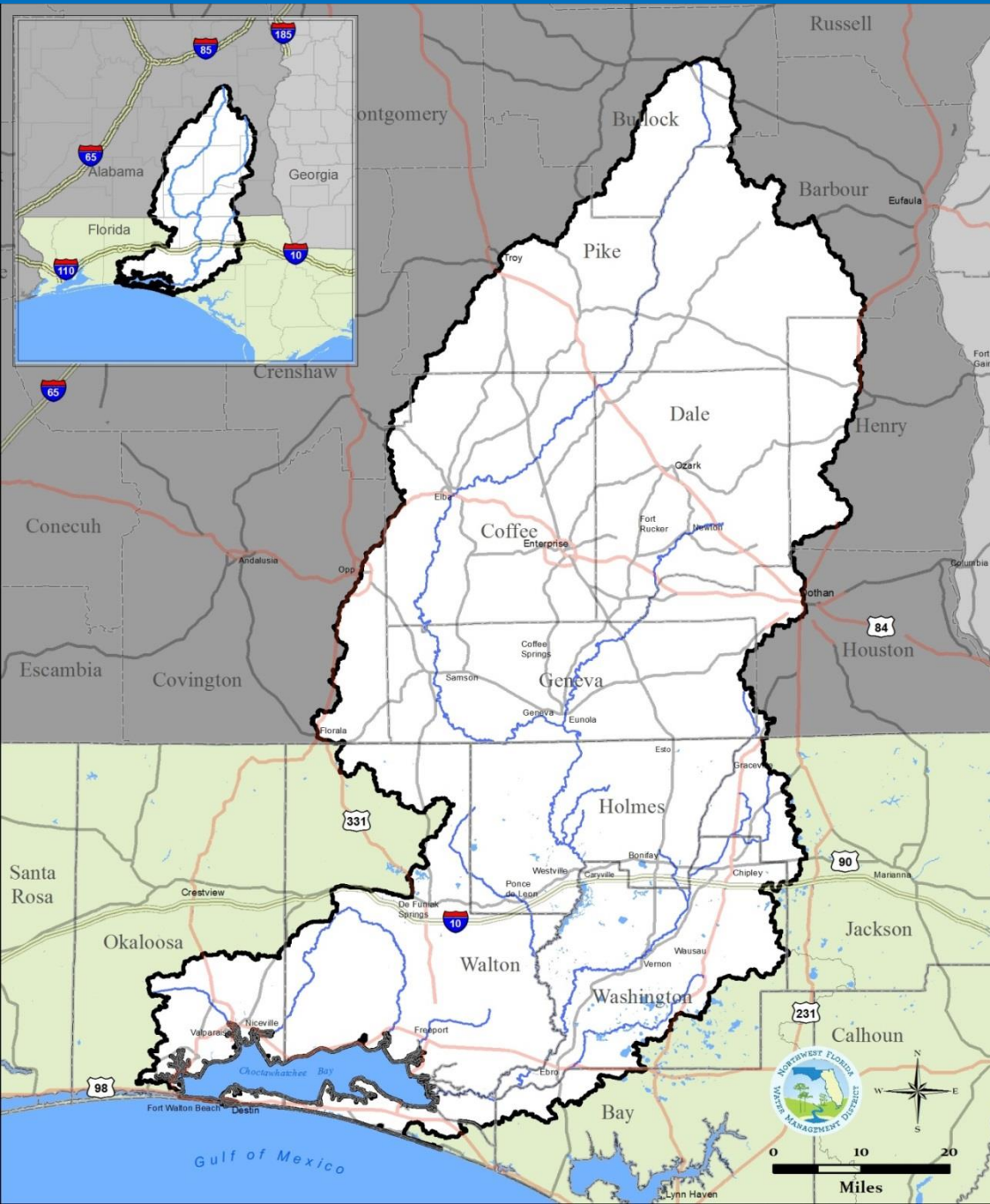
# Choctawhatchee River and Bay Watershed





