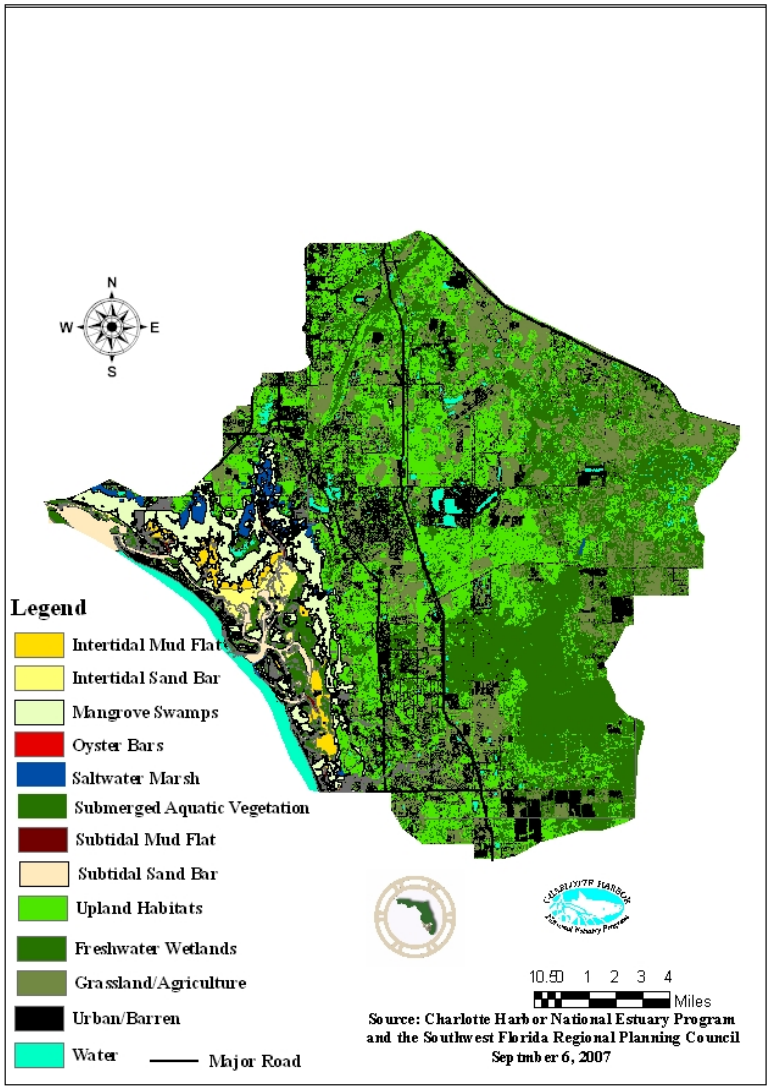
Growth Management Regulation, Public Investment and Resource Implications for the Estero Bay Watershed 2006-2007– Southwest Lee County, Florida

Year 2006 Habitats of Estero Bay



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Abstract:

A regulatory and public investment infrastructure has evolved to manage development in the Estero Bay basin. The development resulting from this structure in the last several years has raised issues regarding environmental quality, infrastructure costs, and quality of life. Federal, state, regional, and local agencies and non-profit and for-profit organizations have engaged in separate and distinct efforts to evaluate and manage the impacts of growth in the Estero Bay Watershed through research, planning, and regulatory measures. This project is a comprehensive study and evaluation of the decision framework utilized by government and private entities for development, permitting activity and public investment.

The existing Decision Framework for permitting, development practices and public investment is documented by analyzing recent public and private development projects and producing a time based decision tree. Key criteria and process procedures are noted. The resultant decision tree, criteria and processes were used to project a resultant future build out scenario(s) assuming continuation of existing practices. This scenario(s) is compared with current Future Land Use Maps (FLUM), critical habitat maps, environmental quality goals and other watershed build-out projections to the year 2050. The implications for land use and land development patterns, quality of life, water quality, impacts to wetlands and estimated infrastructure requirements are evaluated.

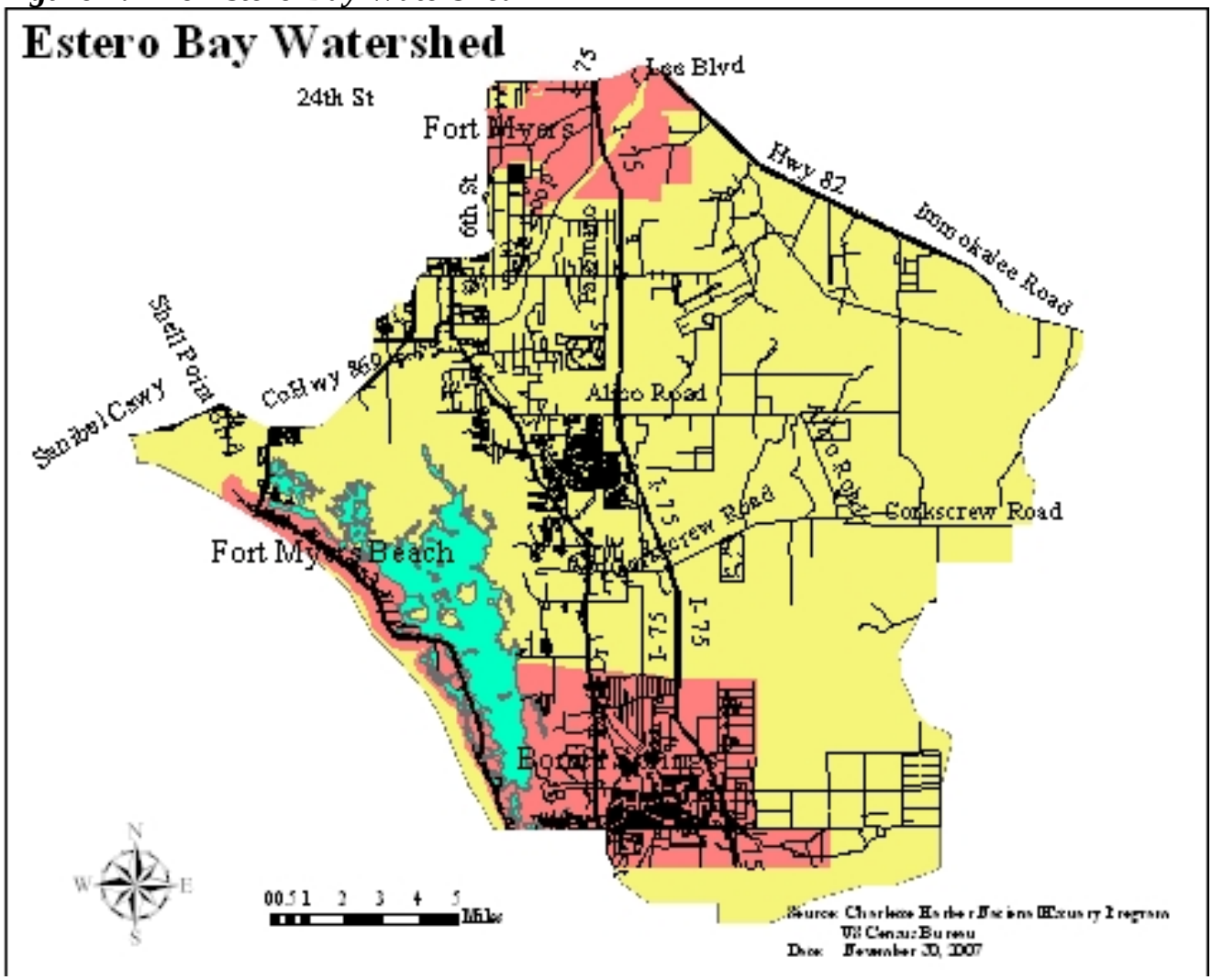
Recommendations for changes, improvements or additions to the decision framework to improve its efficiency, effectiveness and resultant development patterns have been constructed. The recommendations suggest new procedures along with changes to the text of or alternative interpretations of current codes, regulations, statutes, practices or policies.

The products from this project were reviewed and approved by the Estero Bay Agency On Bay Management (ABM) for technical quality and implementability. Additional review and comment by the Charlotte Harbor National Estuary Program (CHNEP) was initiated and used by the ABM in its deliberations.

Introduction Part 1: Watershed Description

The Estero Bay Watershed is located on the lower west coast of Florida, on the Gulf of Mexico. The Estero Bay basin encompasses 221,019.8 acres, or 345.3 square miles. The Estero Bay Watershed is listed as U. S. Geological Service (USGS) Cataloging Unit: Everglades – West Coast: 03090204. The Estero Bay Watershed is a sub-basin within the CHNEP study area

Figure 1: The Estero Bay Watershed



The Estero Bay Watershed is roughly bounded by Summerlin Road-McGregor Boulevard (CR 869) east to 6th Street north to 24th Street east to Lee Boulevard east to Immokalee Road (SR82) southeast to Wildcat Road, south on TPI Road, west to Six Ls Farm Road, south to Pioneer Road, south to the Bird Rookery Swamp, west to Interstate 75, north to Tuscany Reserve, west to new US 41, north to Bonita Beach Road, west to the Gulf of Mexico Beach of Bonita Beach, north and northwest along the beaches of Bonita Beach, Big Hickory Island, Black Island, Lovers Key, . Estero Island, Bunche Beach and on

a north west bearing from Bodwitch Point to the landward end of the Sanibel Causeway at Summerlin Road.

Three different methodologies have produced estimates of the impervious surface of the watershed in 2000 (7% to 13%), 2025 (13% to 31%) and 2050 (15% to 32%). Population growth for the period between 1950 and 1980 was a nearly a 100% average increase per decade while 1980 to 2000 had almost 50% average increase per decade. By 2000, the area qualified as an urbanized area, as the population density had exceeded 1,000 people per square mile, with a population of 121,923. Historically, the watershed encompassed more that 75,000 acres of wetlands. Over 28 percent or 19,143 acres of wetlands have been lost in the Estero Bay Watershed. This study will focus on the currently undeveloped acreage including the approximately 60,000 wetland acres within the watershed that are under pressure for development.

All of the Estero Bay tributaries have the Outstanding Florida Waters designation and Estero Bay itself was the first estuary in the Florida to receive the Aquatic Preserve designation. The Estero Bay Watershed is within the South Florida Water Management District's (SFWMD) Lower Charlotte Harbor Surface Water Improvement Management (SWIM) program.

In 1999, the South Florida Water Management District completed the Estero Bay and Watershed Management and Improvement Plan. The plan developed land and water management strategies to achieve water quality and quantity objectives for Estero Bay. More recently, in 2003 the SFWMD Governing Board designated Lower Charlotte Harbor a priority SWIM Program water body, which includes Estero Bay. The SFWMD also received delegated authority to issue Environmental Resource Permits (ERP) from the State of Florida Department of Environmental Protection (FDEP).

The Estero Bay Watershed area is composed of a variety of landscapes with urban development comprising approximately 26% of the total watershed area in 2003. The urban development is primarily concentrated in the western portion of the Estero Bay basin. Interspersed between these urbanized areas are sections of public conservation land, agricultural land, other native land habitats, uplands, floodplain and riverine wetlands, tidal marsh and open water. Estero Bay Watershed includes almost 32,000 acres of managed public conservation areas, or 17.4% of the SWFRPC land area, including the western part of the Corkscrew Regional Ecosystem Watershed (CREW). Agriculture and rangeland covers approximately 5%, native upland habitats 16.4%, open water 19.2%, native wetlands 28.5% and barren lands (principally in conversion to development) 4%.

The natural hydrology of the Estero Bay Watershed has been altered by man-made canals, water control structures, drainage ditches, berms, and roads. SFWMD has delineated basins in Estero Bay Watershed differently than FDEP. Compared to FDEP's Plan Units below, the northern headwaters of the Cocohatchee are in the Estero Bay Plan Unit. As a result of flooding in 1995, SFWMD determined that Trafford basin flows west to the Estero Bay or south depending on the amount of rainfall.

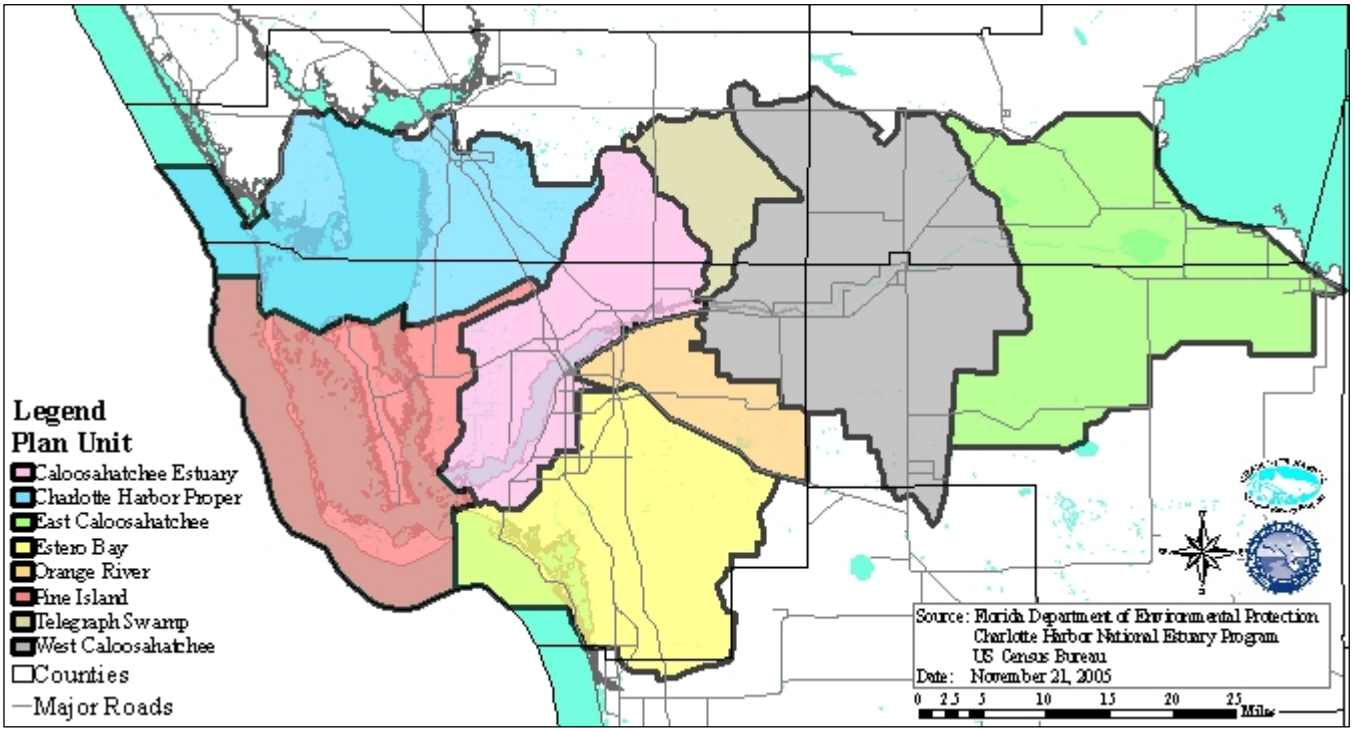
For the purposes of this study the Estero Bay Watershed comprises 221, 019.8 acres (Table 1 and Figure 1). The basins are also represented by the FDEP Plan Units which are further defined by water body identification (WBID) areas (Table 1 and Figure 3).

Table 1: Area of the Estero Bay Watershed under Different Definitions

Source	Area (acres)	Area (square miles)
Estero Bay FDEP	221,019.8	345.3
Estero Bay SFWMD	295,620.0	461.91
Estero Bay FDEP Plan Units	221,019.8	345.3

SFWMD has delineated basins in LCH differently than FDEP (Figure 2). Compared to FDEP's Plan Units below, a small area of Charlotte Harbor is attributed to the Estero Bay Watershed south of the Caloosahatchee Estuary, and the northern headwaters of the Cocohatchee are in the Estero Bay Plan Unit. In addition, as a result of flooding in 1995, SFWMD determined that Trafford basin flows west to the Estero Bay or south depending on the amount of rainfall.

Figure 2: FDEP Basins



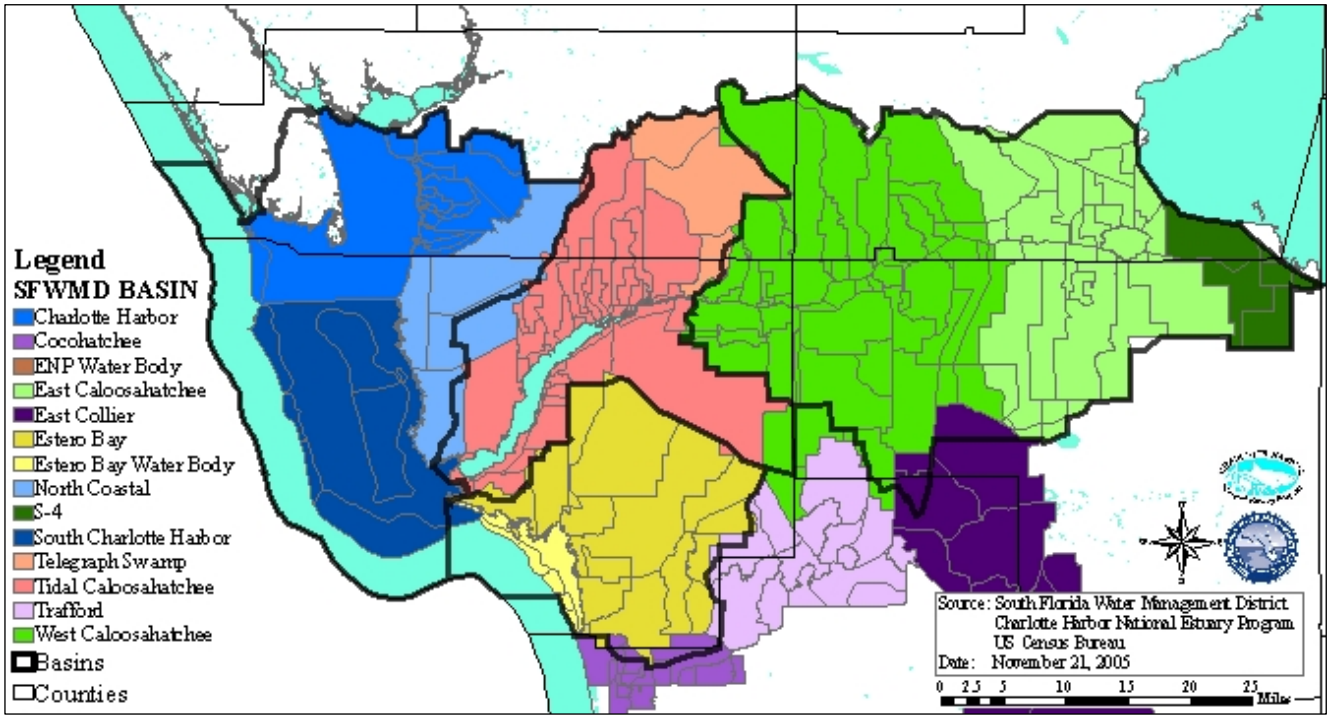


Figure 3: SFWMD Basins

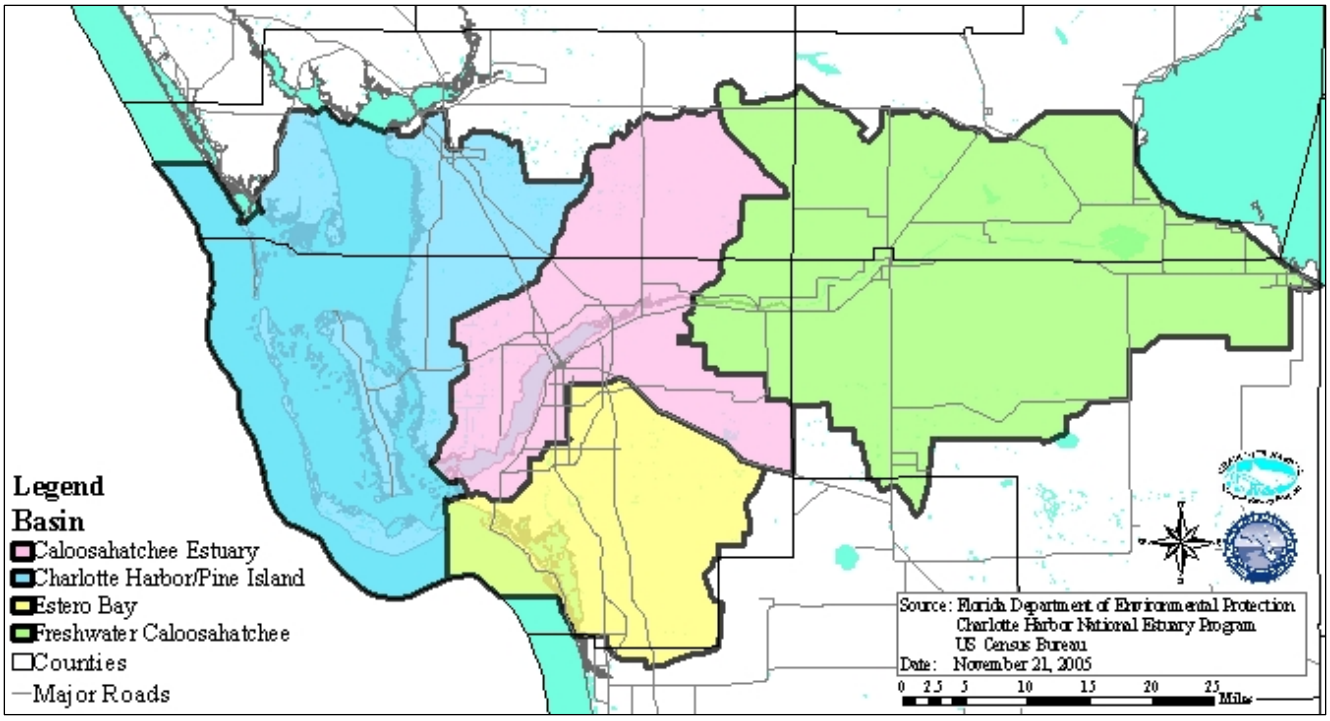


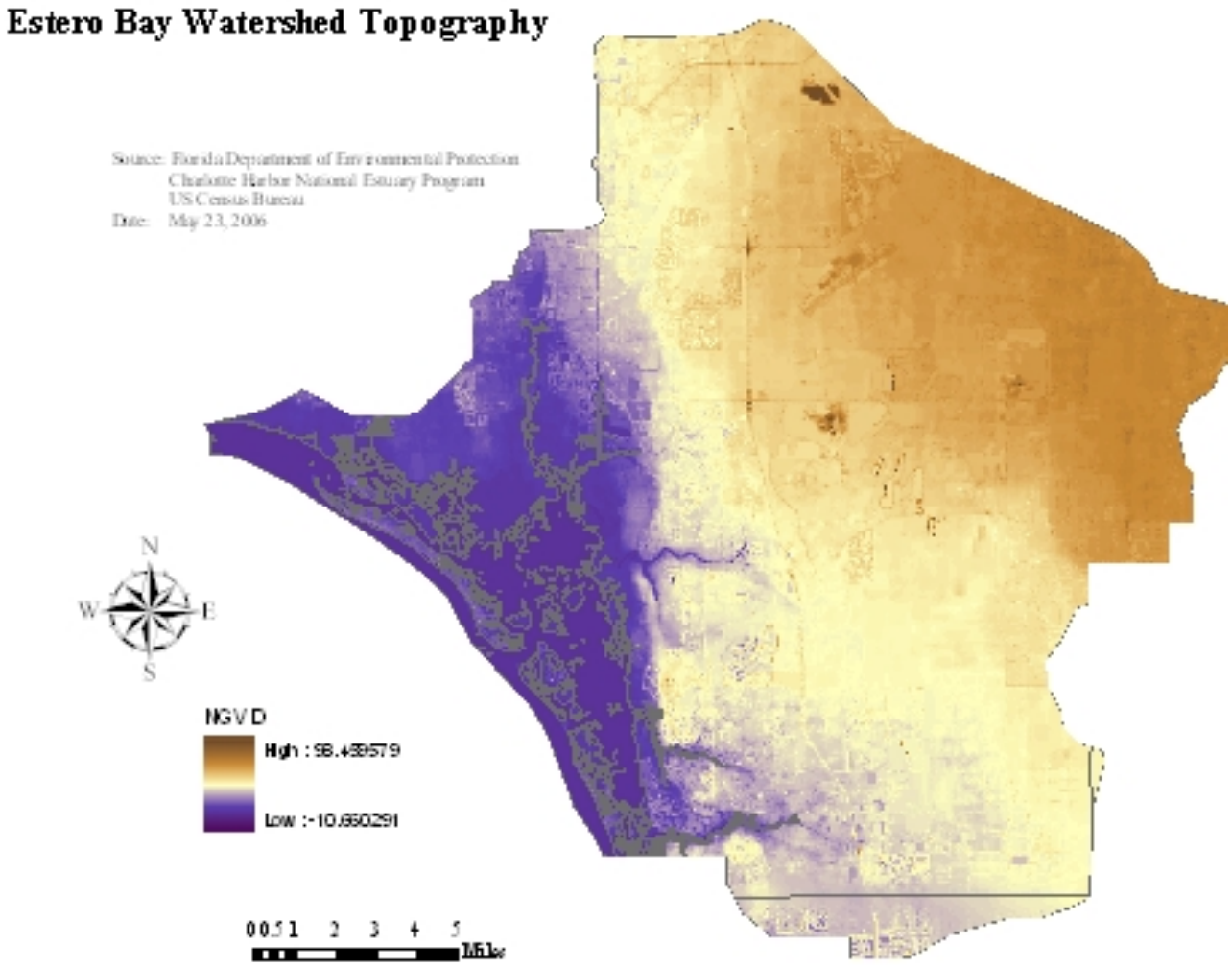
Figure 4: FDEP Plan Units

Physiographic Areas

The Estero Bay estuary and watershed in southwestern Lee County, consists of Estero Bay and associated barrier islands, the Estero Bay basin, including the Imperial and Estero rivers, and the Six-Mile Cypress Slough Watershed (Science Subgroup 1996).

Estero Bay is a shallow, subtropical estuarine lagoon, approximately 4,580 hectare (ha, ~11,317 acres) in area. The major Gulf of Mexico passes on Estero Bay include Matanzas Pass, Big Carlos Pass, Big Hickory Pass, Little Hickory Pass, and Wiggins Pass. (Antonini, et. al. 2002). Five creeks and rivers drain into the bay including Hendry Creek, Mullock Creek, Estero River, Spring Creek, and Imperial River. The Six-Mile Cypress Slough subbasin (830 ha or 2,051 acres) is in central Lee County. Estero Bay is separated from the Gulf of Mexico by several barrier islands: Estero Island, the Lovers Key complex (Long Key, Lovers Key, Black Island), Big Hickory Island, Little Hickory Island, and Bonita Beach Island (CHNEP 1996).

Figure 5: Topography of Estero Bay Watershed



The meandering Caloosahatchee floodplain, Gulf Coast Lowlands, DeSoto Plain and the Immokalee Rise are apparent in the topographic map shown in Figure 5. The topographic assessment was developed as a component of the Southwest Florida Feasibility Study using LIDAR technology.

The Estero Bay Watershed is a series of relatively flat plateaus with intervening old shoreline ridges ranging in elevation from sea level to a natural maximum of 50 feet NGVD in the eastern portion of Lee County. The Hendry Creek basin is low and does not exceed 5 feet National Geodetic Vertical Datum (NGVD) throughout, while elevations in basins farther south, Spring Creek, Estero River, and Imperial River, increase closer to the coast due to a xeric ridge of relic prehistoric beaches.

The higher elevations in the eastern part of the watershed are associated with the Immokalee Rise, and increase relatively steeply from 15 feet to over 40 feet in elevation. The Immokalee Rise separates the flowways of the Big Cypress and the Everglades from the Estero Bay Watershed.

Geologic History of Lower Charlotte Harbor

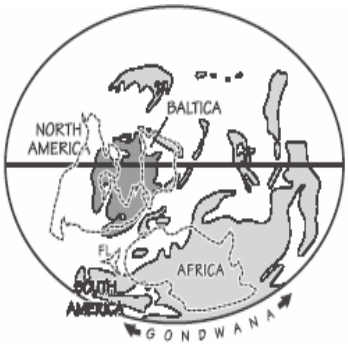
The basement rock of Florida is on a separate plate from most of the rest of North America. The plate underlying what is now Florida is technically called the Tallahassee-Suwanee Terrane and is a fragment from the Gondwana plate. This Gondwana plate fragment was adjacent to present-day West Africa and South America during the Devonian, 390 million years ago (mya). This was also the time of the first amphibians and jawed fishes.

In the period including the Mississippian, Pennsylvanian, and Permian 354-250 million years ago, Gondwana collided with proto-North America, forming the super-continent, Pangea. The collision also formed the central south Appalachian Mountains. This period represents the late Paleozoic and the emergence of scale trees, seed ferns, and the first reptiles. The Permian had the greatest recorded major extinctions of any extinction event including many marine forms of life.

During the Triassic and Jurassic periods, 250-142 million years ago, Pangea began to split and rifts are created in the crust. With the formation of the rift basins, the Atlantic Ocean and Gulf of Mexico began opening. During the Triassic, the first dinosaurs and mammals emerged. Dinosaurs dominated the Jurassic and the first birds evolved.

It was during the period including the Cretaceous, Tertiary, and Quaternary that Florida drifted to its present location and emerged from the sea. During the Cretaceous the Tethys Sea was created with the rifts between the northern and southern continental plates and on this sea's shoreline the first red mangroves appear. Common fossils found in rocks of this period in the Estero Bay watershed include marine fossils such as mollusks, shark and ray teeth and manatees. Florida began to emerge from the shallow marine coral seas during the Tertiary and attained significantly large extents during the ice ages of the Quaternary. Interior deposits from the Age of Mammals include fossils of the giant land tortoise, land mammals including giant sloth, mastodon, and saber cats.

Devonian
(417-354 mya)



Mississippian-Permian



Triassic-Jurassic
(250-142 mya)



Cretaceous-Quaternary



Figure 6: Continental Drift: Dark areas above the water. Figures by J. Houghton, after C. Scotese, Paleomap Project, 2000 (www.scorcese.com).

The surface geology of the Estero Bay area is characterized by Quaternary (Holocene-10 tya and Pleistocene-1.8 mya) and Tertiary (Pliocene- 2 mya and Miocene- 2.4 mya) deposits. The basement rock from Gondwana is now thousands of feet below the surface.

The resulting aquifer systems of significance in the Estero Bay Area (and in fact for all of Florida) are from the Quaternary and Tertiary periods. The deepest of the aquifer systems is the Floridan, followed by the Intermediate, with the Surficial Aquifer System at the surface.

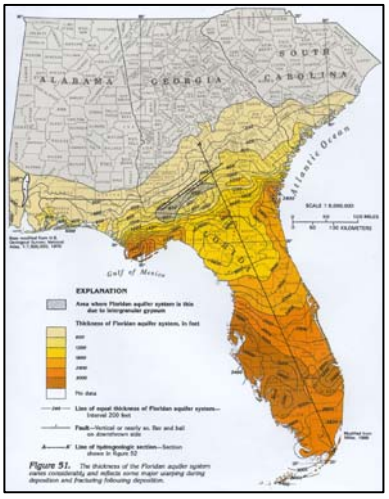
<table>
<tr><th>Period</th><th>Series</th><th>Surface Geology</th><th colspan="3">Stratigraphic and Hydrologic Units</th><th>Thickness (in Feet)</th><th>Lithology</th></tr>
<tr><td rowspan="2">Quaternary</td><td>Holocene</td><td>Qh/Qu</td><td>Undifferentiated alluvium and terrace deposits</td><td colspan="2" rowspan="2">Surficial Aquifer System</td><td>20-75</td><td>Sand with local shell beds</td></tr>
<tr><td>Pleistocene</td><td>TQsu</td><td>Caloosahatchee Marl</td><td>20-75</td><td>Marl with minor shell and silt, Shelly sediments</td></tr>
<tr><td rowspan="11">Tertiary</td><td rowspan="2">Pliocene</td><td rowspan="2">Tt</td><td rowspan="2">Tamiami Formation</td><td>Confining Unit</td><td rowspan="4">Intermediate Aquifer System</td><td>20-75</td><td rowspan="2">Sand, limestone, and shell beds. Thick clay near top.</td></tr>
<tr><td>Tamiami Unit</td><td>50-150</td></tr>
<tr><td rowspan="6">Miocene</td><td rowspan="6">No Surface Exposures</td><td rowspan="6">Hawthorn Unit</td><td>Upper Hawthorn Confining Unit</td><td>300-500</td><td rowspan="6">Mostly limestone, sandy linestone, and sand. Phosphatic in part. Dolomite beds common. Clayey in middle part.</td></tr>
<tr><td>Sandstone Aquifer</td><td rowspan="5">Insufficient Data</td></tr>
<tr><td>Confining Unit</td></tr>
<tr><td>Mid-Hawthorn Unit</td></tr>
<tr><td>Lower Hawthorn Confining Unit</td></tr>
<tr><td rowspan="4">Floridan Unit</td></tr>
<tr><td>Ogliocene</td><td>Upper Floridan</td><td rowspan="4">Floridan Aquifer System</td><td rowspan="4">3000-3400</td><td rowspan="4">Thick sequence of carbonate rocks (limestone and dolomite).</td></tr>
<tr><td>Eocene</td><td>Confining Unit</td></tr>
<tr><td>Paleocene</td><td>Lower Floridan</td></tr>
<tr><td colspan="2"></td><td>Confining Unit</td></tr>
</table>

Figure 6: Stratigraphy (assembled from Miller 1990 and SFWMD 2004)

All three aquifer systems are characterized by calcareous sedimentary rock with clayey confining layers of lower permeability. Each aquifer system has different extents in the southeastern United States. The Floridan underlies all of Florida and the southern extents of Alabama, Georgia and South Carolina. The Lower Charlotte Harbor area is the area where the unit is at its thickest. The Intermediate aquifer is restricted to Southwest Florida. Finally, the Surficial Aquifer covers all of the Lower Charlotte Harbor Area, the Atlantic Coast north of Palm Beach, and Apalachicola.

Figure 7: Aquifers

Floridan



Intermediate



Surficial

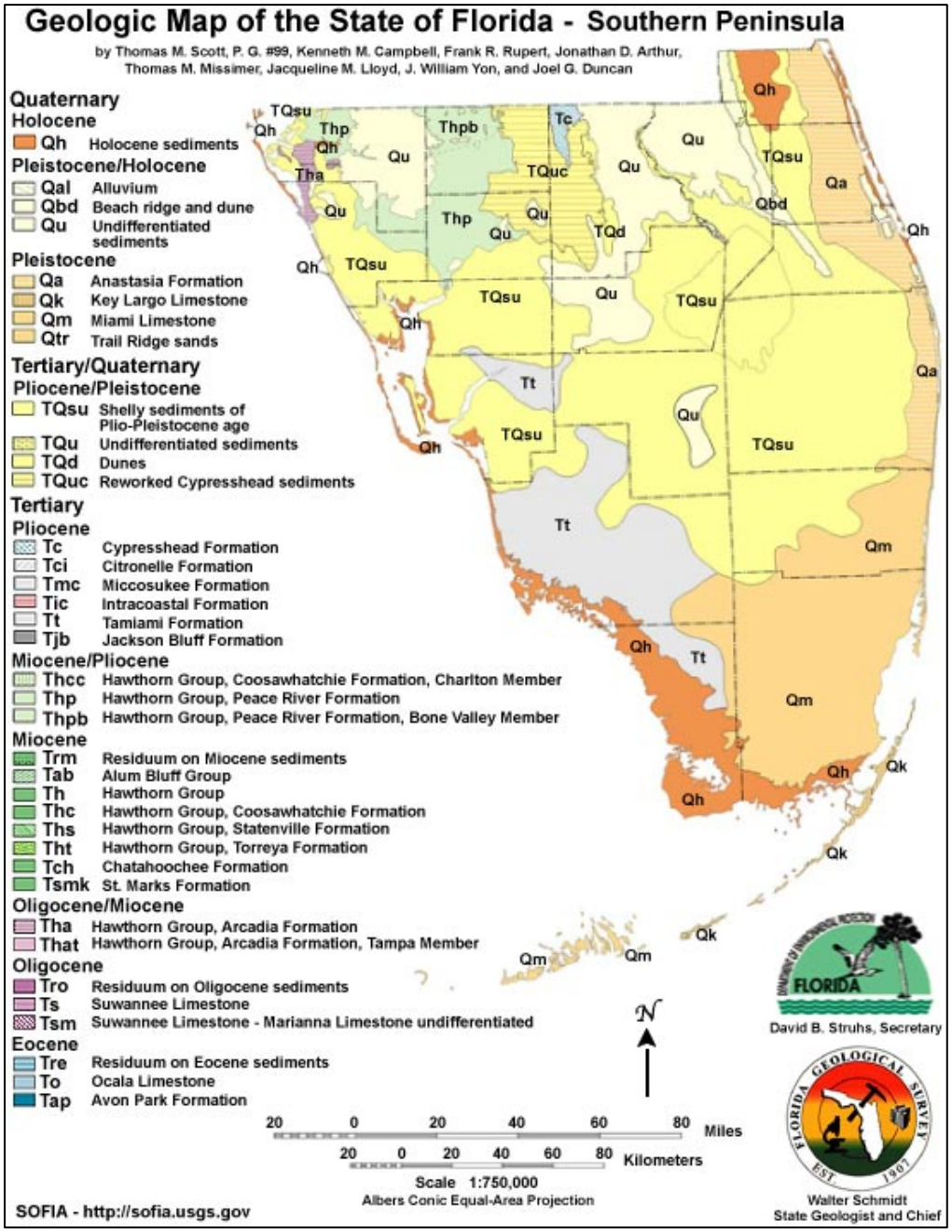


(Maps from Miller 1990)

The "Geologic Map of the State of Florida – Southern Peninsula," classifies the surface geology for Lower Charlotte Harbor is comprised of Holocene sediments (Qh), undifferentiated sediments (Qu), shelly sediments of Plio-Pleistocene age (TQsu), and the Tamiami Formation (Tt). These exposures represent the Surficial Aquifer.

The Holocene sediments (Qh and Qu) are probably from an interglacial period of rising sea levels and coastal marshes advancing inland. A period of erosion predated the deposition of these sediments during the low sea level stages in the late Pleistocene. The Caloosahatchee formation (TQsu) was deposited in the Pleistocene and late Pliocene ages. In this epoch, there were both glacial and interglacial periods (Gleason and Stone 1994).

Figure 8: Geologic Map



Soils

Soils in the Estero Bay Watershed are typically hydric or partially hydric (see Figure 9). Non-hydric areas are associated with natural drainage courses such as the Estero River or with fill area such as the Bonita Beach Road causeway. Soils in the area are most typically poorly drained (see Figure 10). Tables 2 and 3 present more detailed information about the soils in the Estero Bay Watershed.

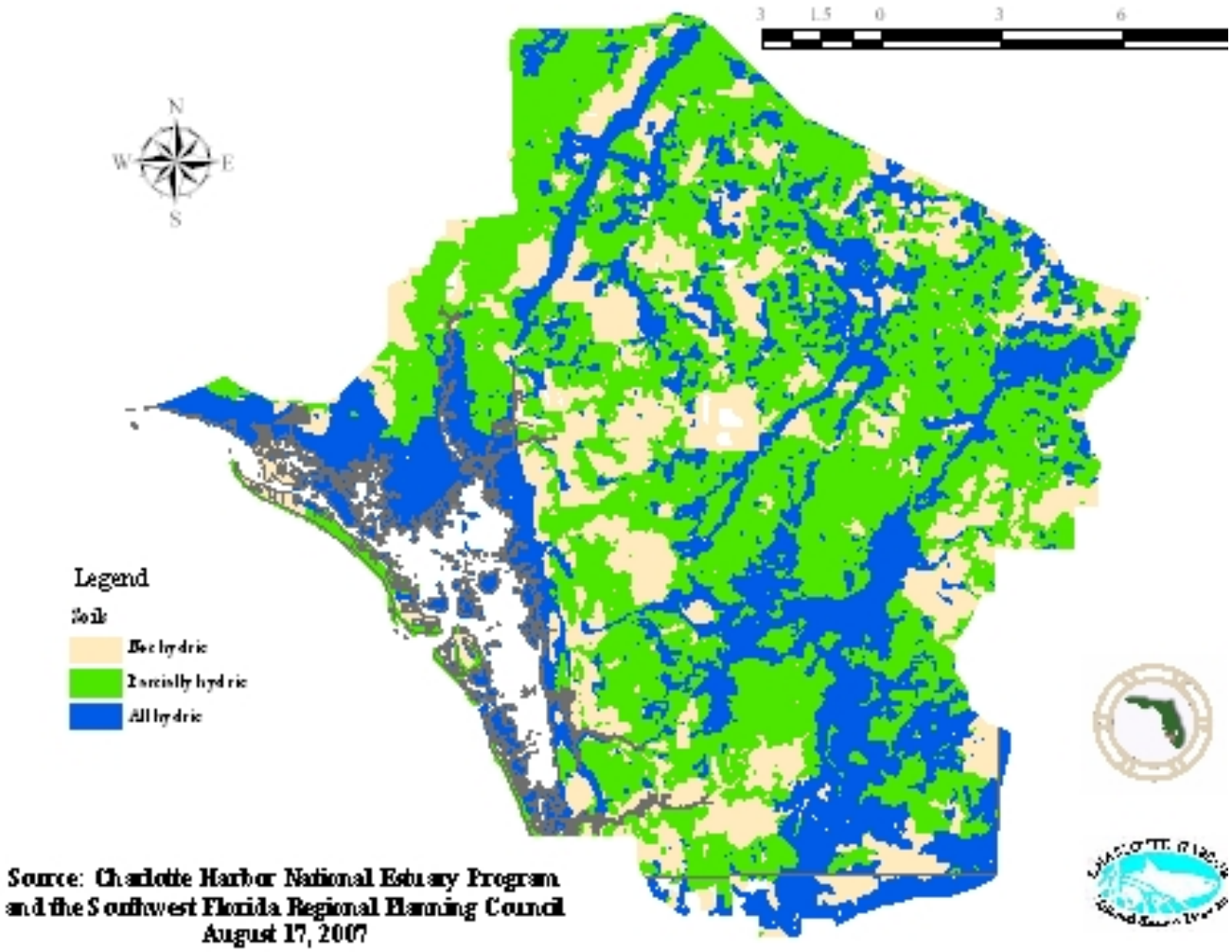


Figure 9: Hydric Characteristics of Soils

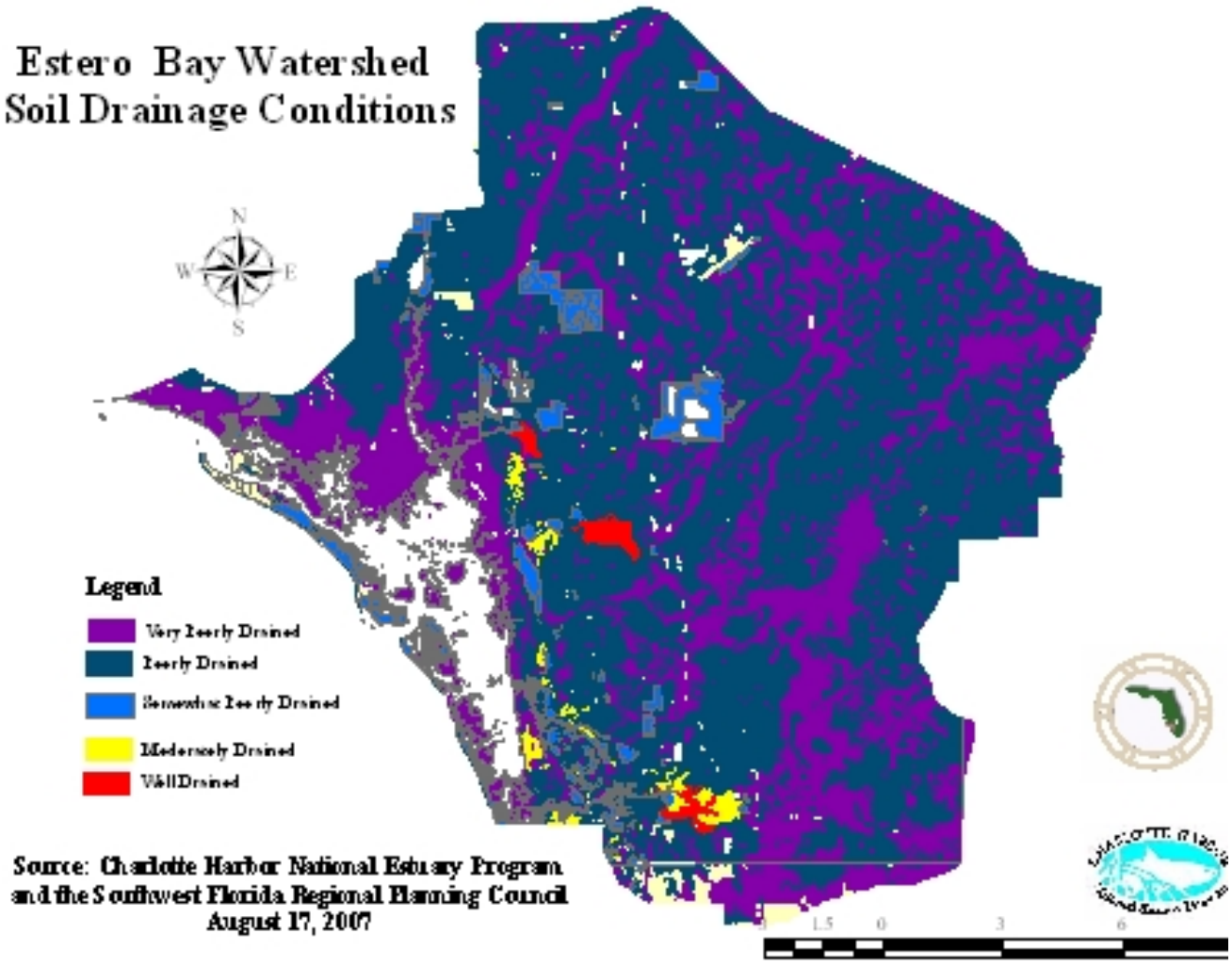


Figure 10: Drainage Characteristics of Soils

Table 2: Most Common Soil Types by Area

(Top 97%)

Map Unit Name	acres	% of total land area in the Estero Bay Watershed
Immokalee sand	20,504	12.5%
Hallandale fine sand	15,258	9.3%
Pineda fine sand	13,124	8%
Malabar fine sand	11,146	6.8%
Boca fine sand	11,022	6.7%
Pompano fine sand, depressional	10,169	6.2%
Pompano fine sand	9,378	5.7%
Oldsmar sand	9,089	5.5%
Felda fine sand, depressional	8,736	5.3%
Isles fine sand, depressional	8,351	5.1%
Valkaria fine sand	6,242	3.8%
Pineda fine sand, depressional	5,841	3.6%
Wulfert muck	5,657	3.5%
Boca fine sand, slough	3,664	2.2%
Peckish mucky fine sand	3,625	2.2%
Matlacha gravelly fine sand	3,014	1.8%
Myakka fine sand	2,679	1.6%
Copeland sandy loam, depressional	2,624	1.6%
Water	2,544	1.6%
Wabasso sand, limestone substratum	2,107	1.3%
Felda fine sand	1,951	1.2%
Estero muck	1,749	1.1%
Matlacha-Urban land complex	1,610	1%
Pineda fine sand, limestone	1,185	0.7%
Winder sand, depressional	899	0.5%
Smyrna fine sand	772	0.5%
Wabasso sand	634	0.4%
Malabar fine sand, high	362	0.2%
Immokalee-Urban land complex	188	0.1%
Matlacha gravelly fine sand, limestone	6	0%
Total	164,130	97%

Table 3: Soil Types by Total Percent

Map Unit Name	Percentage	Drainage Class	Soil Group	Hydrography
Immokalee sand	12.5%	Poorly drained	B/D	Partially hydric
Hallandale fine sand	9.3%	Poorly drained	B/D	All hydric
Pineda fine sand	8%	Poorly drained	B/D	Partially hydric
Malabar fine sand	6.8%	Very poorly drained	B/D	All hydric
Boca fine sand	6.7%	Very poorly drained	D	All hydric
Pompano fine sand, depressional	6.2%	Very poorly drained	D	All hydric
Pompano fine sand	5.7%	Poorly drained	B/D	Partially hydric
Oldsmar sand	5.5%	Poorly drained	B/D	Partially hydric
Felda fine sand, depressional	5.3%	Very poorly drained	D	All hydric
Isles fine sand, depressional	5.1%	Very poorly drained	D	All hydric
Valkaria fine sand	3.8%	Poorly drained	B/D	Partially hydric
Pineda fine sand, depressional	3.6%	Very poorly drained	D	All hydric
Wulfert muck	3.5%	Very poorly drained	D	All hydric
Boca fine sand, slough	2.2%	Poorly drained	B/D	Partially hydric
Peckish mucky fine sand	2.2%	Very poorly drained	D	All hydric
Matlacha gravelly fine sand	1.8%	Somewhat drained	C	Not hydric
Myakka fine sand	1.6%	Poorly drained	B/D	Partially hydric
Copeland sandy loam, depressional	1.6%	Very poorly drained	D	All hydric
Water	1.6%	NA	NA	NA
Wabasso sand, limestone substratum	1.3%	Poorly drained	B/D	Partially hydric
Felda fine sand	1.2%	Poorly drained	B/D	Partially hydric
Estero muck	1.1%	Very poorly drained	D	All hydric
Matlacha-Urban land complex	1%	Somewhat drained	C	Not hydric
Pineda fine sand, limestone substratum	0.7%	Poorly drained	B/D	Partially hydric
Winder sand, depressional	0.5%	Very poorly drained	D	All hydric
Smyrna fine sand	0.5%	Very poorly drained	D	All hydric
Wabasso sand	0.4%	Poorly drained	B/D	Partially hydric
Malabar fine sand, high	0.2%	Poorly drained	B/D	Partially hydric
Immokalee-Urban land complex	0.1%	Poorly drained	B/D	Partially hydric
Matlacha gravelly fine sand, limestone	0%	Somewhat drained	C	Not hydric
Basinger fine sand	0%	Very poorly drained	B/D	All hydric
Oldsmar sand, limestone substratum	0%	Poorly drained	B/D	Partially hydric
Boca sand	0%	Poorly drained	B/D	Partially hydric
Margate sand	0%	Poorly drained	B/D	Partially hydric

Map Unit Name	Percentage	Drainage Class	Soil Group	Hydrography
Pineda sand, limestone substratum	0%	Poorly drained	B/D	Partially hydric
Riviera sand, depressional	0%	Very poorly drained	B/D	All hydric
Basinger sand	0%	Poorly drained	B/D	Partially hydric
Myakka sand	0%	Poorly drained	B/D	Partially hydric
Holopaw sand	0%	Poorly drained	B/D	Partially hydric
Heights fine sand	0%	Poorly drained	B/D	Partially hydric
Riviera sand, limestone substratum	0%	Poorly drained	B/D	Partially hydric

Soils in the study area are dominated by soil group B/D. The infiltration rate varies in this area depending upon the presence of a clay-rich hardpan near the surface. Mapped areas of wetlands generally coincide with the areas dominated by soil group B/D. The group D soils are poorly drained due to the clay hardpan beneath them, which gives rise to areas of standing water that promote wetland vegetation. (URS, 2005)

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission. None exist in the Estero Bay Watershed

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a permanent high water table, and soils that have a clay hardpan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Human History of Lower Charlotte Harbor

Calusa Period

The Calusa Period spanned from 4000 BC to 1710 AD. As new archeological data are analyzed the date of the first human habitation of Florida is pushed earlier and earlier. It is currently estimated that the first human habitation of Lower Charlotte Harbor was approximately 10,000 years ago. These first inhabitants were nomadic people who used stone tools and hunted large mammals in the interior plains. Coastal villages developed as climate changed, sea levels rose and fishing skills increased. Farming, pottery skills, and trade with people outside of Florida developed between 3,000 and 500 years ago. Archeological records indicate that copper, iron ore and maize seeds were prized imports, while pearls, shells, and fish bones were the primary exports. During this period, mound building began and ceramic pottery was used to store goods.

