

SURFACE WATER IMPROVEMENT AND MANAGEMENT PROGRAM

PRIORITY LIST

FOR THE

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT



Prepared under the auspices of Chapter 373, Florida Statutes

Program Development Series 06-02

January, 2006

NORTHWEST FLORIDA WATER MANAGEMENT DISTRICT

GOVERNING BOARD

Wayne Bodie, Chair
DeFuniak Springs

Joyce Estes, Vice Chair
Eastpoint

Paul Bradshaw, Secretary/Treasurer
Havana

L.E. McMullian, Jr.
Sneads

Sharon T. Gaskin
Wewahitchka

Michael Joyner
Tallahassee

Hulan S. Carter
Chipley

Sharon Pinkerton
Pensacola

Stephanie H. Bloyd
Panama City Beach

Douglas E. Barr, Executive Director

For additional information, write or call:

Northwest Florida Water Management District
81 Water Management Drive
Havana, Florida 32333
(850) 539-5999; Suncom 793-5999
FAX # (850) 539-2777; Suncom 793-2777
<http://www.state.fl.us/nwfwmd/>

TABLE OF CONTENTS

Introduction	1
NWFWMD SWIM Priority List Background	1
SWIM Plan Development and Implementation	4
Updated NWFWMD SWIM Priority List.....	4
Apalachicola River and Bay Watershed.....	6
Pensacola Bay Watershed.....	8
Choctawhatchee River and Bay Watershed	10
St. Andrew Bay Watershed.....	12
St. Marks River and Apalachee Bay Watershed.....	16
Ochlockonee River and Bay Watershed	14
Perdido River and bay Watershed	18
References.....	20

LIST OF TABLES

Table 1. Initial Waterbodies Identified for Ranking (1988).....	2
Table 2. 1988 NWFWMD SWIM Priority List.....	2
Table 3. 1993 NWFWMD SWIM Priority List.....	3
Table 4. Approved NWFWMD SWIM Plans	4
Table 5. 2006 NWFWMD SWIM Priority List.....	5
Table 6. Apalachicola River and Bay System Characteristics.....	6
Table 7. Pensacola Bay System Characteristics.....	8
Table 8. Choctawhatchee River and Bay System Characteristics	14
Table 9. St. Andrew Bay Watershed Characteristics.....	10
Table 10. St. Marks River/Apalachee Bay Watershed Characteristics.....	12
Table 11. Ochlockonee River and Bay Watershed Characteristics.....	16
Table 12. Perdido River and Bay Watershed Characteristics	18

LIST OF FIGURES

Figure 1. Apalachicola River and Bay System	7
Figure 2. Pensacola Bay System	9
Figure 3. Choctawhatchee River and Bay Watershed.....	11
Figure 4. St. Andrew Bay Watershed	15
Figure 5. St. Marks River/Apalachee Bay Watershed	13
Figure 6. Ochlockonee River and Bay Watershed	17
Figure 7. Perdido River and Bay Watershed.....	19

Introduction

The purpose of this report is to provide a comprehensive review and update of the Northwest Florida Water Management District's Surface Water Improvement and Management (SWIM) priority list. The Florida Legislature passed the Surface Water Improvement and Management Act in 1987. In so doing, the Legislature recognized that the surface waters of the state perform important functions, including providing habitat for native plants, fish, and wildlife; providing safe drinking water to the growing population of the state; providing an aesthetic and recreational resource; and attracting visitors and accruing other economic benefits. The Legislature also recognized, however, that quality of many of the state's surface waters had become degraded or were in danger of becoming degraded. The Legislature further recognized that natural systems associated with many of these surface waters had become so altered as to diminish their ability to provide their valued functions. In considering these challenges, the Legislature concluded that such problems could be corrected and prevented through cooperative efforts on the part of water management districts, state agencies, and local governments.

As specified in section 373.453, Florida Statutes (F.S.), each water management district shall maintain a list that prioritizes waterbodies of regional or statewide significance. This list is to be developed in cooperation with the Florida Department of Environmental Protection (FDEP), the Florida Department of Agriculture and Consumer Services (FDACS), the Florida Department of Community Affairs (FDCA), the Florida Fish and Wildlife Conservation Commission (FFWCC), local governments, and others, and it must be reviewed and updated every five years.

The Northwest Florida Water Management District adopted its initial SWIM priority list in April 1988 and updated it in 1993. Additional revisions to the list were made in 1996 in consultation with FDEP. In 2001, the SWIM priority list was reviewed by District staff, but no changes were recommended.

NWFWMD SWIM Priority List Background

The methodology for developing the initial priority list in 1988 included a limited basin-approach as described in the 1993 Priority List. The process included identifying waterbodies of regional and statewide significance and ranking them according to criteria that included waterbody condition, functional value, and public interest and commitment. The initial set of waterbodies identified for consideration is listed in Table 1, and the final approved priority list is provided by Table 2.

Table 1. Initial Waterbodies Identified for Ranking (1988)

Alligator Harbor	Lake Seminole/Chattahoochee River
Apalachee Bay	Lower Ochlockonee River/Ochlockonee Bay
Apalachicola Bay/St. George Sound	Merritts Mill Pond
Apalachicola River	Pensacola Bay Area
Blackwater River	Perdido Bay
Chipola River	Perdido River
Choctawhatchee Bay	St. Andrew Bay
Choctawhatchee River	St. Joseph Bay
Deer Point Lake	St. Marks River
Escambia River	Sand Hill Lakes
Lake Iamonia	Santa Rosa Sound
Lake Jackson	Shoal River
Lake Lafayette	Upper Ochlockonee River/Lake Talquin
Lake Miccosukee	Wakulla River
Lake Munson	Yellow River

Table 2. 1988 NFWMD SWIM Priority List

Rank	Waterbody	Major Activity
1	Apalachicola River	Preservation
2	Apalachicola Bay/St. George Sound	Preservation
3	Lake Jackson	Preservation
4	Deer Point Lake	Preservation
5	Pensacola Bay Area	Preservation
6	St. Marks River	Preservation
7	Choctawhatchee Bay	Preservation
8	Choctawhatchee River	Preservation
9	Santa Rosa Sound	Preservation
10	St. Joseph Bay	Preservation
11	Chipola River	Preservation
12	St. Andrew Bay	Preservation
13	Escambia River	Preservation
14	Lake Munson	Preservation
15	Merritts Mill Pond	Preservation
16	Upper Ochlockonee River/Lake Talquin	Preservation
17	Lake Iamonia	Preservation
18	Blackwater River	Preservation
19	Lake Lafayette	Preservation
20	Shoal River	Preservation
21	Yellow River	Preservation
22	Lower Ochlockonee River/Ochlockonee Bay	Preservation
23	Lake Miccosukee	Preservation
24	Sand Hill Lakes	Preservation

The SWIM priority list was updated in 1993. In developing the 1993 update, District staff applied the same methodology used for the initial list. The 1993 list, however, more completely applied a watershed approach (Snowden 1993). The 1993 SWIM priority list is provided by Table 3.