## Choctawhatchee River and Bay

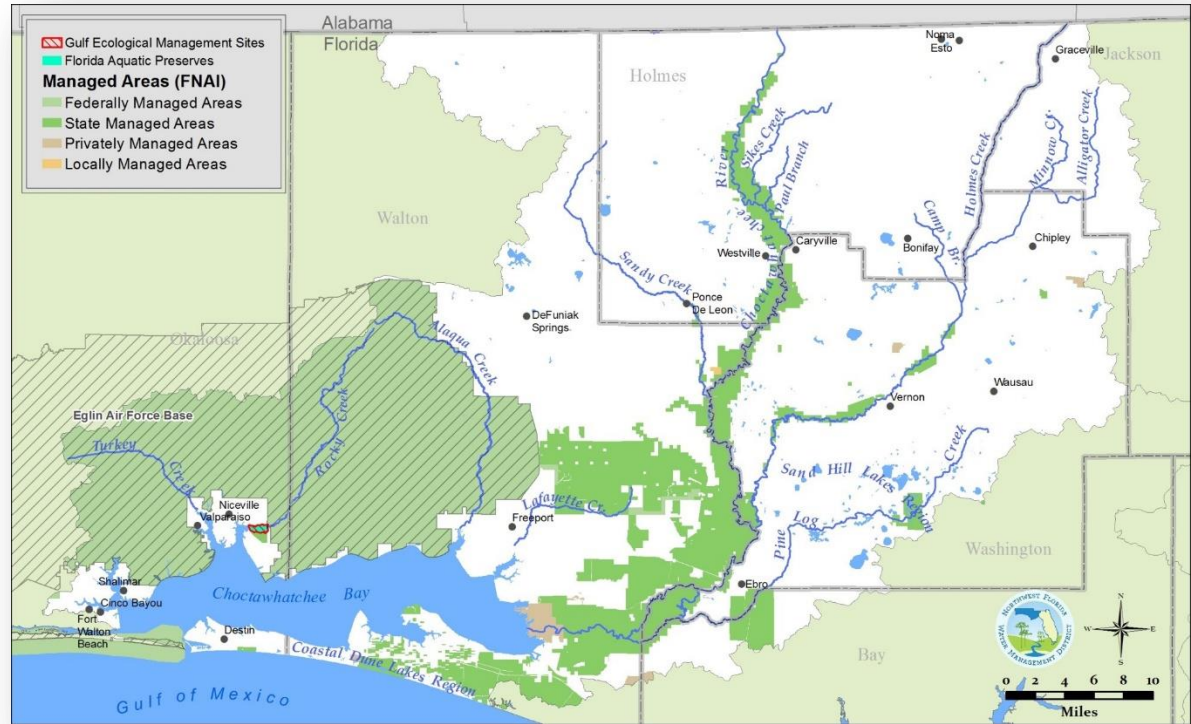
- 5,350 square mile Interstate watershed: 40% in Florida; 60% in Alabama
- Florida's fourth largest river (flow) – discharge of over 4,600 million gallons per day
- Approximately 129 square mile estuary
- 2010 watershed population estimated at over 187,000 in Florida alone





# Choctawhatchee River and Bay Watershed

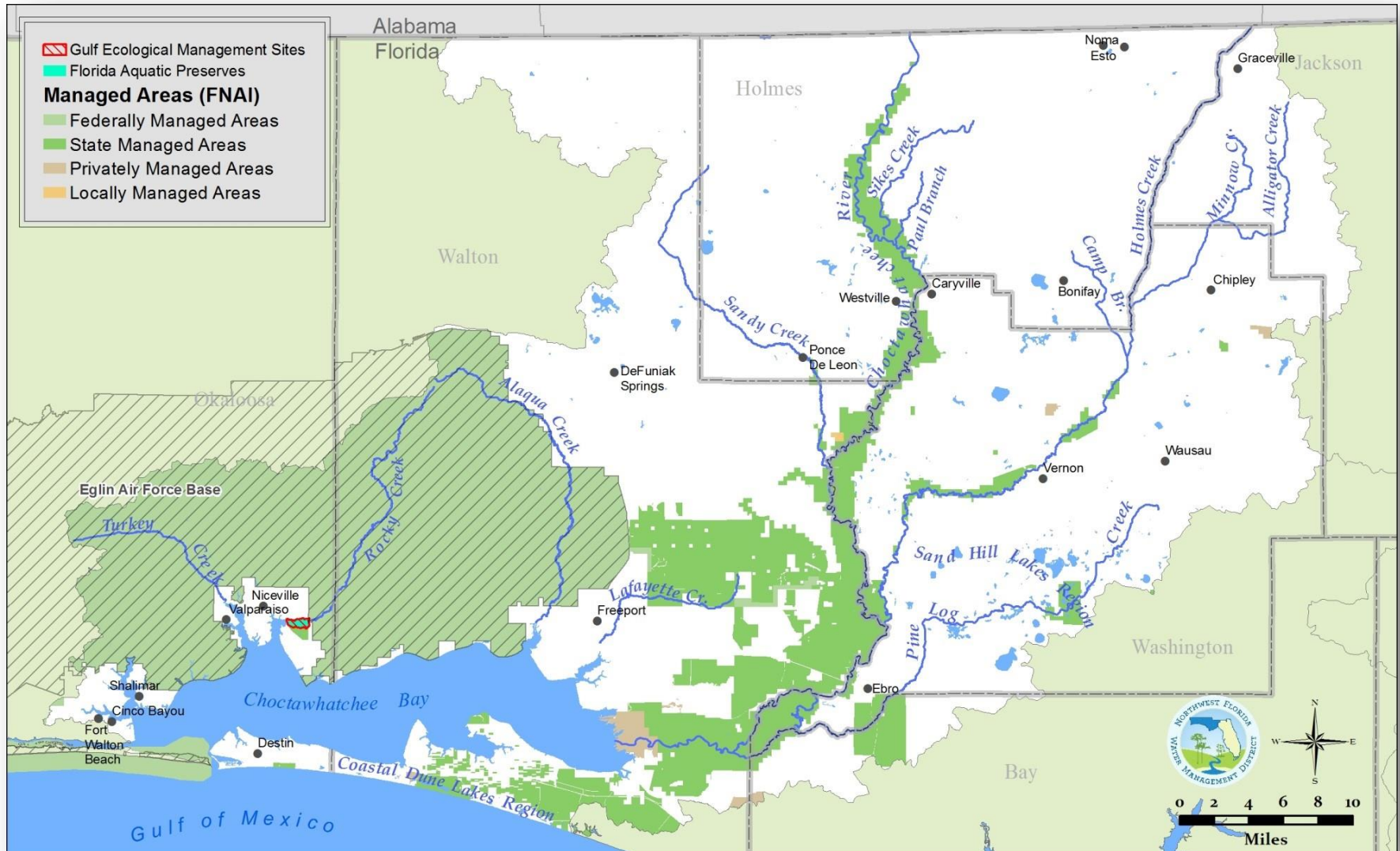
- Over 1,900 acres of seagrasses mapped in 2007
- Important coastal barrier along Santa Rosa Island and Moreno Point
- 17 Coastal dune lakes
- Over 376,000 acres of public conservation lands
- Diverse habitats, including steephead streams, coastal dune lakes, tidal marshes, Floridan aquifer springs, seagrass beds, and oyster reefs