The Lower Charlotte Harbor area was the center of the Kingdom of the Calusa. It is thought that this tribe came from Caribbean islands around 2,000 years ago. The Calusas fished the Gulf of Mexico, established settlements near fresh water tributaries, and paddled cypress canoes to colonies in other areas. Archeologists believe nearby Mound Key in Estero Bay may have been the tribes' regional center. The 125-acre island is approximately 33 feet high and covered with massive middens; refuse heaps composed of discarded shells. As had other Indian civilizations living on the Gulf of Mexico, the Calusa built large structural mounds from mollusk shells on which important buildings were constructed. Structures on the mounds ranged from the residence of Chief to temple-like buildings. The Calusa built small canals that served as access to Lake Okeechobee and the Kissimmee River from the Caloosahatchee. The first documented Europeans to visit southwest Florida were the Juan Ponce de León expedition on June 4, 1513. He sailed as far south as Estero Bay. The Calusa attacked the Spaniards' ships after they entered into Charlotte Harbor. After two attacks, the Spanish retreated.

Throughout the 1500s, other Spanish explorers and enterprising pirates sailed Southwest Florida's coastal waters Treasure-laden galleons from Mexico and Central America sailed past Estero Bay. Map-makers named the bay "Estero," the Spanish word for estuary. Some purposely put ashore to rest and refill their water casks, others were driven in by storms and high winds, and still others were shipwrecked when their ships sank to the sea's bottom, overcome by hurricanes.

A tenuous alliance was later formed between the Calusa and the Spanish in 1567. However, the Spanish did not want to help the Calusa against their enemy the Tocobaga and the Calusa were disinterested in Christianity, so the alliance dissolved. Other Spaniards followed, and the Calusa were eventually conquered—but by disease, not warfare. Common European illnesses such as smallpox and influenza spread like wildfire among the sheltered tribes, and the last known Calusa in southwest Florida died in the late 1700s. There is evidence that the last remnants of the tribe subsequently settled in Cuba by the e 1800's.

Cuban Period

The Cuban Period spanned from 1710 to 1836. Southwest Florida, while it remained under Spanish control, was not a center for major settlement. Fishing camps were established by people of direct Spanish and Cuban descent who harvested the bounty of the estuary and brought salted and smoked fish to the urban centers of Cuba and the Spanish Caribbean. Beyond fishing camps, the interior was visited only for hunting trips. Here the Cubans made contact with the Seminoles. The name Seminole is from the Creek word 'semino le', interpreted to translate as 'runaway.' Another, better description of the meaning can be "emigrants who left the main body and settled elsewhere." The term was first applied to the tribe about 1778. The Cuban populations did not desire to settle in the interior of southwest Florida so conflict with the Seminoles was minimal. The settlement history of southwest Florida by Americans was driven by military decisions associated with the series of Seminole Wars generated by the southward movement of. American settlers from Georgia and elsewhere in the southeastern United States immigrated into Florida even when it was still a Spanish possession. There were three Seminole Wars in Florida; first Seminole War started in 1817 and shortly, thereafter, Spain ceded Florida to the United States.

American Period

The American Period spans from 1817 when Florida became a territory of the United States to the present. The Treaty of Camp Moultrie was signed in 1823, legally establishing large parts of Lower Charlotte Harbor as the promised Seminole territory. By 1840, the Lower Charlotte Harbor area had several forts: Fort Dulany, Fort Denaud, Fort Adams, and Fort Thompson. The last Seminole War ended in 1842 with an agreement that the Seminoles could remain in Florida but were forced further south.

By the mid 1800s, settler families headed south, settling on the high ground created by the Calusas and scrub lands along rivers. They raised citrus, ranched cattle and commercial fished. Frank Johnson, one of Lee County's early pioneers, settled on Mound Key and began excavating the historic site, gathering Calusa artifacts and gold and items left behind by the Spaniards and Cubans.

In 1904, the Koreshans, a celibate Utopian society that settled by the Estero River, built a post office at their settlement and Estero officially became a town. But three years later, other local citizens protested the incorporation, the neophyte city was dissolved and once again part of unincorporated Lee County.

The Koreshans gradually dwindled in numbers, and when their leader, Dr. Cyrus Teed, died in 1908, the group began breaking up. The four remaining members deeded the major part of the Koreshan property to the State of Florida in 1961. Today, the Koreshan State Historic Site includes several preserved buildings, and fishing, camping, nature study, picnicking and boating are popular activities. Canoe rentals are available and park rangers offer guided walks and campfire programs according to seasonal demand.

Historically, the Estero Bay basin was approximately 1,275 ha (3,150 ac) smaller than today. The boundaries were increased when 10-mile Canal was dredged in the 1920's. The dredging began as a source of fill to create a dike to prevent parts of Fort Myers from flooding with seasonal sheetflow from undeveloped lands to the east of the city boundary. The canal was extended, dredging through uplands and wetlands and blasting through rock to connect it to Mullock Creek, cutting off the connection of the Six-Mile Cypress Slough to the headwaters of Hendry Creek.

Estero remained a quiet, sleepy citrus and fishing community for the next 50 to 60 years, harboring small retirement communities and mobile home parks. Estero River Heights, the area's first major development, was built along the river during the late 1960s; today, the neighborhood is filled with

mature landscaping and trees, home renovations and price points that reflect its desirable waterfront location.

The first attempt to incorporate Fort Myers Beach occurred in the mid 1940's and failed by a margin of six or seven votes. A second try in the late 40's lost by a larger number, and an attempt in November, 1953 was a total failure. Using a newly written Charter stipulating that no more than two mills on the tax rate could be assessed without a referendum, the 1957 attempt was defeated by a margin of 88 votes. Using the same Charter in the winter of 1960, the effort to incorporate lost by 50 votes with feelings running strong and voting turnout high.

In 1969, a boundary line agreement between the State of Florida and adjacent landward property owners allowed the sale of more than two thousand acres of aquatic preserve to private ownership. In 1972, Robert B. Troutman, Jr. (an Atlanta attorney) attempted to develop a five hundred million dollar condominium development on 5,240 acres of marshland and mangroves on north shoreline of Estero Bay. Conservationists filed suit against the state to have the boundary line nullified. Between 1969 and 1975, conservationists struggled with developers to protect wetlands, prevent the development and establish the Estero Bay Aquatic Preserve (EBAP). By 1975, the Florida Aquatic Preserve Act was passed and the existing preserves were brought under a standard set of management criteria.

In the 1990's, a settlement agreement between the Responsible Growth Management Coalition and the State of Florida over the siting of Florida Gulf Coast University led to creation of the Estero Bay Agency on Bay Management.

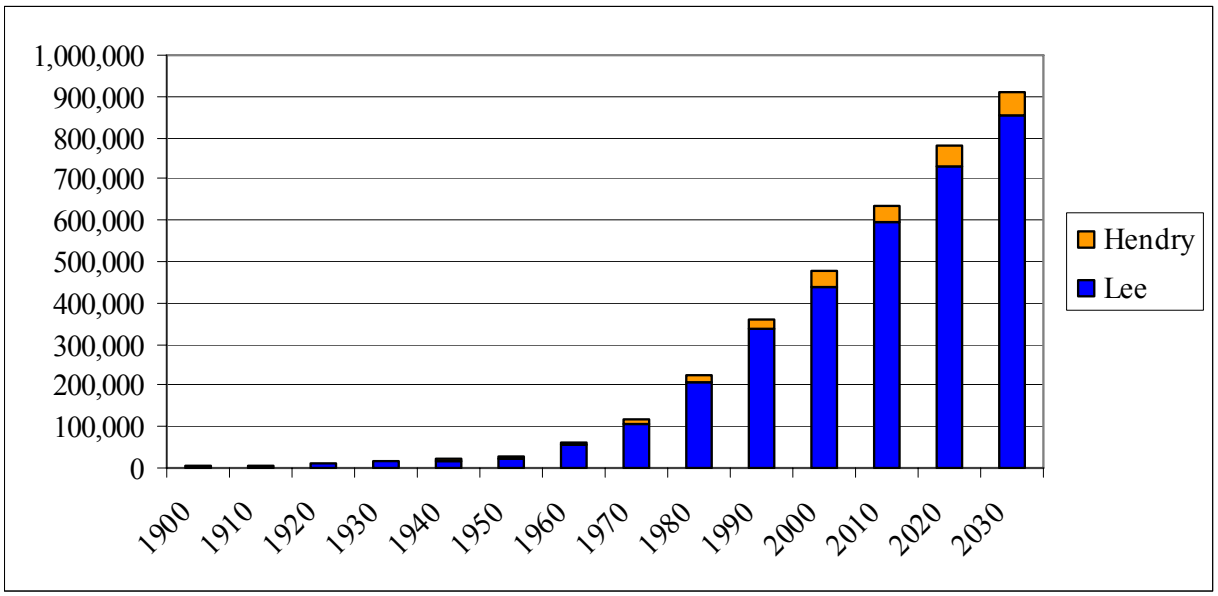
In 1997, Southwest Florida's only four-year university, Florida Gulf Coast University, opened right in the middle of the watershed and east of Estero. Germain Arena and Miromar Outlets opened in Estero in 1998, increasing the population and real estate values. Miromar is a 70-acre, 700,000-square-foot outlet center. Germain, which doubles as a hurricane and emergency shelter housing up to 6,500 people, is the home of the Florida Everblades professional hockey team, the Sea Dragons basketball team, and the Firecats, a minor league arena football team. Growth exploded both east of Interstate 75 and the coastal band flanking US 41.

Population and Urbanized Area Growth

The latest decennial Census of the population was performed in the year 2000. GIS techniques were used to analyze study area population. There is double-counting where census blocks cross basin boundaries. The greatest portion of the population existed in the Tidal Caloosahatchee basin, followed by the Estero Bay basin. The Estero Bay population in 2000 was 121,923. This is 22.7% of the Lower Charlotte Harbor Area population and 26% of the population of Lee County. Given the dominance of the Tidal Caloosahatchee and Estero Bay basins in population numbers, it follows that Lee County has the greatest total population (87%) within the total Lower Charlotte Harbor study area that also includes Charlotte, Glades and Hendry counties.

The historical population growth is based on Lee and Hendry County population because these counties represent 93% of the study area population and most of the population of the two counties resides in the study area. The study area has been experiencing exponential growth and there is a substantial difference in population between coastal and interior counties. The total population is currently over 500,000 residents and is projected to be over 900,000 by the year 2030 (BEBR, 2003).

Figure 11: Historic and Projected Population Growth in Lee and Hendry Counties



The Census Bureau defines an urbanized area as continuous areas of over 1000 people per square mile. The first urbanized area in Lower Charlotte Harbor was defined for Fort Myers/Cape Coral as a result of the 1970 census. The increase of the 1980 urbanized area was not much greater geographically than the 1970. The most geographically significant increase of urbanized area for 1990 was in Cape Coral and Punta Gorda. By the year 2000 the urbanized area had greatly expanded in the Estero Bay basin (See Figure 11).

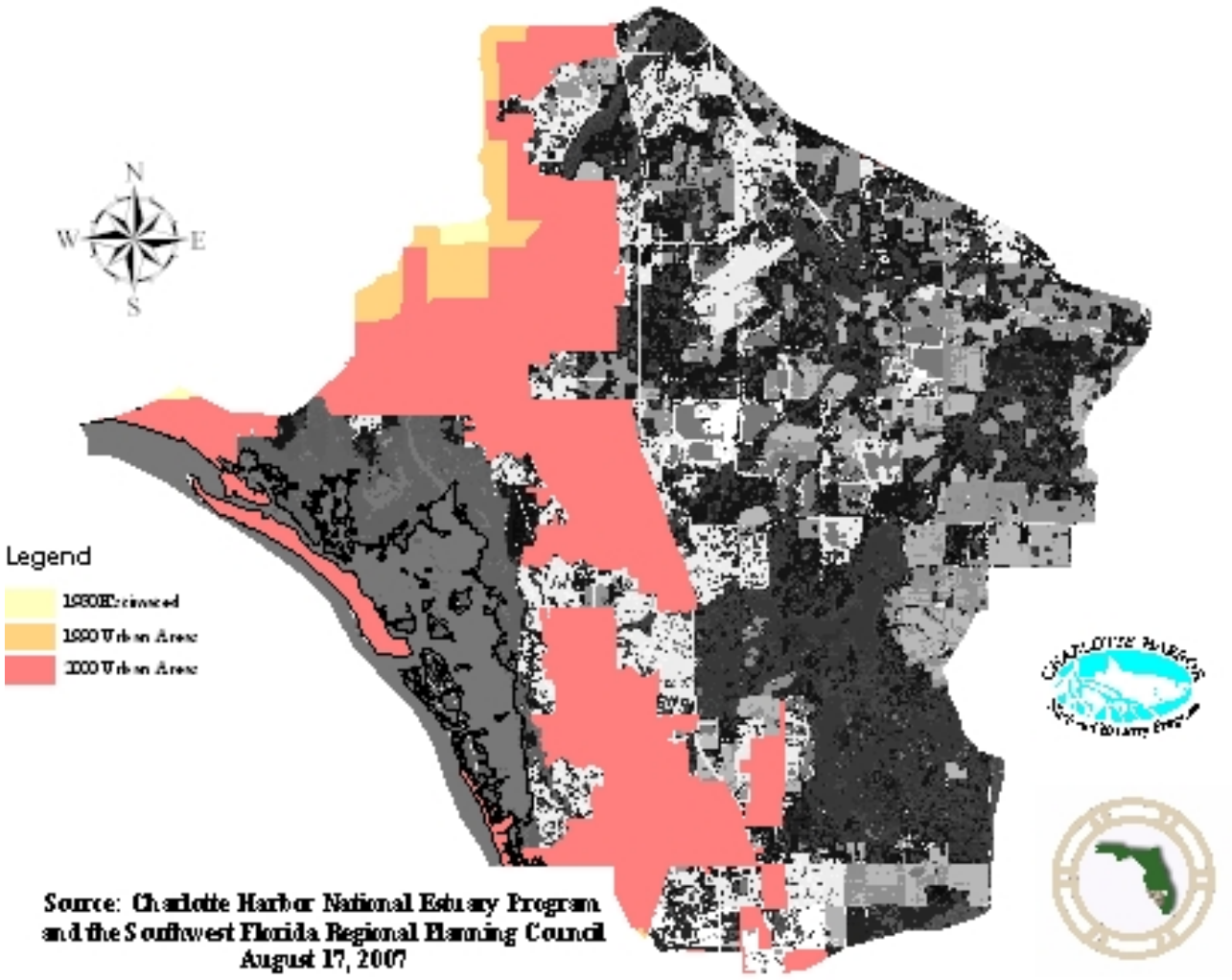


Figure 12: Urbanized Area Growth

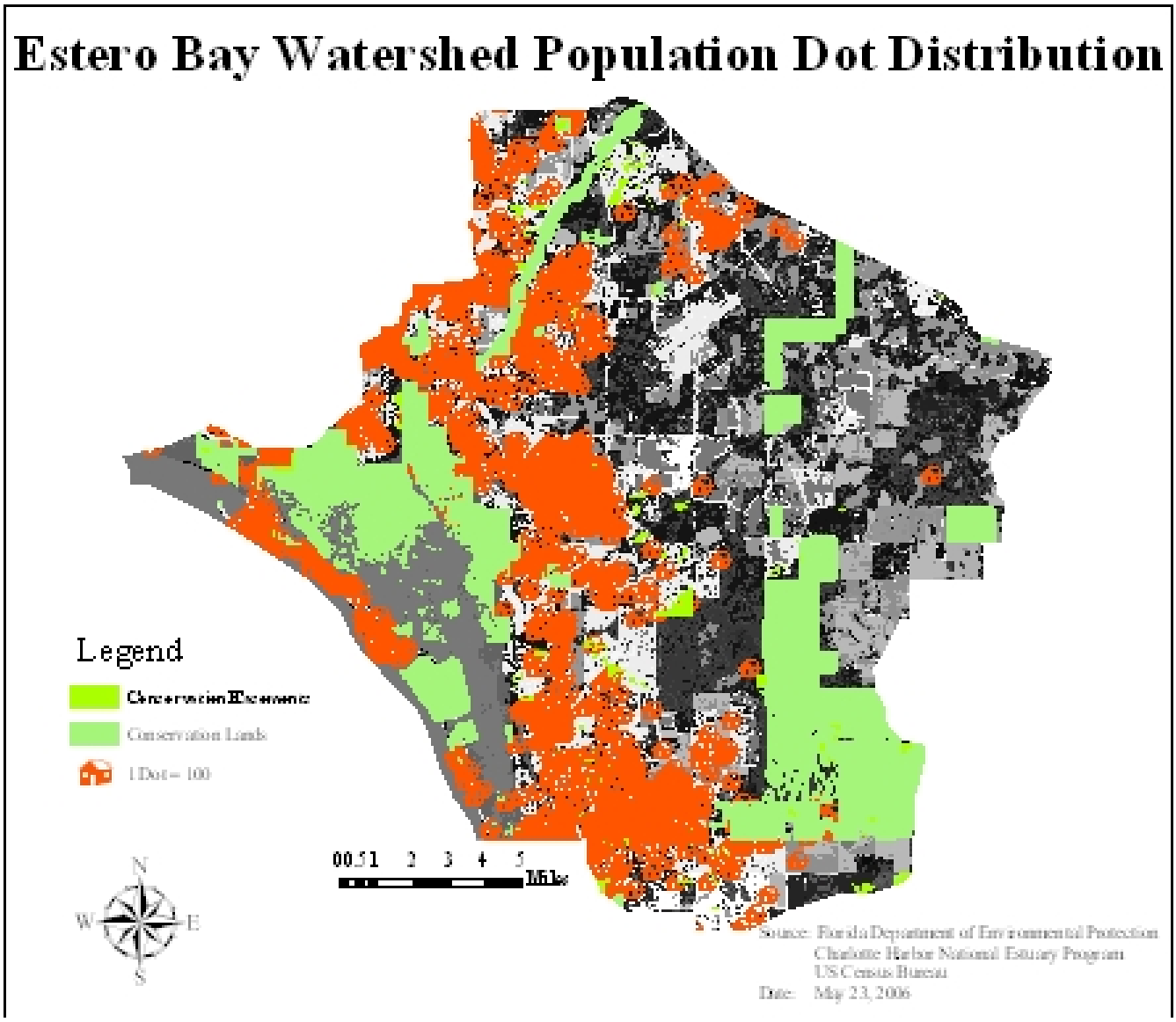


Figure 13: Population Distribution

Projected future growth

The Lee Plan is designed to depict Lee County as it will appear in the year 2020. Given the projected increase in population (to 602,000 permanent and 764,171 seasonal residents) and the probable rate of technological change between the present date and 2020, it is impossible to describe the future face of the county with any degree of certainty or precision. However, the following list of themes will be of great importance as Lee County approaches the planning horizon:

- The growth patterns of the county will continue to be dictated by a Future Land Use map that will not change dramatically during the time frame of this plan. With the exception of Cape Coral and Lehigh Acres, the county's urban areas will be essentially built out by 2020 (pending, in some cases, redevelopment). The county will attempt to maintain the clear distinction between urban and rural areas that characterizes this plan. Its success will depend on two things: the continuing viability of agricultural uses and the amount of publicly-owned land in outlying areas.

- The county will protect its natural resource base in order to maintain a high quality of life for its residents and visitors. This will be accomplished through an aggressive public land acquisition program and by maintaining and enforcing cost-effective land use and environmental regulations that supplement, where necessary, federal, state, and regional regulatory programs.

The Lee Plan's land use accommodation is based on an aggregation of allocations for 22 Planning Communities. These communities have been designed to capture the unique character of each of these areas of the county. Within each community, smaller neighborhood communities may exist; however, due to their geographic size, a planning community could not be created based on its boundaries. These communities within the Estero Bay Watershed and their anticipated evolutions are as follows: (Amended by Ordinance No. 99-15)

Bonita - This community includes all land incorporated in the City of Bonita Springs as well as additional lands to the north in unincorporated Lee County. This Community is located in south Lee County from the Estero River and the northern boundary of the Brooks of Bonita development south to the Collier County line. It is generally west of I-75 except south of Bonita Beach Road where it extends to the east county line. The Community contains all the islands south of the Town of Fort Myers Beach including those in the area of Mound Key. This community has a wide variety of Future Land Use designations from Rural to Central Urban. It includes Industrial Development areas and a General Interchange area. The General Interchange, Outlying Suburban, and Rural lands east of I-75 are included because they do not have the same characteristics as the other lands within the Southeast Lee County community described below which is almost entirely Density Reduction/Groundwater Resource. Bonita Springs is one of the fastest growing communities in Lee County and is expected to nearly double in population between 1996 and 2020 with an expected 2020 permanent population of approximately 37,000. The Bonita Community will also remain a seasonal homeowner destination and has an anticipated Seasonal Population of 61,000 in the year 2020. This community will have only 20% of its total land area remaining vacant or in agricultural use in the year 2020. (Added by Ordinance No. 99-15)

Daniels Parkway - This Community is located between I-75 and the Six Mile Cypress Slough, south of the City of Fort Myers and north of the Alico Road industrial area. The community contains lands designated Rural, Outlying Suburban, and a small area of General Interchange. This community is considered one of the primary gateways to Lee County. This community has some rural characteristics which will remain in existence through the year 2020. Much of the existing vacant land will be developed into low density gated communities. While there is a potential to redevelopment the large lot home sites north of Daniels Parkway into the smaller lots allowed by the Outlying Suburban category, this development pattern not anticipated by 2020.This community will grow from 6,000 to 7,500 permanent residents and over 10,000 total residents by 2020. (Added by Ordinance No. 99-15)

Estero – The Estero Community is a community that embraces its historic heritage, while planning for future growth resulting from Florida Gulf Coast University, the Southwest Florida International Airport, growing population and the natural environment. Estero's growth will be planned as a village, establishing defined areas for shopping, service and entertainment, while protecting and encouraging residential neighborhoods. Weaving the community together will be limitations on strip commercial uses, inappropriate signage and undesired commercial uses, while additional design guidelines will be established to ensure landscaping, streetscaping, architectural standards, and unified access points. The implementation of this Planning Vision will help reduce the conflict between residential and commercial areas.

Fort Myers Beach - This community includes all land incorporated in the Town of Fort Myers Beach as of this date. The town of Fort Myers beach will continue to have a strong retail base for tourist needs and the daily needs of the residents. However, major consumer needs will remain to be met outside of this community. Fort Myers Beach does a boating and marina industry on the island which fosters the employment base of the community. The development of its own comprehensive plan ensures that the Town of Fort Myers Beach will look much as it does today in the absence of a major hurricane or other natural disaster. The population of this community is very influenced by seasonal factors. This community is nearly built out today and will not have a substantial increase in permanent population by the year 2020. (Added by Ordinance No. 99-15)

Gateway/Airport - This Community is located South of SR 82, generally east of I-75, and north of Alico Road including those portions of the Gateway development that either have not been or are not anticipated to be annexed into the City of Fort Myers, the Southwest Florida International Airport and the properties the airport expects to use for its expansion, the lands designated as Tradeport, and the land designated as Industrial Development west of I-75 north of Alico Road. In addition to these two land use designations, properties in this community are designated New Community (the Gateway development), Airport, Density Reduction/ Groundwater Resource (primarily the anticipated airport expansion areas), Rural, and General Interchange. The road network in this community is planned to change dramatically over time creating access to and from this community to the north, south, and east without relying on I-75.There are three distinct areas within this community. The Gateway portion of this community is the area where residential uses will occur. Gateway will be a nearly built-out, mixed-use community in 2020. The population of this community is anticipated to grow from 1,500 permanent residents in 1996 to approximately 8,000 in 2020 and is expected to have fewer than1, 000 units remaining to be built in the year 2020. The Gateway/Airport community will continue to have an average seasonal resident influx for the Lee County area with an expected 2020 functional population of 10,000. The second area in this community is the Southwest Florida International Airport. The airport will be greatly expanded by 2020. The expanded airport will have a second parallel runway and a new terminal building that will more than double the existing capacity of the airport. Development will be guided by the Airport Layout Plan (as established through the airport master plan process) consistent with the Southwest Florida International Airport Proposed Development Schedule and all other Lee Plan provisions. The airport expansion and the completion of Florida Gulf Coast University are expected to energize the remaining area in this community, including the commercial and industrial components. This portion of the community is to the south and west of Gateway and the airport and extends west of I-75 along Alico Road. While this segment of the community was not expected to build out during the timeframe of the 2020 plan, the reality is that development has accelerated for permitting for a more urbanized with industry and businesses. (Amended by Ordinance No. 04-16)

San Carlos - This Community is located in the southern portion of Lee County, east of Hendry Creek and, for the most part, south of Alico Road. It is north of the Estero River on the west side of US 41 then north of the Brooks of Bonita development east of US41. The community does extend east of I-75 to include the approved developments along Corkscrew Road and all lands designated University Community. The majority of the land in this community is designated as Suburban and then Urban Community (both having a maximum standard density of 6 units per acre) with the remaining areas designated as Rural, Outlying Suburban, and Industrial Development. There are four distinct areas within this community: San Carlos Park, Island Park, Estero, and the new university area. All of these areas will be experiencing tremendous development pressures as this community explodes into the next century. This community will be challenged with addressing the needs of the Lee County community that contains the newest major state university, a new semi-professional ice-hockey arena, and immediate access to the Southwest Florida International Airport. Most of the vacant property in this community (nearly 70%) has some

type of development approval most of which were granted prior to the advent of many of these new development engines.

South Fort Myers - This Community is located in the center of Lee County. South of the City of Fort Myers, east of the Caloosahatchee River, west of the Six Mile Cypress Slough, and north of Gladiolus Drive. This community primarily has the higher intensity land use categories such as Intensive Development, Central Urban, Urban Community, Industrial Development, and Suburban. This community contains one of the county's major hospitals, a baseball spring training facility, and the local community college. This community will be nearly built out by the year 2020 The South Fort Myers Community will continue to be a core area of the county providing office area for professional services in areas such as financial and medical. There will also be an increased amount of commercial activity along the US 41 corridor and light industrial uses will continue to expand along the Metro Avenue corridor north of Daniels Parkway. The amounts of commercial and industrial uses in this community are expected to double and most of the suitable land for these uses will be developed by 2020.The residential areas of this community will also continue to develop through the year 2020 however the popularity of the residential opportunities to the south in the San Carlos/Estero and Bonita communities will continue to dominate this segment of the market. This community will grow from a 1996 permanent population of 46,000 to approximately 52,000 in 2020. In 2020, this community will still be 4,000 permanent residents from its build out population. While this community is not as heavily influenced by the seasonal population as the communities to the south, in season, South Fort Myers is expected to have a population of over 60,000 in the year2020. (Added by Ordinance No. 99-15)

Southeast Lee County - As the name implies, this Community is located in the southeast area of Lee County. South of SR 82, north of Bonita Beach Road, east of I-75 (excluding areas in the San Carlos Park/Island Park/Estero Corkscrew Road and Gateway/Southwest Florida International Airport Communities) and west of the county line. With the exception of a few Public Facilities, the entire community is designated as Density Reduction/Groundwater Resource, Conservation Lands (both upland and wetlands), and Wetlands on the Future Land Use Map. This "community" consists of mining operations, agricultural uses, and very large lot residential home sites. The one exception is the Citrus Park Community. This community will not change in character by the year 2020 and will continue to have a population of approximately2000 residents. (Added by Ordinance No. 99-15)

Pre-Development and Recent Land Cover

As part of the Southwest Florida Feasibility Study (SWFFS), a pre-development vegetation map was prepared for the hydrologic modeling effort. The mapping effort began with the soils map. For disturbed soils, archival information was used to identify the likely pre-development vegetative communities (See Figures 15 and 16).

The ratio of pine flatwood types to each other in the pre-development landscape was 1 acre of xeric pine flatwoods to 22 acres of mesic pine flatwoods to 16.5 acres of hydric pine flatwoods. The total acres of wetlands were 115,827 acres including 48,500 acres of hydric pine flatwoods. Mesic flatwoods comprised over 40% of the land area before development, with hydric flatwoods making up another 21%. The ratio of wetlands to upland landcover was 1.65 to 1.

Table 4: Pre-Development General Habitat Types Acreage

Upland	***Wetland***	***Open Water***
70,351 acres	115,807 acres	34,861 acres
32%	***52%***	***16%***

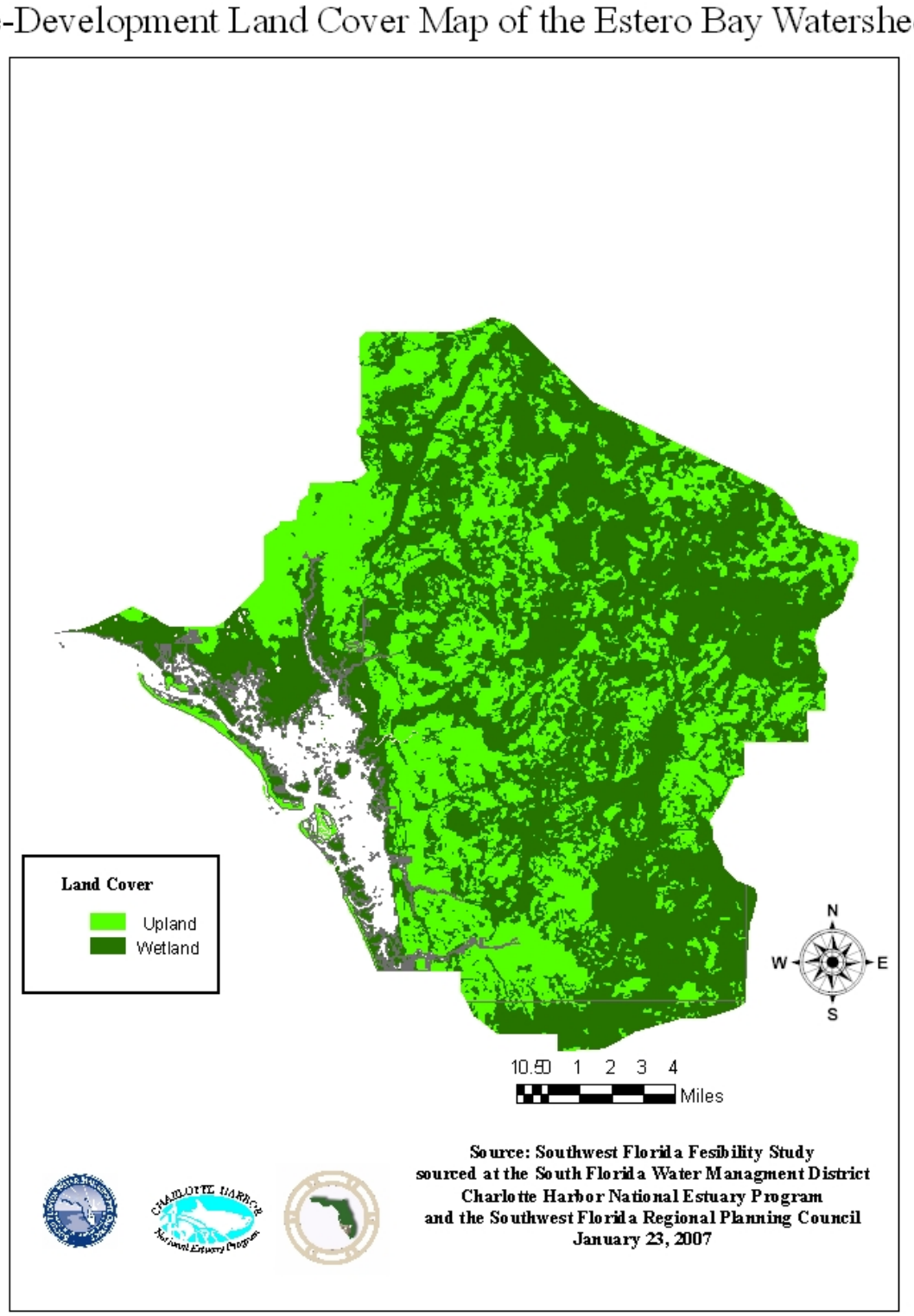


Figure 14: Simplified Pre-Development Vegetation Map

Pre-Development Land Cover Habitat Map of the Estero Bay Watershed

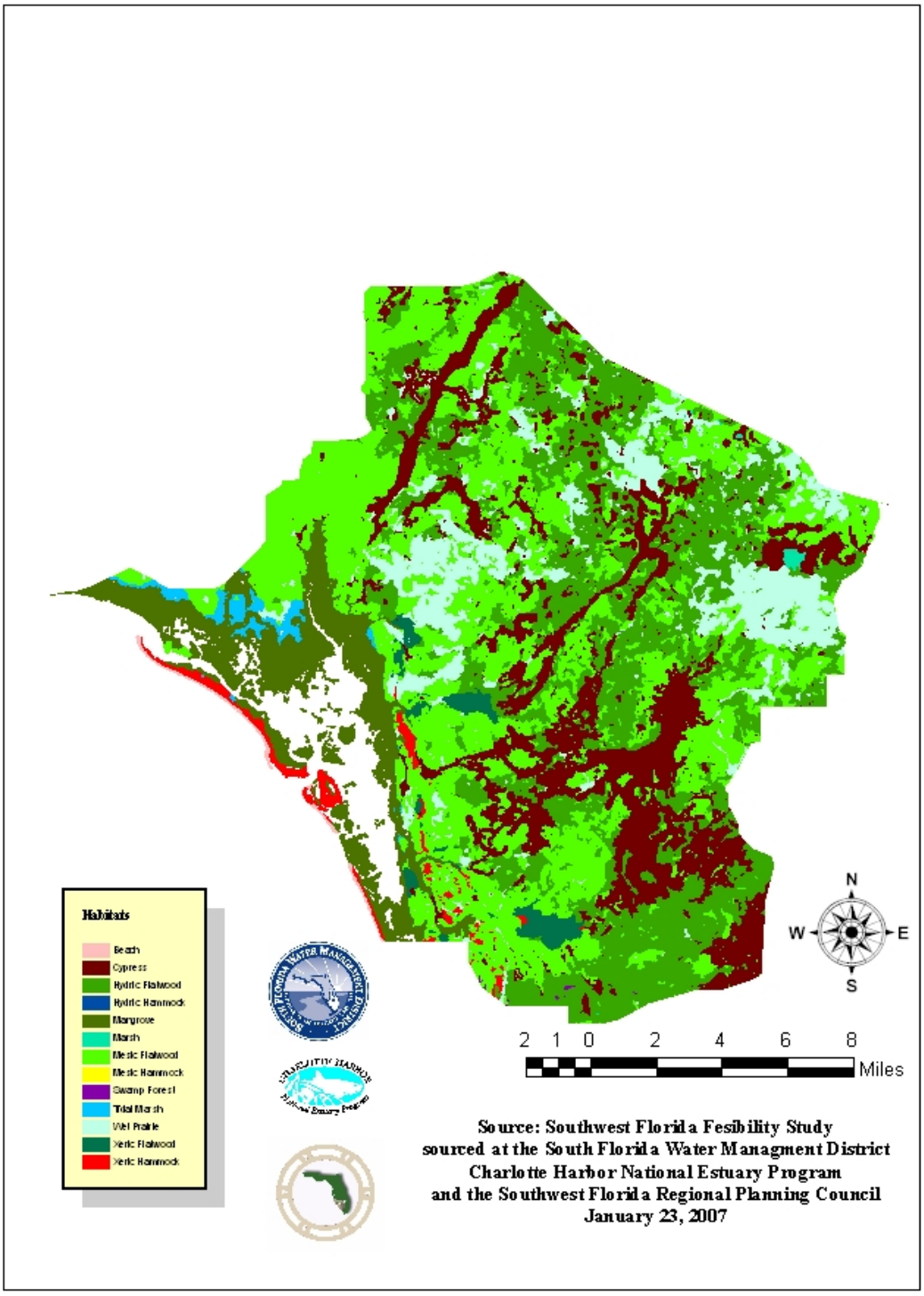


Figure 15: Pre-Development Vegetation Map

Table 5: Pre-Development Vegetation Acreage

	Estero Bay	Percentage
Beach	252	0%
Cypress	31,989	4%
Hydric Flatwood	48,500	21%
Mangrove	13,311	4%
Marsh	350	6%
Mesic Flatwood	64,577	41%
Swamp Forest	129	0%
Tidal Marsh	2,024	1%
Water	34,861	20%
Wet Prairie	19,504	6%
Xeric Flatwood	2,945	1%
Xeric Hammock	2,577	1%
Total	221,020	100%

The FWC prepares land cover maps from LandSat Imagery. The latest version is from 2003 (See Figure 15). Land cover can be different from land use. For example, the land cover for unimproved pasture can be Mesic Flatwoods.

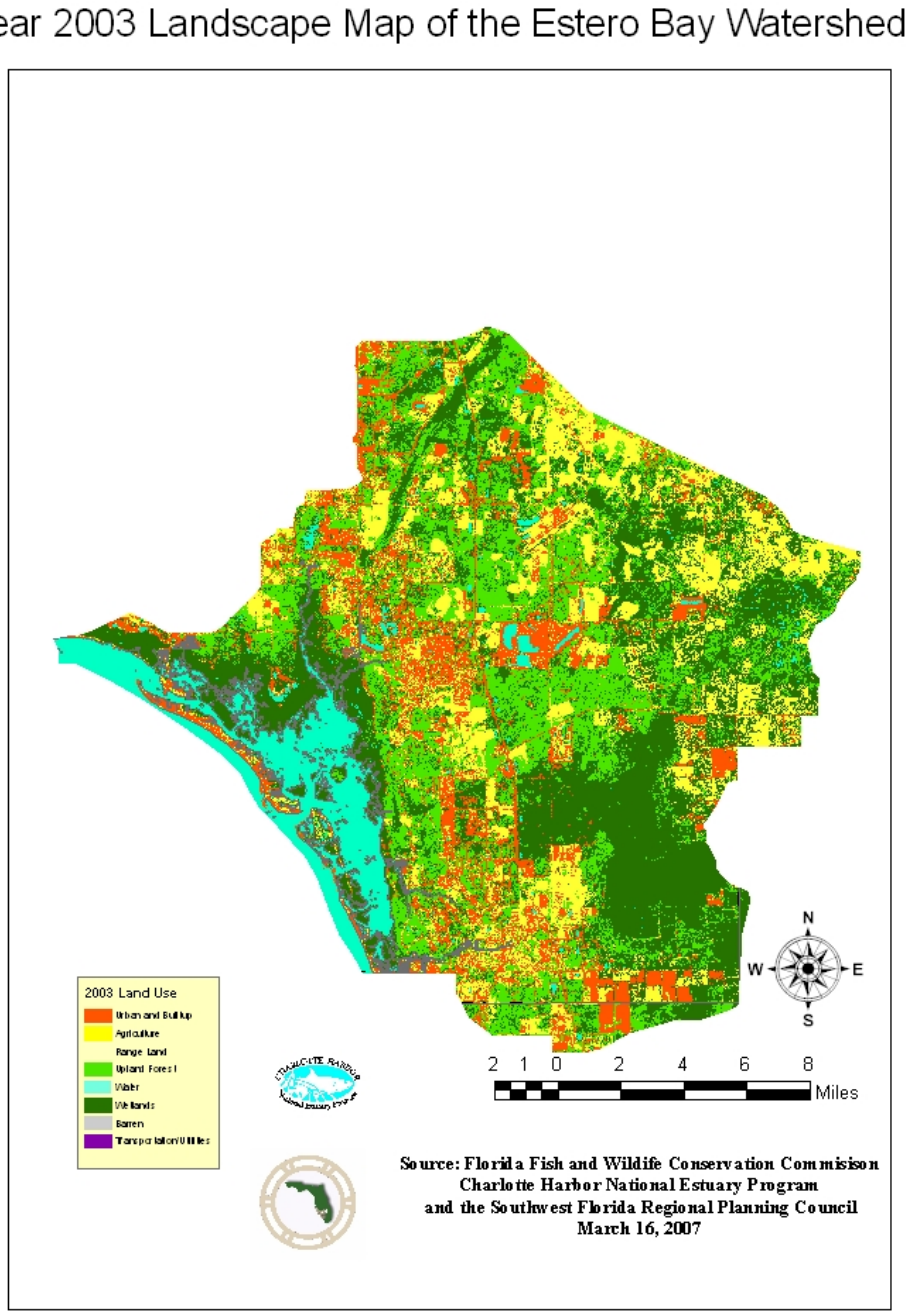


Figure 15: 2003 FWC Land Cover

For the purposes of this analysis, Land Cover categories were converted to SFWMD Pre-Development Vegetation classifications. FWC did not make the distinction between xeric, mesic, and hydric in the same manner that SFWMD did. Therefore, the following table includes some combining of categories. Beach may have increased because of renourishment and compaction of coastal strand. Mesic/Xeric Hammock may have increased because of fire suppression and drainage. Overall, by the year 2003 native habitats decreased by 53% from Pre-Development conditions.