Rank	Waterbody	Major Activity
1	Apalachicola River and Bay System (including Lake Seminole, the Chipola River, St. George Sound, and Merritts Mill Pond)	Preservation
2	Lake Jackson	Preservation
3	Deer Point Lake	Preservation
4	Pensacola Bay System (including the Escambia, Blackwater, Yellow, and Shoal rivers)	Preservation
5	St. Marks River (including Wakulla River and Apalachee Bay)	Preservation
6	Choctawhatchee River and Bay	Preservation
7	Santa Rosa Sound	Preservation
8	St. Joseph Bay	Preservation
9	St. Andrew Bay	Preservation
10	Lake Munson	Preservation
11	Ochlockonee River and Bay	Preservation
12	Lake Iamonia	Preservation
13	Lake Lafayette	Preservation
14	Lake Miccosukee	Preservation
15	Sand Hill Lakes	Preservation

District and FDEP staff in 1996 agreed to include western and central Santa Rosa Sound in the Pensacola Bay System SWIM program. The eastern portion of Santa Rosa Sound is included in the Choctawhatchee River and Bay SWIM program (roughly from the city limits of Fort Walton Beach eastward to Choctawhatchee Bay).

SWIM Plan Development and Implementation

Since 1988, SWIM plans have been approved for seven waterbodies (Table 4).

Table 4. Approved NFWMD SWIM Plans
Deer Point Lake (Superseded by St. Andrew Bay SWIM Plan)
Apalachicola River and Bay
Lake Jackson
Pensacola Bay
St. Marks River/Apalachee Bay
St. Andrew Bay (Including Deer Point Lake Reservoir & Sand Hill Lakes)
Choctawhatchee River and Bay

All of these plans, with the exception of Deer Point Lake (which was subsequently incorporated within the St. Andrew Bay Watershed SWIM plan) are in the implementation stage.

Updated NFWMD SWIM Priority List

The 1993 SWIM priority list and original ranking provided the basis for the current update. To more completely apply a comprehensive watershed approach, the NFWMD designated priority list now identifies waterbodies based exclusively on major riverine-estuarine watersheds. In so doing, sub-watersheds are aligned within their respective river or bay systems. This results in identified SWIM waterbodies giving full consideration that watershed management is the recognized approach for their improvement and management. Additionally, the approach facilitates efficient SWIM plan development and implementation and supports associated programs, such as the Florida Forever program, regional wetland mitigation, and FDEP's basin approach for watershed assessment and management.

The updated SWIM priority list is provided in Table 5. In addition to respective watersheds, the list identifies major tributaries and waterbodies. All other tributaries, sub-embayments, and contributing watershed areas are also considered as being part of the listed priority waterbodies.

The SWIM priority list is intended to allow for maximum flexibility to target specific programs, projects, and activities to all waterbodies and watersheds. Annual budgeting and workplan development allows the District to target specific SWIM tasks and resources for implementation, contingent on the appropriation of adequate funds by the Florida Legislature.

Table 5. NFWMD SWIM Priority List

Apalachicola River and Bay Watershed	
Apalachicola River	Apalachicola Bay
Lake Seminole	
Chipola River	
New River	
Pensacola Bay Watershed	
Escambia River	Escambia Bay
Blackwater River	East Bay
Yellow River	Blackwater Bay
Shoal River	Western and Central Santa Rosa Sound
East Bay River	Big Lagoon
Pensacola Bay	
Choctawhatchee River and Bay Watershed	
Choctawhatchee River	Eastern Santa Rosa Sound
Holmes Creek	Choctawhatchee Bay
St. Andrew Bay Watershed	
St. Andrew Bay	St. Joseph Bay
North Bay	Econfina Creek
West Bay	
East Bay	
Deer Point Lake Reservoir	
St. Marks River and Apalachee Bay Watershed	
St. Marks River	Lake Lafayette
Wakulla River & Wakulla Springs	Lake Munson
Lake Miccosukee	Apalachee Bay
Ochlockonee River and Bay Watershed	
Ochlockonee Bay	Lake Jackson
Ochlockonee River	Lake Iamonia
Perdido River and Bay Watershed	
Perdido River	Perdido Bay

Land acquisition and coordination with Alabama are primary activities and resource priorities considered to be preservation and restoration. Thus, SWIM and associated program activities will continue to encompass both preservation and restoration components.

The Florida Water Protection and Sustainability Program, created by the 2005 Florida Legislature, provides impetus to integrate SWIM activities with other District responsibilities by providing a funding mechanism for SWIM plan implementation. This important legislation allows the District to further plan for SWIM program implementation with an additional source of funding to help accomplish the original goals of the program.

General descriptions and watershed maps of the priority watersheds are provided on the following pages.

Apalachicola River and Bay Watershed

The Apalachicola River and Bay Watershed is a major interstate watershed. The system (Figure 1) is comprised of the Apalachicola River and Bay watershed, including the Chipola River watershed, and is a component of the Apalachicola, Chattahoochee, and Flint (ACF) River basin.

The ACF Basin drains 21,794 square miles of lands within Alabama, Georgia and Florida. The river is 21st in magnitude of flow volume among the rivers in the coterminous United States, the 5th largest entering the Gulf of Mexico, and the largest in Florida. As described in the 1996 SWIM Plan for the Apalachicola River and Bay, the hydrologic regime and water quality of the Chattahoochee and Flint rivers define the physical and biological characteristics of the Apalachicola River and floodplain, which plays a key role in defining the salinity regime and ecology of the Apalachicola Bay. The estuary, in turn, is significant to the character and productivity of the northeastern Gulf of Mexico.

The ACF basin is one of the southeastern United States' most diverse, productive and economically important natural systems. Its uniqueness and diversity is related to its origin in the southern Appalachian Mountains and the adjacent Piedmont, which has contributed to a diverse physical environment and connectivity of regional biota. The forested floodplain of the Apalachicola River is the largest in Florida and covers approximately 173 square miles of floodplain. The Apalachicola watershed also has the highest species density of amphibians and reptiles in North America, north of Mexico, and the greatest number of freshwater fish species in Florida. The estuary provides an especially significant commercial fishery. It is commonly reported as providing over 90% of the state's commercial oyster harvest.

The Apalachicola River and Bay System has been recognized as a resource of state, federal, and international importance. The bay has been designated an Outstanding Florida Water, a State Aquatic Preserve, and an International Biosphere Reserve. It includes the Apalachicola Bay National Estuarine Research Reserve and the St. Vincent National Wildlife Refuge. Additionally, state and federal agencies, as well as the NFWFMD, have made extensive investments in acquiring and protecting lands along both the river and the bay and in implementing retrofit and restoration activities.