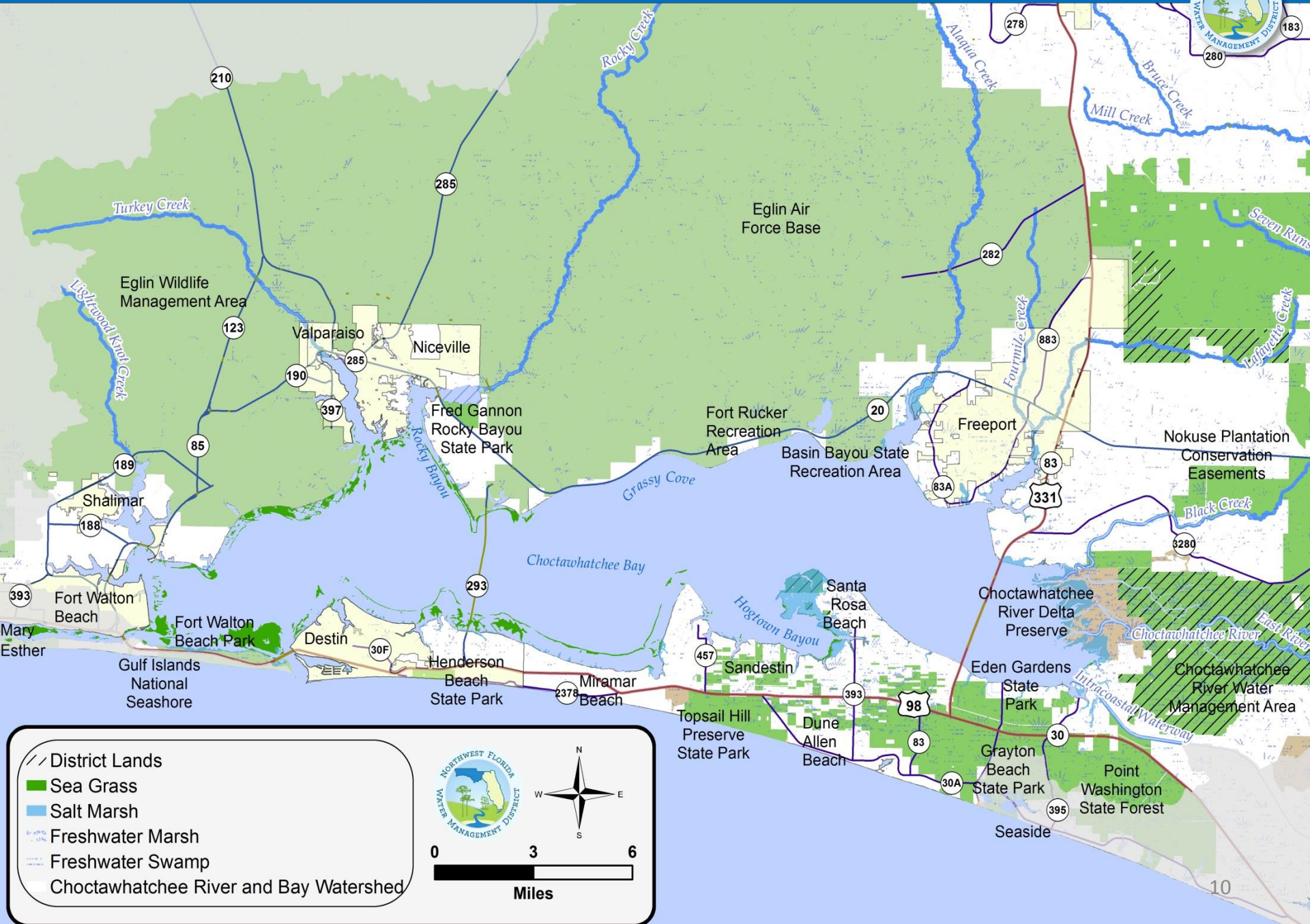




# Choctawhatchee River and Bay Watershed



# NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT





# Watershed Challenges





# Watershed Challenges

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- Water quality
  - Verified impairments for bacteria, nutrients and dissolved oxygen affecting Choctawhatchee Bay; Choctawhatchee River; Holmes, Alaqua, Turkey, and Eagle and Little creeks; Cypress Springs, and public swimming beaches
  - Over 2,000 acres of seagrass losses identified from 1992 to 2007 (FWC SIMM report)