Table 6: 2003 Land Cover Compared to Pre-Development Vegetation (in acres)

	2003 Land Cover	Predevelopment Landcover	Percentage Change
Beach	231	252	-8%
Cypress	16,353	31,989	-49%
Flatwood	37,754	113,077	-67%
Hydric Hammock	584	0	+584%
Mangrove	11,969	13,311	-10%
Mesic/Xeric Hammock	2,444	5,522	-56%
Swamp/Marsh	18,909	22,007	-14%
Open Water	42,450	34,861	+22%
Exotics	41	N/A	N/A
Agriculture	30,396	N/A	N/A
Urban	51,301	N/A	N/A
Mining	820	N/A	N/A
Total			
Native Land Habitats	130,694	220,788	-41%

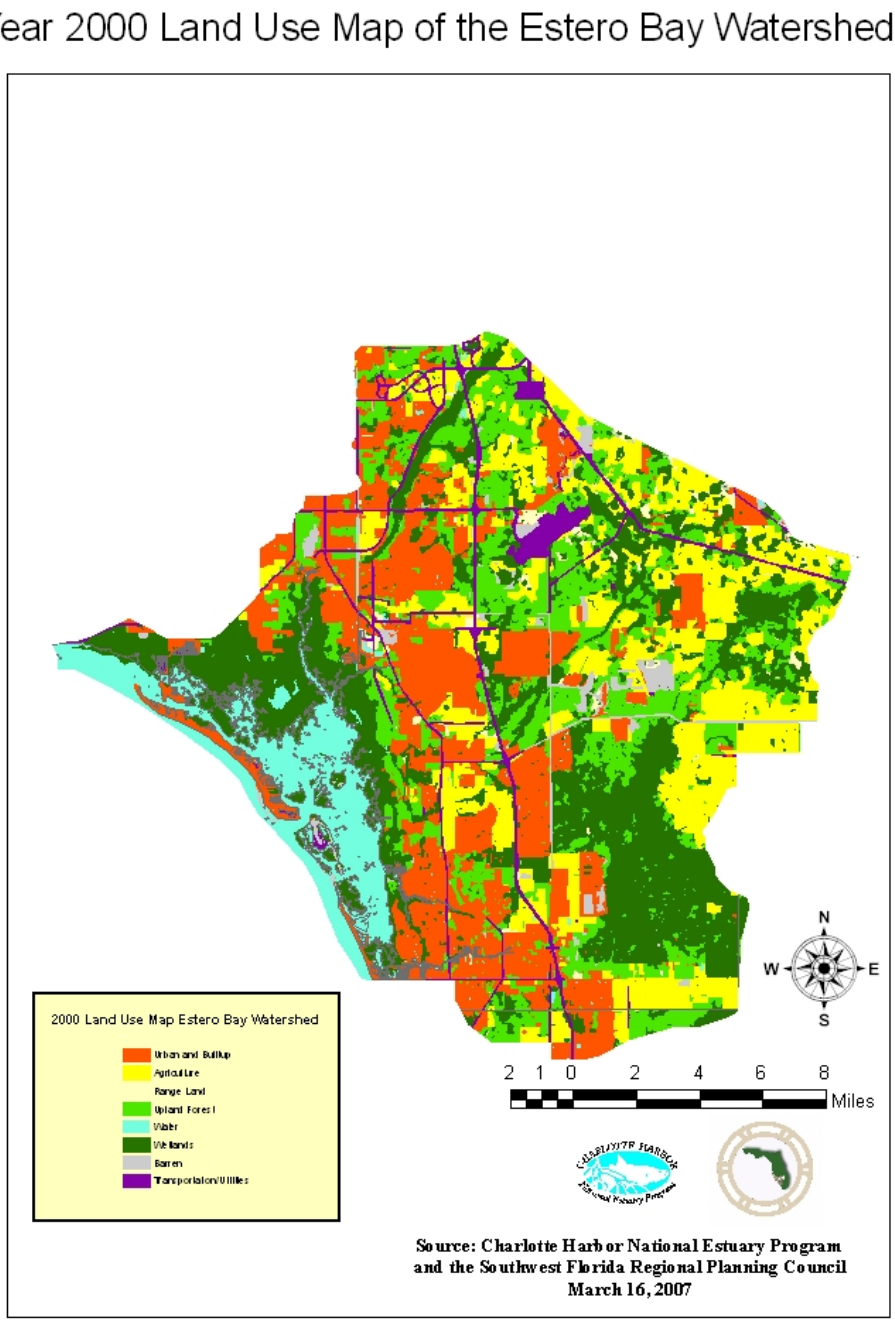
Existing Land Use

2000 Land Use

Both the SFWMD and SWFWMD maintain Existing Land Use information using the Florida Land Use and Cover Classification System (FLUCCS). Typically these are updated every 5 years. FLUCCS is the state standard and was developed by the Florida Department of Transportation (FDOT) in cooperation with state agencies. The manual which details the classification system is available at: http://www.dot.state.fl.us/surveyingandmapping/geographic.htm.

Land designated as urban land use or urban purpose, depicted in orange in the figure below are concentrated along the Tidal Caloosahatchee and the Orange River (Lehigh Acres) (See Figure 19). Pockets of urbanization have expanded in the Estero Bay Basin. Distinct Community areas still exist in the tidal Caloosahatchee and in Charlotte Harbor basins. Agricultural Uses are concentrated within the Freshwater Caloosahatchee watershed. Upland Forest is found predominately as a band across the northern third of the study area. Wetlands are found as a mangrove fringe surrounding the estuarine waters of the study area and large cypress systems such as the Flint Pen Strand and Telegraph Swamp.

Figure 16: 2000 Level 1 Land Use



The following table details the land acreages at the FLUCCS level 2.

Table 7: 2000 Land Uses at Level 2 (in acres)

Land Use Code	Description	Acres	Percentage
100	Urban/Builtup	2,001	1
110	Residential, Low Density <Less than two dwelling units per acre>	5,720	2.6
120	Residential, Medium Density <Two-five dwelling units per acre>	12,607	5.7
130	Residential, High Density	3,194	1.7
140	Commercial and Services	2,237	1
150	Industrial	2,138	1
160	Extractive	4,200	1.9
170	Institutional	461	0.2
180	Recreational	6,467	2.9
190	Open Land	4,097	1.9
210	Pastures/Row Crop	31,254	14.2
220	Tree Crops	2,249	1
230	Feeding Operations	0	0
240	Nurseries and Vineyards	248	0.1
250	Specialty Farms	86	0.03
260	Other Open Lands <Rural>	1,071	0.4
310	Herbaceous (Dry Prairie)	80	0.03
320	Shrub and Brushland	981	0.5
330	Mixed Rangeland	1,143	0.5
410	Upland Coniferous Forests	31,609	14.3
420	Upland Hardwood Forests	2,559	1.2
430	Upland Hardwood Forests Cont.	975	0.5
440	Tree Plantations	107	0.04
510	Streams and Waterways	589	0.3
520	Lakes	157	0.07
530	Reservoirs	1,988	0.9
540	Bays and Estuaries	34,229	15.5
560	Slough Waters	387	0.2
610	Wetland Hardwood Forests	16,867	7.6
620	Wetland Coniferous Forests	24,972	11.3
630	Wetland Forested Mixed	5,403	2.5
640	Vegetated Non-Forested Wetlands	10,437	4.7
650	Non-Vegetated/Tidal Flats	656	0.3

710	Beaches Other Than Swimming Beaches	123	0.05
720	Sand Other Than Beaches	10	0.004
740	Disturbed Lands	4,241	1.9
810	Transportation	4,006	1.8
820	Communications	20	0.008
830	Utilities	1,443	0.7
	Total Area	221,012	100
	Land Area	183,663	83

Public Conservation Lands

Existing Lands under Public or Private Stewardship

The Florida Natural Areas Inventory (FNAI) maintains an inventory and Geographic Information System (GIS) coverage of lands under public and private non-profit management for conservation purposes. The coverage includes contact information and descriptions of the property. By the year 2006, nearly 32,000 acres are publicly managed within the Estero Bay Watershed area, as shown in Figure 20 below.

Year 2006 Conservation and Mitigation Areas of the Estero Bay Watershed

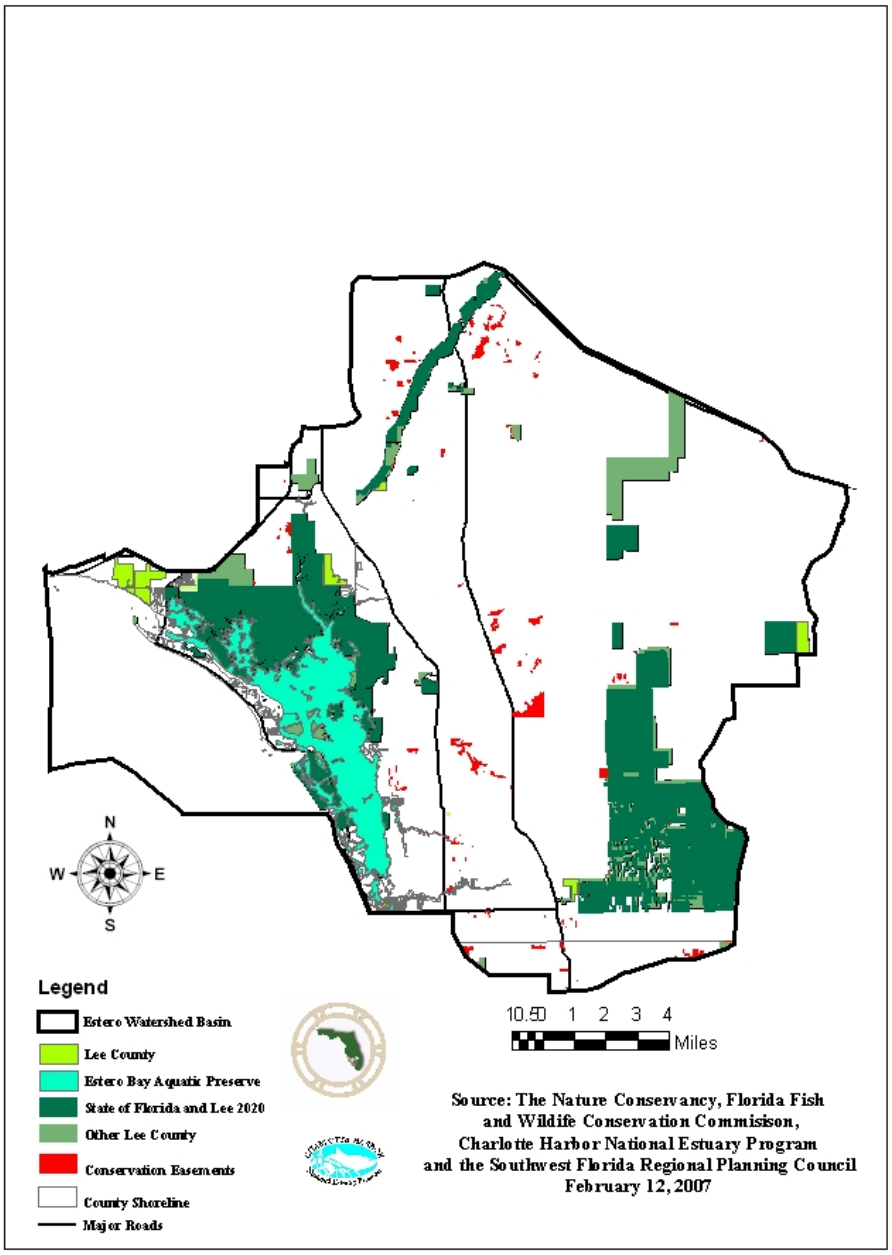


Figure 17: Lands and Waters in Conservation

Numerous agencies have acquired and managed lands for conservation purposes. The SFWMD is steward for 12,239 acres which includes the CREW. The State of Florida, through the Trustees of the Internal Improvement Trust Fund owns and manages 11,151 acres. These purchases have been by-and-

large for buffers to the State Aquatic Preserves. An additional 8,457 acres is under Lee County ownership and management.

A summary of existing conservation lands compiled through the Florida Natural Areas Inventory, Florida Managed Lands shape file, issued March 2005, is presented in Table 6 below.

Table 8: Public Lands Total Acreage in Conservation

OWNER	Estero Bay
City of Fort Myers	101
Lee County	8,457
SFWMD	12,239
State of Florida	11,151
Total	31,948
Total Land Area	183,663
Percentage in conservation	17.4%

Conservation Easements under Private Management

An extra 2,786 acres are privately managed and are within a conservation easement. These easements are nearly all associated with private development permit requirements. Both Lee County and SFWMD track conservation easements which are transferred to them as a result of development permitting regardless of size using GIS, from which the Figure 18 was derived.

Table 9: Conservation Easements

	Total Acres
SFWMD easement holder	2,688
Lee easement holder	99
Total	2,786

Figure 18: Conservation Easements

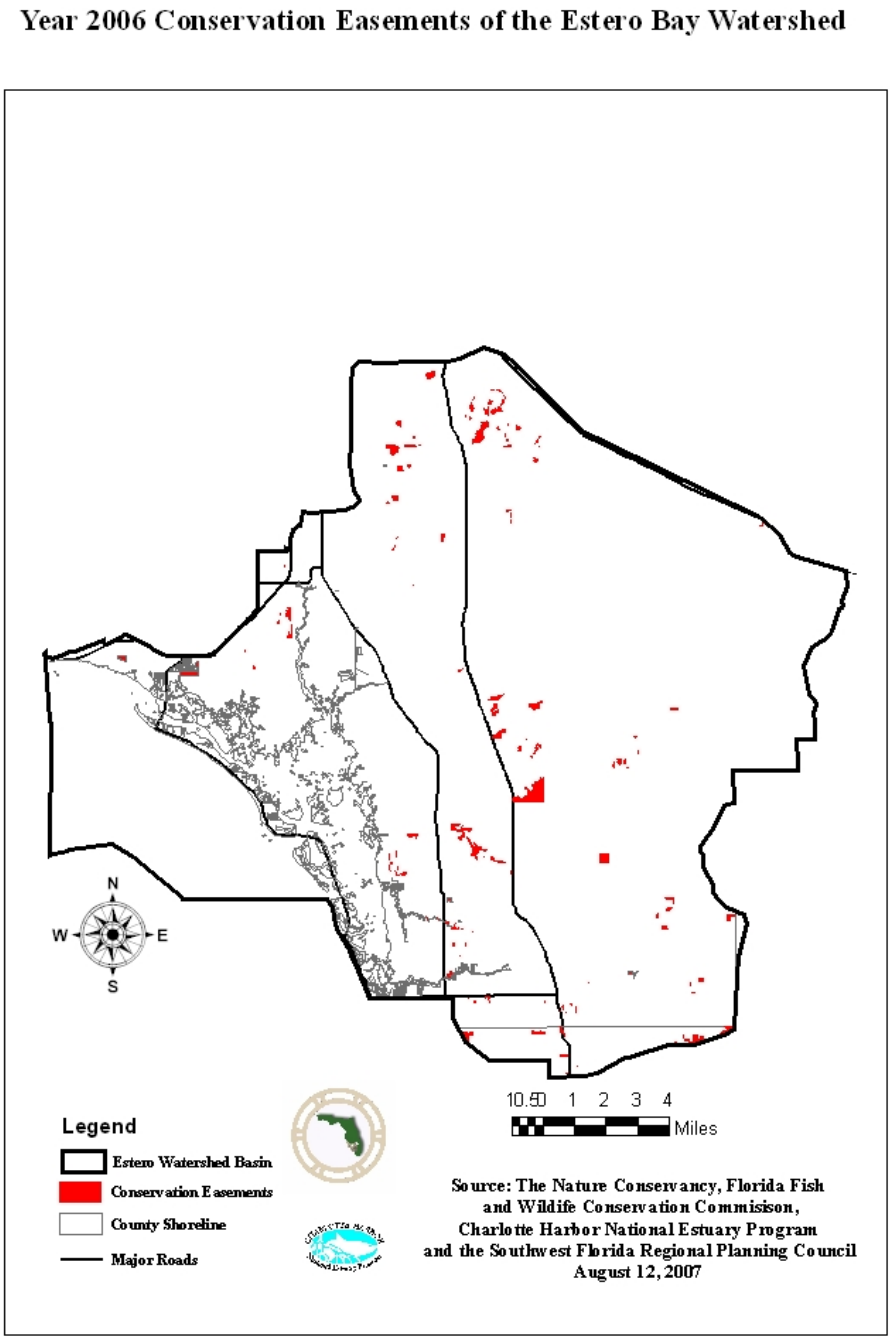


Table 10: Total Acreage Public and Private Areas in Conservation in the Estero Bay Watershed

OWNER	Estero Bay
City of Fort Myers	101
Lee County	8,457
Private/Easements	2,786
SFWMD	12,239
State of Florida	11,151
Total	34,734
Total Land Area	183,663
Percentage in conservation	18.9%

Strategic Habitat Conservation Areas and Greenways

Using LandSat imagery, habitat use, and listed species sightings, the FFWCC identified Strategic Habitat Conservation Areas (SHCAs). SHCAs have many areas in common with native lands.

Figure 19: Strategic Habitat Conservation Areas

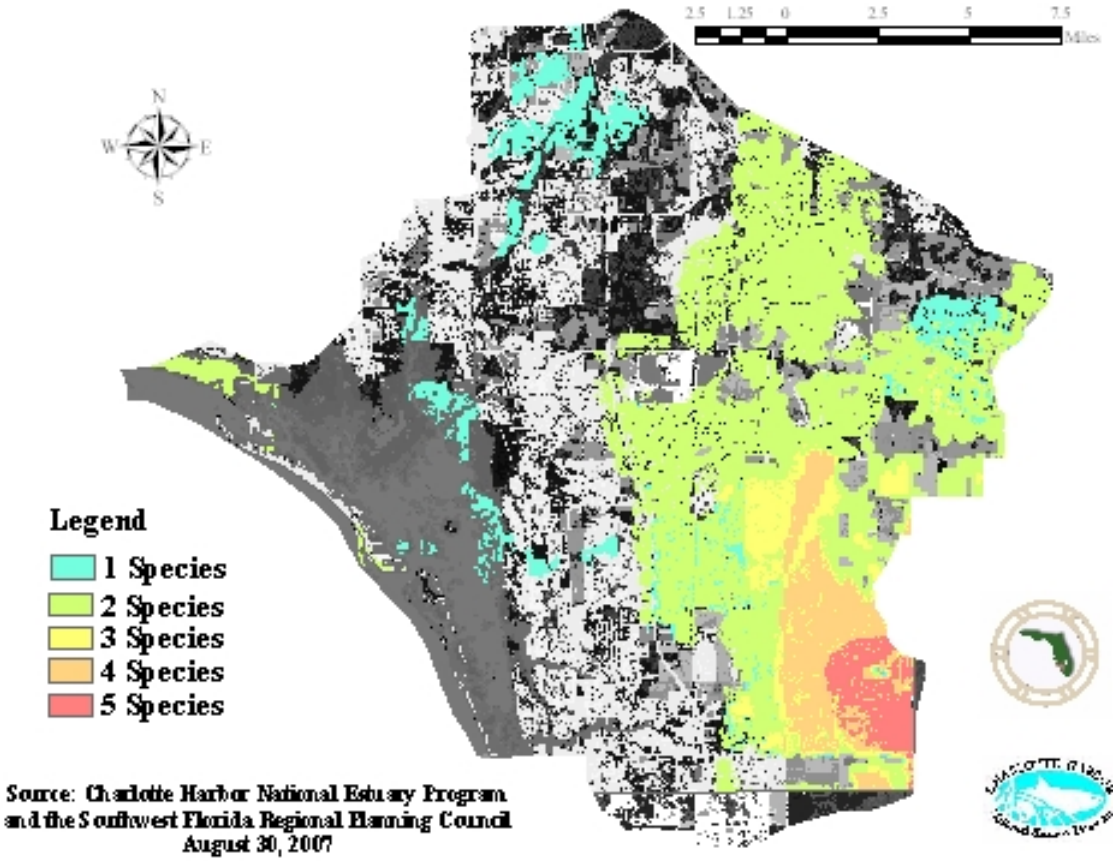


Table 11: Strategic Habitat Conservation Area Species Pertinent to the Estero Bay Watershed

Amphibians and Reptiles	*Birds*	OTHER COMPONENTS OF
American crocodile	American swallow-tailed kite	BIOLOGICAL DIVERSITY
	Audubon's crested caracara	Analysis of 105 globally rare plant species
Mammals	Black-whiskered vireo	Scrub communities
•	Cuban snowy plover	Tropical hardwood hammock communities
Florida black bear	Florida grasshopper sparrow	Wetlands important to wading birds
Florida panther	Florida sandhill crane	• Common egret
Big Cypress fox squirrel	Florida scrub jay	• Little blue heron
	Limpkin	• Reddish egret
	Mangrove cuckoo	• Roseate spoonbill
	Mottled duck	• Snowy egret

	Red-cockaded woodpecker Short-tailed hawk Snail kite Southeastern American kestrel Southern bald eagle	• Tricolored heron • White ibis • Wood stork

As part of Florida's statewide system of greenways and trails, a series of maps were completed to define opportunities for establishing the Trails and Ecological Greenways Networks. These maps assist in guiding planning and determining appropriate lands for acquisition. They were originally completed during creation of the 1998 Implementation Plan for the Florida Greenways and Trails System and have gone through an update since that time. Figure 23 shows the conservation/ecological opportunities FDEP product. More information can be found at: http://www.dep.state.fl.us/gwt/network/network.htm.

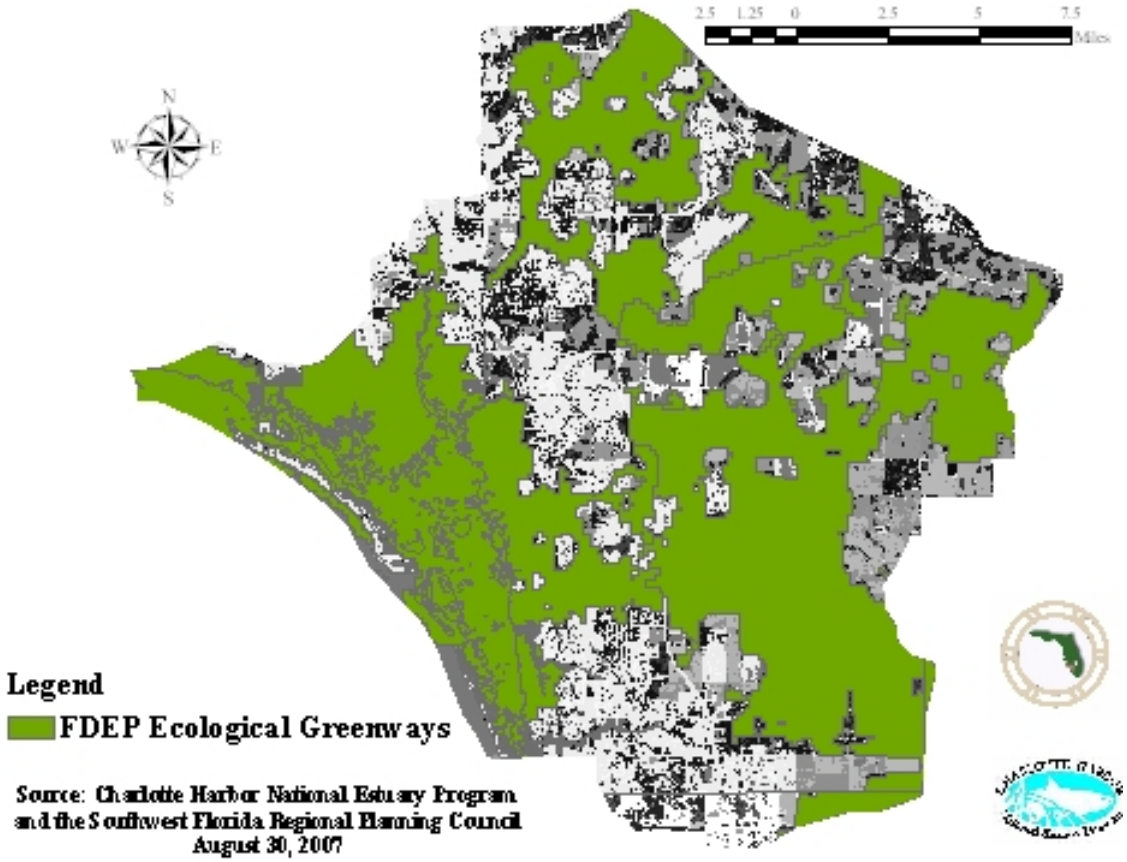


Figure 20: Florida Greenways and Trails Program Conservation/Ecological Opportunities

Identified Lands for Potential Future Acquisition

Potential future acquisition sites are identified through the State's Florida Forever program and through the Lee County Master Mitigation Plan, SWF RRCT Restoration Needs, and SWFFS Alternatives Development Group. The predecessor to the Florida Forever program is the Conservation and Recreation Lands (CARL) program.

Figure 21: Identified Lands for Potential Future Acquisition

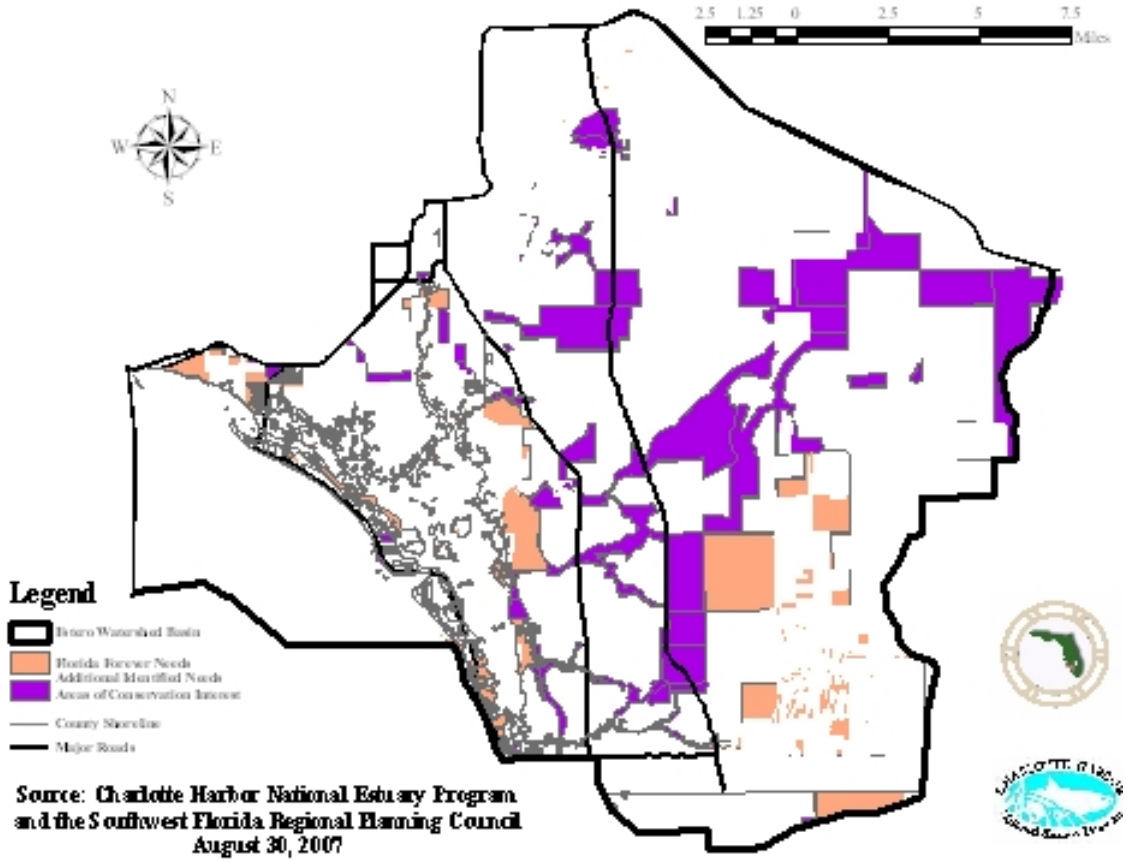


Table 11 compares acreage of existing lands managed for conservation purposes to potential future acquisitions of conservation lands. Nearly 64% of identified conservation land acquisition needs are included in the existing Florida Forever projects' boundaries.

Table 11: Future Lands Managed for Conservation Needs Analysis

	Acres
All Identified Future Acquisition Needs	35,057
Florida Forever Needs Only	12,721
Existing Conservation Managed Lands	31,948
Total Identified Future Conservation Managed Lands	67,005
Percent Increase Conservation Managed Lands Identified	110%
Total Estero Watershed Land Area	183,663
Percent Conservation Managed Lands Identified of Total Land Area of the Estero Bay Watershed	36%

Sources: Florida Natural Areas Inventory and Charlotte Harbor National Estuary Program (Lee County Master Mitigation Plan Mapping).

East Gulf of Mexico Coastal Conservation Corridor Plan

The East Gulf of Mexico Coastal Conservation Corridor originated as the Southwest Florida Coastal Conservation Corridor Project (SWFCCC). Work on the project was conducted under that title until mid-2007 when the Team Leaders voted to change the title to better reflect the geographic extent of the project.

The concept for the SWFCCC grew out of the Coastal Wetlands Planning Protection and Restoration Act (CWPPRA) passed in 1990. The CWPPRA authorizes the USFWS to provide matching National Coastal Wetlands Conservation grants to coastal states for the acquisition, management, restoration, and enhancement of wetlands. The definition of a coastal wetland referenced in the administration of CWPPRA is broad, and includes multiple, interrelated coastal wetlands including those located in drainage basins of estuaries, adjacent freshwater and intermediate wetlands. These various types of wetlands interact together as an ecological unit. This interrelationship is critical to coastal fish, wildlife, and their habitat. Additionally, the Act takes into account maritime forests on barrier islands in the Southeast Coastal Plain. Maritime forests are under intense development pressure. The Coastal Wetlands Program also incorporates goals set forth in the Emergency Wetlands Resources Act of 1986, which provided criteria and guidance for prioritizing wetlands. The Program has been highly successful based on the number of acres acquired and restored. However, planning for ecosystems and landscape scale conservation has been slow. Further, acquisition priorities are set by several different agencies typically with limited cooperative planning.

The Southwest Florida Coastal Conservation Corridor enhances the Coastal Wetlands Program by including additional natural community types integral to the proper functioning of entire ecosystems in the region and by coordinating multi-agency efforts. The SWFCCC will establish a multi-jurisdictionally governed partnership to create and manage a conservation corridor system composed of coastal wetlands, scrub habitat, maritime forests, pine flatwoods, riverine transition habitat and freshwater swamps. This partnership will ensure a cooperative, balanced effort between government agencies, private groups, and citizens. The partnership will also help maximize the effectiveness of refuges, aquatic preserves, estuarine research reserves, wildlife management areas, county and city owned lands, conservation easements, private natural areas, and parks.

The SWFCCC Project holds great promise for protecting the widely recognized high levels of biological diversity in southwest Florida. Proven public support and the extent of ecologically significant land still undeveloped in the southwest region, greatly increase this project's potential to achieve substantial results.

The US Fish and Wildlife Service and Florida Department of Environmental Protection funded the project in late 2001. The Nature Conservancy's Florida Chapter is undertaking the technical and coordination aspects of the work.

The Conservation Corridor Project focuses on gathering, compiling, mapping, and analyzing ecological, biological, hydrological and socioeconomic data for those remaining undeveloped lands in southwest Florida that are essential for habitat conservation. The Nature Conservancy's institutional knowledge of existing private lands and their natural resource values also form a component of the data brought together for the conservation analysis. Most data is sought in GIS or GIS-ready format for rapid incorporation into the Conservancy's GIS. Some agencies have not transitioned their data from a paper-

based mapping system into a computerized GIS. The time and effort that will need to be dedicated to these situations will have to be considered on a case-by-case basis for relevance and necessity.

The resulting products will be several geographically and biologically defined corridor systems for hydrology, fish, wildlife, and passive recreation. A series of detailed maps will illustrate the proposed corridor systems and the undeveloped lands deemed critical for the conservation of biological diversity in western half of peninsular Florida. It is also envisioned that an internet mapping application will be developed both for the dissemination of this data and to function as an avenue for updating the corridor plans.

The Nature Conservancy serves as the administrative coordinator and will function as the liaison between team members and partner organizations. The study area has been divided into nine Management Zones with regional coordinators to compile regionally significant information and coordinate regional involvement. A project commencement meeting was held in March 2002 to summarize the mission statement, roles, and responsibilities (based on statutory responsibilities) and give further direction to the project. Periodic meetings between team leaders have been held to review project progress.

Updates and plan revisions will be completed annually, as funding permits, to show progress on implementations of the plan. Furthermore, the SWFCCC Project plans to organize with the North Gulf Initiative Project and review components, issues, and data collection for consistency and completeness.

Agency partners contributing to the development of the CCCP include TNC, FFWCC, FDEP, ABM, and FWS, along with 21 counties, three water management districts and three national estuary programs. The GIS database and plan will be posted on TNC's website in 2005 and can be reviewed at: http://www.egmccc.org/infobank/infobank.aspx

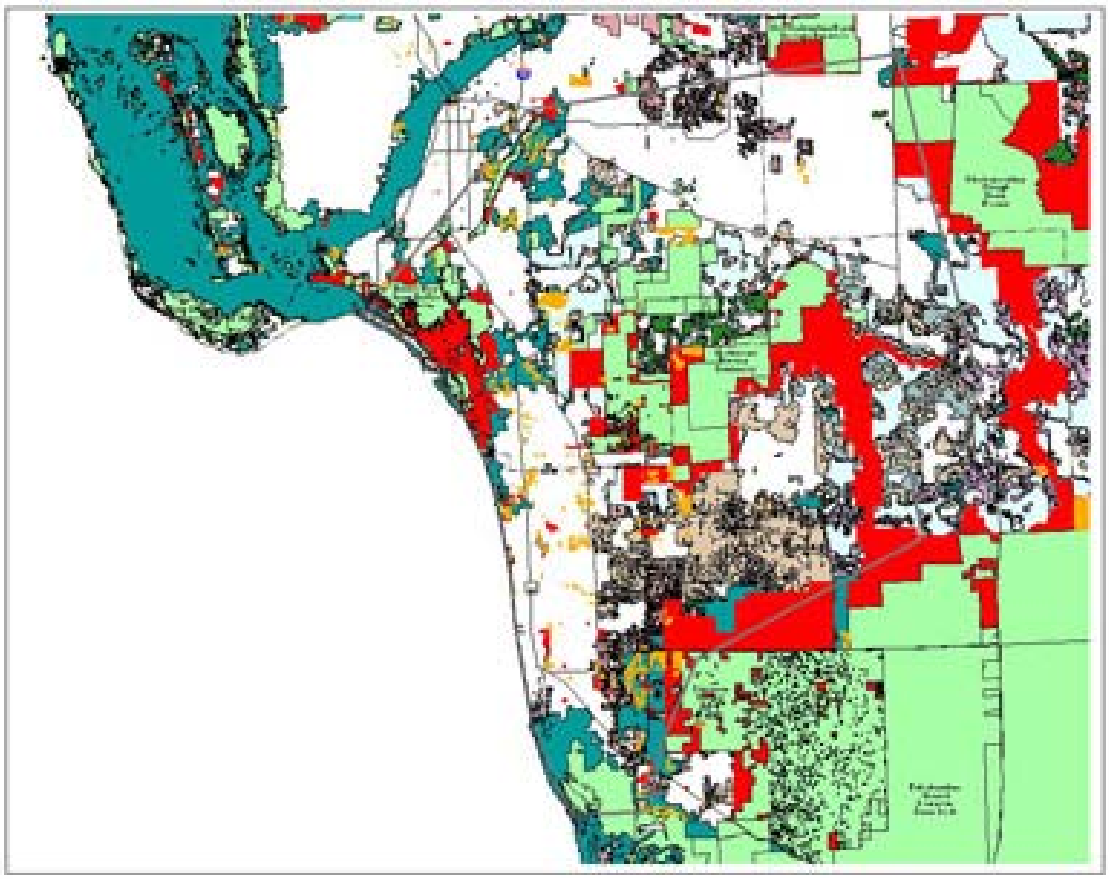


Figure 22: Identified Lands for Potential Future Acquisition (in red) of the EGMCCCP for the Estero Bay Watershed

Introduction Part 2: Water Quality and Quantity

Water Quality Monitoring

This section presents information on water quality monitoring performed and the water quality status and trends for the four basins. Terms defining the different water quality parameters can be found at: www.epa.gov/trs/.

In Southwest Florida, water quality data are collected by numerous agencies and volunteer organizations. All of these entities have water quality monitoring programs that sample at varying frequencies for various core analytes. Each is presented below. These data are normally placed into a central database that is maintained by the State of Florida. The database STOrage and RETrieval (STORET) is a structure used nation-wide and used for water quality analysis. Most large area analysis of water quality begins with the use of STORET.

The Charlotte Harbor Environmental Center (CHEC), Watershed Resources Center, with funding from the SWFWMD and CHNEP develops up-to-date maps of water quality for Charlotte Harbor estuarine waters and maintains a water quality monitoring website. CHEC works directly with the agencies that collect and analyze water quality samples on a routine basis. CHEC receives the data as soon as it is available, normally 1-2 months after collection. The tabular data are drawn into a GIS environment and values are interpolated spatially. The user of the Internet site may compare monthly water quality maps with medians from the 1993-2000 time frames. CHNEP is working with CHEC to develop methods to expand the mapping to include the Estero Bay area. The site is: http://www.checflorida.org/chec/waterquality.htm.

U.S. Geological Service

The U.S. Geological Service (USGS) collects water quality data based on special projects. One such project funded by SFWMD is a study and mapping of salinity for 2001 through 2006. Data are captured continuously as the equipment is drawn through estuarine and Gulf waters on a boat. Salinity maps are presented using spatial analyst techniques. Additional continuous monitoring stations are funded to augment this information. Information on the project can be found at: http://sofia.usgs.gov/projects/ebap/.

The Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network (CHEVWQMN)

This program is managed by FDEP Charlotte Harbor Aquatic Preserve Office in Punta Gorda. There are over 100 volunteers that take monthly, synoptic water quality samples at approximately 44 fixed stations from Lemon Bay, Charlotte Harbor and southward to Estero Bay. Eight stations are located in Estero Bay. Water samples are tested for:

- dissolved oxygen
- pH
- salinity
- water color
- water temperature
- air temperature
- water clarity
- water depth
- wind speed & direction
- precipitation
- weather & water surface conditions
- tide stage

This program started in 1996 and the data are available at:
http://www.dep.state.fl.us/coastal/sites/charlotte/volunteer/waterquality.htm.

FDEP monitoring programs

FDEP is responsible for identification of impaired waters pursuant to the Impaired Waters Rule (see the next section concerning Impaired Waters). FDEP completes compliance monitoring, algal bloom complaints, and studies as required including Total Maximum Daily Loads (TMDL) data gaps, lake (wet season) and stream (wet and dry season) condition indexes. Benthic, habitat condition, pesticides and periphyton studies can be included. Water samples are tested for:

- dissolved oxygen
- pH
- water temperature
- conductivity
- color
- Total Phosphorus
- Ortho Phosphate
- Total Nitrogen
- NO_2-NO_3
- TKN
- Chlorophyll A (corrected)
- Heavy Metals
- Alkalinity
- BOD
- turbidity

Florida Fish and Wildlife Conservation Commission

The Florida Fish and Wildlife Conservation Commission (FWC) Fish and Wildlife Research Institute (FWRI) collect and compile information related to red tide levels and shell fish closures. This information is available for Southwest Florida at:
http://www.floridamarine.org/features/view_article.asp?id=12373.

South Florida Water Management District

SFWMD maintains a monitoring program of 4 fixed stations within the Caloosahatchee River that was established in April 1999. Originally, SFWMD sampled 8 sites but this was changed in 2002 when the Coastal Charlotte Harbor Monitoring Network started sampling the river (see below). Water quality data are taken on a monthly frequency and used to produce annual technical reports on the current status and trends of several nutrients and physical attributes of the system, provide supporting data for water supply modeling, and contribute to a growing body of regional data made available to all interested parties. Analytes collected under this program are below. Lee County Environmental Lab collects and analyzes the samples for the SFWMD and has added several additional analytes to the SFWMD effort. Water samples are tested for:

- Chlorophyll A (corrected)
- Color
- Conductivity
- dissolved oxygen
- NH_3
- NO_2-NO_3
- Ortho Phosphate
- PAR (4 pi Licor)
- pH
- salinity
- secchi disk depth
- silica
- water temperature
- TKN
- TN
- TOC
- Total Phosphorus
- Turbidity

In addition, SFWMD maintains a central database, similar to STORET named DBHYDRO. DBHYDRO is the SFWMD's environmental database, storing hydrologic, meteorologic, hydrogeologic, and water quality data. It contains data collected by the SFWMD and other agencies and organizations. To assess water quality within 16 South Florida counties, the SFWMD monitors surface water in a variety of locations, including canals, pumping stations, agricultural discharges, and many other types of aquatic environments. The District also monitors sediments and fish for a variety of pollutants, including nutrients, trace metals and pesticides, which can be conveyed by water.

The Southwest Florida Feasibility Study (SWFFS) developed by the SFWMD jointly with the US Army Corps of Engineers includes a Water Quality analysis completed in June 2004, entitled "Compilation, Evaluation, and Archiving of Existing Water Quality Data for Southwest Florida." The work was completed by TetraTech with the assistance of Janicki Environmental, Inc. This report is an extensive listing of water quality data available as of early 2004 throughout the entire lower southwest Florida region. Each set of data is evaluated for quality and the times and parameters tested are detailed. The location of the data is also provided, with a large percentage in the DBHYDRO database. The data were used to identify areas for potential concern and gaps in important information. The analysis and database of water quality readings is available from the SFWMD on CD.

Lee County

Lee County's water quality monitoring program, managed by the County's Environmental Lab, samples 14 sites on a monthly basis at fixed stations in Pine Island Sound and Matlacha Pass, 14 fixed sites in Estero Bay, and approximately 90 stations throughout the County at freshwater sites such as 10-Mile and 6-Mile. The water samples are analyzed for core analytes including:

- Aluminum
- Arsenic
- BOD
- Cadmium
- Chlorine
- Chlorophyll A (corrected)
- Chromium
- COD
- Color
- Conductivity
- Copper
- dissolved oxygen
- Enterococci
- Fecal coliform
- Flow and stage
- Lead
- Mercury
- Nickel
- NH_3
- NO_2-NO_3
- Ortho Phosphate
- PAR (4 pi Licor)
- pH
- salinity
- Secchi disk depth
- Selenium
- silica
- TKN
- TN
- TOC
- Total alkalinity
- Total Phosphorus
- Turbidity
- water temperature
- Zinc

Data from this program are maintained at the Environmental Lab and uploaded into STORET and can be viewed at a new website maintained by the County at: http://lcems.edats.com/. The County also runs a new atmospheric deposition monitoring station on Lover's Key that collects both wet and dry nitrogen deposition rates.

Lee County Hyacinth Control District

The Lee County Hyacinth Control District (LCHCD) manages a program called Pondwatch. Pondwatch is a volunteer monitoring program created in 1993 by the LCHCD to help residents manage ponds and lakes and to answer their concerns about problems related to aquatic weeds in Lee County. Both seasonal and permanent residents participate in the program, averaging 10 – 15 participants per month. Water samples are collected monthly and brought to the LCHCD's water quality laboratory for chemical analysis of total phosphorus, orthophosphate, ammonia, nitrites-nitrates, and chlorophyll-a. Some of the benefits experienced by some participating groups have been a reduction of the chemical control required to maintain the ponds. Other communities have followed recommendations for aeration systems minimizing the potential for stratification and dissolved oxygen problems.

Charlotte Harbor National Estuary Program

The Charlotte Harbor National Estuary Program (CHNEP) coordinates the Coastal Charlotte Harbor Monitoring Network. In support of its long-term monitoring strategy, an inter-agency, collaborative program was initiated in April 2001 for the coastal Charlotte Harbor region, including the tidal Caloosahatchee, Peace and Myakka Rivers, and Estero and southern Lemon Bays. SWFWMD, SFWMD, Charlotte and Lee Counties, FWC-FWRI, the Cities of Sanibel and Cape Coral, and FDEP Charlotte Harbor Aquatic Preserve monitor the region using a stratified, random sampling design for the core analytes listed in the CHNEP CCMP, including biological, nutrient and field parameters. The Charlotte Harbor and Lemon and Estero Bay region is broken into 12 strata with five monitoring stations randomly chosen every month for each. The Lower Charlotte Harbor strata are listed below:

1. Lower Charlotte Harbor within Charlotte County
2. Matlacha Pass
3. Bokeelia region of Charlotte Harbor
4. San Carlos Bay
5. Tidal Caloosahatchee River
6. Pine Island Sound
7. Estero Bay

This program comprehensively monitors the ambient water quality conditions of the coastal Charlotte Harbor region and will allow resource managers to determine if conditions for this large area are improving or degrading over time. The analytes collected by the Network are as follows, although some members may collect additional such as bacteria, BOD and silica, depending on resources and interests:

- Chlorophyll A (corrected)
- Color
- Conductivity
- dissolved oxygen
- Ortho Phosphate
- PAR (4 pi Licor)
- pH
- salinity
- TKN
- TN
- TOC
- Total Phosphorus

- NH_3
- NO_2-NO_3
- Secchi disk depth
- water temperature
- Turbidity
- TSS

In 2003, the CHNEP published its Water Quality Status and Trends Report. The report was completed by Janicki Environmental, Inc. and developed methods which were later used for the SWFFS study discussed above. Findings were consistent between the two studies where the geographic area coincided.

Water Quality Monitoring Locations

The most up-to-date compilation of water quality monitoring is the 2004 SWFFS water quality study discussed above. The study report included the map shown as Figure 24 below. Fixed station locations in Charlotte Harbor, Caloosahatchee Estuary, and Estero Basins are shown as Figure 23.

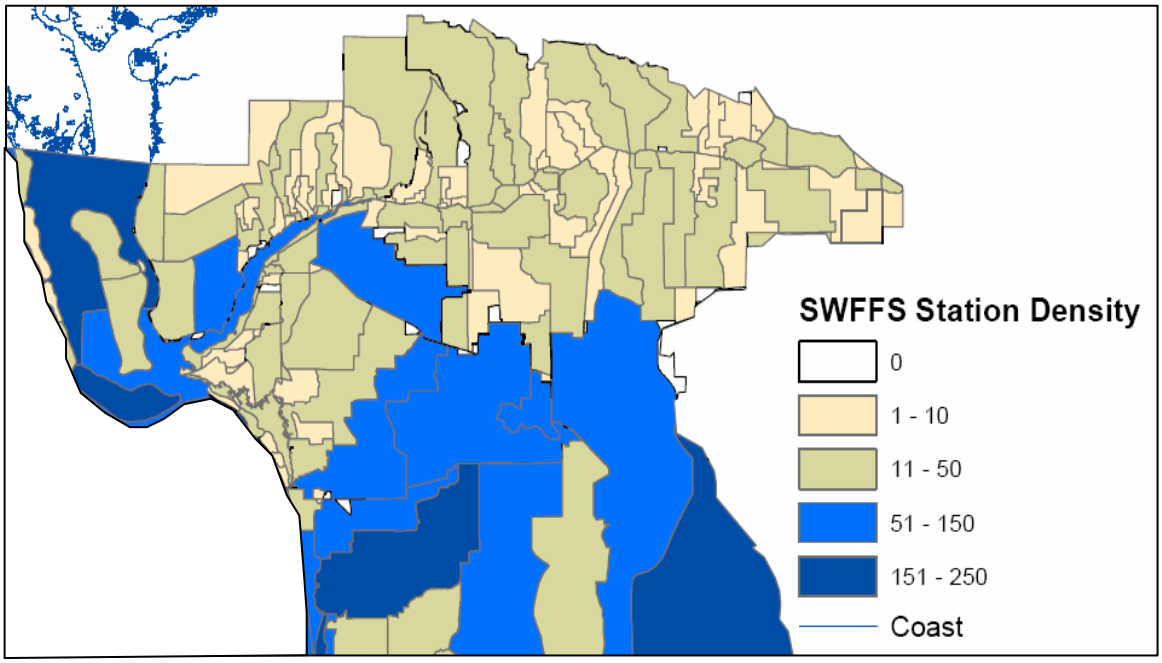
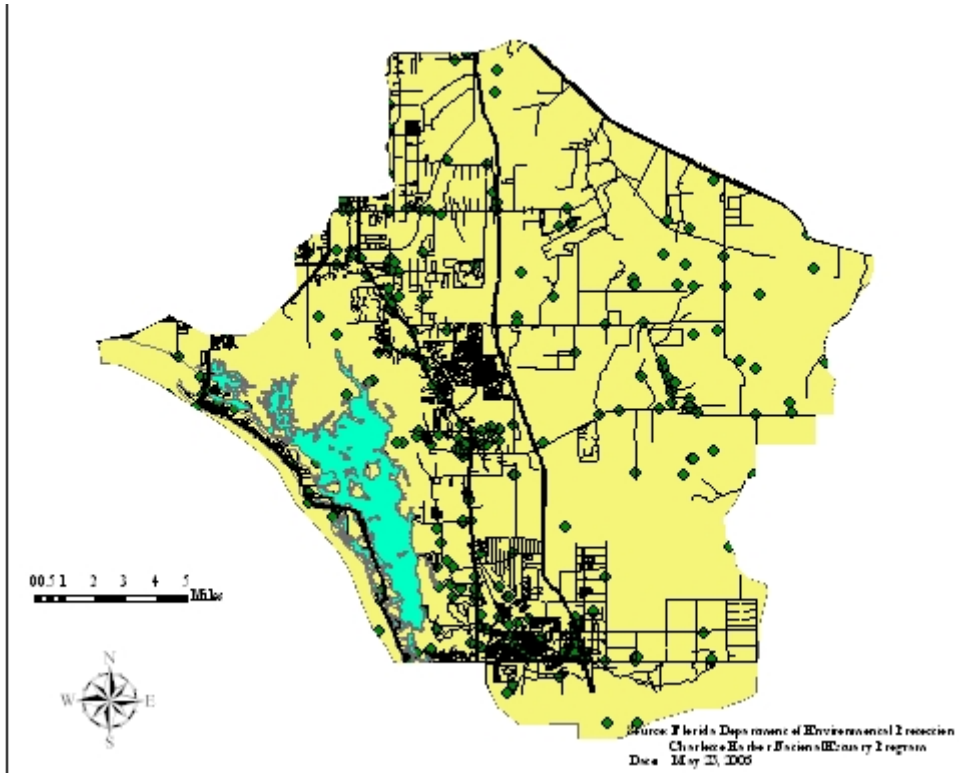


Figure 23: 2004 SWFFS Monitoring Station Density

(Source: TetraTech, Inc and Janicki Environmental, Inc. 2004. Compilation, Evaluation, and Archiving of Existing Water Quality Data for Southwest Florida. Department of Army, Jacksonville District Corps of Engineers.)