Table 6. Apalachicola River and Bay System Characteristics

Florida Watershed Area:	3,270 square miles
Interstate Watershed Area:	21,794 square miles
Florida Counties:	Jackson, Gadsden, Calhoun, Liberty, Gulf, Franklin
Major Cities:	Apalachicola, Blountstown, Chattahoochee, Marianna, Carrabelle
Principle Land Uses:	Forestry, agriculture
Florida Population 2004 (total county est.):	143,500
Outstanding Florida Waters:	Apalachicola River, Apalachicola Bay, Chipola River Apalachicola National Estuarine Research Reserve Apalachicola Bay State Aquatic Preserve St. Vincent National Wildlife Refuge Alligator Harbor Aquatic Preserve State Parks: St. George Island, Three Rivers, Torreya, Florida Caverns

Pensacola Bay Watershed

The Pensacola Bay system watershed (Figure 2) covers nearly 7,000 square miles. About one-third of the overall watershed is within Florida. The watershed includes three major river systems, the Escambia, Blackwater, and Yellow. These rivers discharge into a 144-square mile estuary that includes Escambia Bay, Pensacola Bay, Blackwater Bay, East Bay, and Santa Rosa Sound. Supported habitats within the watershed include alluvial rivers, tributaries, floodplain forests, diverse wetlands, and seagrasses.

The river and bay system includes an array of interrelated ecological systems and habitats, including pitcher plant bogs, steephead streams, salt marshes, and bottomland hardwood forests. Extensive public landholdings, including Blackwater River State Forest, District lands along the Escambia River floodplain, Conecuh National Forest, and Eglin Air Force Base, help protect and manage water quality, flows, and habitat along the principle tributary rivers and streams.

Water quality is the major issue facing the watershed, due to long-term pollution problems from point and nonpoint sources within the basin in both Alabama and Florida. The most intractable and chronic water and sediment quality problems occur in the urban areas in and around Pensacola. Wetlands and aquatic habitats have been impacted locally and regionally by incremental conversion, fragmentation, and secondary impacts. Water quality management initiatives taken to improve the river and bay system include stormwater retrofit projects, point source abatement, and advanced treatment and disposal technologies. According to the 1997 SWIM Plan for the Pensacola Bay Watershed, the major watershed and resource management issues include water and sediment quality in bays and bayous and declining habitat quality. Intergovernmental and interagency coordination is also noted as an essential component of plan implementation.

Table 7. Pensacola Bay Watershed Characteristics

Florida Watershed Area:	2,300 Square miles
Interstate Watershed Area:	7,000 Square miles
Florida Counties:	Escambia, Santa Rosa, Okaloosa, Walton
Major Cities:	Pensacola, Milton, Crestview, Gulf Breeze
Principle Land Uses:	Urban, agricultural, and forestry
Florida Population 2004 (total county est.):	677,300
Outstanding Florida Waters:	Yellow River Marsh Aquatic Preserve Blackwater River Shoal River Blackwater River State Park Escambia Bay Bluffs Gulf Islands National Seashore Fort Pickens State Park Aquatic Preserve Big Lagoon State Recreation Area Milton to Whiting Field CARL area

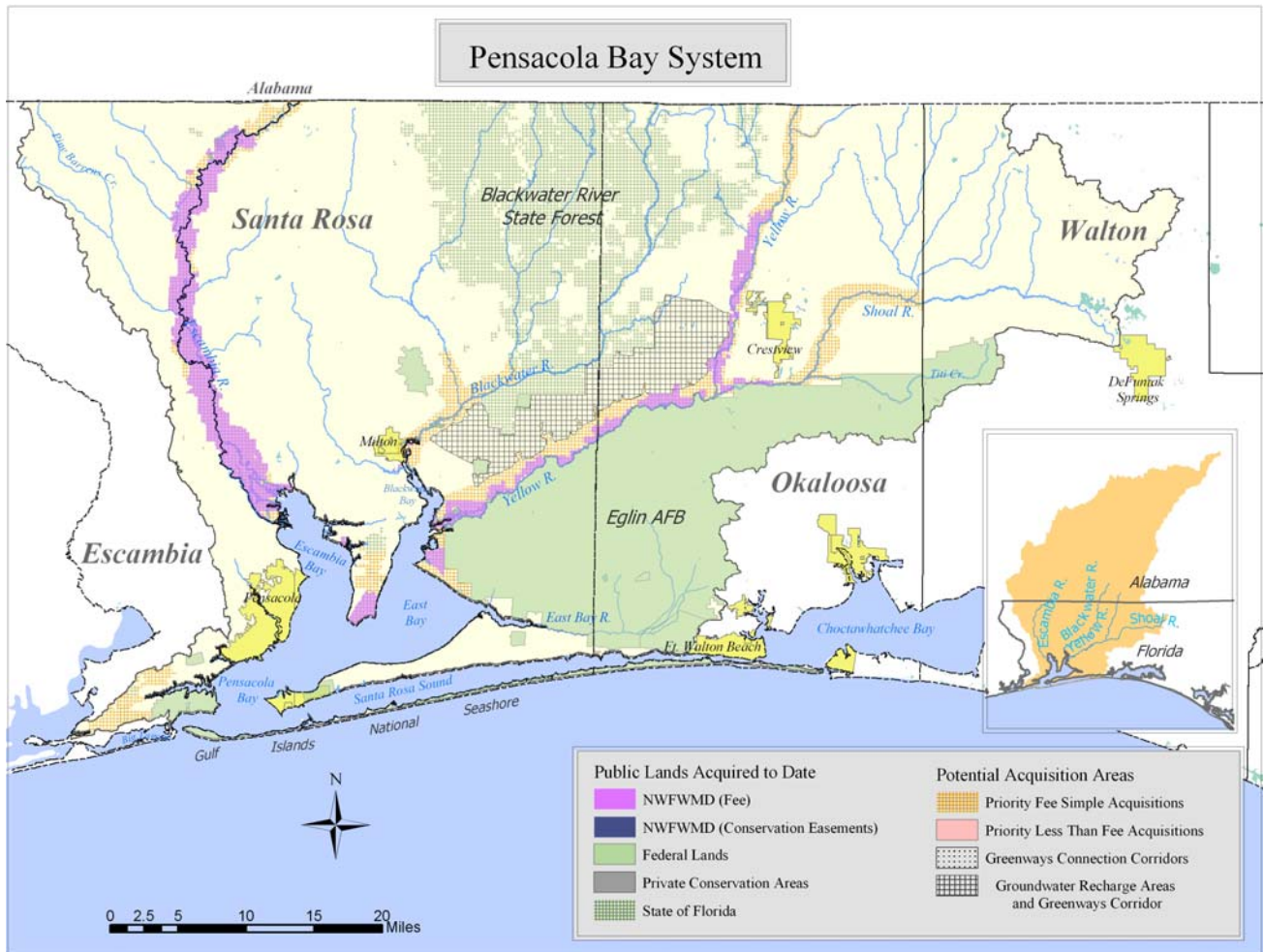


Figure 2. Pensacola Bay System Watershed

Choctawhatchee River and Bay Watershed

The Choctawhatchee River and Bay watershed covers about 5,347 square miles. About 42 percent of this is within Florida, and the remainder is in Alabama. Major tributaries of the river include the Pea and Little Choctawhatchee rivers in Alabama, as well as Holmes, Wrights, Bruce, and Pine Log creeks in Florida. Direct tributaries of the bay include Alaqua, Rocky, Black, and Turkey creeks. The watershed also includes a portion of the Sand Hill Lakes in Washington County, including a recharge area for Floridan Aquifer springs discharging into Holmes Creek. The bay has one direct opening to the Gulf of Mexico at East Pass, adjacent to the city of Destin, and joins with Santa Rosa Sound to the west and the Intracoastal Waterway to the east.