# Watershed Challenges

## Impaired Waters

Bacteria	Nutrients	Dissolved Oxygen
Flat Creek	Cypress Springs	Choctawhatchee Bay
Alaqua Creek	Holmes Creek (lower)	Bass Lake
Eagle Creek	Boggy Bayou	
Choctawhatchee Bay	Rocky Bayou	
Little Creek	Alaqua Bayou	
Mack Bayou	Choctawhatchee Bay	
	Rattlesnake Lake	
	Bass Lake	

Plus an additional five watershed segments each with impairments identified for iron and Gulf beach bacteria



# Watershed Challenges

## Established Total Maximum Daily Loads

Bacteria	Dissolved Oxygen
Choctawhatchee River	Minnow Creek
Alligator Creek	Sikes Creek
Camp Branch	
Minnow Creek	
Sikes Creek	

Plus an additional 26 watershed segments with TMDLs established for Mercury



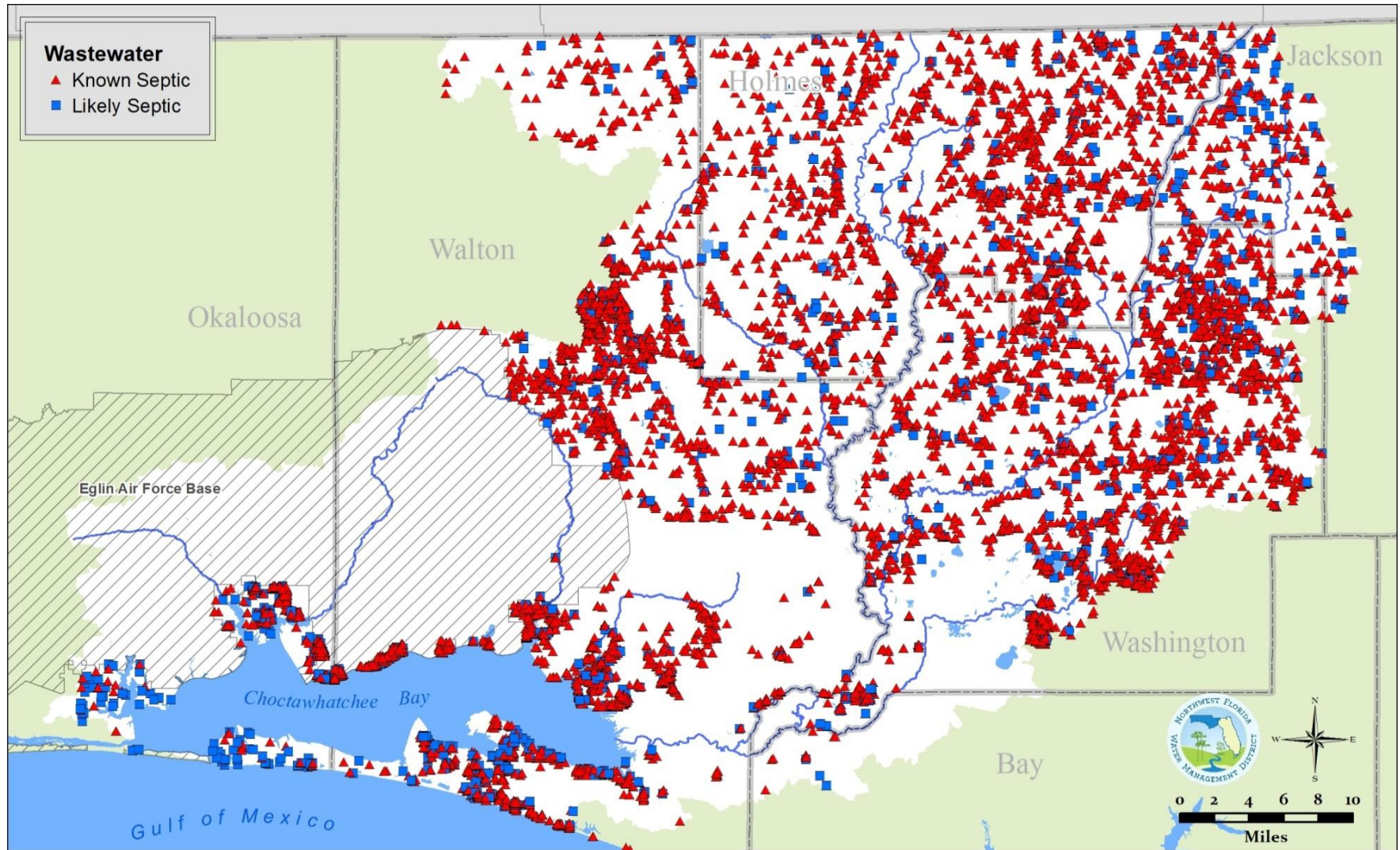
# Watershed Challenges

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- Water quality (continued)
  - Nonpoint source pollution from urban areas, agricultural land uses, and construction sites
  - Sedimentation from unpaved roads, streambank erosion, and other erosion sites
  - Extensive areas of impervious surface, resulting in hydrologic and water quality impacts to tributary streams and receiving waters
  - Domestic wastewater facilities; potential to develop additional water reclamation and reuse
  - Over 33,000 septic systems identified within the Florida portion of the watershed in 2012 (FDOH permit data)