Figure 24: 2003 CHNEP Water Quality Study Fixed Station Locations



Impaired Waters

In Florida, the Clean Water Act (CWA) is implemented through the Watershed Restoration Act of 1999 (FS 403.067). The state's Impaired Waters Rule (IWR) was adopted in 2001 as Chapter 62-303, Florida Administrative Code. The IWR establishes a methodology to identify surface waters of the state that will be included on the state's planning list of waterbodies. It also establishes a methodology to identify impaired waters that will be included on the state's verified list of impaired waters, for which the FDEP will calculate Total Maximum Daily Loads (TMDLs).

Section 303(d) of the Clean Water Act (CWA) requires states to list waters that do not meet applicable quality standards and establish Total Maximum Daily Loads (TMDLs) for those waters on a prioritized schedule. TMDLs establish the maximum amount of pollutants a water body can assimilate without exceeding water quality standards. In 1998, EPA approved Florida's 1998 303(d) Impaired Waters list, which was based either on existing, readily available data or best professional judgment. State waterbodies were on the 1998 303(d) list. However, in 1999, the Florida Watershed Restoration Act, Section 403.067, FS was enacted by the Florida Legislature. This law requires FDEP to adopt, by rule, a scientific methodology for analyzing environmental data and determining whether a waterbody is impaired or healthy. All waterbodies on the 1998 303(d) list are required to be either 1) verified as impaired, 2) de-listed as they are meeting water quality standards, or 3) placed on a planning list if insufficient data exist (Category 3).

FDEP's 2002 update to Florida's 1998 303(d) Impaired Waters List for Group 1 Basins with sufficient data (Category 5) was amended August 2002 by Secretarial order and submitted to EPA October 2002. The verified list was amended March 11, 2003 by Secretarial order. The 2002 update was developed in

accordance with EPA guidelines for Integrated Water Quality monitoring and Assessment Reports. Group 1 included Everglades West, which includes Estero Bay.

FDEP's 2004 update to Florida's 1998 303(d) Impaired Waters List for Group 2 Basins with sufficient data (Category 5) was adopted May 27, 2004 by Secretarial order, including Charlotte Harbor, a portion of which is Charlotte Harbor, Pine Island Sound, and Matlacha Pass.

FDEP's 2005 update to Florida's 1998 303(d) Impaired Waters List for Group 3 Basins with sufficient data (Category 5) was adopted June 20, 2005 by Secretarial order, including the Caloosahatchee basin.

The Florida Watershed Restoration Act addresses processes for refining the list for calculating and allocating TMDLs. According to EPA guidelines, waters expected to attain and maintain applicable water quality standards through other Federal, State, or Local requirements do not need to be included on the 303(d) list pursuant to approval of "Reasonable Assurance."

Water bodies were divided into five groups, and a five-year rotation of assessment, analysis, and implementation was established. In 2000, FDEP began addressing the first group of basins (Group 1) and continues to initiate activities in a new group (Groups 2 through 5) each year over a five-year cycle to cover the entire state.

The general sequence of the five-year cycle is:

Phase 1- Basin Assessment

Preliminary basin assessment focusing on existing data.

Phase 2 –Verified List

Strategic water quality monitoring to obtain additional detailed scientific evidence of water quality conditions and adoption of basin-specific verified lists of impaired waters.

Phase 3 – Total Maximum Daily Loads (TMDL)

Data analysis and TMDL development and adoption where impairment exists.

Phase 4 – Basin Management Action Plans (B-MAP) Development

Development of a Basin Management Action Plan, in conjunction with local stakeholders, to allocate, among the local sources of pollution, reductions necessary to meet the TMDL.

Phase 5 - B-MAP Implementation

Implementation of the TMDL.

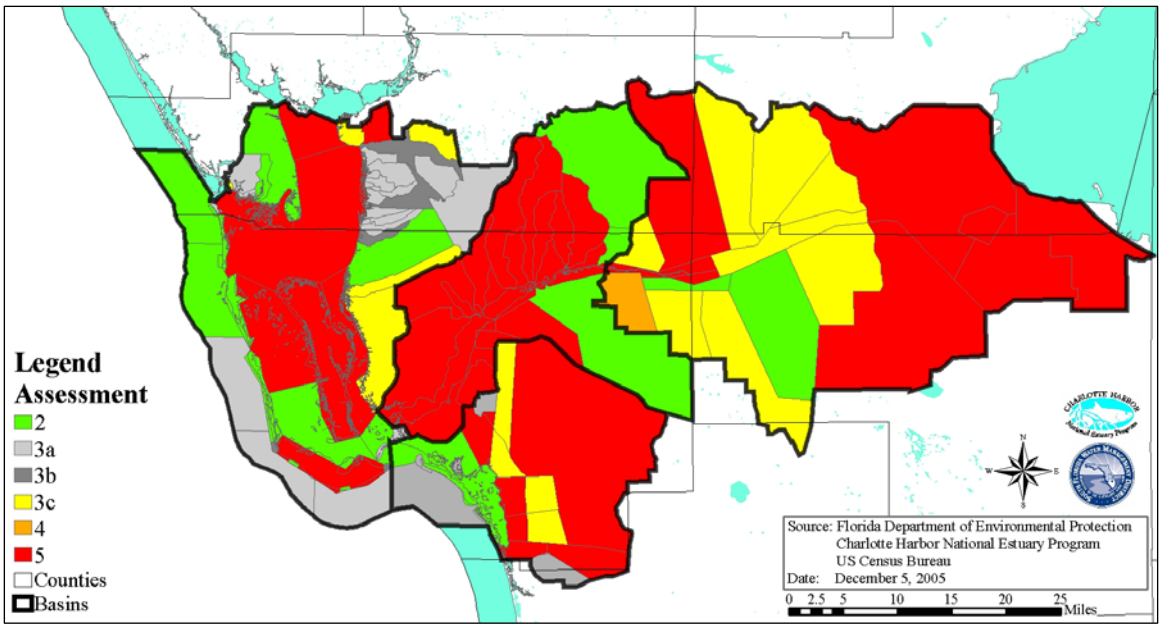
In Lower Charlotte Harbor, Everglades West (including Estero Bay) is in Group 1. Charlotte Harbor (including Pine Island Sound) is in Group 2. Caloosahatchee (both fresh and tidal portions) are in Group 3.

Table 12: Impaired Waters Phases and Year

Year	00	01	01	02	02	03	03	04	04	05	05	06	06	07	07	08	08	09	09	10
Estero	1		2		3		4		5		1		2		3		4		5	
Charlotte Harbor			1		2		3		4		5		1		2		3		4	
Caloosahatchee					1		2		3		4		5		1		2		3	

FDEP's integrated assessment (Figure 25) identifies areas of no or insufficient data (grey), areas attaining some designated uses (green), areas that are potentially impaired (yellow), and areas with a reasonable assurance of attaining water quality standards (orange), and areas were water quality is not attained (red).

Figure 25: FDEP Integrated Assessment



Category 1- Attaining all designated uses.
Category 2- Attaining some designated uses.
Category 3a- No data or information to determine if any designated use is attained.
Category 3b- Insufficient data to determine if any designated use is attained.
Category 3c- Waterbody meets Planning List criteria and is Potentially Impaired for one or more designated uses.
Category 3d- Waterbody meets Verified List criteria and is Potentially Impaired for one or more designated uses.
Category 4- Impaired for one or more designated uses, but does not require a TMDL because a pollutant control measure will restore a designated use, TMDL has been completed, the impairment was not caused by pollutant.

In 2005, within the lower Charlotte Harbor area, a total of 40 out of 113 waterbodies are impaired for at least one parameter. Within the 40 impaired water bodies, there are a total of 74 impairments.

Designated Uses

When FDEP considers water quality impairments, the impairment assessment is based on the use of the waterbody. For example, Class 1 waters are designated for drinking water and must be held to a higher standard than other class designations. Class 2 waters are for shellfishing and must have lower bacteria

levels than other classes. Therefore, Pine Island Sound may have impairment for bacteria but may have lower bacteria levels than Class 3 waters designated for fishing and swimming that may not be shown to have impairment. More information about the Clean Water Act is available at: http://www.cleanwateract.org/.

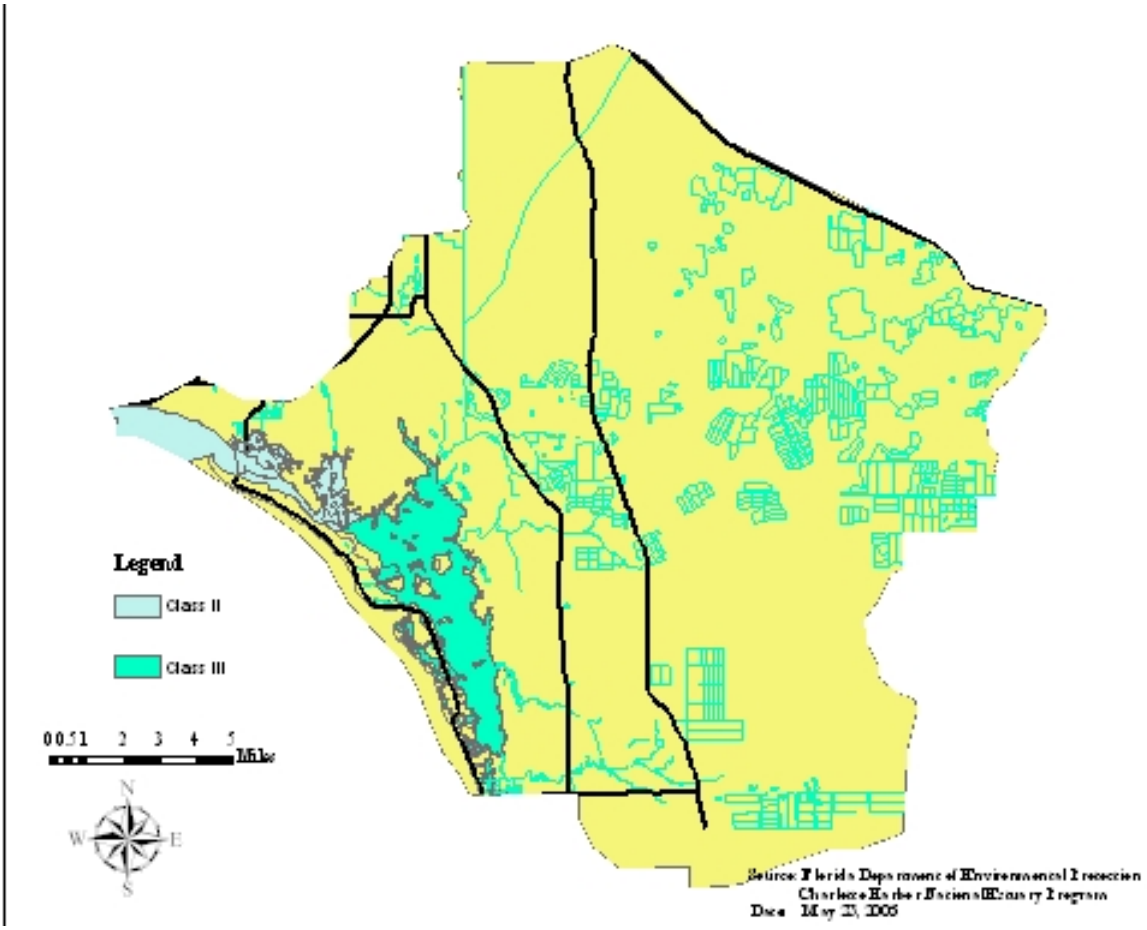


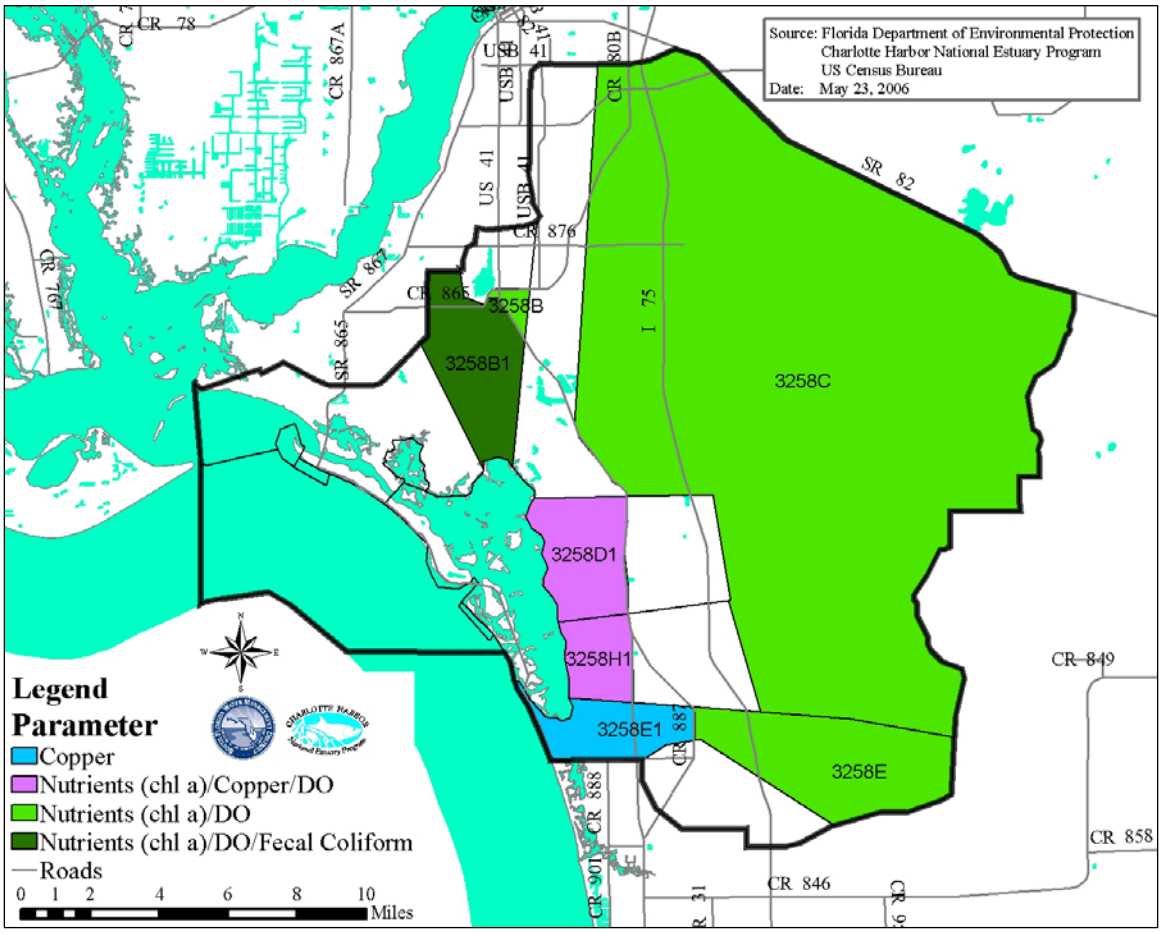
Figure 26: Designated Uses

Waters not belonging to Class 1 or Class 2 is designated Class 3. Class 3 designated uses include fishing and swimming.

The Estero Bay planning unit is in Group 1 (see schedule below) as part of the Everglades West group. Estero Bay has seven waterbodies that are impaired. The impaired waterbodies by name, Water Body Identification (WBID) and impairment(s) are as follows.

Chlorophyll-a caused by nutrients and low dissolved oxygen impair 5 water bodies in Estero Bay basin. Hendry Creek fresh and marine (WBIDs 3258B and 3258B1), the Estero Bay drainage (Mullock Creek, WBID 3258C), Estero River marine (WBID 3258D1), Spring Creek marine (WBID 3258H1), and Imperial River fresh (WBID 3258E) have verified nutrient impairments. Copper impairments affect the marine sections of Imperial River (WBID 3258E1), Estero River marine (WBID 3258D1), and Spring Creek (WBID 3258H1). The one water body impaired for fecal coliform is Hendry Creek marine (WBID 3258B1).

Figure 27: Estero Verified Impairments



TMDL Development was planned for 2007 for all of the parameters. At the time of completion of this study it was not finished.

Table 13: Estero Bay TMDL Schedule and Impairments

Original Year	Group 1 Phase
2001	Basin Assessment
2002	Verified List
2003	TMDLs
2004	B-MAP Development
2005	B-MAP Implementation

WBID	Water Segment Name	1998 303(d) Parameters of Concern	Parameters Assessed Using the 2001 Impaired Surface Waters Rule (IWR)	Comments (# of Exceedances/ # of Samples) PP=Planning Period VP=Verified Period[3]
3258B	HENDRY CREEK	Dissolved Oxygen	Dissolved Oxygen	pp = 122 / 160; vp = 46 / 54. TN, TP, and BOD did not exceed the impairment threshold for streams. TN median = 0.78 mg/L, TP = 0.03 mg/L, and BOD = 1.5 mg/L. Listed as impaired on Cycle 1 Verified List.
3258B	HENDRY CREEK	Nutrients	Nutrients (chlorophyll-a)	Chlorophyll-a annual average in 2000 exceeded the 20.0 ug/L threshold for streams. Annual averages: 2005 - 8.5 ug/L, and 2006 - 3.7 ug/L. Listed as Impaired on Cycle 1 Verified List. Did not have three consecutive years of not exceeding nutrient threshold.
3258B1	HENDRY CREEK MARINE		Dissolved Oxygen	pp = 113 / 126; vp = 43 / 50. TN, TP, and BOD did not exceed the impairment threshold for streams. TN median = 0.89 mg/L, TP = 0.05 mg/L, and BOD = 1.3 mg/L. Listed as impaired on Cycle 1 Verified List.
3258B1	HENDRY CREEK MARINE		Nutrients (chlorophyll-a)	Chlorophyll-a annual average in 2001 exceeded the 11.0 ug/L threshold for estuaries. Annual averages: 2005 - 7.8 ug/L, and 2006 - 3.3 ug/L. Listed as Impaired on

				Cycle 1 Verified List.
3258B1	HENDRY CREEK MARINE		Fecal Coliform	pp = 29 / 136; vp = 26 / 143 Listed as Impaired on Cycle 1 Verified List.
3258C	ESTERO BAY DRAINAGE		Dissolved Oxygen	pp = 338 / 372; vp = 94 / 117. TN Median = 0.99 mg/L (88 obs), TP Median = 0.04 (70 obs), and BOD Median = 1.6 mg/L (78 obs). TN/ TP ratio = 24.25 (70 obs). Listed as impaired on Cycle 1 Verified List.
3258C	ESTERO BAY DRAINAGE		Nutrients (chlorophyll-a)	Chlorophyll-a annual averages in 2005 - 7.8 ug/L, 2006 - 3.4 ug/L. Nutrient Impairment due to co-limitation of nitrogen and phosphorus. Listed as Impaired on Cycle 1 Verified List.
3258C	ESTERO BAY DRAINAGE		Fecal Coliform	pp = 39 / 289; vp = 29 / 224
3258C1	ESTERO BAY DRAINAGE MARINE		Iron	pp = no data; vp = 5 / 10
3258C1	ESTERO BAY DRAINAGE MARINE		Mercury	pp = 7 / 7; vp = 7 / 7
3258D	ESTERO RIVER		Fecal Coliform	pp = 27 / 115; vp = 26 / 97
3258E	IMPERIAL RIVER	Dissolved Oxygen	Dissolved Oxygen	pp = 141 / 154; vp = 56 / 79. TN, TP, and BOD did not exceed the impairment threshold for streams. TN median = 0.94 mg/L, TP = 0.04 mg/L, and BOD = 1.2 mg/L. Listed as impaired on Cycle 1 Verified List.
3258E	IMPERIAL RIVER	Nutrients	Nutrients (chlorophyll-a)	Chlorophyll-a annual average in 2001 exceeded the 20 ug/L threshold for streams. Annual averages: 2000-14.3 ug/L, 2001-46.9 ug/L, 2002-5.8 ug/L, 2003-4.4 ug/L, 2004-4.1 ug/L, 2005-2.4 ug/L, and 2006-2.6 ug/L. Listed as Impaired on Cycle 1 Verified List.

3258E	IMPERIAL RIVER		Fecal Coliform	pp = 47 / 129; vp = 36 / 138
3258E1	IMPERIAL RIVER MARINE		Dissolved Oxygen	pp = 197 / 297; vp = 39 / 102. Causative pollutant linked to nutrients with TN/TP ratio median of 22 mg/L (81 obs).
3258E1	IMPERIAL RIVER MARINE		Fecal Coliform	pp = 40 / 377; vp = 48 / 325
3258E1	IMPERIAL RIVER MARINE		Nutrients (chlorophyll-a)	Annual chlorophyll-a average exceeded the 11.0 ug/L threshold for estuaries in 2004 with mean of 30.13 ug/L. Annual chlorophyll-a average did not exceed threshold in 2005 with mean of 4.8 ug/L and in 2006 with 4.7 ug/L. Nutrient impairment due to co-limitation of nitrogen and phosphorus.
3258G	TENMILE CANAL		Mercury	pp = 34 / 34; vp = 34 / 34
3258H1	SPRING CREEK MARINE		Dissolved Oxygen	pp = 194 / 287; vp = 57 / 115. Causative pollutant linked to nutrients with TN/TP ratio median of 16.4 mg/L (84 obs). Listed as impaired on Cycle 1 Verified List.
3258H1	SPRING CREEK MARINE		Nutrients (chlorophyll-a)	Chlorophyll-a annual averages exceeded the 11 ug/L threshold for estuaries in 2001 -2004. Chlorophyll-a annual average in 2001 is 14.48 ug/L, 2002 is 13.29 ug/L, 2003 is 14.41 ug/L, 2004 is 12.80 ug/L, 2005 is 6.11 ug/L, and 2006 is 2.96 ug/L. Nutrient impairment due to co-limitation of nitrogen and phosphorus. Need one more year to have three consecutive years not exceeding threshold. Listed as Impaired on Cycle 1 Verified List.

8999	FLORIDA GULF COAST	Mercury (Fish Tissue)	Mercury (Fish Tissue)	Data verified to be within the last 7.5 years (2002, 2003/2004). Confirmed recent data for coastal and associated estuary fish advisories for king mackerel and bull shark. This includes the following WBIDs; 3258A, 3258B1, 3258C1, 3258D1, 3258E1, 3258F, 3258H1, 3258I, 3258J, 3259A, 3259M, 3259Z, 3278I, 3278Q, 3278R, 3278U, 8060, 8061, 8062, 8063, 8064, and 8065. Confirmed recent data for freshwater fish located in fish advisories for largemouth bass. This includes the following WBIDs: 3261B and 3261C in 2006, 3266A and 3278M from 2002 - 2004. Confirmed recent data in 2003 for freshwater fish advisories for warmouth. This includes the following WBIDs: 3259I and 3278I. Average HG levels were 0.67 mg/kg in king mackerel, 1.85 mg/kg in bull shark, 0.51 mg/kg in warmouth, and 0.89 mg/kg in largemouth bass which exceeded the threshold of 0.43 mg/kg of mercury.

Trends

The report entitled "Compilation, Evaluation, and Archiving of Existing Water Quality Data for Southwest Florida" is discussed in Section 5 of this report. The report included a discussion of water quality trends for the LCH area plus Big Cypress basin. The report:

- Evaluates data quality and details it,
- Evaluates and identifies trends;
- Identifies water quality parameters of concern; and
- Identifies data gaps.

For the purposes of the study, "shallow trends" were defined as statistically significant trends with a rate of change less than 5% per year of the median value for the period of record for the waterbody, and "steep trends" were defined as statistically significant trends with a rate of change greater than or equal to 5% of the median value per year. Thus, "shallow trends" represent water quality conditions that are changing (either decreasing or increasing) at a lesser rate of change than the rate of change for "steep trends". These are relative terms, and the actual estimated rates of change are presented for each station in the statistical summary tables as described in the report. The terms "steep" and "shallow" do not imply ecological significance or lack of ecological significance.

The following figures show trends of dissolved oxygen, bio-chemical oxygen demand, turbidity, total suspended solids, Kjeldahl nitrogen, total phosphorous, and chlorophyll a trends

Figure 28: Dissolved Oxygen Trends

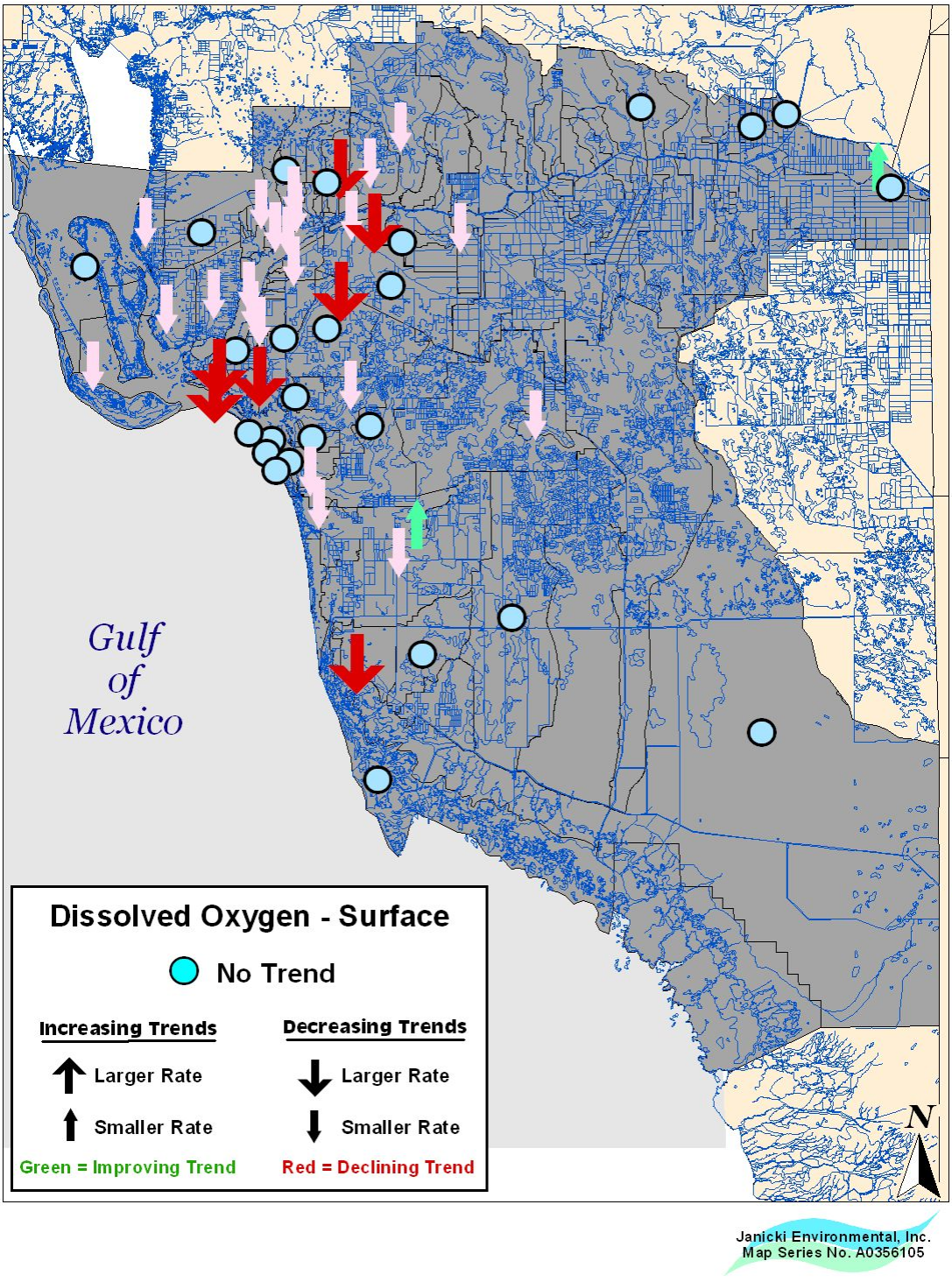


Figure 29: Bio-Chemical Oxygen Demand Trends

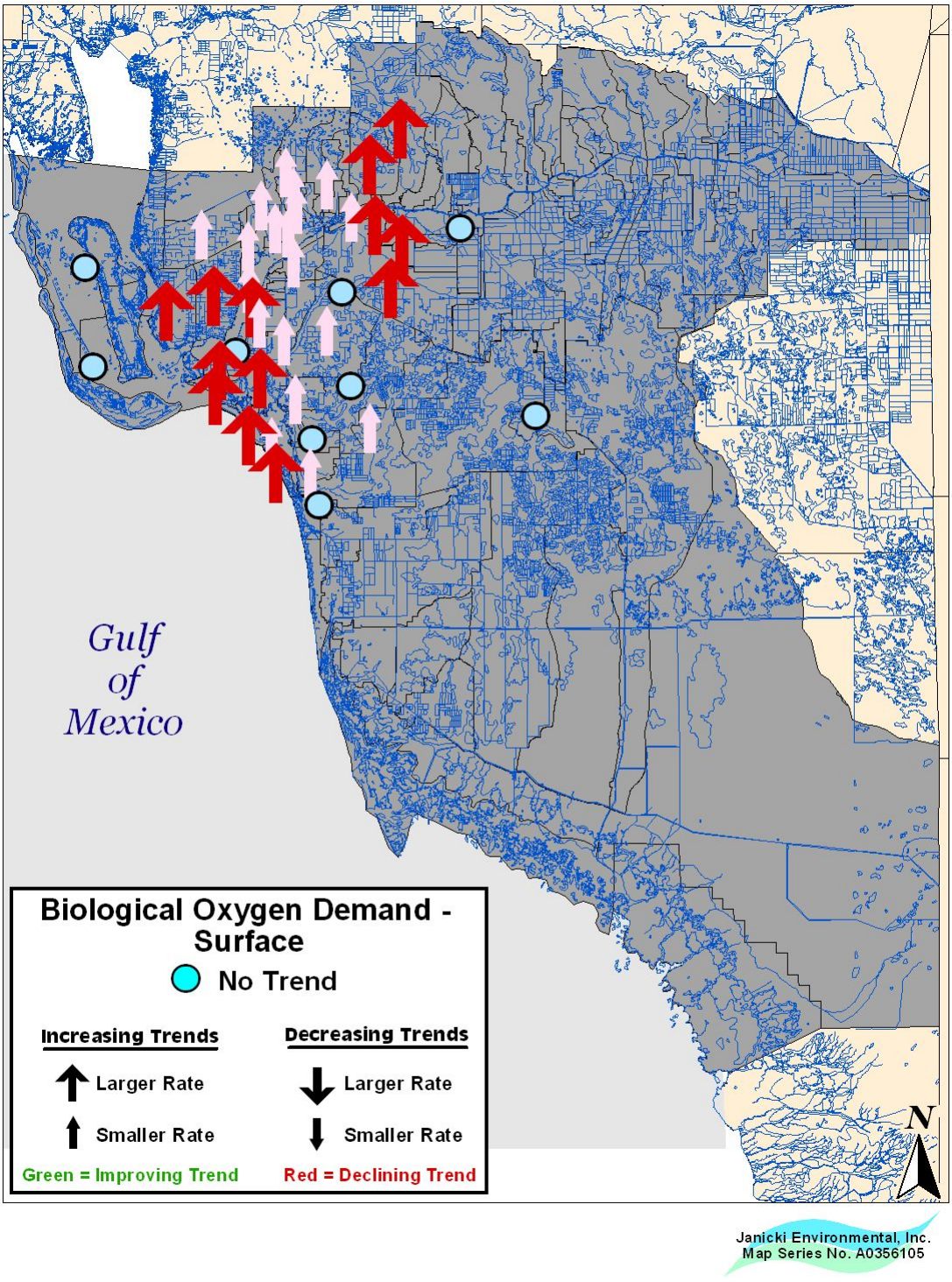


Figure 30: Turbidity Trends

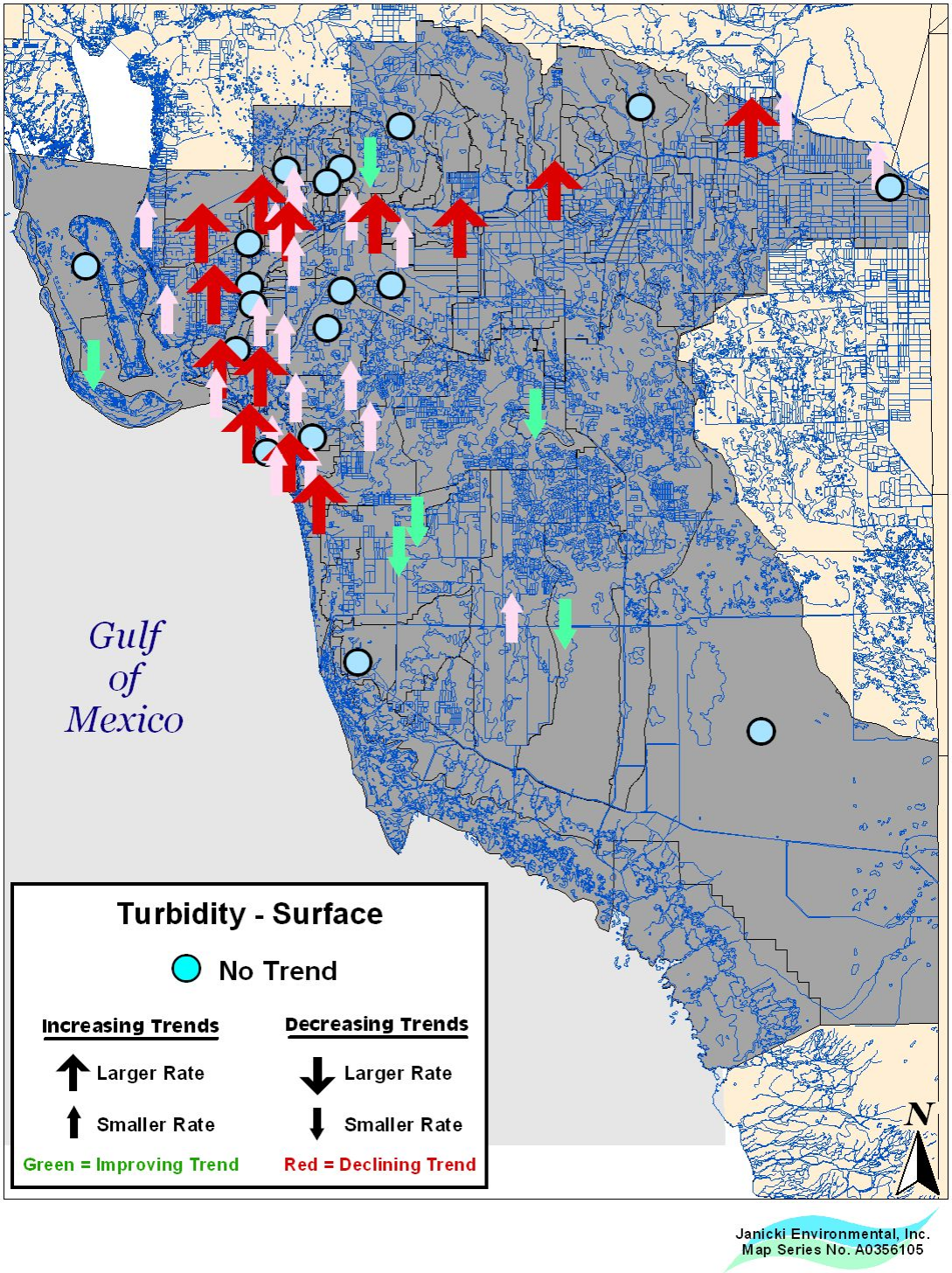


Figure 31: Total Suspended Solids Trends

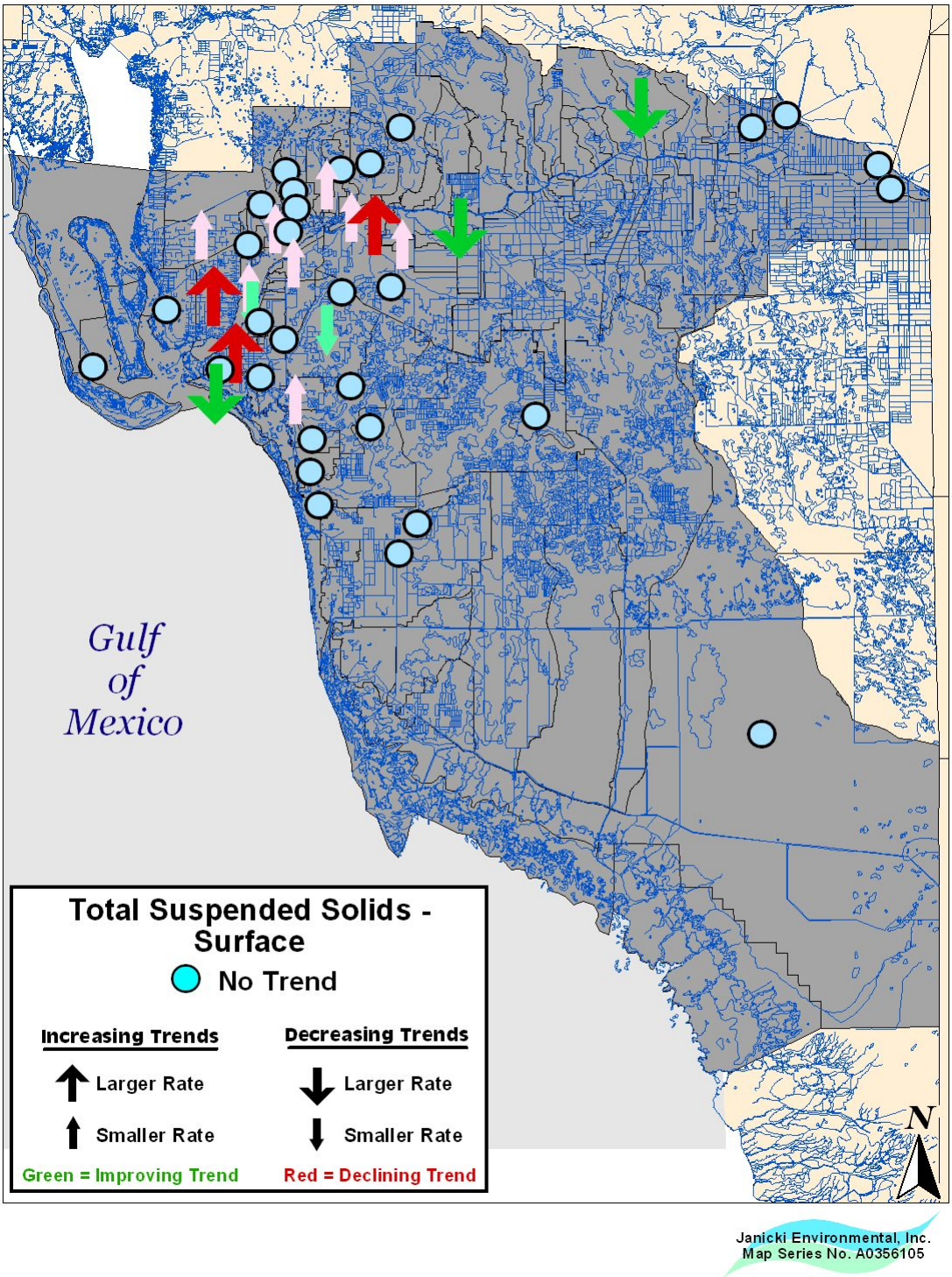


Figure 32: Total Kjeldahl Nitrogen Trends

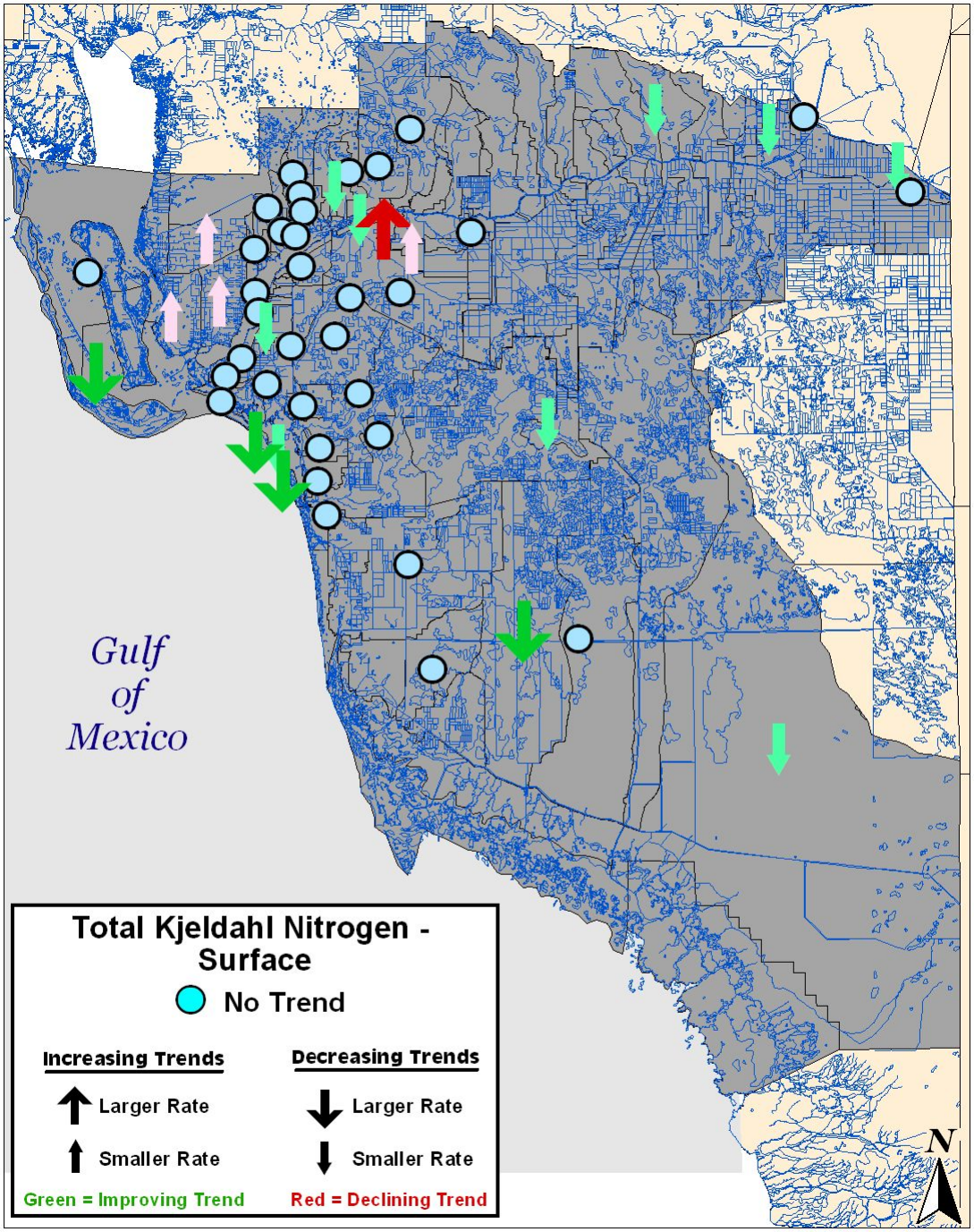


Figure 33: Total Phosphorous Trends

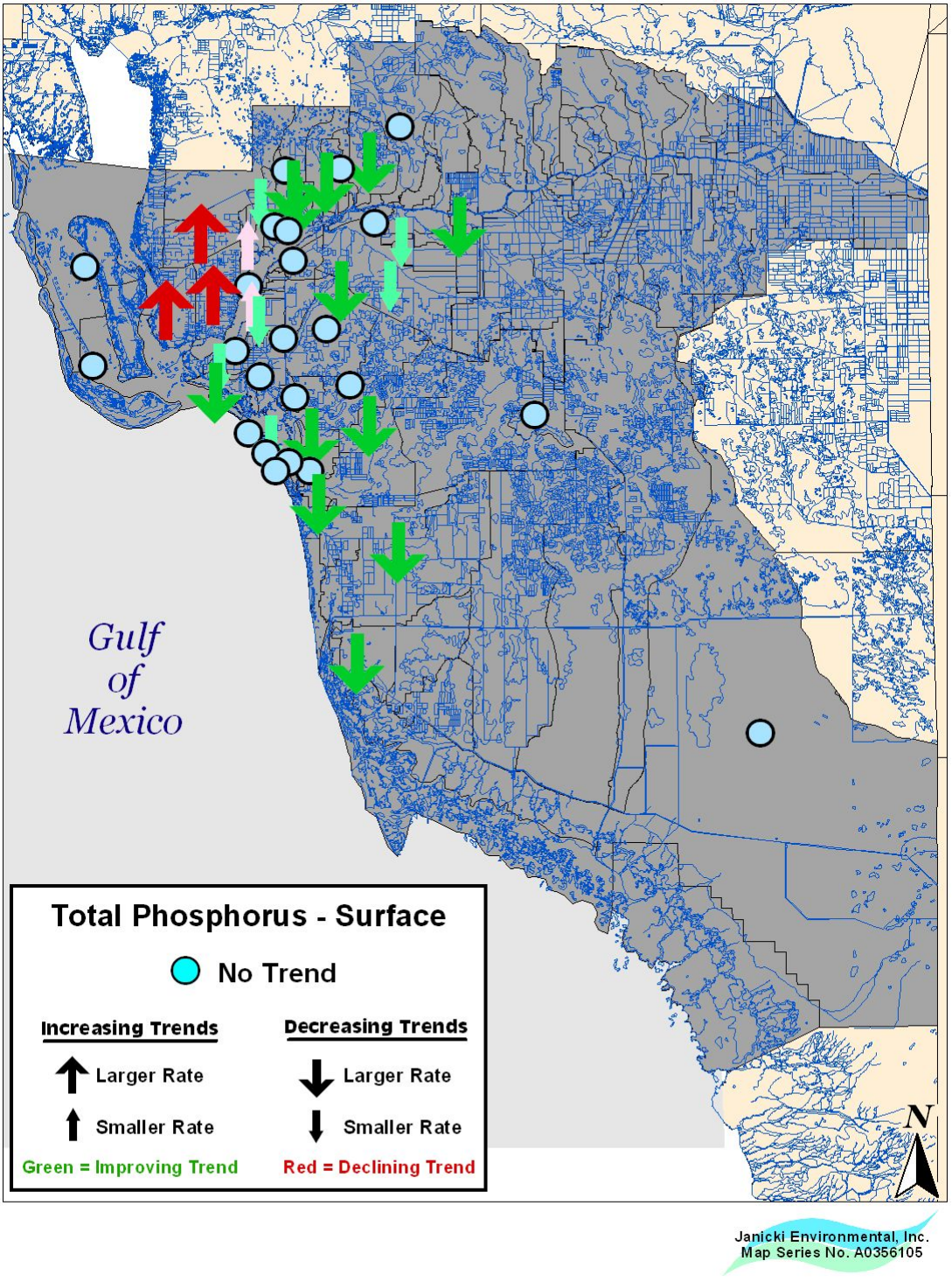
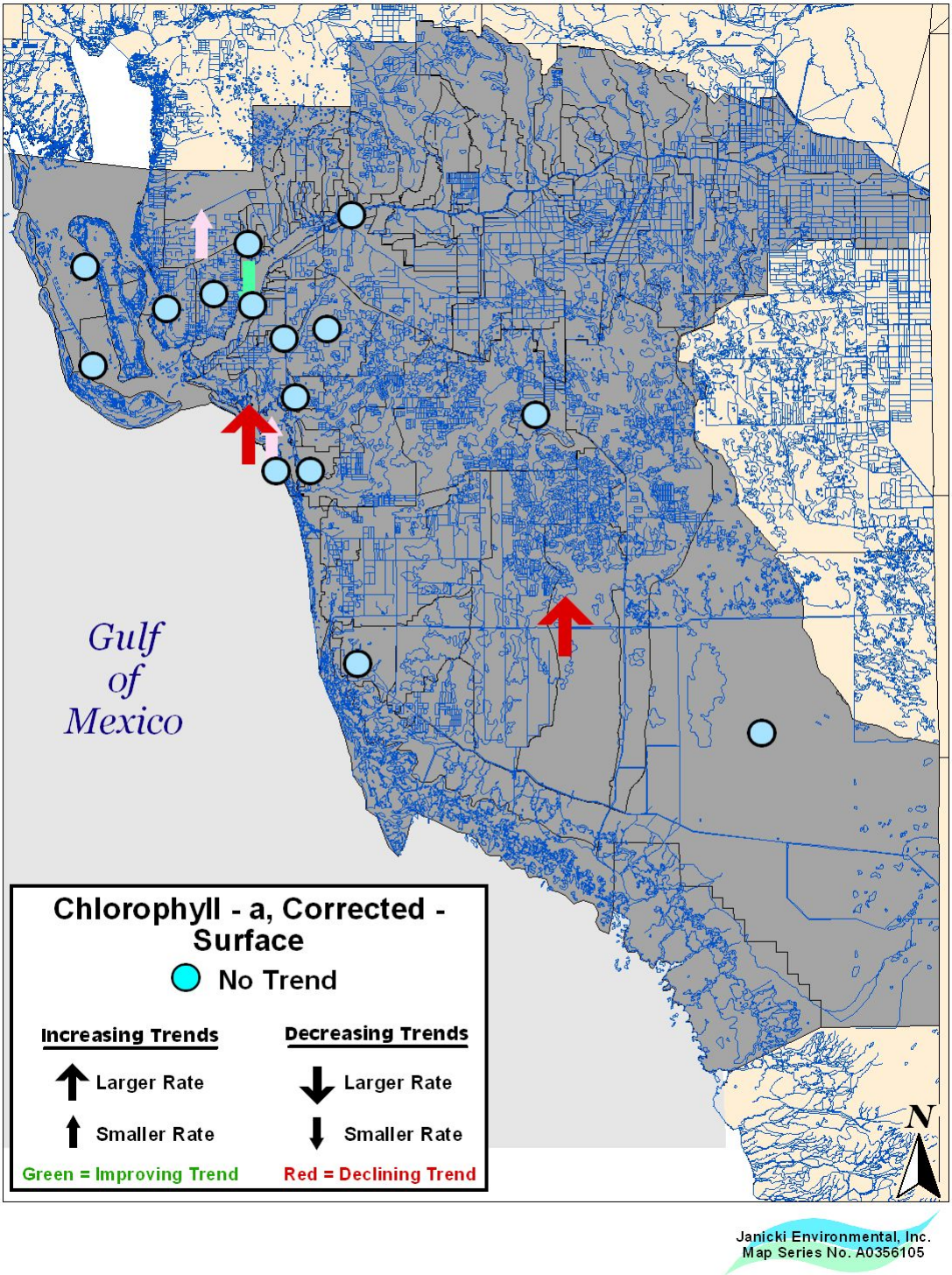


Figure 34: Chlorophyll-a (Corrected)- Surface Trends



Identified Sources of Pollution

National Pollution Discharge Elimination System (NPDES)

In 1972, the Federal Water Pollution Control Act, also referred to as the CWA was amended to provide that discharge of any pollutant to waters of the United States from any point source is unlawful without a NPDES permit. Phase I of the NPDES Stormwater Regulations required "medium" and "large" municipalities to obtain permit coverage for their respective regulated small municipal separate storm sewer system (MS4). A medium municipality has been defined as any local government with a population greater than 100,000 and less than 250,000. A large municipality is defined as any local government with a population greater than 250,000. Those municipalities with less than 100,000 residents were not regulated under Phase I unless specifically designated by the EPA. Phase II of the NPDES Stormwater Regulations is intended to further reduce adverse impacts to water quality by incorporating new thresholds for construction generic permitting, and new MS4 generic permitting for Phase II communities that include Urbanized Areas. Lee County and Charlotte County have been designated an MS4 by EPA.