As described in the 1996 Choctawhatchee River and Bay SWIM plan, the Choctawhatchee River and Bay watershed supports a wide array of aquatic and wetland resources and provides numerous benefits for the human community. Among the environmental resources are a variety of aquatic and wetland habitats, extensive forests, Floridan Aquifer springs, steephead streams, and many species of flora and fauna. Human benefits provided include commercial and recreational fisheries, marine transportation, military uses, outdoor recreation, tourism, aesthetic qualities, and economic benefits associated with all of these.

While the Choctawhatchee River and Bay watershed continues to support outstanding resources, it has also experienced many of the impacts that are common to Florida estuaries. These include urban stormwater runoff and other nonpoint sources of pollution, widespread sedimentation, domestic and industrial wastewater discharges, and habitat loss and degradation. Cumulatively, these impacts have degraded the productivity of the river and bay system and diminished the benefits it provides.

Table 8. Choctawhatchee River and Bay Watershed Characteristics

Florida Watershed Area:	2,228 Square Miles
Interstate Watershed Area:	5,347 Square Miles
Florida Counties:	Okaloosa, Walton, Holmes, Washington, Jackson
Major Cities:	Fort Walton Beach, Destin, Bonifay, Niceville, Chipley
Principle Land Uses:	Agriculture, forestry, and urban
Florida Population 2004 (total county est.):	326,600
Outstanding Florida Waters:	Choctawhatchee River State Parks: Falling Waters, Ponce de Leon Springs, Eden Gardens, Topsail Hill, Rocky Bayou, Henderson Beach Point Washington CARL program area Rocky Bayou Aquatic Preserve

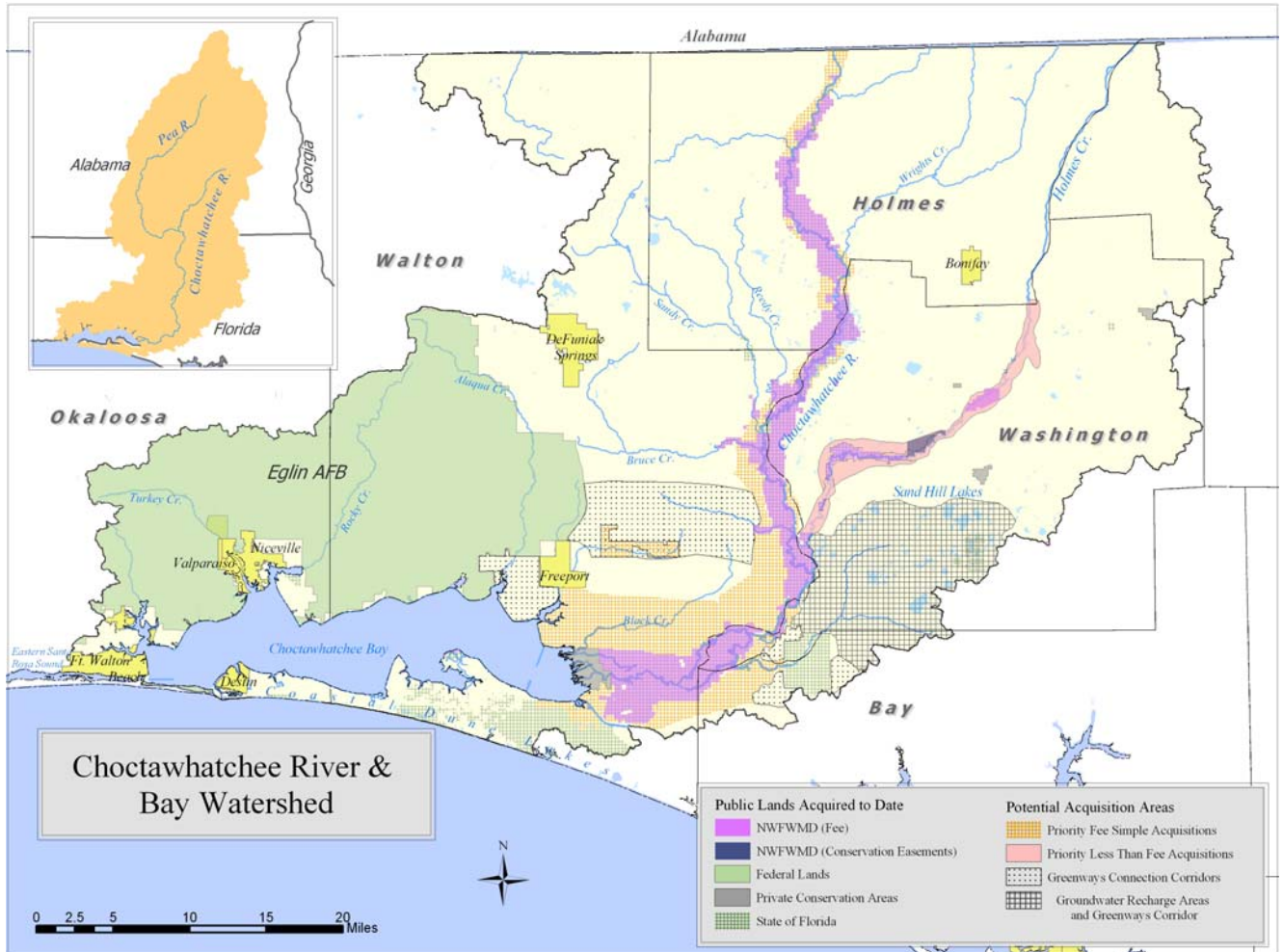


Figure 3. Choctawhatchee River and Bay Watershed

St. Andrew Bay Watershed

The St. Andrew Bay watershed covers about 1,170 square miles and is the only major estuarine drainage basin entirely within the NFWMD. Spring-fed Econfina Creek is the main stream feeding the estuarine system of the bay, through the Deer Point Lake Reservoir. Created by an impoundment across North Bay in 1961, the reservoir retains flow from Econfina Creek, Bear Creek, Bayou George and Cedar Creek and serves as the water supply source for Panama City and much of the outlying urbanized area. The importance of water quality protection has led to the District's acquisition of a large portion of the creek's watershed and interior recharge areas. One of the original SWIM priority waterbodies for the District, the Deer Point Lake SWIM program is now incorporated within the St. Andrew Bay Watershed SWIM Plan.