# Watershed Challenges







# Watershed Challenges

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- Habitat quality
  - From 1992 to 2007, estimated seagrass coverage declined from 4,261 acres to less than 2,000 acres.
  - Diminished benthic habitat conditions historically identified in urban bayous.
  - Extensive shoreline hardening and loss of littoral habitat



# **Roadblocks to Seagrass Recovery**

Project Update – Florida Fish and Wildlife  
Research Institute

# Project Planning

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.





# Watershed Specific Priorities and Objectives

Priority Issues	Conceptual Objectives
<b>Point and Nonpoint Source Pollution</b> <ul style="list-style-type: none"><li>• Stormwater runoff</li><li>• Basinwide nonpoint source pollution</li><li>• Pollutant export from septic tanks</li><li>• Potential wastewater treatment and reclamation improvements</li><li>• Impacts to specific waterbodies, including -<ul style="list-style-type: none"><li>• Urban bayous</li><li>• Choctawhatchee River and tributaries (sediments, nutrients)</li><li>• Choctawhatchee Bay (nutrients)</li></ul></li></ul>	<p>Retrofit stormwater infrastructure to improve water quality treatment and reduce hydrologic impacts of landscape development.</p> <p>Sedimentation abatement from unpaved roads and erosion sites</p> <p>Invest in connecting residences and businesses to central sewer</p> <p>Make advanced passive onsite sewage treatment and disposal systems available for areas not practical for central sewer</p> <p>Support wastewater collection and treatment improvements</p> <p>Invest in agricultural and silviculture BMPs; includes cost-share and technical assistance</p>



# Watershed Specific Priorities and Objectives

Priority Issues	Conceptual Objectives
<b>Aquatic and Wetland Habitat</b> <ul style="list-style-type: none"><li>• Sedimentation impacts</li><li>• Submerged aquatic vegetation (SAV) loss</li><li>• Wetland and tidal flat loss and degradation</li><li>• Invasive species</li><li>• Springs protection</li><li>• Protection/restoration of shellfish habitat</li><li>• Protection of sensitive aquatic systems – including coastal dune lakes and steephead streams</li></ul>	<p>Protect, restore, and enhance benthic habitats – SAV, shellfish habitat, tidal flats</p> <p>Restore wetland and floodplain functions</p> <p>Support management efforts to control, eradicate, and minimize the introduction or spread of invasive species</p> <p>Reduce sedimentation and turbidity</p>



# Watershed Specific Priorities and Objectives

Priority Issues	Conceptual Objectives
<b>Coastal Resiliency</b> <ul style="list-style-type: none"><li>• Shoreline destabilization/erosion</li><li>• Opportunities for shoreline habitat and functional restoration</li><li>• Sea level rise</li><li>• Coastal storm impacts</li><li>• Effects of land cover/land use changes</li></ul>	<p>Continue investments in projects to restore and protect shoreline habitats and functions</p> <p>Evaluate and refine adaptation options in response to projected land use changes</p> <p>Identify and implement a proactive approach to incorporating coastal resiliency concepts into planning, infrastructure, and future land uses</p>





# Watershed Specific Priorities and Objectives

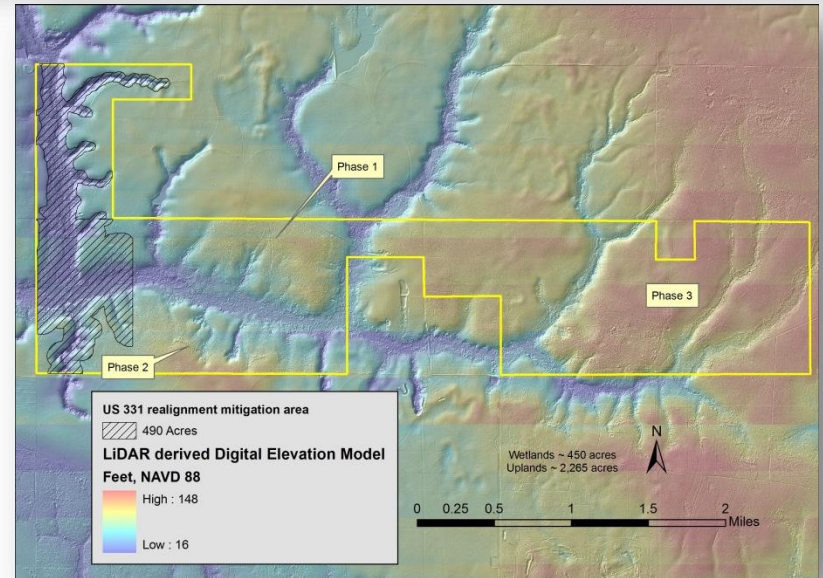
Priority Issues	Conceptual Objectives
<b>Floodplains and Hydrology</b> <ul style="list-style-type: none"><li>• Opportunities for hydrologic and floodplain functional restoration</li><li>• Estuarine riparian buffer loss; protection of tributary riparian systems</li><li>• Sedimentation and physical impacts from unpaved roads, erosion, construction sites, and other sources</li><li>• Hydrologic effects of landscape development</li></ul>	<p>Prioritize and correct hydrologic alterations</p> <p>Identify and address needs for restoration of wetland and floodplain functions</p> <p>Identify and address needs for restoration of vegetated riparian buffers</p> <p>Reduce effective impervious surface area</p> <p>Prevent erosion and sedimentation from construction and agricultural and silvicultural operations</p>