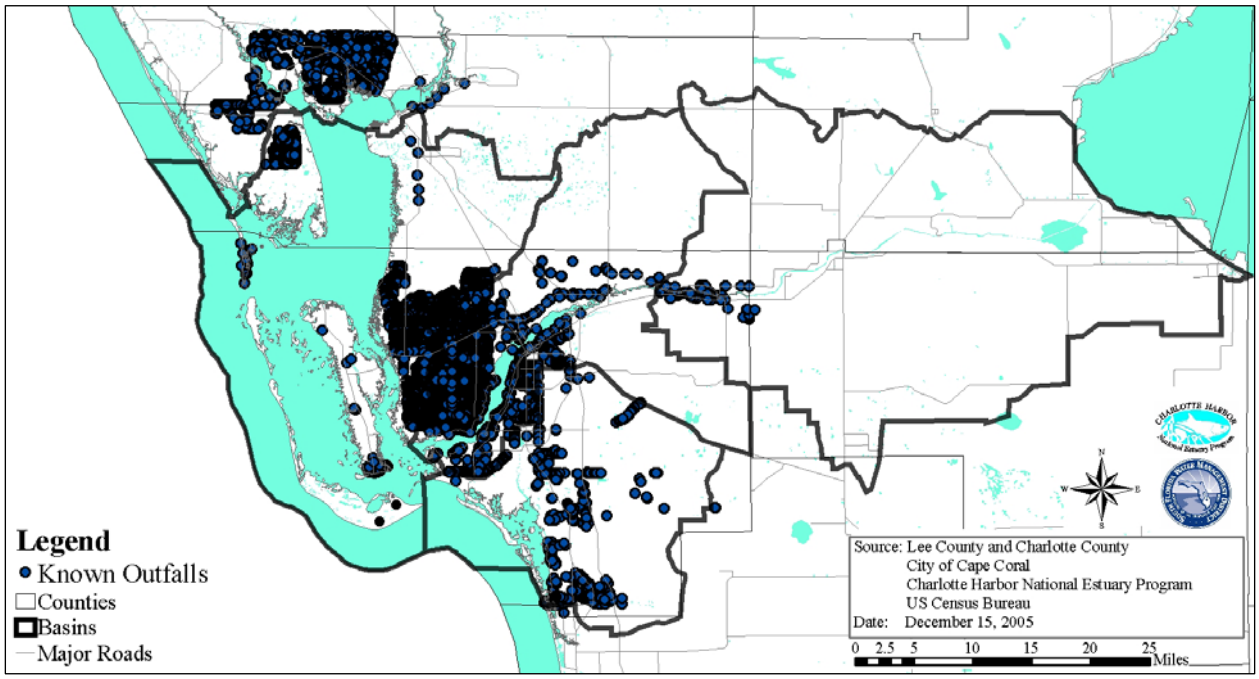
Lee County

Lee County received an NPDES permit for its MS4 in October 1997. The permit conditionally authorizes Lee County and the 13 original co-permittees to discharge stormwater to "the Waters of the United States." Agreements signed between all co-permittees assure cooperation in boundary related issues. Additionally, the County is required to inspect and monitor industrial and construction activities for permit compliance. Lee County Ordinance 98-11 was adopted in June, 1998 providing legal authority for enforcement of the CWA mandate.

Under the NPDES General Permit for Storm Water Discharges Associated with Industrial and Construction Activities, EPA requires the development and implementation of a Storm Water Pollution Prevention Plan (SWP3) designed to reduce pollution at the source. A notice of intent has been issued with Lee County's SWP3 for all construction work greater than 1 acre per Lee County Development Code 14-477.

Cities within Lee County are co-permittees for the NPDES program. Lee County maintains NPDES information online at: http://www.lee-county.com/npdes/.

Figure 35: Known Outfalls



Designated Brownfields

There are no brownfield sites that have been designated per the Brownfield Redevelopment Act (Sections 376.77-376.875, FS) within the Estero Bay Watershed. The two Brownfield site designated in Lee County are in the City of Fort Myers in the Caloosahatchee River watershed.

Wastewater Generating Facilities

Within the study area, there are currently 35 wastewater generating facilities permitted by the Florida Department of Environmental Protection including domestic wastewater treatment facilities and industrial wastewater facilities shown in Figure 34. A number of these facilities are required to obtain a NPDES permit, administered through FDEP, while some are not and are regulated solely under state law (FS 403). Out of 162 wastewater facilities in the Lower Charlotte Harbor study area, 29 possess NPDES permits. The wastewater facilities included 117 domestic wastewater facilities and 45 industrial wastewater facilities.

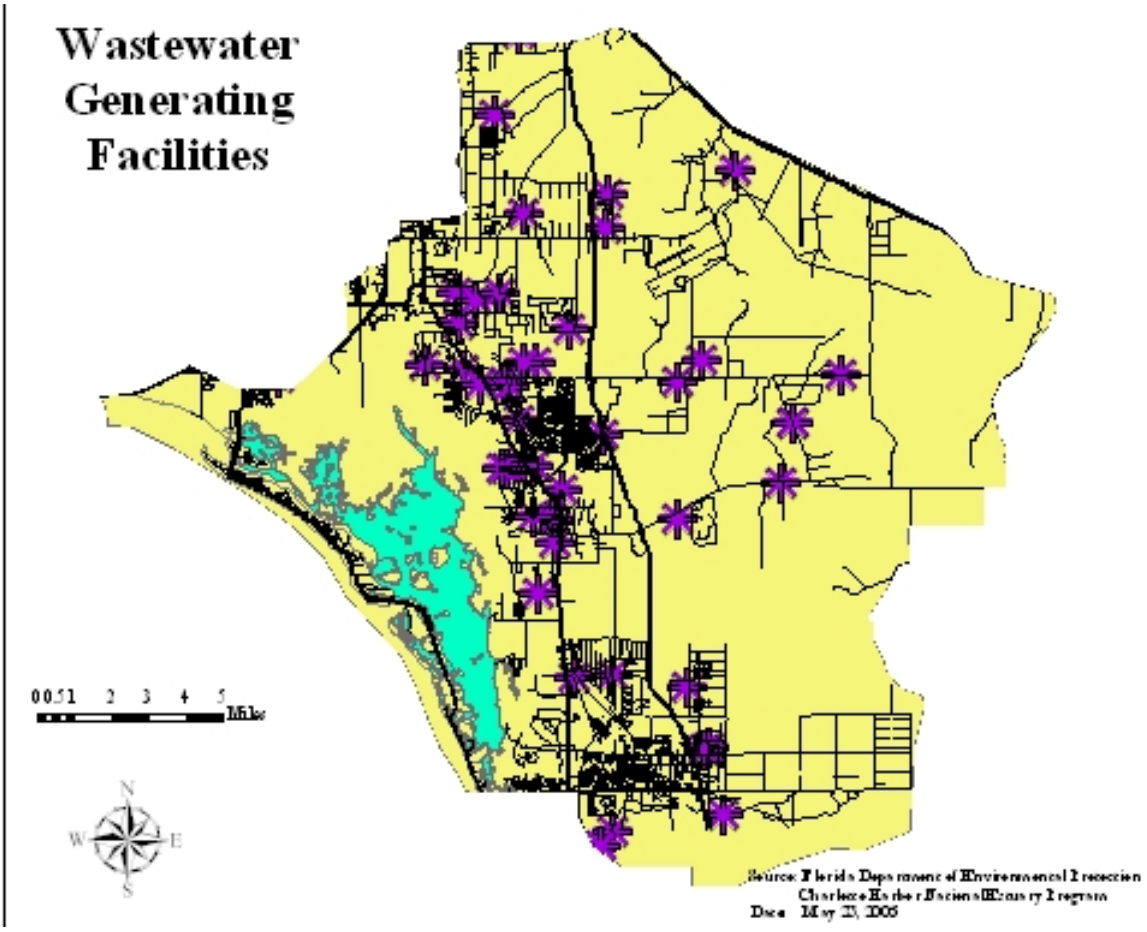
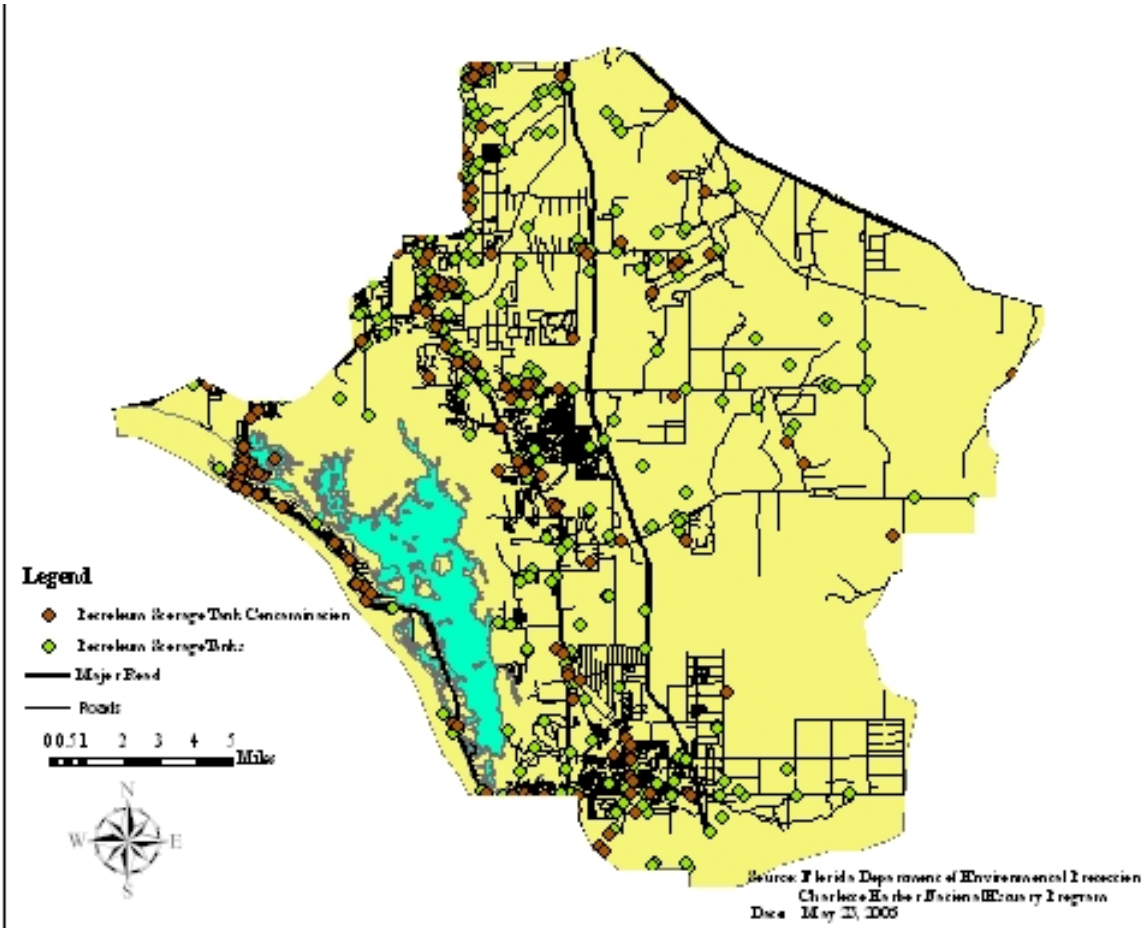


Figure 34: Wastewater Generating Facilities

The domestic wastewater treatment plants generate secondarily treated wastewater that may be permitted to be disposed of in many ways including: surface water discharge; deep well injection; land application; re-use (treated to a higher standard); intermittent surface water discharge; or a combination of these. Intermittent surface water discharge generally means the wastewater is contained within an isolated pond and only reaches surface waters of the state through ground water seepage and transmission, or during a significant storm event.

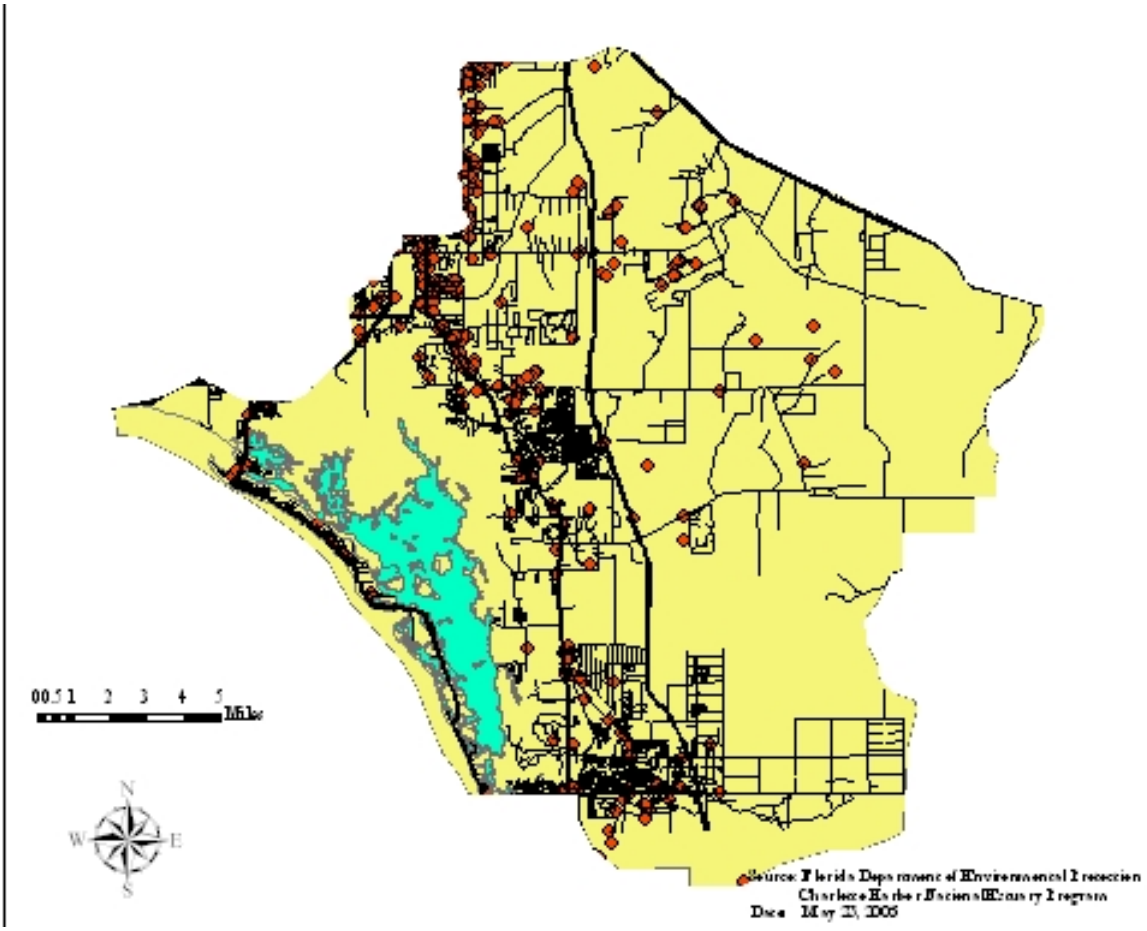
The industrial wastewater permits in the study area serve facilities such as, concrete batch plants (TSS – primarily from site runoff), reverse osmosis plants (typically high in TDS), agricultural processing operations (sugar, citrus, tomatoes), and primarily discharge to groundwater through percolation ponds. Other types of discharge that occur to a lesser extent are: surface water discharge, land application, deep well injection, and re-use.

Figure 35: Petroleum Storage Tanks



Petroleum storage tank facilities within the Estero Bay Watershed study area are regulated by FDEP due to the potential for groundwater contamination. The facilities identified on the map shown above are regulated petroleum storage tank facilities, which include above ground storage tanks greater than 550 gallons in volume, and underground storage tanks greater than 110 gallons in volume. The facilities identified in orange are petroleum storage tank facilities that have experienced confirmed discharges and total 98. These confirmed discharges may be caused by leaks or corrosion in the tank system, equipment failure, operator error (i.e. overfilling of tank), etc. Cleanup of contamination is required to be completed by the property owner under the supervision of FDEP.

Figure 36: Hazardous Waste Handlers



Hazardous waste generators within the Estero Bay Watershed study area are regulated by the FDEP due to the potential threat they pose to human health and natural resources. The facilities identified on the map shown above include small quantity generators, conditionally exempt small quantity generators of hazardous waste, and non-handlers (used oil generator). The designation of small quantity generator includes facilities that generate between 100 kg and 1000 kg of hazardous waste per month. Conditionally exempt small quantity generators of hazardous waste generate up to 100 kg of hazardous waste per month or less than 1 kg of acute hazardous waste. Acute hazardous wastes are substances that have been found to pose significant, irreversible harm to human health, such as arsenic and cyanide compounds. All small quantity and conditionally exempt small quantity generators of hazardous waste, as well as non-handlers (used oil generating facilities) are required to ensure proper disposal of their wastes through pick up by a licensed hauler for its eventual proper disposal or storage. The Estero Bay study area has no large quantity generators, nor any treatment, disposal, or storage sites.

Water Resource Management Issues of Concern

Water resource management issues of concern include needed hydrologic planning and restoration research and restoration

Existing Hydrology and Hydraulics Plans

Existing hydrology and hydraulics plans within the Estero Bay Watershed study area were identified. Most recently, the regional efforts have been a component of the Comprehensive Everglades Restoration Plan (CERP) and the Southwest Florida Feasibility Study (SWFFS). The SWFFS investigates water resources problems and opportunities in all or parts of Lee, Collier, Hendry, Glades, Charlotte, and mainland Monroe counties. The purpose of the study is to determine the feasibility of making structural, non-structural, and operational modifications and improvements in the region in the interest of environmental quality, water supply, and other purposes. The SWFFS is developing a comprehensive regional plan of action to address the health of aquatic and upland ecosystems; the quantity, quality, timing, and distribution of water flows; agricultural, environmental, and urban water supply; the sustainability of economic and natural resources; flood protection; fish and wildlife; biological diversity; and natural habitat. Modeling will be used for detailed design and environmental output evaluation purposes. Hydrologic model development, environmental model development, water quality analyses, and water supply analyses will be required to refine alternative plan formulation. Cost-effectiveness and incremental cost analysis will be used to compare different outputs resulting from the various levels of expenditures.

Four hydrologic and hydraulic models are used to support decision-making through the Southwest Florida Feasibility Study. They include the SWFFS Regional Model, MIKE SHE, MIKE 11, and CH3D (Hydrodynamic Model). The 2003 Strategic Model Plan lists these models as a part of an overall model strategy for SFWMD. The plan can be viewed at: http://gwmftp.jacobs.com/Peer_Review/strategic_plan_final_2%200.pdf.

Hydrology and hydraulic studies and plans also include stormwater and drainage planning efforts and a discussion of the identified problems that need to be addressed. The spatial relationship of these plans within the watershed, the time period that they were developed and the implementation extent are presented. Forty-five separate active Stormwater Master Plans (SMP) have been identified and collected.

Lee County

Lee County has pursued SMP development and implementation. The web page devoted to stormwater planning is http://www.lee-county.com/STORMWATER/MasterPlanpage.htm. According to the website: "One of the main purposes of the Plan was to identify the existing flowways, streams and runoff rates for each basin and provide recommendation for protection and improvement of each flowway and stream. This is being done to protect upstream lands from additional flooding which might be caused from downstream developments. The first portion of the Surface Water Management Plan was an inventory of existing facilities on the major streams and a detailed study of Six Mile Cypress watershed. The Six Mile Cypress Watershed Plan was

finished in February, 1990. This plan was adopted by the Board of County Commissioners on April 18, 1990." More watersheds were studied and the report was completed in June, 1991. In December 1992, additional watersheds were completed. In the most recent effort, Lee County is currently updating the Six Mile Cypress Plan.

Table 14: Lee County Water Management Plans

AUTHOR	DATE	PUBLICATION	GEOGRAPHIC AREA
MONTGOMERY	1988	LEE COUNTY WATER RESOURCES MANAGEMENT PROJECT	Lee County
BENDER	1990	MANAGING THE QUALITY, QUANTITY, AND TIMING OF SURFACE WATER DISCHARGE INTO THE ESTERO BAY STATE AQUATIC PRESERVE	Estero Bay
JOHNSON ENGINEERING	1992	VOL I & IIA, IIB, III MASTER PLAN DECEMBER 1992	Lee County
USDA	1992	FLOOD PRONE AREAS OF LEE COUNTY FLORIDA FLOOD PLAIN MANAGEMENT STUDY PHASE I ESTERO BAY AREA	Estero Bay
JOHNSON & HM	1998	SURFACE WATER MANAGEMENT PLAN VOL 1-3 CONVEYANCE INVENTORY REGIONAL MSTU/GIS MAPPING	Lee County
POST BUCKLEY	1998	SOUTH LEE COUNTY WATERSHED PLAN VOL I	Estero Bay
LEE COUNTY PUBLIC SAFETY	1999	LEE COUNTY FLOODPLAIN MANAGEMENT HAZARD MITIGATION PLAN 1999	Lee County
PSI	2001	LEE COUNTY ENVIRONMENTAL SERVICES NATURAL RESOURCES DIVISION FLOW MEASUREMENT PROJECT	Lee County
LEE COUNTY PARKS & REC	2002	SIX MILE CYPRESS SLOUGH PRESERVE LAND STEWARDSHIP PLAN 2002	Six Mile Cypress Slough

City of Bonita Springs

In 2002, the City of Bonita Springs completed a Stormwater Master Plan (SMP). The SMP presented the history of flooding in Bonita Springs, prepared 2 foot contour maps of the City, delineated drainage basins, and identified thirteen of the most seriously flood prone areas. General cost estimates were prepared for improvements in these areas, with detailed estimates for remedial measures within the three more serious problem areas. The improvements in the thirteen areas were estimated to cost approximately $4 million in 2002. The SMP also *estimated* annual Stormwater system maintenance costs and projected this to a cost per household. The total value of the annual O & M (operation & maintenance) costs was expected to total approximately $0.5 million per year. The City initiated a feasibility study for a Stormwater Utility. The report for the Feasibility Study of a Stormwater Utility is now being completed. Over the past two years the City has undertaken many "small" projects to improve both storm water quantity and quality. Several of these have implemented a portion of some of the thirteen areas addressed in the Stormwater Master Plan. The City has also been able to obtain two grants from SFWMD to assist in these improvements. Currently, the City is developing a 5-year Financial Plan which is expected to show the City funding the recommended CIP improvements over a 10-year period, along with the necessary O & M.

Table 15: Bonita Springs Stormwater Management Plans

AUTHOR	DATE	PUBLICATION	GEOGRAPHIC AREA
HARTMAN & ASSOC	2002	STORMWATER MASTER PLAN VOLUME I FOR THE CITY OF BONITA SPRINGS	Bonita Springs

Town of Fort Myers Beach

The Town of Fort Myers Beach has adopted no SMP with hydrologic analysis and recommended projects with costs. Retrofits are being implemented in association with road projects. However, the Town cites Chapter 9 of its Comprehensive Plan as the current guiding document for SMP. The objectives include stormwater pollutant reduction, increasing recharge rates, reducing erosion, maintaining interim levels of flood protection, and stormwater master planning and implementation. The chapter can be found at: http://www.fmbeach.org/comp_plan/Stormwater.pdf.

The Town of Fort Myers Beach identified 11 drainage projects that are now in various stages of development or have been completed. They are Santos Drive, Primo Drive, Lanark & Lauder, Bayland Area, Matanzas Street, Miramar Drive, Pearl Street, St. Peter's Drive, Andre Mar Drive, Gulfview/Bayview/Strandview Area and Mid-Island Drive. The Town plans to have at least 5 more streets ready for construction in FY 05/06, including Laguna Shores, Sabal, Coconut, Pearl and Miramar. These projects include adding swales to all the side streets and a grit chamber system to keep the sand and sediment from washing into Estero Bay. They also have committed funds each year for cleaning these structures out.

The Town also budgeted for the beginning of a canal improvement initiative in FY 04/05 that includes dredging. The Town allocated $700,000 toward these projects in FY2005.

The Town has also budgeted $300,000 in grant money for the implementation of the Matanzas Harbor Action Plan which will provide improved sewage disposal for anchored vessels. The Town expects the Harbor improvements to be completed fall 2005.

At the direction of the Town Council, Town staff has been pursuing the possibility of the Town obtaining title to, or a conservation easement upon, real property located at or near an entrance to the Matanzas Pass Preserve at Donora Street as well as other areas. It is envisioned that if suitable property can be obtained, it could provide an additional entrance and parking area for the Preserve.

Table 16: Town of Fort Myers Beach CIP Projects

Project	**2004-05**	**2005-06**	**2006-07**	**2007-08**	**2008-09**	**2009-10**	**Year 6-10**	**Total**
Drainage/Canal Projects	$700,000							$700,000
Matanzas Harbor Plan	$300,000		Annual CIP					$300,000

Side Street Stormwater		$500,000	$500,000	$500,000	$500,000	$500,000		$2,500,000
TOTAL	$1,000,000	$500,000	$500,000	$500,000	$500,000	$500,000	$0	$3,500,000

SFWMD

To assist local governments in the Estero Bay Watershed area, SFWMD has developed and implemented various stormwater plans.

Table 17: SFWMD Stormwater Management Plans

AUTHOR	DATE	PUBLICATION	GEOGRAPHIC AREA
JOHNSON ENG	1999	SOUTH LEE COUNTY WATERSHED PLAN	Estero Bay
POST BUCKLEY	2002	ESTERO BAY & WATERSHED ASSESSMENT	Estero Bay

Table 18 presents a summary of projects recommended in the Various SMPs.

Table 18: SFWMD Stormwater Plans Recommendations

Watershed	Recommendation Summary	Cost[1] Estimate	DATE	Agency
Fort Myers	Enlarge culverts, Replace bridge, remove silt, interconnect with pumps, extend canals.	$6,600,000	1987	City of Fort Myers
Six Mile Cypress North	Develop controlled outfalls	$227,000	1987	City of Fort Myers
Ten Mile Canal	Excavate 3 sections of channel, build littoral shelf, diversion to borrow pit, detention facility, replace crossings, construct pump facility.	$9,070,718.00	1991	Lee County
Imperial River	Clean and snag river, install 1 weir	$1,960,000	1991	Lee County
Hendry Creek	Initial vegetation removal and right-of-way acquisition.	$500,000	1991	Lee County
Halfway Creek	Initial vegetation removal, acquire floodplain wetlands west of 41	$802,300	1992	Lee County
Spring Creek	Initial vegetation removal, 1 culvert, 335 acres of sensitive land	$987,000	1992	Lee County
Mullock Creek	5 culverts, 155 acres sensitive land, 37 acre STA, 1 weir	$2,724,000	1992	Lee County
Estero River	Initial vegetation removal, acquire tidal wetlands, install 2	$2,830,800	1992	Lee County

[1] The Cost Estimates are from the Master Plans developed over many years and may not be considered current or reliable at this time.

Table 18: SFWMD Stormwater Plans Recommendations				
Watershed	**Recommendation Summary**	**Cost[1] Estimate**	**DATE**	**Agency**
	culverts, reconstruct 1 bridge			
Oak Creek	2 bridges, 3 box culverts	$1,354,200	1997	Lee County
Bonita Springs	13 flood control projects	$3,928,787	2002	City of Bonita Springs

Many of these projects have been implemented in the years since the preparation of the stormwater plans. Each agency has evaluated their SMPs in association with current needs and techniques. Current stormwater project needs identified as of the writing of this report are in the following table. This table was based on the input received from representatives of Lee County, Fort Myers, Bonita Springs, and more recent SMPs and is not believed to be all inclusive.

Table 19: Identified Project Needs in the Estero Bay Watershed					
Type Of Improvement	**Location/ Extent**	**Watershed**	**$**	**DATE**	**Jurisdiction**
Bridge	Sandy Lane Bridge Reconstruction; Downstream from Three Oaks Parkway, along main conveyance channel. This bridge has low chords less than the recommend 3 foot clearance from the 25 year peak stage elevation.	Estero River	650,000.00	1992	Lee County
Bypass System	Imperial Gates Subdivision (Quinn St. Area). A bypass system for the Imperial Gates Subdivision and the Pinecrest Subdivision with a 72-inch RCP option, with pipes from the Imperial River to Oak Creek.	Imperial River	832,166.00	2002	Bonita Springs
Channel Excavation	Tamiami Trail (US 41) to Six Mile Cypress Parkway (140,000 CY). South of Railroad Bridge to Hanson Street (60,000 CY). Park Road area (60,000 CY)	Ten Mile	2,828,000.00	1991	Lee County
Culvert Replacement	CR 887 2-11' wide by 6' high box culverts, 64 LF; The current culvert crossing is undersized.	Spring Creek	104,000.00	1992	Lee County
Culvert Replacement	Constitution Circle 5-10' wide by 4' high box culverts, 64 LF	Mullock Creek	165,000.00	1992	Lee County
Culvert Replacement	Wood Street 3-9' wide by 6' high box culverts, 64 LF	Mullock Creek	130,000.00	1992	Lee County
Culvert Replacement	Phlox Drive 3-48" RCP, 64 LF The current culvert crossing is undersized.	Mullock Creek	39,000.00	1992	Lee County
Culvert	Lee Boulevard 3-48" RCP, 64 LF The current culvert	Mullock Creek	39,000.00	1992	Lee County

Table 19: Identified Project Needs in the Estero Bay Watershed

Type Of Improvement	Location/ Extent	Watershed	$	DATE	Jurisdiction
Replacement	crossing is undersized.				
Culvert Replacement	Add 2-72" RCP at Metro Parkway for the North Colonial Waterway, as part of road reconstruction.	North Colonial Waterway		1987	Ft. Myers
Culvert Replacement	Oriole Road 3-48" RCP, 64 LF The current culvert crossing is undersized.	Mullock Creek	39,000.00	1992	Lee County
Initial Vegetation Removal	US 41 to CR 887, upstream of US 41. There is excessive vegetation growing along the bank.	Spring Creek	200,000.00	1992	Lee County
Initial Siltation Removal	Clear Brush, remove silt in existing channels. Consider temporarily store more runoff onsite prior to discharge to existing channels. This would involve the construction of stormwater facilities such as swales and ponds.	Imperial River	27,000.00	2002	Bonita Springs
Initial Vegetation Removal	Removal of excessive vegetation from the canal cross-section and periodic maintenance is recommended for both canals in Lake Amelia area.	Imperial River	20,000.00	2002	Bonita Springs
Initial Siltation Removal	Station 100+00 to 392+00: Siltation of some culverts located along the conveyance exceeds 75% of the flow area.	Hendry Creek	400,000.00	1991	Lee County
Sensitive Lands	155 acres (with easement); Tidal wetlands along the southern side of Mullock Creek should be purchased to compliment the nearby State lands.	Mullock Creek	186,000.00	1992	Lee County
Stormwater System	Stormwater System from Arroyal Pond to Bridge at County Park, with the 48-inch RCP option, to address flooding at US 41 and Bonita Beach Road.	Imperial River	453,621.00	2002	Bonita Springs
Swale/ treatment pond system	The Bonita Drive Area may require storage, treatment and conveyance system upgrades to meet the City's goals for reduced flooding and improved water quality.	Imperial River	350,000.00	2002	Bonita Springs
Swale/ treatment pond system	Localized flooding within Imperial Bonita Estates would be reduced by construction of a swale/treatment pond system that outfalls south to the Imperial River.	Imperial River	15,000.00	2002	Bonita Springs
Swale/ treatment pond system	Consider upgrade and expansion of the minimal conveyance system with storage swales or ponds depending upon available land in the Wagon and Torchfire Trails area.	Imperial River	450,000.00	2002	Bonita Springs
Swales	Ragsdale Street Area addition of shallow roadside swales with outfall to the Imperial River or Oak Creek. The stormwater swales should have check dams to reduce the inflow of pollutants into the receiving surface water system.	Imperial River	640,000.00	2002	Bonita Springs

Table 19: Identified Project Needs in the Estero Bay Watershed

Type Of Improvement	Location/ Extent	Watershed	$	DATE	Jurisdiction
Swales	Matheson Avenue has poor roadside drainage south of Longfellow Lane that needs to be addressed.	Imperial River	575,000.00	2002	Bonita Springs
Swales	The improvements in Tangelo and Matheson area (Orangewood Subdivision) involve recutting the swales and cleaning the storm sewer system.	Imperial River	100,000.00	2002	Bonita Springs
Swales	An existing canal north of this area could function as an outfall for future stormwater infrastructure for the Rosemary Road area. Roadside swales should be included as part of the improvements for water quality.	Imperial River	391,000.00	2002	Bonita Springs
Swales/Cross Drains	Construct drainage swales and periodic cross drains in Imperial Harbor area.	Imperial River	75,000.00	2002	Bonita Springs
Water Quality Improvements	Littoral Shelf - 20 acres Diversion to Burrow Pit - with 2 control structures In-Line Wet Detention - 70' crest @ 12.5' NGVD	Ten Mile	5,901,718.00	1991	Lee County
Water Quality Improvements	37 acre facility; Detention basins needed to improve water quality runoff from the existing developed area.	Mullock Creek	993,000.00	1992	Lee County
Weir Installation	Waltzing Water 100' length 4-6'x5' gates (with easement); immediately east of US 41.	Mullock Creek	355,000.00	1992	Lee County

On November 15, 2005, the Southwest Florida Watershed Council (SWFWC) published the Estero Bay Water Quality Improvement Project, prepared by Johnson Engineering. Lee County is in the process of developing a funding strategy to implement the recommended projects. Recommendations include:

- Ten Mile Canal Pumps– The construction of Ten Mile Canal diverted a large portion of the Hendry Creek Watershed to Mullock Creek. The proposed pumps would re-direct some flow back to Hendry Creek. This will reduce flows in Mullock Creek, allowing more residence time. It will also take advantage of the filtering capabilities of Hendry Creek wetlands that are currently under utilized. Quantifying improvements could be a challenge.
- Briarcliff Filter Marshes A & B. There is vacant land located adjacent to the SWFIA airport south outfall and Briarcliff Canal. This land could be used to construct filter marshes. Existing weirs or pumps could be used to force water into the filter marsh.
- Briarcliff Mine Detention – An existing mine located southwest of Fiddlesticks could be used to detain runoff from SFWIA south outfall and Briarcliff Ditch.
- Alico Rd. / SR 739 Filter Marsh– There are some land located near the future intersection of Alico Road and SR 739. This land could be used for a filter marsh.
- Island Park Road Canal Pumps– Construct pumps in the dead end canals at the end of Island Park Road. This would reduce the dead ends in the canals and remove some runoff from Mullock Creek.

- Island Park Road Pump and Filter Marsh– Construct a filter marsh on the west side of Island Park Road and pump water from Ten Mile Canal through the filter marsh and into Hendry Creek.
- Mullock Creek Filter Marsh A & B– Construct a filter marsh at the outfall of San Carlos Park.
- San Carlos Park Filter Marsh– Construct filter marshes on islands located in San Carlos Park Conveyances.
- San Carlos Park Ditch Blocks– Place ditch blocks in swales within San Carlos Park to detail runoff.
- Estero River N. Restoration / Filter Marsh– Purchase lands to the north of the Estero River and create a filter marsh within a restoration area.
- Estero River Filter Marsh north & south– Construct filter marshes adjacent to the Estero River.
- Spring Creek Filter Marsh– Construct a filter marsh along Spring Creek.
- Bonita Golf Course Park / BMP– Purchase the Bonita Golf Course and create a park with lakes and wetlands to provide treatment.
- San Carlos Estates Filter Marsh– Construct a filter marsh for San Carlos Estates to discharge into.
- Liberty Youth Ranch Storage– pump water into the existing lake on the Liberty Youth Ranch property.
- BSU Filter Marsh– Construct a filter marsh at the south end of the BSU east water treatment plant site.
- Tesone Property flow-way– Modify the existing preserve through Tesone to provide additional water treatment.
- Imperial River Filter Marsh A&B– Construct filter marshes along the Imperial River.
- Harbourage Lake Storage– Pump water from Ten Mile Canal into the Harbourage lakes for treatment.
- Alico Road Mine Storage– Pump water from the Alico Road ditch into the mines located south of Alico Road.
- Forest Filter Marsh Pump Station – Construct a pump station to convey water from the Ten Mile Canal to the Filter Marsh constructed by Lee County.
- Daniels Parkway – Six Mile Cypress Pump – Construct a pump to convey water from the Daniels Road ditch to Six Mile Cypress Slough.

Research

The following research issues of concern have been identified through the reconnaissance report process that includes input from the Calusa Restoration Coordination Team (CRCT).

Assimilative Capacities within each Basin

Since impaired waters have been identified in basins in the LCH area, the next step is identifying the assimilative capacities in conjunction with adopting TMDLs and preparing B-MAPs. According to FDEP, because a TMDL represents the assimilative capacity of a surface water body to withstand pollutants, it must identify how many pounds of specific pollutants can be "discharged" while still allowing the water body to meet its designated uses. The reasonable and equitable allocation of the pollutant load reductions required to meet the TMDL is part of its implementation phase. FDEP is working to establish TMDLs and preliminary allocations with strategies to reduce pollutant loads through the development of a local Basin Management Action Plan for each impaired waterbody.

Fill data gaps for TMDLs

Several waterbodies had insufficient data to determine whether or not they are impaired. These waterbodies are illustrated below in Figure 53. Most data needs (Table 20) within the SFWMD jurisdictional boundaries are associated with parks (Lakes Park, Lynn Hall Park, Lovers Key State Park, and Bowditch Park) and other public land (Sanibel Causeway, Gulf of Mexico, and Hell Peckney Bay). FDEP has identified a need to obtain data for any water body listed on the master lists as categories 3a, 3d, 3c, and 3b prioritized in that order (See Figure 37.) FDEP is working to resolve this data gap through its TMDL program. For additional information about the FDEP TMDL program see: www.dep.state.fl.us/water/tmdl/index.htm.

Figure 37: Water Quality Data Needs for Impaired Waters Rule

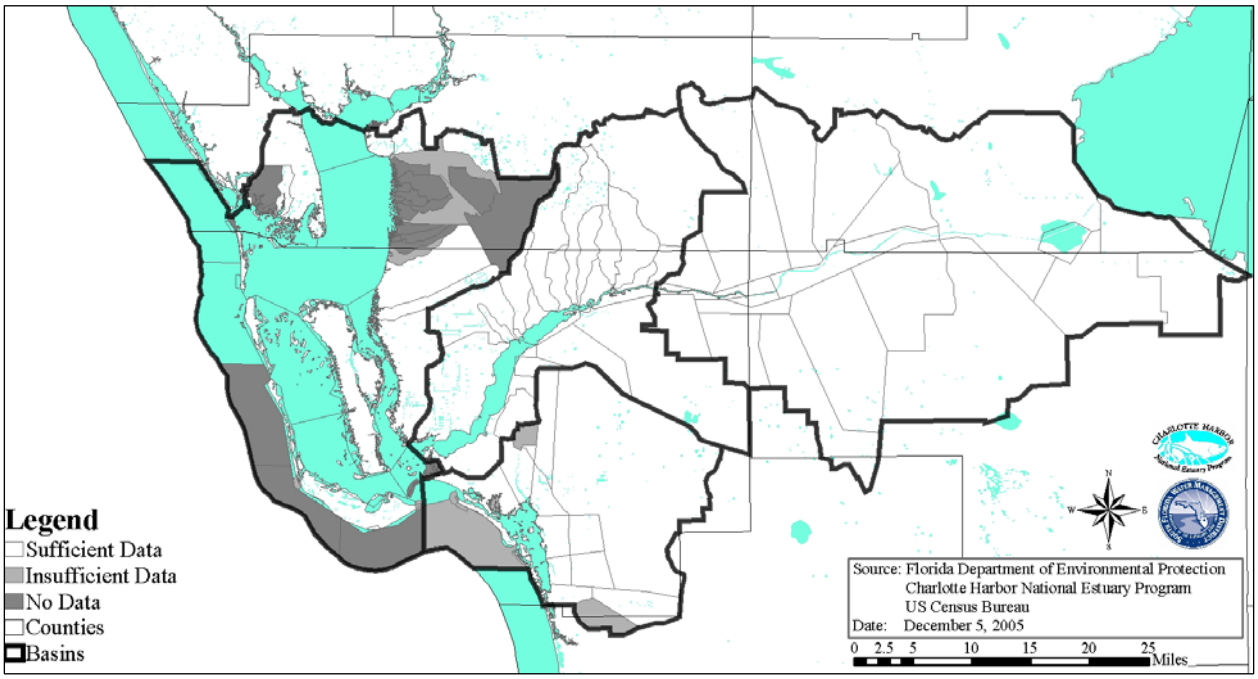


Table 20: Data Needs to Determine Water Quality Impairments

WBID	District	Plan unit	Group	Basin	Assessment
3240O	SO	Pine Island	2	PUNTA RASA COVE	3a
2065HA	SO	Pine Island	2	SANIBEL CAUSEWAY	3a
8060A	SO	Estero Bay	1	BOWDITCH PARK	3a
8060	SO	Estero Bay	1	Estero Bay Gulf	3a
3258J	SO	Estero Bay	1	HELL PECKNEY BAY	3a
8060C	SO	Estero Bay	1	Lovers Key State Park	3a
8060B	SO	Estero Bay	1	LYNN HALL PARK	3a
3258F	SO	Estero Bay	1	OAK CREEK	3a
3258X	SO	Estero Bay	1	THE LAKES PARK	3a

Stormwater Infrastructure Mapping

Lee County and Bonita Springs have prepared GIS maps of outfall locations for their NPDES permits. The Town of Fort Myers Beach has begun mapping them but the work is not completed yet. The City of Fort Myers reports the mapping of outfalls to be a need

Infrastructure such as catch basins and piping has been mapped in only a few places. A comprehensive inventory and map of catch basins and piping are needed.

Stormwater Master Plans

The Town of Fort Myers Beach could benefit from the development of a detailed stormwater master plan, focusing on opportunities to address water quality issues. Master plans other than those for Southwest Lee County, Bonita Springs, and Six-Mile Cypress are now over 15 years old and could be updated, especially to address water quality improvement techniques.

Estuarine Mixing Model

As the SWFFS is developed, mixing models to address the Estero Bay system are planned.

Restoration

Area-wide Restoration Needs

The Lee County Master Mitigation Plan, Draft Charlotte Harbor NEP Restoration Plan and the Southwest Florida Regional Restoration Coordination Team (SWF RRCT) Restoration Plan are all coordinated and tracked together. The projects for the Estero Bay area consist of those used for the Lee County Master Mitigation. These projects are estimated to cost $31,403,000.00 in 2006 dollars. This includes acquisition of 320 acres of land needed to restore hydrology and water quality. It also includes culvert replacement at certain roadways and restoration of acres. These projects are listed in Table below.