The 2000 SWIM Plan describes in detail the natural resources and management challenges of the watershed, as well as resource descriptions of the systems' water and related resources. St. Andrew Bay interacts with the Gulf of Mexico through West Pass and East Pass. The bay and its watershed have experienced many of the impacts common to Florida waterbodies, including urban nonpoint source pollution, domestic and industrial wastewater discharges, and loss of seagrasses and other habitat. The bay system and its watershed have a considerable history of research, coordination, and implementation projects as described in the SWIM Plan. Priority management issues are identified as growth management/land use planning, nonpoint source pollution, point source pollution, chemical contamination, biological diversity, public outreach, and Deer Point Lake management.

Table 9. St. Andrew Bay Watershed Characteristics

Florida Watershed Area:	1,170 square miles
Interstate Watershed Area:	n/a
Florida Counties:	Bay, Walton, Gulf, Washington, Calhoun, and Jackson
Major Cities:	Panama City, Lynn Haven, Panama City Beach, Springfield, Callaway, and Port St. Joe
Principle Land Uses:	Forested, urban, residential
Florida Population 2004 (total county est.):	310,000
Outstanding Florida Waters:	Lake Powell, Phillips Inlet and tributaries St. Joseph Bay Aquatic Preserve St. Andrew State Park Aquatic Preserve Grayton Beach State Park Western Lake Upper Eastern Lake Upper Camp Creek St. Andrews State Park St. Joseph Peninsula State Park

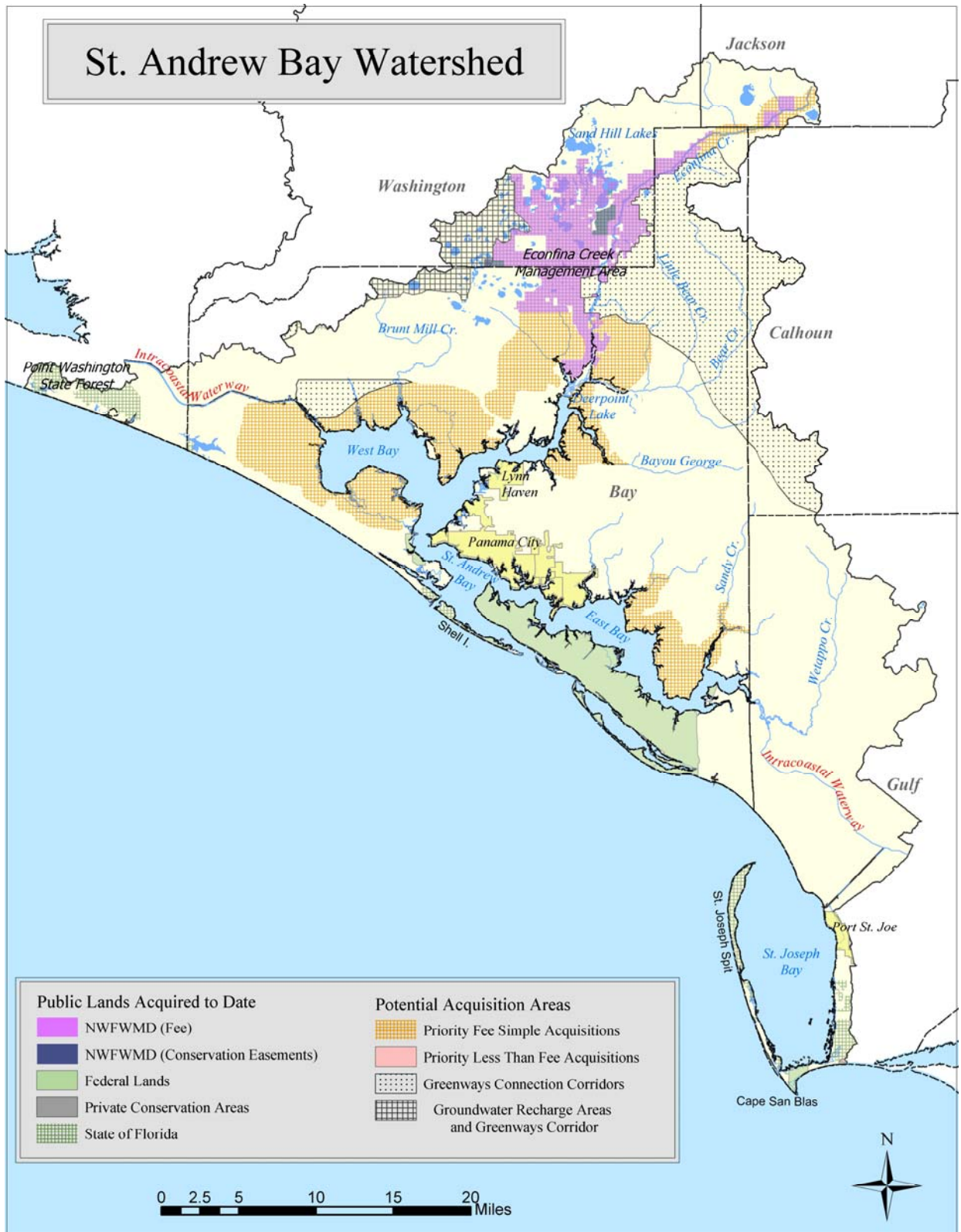


Figure 4. St. Andrew Bay Watershed

St. Marks River and Apalachee Bay Watershed

The St. Marks River watershed (Figure 5) extends from southern Georgia through Florida to the Gulf of Mexico, covering approximately 1,170 square miles. The watershed includes the St. Marks River; its major tributary the Wakulla River; Apalachee Bay; and lakes Miccosukee, Lafayette, and Munson. The river and bay system and the lakes within the watershed are popular for recreational uses including fishing, boating, canoeing, and nature observation.

Overall water quality and habitat values are good for the watershed, and there are extensive public landholdings that help provide for resource protection and management. There are, however, localized exceptions related primarily to nonpoint source management, with needs including stormwater treatment, nutrient management, and public education.

The watershed is predominantly characterized by karst topography, with limestone lying close to the surface and numerous springs and sinks. As a result, surface and ground waters readily interact. Groundwater, particularly through Floridan Aquifer springs, establishes the quality and character of surface waters within the watershed. Similarly, activities on the land surface can very quickly affect groundwater quality. These conditions present distinct management challenges that must be considered in land use planning, resource regulation, and the treatment and management of both stormwater and wastewater.

Watershed conditions, issues, and the associated SWIM program projects and activities are described in the 1997 SWIM Plan. According to the plan, nutrient management is a priority concern for Wakulla Springs and Wakulla River, including its upgradient springshed.