# Watershed Specific Priorities and Objectives

Strategic Priorities	Conceptual Objectives
<b>Public Awareness and Education</b> <ul style="list-style-type: none"><li>• Need for expanded community engagement opportunities</li><li>• Need for opportunities for public engagement with resource management decision-making</li><li>• Support and expand public awareness of basis for management programs and projects</li><li>• Litter and debris entering inland and coastal waters</li></ul>	<p>Expand watershed resource awareness and understanding through innovative, hands-on community-based restoration.</p> <p>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.</p> <p>Reduce litter and debris entering waterways.</p>

# Implementation





# An Array of Funding Resources

<b>RESTORE Bucket 1</b> County MYIPs	<b>NFWF</b> Gulf Environmental Benefit Fund	<b>Florida Legislature</b>
<b>RESTORE Bucket 2</b> Gulf Coast Ecosystem Restoration Council	<b>Florida Springs Restoration Funding</b>	<b>US EPA</b> Section 319 Grants
<b>RESTORE Bucket 3</b> Florida Gulf Consortium	<b>NRDA</b> Natural Resource Damage Assessment	<b>Triumph Gulf Coast Inc.</b>
<b>RESTORE Bucket 4</b> NOAA Science Program	<b>Florida Land Acquisition Trust Fund</b>	<b>TMDL Water Quality Restoration Grants</b>
<b>RESTORE Bucket 5</b> FL Inst. of Oceanography	<b>Clean Water State Revolving Fund</b>	<b>FL Coastal Mgt Program</b>





# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
Urban Stormwater Retrofits	<ul style="list-style-type: none"> <li>• Water quality improvement</li> <li>• Flood protection</li> <li>• Aquatic habitat restoration and protection</li> </ul> <p><i>Project examples:</i></p> <p><i>Stormwater Master Plan Implementation: Niceville, Destin, Walton and Okaloosa counties, Fort Walton Beach</i></p>	<ul style="list-style-type: none"> <li>• Local governments</li> </ul>
Monitoring Program Development and Enhancement	<ul style="list-style-type: none"> <li>• Support targeted monitoring program</li> <li>• Identify trends</li> <li>• Support adaptive management</li> </ul> <p><i>Furthering efforts of Choctawhatchee Basin Alliance, Okaloosa County, FDEP, and others</i></p>	<ul style="list-style-type: none"> <li>• Choctawhatchee Basin Alliance</li> <li>• Local governments</li> <li>• Estuary Program</li> <li>• FDEP</li> </ul>



# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
<b>Agricultural Best Management Practices (BMPs)</b>	<ul style="list-style-type: none"> <li>Water quality protection</li> <li>Water use efficiency</li> </ul> <p><i>Supporting and building upon technical assistance and cost share initiatives.</i></p> <p><i>Includes Choctawhatchee River and Bay Agricultural Water Quality and Conservation Cost Share Initiative – Florida Department of Agricultural and Consumer Services</i></p>	<ul style="list-style-type: none"> <li>FDACS</li> <li>NRCS</li> <li>Private producers</li> <li>NWFWMD</li> </ul>
<b>Silviculture BMPs</b>	<ul style="list-style-type: none"> <li>Water quality protection</li> <li>Habitat protection</li> </ul> <p><i>Building on Florida's Silviculture BMP program (FDACS); cooperative effort between public agencies and private landowners</i></p>	<ul style="list-style-type: none"> <li>FDACS</li> <li>Private landowners</li> <li>Public landowners</li> </ul>
<b>Basinwide Sedimentation Abatement</b>	<ul style="list-style-type: none"> <li>Watershed assessment of impacts from unpaved roads and other erosion sites</li> <li>Prioritize sites</li> <li>Support implementation</li> </ul>	<ul style="list-style-type: none"> <li>Local governments</li> <li>Estuary Program</li> </ul>



# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
Hydrologic Restoration	<ul style="list-style-type: none"><li>• Restoration of natural wetland, floodplain, and estuarine hydrology</li><li>• Stream channel restoration</li><li>• Enhance resiliency through biodiversity and natural adaptation enhancement</li></ul> <p><i>Coastal Dune Lakes hydrologic restoration and reconnection</i></p>	<ul style="list-style-type: none"><li>• State and federal resource agencies</li><li>• Local governments</li><li>• Estuary Program</li></ul>
Wetland Restoration	<ul style="list-style-type: none"><li>• Restore wetland functions: fish and wildlife habitat, floodwater storage, discharge regulation, water quality protection, aquifer recharge, and more</li><li>• Enhance resiliency through biodiversity and natural adaptation enhancement</li></ul>	<ul style="list-style-type: none"><li>• Local governments</li><li>• Estuary Program</li><li>• State and federal resource agencies</li></ul>



# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
Subbasin Plans	<ul style="list-style-type: none"><li>Comprehensive restoration plans for targeted basins</li></ul> <p><i>Urban bayous</i></p> <p><i>Holmes Creek</i></p> <p><i>More</i></p>	<ul style="list-style-type: none"><li>Local governments</li><li>Estuary Program</li></ul>
Seagrass Restoration	<ul style="list-style-type: none"><li>Targeted restoration in areas where water quality and other supporting site conditions have been achieved</li></ul>	<ul style="list-style-type: none"><li>Estuary Program</li><li>Florida FWRI</li><li>Local governments</li></ul>
Estuarine Habitat Restoration	<ul style="list-style-type: none"><li>Seagrass restoration</li><li>Oyster reef establishment</li></ul>	<ul style="list-style-type: none"><li>Estuary Program</li><li>CBA</li><li>Florida FWRI</li></ul>





# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
Water Reclamation and Reuse	<ul style="list-style-type: none"> <li>• Protect water quality through improved treatment and reduced discharges</li> <li>• Water conservation/demand management</li> <li>• Conserve potable water sources</li> </ul>	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• Local governments</li> </ul>
OSTDS to Central Sewer Connections	<ul style="list-style-type: none"> <li>• Connect areas served by OSTDS to central sewer systems</li> <li>• WWTF/WRF Improvements</li> </ul> <p><i>Rocky Bayou Estates Sanitary Sewer Extension</i></p> <p><i>Lake Pippen Area Sanitary Sewer Extension</i></p>	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• Local governments</li> <li>• FDOH</li> <li>• FDEP</li> </ul>
Advanced Technology OSTDS	<ul style="list-style-type: none"> <li>• Implement affordable, new technology passive OSTDS in areas where connection to central sewer is not cost-effective</li> </ul> <p><i>Build upon and adapt efforts underway in other regions</i></p>	<ul style="list-style-type: none"> <li>• Utilities</li> <li>• Local governments</li> </ul>



# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
Riparian Buffer Zones	<ul style="list-style-type: none"> <li>Water quality protection</li> <li>Shoreline Stability</li> <li>Habitat</li> <li>Enhance resiliency through biodiversity and natural adaptation enhancement</li> </ul>	<ul style="list-style-type: none"> <li>Private landowners</li> <li>Local governments</li> <li>Estuary Program</li> <li>CBA</li> </ul>
Living Shorelines	<ul style="list-style-type: none"> <li>Shoreline habitat restoration</li> <li>Implementation of alternative method of shoreline protection that enriches littoral and aquatic habitat and productivity</li> <li>Enhance resiliency through biodiversity and natural adaptation enhancement</li> </ul> <p><i>North Choctawhatchee Bay shoreline restoration</i></p> <p><i>Living shorelines alternatives for private landowners</i></p>	<ul style="list-style-type: none"> <li>Estuary Program</li> <li>CBA</li> <li>Local governments</li> <li>Eglin AFB</li> <li>State and federal resource agencies</li> </ul>
Interstate Coordination	<ul style="list-style-type: none"> <li>Coordination of priority watershed management efforts across state lines</li> </ul>	<ul style="list-style-type: none"> <li>Estuary program</li> </ul>



# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
Landscape Scale Headwaters and Longleaf Pine Ecosystem Protection and Restoration	<ul style="list-style-type: none"><li>• Achieve perpetual working forest conservation easements</li><li>• Restore historic longleaf pine ecosystem</li></ul>	<ul style="list-style-type: none"><li>• FDACS</li><li>• Private landowners</li><li>• Gulf Coastal Plain Ecosystem Partnership</li></ul>
Evaluation and Planning for Strategic Land Acquisition and Conservation	<ul style="list-style-type: none"><li>• Water resource protection for water quality, floodplain, and aquatic and wetland habitat protection</li><li>• Multiple specific projects proposed through Community-based Watershed Plans</li></ul>	<ul style="list-style-type: none"><li>• Local governments</li><li>• Private non-profit initiatives</li><li>• Estuary Program</li><li>• FDEP</li></ul>