Table 21: Lee County Master Mitigation Plan Water Quality Projects

PROJECT	BASIN	Habitat	Water Quantity	Water Quality	Unfunded Remainder	Needed Acq Acreage	Needed Restore Acreage
Bonita Springs Utilities	Estero	Yes	Yes	Yes	$1,920,000.00	320	320
East Estero Bay Buffer	Estero	Yes	Yes	Yes	$5,120,000.00	0	5120
Estero River North	Estero	Yes	Yes	Yes	$5,324,000.00	484	484
Island Park Road/Hendry Creek Filter Marsh	Estero	Yes	Yes	Yes	$693,000.00	63	63
Lakes Park CERP Expansion	Estero	Yes	Yes	Yes	$500,000.00	100	100
Lakes Park-Hendry Creek Connector	Estero	Yes	Yes	Yes	$186,000.00	31	31
Little Estero Island Critical Wildlife Area	Estero	Yes	No	Yes	$0.00	1	40
Metro and Alico Junction Filter Marsh	Estero	No	No	Yes	$420,000.00	65	65
Mullock Creek Preserve	Estero	Yes	Yes	Yes	$250,000.00	0	250
North Estero Bay Buffer	Estero	Yes	Yes	Yes	$10,000,000.00	0	10000
North Side of Section 25 in T47R25.	Estero	No	No	Yes	$3,840,000.00	320	320
Spring Creek Flow-way	Estero	Yes	Yes	Yes	$3,000,000.00	0	2000
Tesone Property	Estero	No	Yes	Yes	$150,000.00	0	30
Totals					$31,403,000.00	1,384	18,823

CHNEP Identified Restoration Needs

In 2005, the Charlotte Harbor National Estuary Program (CHNEP) conducted a survey of its members to prioritize restoration activities. The following are the water quality (WQ) related activities which received the greatest favorable responses.

Table 22: CHNEP Identified Water Quality Restoration Needs

Question	Total Scientists In Support
Install or retrofit agricultural Best Management Practices (BMPs) to maintain or improve water quality and flows associated with citrus, cattle, vegetable, and container grown plant operations.	34
Reduce non-point source pollutants associated with stormwater runoff.	30
Install or retrofit urban Best Management Practices (BMPs) to maintain or improve water quality and flows in residential, commercial, and industrial areas.	30
Install or retrofit mining Best Management Practices (BMPs) to maintain or improve water quality and flows for phosphate mines and sand/rock mines.	25
Encourage, expand, and develop incentives for the use of reclaimed water.	20
Provide central sanitary sewers or other alternative technology to residential areas (parcels of land one acre or less) and all commercial and industrial development within 900 feet of waters (canals, streams, etc)	20
Install filtration marshes Lake Hancock, Buffer zone around Lake Hancock, Remove Lake Hancock muck	18
Install filter marshes to improve water quality.	17
Reduce contaminants from marina and dock operations.	12

Chapter 1:

The applicable Federal, State and County statutes, regulations, rules, Comprehensive Plan Elements, Land Development Code ordinances, and policies for land development permitting and public investment decisions in the Estero Bay Watershed.

Public Entities:

The entities involved in the Estero Bay Basin include: the Estero Bay Agency on Bay Management (ABM), the Southwest Florida Regional Planning Council (SWFRPC), Southwest Florida Watershed Council (SWFWC), Estero Bay Nutrient Management Partnership (EBNMP), Corkscrew Regional Ecosystem Watershed (CREW) Land & Water Trust, Florida Department of Environmental Protection (FDEP), South Florida Water Management District (SFWMD), Lee County, U.S. Fish and Wildlife Service (USFWS), U.S. Geological Service (USGS), U.S. Army Corps of Engineers (USACOE), U. S. Environmental Protection Agency (USEPA), Florida Fish and Wildlife Conservation Commission (FWC) , Florida Department of Transportation (FDOT), Town of Fort Myers Beach (FMB), City of Bonita Springs (CBS), Lee Building Industry Association (LBIA), Lee County Metropolitan Planning Organization (LMPO), Water Enhancement and Restoration Coalition (WERC), Southwest Florida Transportation Initiative (SWFTI), Urban Land Institute – Southwest Florida Chapter (ULI-SWF), and the Estero Design Review Committee (EDRC). Information was sought from and shared with all of these organizations.

Table 23: Entities Evaluated

Agencies	
Federal	
U.S. Army Corps of Engineers	U.S. Fish and Wildlife Service
U.S. Environmental protection Agency	National Oceanic and Atmospheric Administration
U.S. Geological Survey	Charlotte Harbor National Estuary Program
State	
Department of Environmental Protection	Department of Community Affairs
Public Service Commission	Department of Health
Department of Transportation	Department of Agriculture and Consumer Services
Fish and Wildlife Conservation Commission	Florida Gulf Coast University
Regional	
Estero Bay Agency on Bay Management	Southwest Florida Regional Planning Council
South Florida Water Management District	West Coast Inland Navigation District

Counties	
Lee	
Cities and Towns	
Bonita Springs	Fort Myers Beach
Fort Myers	
Taxing Districts	
Community Development Districts	Special Topic Districts
Public Works Authority	Water Control Districts
Soil and Water Conservation Districts	
Stakeholders	
Unincorporated Communities	
Estero	San Carlos Park
South Fort Myers	
Non-Governmental Organizations	
Audubon	Corkscrew Regional Ecosystem Watershed Trust
Conservancy of Southwest Florida	Southwest Florida Watershed Council
Responsible Growth Management Coalition	Water Enhancement and Restoration Coalition

Counties and Cities

Three of the five Lee County incorporated cities are located in the study area: Fort Myers, Fort Myers Beach, and Bonita Springs.

Each county and city adopts a comprehensive plan and an annual budget. Many also adopt a 5-year Capital Improvements Program (CIP). Some local jurisdictions have dependent drainage districts to fund works, commonly known as Municipal Service Taxing Units (MSTU) or Municipal Service Benefit Units (MSBU). In addition, the coastal counties and their cities are National Pollutant Discharge Elimination System (NPDES) permittees.

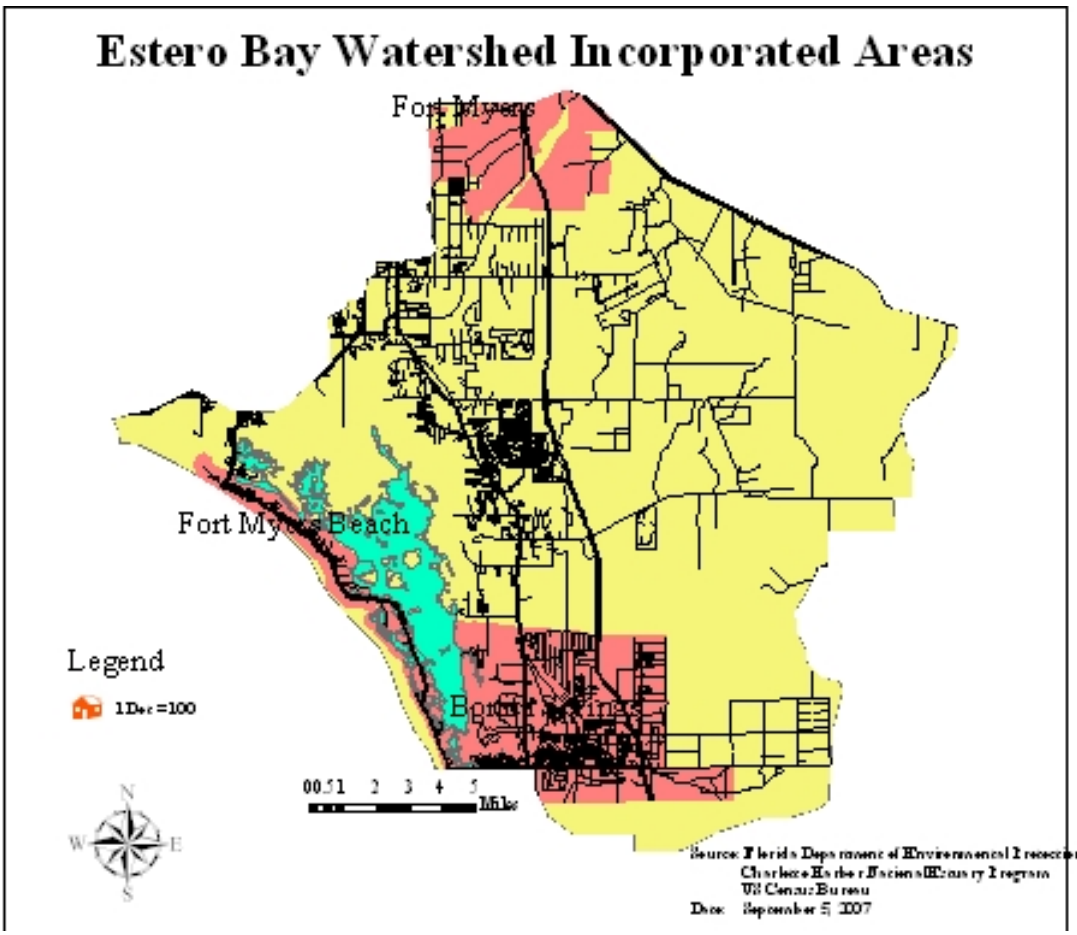


Figure 38: Incorporated Area

Special Districts

All the districts listed in the Florida Department of Communities Affairs "Official List of Special Districts On-Line," are local units of special-purpose government. They have a governing board with policy-making powers, are operating within a limited geographical boundary, performing a governmental function, and were created by general law, special act, local ordinance, or by rule of the Governor and Cabinet. On the other hand, a MSBU or MSTU is not a unit of local special-purpose government (see s. 189.403(1), F.S.) and is under the authority of a City or County. A special district is dependent if a single county or single municipality has some control over its budget or governing body membership (see s. 189.403(2) (a)-(d), F.S.). For the purposes of identifying governmental units with jurisdiction, both dependent and independent districts are included in this report. The types of special districts found in Lower Charlotte Harbor that have relevance to surface water improvement and management include:

- Aquatic Plant Control,
- Community Development,
- Conservation and Erosion,

- Soil and Water Conservation,
- Water Control, and
- Water and Sewer.

Water Control Districts

Chapter 298, Florida Statutes is dedicated to drainage and water control and provides for the formation of water control districts (WCD) (See Figure 17). Each WCD created through FS 298 is governed by an elected Board of Supervisors. Landowners vote for this board based on acreage owned within the respective WCD. Each WCD adopts a water control plan that directs infrastructure and works. They all have the ability to issue bonds and assess property owners.

Figure 39: Section 298 Water Control Districts

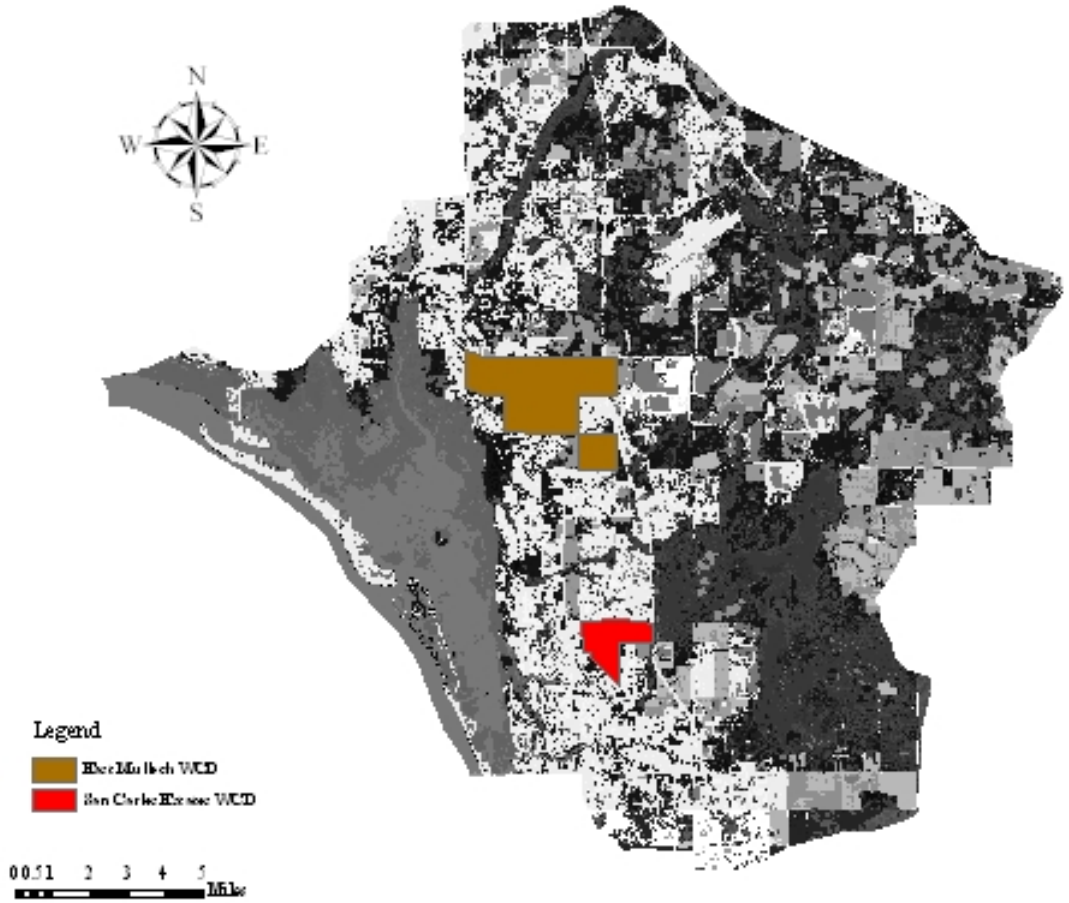


Table 24: Section 298 Water Control Districts

District	County	Year Est.	Independent
East Mullock Water Control District	Lee	1963	Yes
San Carlos Estates Drainage District	Lee	1969	Yes

Related Districts

There are 4 related types of districts in the area: Aquatic Plant Control, Erosion, Soil & Water Conservation, and Water & Sewer. The Lee County Hyacinth Control District (LCHCD) was established pursuant to FS 189.404 in 1961. The Captiva Erosion Prevention District was established in 1959, prior to the adoption of FS 161 Part II which establishes beach and shores preservation districts. It operates under the authority of FS 161.32 which provides for existing beach and shores preservation districts. The Lee Soil & Water Conservation District is the only independent Soil & Water District of the four in Lower Charlotte Harbor. All soil and water conservation districts were established under FS 582.

Table 25: Related Districts

District	County	Function	Year Est.	Independent
Lee County Hyacinth Control District	Lee	Aquatic Plant	1961	Yes
Lee Soil & Water Conservation District	Lee	Soil and Water	1947	Yes

Community Development Districts

Community Development Districts (CDD) are established under the statutory authority of FS 190 and FAC Chapter 42. FS 190.013 provides the CDDs with the ability to assume responsibility for flood control and water quality. The CDDs identified in Table 5 are responsible for providing flood control and have master stormwater management plans for the lands located within the district. All CDDs listed below are independent.

Table 26: Section 190 Community Development Districts

District	County	Year Est.
Arborwood Community Development District	Lee	2004
Bay Creek Community Development District	Lee	1993
Bayside Improvement Community Development District	Lee	1991
Brooks of Bonita Springs Community Development District	Lee	1998
Brooks of Bonita Springs II Community Development District	Lee	1999

CFM Community Development District	Lee	2002
Colonial Country Club Community Development District	Lee	2002
Gateway Services Community Development District	Lee	1986
Habitat Community Development District	Lee	2003
Heritage Oak Park Community Development District	Charlotte	1998
Heritage Palms Community Development District	Lee	1998
Laguna Lakes Community Development District	Lee	2002
Mediterra North Community Development District	Lee	2001
Miromar Lakes Community Development District	Lee	2000
Parklands Lee Community Development District	Lee	2004
Parklands West Community Development District	Lee	2000
Renaissance Community Development District	Lee	2001
River Ridge Community Development District	Lee	1996
Stoneybrook Community Development District	Lee	1998
University Square Community Development District	Lee	1998
Vasari Community Development District	Lee	2001
Verandah West Community Development District	Lee	2002

Local Governments

Lee County

Overseen by a five-member Board of County Commissioners, Lee County Government provided services to the more than 575,000 residents of Lee County and its cities, at the time of this study.

The Lee County Department of Community Development provides services associated with permitting, plan review, inspections, code enforcement, zoning, land use planning, environmental sciences, affordable housing, and historic preservation for properties located within unincorporated Lee County, the Town of Fort Myers Beach, and the City of Bonita Springs. The stated mission is, through the services provided, “to promote public health and safety, help maintain a healthy environment, promote a strong local economy, and provide courteous, timely, and efficient service to the public.”

Zoning determines the future use of a defined piece of property in the Estero Bay Watershed. Every piece of property has been given a specific zoning category. Zoning maps can be reviewed at 1500 Monroe Street or purchased from the Property Appraiser's Map Sales office at 2480 Thompson Street. A rezoning may be requested if a person desires to use property for a use that is not currently allowed. All rezonings must be in

conformity with the Lee County Comprehensive Plan and a zoning application must be completed. Zoning applications are available through a computer download. An applicant is required to submit different materials depending on which process s(he) is going through. Pre-application meetings are available with staff to discuss the process in detail and to discuss any questions you may have with your rezoning case, as long as you provide any maps and/or documents necessary. You may fill out a pre-application (informal meeting) application via the internet.

Following a staff review that results in a written report, all re-zonings are then subject to a public hearing before the Hearing Examiner. Applicants must give a brief presentation and respond to questions or cross-examination. All interested parties can speak on the matter or present written comments.

The Hearing Examiner issues a recommendation to the Board of County Commissioners, who decide the matter at another public hearing. Re-zonings are generally heard by the Board on the first, third and fifth Monday of each month at 9:30 a.m.

Information concerning rezoning proposals or cases in progress is available from the Division of Development Services in person or by emailing a Zoning staff member.

The procedures governing public participation in the zoning process before the Hearing Examiner and the Board of County Commissioners are set forth in the Guide to Public Participation, http://www.lee-county.com/attyguidetipublicpart.pdf

For the conventional rezoning process, an applicant is required to submit: a completed application, including sketch, legal description and STRAP number, purpose of the rezoning, name and address of property owners within 500 feet. (if less than 10 property owners then 750 feet), notarized authorization from property owner and disclosure form, if necessary, a fee pursuant to the county fee schedule, site plans, traffic studies and an environmental evaluation (if necessary).The average time to complete the conventional rezoning process is 11 weeks. For further information, you may contact the Division of Development Services.

Planned Development re-zonings are required for large projects. The applicant submits a conceptual site plan which establishes use, access, buffers and open space, and other features of the actual development. Planned Developments allow greater flexibility in design but may have conditions attached during the approval process. An applicant is required to submit: a completed application, including sketch, legal description and STRAP number, purpose of the rezoning, name and address of property owners within 500 feet (if less than 10 property owners then 750 feet), notarized authorization from property owner and disclosure form, and if necessary, a fee pursuant to the county fee schedule. For further information, you may contact the Division of Development Services.

A Special Exception allows uses that are not normally permitted in a particular zoning district upon a demonstration that the use will comply with special conditions and standards for location and operation. Examples include day care centers in residential districts or electric substations in commercial districts. The Special Permit is a similar

procedure where the use or activity is permitted in accordance with certain standards. Examples of Special Permits include bars and cocktail lounges in commercial districts or shared parking lots. The applicant for a Special Exception is required to submit a completed application which includes: the name and address of surrounding property owners, statement of purpose and compliance with standards, notarized authorization from property owner and disclosure form, if necessary, a site plan detailing the proposed use, traffic impact analysis (certain cases only), and a fee that varies with type of request pursuant to the county fee schedule. The average time to complete the Special Exception process is seven weeks.

The Division of Environmental Sciences provides for the identification and conservation of natural systems, native vegetation and wildlife through project review, permit issuance and enforcement of Lee County environmental land use regulations. The regulations include the environmental sections of the Lee County Comprehensive Plan and Land Development Code (LDC). This permitting program applies to the unincorporated areas of Lee County.

Wetlands are determined using the Florida Unified Wetland Delineation Methodology detailed in Chapter 62-340, F.A.C. Persons trained in using this methodology determine if an area contains wetlands based on the type of vegetation present, hydric indicators in the soil, and evidence of hydrology. The historical Soil Survey of Lee County completed in the early 1980s, serves as guideline for locating potential wetland areas. Frequently flooded, slough (sheet-flow) and depressional (ponding and muck) soil types can indicate areas of wetland formation; however, a site visit needs to be conducted by a person trained in wetland delineation methodology to verify the presence or absence of wetlands. Please note that just because a parcel does not contain a hydric soil mapping unit number does not automatically mean wetland conditions are not present. And the opposite is true – just because a parcel is mapped with a hydric soil number does mean that a wetland is definitely present. Thus, the need for a site inspection by trained personnel. Lee County no longer conducts independent wetland determinations since the passing of Land Development Code Wetland Protection Amendments. However, if a hydric soil mapping unit, according to the Soil Survey of Lee County, is present on a parcel Lee County requires a wetland determination prior to the approval of applications for single family residence building permits, planned development re-zonings, lot splits, and development orders. The Florida Department of Environmental Protection (DEP) provides wetland determinations for single family residence parcels. The South Florida Water Management District (SFWMD) handles parcels zoned for commercial, agriculture and multi-family use. If a wetland determination reveals wetlands are present on a parcel, an Environmental Resource Permit must first be obtained prior to the issuance of Lee County permits and development orders.

DEP conducts informal wetland determinations at no cost for single family residence parcels under one acre. The Request for Informal Wetland Determination form is available online, at www.dep.state.fl.us/south. Once completed, the form can be faxed or mailed to DEP. For parcels over one acre or further information on wetland determinations, DEP South District Office must be contacted directly.

Impacts to wetlands, including clearing, filling or excavation, typically require an Environmental Resource Permit (ERP) from the Florida Department of Environmental Protection (DEP) or the South Florida Water Management District (SFWMD). Generally, parcels zoned for single family residence are handled by DEP. Parcels zoned for multi-family residence, commercial and agriculture are handled by SFWMD. Prior to the release of Lee County development orders and building permits on parcels containing wetlands (see section above for information on Wetland Determinations), an ERP must be obtained and a copy provided to Lee County. Conditions of the DEP or SFWMD Environmental Resource Permit will be incorporated into Lee County development orders and permits. Lee County Environmental Sciences staff will participate with FDEP staff in the compliance and enforcement of permit conditions.

On September 18, 1996, the Lee County Board of County Commissioners approved amendments to the Wetland Protection Section in Chapter 14 in the Land Development Code. These amendments change the permit process for parcels of land with wetlands. Per LDC Section 10-415(b)(1), large developments, with existing indigenous native vegetation, must provide 50 percent of their open space percentage requirement through the onsite preservation of existing indigenous native vegetation. Per LDC Section 10-415(b)(2), as an incentive to preserve indigenous native upland plant communities in large tracts, a scaled open space credit for single preserve areas will be granted as follows: 110% credit is provided for a minimum size of ½ acre with a minimum width of 50 feet, 125% credit is provided for a minimum size of 1 acre with a minimum width of 75 feet, and 150% credit is provided for a minimum size of 3 acres with a minimum width of 150 feet. An additional, maximum ten percent credit will be granted if any of the following indigenous vegetation areas are included: rare and unique uplands as defined by the Lee Plan, connection to offsite public or private environmental conservation or preserve areas, or upland buffers to natural waterbodies.

Per LDC Section 10-415(b)(3), consistent with the provisions of section 10-104, the director may permit administrative deviations to reduce the minimum 50 percent indigenous native vegetation requirement within this subsection to a lower percentage. Existing, approved indigenous preserve areas within planned developments are not eligible for administrative deviations. The administrative deviation request must include the unique conditions or circumstances that make the property unusable and unreasonably burdensome. The applicant must provide details of other actions that will be taken to offset the reduction (mitigation). Mitigation must, at a minimum, meet a one to one (1:1) ratio of reduction of indigenous area to mitigated area. Mitigation that will be considered includes, but is not limited to: onsite ecological creation/restoration, with long-term management, offsite land acquisition with perpetual conservation protection, offsite ecological restoration on public lands or protected private lands, or purchase of appropriate credits from a permitted mitigation bank.

Per LDC Section 10-415(c)(3) Indigenous open space areas must have a minimum average width of 20 feet and minimum area of 400 square feet.

Native trees are protected from removal and abuse on subdivision, commercial and industrial development sites. Barricades are required to be placed around all trees to be retained on development sites prior to the start of clearing or construction. ES staff conducts inspections of the installed barricades prior to the start of construction and the issuance of the tree permit. A Vegetation Removal Permit is required for the clearing of trees for any development reason, including existing developments and the construction of new developments. Removal of trees and other native vegetation on Agricultural (AG) zoned property that is being converted to bonafide agricultural use is done through a Notice of Clearing (NOC). ES staff review NOC applications for environmental issues, including protected species and wetlands.

A permit is required for the removal of native vegetation and trees in accordance with the Tree Protection section of the Lee County Land Development Code. A comprehensive list of the specific trees in Lee County which require a Vegetation/Tree Removal Permit can be found here. The different areas of vegetation removal are: for agricultural clearing purposes - Notice of Clearing , for single family residences on coastal islands, for multi-family residences, for commercial / industrial uses, in association with a development order, and of Hazard Trees

The conservation of existing trees and the planting of new trees on development sites is required by the Lee County Land Development Code. Both retained and new trees provide breaks in the urban landscape and offer many benefits. These benefits include: providing oxygen, conserving energy, filtering water, creating a cooling canopy, absorbing noise, reducing glare, creating areas for wildlife and increased property values.

Trees can be pruned to address visibility and safety while maintaining their structural integrity. The intent of tree maintenance is to allow required trees to grow into normal, mature landscape features and is required by Section 10-421 (c) of the Lee County Land Development Code which states:

(c) Pruning. Vegetation required by this code may only be pruned to promote healthy, uniform, natural growth of the vegetation. Trees must not be severely pruned to permanently maintain growth at a reduced height or spread. Pruning must not interfere with the design intent of the original installation. Severely pruned trees must be replaced by the property owner. A plant's growth habit must be considered in advance of conflicts which might arise (i.e. views, signage, overhead power lines, lighting, circulation, sidewalks, buildings, and similar conflicts).

Some examples of the most common and severe tree pruning violations in Lee County: Severe over-pruned palms, hat-racking, balling or shaping, and lion-tailing or poodle - tailing. Severe pruning is considered irreparable damage to trees. Citations, to both the property owner and the tree pruning contractor will be issued. If the trees are severely pruned tree restoration may be required. It is extremely important to plan your landscape to avoid future pruning problems. Appropriate plant selection can result in a reduced need for extensive pruning and maintenance. For information regarding plant selection and tree protection contact the Lee County Division of Environmental Sciences staff. Information

on landscape maintenance and plant pruning can also be obtained by contacting the Lee County - University of Florida Extension Office staff at (239) 338-3232.

The Lee County Board of County Commissioners has long recognized the problems invasive exotic plants have had on the ecosystems in Lee County. Starting in 1982, the Commissioners have passed ordinances to deal with this growing problem. Included in Ordinance No. 82-42 (which established the Lee County Development Standards Regulations) was the prohibition of the use of melaleuca (*Melaleuca quinquenervia*), Australian pine (*Casuarina* species), and Brazilian Pepper (*Schinus terebinthifolius*) for landscaping requirements.

Ordinance No. 90-06 required the removal of these species from provided open space areas for all developments that received final development order approval after March 5, 1990. An invasive exotic vegetation removal and maintenance plan was required for development order approval. The applicant had to include a tree location graphic or map which identifies invasive exotic plants or invasive exotic plant masses as to the particular species, native plants and plant masses, and a plan to remove invasive exotic vegetation so as to preserve native trees and understory. The plan also required a commitment to maintain these areas free from invasive exotics in perpetuity.

Per Lee County Land Development Code Section 10-420 (f), the following highly invasive exotic plant must be removed from the development area. Methods to remove and control invasive and exotic plants must be included on the development order plans. A statement must also be included on the development order that the development area will be maintained free from invasive exotic plants in perpetuity. (http://www.municode.com/resources/gateway.asp?pid=12625&sid=9)

For the purposes of this subsection, invasive exotic plants include Australian pine *(All Casuarina species),* Bishopwood Toog Tree, Brazilian pepper, (*Schinus terebinthifolius),* downy rosemyrtle, (*Rhodomyrtus tomentosus),* earleaf acacia *(Acacia auriculiformis),* Melaleuca, (*Melaleuca quinquenervia),* tropical soda apple, *(Solanum viarum),* Carrot Wood, Cork Tree/Seaside Mahoe, Java Plum, Rose Apple, Wedelia/Creeping Oxeye, Woman's Tongue, and Rose Wood.

Mangrove trees along natural and many artificial water bodies are protected from removal. Mangrove trees are protected from removal by Dock and Shoreline regulations, the natural waterway buffer requirement and the Tree Protection Code. In many cases, mangrove trees can not be removed without first obtaining a vegetation removal permit from Lee County. Mangroves are typically located in wetlands. Impacts or removal of mangrove wetlands may require permits from state and federal agencies. Since July 1, 1996, Lee County has generally not been involved in the regulation of mangrove tree pruning. The FDEP regulates the permitting of mangrove pruning per the Mangrove Trimming and Preservation Act (Florida Statutes Sections 403.9321-403.9333)

Southern bald eagles, loggerhead sea turtles and other protected animal and plant species are afforded habitat protection through several Lee County land development regulations. In 1986, the Lee County Board of County Commissioners adopted Southern bald eagle

nest guidelines and created an Eagle Technical Advisory Committee (ETAC). The Division of Environmental Sciences and ETAC members monitor bald eagle nests throughout Lee County and provide technical advice to landowners on bald eagle biological requirements.

From May 1st through October 31st, loggerhead sea turtles nest on the Gulf of Mexico beaches in Lee County. To minimize disruption of both adult sea turtle nesting activities and the return of sea turtle hatchlings to the Gulf, regulations exist to reduce lighting along the beach (Land Development Code Chapter 14). Various light shielding techniques are used for both new and existing development. Beach activities like open fires and deep beach raking are restricted during the nesting season.

Other protected animals include species such as the gopher tortoise, wood stork, fox squirrel and eastern indigo snake. Protected plants include species such as the joewood tree, beautiful paw-paw, Curtis milkweed and Florida coontie. A complete list of protected animal species is located under Appendix H of the Lee County Land Development County and a complete list of protected plant species is available on the Environmental Sciences webpage.

A survey for protected animal and plant specie is required for most new development project; A habitat management plan is required protected species occur on a development site.

Environmental Sciences staff who work in this section conduct inspections of development sites to insure compliance with environmental regulations and permit conditions. Compliance and enforcement staff's primary duties include enforcement of tree protection regulations, sea turtle protection regulations, zoning conditions, protected species management plans & monitoring reports and development order requirements. If projects or properties are not in compliance, enforcement action may be necessary. Enforcement action includes the issuance of a stop work, citation, and/or a notice of violation. Abatement conditions of a notice of violation typically include compliance with approved permits and/or restoration of the site. If a violation is not abated within the time frame given, it is scheduled before the Hearing Examiner. The Hearing Examiner can impose a fine in the form of a lien on a property of up to $250.00 per day and the cost of prosecution for the violation case.

Environmental violations include the unpermitted clearing of trees or other vegetation, improper tree pruning, and noncompliance with development approval requirements and protected species issues. Environmental violations should be reported to the Environmental Sciences Enforcement staff member.

Noise complaints may be made directly to the Sheriff's office by calling 239-332-3456.

Complaints regarding illegal dumping and trash pick-up may be made by calling the Lee County Department of Solid Waste at 239-479-8580.

In 2005, a study of the Density Reduction Groundwater Recharge (DR/GR) area of southern Lee County was completed. The DR/GR lies within the Estero Bay watershed east of Interstate 75 and south of SR 82. The DR/GR report assessed the groundwater and mining resources and through the process of data collection and technical analysis. One recommendation of the DR/GR study was for Lee County to further evaluate the role that land alterations and impervious surfaces, which when combined with drainage play on the hydrologic system in order to assess the feasibility of remedial and mitigation measures. In addition, as part of the study, Surface Water Flow-ways for all of Lee County have been mapped to aid in review of sensitive environmental areas.

In October 2001 following a year long study of the issue by a task force, the Board of Lee County Commissioners authorized the creation of the county's Smart Growth Department. The Board also created a 18-member Smart Growth Advisory Committee, with each Commissioner appointing three members. The chairmen of the School Board and County Commission also are committee members, and the County Manager is an ex-officio member. The Smart Growth Advisory Committee held its inaugural meeting April 25, 2002 to officially begin the county's Smart Growth process.

The Smart Growth Committee builds upon and furthers the work initiated by the Smart Growth Task Force. The work of the Smart Growth Task Force is contained in the Archives section of this Website.

The goal of Smart Growth is to achieve a good balance between community livability, economic viability, and environmental sensitivity. One of its keys is proactive, inclusive, community-supported growth management. Elements include, but are not limited to, Environmental Quality, Land Use, Transportation, Water Supply and Community Character.

In February 2002, the county hired Wayne Daltry, former executive director of the Southwest Florida Regional Planning Council, as its Smart Growth Director. Mr. Daltry worked for the Regional Planning Council for 27 years – 20 as executive director – and has extensive experience with regional and local community issues.

In 2004, Lee County began implementing the Lee County Master Mitigation Plan (LMMP). The LMMP provides a systematic assessment of habitat, water quality, re-hydration and wetland and upland preservation needs for Lee County. The LMMP was developed by a multidisciplinary and multi-agency task team. The LMMP Plan has three main purposes: to provide a master strategy by which critical environmental features continue to be preserved; to provide "safe harbor" approaches for mitigation projects that are required for the infrastructure needed to accommodate growth, which in turn will enable the budgeting process to be reliable; and to restore degraded resources that are important for the health, safety, and welfare of the public. The plan catalogs potential restoration projects, identifies capital projects that will result in the most improvement in the capital projects area for advance mitigation. The LMMP identified potential sites for future mitigation within the Estero Bay watershed. The first of these projects have been programmed into the CIP.

In 1998, citizens of Lee County voted in favor of a non-binding resolution to fund acquisition, restoration and management of environmentally sensitive land. The resulting program - Conservation 2020 - has successfully acquired sensitive land for environmental conservation, and the Board of County Commissioners has approved continued funding of the program. Funding for the Conservation 2020 program is also reflected in Table 35 below.

Table 27: Lee County Master Mitigation Plan and Conservation 2020 Water Quality Capital Projects Pertinent to the Estero Bay Watershed

Project	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Year 6-10	Total
Alico Road Drainage Improvements	$498,312							$498,312
Briarcliff Ditch Filter Marsh and Weirs	$592,700							$592,700
Conservation 2020 Land Acquisition	$33,537,729	$14,123,030	$15,323,488	$16,625,984	$18,039,193	$19,572,524		$117,221,948
Eagle Ridge/Legends Interconnect, stormwater			$450,000					$450,000
Island Park Filter Marsh	$268,000	$2,000,000						$2,268,000
Lakes Park CERP Project	$2,151,886							$2,151,886
Neighborhood Improvement Program	$350,000	$350,000	$350,000	$350,000	$350,000			$1,750,000
Orange River Outfall		$250,000	$250,000					$500,000
Ten Mile Filter Marsh	$3,185,862		$500,000					$3,685,862
Three Oaks Parkway Filter Marsh	$994,954	$3,000,000	$1,800,000					$5,794,954
Water Quality Mitigation					$1,000,000	$1,000,000	$5,000,000	$7,000,000
TOTAL	$41,579,443	$19,723,030	$18,673,488	$16,975,984	$19,389,193	$20,572,524	$5,000,000	$141,913,662

Additional CIP projects include roadway improvements. The following road widenings are planned:

- Cypress Lake Drive Widening
- Gladiolus Widening
- I-75 Widening
- Imperial Street
- Pondella Road Widening
- Six Mile Cypress parkway 4-laning
- Three Oaks Parkway Widening.

County road projects require water quality treatment systems to be installed as per SFWMD permit requirements. Any treatment over and above that which is required by

rule will be handled on a case-by-case basis and may be used to improve water quality of runoff going to verified impaired waters.

The plan is a component of the implementation of the Lee County Comprehensive Plan. In addition, the plan is being incorporated into other efforts including the CHNEP Restoration Plan, the SWFFS restoration alternatives, and the SWFRRCT Restoration Plan. The plan can be found at: http://www.swfrpc.org/LMMP.htm.

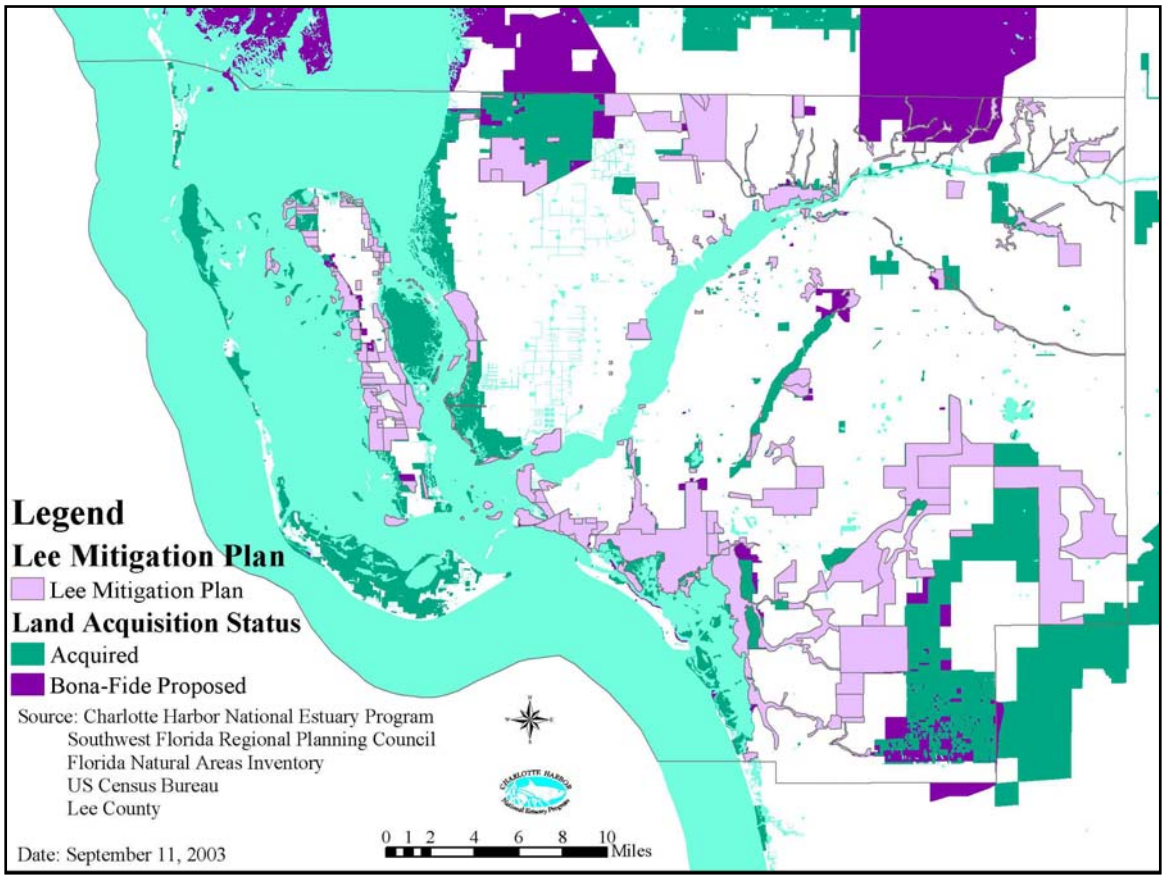

Legend
Lee Mitigation Plan
Lee Mitigation Plan
Land Acquisition Status
Acquired
Bona-Fide Proposed
Source: Charlotte Harbor National Estuary Program
Southwest Florida Regional Planning Council
Florida Natural Areas Inventory
US Census Bureau
Lee County
Date: September 11, 2003
0 1 2 4 6 8 10
Miles

Figure 40: Lee Mitigation Plan

Municipalities

Town of Fort Myers Beach

The Town of Fort Myers Beach is a new municipality incorporated after a vigorously debated campaign, the citizens of Fort Myers Beach passed a referendum asking the Florida State Legislature to allow Fort Myers Beach to become a municipality. The State Legislature passed the required legislation, and it became law without Governor Chiles' signature on June 17, 1995. Elections for Town Council were held in November and December and on December 31, 1995, the Town of Fort Myers Beach was born.

While the bill to create the Town was working its way through the legislature, a Transition Team was formed to do the necessary advance preparation. A Town Charter was drafted with a City Manager/Town Council form of municipal government. Through numerous visits and telephone calls to other communities the Transition Team became informed about which policies and procedures would and would not work for the Town.

The City of Sanibel was of major assistance to the Transition Team and in the first months of the Town's existence provided their Assistant City Manager, Bill Mills, to be the Town's Acting Town Manager until a search could be completed and a full-time Town Manager hired.

The Transition Team was organized to gather information to present to the first Town Council members to help them get started on the task of bringing home-rule to our island. The team consisted of many volunteers who graciously gave their time and paid their own expenses because they believed in this new governmental unit. The team realized that the candidates who would run for town council would be occupied with the election campaign. By gathering the information ahead of time the team hoped to make the transition easer for those elected.

City of Bonita Springs

In 2002, the City of Bonita Springs completed a Stormwater Master Plan (SMP). The SMP presented the history of flooding in Bonita Springs, prepared 2 foot contour maps of the City, delineated drainage basins, and identified thirteen of the most seriously flood prone areas. General cost estimates were prepared for improvements in these areas, with detailed estimates for remedial measures within the three more serious problem areas. The improvements in the thirteen areas were estimated to cost approximately $4 million in 2002. The SMP also estimated annual Stormwater system maintenance costs and projected this to a cost per household. The total value of the annual O & M (operation & maintenance) costs was expected to total approximately $0.5 million per year. The City initiated a feasibility study for a Stormwater Utility. The report for the Feasibility Study

of a Stormwater Utility is now being completed. Over the past two years the City has undertaken many "small" projects to improve both storm water quantity and quality. Several of these have implemented a portion of some of the thirteen areas addressed in the Stormwater Master Plan. The City has also been able to obtain two grants from SFWMD to assist in these improvements. Currently, the City is developing a 5-year Financial Plan which is expected to show the City funding the recommended CIP improvements over a 10-year period, along with the necessary O & M.

The City of Bonita Springs CIP projects are presented below.

Table 25: City of Bonita Springs CIP Projects

Project	2004-05	2005-06	2006-07	2007-08	2008-09	2009-10	Year 6-10	Total
Canal/Drainage Improvements	$475,000	$150,000	$150,000	$150,000	$150,000			$1,075,000
Southeast Bonita Drainage	$150,000							$150,000
Nevada St. Stormwater Retrofit Phase 3		$170,000						$170,000
Imperial Bonita Estates	$209,000	$85,000						$294,000
Riverside Depot & Deport Park Water Quality Improvements		$677,000	$992,000	$851,000	$1,497,000			$3,997,000
TOTAL	$834,000	$1,082,000	$1,142,000	$1,001,000	$1,647,000	$0	$0	$5,686,000

Road improvements planned include:

- Old US 41 Widening (Rosemary to US 41)
- East Terry Street (Old US 41 to Imperial) Improvements
- Imperial Street Widening
- West Terry Street Improvements

Regional Entities

Charlotte Harbor National Estuary Program

The Charlotte Harbor National Estuary Program (CHNEP) was established in 1995 pursuant to section 320 of the Clean Water Act. It is one of 28 NEPs in the U.S. and one of four in Florida. NEPs are organized and funded though the Environmental Protection Agency (EPA). Information on the NEP nation-wide can be found at: http://www.epa.gov/owow/estuaries/. EPA's National Estuary Program was established by Congress in 1987 to improve the quality of estuaries of national importance. The Clean Water Act Section 320 directs EPA to develop plans for attaining or maintaining

water quality in an estuary. This includes protection of public water supplies and the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife, and allows recreational activities, in and on water, requires that control of point and nonpoint sources of pollution to supplement existing controls of pollution.

All basins, with the exception of the Freshwater Caloosahatchee, are within the CHNEP area. The entire 4,400 square-mile CHNEP area encompasses all or part of Lee, Charlotte, Polk, Manatee, Sarasota, Hardee, and DeSoto counties. Invited participants of the NEP management conference include Federal, state, and local governments and agencies as well as citizens and organizations within the study area. The CHNEP maintains a Comprehensive Conservation and Management Plan (CCMP) which is implemented through the partnership of member organizations. It details the actions needed to protect and improve the watershed by finding the balance between meeting human needs and maintaining a healthy natural system. The plan identifies common, priority issues for the region. The priority issues are hydrologic alterations, water quality degradation, fish and wildlife habitat loss, along with land use and land use management impacts. The plan outlines the goals and objectives for the CHNEP study area and identifies the priority actions that are needed to meet those goals and objectives as well as the parties responsible for completing them. The CHNEP prepares Research Needs Inventories and Restoration Needs through a geographic information system. The CCMP and other publications of the CHNEP can be found at www.charlotteharbornep.org.

More information on this organization can be found at:
http://www.charlotteharbornep.org/

CREW Land & Water Trust

The Corkscrew Regional Ecosystem Watershed (CREW) Land & Water Trust was established in 1989 as a nonprofit organization to coordinate the land acquisition, land management, and public use of the 60,000-acre CREW. This watershed straddles Lee and Collier Counties and provides aquifer recharge, natural flood protection, water purification, preservation of wildlife habitat, and public recreation. Since 1990, CREW has coordinated the purchase of nearly 27,500 acres. The CREW Land & Water Trust was the first public/private partnership approach to an ecosystem-based acquisition project in Southwest Florida. CREW is a Florida Forever project and the SFWMD continues to acquire land within the designated boundary of CREW and restore the natural habitat. .

The CREW Land & Water Trust was established in 1989 as a nonprofit organization to coordinate the land acquisition, land management, and public use of the 60,000-acre Corkscrew Regional Ecosystem Watershed. This watershed straddles Lee and Collier Counties and provides aquifer recharge, natural flood protection, water purification, preservation of wildlife habitat, and public recreation. Since 1990, CREW has coordinated the purchase of nearly 27,000 acres. CREW's majestic 5,000 acre marsh is the headwater for the entire watershed which includes the Audubon Corkscrew Swamp Sanctuary directly to the south.

More information on this organization can be found at http://www.crewtrust.org/

Estero Bay Agency on Bay Management

Negotiations over the permit issuance for the Florida Gulf Coast University led to a Settlement Agreement that called for the creation of the "Arnold Committee" and an assessment of overall land uses and natural systems, environmental protection and mitigation tools in the Estero Bay Watershed. Upon completion of the Assessment and its adoption by the Arnold Committee in October of 1996, the SWFRPC established and began providing Staff support to the Estero Bay Agency on Bay Management (ABM). The ABM is a non-regulatory advisory committee to the SWFRPC. Its directive is to make comments and recommendations regarding the management of Estero Bay and its watershed. The ABM collects and maintains data and it reviews and comments to regulatory agencies on issues affecting the watershed. Its members include Lee County legislative delegates and representatives of the Council, local chambers of commerce, citizen and civic associations, the Responsible Growth Management Coalition, Lee County, Collier County, City of Fort Myers, Town of Fort Myers Beach, SFWMD, FDEP, FFWCC, Florida Gulf Coast University, Federal agencies involved in natural resource management, commercial and recreational fishing interests, environmental and conservation organizations, scientists, affected property owners, and the land development community. Determinations and recommendations issued by the ABM are based on the adopted "Estero Bay Agency on Bay Management Principles."