Table 10. St. Marks River/Apalachee Bay Watershed Characteristics

Florida Watershed Area:	1,060 square miles
Interstate Watershed Area:	1,170 square miles
Florida Counties:	Leon, Jefferson, Wakulla
Major Cities:	Tallahassee
Principle Land Uses:	Urban, suburban, and forestry
Florida Population 2004 (total county est.):	303,500
Outstanding Florida Waters:	St. Marks National Wildlife Refuge St. Marks River Wakulla River Wakulla Springs State Park Big Bend Seagrasses State Aquatic Preserve

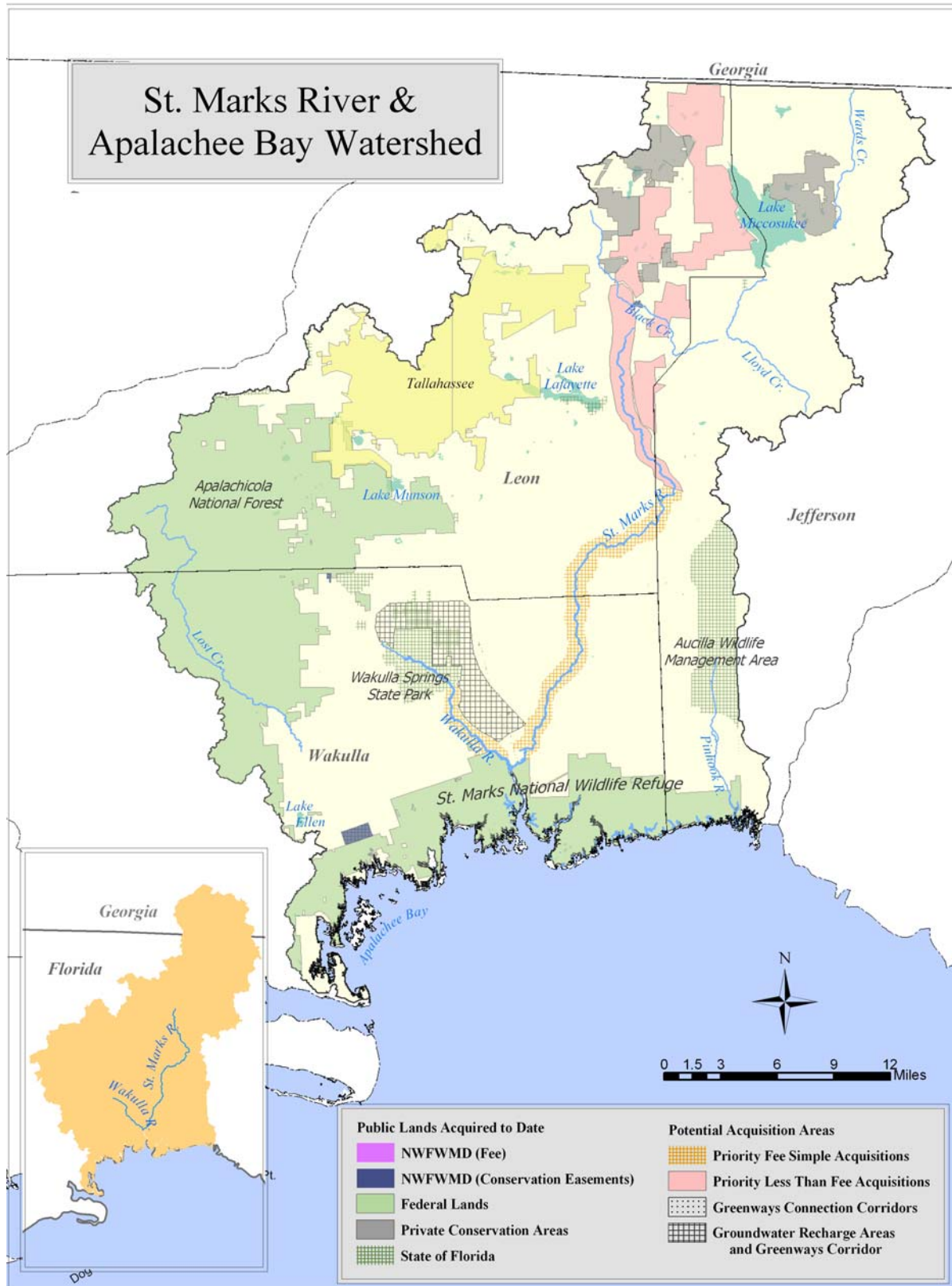


Figure 5. St. Marks River/Apalachee Bay Watershed

Ochlockonee River and Bay Watershed

The Ochlockonee River originates in south-central Georgia and flows about 206 miles south to Ochlockonee Bay, draining about 2,400 square miles and all or part of eleven counties in both states (Figure 6). Numerous tributaries contribute flow to the river system, ranging in flow from small intermittent streams to moderate streams such as Little River, Telogia Creek, and Sopchoppy River. The mean flow for the USGS station near Havana above Lake Talquin, with a 78 year period of record, is about 618 cubic feet per second. Downstream of the dam the 79-year period of record mean flow is about 1,350 cfs. The increase is due to input from Little River, Bear Creek, Rocky Comfort Creek, Ocklawaha Creek, and many smaller streams.

The river is impounded by the Jackson Bluff dam (built in the 1920s for hydroelectric power), forming Lake Talquin. Most of the area drained by the Ochlockonee is forested or agricultural, but there are growing urbanized areas around Tallahassee and Quincy above Lake Talquin. As a result, there are nonpoint source management issues associated with urban and agricultural lands. These issues include erosion and sedimentation, nutrients, coliform bacteria, and turbidity.

Lakes Iamonia and Jackson are in the upper Florida portion of the basin. Lake Iamonia and the Ochlockonee River have an intermittent surface water hydrologic connection (during high river flows and higher lake levels). Lake Jackson is in an internally-drained basin with no surface water outfalls. Because Lake Jackson’s basin is in an active karst area, the lake periodically drains into the Floridan Aquifer system. Lake Jackson has been a component of the District’s SWIM program since 1988 and has been the focus of considerable restoration and protection activity as detailed in the 1994 SWIM Plan for the lake and the 1997 Addendum.

Below Lake Talquin, the river flows through the Apalachicola National Forest and Tate’s Hell State Forest, providing a degree of protection to the lower river basin. The lower river, the lower Sopchoppy River, and Crooked River are all tidally influenced.