# Conceptual Projects and Management Practices

Project/Practice	Objectives	Lead Entities
<b>Watershed Stewardship Initiatives</b>	Build citizen engagement opportunity and capacity, including: <ul style="list-style-type: none"> <li>• Citizen science</li> <li>• Monitoring</li> <li>• Training and outreach</li> <li>• Habitat enhancement; oyster gardening</li> <li>• Urban and Marina BMPs</li> </ul> <i>Grasses in Classes</i> <i>Shoreline restoration</i> <i>Offer Your Shell to Enhance Restoration (OYSTER)</i>	<ul style="list-style-type: none"> <li>• Estuary Program</li> <li>• Choctawhatchee Basin Alliance</li> <li>• IFAS Extension/Sea Grant</li> <li>• Local Governments</li> </ul>
<b>Hydrodynamic Model</b>	Develop application for hydrodynamic, circulation, and water quality analysis <ul style="list-style-type: none"> <li>• Enable applied planning of management actions and results/outcome forecasting</li> </ul>	<ul style="list-style-type: none"> <li>• Choctawhatchee Basin Alliance</li> </ul>



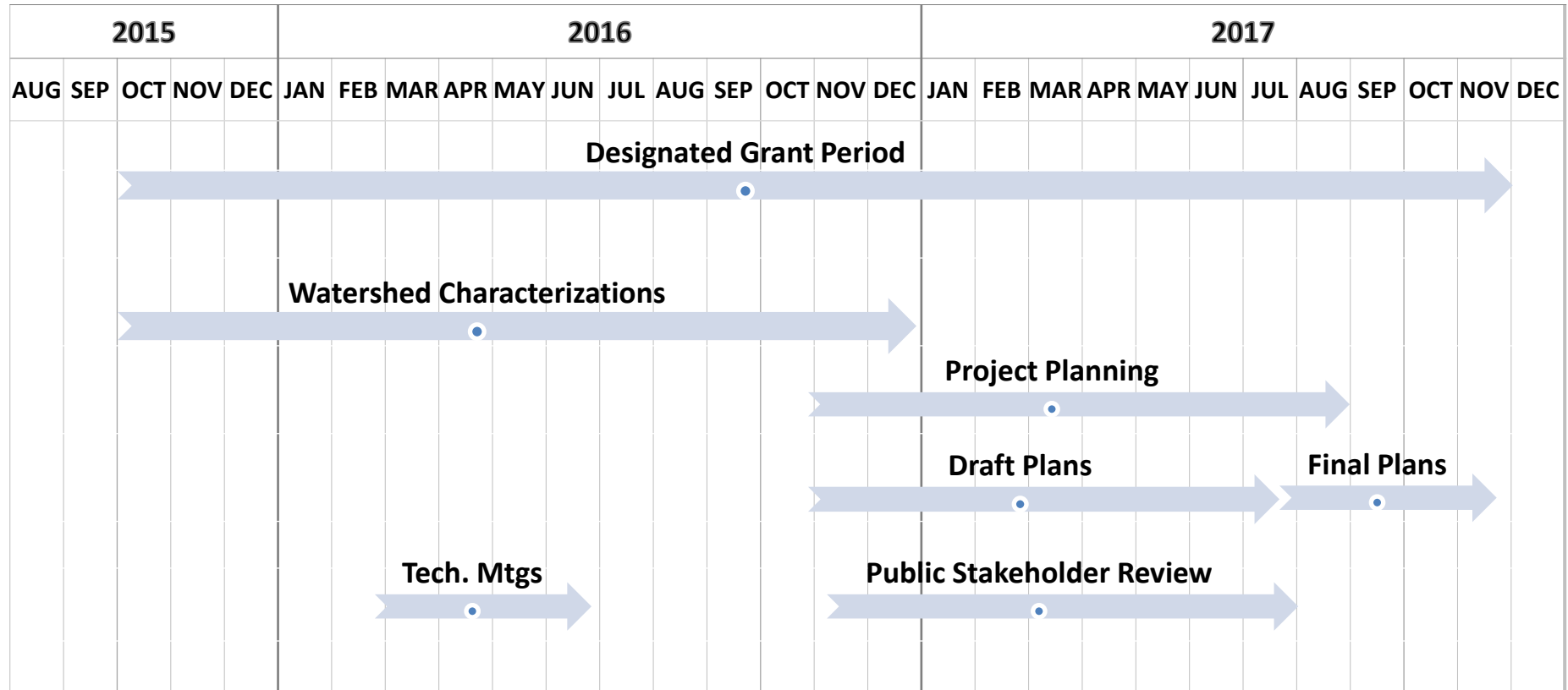


# Criteria for Project Planning and Evaluation

- Infrastructure projects (stormwater and wastewater)
  - Projects should have responsible parties that will implement, own, operate, and maintain the facilities
  - Responsible parties should have dedicated funding source for operation and maintenance
- Restoration and habitat enhancement
  - Completed project should be naturally self-sustaining; not requiring frequent human intervention
  - Restoration should reflect ecosystems or habitats that are naturally supported in the watershed and physical environment
  - Completed restoration sites should be adaptable to natural change and variability – short-term and long-term



# SWIM Plan Updates – Schedule





# Thank you!

## Choctawhatchee River and Bay Watershed Resource Characterization:

<http://www.nwfwater.com/Water-Resources/SWIM/SWIM-Plan-Updates>

Please provide comments, recommendations, and questions to:  
[SWIM@nwfwater.com](mailto:SWIM@nwfwater.com)

Comments requested by March 10, 2017

**For more information:**

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