The 2006 Workplan for the ABM includes the following tasks:

- Work toward funding a Southwest Florida Land Use Study, a system for monitoring land
- Land use change in the watershed, both data collection and data management.
- Review specific Agency review processes (and accompanying rules) to determine whether the principles of the ABM for effective bay management are included, and to report back to the Council on deficiencies that are noted. This year we will focus on the annexation of land by the incorporated municipalities within the watershed.

The SWFRPC will provide the use of plotting equipment and mapping software, and staff expertise in growth management; the ABM will provide technical review and comments on the draft work products and final review prior to submission to US EPA.

ABM materials can be found at:. http://www.swfrpc.org/abm.shtml

Estero Bay Nutrient Management Partnership

The Estero Bay Nutrient Management Partnership (EBNMP) has been established to begin addressing the nutrient and other water quality problems within the Estero Bay basin. The EBNMP was organized in 2003 as a non-regulatory, community based partnership to address deteriorating water quality in Estero Bay and its tributaries and to achieve nutrient load reduction goals that will be consistent with the TMDL program. Consistent with its mission, the Southwest Florida Watershed Council (Watershed

Council) was founded on the premise of improving collaboration and developing partnerships to address water resource issues on a watershed scale. Our primary objective within this project proposal is to develop a partnership with public and private entities to work cooperatively toward nutrient reduction goals in the Estero Bay Watershed. Secondarily, the proposed partnership could become a model for restoring other bays throughout coastal Southwest Florida.

This project is being organized into three phases: 1) organization and partnership building; 2) research and information acquisition/analysis and development of nutrient reduction goals/plans; and 3) implementation. Phases 1 and 2 are underway now.

The EBNMP anticipates that this project will be successful in maintaining or reducing nutrient loads to Estero Bay. Admittedly, this will be a challenge because we anticipate that the watershed will continue, as predicted, to experience rapid and progressive conversion to urban land uses. By creating an awareness of the "value" both ecologically and economically of the Bay and its OFW tributaries, EBNMP hopes to motivate private and public stakeholders toward a community/watershed strategy to improve the resource.

More information on this organization can be found at:
http://www.swfwc.org/EBNMP/default.htm.

Lee County Metropolitan Planning Organization

The Lee County Metropolitan Planning Organization (MPO) is an intergovernmental transportation planning agency created by an agreement among Lee County, Bonita Springs, Cape Coral, Fort Myers, Fort Myers Beach, Sanibel, and the Florida Department of Transportation. State and federal laws require the formation of MPOs in urbanized areas with populations of more than 50,000 in order for surface transportation projects to be eligible for federal Highway Trust Fund dollars.

The MPO is responsible for conducting a continuing, cooperative, and comprehensive transportation planning process for all of Lee County. It must plan for the movement of both people and goods within the county by all modes of travel--including highways, public transportation, bicycles, and foot. It also plans for the connections (such as airports, seaports, or bus, railroad, and pipeline terminals) linking these modes or tying us to the rest of the world.

The MPO sets priorities among surface transportation improvement projects within Lee County for state or federal funding. In order for them to be eligible for federal funds, federal law requires that the MPO endorse a transportation improvement program identifying the projects to be done over the next few years.

The Lee County MPO's mission is to provide leadership in planning and promoting a comprehensive intermodal surface transportation system that will provide for regional mobility, encourage a positive investment climate and foster sustainable development sensitive to community and natural resources. The Lee County MPO's vision is to have a

multi-jurisdictional, integrated multi-modal transportation system that safely and efficiently moves people and goods to, through, and within our area, and which enables Lee County and the surrounding areas to flourish in the global marketplace. The Lee County MPO strives to include and promotes public participation in every aspect of its' planning processes.

The MPO consists of 15 voting members and 2 non-voting members including Lee County (All five county commissioners), City of Bonita Springs (One elected official), City of Cape Coral (Four elected officials), City of Fort Myers (Three elected officials), Town of Fort Myers Beach (One elected official), and City of Sanibel (One elected official). Non voting members include Florida Department of Transportation, District 1(District Secretary or designee), and the Southwest Florida Regional Planning Council (Executive Director or designee).
Prior to making decisions, the MPO receives recommendations from the Citizens' Advisory Committee (CAC), the Technical Advisory Committee (TAC), the Transportation Disadvantaged Local Coordinating Board (LCB), and Bicycle Pedestrian Coordinating Committee (BPCC).

The Citizen Advisory Committee (CAC) consists of 21 appointed citizens who make recommendations to the MPO from the public's perspective on proposed long-range transportation plans, project plans, priorities for state and federal funding and other transportation issues.

The Technical Advisory Committee (TAC) consists of local and state agency planners, engineers, and transit operators who make recommendations to the MPO on transportation plans, programs, and priorities on behalf of the agencies they represent.

The Transportation Disadvantaged Local Coordinating Board (LCB) consists of government, social service agency, citizen, and consumer representatives. It monitors the performance of the community transportation coordinator in providing transportation services to disadvantaged people.

The Bicycle Pedestrian Coordinating Committee (BPCC) consists of the local and state agency personnel who are responsible for bicycle and pedestrian planning for their agencies. It coordinates these agencies' bicycle/pedestrian planning activities, reviews provisions for pedestrians and cyclists in state and federal-aid surface transportation projects, and advises the MPO on the development of the bicycle and pedestrian element of its transportation plan and the programming of bicycle and pedestrian facilities.

The Traffic Signal Coordinating Committee (TSCC) consists of local and state agency traffic engineers. It reviews all proposals for new traffic signals, serves as a technical subcommittee of the Lee County Community Traffic Safety Team, oversees the MPO's congestion management system, and recommends congestion mitigation measures for programming with federal funds.

Southwest Florida Regional Planning Council

The SWFRPC consists of elected city and county officials, regional and state representatives, and Governor appointees. The SWFRPC “acts as a regional information

clearinghouse, conducts research to develop and maintain area wide goals, objectives, and policies, and assists in implementing a number of local, state, and federal programs. The Council serves as an advocate for the Region with State and Federal agencies, including the Legislature and Congress" (SFWRPC 2004). The SWFRPC adopts a Strategic Policy Plan to guide its actions and decisions. The SWFRPC Strategic Policy Plan can be found at: http://www.swfrpc.org/srpp.htm.

Southwest Florida Watershed Council

The mission of the Southwest Florida Watershed Council is to protect, conserve, manage and/or restore the land and water resources of the Caloosahatchee and Big Cypress Watersheds. Through increased awareness, participation and cooperation among all stakeholders in consensus building, planning and decision making, we are working to meet the economic, natural and cultural needs for this and succeeding generations.

The Southwest Florida Watershed Council is a grass-roots, multi-county coalition of individuals, organizations, agencies and businesses that have come together to address the issues affecting the Caloosahatchee and Big Cypress watersheds. The purpose of the Watershed Council is to ensure that the interests and concerns of all stakeholders are addressed, and that long term management strategies balance the needs of this region's growth and the natural systems upon which our economy and quality of life depend.

Southwest Florida Resource Conservation and Development Council, Inc.

The Southwest Florida Resource Conservation and Development Council, Inc. (SWFRC&D) is a regional 501(c)3 non-profit organization dedicated to helping local communities protect and conserve their natural resources, improve social conditions and provide opportunities for economic development. The SWFRC&D was created September 2002. Charlotte, Collier, Hendry, Glades and Lee County comprise the regional area. The SWFRC&D council consists of 15 board members, three from each county. To ensure the representation by each of these areas, the SWFRC&D has assigned members to maintain, contact and facilitate the implementation of projects serving all areas. The role of the SWFRC&D is to cooperate and assist with the implementation of local and regional plans of organizations and agencies beneficial to resource conservation and sustainable development in the 5-county area. Information on the SWFRC&D can be found at: http://www.swfrpc.org/RCDC.htm.

Water Resources Advisory Commission

The SFWMD Water Resources Advisory Commission (WRAC) is an advisory body to the SFWMD Governing Board and the South Florida Ecosystem Restoration Task Force, and is a forum for improving public participation and decision-making on water resource issues in south and central Florida.

The Commission builds consensus in the public and private sectors regarding water resource activities impacting south Florida, including the further development and implementation of the Comprehensive Everglades Restoration Plan and Accelerate Projects, Regional Water Supply Plans; and, Lake Okeechobee and Estuary Recovery,

examines the effects of continued population growth, development and agriculture on south Florida's natural resources, assists in developing actions needed to restore, preserve, and protect the greater south Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection and assists in promoting and monitoring the implementation of its recommendations to the Governing Board.

Members are appointed to the Commission by the SFWMD Governing Board, and represent a broad range of business, agricultural, environmental, tribal, and governmental and public interests. The Commission meets once a month and holds Issues Workshops as needed. Governing Board member Mike Collins is the Chair of the WRAC. It is co-chaired by fellow Board member Malcolm S. Wade, Jr.

STATE ENTITIES

Florida Department of Agriculture

Agriculture has always been one of Florida's major industries, but not until the Constitution of 1868 was adopted did Florida have an official in charge of promoting agriculture: the Office of Commissioner of Immigration. The Commissioner of Immigration was empowered to attract settlers to Florida.

In 1871, the Constitution was amended consolidating the Offices of Surveyor General and Commissioner of Immigration as the new Commissioner of Lands and Immigration. The revised State Constitution of 1885 renamed the Commissioner of Lands and Immigration as the Commissioner of Agriculture. This official was also given supervision of the State prisons.

Over the years, the Legislature has added many responsibilities to the Florida Department of Agriculture in the fields of inspection and regulation. The responsibility for the State prisons was removed in 1957 and taken over by the new Division of Corrections.

The 1959 Legislature passed the Agricultural Services Reorganization Act and Governor Collins signed it June 16, 1959. Several independent boards and bureaus were abolished and their duties assigned to the Department. The State Chemist, a position created in 1891 and filled by gubernatorial appointment, was absorbed by the Department and expanded to Director of the Division of Chemistry. The Bureau of Immigration, one of the original subdivisions, was abolished. The reorganization became effective January 15, 1961. As a result of this reorganization, the Department emerged with the Division of Administration, Animal Industry, Chemistry, Dairy Industry, Fruit and Vegetable Inspection, Marketing, Plant Industry, Inspection and Standards.

The Florida Legislature created the Office of Consumer Services and placed it in the Commissioner's Office. Under the Executive Reorganization Act of 1969, the Office of Consumer Services became the Division of Consumer Services and the independent Board of Forestry, created in 1927, became the Division of Forestry. This brought to

eleven (11) the number of Divisions within the Department. In conjunction with the reorganization, the Department was renamed the Department of Agriculture and Consumer Services.

The 1992 Legislature passed Chapter 92-291, Laws of Florida, which organized the Department along more functional lines.

The revised Florida Constitution provides for a Governor and a "Cabinet composed of an Attorney General, a Commissioner of Agriculture and a State Chief Financial Officer". Each of the three Cabinet officers is elected by popular vote in a statewide general election every four years, and has duties assigned by the Constitution, as well as individual responsibilities assigned by the Legislature. Each member shares with the Governor the management of major State Departments

The Department has established the following Divisions to direct its functions: Administration, Animal Industry, Plant Industry, Marketing and Development, Dairy Industry, Agricultural Environmental Services, Food Safety, Fruit and Vegetables, Consumer Services, Forestry, Standards, Aquaculture and Licensing.

The Florida Division of Forestry is made up of 1250 dedicated employees with the mission to protect and manage the forest resources of Florida, insuring they are available for future generations. Wildfire prevention and suppression are key components in efforts to protect homeowners from the threat of damage in a natural environment that is fire dependent. We are dedicated to training individuals to meet these goals. In addition to managing over one million acres of State Forests for multiple public uses including timber, recreation and wildlife habitat, we also provide services to landowners throughout the state with technical information and grant programs. Our goal is to provide you with information about programs which are implemented by our Field Operations fire and forest resource staff in 15 field units across the state.

The Division of Agricultural Environmental Services administers various state and federal regulatory programs concerning environmental and consumer protection issues. These include state mosquito control program coordination; agricultural pesticide registration, testing and regulation; pest control regulation; and feed, seed and fertilizer production inspection and testing. The Division of Agricultural Environmental Services, through its four bureaus, ensures that: pesticides are properly registered and used in accordance with federal and state requirements; mosquito control programs are effectively conducted; and feed, seed and fertilizer products are safe and effective.

State Regulatory

Florida Department of Environmental Protection

Florida has a comprehensive state regulatory program that regulates most land (upland, wetland, and other surface water) alterations throughout the state. The regulatory program also includes a federal State Programmatic General Permit and implementation of a statewide National Pollutant Discharge Elimination System (NPDES) program. In addition activities located on or using state-owned sovereign submerged lands also

require applicable proprietary authorizations (including Consents of Use, Leases, and Easements). Major features of this program include:

Florida implements an independent state permit program that operates in addition to the federal dredge and fill permit program. The state regulatory permit program is implemented differently, depending on the location of the activity. As described below, this includes a statewide regulatory environmental resource and wetland resource permit under part IV of chapter 373 of the Florida Statutes. It also includes a mangrove trimming and alteration program under chapter 403 of the Florida Statutes.

An environmental resource permit (ERP) program regulates virtually all alterations to the landscape, including all tidal and freshwater wetlands and other surface waters (including isolated wetlands) and uplands. The ERP addresses dredging and filling in wetlands and other surface waters, as well as stormwater runoff quality (i.e. stormwater treatment) and quantity (i.e. stormwater attenuation and flooding of other properties), including that resulting from alterations of uplands. This program regulates everything from construction of single family residences in wetlands, convenience stores in the uplands, dredging and filling for any purpose in wetlands and other surface waters (including maintenance dredging), construction of roads located in uplands and wetlands, and agricultural alterations that impede or divert the flow of surface waters. Issuance of the ERP also constitutes a water quality certification or waiver thereto under section 401 of the Clean Water Act, 33 U.S.C. 1341. In addition, issuance of an ERP in coastal counties constitutes a finding of consistency under Florida Coastal Zone Management Program under Section 307 (Coastal Zone Management Act). The ERP program is implemented jointly by the Department of Environmental Protection and the four water management districts, in accordance with an operating agreement that identifies the respective division of responsibilities.

The trimming or alteration of mangroves (a tropical tree species growing in the estuaries of middle and south Florida, including the red mangrove *Rhizophora mangle*; black mangrove *Avicennia germinans*; and white mangrove *Laguncularia racemosa*) is regulated in accordance with the Mangrove Protection Act of 1996 (sections 403.9321-403.9334, F.S. Levels of regulation include exemptions, general permits, and individual permits, depending on the number and extent of trimming or alteration.

In addition to the above regulatory permit programs, activities that are located on submerged lands that are owned by the state of Florida (otherwise called sovereign submerged lands) also require a proprietary authorization for such use under chapter 253 of the Florida Statutes. Such lands generally extend waterward from the mean high water line (of tidal waters) or the ordinary high water line (of fresh waters) both inland and out to the state's territorial limit (approximately three miles into the Atlantic Ocean, and ten miles in the Gulf of Mexico). If such lands are located within certain designated Aquatic Preserves, the authorization also must meet the requirements of chapter 258 of the Florida Statutes. Such authorization considers issues such as riparian rights, impacts to submerged land resources, and preemption of other uses of the water by the public. Authorizations typically are in the form of consents of use, easements, and leases. This program is implemented jointly by the Department and four of the state's five water management districts in accordance with the same operating agreement that governs the ERP program. The program is structured such that applicants who do not qualify at the

time of the permit application for both the regulatory permit and the proprietary authorization cannot receive either permit or authorization.

The issuance of a state environmental resource or wetland resource permit also constitutes a state water quality certification or waiver thereto under section 401 of the Clean Water Act, 33 U.S.C. 1341, and, in coastal counties, a finding of consistency under Florida Coastal Zone Management Program under Section 307 (Coastal Zone Management Act). When a corresponding federal dredge and fill permit is required, it is issued independently from the state permit by the U.S. Army Corps of Engineers (USACE) after issuance or waiver of the state water quality certification and applicable coastal zone consistency concurrence.

In addition to the above state regulatory programs, Florida has statewide authorization to implement the federal National Pollutant Discharge Elimination System (NPDES) permit program for stormwater. Areas of regulation include municipal separate storm sewer systems, certain industrial activities, and construction activities. The municipal program has jurisdiction over large and medium municipalities. The industrial program covers selected industries that are identified by Standard Industrial Code. New construction may also require a stormwater permit if the clearing, grading, or excavation work disturbs five or more acres of land and discharges to either a surface water of the state or to a Municipal Separate Storm Sewer System (MS4). The NPDES stormwater permit needed is called the *Generic Permit for Stormwater Discharge from Construction Activities that Disturb Five or More Acres of Land*. Copies of the permit, application forms, guidance materials, and other information about the permit and NPDES stormwater program can be downloaded from the following website: http://www.dep.state.fl.us/water/stormwater/npdes/.

The U.S. Army Corps of Engineers has delegated to the FDEP the ability to issue the federal dredge and fill permit under section 404 of the Clean Water Act for certain activities that qualify for an ERP or wetland resource permit or exemption.

The comprehensive nature of the state program is broader than the federal program in that it also regulates alterations of uplands that may affect surface water flows, including addressing issues of flooding and stormwater treatment. The state program is in addition to, not in place of or superseded by the federal dredge and fill permit programs. There are no thresholds wherein some activities are reviewed by the state and others by the federal government. In essence applicants must get all applicable permits and authorizations from both the state and the federal government before beginning work.

While it is true that jurisdictional coverage of the state program is generally broader than the federal program, because the state program regulates upland alterations, it is also true that the federal program is broader than the state program jurisdiction in the following ways:

- Requirement for analysis of alternative sites,
- Inclusion of hydric pine flatwoods as jurisdictional wetlands,
- Lack of automatic, default approvals of permit applications after a given timeframe,

- Recapture of jurisdiction where agricultural activities convert wetlands to uplands,
- Requirement for sequential consideration of avoidance, minimization & mitigation, and
- Lack of a requirement for expedited review of economically important projects.

These differences are part of the reason for the current maintenance of both state and federal programs.

There is a division of responsibilities between the state Department of Environmental Protection and the water management districts (who have regional *ad valorum* taxing authority). The FDEP and SFWMD share:

- A wetland delineation methodology ratified under state law that is binding on all state, regional, and local governments throughout Florida. This methodology is specific to Florida, and differs from the federal wetland delineation methodology.
- A statewide mitigation banking program implemented by the Department and three of the state's five water management districts.
- ERP permits that are valid for the life of the system (includes all structures and works authorized for construction or land alteration). The ERP permit does not automatically expire after the construction phase (typically a five-year period), and continues to cover *operation* (use of) of the system.
- A program to authorize regional mitigation for Florida Department of Transportation Projects.
- A joint permit application form, wherein applicants for a federal dredge and fill permit apply directly to the either the Department of Environmental Protection or the applicable water management district using the same form that is used for the state ERP or wetland resource permit. The Department and the water management districts then forward the application to the U.S. Army Corps of Engineers (USACE) for concurrent federal permit processing (which can only be issued after issuance of the applicable state permit that grants or waives water quality certification).
- A program that regulates the trimming or alteration of mangroves.
- The issuance of a State Programmatic General Permit from the USACE to the Department of Environmental Protection that provides that certain activities (such as docks, seawalls, dredging, and activities that qualify for state exemptions or general permits) that qualify under the state regulatory program also will receive the associated federal dredge and fill permit.
- A limited delegation of the ERP program from the Department and the South Florida Water Management District to Broward County.

State Wetland Conservation Plan
Florida has its independent statutes and rules governing activities in wetlands, as described above. Although Florida's program essentially contains all the required elements of a State Wetland Conservation Plan, Florida has never packaged the program for EPA review and sign-off. Therefore, Florida does not operate under an EPA-approved State Wetland Conservation plan at this time.

No Net Loss/Net Gain Goal
Florida does set a goal of no net loss or gain of wetland acreage. FDEP states that the regulatory rules are written so as to be implemented in a manner that achieves a programmatic goal, and a project permitting goal, of no net loss in wetland or other surface water functions (not including activities that are exempt from regulation or that are authorized through a noticed general permit). An ERP permit standard is that activities must not adversely impact the value of functions provided to fish and wildlife and listed species by wetlands and other surface waters. The wetland resource permit program does not actually contain the above stated goals, but operates such that an activity must not be contrary to the public interest, which typically includes offsetting wetland impacts

Wetland Regulatory Statutes and Administrative Rules
The wetland regulatory program is authorized under Part IV of chapter 373 of the Florida Statutes governs the environmental resource permit program.

Florida Administrative Code regulatory rules of general applicability include chapters:

- 62-4 (including general permitting criteria, fee requirements, water quality protection criteria for special waters, and anti-degradation criteria)
- 62-40 (State Resource Implementation Rule)
- 62-340 (statewide delineation of the landward extent of wetlands and other surface waters)
- 62-342 (mitigation banking)

Florida Administrative Code rules implementing the ERP permit program include chapters:

- 62-330 (which adopts the various rules of the water management districts listed below)
- 62-312 (only part IV—additional criteria within Monroe County)
- 62-341 (standards and criteria for noticed general permits)
- 62-343 (general application and review criteria
- 62-344 (delegation of the ERP permit program to local governments)
- 40B-4, 40B-400, & ERP Applicant's Handbook (within the Suwannee River Water Management District)

- 40C-1, 40C-4, 40C-8, 40C-40, 40C-41, 40C-42, 40C-400, Stormwater Applicant's Handbook, and Management and Storage of Surface Waters Applicant's Handbook (within the St. Johns River Water Management District)
- 40D-1, 40D-4, 40D-40, 40D-400, and Basis of Review (within the Southwest Florida Water Management District)
- 40E-1, 40E-4, 40E-40, 40E-41, 40E-400, and Basis of Review (within the South Florida Water Management District)
- Florida Administrative Code rules implementing the wetland resource permit program applicable only certain grandfathered projects in the rest of the state): Chapter 62-312

The proprietary program is authorized under chapter 253 of the Florida Statutes. Activities on sovereign submerged lands in Aquatic Preserves are further authorized by chapter 258 of the Florida Statutes.

Florida Administrative Code rules implementing the proprietary program include chapters:

- 18-14 (Administrative Fines)
- 18-18 (Biscayne Bay Aquatic Preserve)
- 18-20 (Aquatic Preserves)
- 18-21 (Sovereignty Submerged Lands Management)

Entire copies of these rules are available at
http://www.dep.state.fl.us/water/wetlands/erp/rules/guide.htm

All licensing and agency action determinations under the above statutes and rules are further governed by the Administrative Procedures Act chapter 120 of the Florida Statutes and by the rules of uniform procedures under chapter 28 of the Florida Administrative Code.

Wetland Definition and/or Delineation; Comparability with the Federal Definition

Under section 373.421 of the Florida Statutes, Florida has adopted a wetland delineation methodology that is binding on all state, regional, and local governments throughout Florida. This methodology was adopted as chapter 62-340 of the Florida Administrative Code, which was then ratified in section 373.4211 of the Florida Statutes for statewide applicability. It became effective on July 1, 1994. This methodology is a unified statewide approach to wetland and other surface water delineation and is specific to Florida, in recognition of the vegetation, hydrologic, and soil features that specifically exist in Florida.

Florida's methodology differs from the Corps 1987 manual methodology in many respects, although the USACE methodology continues to be used separately by the federal permitting agencies in Florida. In real-world application, the state and federal wetland lines typically are very close or identical with one another, although, in certain areas of the state, significant differences do exist.

Florida has not produced a map of the wetlands as they would be delineated using the state methodology in s. 373.421 and 373.4211, F.S. Staff in the Tallahassee office of the Department's Bureau of Beaches and Wetland Systems and District offices, as well as staff in South Florida Water Management Districts perform wetland delineations for a specific parcel of property on request or as part of a permit application review. There are three ways such requests for wetland delineations may occur:

- By formal petition for a formal determination of the landward extent of wetlands and other surface waters (in accordance with section 62-343.040, F.A.C.) in peninsular Florida, or by formal petition for Jurisdictional Declaratory Statement (in accordance with section 62-312.040, F.A.C.) in the northwest DEP district. These determinations are done for a fee, depending on the size of the total parcel, are subject to specified time frames, typically require the petitioner to produce a survey of the wetlands so delineated, and are binding on the petitioner and the state agencies for a period of five years (which may be extended).
- As part of a permit application. There is no additional charge for this service above that required to process the permit application.
- Through an informal determination. These are normally done only for private single family landowners. There is no fee for these determinations, but they are done on an "as-resources allow" basis, are not subject to any time frames, and are not binding on any of the parties. Due to staffing limitations, there is increased reluctance of the district staff to do these, and property owners usually are encouraged to file a petition for a formal determination.

All of the above delineations are done using the state methodology in chapter 62-340 of the Florida Administrative Code.

If a federal dredge and fill permit is required for an activity, it is up to the USACE to separately delineate the wetlands on the parcel using the applicable federal methodology. While the USACE determination may be done coincident with the state delineation, the two methodologies are not interchangeable, and often the wetlands delineated by each methodology is different, as mentioned above.

The National Academy of Sciences has reaffirmed the federal wetland delineation methodology as the best available science for such determinations, but also recommended that regional specificity be addressed. Manual regionalization for the Atlantic and Gulf coastal states is currently underway.

Additional information regarding FDEP Wetland delineation section can be found at http://www.dep.state.fl.us/water/wetlands/delineation/index.htm

Evaluation Methodology for All Environmental and Wetland Resource Permits

The first step in the review of all environmental and wetland resource permit applications involves a consideration of eliminating and reducing otherwise unpermittable adverse impacts (note that this is a different test that the "Alternatives Analysis" used by federal agencies; it does not provide for considering an alternate site).

Staff from the Department of Environmental Protection or from the applicable water management districts (in accordance with the Department/Water Management District Operating agreements described above) evaluate (using their best professional judgment) whether an activity will adversely affect fish, wildlife, listed species, and their habitats. Upon receipt, a copy of each application also is initially copied to the state's Fish and Wildlife Conservation Commission (FWC). Comments and suggestions regarding listed species and other wildlife impacts from the FWC are considered during processing of the application. The FWC also may object to issuance of an ERP or wetland resource permit under Florida's Approved Coastal Zone Management Act coordination process. The Department and water management districts do not rely on, but will also consider, comments from the federal resources agencies (U.S. Fish and Wildlife Service and the National Marine Fisheries Service) when such comments are made in a timely manner during the processing of a state permit. Consideration is given under the environmental resource permit program to upland buffers that are designed to protect the functions that uplands provide to wetlands and other surface waters. When considering impacts to the listed (endangered, threatened and special concern) species under the environmental resource permit program, the agencies may only consider adverse impacts to aquatic or wetland dependent listed species that use wetlands and other surface waters or that use upland habitats for nesting and denning.

All activities must be found to not result in violations of state surface and groundwater water quality standards (there are no separate water quality criteria for wetlands—see discussion on water quality). In addition, for projects located in Outstanding Florida Waters (these waters are identified in chapter 62-302, F.A.C.), the activity must be found to not cause degradation of ambient water quality. The siting of marinas and other activities that may affect the flow of waters includes hydrographic evaluations that are useful in predicting whether water quality standards will be met. The rules also provide for mitigation in the form of net improvement when an activity will cause or contribute to discharges in waters that do not currently meet state water quality standards for the constituents of those discharges.

Although Hydrogeomorphic Method (HGM) models have been finalized for Florida, they are not yet available for all wetland types. In south Florida, they are not being used for wetlands permit review. When evaluating the value and functions that wetlands and other surface waters provide for fish, wildlife, listed species, and water quality, the state does not rely on Hydrogeomorphic (HGM) analysis, although such analyses will be considered if submitted as part of a permit application. The State of Florida requires the use of the Unified Mitigation Assessment Method (UMAM) to evaluate wetland functions.

The evaluation is largely based on "best professional judgment." When an analysis determines that an activity is likely to adversely affect wetland and other surface water

functions, the rules include provisions, after first considering ways to reduce or eliminate those adverse affects, for wetland and other surface water mitigation. Mitigation considerations are discussed in the "Mitigation" section, below. In addition, many applicants and the agencies (including the USACE regional office in Florida) also use a Wetland Rapid Assessment Procedure (WRAP) to assist in analyzing wetland functions. WRAP was originally developed by the South Florida Water Management District as a tool to analyze compliance at mitigation sites and is now informally used in the evaluation of ERP, wetland resource, and mitigation bank applications. WRAP is still being used where there is a history of its use on a particular site.

Section 373.414(18) of the Florida Statutes, adopted by Florida's legislature in 2000, required the FDEP, in consultation with the water management districts, to develop a uniform wetland mitigation assessment method by October 1, 2001, and for such method to be adopted by rule no later than July 1, 2001. The Uniform Wetland Assessment Method (UMAM) rule (Chapter 62-345, F.A.C.) went into effect on February 2, 2004. Once adopted, this method was binding on the FDEP, the water management districts, local government, and any other State and local governmental agencies, and is the sole means to determine mitigation needed to offset adverse impacts and to award and deduct mitigation bank credits..

In addition to evaluating direct, construction-related impacts to wetlands and other surface waters, the ERP and wetland resource rules and associated case law require a consideration of secondary and cumulative impacts when evaluating adverse impacts of an activity.

Secondary impacts are those actions or actions that are very closely related and directly linked to the activity under review that may affect wetlands and other surface waters and that would not occur but for the proposed activity. Secondary impacts to the habitat functions of wetlands associated with adjacent upland activities are not considered adverse under the environmental resource permit program if buffers of a certain minimum size are provided abutting the wetlands (with some exclusionary provisions).

Cumulative impacts are residual adverse impacts to wetlands and other surface waters in the same drainage basin that have or are likely to result from similar activities (to that under review) that have been built in the past, that are under current review, or that can reasonably be expected to be located in the same drainage basin as the activity under review.

ERP Permits

In addition to the above, the Environmental Section in each of the Water Management District's Applicant's Handbooks and Basis of Review (these are adopted for use by the FDEP in Chapter 62-330, F.A.C.) contains a detailed explanation of the criteria that are used to evaluate permittable and unpermittable impacts to wetlands and other surface waters.

All projects requiring a permit must be found to:

Not cause adverse water quantity impacts to receiving waters and adjacent lands;

Not cause adverse flooding to on-site or off-site property;

Not cause adverse impacts to existing surface water storage and conveyance capabilities;

Not adversely impact the value of functions provided to fish and wildlife and listed species by wetlands and other surface waters;

Not adversely affect the quality of receiving waters such that state water quality standards will be violated;

Not cause adverse secondary impacts to water resources;

Not adversely impact the maintenance of surface or ground water levels or surface water flows;

Not adversely impact a work of a water management district;

Be capable, based on generally accepted engineering and scientific principles, of being performed and of functioning as proposed;

Will be conducted by an entity with the financial, legal, and administrative capability of ensuring that the activity will be undertaken in accordance with the terms and conditions of the permit, if issued; and

Will comply with applicable special basin or geographic area criteria adopted by rule.

In addition, activities in wetlands and other surface waters must not be contrary to the public interest, or, if the activity is located in an Outstanding Florida Water (these waters are listed in chapter 62-302, F.A.C.), the activity must be clearly in the public interest. This test is based on a weighing a balancing of the following criteria:

Whether the regulated activity will adversely affect public health, safety, or welfare, or the property of others (based solely on environmental, not economic, considerations);

Whether the regulated activity will adversely affect the conservation of fish and wildlife, including endangered and threatened species, or their habitats;

Whether the regulated activity will adversely affect navigation or the flow of water, or will cause harmful erosion or shoaling;

Whether the regulated activity will adversely affect fishing or recreational values or marine productivity in the vicinity of the activity;

Whether the regulated activity will be of a temporary or permanent nature;

Whether the regulated activity will adversely affect or will enhance significant historical and archaeological resources under the provisions of section 267.061, F.S.; and

What are the current condition and relative value of the functions being performed by areas affected by the proposed regulated activity.

Direct, secondary, and cumulative impacts are considered for all activities in wetlands and other surface waters.

In addition to considering impacts to wetlands and other surface waters, development or other alteration of the uplands that affects surface water flow or that generates new

sources of stormwater runoff also is evaluated. There are certain exemptions from the need for an ERP permit for these activities, such as for individual, private single family residences constructed in the uplands that are not part of a larger plan of common development, and projects that are below certain size thresholds, depending on the water management district.

Wetland Resource Permits

To qualify for a permit, a wetland resource permit applications must be found to not be contrary to the public interest, or, if the activity is located in an Outstanding Florida Water (these waters are listed in chapter 62-302, F.A.C.), the activity must be clearly in the public interest. This test is based on a weighing a balancing of the following criteria:

Whether the regulated activity will adversely affect public health, safety, or welfare, or the property of others (based solely on environmental, not economic, considerations);

Whether the regulated activity will adversely affect the conservation of fish and wildlife, including endangered and threatened species, or their habitats;

Whether the regulated activity will adversely affect navigation or the flow of water, or will cause harmful erosion or shoaling;

Whether the regulated activity will adversely affect fishing or recreational values or marine productivity in the vicinity of the activity;

Whether the regulated activity will be of a temporary or permanent nature;

Whether the regulated activity will adversely affect or will enhance significant historical and archaeological resources under the provisions of section 267.061, F.S.; and

The current condition and relative value of the functions being performed by areas affected by the proposed regulated activity.

Direct, secondary, and cumulative impacts are considered for all activities in wetlands and other surface waters.

Stormwater

With the implementation of the state stormwater rule (chapter 62-25, F.A.C.) in February 1982, Florida was the first state in the country to require the treatment of stormwater from all new stormwater discharges. This technology based rule requires stormwater systems to remove at least 80% of the post-development total suspended solids (TSS) loading (95% removal of TSSs if the stormwater system directly discharges to an OFW).

Stormwater runoff can significantly affect wetland and other surface water quality and functions.

Evaluation of stormwater quality and quantity is a component of the Environmental Resource Permit program in peninsular Florida, as described above.

Sovereign Submerged Lands

Activities located in whole or in part in, on, or over sovereign submerged lands will also require an applicable proprietary authorization to use such lands. The review criteria include a requirement that an activity not be contrary to the public interest, and, in aquatic preserves, that the activity be clearly in the public interest. Evaluation factors are contained in chapter 18-21, F.A.C., and, if in an aquatic preserve, additional factors in chapter 18-20, F.A.C., also apply. Considerations will include whether the activity will adversely affect sovereign submerged lands resources (such as. grass beds and oyster bars), the rights of riparian property owners, navigation, and preemption of uses of the waters by the public-at-large. Many of the evaluation factors are very prescriptive, with specific limitations on the sizes, types, and designs of activities that can be authorized. Only uses that are water dependent can be approved, except for certain non-water dependent activities have been "grandfathered" and incidental uses that may be approved on a case-by-case basis for public projects. Dredging of submerged lands typically requires payment to the state for "severing" dredged material from public ownership. Commercial uses of sovereign submerged lands (such as for marinas) require a lease, with annual lease fee payments to the state. Utilities and certain other activities must obtain public or private easements. Private easements require a one-time payment of easement fees, based on the appraised value of the easement.

Florida's regulatory programs are not affected by the recent SWANCC or Rapanos decisions affecting the identification of isolated wetlands under the federal dredge and fill permit program, since they use a separate state-unique method of jurisdictional determination..

Many local governments in Florida have their own environmental regulatory program that requires compliance with local regulatory ordinances and Acts. These local requirements are *in addition* to the state and federal requirements, and do not replace or supersede state and federal permitting requirements.

Regulated and Exempted Activities

Certain activities have been exempted by statute and rule from the need for regulatory permits under state law or by agency rule. To be exempt by rule, the activities have been previously determined by the agencies to be capable of causing no more than minimal individual and cumulative adverse impacts to wetlands and other surface waters.

Examples (by no means inclusive) of exempt activities include:

construction, repair, and replacement of certain private docking facilities below certain size thresholds;

maintenance dredging of existing navigational channels and canals;

construction and alteration of boat ramps within certain size limits;

construction, repair, and replacement of seawalls and rip rap in artificial waters;

repair and replacement of structures; and

construction of certain agricultural activities (see below).

In addition, the state has issued a number of "noticed general permits" for activities that are slightly larger than those that qualify for the above exemptions and that otherwise

have been determined to have the potential for no more than minimal individual direct and secondary impacts. These include (by no means comprehensive):

construction and modification of boat ramps of certain sizes;

installation and repair of riprap at the base of existing seawalls;

installation of culverts associated with stormwater discharge facilities; and

construction and modification of certain utility and public roadway construction activities.

Anything that does not specifically qualify for an exemption or noticed general permit generally requires an ERP permit. Activities that are not specifically exempt and that involve dredging or filling in connected wetlands and other surface waters generally requires a wetland resource permit.

Special Provisions for Agriculture and Forestry
(exemptions, general permits, or other specifics that address agriculture and/or silviculture)

Sections 373.406 and 403.927, F.S., exempt certain agricultural activities from the need for Environmental Resource and Wetland Resource permits. These include the rights of any person engaged in the occupation of agriculture, silviculture, floriculture, or horticulture to alter the topography for purposes consistent with the practice of such occupation, provided the alteration is not for the sole or predominant purpose of impounding or obstructing surface waters. All five water management districts in the state have adopted specific rules to regulate other agricultural activities, including the adoption of noticed general permits. The review of all agricultural activities, including permitting, compliance, and enforcement, is the responsibility of the water management districts. Florida's Department of Agriculture and Consumer Services (DACS), in cooperation with the Department and the water management districts also have developed various Best Management Practices handbooks to assist the agriculture community in working in a manner that will minimize adverse impacts to wetlands and other surface waters.

Certified aquaculture activities that apply appropriate best management practices adopted under section 597.004 are exempt from the need for permits under part IV of chapter 373, F.S. Compliance, enforcement, and permitting of such aquacultural activities are the responsibility of DACS. Compliance, enforcement, and permitting of activities that are not so certified continue to be the responsibility of the Department.

The Southwest Florida Water Management District (SWFWMD) has developed a unique Agricultural Ground and Surface Water Management (AGSWM) program.

"Ag-team" staff has been established in local service offices to provide full service water management regulation for agriculture. This initiative has been underway for nearly eight years. It is the central part of the which has received state-wide recognition.

SWFWMD's four principle service offices have assigned and trained Ag-Team staff who specialize in Water Use, Surface Water and Environmental regulation for agriculture. The Technical Services Department (TSV) has an Ag-Team "facilitator" who works with local Ag-Team staff to provide technical oversight and direction, and to foster cooperation on a regional or state basis. Also, TSV has an irrigation engineer who works with agricultural water management research and on other special projects to assist the regulated public.

AGSWM was developed by District staff and members of the agriculture community. AGSWM is an alternative regulatory process for agricultural operations that uses field visits, site specific conservation management planning and technical provisions to foster agricultural production and environmental resource protection. SWFWMD staff encourages farmers who are planning activities that are subject to Environmental Resource Permitting (ERP) or Water Use Permitting (WUP) regulation to use the AGSWM pre-application review process, which can help facilitate exemption determination or permitting review. In addition, a few years ago a Senate report, entitled "A Bridge Over Troubled Waters," cited the District's alternative agricultural regulatory process as a model for future practices.

Since 1991, the SWFWMD has provided about $200,000 per year for USDA-NRCS to support technical assistance that helps farmers and SWFWMD staff to implement site specific ecosystem based conservation management planning. Agricultural projects that qualify for an ERP/AGSWM exemption letter must be planned and implemented according to prescribed conservation management planning practices.

The AGSWM process, using local Ag-teams, encourages a "customer service" based approach to ERP and WUP regulation. This can result in better understanding and faster processing of applications, which in turn, helps growers reduce production delays and helps the SWFWMD avoid compliance and enforcement procedures.

Expedited permitting

The Florida Department of Environmental Protection (DEP) in partnership with the US Army Corps of Engineers (Corps) developed a Joint Emergency Permit to expedite permitting for impacted property owners in Northwest Florida following hurricane events.

Using a joint state-federal permit, DEP reduced permitting processes and timeframes to accelerate rebuilding. The Department and the Corps are conducting joint site inspections and issuing on-site permits for dredge and fill activities covered by DEP's Emergency Final Order. The Joint Emergency Permitting teams conducted more than 40 site inspections. Permitting teams conduct advance site research before the actual visit, further streamlining the inspection and field permitting. An Emergency Final Order provided relief from certain regulatory requirements to minimize environmental hazards and accelerate restoration in areas damaged by the storm.

State Penalties and Enforcement

- Florida employs a combination of the authorities listed below to address civil, administrative, and criminal actions. The great majority of violations are resolved using civil or administrative procedures, with criminal actions used only in the most serious cases or cases that staff can not resolve through other available avenues and for which criminal sanctions are provided.
- Staff from the Department and water management districts (or, where applicable, the delegated local government) that have responsibility for an activity under the respective Operating Agreements are responsible for compliance and enforcement of both the regulatory and the proprietary aspects of a permit and applicable sovereign submerged lands authorization.
- Enforcement is authorized under s. 373.129 of the Florida Statutes to be administered in the same manner and to the same extent as provided in sections 373.430, 403.121(1), 403.121(2), 403.131, 403.141, and 403.161, F.S. Remedies include:
  - Judicial (civil) actions in a court of competent jurisdiction; (provisions under 403.121(1)):
    - can recover damages for injury to air, waters, or property, including plants, animals and aquatic life;
    - civil penalties up to $10,000 per offense; each day constitutes a separate offense;
  - Administrative (provisions under 403.121, 253.04 and rule 18-14, F.A.C.):
    - can recover damages and in addition assess penalties up to $5,000 depending on type and extent of violation;
    - can recover damages to sovereign submerged lands, can also assess fines up to $10,000 per offense; each day constitutes a separate offense. When violator upon notice ceases the activity and applies for appropriate authorization, fines shall not exceed $2500.00 per offense (rule 18-14)
  - Injunctive Relief:
    - may seek injunctive relief in court (s. 403.131, F.S.);
  - Criminal provisions (403.161):
    - willful violation of wetlands regulations—fine of not more than $50,000 and/or imprisonment for up to 5 years for each offense; each day constitutes a separate offense;
    - reckless indifference or gross careless disregard causing violations of wetlands regulations—fine of not more than $10,000 and/or 6 months in jail for each offense;
    - conducting aquaculture on sovereign submerged lands without proper authorization—fine of not more than $1,000.00 and/or up to 6 months in jail and forfeiture of property on sovereign submerged lands (253.74 FS);

- trespass and theft of property from sovereign submerged lands—imprisonment as provided by law;
- Criminal provisions may only be enforced by Office of the State Attorney (prosecutor).

Permit Tracking

The Department and each water management district have their own tracking system to record the progress of each permit application and all enforcement cases. However, some common data are tracked, reviewed, and reported statewide.

The Department's permit tracking system is called Permit Application (PA). It keeps track of permit application numbers, processors, time clocks (date received, dates of requested information, date application became complete, date of agency action), agency action (issued, denied, withdrawn, exempt, general permit), and geographic locators (including section, township and range). Enforcement and compliance tracking in the Department is performed by the Compliance and Enforcement Tracking (COMET) system.

Each water management district has its own tracking system that, at a minimum, also tracks the above information. Some, such as in the South Florida Water Management District automatically generate a staff report based on information inputted; that system also includes extensive pre- and post-project water level and other engineering data. Others include extensive tracking information on such things as permit condition compliance and mitigation success status, and are fully integrated with GIS linkages. For example, the Southwest Florida Water Management District permit tracking system is called the Resource Regulation Database (RRDB). The RRDB tracks permit applications as they are processed as well as compile selected project details. A Geographic Information System is used to collect selected location information. Compliance and enforcement activities are tracked from when action is initiated until the action is resolved.

State General Permit (PGP or SPGP) for 404

(statewide programmatic permits or general permits, when established, acreage or other activities it covers)

A pilot State Programmatic General Permit (SPGP) was issued to the Jacksonville District office of the Department in August, 1995; that pilot was expanded to other district offices of the FDEP in 1996. On September 24, 1997, the Jacksonville District of the U.S. Army Corps of Engineers (USACE) issued an SPGP III to the FDEP that replaced the previous SPGP. SPGP III extended the geographic coverage throughout the Florida, excluding Monroe County and those counties within the jurisdiction of the Northwest Florida Water Management District. The purpose of the SPGP III is to avoid duplication of permitting between the USACE and the FDEP for minor work located in

waters of the United States, including navigable waters. This has the effect of eliminating the need for separate approval from the USACE for certain activities. Activities covered by the SPGP include:

- construction of shoreline stabilization activities (such as riprap and seawalls; groins, jetties, breakwaters, and beach nourishment/re-nourishment are excluded);
- boat ramps and boat launch areas and structures associated with such ramps or launch areas;
- docks, piers, marinas, and associated facilities;
- maintenance dredging of canals and channels
- selected regulatory exemptions; and
- selected ERP noticed general permits.

Applications that are received for the above activities are first reviewed to determine if they meet all the conditions of the SPGP. Those that do are processed as "green," in which case issuance of the Department permit constitutes issues of the corresponding federal dredge and fill permit. Those that do not are processed as "yellow," in which case a copy of the application is forwarded to the USACE. These applications are reviewed by the USACE and are either:

- Returned to the state for processing with or without additional federal conditions; or
- Retained for processing by the USACE.

At this time, permits processed by the water management districts are not included in the SPGP. However, negotiations continue on expanding the SPGP to include ERP permits processed by the water management districts and Broward County.

Assumption of Section 404 Powers

Florida investigated the possibility of assuming the section 404 from the Federal government several years ago. Substantial impediments would exist with such an assumption. These include:

- Most of Florida's waters are non-assumable waters because they are navigable, navigable in fact, or navigable with improvement, and hence are covered by section 10 of the Rivers and Harbors Act. Considerable confusion would exist at both the public and the staff level with a permitting system that would require a determination of the status of such waters and the wetlands associated with them.
- There are differences between the methodology used by the state of Florida to delineate the landward extent of wetlands and other surface waters and the federal methodology (see discussion above). While in many areas those differences are not significant, in other areas there are significant differences. Florida has identified two key species (slash pine and gallberry) that are primarily responsible for these differences. Florida does not consider areas dominated by these species (in the absence of other indicators, such as hydric soils) to be wetlands although those areas may be classified as wetlands under the federal methodology. The

Florida legislature would have to expand the state methodology to include those areas of slash pine and gallberry. At this time it does not appear the federal government has the authority to make regional adjustments to the 1987 manual. Absent an ability to use "one line" in Florida, considerable confusion would exist with the public and the agencies in identifying such areas, and developing a workable solution to authorize activities in such areas that are claimed as wetlands by one agency and not the other.

- Additional barriers to Florida assumption of Section 404 are listed above on page 110.

Joint Permitting
(Joint permitting procedures with the Corps and/or local government)

The USACE and Florida have adopted joint ERP and wetland resource application booklets and forms, and coordinate under an Operating Agreement. Under this agreement, the Department or water management district initially receive all ERP and wetland resource permit applications. Copies of those applications that do not qualify under the SPGP (see above) are forwarded to the USACE within five working days. At that point, both the USACE and the Department or water management district independently process their respective applications. The USACE cannot act on applications that require a federal dredge and fill permit until the state ERP or wetland resource permit has been issued, which permit contains the federal water quality certification and coastal zone consistency concurrence determination (or waiver thereto).

Special Area Management Plan (SAMP) and Advanced Identification (ADID)
In addition to the above, the Jacksonville office of the USACE has developed an innovative Comprehensive Conservation, Mitigation and Permitting Strategy that targets areas around the state that are experiencing significant development pressure with concurrent concerns with long term habitat and water quality impacts, or where large scale projects are underway that can be expected to result in significant regional impacts. These include the Environmental Impact Statement for South West Florida. Each of these has involved coordination with the Department and the water management districts.