Table 11. Ochlockonee River and Bay Watershed Characteristics

Florida Watershed Area:	1,080 square miles
Interstate Watershed Area:	2,416 square miles
Florida Counties:	Leon, Gadsden, Liberty, Wakulla, Franklin
Major Cities:	Tallahassee
Principle Land Uses:	Agricultural, forestry, residential, urban
Florida Population 2004 (total county est.):	354,200
Outstanding Florida Waters:	Ochlockonee River Lake Jackson Aquatic Preserve Lake Talquin State Park Ochlockonee River State Park Mashes Sands Sopchoppy River

Ochlockonee River & Bay Watershed

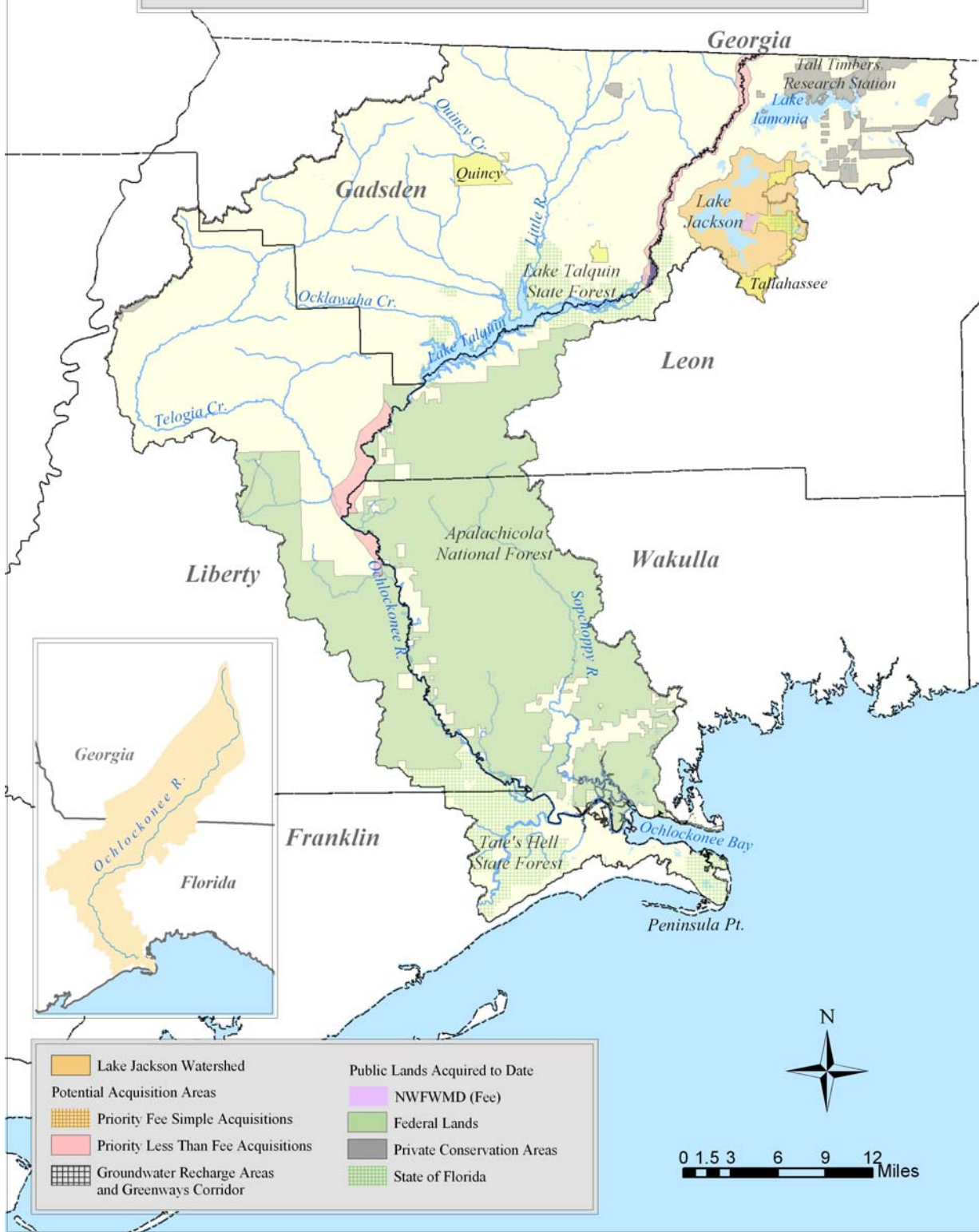


Figure 6. Ochlockonee River and Bay Watershed

Perdido River and Bay Watershed

The Perdido originates in Baldwin County in south-central Alabama and flows about 44 miles south to Perdido Bay, forming the state border and draining about 1,250 square miles in both states (Figure 7). Most of the watershed's land area and the river's tributary streams are in Alabama. Florida tributaries include Tarkiln Bayou, Eightmile Creek, Elevenmile Creek, Cowdevil Creek, Alligator Creek, McDavid Creek, Boggy Creek, and Brushy Creek. The river's 61-year period of record mean flow at the U.S. Geological Survey stream gage at Barrineau Park is 809 cubic feet per second. Perdido Bay covers about 50 square miles and is separated from the Gulf of Mexico by Perdido Key.

The Perdido River is a sand-bottom river in its upper reaches and a blackwater stream in its lower reaches. Overall water quality is relatively good for most of the watershed, but there are water quality problems associated with point source discharges to Elevenmile Creek. The Florida portion of the watershed drains the western half of Escambia County including the suburbs of Pensacola. The lower part of the bay has extensive shoreline residential development in Alabama and Florida, and likely has nonpoint source pollution issues related to yard and street runoff. Most of the upper bay and river frontage is relatively undeveloped.

Table 12. Perdido River and Bay Watershed Characteristics

Interstate Watershed Area:	1,250 square miles
Florida Counties:	Escambia
Major Cities:	Bay Minette, Pensacola (near)
Principle Land Uses:	Forestry, agricultural, residential, urban
Florida Population 2004 (total county est.):	307,000
Outstanding Florida Waters:	Perdido River, Big Lagoon State Park, Perdido Key State Park, Tarkiln Bayou Preserve State park

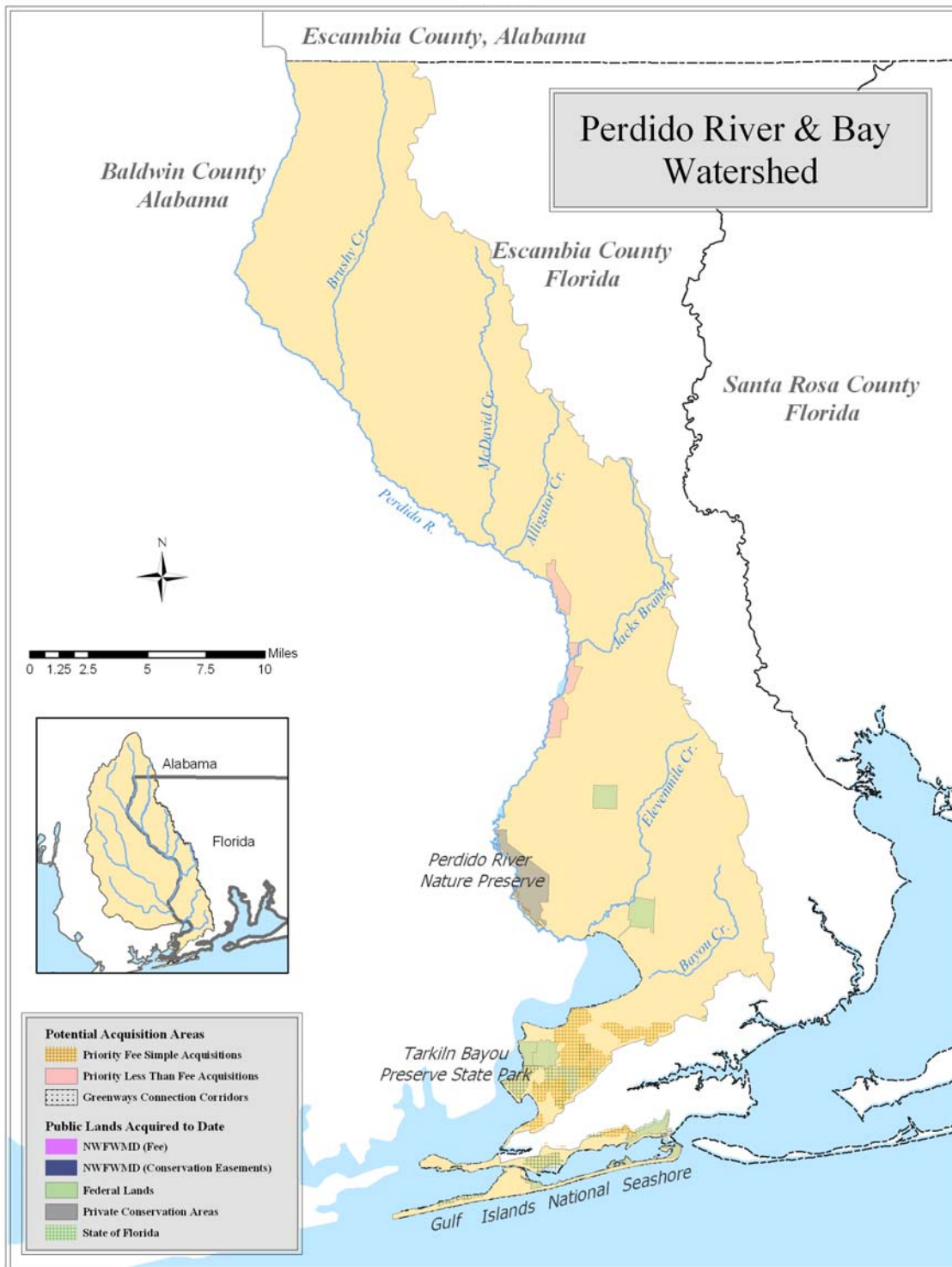


Figure 7. Perdido River and Bay Watershed

References

- Barkuloo, J.M., L. Patrick, L. Stich, and W.J. Troxel. 1987. Natural Resources Inventory Apalachicola-Chattahoochee-Flint River Basin. US Fish and Wildlife Service. 154p.
- Edmiston, H.L. and H.A. Tuck. 1987. Resource Inventory of the Apalachicola River and Bay Drainage Basin. Florida Game and Fresh Water Fish Commission. 303 pp.
- Leitman, S.T. 1986a. Wetland Resources of the Apalachicola Basin. In Managing Cumulative Effects in Florida Wetlands. Conference Proceedings, New College Environmental Studies Program 38.
- Macmillan, T.L., and C. Diamond. 1994. Lake Jackson Management Plan: A Comprehensive Plan for the Restoration and Preservation of Lake Jackson. Northwest Florida Water Management District.
- Macmillan, T.L. 1997. Lake Jackson Management Plan Addendum. Northwest Florida Water Management District, Program Development Series 97-4.
- Means, D.B. 1977. Aspects of the Significance to Terrestrial Vertebrates of the Apalachicola River Drainage Basin, Florida. Proceedings of the conference on the Apalachicola Drainage System. Florida Marine Research Publications 26:37-67.
- Northwest Florida Water Management District. 1988. Surface Water Improvement and Management Program. Program Development Series 88-1.
- Northwest Florida Water Management District. 2001. Florida Forever 2001 Five Year Work Plan. Havana: Northwest Florida Water Management District. Project Development Series 2001-1.
http://www.nwfwmd.state.fl.us/pubs/florida_forever/florida_forever.pdf
- Olinger, L.W., R.G. Rogers, P.L. Force, T.L. Todd, B.L. Mullings, F.T. Bisterfeld, and L.A. Wise II. 1975. Environmental and Recovery Studies of Escambia Bay and the Pensacola Bay System, Florida. Washington: U.S. Environmental Protection Agency.
- Richards, Christopher J. 1997. Delineation of the Floridan Aquifer Zone of Contribution for Econfinia Creek and Deer Point Lake, Bay and Washington Counties, Florida. Havana: Northwest Florida Water Management District. Water Resources Special Report 97-2.
- Ryan, P.L., and E. Hemmert. 1997. St. Marks River Watershed Surface Water Improvement and Management Plan. Havana: Northwest Florida Water Management District. Program Development Series 97-1.
- Ryan, P.L., et al. 2000. St. Andrew Bay Watershed Surface Water Improvement and Management Plan. Havana: Northwest Florida Water Management District. Program Development Series 97-1.
- Snowden, Cynthia. 1993. Surface Water Improvement and Management Program Priority List for the Northwest Florida Water Management District. Program Development Series 93-1.

Thorpe, P.J., and P.L. Ryan. 1996. Choctawhatchee River and Bay System Surface Water Improvement and Management Plan. Havana: Northwest Florida Water Management District. Program Development Series 96-4.
<http://www.nwfwmd.state.fl.us/pubs/chocswim/chocswim.pdf>

Thorpe, P.J., R. Bartel, P.L. Ryan, K. Albertson, T. Pratt, and D.J. Cairns. 1997. Pensacola Bay System Surface Water Improvement and Management Plan. Havana: Northwest Florida Water Management District. Program Development Series 97-2.
<http://www.nwfwmd.state.fl.us/pubs/swimpens/pbswim.pdf>

Thorpe, P. J., N. Wooten, P. Krottje, and F. Sultana. 1998. Land Use, Management Practices, and Water Quality in the Apalachicola River and Bay Watershed. Havana: Northwest Florida Water Management District. Water Resources Assessment 98-1.

Thorpe, P.J., F. Sultana, and C. Stafford. 2002. Choctawhatchee River and Bay System Surface Water Improvement and Management Plan, 2002 Update. Havana: Northwest Florida Water Management District. Program Development Series 02-2.

Tonsmeire, D., D.J. Cairns, E. Hemmert, and P.L. Ryan. 1996. Apalachicola River and Bay Management Plan. Northwest Florida Water Management District. Havana: Northwest Florida Water Management District. Program Development Series 96-1.

Wolfe, S.H., J.A. Reidenauer and D.B. Means. 1987. An Ecological Characterization of the Florida Panhandle. US Fish and Wildlife Service Biological Report 87.