Role of Local Governments
Section 373.441, F.S., and its implementing rule chapter 62-344, F.A.C., provide the procedures and considerations for the Department and the water management districts to delegate the ERP program to local governments. Delegations can be granted only where:

- the local government can demonstrate that delegation would further the goal of providing an efficient, effective, and streamlined permitting program; and
- the local government can demonstrate that it has the financial, technical, and administrative capabilities and desire to effectively and efficiently implement and enforce the program, and protection of environmental resources will be maintained.

To date, only one local government (Broward County) has received a comprehensive, albeit limited geographically and to certain project types, delegation of the ERP program from the Department and the South Florida Water Management District. Their responsibilities include permitting, compliance, and enforcement of activities for which

they have been given responsibility under a Delegation Agreement adopted in chapter 62-113, F.A.C. Miami-Dade County has a limited delegation from the Department to confirm sovereign submerged lands consents of use under chapter 253, F.S., for activities that qualify for the s. 403.813(2)(b), F.S., regulatory exemption for private single-family docks. The City of Tallahassee has a delegation from the Department to review, take agency action on, and perform compliance and enforcement of stormwater general permits under chapter 62-25, F.A.C., in accordance with a Delegation Agreement adopted in chapter 62-113, F.A.C.

Wetlands and Water Quality Regulations

Florida's surface water quality standards are authorized under Section 403.061, Florida Statutes, and adopted in chapter 62-302 of the Florida Administrative Code. This chapter includes antidegradation policies, water classifications, specific narrative and numeric standards, and an identification of Outstanding Florida Waters (which receive the highest water quality protection).

Additional water quality standards for Outstanding Florida Waters, including antidegradation standards for all waters are contained in section 62-4.242, F.A.C. Standards for granting mixing zones of water quality standards are contained in section 62-4.244, F.A.C. Chapter 62-4 contains additional provisions for exemptions from water quality standards, and for sampling, testing, and method detection limits for water pollution sources. An antidegradation policy is applied to wetlands, based upon designated use classifications.

Florida's Domestic Wastewater to Wetlands Rule

Special standards have been adopted for discharge of treated stormwater and wastewater into wetlands. The Department, through Chapter 62-611, F.A.C., allows a method of advanced wastewater treatment utilizing wetlands which may be less expensive than conventional treatment processes, while at the same time serves to maintain, create, and restore wetland hydrology and habitat. Properly managed wastewater treatment wetlands improve water quality and the environment.

Chapter 62-611, F.A.C., provides State regulations and standards for domestic wastewater discharges to wetlands.

On March 1, 1979, the Department formally recognized the potential of wetlands as a means of providing wastewater treatment and adopted an exemption for the experimental use of wetlands (now Rule 62-600.120(3), F.A.C.). In April 1986, as a result of the 1984 Warren S. Henderson Act, the Department adopted specific regulations and standards (17-6.055, F.A.C.) which codified the permitting of wetlands for treatment of domestic wastewater such that the type, nature, and function of wetlands would be protected. Three and one half years after the wastewater to wetlands regulations were promulgated (circa November 1989), a separate chapter of the Florida Administrative Code was dedicated to the wastewater to wetlands regulations (Chapter 17-611, F.A.C.). Currently, the

Department regulates domestic wastewater discharge activities in wetlands through Chapter 62-611, F.A.C.

The wastewater to wetlands rule controls (1) the quality and quantity of wastewater which may be discharged to wetlands and (2) the quality of water discharged from wetlands to contiguous surface waters. It also provides water quality, vegetation, and wildlife standards which provide protection of other wetland functions and values, and establishes permitting procedures and extensive monitoring requirements for wastewater discharges to wetlands.

Chapter 62-611, F.A.C., classifies wetlands based on the level of treatment provided by the wastewater facility (secondary treatment with nitrification or advanced wastewater treatment), background hydrology of the wetland (hydrologically altered or hydrologically unaltered), wetland's origin (man-made or natural), and the type of vegetation (herbaceous or woody). For a graphic representation of the array of wetland systems types, according to the classification system found in Chapter 62-611, FAC, which may be permitted by the Department (without a variance from the rules), see the Domestic Wastewater Wetlands Chart.

The rule promotes the use of man-made (constructed) and hydrologically altered wetlands by requiring less monitoring and allowing higher hydraulic and nutrient loading rates for those systems. These regulatory incentives attempt to create and restore wetlands. Many wetland systems are classified as reuse of reclaimed water per Rule 62-610.810(g), F.A.C., which states that wetlands creation, restoration, and enhancement projects....shall be classified as "reuse." Chapter 62-611, F.A.C., does not regulate is the determination of and the dredging and filling within wetlands. This is done through the Wetland Environmental Resource Permit program (SLERP) and Chapter 62-340, F.A.C.

.ERP permits also must consider whether a regulated activity will adversely affect the groundwater standards contained in chapters 62-520, 62-522, and 62-550, F.A.C.

Stormwater to Wetlands

In October 2000, EPA authorized the Florida Department of Environmental Protection (DEP) to implement the NPDES stormwater permitting program in the State of Florida (in all areas except Indian Country lands). DEP's authority to administer the NPDES program is set forth in Section 403.0885, Florida Statutes (F.S.). The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the State of Florida from certain municipal, industrial and construction activities. As the NPDES stormwater permitting authority, DEP is responsible for promulgating rules and issuing permits, managing and reviewing permit applications, and performing compliance and enforcement activities.

The NPDES stormwater permitting program is separate from the State's stormwater/environmental resource permitting programs (found under Part IV, Chapter 373, F.S. (593KB) and Chapter 62-25, F.A.C. and local stormwater/water quality programs, which have their own regulations and permitting requirements.

The Everglades Restoration processes relating to phosphorous reduction depend upon the utilization of Stormwater Treatment Areas composed of extensive marsh systems.

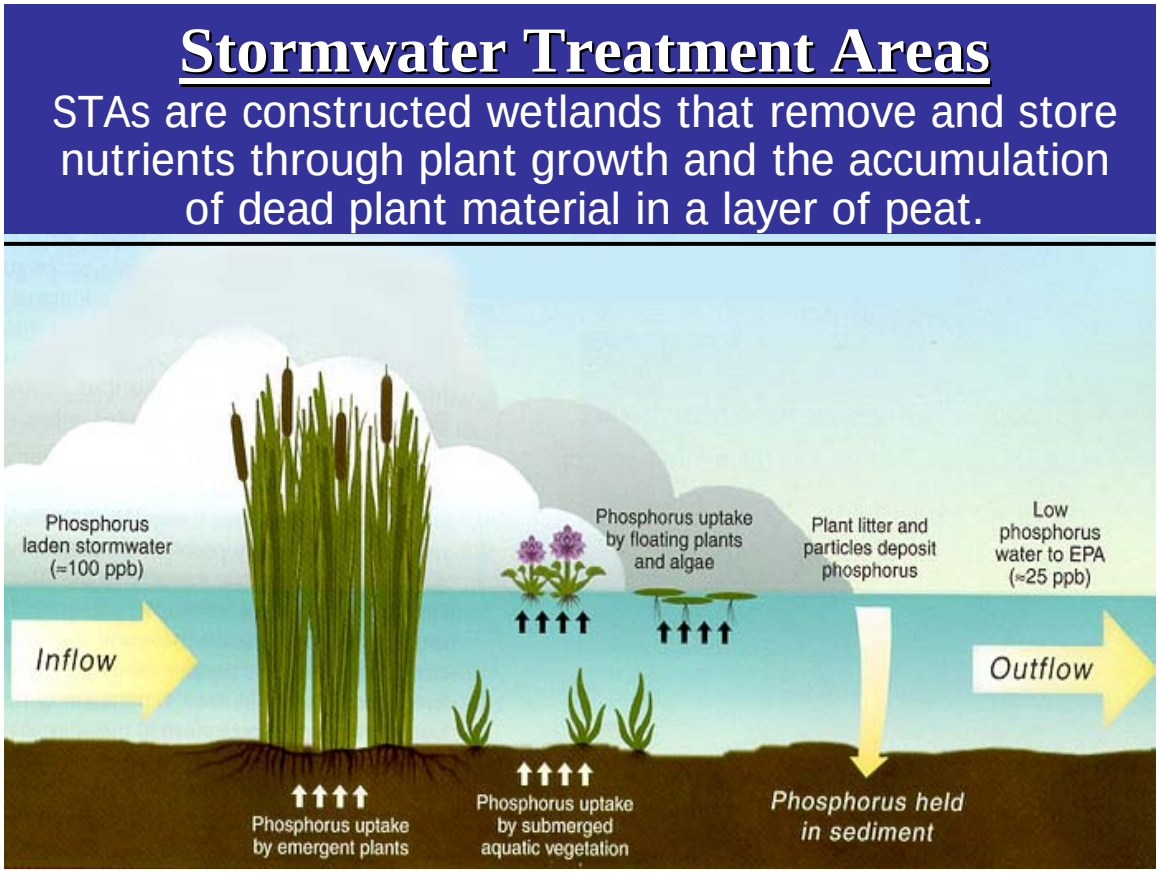


Figure 41: Stormwater Treatment Area Utilizing Wetlands (SFWMD 2007)

Designated Uses

All surface waters in Florida fall into one of five classifications based upon their present and future most beneficial use (designated use). The five classifications include:

Table 30: Designated Uses of Surface Waters

Class	Designated Use
I	Potable Water Supplies
II	Shellfish Propagation or Harvesting
III	Recreation, Propagation and Maintenance of a Healthy, Well-Balanced Population of Fish and Wildlife

IV	Agricultural Water Supplies
V	Navigation, Utility and Industrial Use

Narrative and Numeric Water Quality Criteria

Narrative and numeric water quality criteria as listed in Chapter 62-302, F.A.C., are designed to support the aforementioned designated uses. More stringent criteria apply to waters in a "higher" classification (e.g., Class I waters have more stringent criteria than Class III waters). There are a number of biological water quality criteria contained in Chapter 62-302, F.A.C., including bacteriological quality, biological integrity, nuisance species, and nutrients.

Wetlands are considered as "waters of the State," and are included in the five classes of waters above. Most waterbodies in Florida, including most wetlands, are classified as Class III waters.

Section 373.414(10), F.S., provides the authority for the FDEP, in consultation with the water management districts, to establish by rule water quality criteria for wetlands, giving appropriate recognition to the water quality of such wetlands in their natural state. However, to date, no rules governing specifically the water quality in wetlands have been adopted.

Natural background conditions (condition of waters in the absence of man-induced alterations based on the best scientific information available to the FDEP), such as those that exist naturally in wetlands, are considered. For example, notwithstanding specific numeric criteria, dissolved oxygen levels, which are naturally low in wetlands, that can be attributed to natural background conditions and man-induced conditions that cannot be controlled or abated may be established as alternative dissolved oxygen criteria for a waterbody or portion of a waterbody.

Antidegradation Policy

Florida's antidegradation policy is contained in and implement by sections 62-302.300, 62-302.700, and 62-4.242, F.A.C. It generally provides that permit applicants demonstrate that lowering of water quality is necessary or desirable under federal standards and under circumstances that are clearly in the public interest. Paragraph 62-302.300(17), F.A.C., specifically provides that projects permitted under part IV of chapter 373, F.S., shall be considered to be in compliance with the antidegradation policy.

Rules and statutes that allow for limited lowering of water quality

(Other provisions in water quality standards that are applied to wetlands)

There are several relief mechanisms in place in Florida's permitting rules and statutes that allow for limited lowering of water quality, including Site Specific Alternative

Criteria, mixing zones, variances, and exemptions, provided certain conditions are met. Certain portions of Chapter 62-611, F.A.C., are considered as water quality standards. This chapter allows for the use of some wetlands for treatment of wastewater in very limited cases.

Staffing

All states are required by the Federal Clean Water Act to conduct a periodic comprehensive review of their surface water quality standards every three years ("triennial review"). Past triennial reviews have resulted in significant changes to antidegradation policies, water classifications, and water quality criteria.

The FDEP water quality standards program consists of five staff who review and revise, when necessary, existing surface water quality standards. These staff are continually involved in revising the State's surface water quality standards as needed, including the revision of water quality criteria, reclassifications of surface waters based upon their present and future most beneficial use, and provision of additional water quality protection through designation of certain waterbodies as Outstanding Florida Waters. However, these staff do not review water quality certifications for specific projects.

The review of water quality certifications for specific applications is done by the wetland resource and environmental resource permit permitting staff (see staffing numbers Tables 28 and 29). The ability for an activity to meet applicable state water quality standards is determined as part of the permit application review and the water quality certification is issued, waived, or denied in the same document that issues or denies the wetland resource or environmental resource permit.

Table 28: Statewide Staffing (regulatory staff) *Florida Department of Environmental Protection*

Primary Responsibility	# Full Time Staff
Permitting	104*
Compliance & Enforcement	62*
Administrative	22

*Many staff share responsibilities for permitting, compliance, and enforcement. Numbers shown for compliance and enforcement are staff who is primarily assigned this responsibility.

Table 29: Statewide Water Management District ERP Staffing

Primary Responsibility	# Full Time Staff
Permitting	149
Compliance & Enforcement	86
Administrative	79

Mitigation Policy

It is the intent of the state's environmental resource permitting program that there be a "no net loss" in wetland and other surface water *functions* (note: this is different from *acreage)*. Furthermore, protection of wetlands and surface waters is preferred to destruction and mitigation.

Mitigation may be considered only after practicable modifications have been made to eliminate or reduce otherwise unpermittable adverse impacts. The environmental resource and wetland resource permit rules recognize that, in some cases, mitigation may not be able to offset impacts sufficiently to yield a permittable project.

Mitigation is best accomplished through restoration, creation, enhancement or preservation of ecological communities similar to those being impacted. However, other means or communities may be acceptable and can be considered on a case-by-case basis, as long as the impacts are offset.

Mitigation may be off-site if on-site mitigation is not expected to have long-term viability or if off-site mitigation would provide greater ecological value. Mitigation is typically located within the same basin as the impacts to avoid potential unacceptable cumulative impacts within the basin.

Cash donation is not considered mitigation, unless specified for use in an endorsed environmental project that will serve to offset the impacts.

Mitigation banks and "in-lieu-fee" programs are allowed, given that they are already authorized by the state and serve to offset the impacts.

Prior to the development of the uniform wetland mitigation assessment method (UWAM) the FDEP environmental resource and wetland resource permit rules currently provided recommended guidelines for mitigation ratios of :

creation--1:1-6:1

enhancement--4:1-20:1

preservation--10:1-60:1

However, the above recommended ratios could be adjusted to account for the relative ecological value of the impacts and proposed mitigation, the time lag between impacts and offsetting those impacts, and likelihood of mitigation success on an individual basis.

Mitigation ratios are not currently used to establish mitigation for wetland fills. Section 373.414(18) of the Florida Statutes, adopted by Florida's legislature in 2000, required the Department, in consultation with the water management districts, to develop a uniform wetland mitigation assessment method by October 1, 2001, and for such method to be adopted by rule no later than January 31, 2002. The Uniform Wetland Assessment Method (UMAM) rule (Chapter 62-345, F.A.C.) went into effect on February 2, 2004. Although only the FDEP was required to adopt the method by rule, it is now the sole means for all state entities (FDEP, Water Management Districts, local governments and other governmental entities) to determine the amount of mitigation needed to offset adverse impacts to wetlands and other surface waters and to determine mitigation bank credits awarded and debited. When adopted, this method became binding on the FDEP, the water management districts, local government, and any other governmental agencies, and shall be the sole means to determine mitigation needed to offset adverse impacts and to award and deduct mitigation bank credits.

Mitigation Banks

In response to a legislative directive, Florida adopted a mitigation banking rule in 1994 (Chapter 62-342 of the Florida Administrative Code). This rule establishes guidelines for the operation of public or private banks. Each bank must obtain an environmental resource/mitigation bank permit, from the Department or water management district, that provides for the following requirements:

The banker must have sufficient legal interest in the property to preserve it by a perpetual conservation easement or donation to the state prior to any release of credits;

A detailed mitigation plan to support viable and sustainable functional improvements for the regional watershed;

The number and type of potential mitigation credits must be established, as well as the environmental criteria and schedule for the release of those credits for use;

The mitigation bank must maintain a ledger to track the number and type of credits released and used;

A mitigation service area (MSA), based on watersheds and other ecological criteria, must be established;

A long-term management plan must be established to maintain the mitigation success in perpetuity;

Financial assurance must be established for both the implementation and perpetual management of the bank.

Currently, 27 mitigation banks have been permitted by the state, with a total of 20,974 potential credits and over 61,000 acres. Of these, 18 banks (10,200 credits/32,000 ac.) have had credits released for use, and one has sold out of credits. Thus far, about 2,560 credits have been used as mitigation. Seven of these banks are on public lands and are implemented by either a public agency or are in a public/private partnership.

In Lieu Fee Program

In 2000, legislation was passed that stipulated the requirements by which the department, water management district or local government could sponsor a regional offsite mitigation area (ROMA) project that is paid for by monies accepted as mitigation.

A memorandum of agreement (MOA) is required between the sponsoring agency, and the department or water management district, as appropriate, for any ROMA used for five or more projects or for more than 35 acres of impact. The MOA must address most of the same requirements required by mitigation bank permits, including: the mitigation plan and timeline, success criteria, mitigation credit and tracking, service area, acquisition, preservation and long-term management provisions. In addition, the sponsoring agency must provide a full cost accounting of the monies received to ensure that all monies were used in the purchase, preservation, permitting, implementation and management of the mitigation area.

The major differences between a ROMA and a mitigation bank is that a ROMA can include an acquisition element and do not have to provide the same financial assurance as is required in a mitigation bank permit.

ROMAs do not require federal buy in or concurrence. Projects using ROMAs continue to undergo case-by-case federal wetland permit review. Projects using mitigation banks that are both state and federally approved and complying with the terms for mitigation bank eligibility may have a steamlined federal wetland permit review because the mitigation has already been reviewed.

Ad Hoc Arrangements (mitigation that is not onsite and does not fall into the above categories, for example donations to nonprofits or other organizations who will restore wetlands)

In 1995, the state established a mitigation program specific to meet the Florida Department of Transportation's (FDOT) mitigation needs (Section 373.4137, F.S.), whereby FDOT annually provides an inventory of anticipated wetland impacts to each of the regional water management districts.

The state's five water management districts develop mitigation plans that would serve to offset those impacts, in coordination with other state and federal regulatory agencies. The plan is presented to the water management district's governing board for conceptual approval, and then submitted to the Department for state authorization and approval. Once approved, the mitigation work may commence.

This program does not relieve DOT from eliminating or reducing impacts to the extent practicable or obtaining permits for the impacts.

DOT appropriates a specified amount of money (adjusted annually) for the mitigation needed to offset each acre of impact, and this money is disbursed to the water management districts to conduct the mitigation work

Mitigation Database

Mitigation bank credit releases and uses are tracked by means of a required ledger identified in the mitigation banking section above. Credits used are attributed to specific permits or agency actions.

At this time, the Department does not maintain a central database of mitigation projects permitted, or the success thereof.

Each water management district has its own tracking system.

Statewide Mitigation Staffing

The Department has two staff in the Bureau of Beaches and Wetland Resources who are responsible for:

- Developing mitigation rules and providing guidance on mitigation issues
- Developing the wetland mitigation assessment method
- Reviewing and taking agency action on mitigation bank permits for the Department
- Statewide coordination on mitigation banking
- Reviewing and taking agency action on proposed regional offsite mitigation areas (ROMA)
- Reviewing and taking agency action on the water management districts' regional mitigation plans for the Florida Department of Transportation

In addition, the staff in the Department and the state's five water management districts who review wetland resource and environmental resource permits also review mitigation proposals as part of reviewing the permit application. Depending on the organization of

each office these staff also review the mitigation work for compliance and enforcement. In other offices, additional staff are dedicated to compliance and enforcement of permitted actions (including those that authorize mitigation) and unauthorized actions.

Monitoring and Assessment

Mapping/Inventory

Florida has not produced a statewide map of the wetlands, as they would be delineated using the state methodology in s. 373.421 and 373.4211, F.S. Instead, as discussed above, wetlands are delineated on an "as requested" basis. Although maps of wetlands in Florida have been prepared by the National Wetland Inventory, such maps are typically not at a level of detail that is sufficient for state and federal permitting purposes; the maps are subject to ground truthing; and the maps are not binding on either the state or the USACE. Nonetheless, they may provide a general picture of the potential presence of wetlands on a parcel of property.

Because such maps have not been produced using the state methodology, there is no current statewide status and trends report of wetland gains or losses, based on Florida's wetland delineation methodology. However, historic data is available (see below).

Though a specialized geographic information system (GIS) called ERA tools (Environmental Resource Analysis tools), staff has access to NWI maps and numerous other data sources, including jurisdictional boundaries, land use, fish and wildlife resources, inter-agency permitted activities, water resources, and statewide aerial photographs.

Wetland Classification and Assessment

Florida does not use a wetland classification system. The "status" of wetlands, and the functions they provide, are determined on a project-by-project basis through the permit application review process.

Overall wetland gain and loss

The Department and the water management districts track the acreage of wetlands permitted to be dredged, filled, and mitigated through their permit application tracking systems. Annual wetland status reports were prepared and submitted to Florida's Legislature for the period 1986-1993, during which time a statewide reporting requirement was part of state law. During the period 1984 – 1995, the Department authorized the following acreage of wetland impacts:

Table 30: 1984-1995 Annual Wetland Status Report FDEP

Category	Acreage
Permanently destroyed	7,476
Temporarily destroyed	10,071
Preserved	22,195
Created	39,131
Improved	204,895 (due to accounting errors this figure actually may only be 28,584)

- The above figures do not account for wetland acreage permitted by the water management districts during that period. Due to limitations on staff resources, statewide report on these figures has not been produced since 1993 (when the requirement for these reports was removed from state law). However, reports can be produced on request by the Department and water management districts.
- When reviewing the above, it is important to realize that such figures do not account for the true status of Florida's wetland acreage. This is because those status and trends reports, based on permitting data, did not:
  - account for wetland losses from exempt activities (for which work may occur without notice to the agencies) or activities qualifying for noticed general permits. This is particularly significant considering wetland losses from exempt agricultural activities;
  - account for unauthorized dredging and filling;
  - account for whether the dredging, filling, or mitigation, once permitted, was ever implemented; or
  - account for the success or degree of implementation of any permitted mitigation.
- It is also important to realize that even if such tracking reports did account for the above, they would not account for the gains or losses of wetland *functions*. They do not, for example, provide status and trends for:
  - wetland acreage degraded by exotic infestation
  - wetland acreage degraded by drainage or impoundment
  - wetland acreage restored or in need of restoration.

Restoration

Florida's legislature established the Florida Forever program in 1998 to enhance land acquisition and restoration efforts. This land acquisition program is scheduled to raise $300 million each year during the decade beginning in Fiscal Year 2000-01. Nearly a quarter of these funds may be used for facilities development, ecological or hydrological restoration, or other capital improvements to public lands. Most of the ecological and hydrological restoration funds will funnel through the state's five water management districts, which may spend collectively up to $52.5 million annually from Florida Forever funds for these purposes. Each district has its own governing board and operation rules and policies, but the Department provides oversight and approves all Florida Forever expenditures. In addition to these funds, approximately $10.5 million may be available for capital improvements to Department acquired properties through the Acquisition and Restoration Council, a nine-member board composed of five state agency heads and four governor appointees. The Council has not yet fully developed procedures for awarding these funds. However, both the water management districts and the Council's capital improvement projects must meet goals and measures established in legislation [s. 259.105(4), F.S.].

The state also has a very active invasive plant management program that is critical to its restoration programs. Nearly $34.8 million was appropriated for this effort in Fiscal Year 2000-01. The amount available for invasive plant management is increased substantially through partnerships with other state agencies, water management districts and local and federal governments such that $29,725,376 (includes both uplands and aquatic plant control) will be expended this year. These funds are allocated based on a priority schedule developed by regional working groups in concert with the Department's Bureau of Invasive Plant Management.

On January 9, President George W. Bush and Governor Jeb Bush entered into an historic pact between the state and federal government that keeps Everglades restoration on track and ensures long-term protection for the "River of Grass." The agreement, signed nearly one year ahead of schedule, requires Florida to reserve water specifically for environmental purposes in order to receive federal funding for the $7.8 billion restoration project. The agreement protects 68 endangered and threatened species as well as the natural resources of the Everglades National Park, Loxahatchee National Wildlife Refuge, the 10,000 Islands National Wildlife Refuge and Water Conservation Areas. Everglades restoration is designed to recapture over 1½ billion gallons of water daily that is currently diverted to the Atlantic Ocean and Gulf of Mexico. The majority of water will be used to protect South Florida's system, while providing for other water-related needs of the region, including water supply and flood control.

Federal Conservation Reserve, Conservation Reserve Enhancement, and Wetland Reserve grants have been awarded to the Department and the water management districts to assist in funding wetland restoration projects.

Restoration Program Goals

The Florida Forever program [s. 259.105, F.S.] includes the following goals and measures:

Protect, restore, and maintain the quality and natural functions of land, water, and wetland systems of the state, as measured by:

The number of acres of publicly-owned land identified as needing restoration, acres undergoing restoration, and acres with restoration activities completed;

The percentage of water segments that fully meet, partially meet, or do not meet their designated uses as reported in the Department of Environmental Protection's State Water Quality Assessment 305(b) Report;

The percentage completion of targeted capital improvements in surface water improvement and management plans created under s. 373.453(2), regional or master stormwater management system plans, or other adopted restoration plans;

The percentage of miles of critically eroding beaches contiguous with public lands that are restored or protected from further erosion;

The percentage of public lakes and rivers in which invasive, non-native aquatic plants are under maintenance control; or

The number of acres of public conservation lands in which upland invasive, exotic plants are under maintenance control.

The Legislature has also established performance measures for the Department's invasive plant management program services:

The percent of Florida's public waters where control of hydrilla, water hyacinth, and water lettuce has been achieved and sustained.

The number of new acres of public land where invasive, exotic, upland plants are controlled and maintained.

The number of acres of public water bodies treated.

The number of acres surveyed.

Only public lands and water bodies qualify for funding under state-funded restoration programs. Funds available to water management district generally will be allocated to approved Surface Water Improvement and Management projects, while the Acquisition and Restoration Council's funds for restoration from Florida Forever are restricted to projects on state lands that are identified in the land management plan for each unit of management (i.e., each state park, forest, wildlife management area, etc.).

Restoration Database

The Department 's Florida Wetland Restoration Information Center provides information for a statewide ecological restoration program for wetlands and their associated uplands using ecosystem management and ecological principles. The Center has been developed to aid local governments and community organizations with their restoration efforts by providing online tools and research materials needed for the implementation and management of restoration projects.

A Restoration Guidance Handbook has been developed to provide guidance to local governments and community organizations on the process of wetland restoration,

including how to assess the wetland site, determine appropriate restoration measures, as well as state of the science techniques.

The Florida Ecological Restoration Inventory is a geographic information systems (GIS) compilation of the locations of current and proposed restoration activities on conservation lands. The inventory is available on the internet at http://tlhdwf7.dep.state.fl.us/feri/

State Land Acquisition Program

Florida has one of the largest and most aggressive land acquisition program in the country, with an excess of $300 million spent annually to purchase environmentally sensitive lands.

These acquisition programs began in 1981 when the Florida Legislature enacted a program known as "Save Our Rivers (SOR)," and created the Water Management Lands Trust Fund. The trust fund received revenue from the documentary stamp tax paid when land was sold, and was administered by the Department of Environmental Protection. SOR act enabled the water management districts to acquire lands necessary for water management, water supply, and the conservation and protection of water resources. Since that time there have been a number of additional and successor programs, including "Preservation-2000" (P-2000), Conservation and Recreation Lands (CARL), "Save Our Rivers," and Land Acquisition Trust Fund (LATF). P-2000 (which largely replaced the former CARL and SOR programs) alone was responsible for the public acquisition and protection of more than 1.25 million acres of land. In 1998, "Florida Forever" replaced the P-2000 Program and became the state's newest blueprint for acquisition and conservation of our unique natural resources. Florida Forever, like most of the programs before it, derives its funding through a percentage of the documentary stamp fees assessed when property is sold. This program is scheduled to raise $300 million each year from 2000-2010. An annual report, entitled The Florida Forever 5-Year Plan, describes the lands under consideration for purchase under the Florida Forever program.

Florida Forever is more than just an environmental land acquisition mechanism. It encompasses a wider range of goals, including: restoration of damaged environmental systems, water resource development and supply, increased public access, public lands management and maintenance, and increased protection of land by acquisition of conservation easements. Florida Forever emphasizes water resource development and restoration projects as well as land acquisition for nonstructural flood protection and conservation.

In addition to Florida Forever, the Water Management Districts use ad valorem (property taxes) and mitigation funds for land acquisition. Some shift in emphasis is occurring from traditional land acquisition for preservation to acquisition for District construction projects such as stormwater treatment facilities.

In the late 1980's, it was determined that Florida had to do more to protect and restore its surface waters. While "point" sources--sewage and industrial wastes--were being controlled, "nonpoint" sources--pollutants that enter water bodies in less direct ways--were still a major concern. In 1987, the Florida Legislature created the Surface Water Improvement and Management program (SWIM; (Sections 373.451-373-4595 of the

Florida Statutes) to address these "nonpoint" pollutant sources," in recognition that water quality in surface water bodies throughout the state had degraded or were in danger of being degraded and important functions, once performed by associated natural systems, were no longer being provided.

The functions to be maintained or improved were identified in the SWIM Act to include providing aesthetic and recreational pleasure for the state's citizens; habitat for native plants and animals, including endangered and threatened species; and safe drinking water for the state's growing population as well as attracting visitors and accruing other economic benefits.

The Act required each water management district identify and maintain a priority list of water bodies of regional or statewide significance, and develop plans and programs for the improvement of those water bodies. Water bodies identified by the district's are approved by the state including the addition of new water bodies or the removal of existing ones.

SWIM is the only program that addressed a waterbody's needs as a system of connected resources, rather than isolated wetlands or water bodies. To accomplish this, SWIM meshes across governmental responsibilities, forging important partnerships in water resource management.

While the state's five water management districts and the Department of Environmental Protection are directly responsible for the SWIM program, they also work with federal, state, and local governments and the private sector. All the partners contribute—with funding or in-kind services. Several water management districts have put more resources in SWIM than they receive from the state, and SWIM dollars have been used as a match to secure federal grants.

SWIM develops carefully crafted plans for at-risk water bodies, and directs the work needed to restore damaged ecosystems, prevent pollution from runoff and other sources, and educate the public. SWIM plans are used by other state programs, like Florida Forever, to help make land-buying decisions, and by local governments to help make land-use management decisions. Environmental education efforts are also funded by this program.

Specific SWIM plans developed by the water management districts include:

The Southwest Florida Water Management District has identified, and the state has approved plans for ten priority water bodies. They are Tampa Bay, Rainbow River, Banana Lake, Crystal River/Kings Bay, Lake Panasoffkee, Charlotte Harbor, Lake Tarpon, Lake Thonotosassa, Winter Haven Chain of Lakes, and Sarasota Bay (Figure 1). Goals and objectives were developed for each water body and are used to guide programs and projects for maintaining or improving water quality, natural systems, and the other functions consistent with the SWIM Act. Essential to carrying out the District=s SWIM Program is the cooperation of local governments and agencies in developing and implementing effective SWIM Plans.

Public Outreach/Education

Public outreach and education programs that provide materials on wetlands often also include information related to other surface waters (such as ponds, streams, and estuaries) and about the state's regulatory and proprietary programs. Public Outreach and education programs include:

Visits to schools to provide interactive information in the classroom or out in the schoolyard;

Demonstrations involving the use "Enviroscape Models--including "stormwater" (also used for wetland education), and "coastal" models;

Active programs at specific events, such as scheduled wetland activities at local state park events, fairs or scout jamborees;

The development of agency speaker pools for requests from the public to come and provide information to the community;

Development of Internet based activities, some with specific sites for children;

Involvement in specific programs such as:

the Florida Envirothon

the Disney Environmental Challenge

Technical Reports

Science fairs

The development of many of the above programs and program tools are in part cost shared with other organizations and regulated entities capable of supplying funding and materials for wetland outreach efforts.

To aid in training and support for environmental outreach personnel the State Committee on Environmental Education (SCENE) was formed to bring a network of environmental educators together twice a year to share programs, tools and other information useful towards providing environmental education to the public.

Additional outreach education materials may be accessed at:

SJRWMD Programs & Programs website at: http://sjr.state.fl.us/programs/index.html.

SFWMD website at: http://www.sfwmd.gov/misce/sfwmd_O.htm. the outreach sites are listed in alphabetical order under the "outreach" listings. Information on a training program focused on the Big Cypress Basin is at http://www.sfwmd.gov/org/bcb/Staffwebstuff/ailenemaas.html.

Florida has extensive ownership of wetlands in public lands such as state parks, state forests, and lands that have been acquired under various land acquisition programs at the state and regional (water management district) level. Many of these lands are actively managed by the state and the water management districts. However, the state does not offer any direct assistance for managing privately owned wetlands.

Nonregulatory Incentives for Private Landowners

The Everglades Forever Act (373.4592, F.S.) provides for granting credits to taxes established on farmers in support of the Everglades Restoration if the farmer implements best management practices for reducing phosphorus discharges.

Tax incentives also may be established under Article VII, Section 4(a) of the Florida Constitution to encourage agricultural land, land producing high water recharge to Florida Aquifers, or land used exclusively for non-commercial, recreational purposes not to develop in aquifer recharge areas.

Wetland Training and Education (training and education programs for the public or private sector)

The department and water management districts have regular and active training programs for their staff and staff of associated local governments. These programs concentrate on delineation of wetlands, and implementation of the regulatory and proprietary rules. Due to time (and sometimes funding) constraints, this training is occasionally provided to consultants and other members of the public when appropriate.

Upon request, staff make presentations covering the wetland regulatory and proprietary programs to professional and private and public organizations. This includes two "short course" conferences per year to consultants and other representatives of the regulated community hosted by the Florida Chamber of Commerce.

All of the department and water management district programs have developed Internet sites with program information and publications concerning wetlands and surface water regulations. See "Guidebooks, Brochures, Websites, Other Educational Materials for outreach materials for the public (and private) sector."

Specific, targeted training includes:

The Department's Stormwater/Non–Point Source Management Program has developed a formalized Stormwater, Erosion, and Sediment Control Training and Certification Program for inspectors and contractors.

The Southwest Florida Water Management District has held an annual Soils Identification and Seasonal High Ground Water Table Determination Workshop for the past 13 years.

The South Florida Water Management District has a "Student's Corner" website at: http://www.sfwmd.gov/stude/2_student.html. This site contains several resources for teaching students about wetland and water issues including intern opportunities.

Watershed planning

Like many states, Florida has implemented a watershed management program that is based on the rotating basin concept. This program was authorized by the Florida Watershed Restoration Act of 1999 (403.067, F.S.) which establishes the state's total maximum daily load program and was started in July 2000. Florida's 52 major watersheds were divided into 30 groups, five in each of the six Department District Offices. The watershed approach consists of five phases:

Preliminary basin status evaluation. This phase uses existing data to evaluate the health of water bodies based on the data sufficiency, quality assurance, and data analyses procedures set forth in the Impaired Waters Rule, Chapter 62-302, F.A.C. The product is a Preliminary Basin Assessment that includes a Planning List of potentially impaired waters and a Strategic Monitoring Plan that outlines a monitoring program to fill in data gaps conducted in cooperation with watershed stakeholders.

Strategic monitoring. During this phase water quality and biological monitoring is conducted to verify whether waters on the Planning List are truly impaired, to collect additional data on water bodies that had insufficient data to be analyzed using the Impaired Waters Rule methodology, and to conduct intensive surveys to collect data for the establishment of total maximum daily loads. The product is a Basin Assessment that includes more comprehensive assessment of water body health, a revised Planning List of potentially impaired waters, and a Verified List of impaired waters that is adopted by the DEP Secretary and then submitted to EPA as the state's 303(d) list of impaired waters,

TMDL development. During this phase computer modeling and other data analysis techniques to establish the total maximum daily load for waters on the Verified List of impaired waters. A TMDL is the amount of pollutant loading that can be discharged to a water body such that it meets its designated beneficial uses.

Watershed plan development. During this phase watershed stakeholders work with the DEP to equitably allocate the load reductions needed to achieve the TMDL and develop a watershed management plan that specifies the roles, responsibilities, actions, schedule, and funding sources that will be used to restore an impaired water body.

Watershed plan implementation. During this phase, NPDES permits are modified to reflect the load allocations set forth in the plan and interlocal agreements are entered into by the watershed stakeholders to provide assurance that the actions set forth in the watershed plan by the individual entities are done.

The activities being done under the watershed approach are building upon the watershed management efforts by water management districts and local governments such as the SWIM program, the National Estuary Program, and other watershed planning efforts. Further information about Florida's watershed management and TMDL program can be found at: http://dep.state.fl.us/water/watershed.

Coordination

There is no one "wetland team" in Florida to guide or control all the programs that regulate, acquire, and manage Florida's wetlands. However, mechanisms are in place to foster communication on issues related by wetlands and other surface waters. These include

- The Department and water management districts frequently coordinate on individual permitting actions;
- The Department and water management districts meet approximately four times per year on statewide issues involving implementation and coordination of the environmental resource permit program;
- The Department and water management districts meet frequently to discuss issues related to water use and water consumption, both of which may adversely affect wetland and other surface water levels and functions;
- The Department and water management districts regularly attend permit coordination meetings with the USACE.

Outstanding Florida Waters

Per Section 403.061 FS, an Outstanding Florida Water (OFW), is a water designated worthy of special protection because of its natural attributes. This special designation is applied to certain waters, and is intended to protect existing good water quality; all aquatic preserves are "Outstanding Florida Waters." In addition to the six Aquatic preserves within this report's study area, all of the Estero Bay tributaries have the OFW designation. In addition, all the waters within the "Ding" Darling National Wildlife Refuge and all the waters within the State Parks and Preserves within Lower Charlotte Harbor are OFW by statute. The OFW designation restricts FDEP from issuing permits for direct pollutant discharges to OFWs which would lower ambient

(existing) water quality or indirect discharges which would significantly degrade the Outstanding Florida Water. Also, permits for new dredging and filling must be clearly in the public interest. Additional information can be found at: http://www.dep.state.fl.us/water/wqssp/ofwfs.htm.

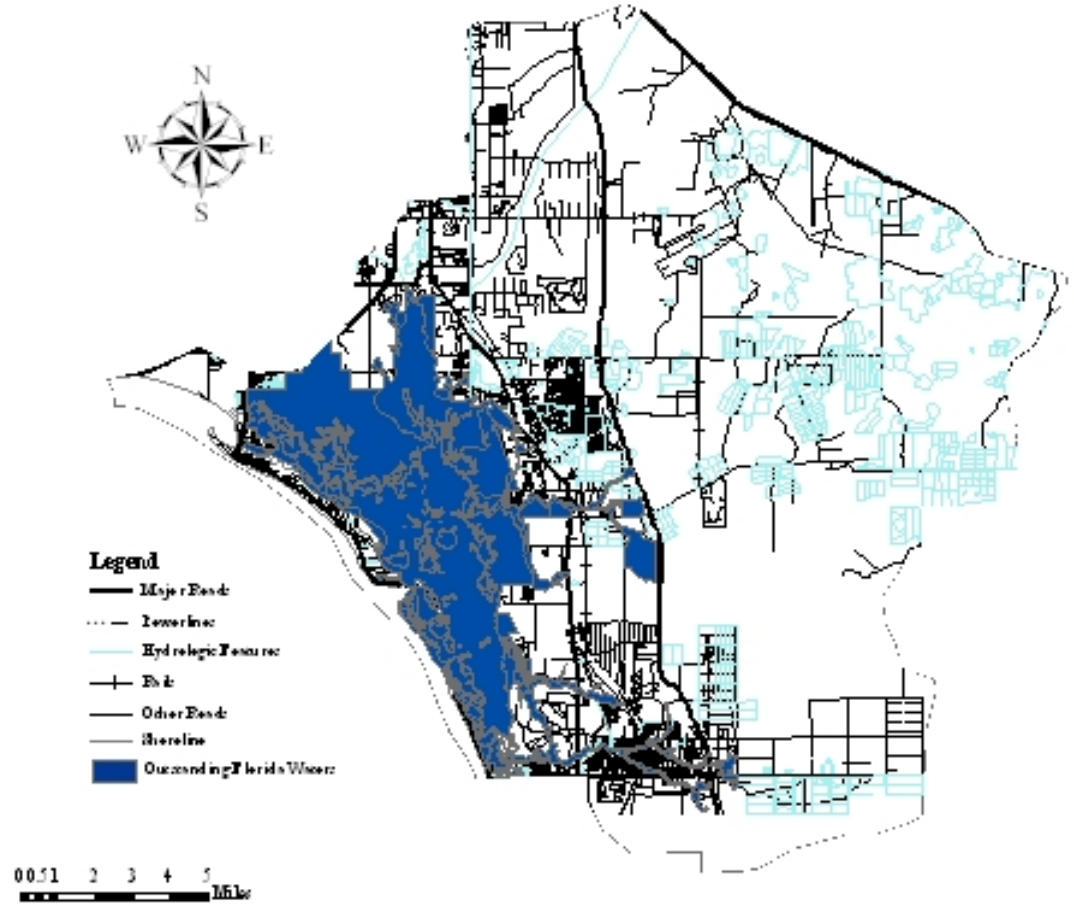


Figure 42: Outstanding Florida Waters

<u>Aquatic Preserves Program</u>

In 1975, the Florida Legislature enacted the Aquatic Preserve Act. This ensured that aquatic preserves' natural condition ... "their aesthetic, biological, and scientific values may endure for the enjoyment of future generations." The overall goals of resource management within the aquatic preserves areas are:

1. maintaining current, detailed resource inventories,
2. maintaining an up-to-date inventory of physical alterations from human activities,
3. restoring and enhancing littoral zone habitats,
4. improving water quality, and
5. encouraging uses of adjacent uplands which protect and enhance the resources in the aquatic preserves.

The Florida Department of Environmental Protection (FDEP) Office of Coastal and Aquatic Managed Areas (CAMA) is currently preparing a state-wide aquatic preserves plan. Over the next three years, CAMA will update each aquatic preserve plan.

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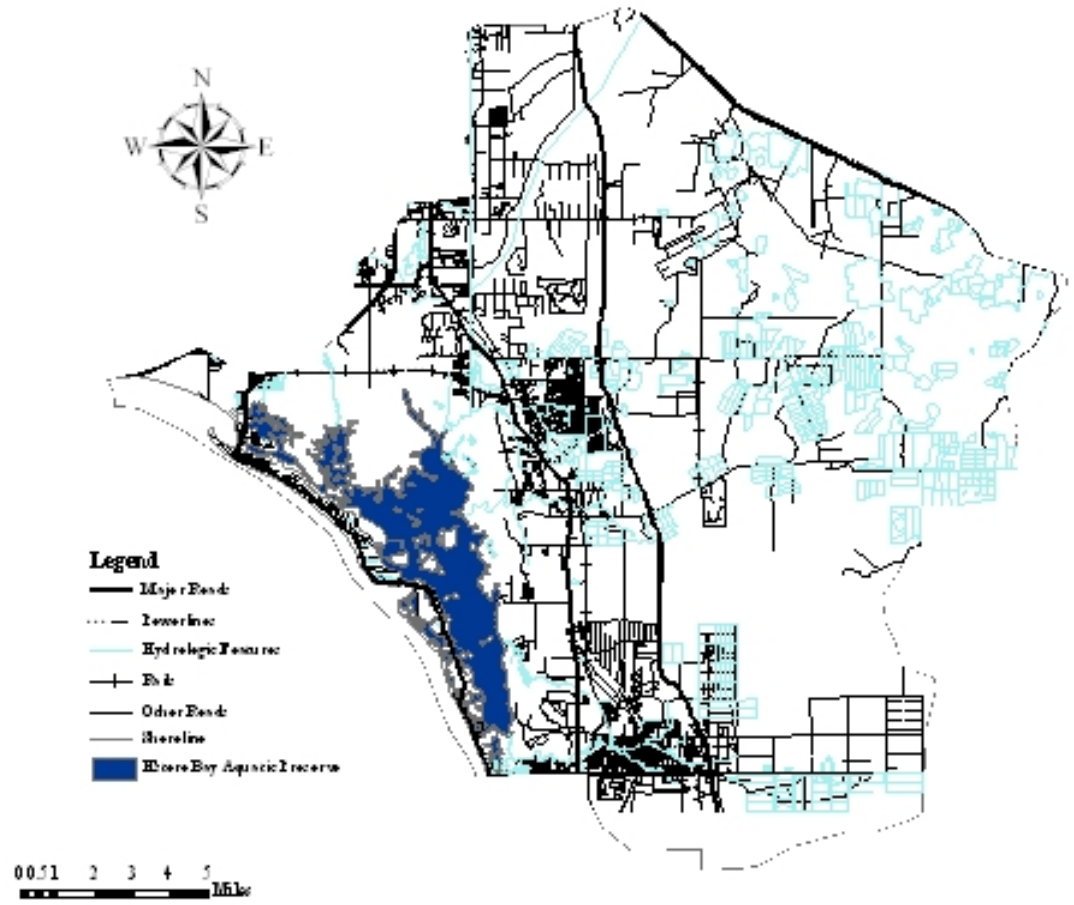


Figure 43: Estero Bay Aquatic Preserve

The Estero Bay Aquatic Preserve (EBAP) was dedicated in December 1966 – Florida's first aquatic preserve. Estero Bay is bordered on the west by a chain of barrier islands, which include: Estero Island, Long Key, Lovers Key, Black Island, Big Hickory Island, and Little Hickory Island, from north to south respectively. The EBAP is designated as a wilderness preserve wherein the primary management objective will be the maintenance of these ecosystems in an essentially natural state. Additional information can be found at: http://www.dep.state.fl.us/coastal/sites/estero/info.htm.

Florida Department of Transportation

The Florida Department of Transportation (FDOT) is decentralized in accordance with legislative mandates. Each of the districts is managed by a District Secretary. The districts vary in organizational structure, but in general each has major divisions for Administration, Planning, Production and Operations. Also, each district has a Public Information Office and General Counsel Office that report to the District Secretary.

The following is a brief summary of the roles and responsibilities for major functional units. These may vary from district to district:

Budget oversees the operating budget and Legislative Budget Request. Construction administers contracts for roadway and bridge construction through local construction offices. Consultant Management is responsible for the selection and monitoring of consultant engineering services for project development studies, roadways and bridge structure designs. Contractual Services and Professional Services directs District Contract and purchasing functions, and acquires consulting engineering and other non-professional services to support production and administrative units. Roadway Design and Structures Design are responsible for the preparation of the plans to build and repair the roadway and bridge system. Environmental Management performs the project development and environmental studies necessary to determine improvements to the state highway system, obtains environmental permits and conducts the public involvement meetings/hearings required in the early phases of a project.

Facilities Management /Office Services operates the office buildings and provides for building leasing, property and facility insurance, utility services, printing and mail services. Financial Services processes payment for purchases and oversees payroll. General Counsel renders legal opinions, provides general legal information, and represents the department in legal affairs. Human Services provides support for personnel, insurance, benefits and training. Information Systems is responsible for the operation of the computer/data center.

Maintenance is responsible for maintaining the State Highway System and mobile equipment fleet in the districts. Local maintenance offices are responsible for minor bridge and roadway repairs, mowing, pavement upkeep, roadway signs and rest area maintenance, inspection and operation of movable bridges and issuance of permits for lane closures, driveways and special uses. Materials inspect, sample and test the materials used in the construction of projects, and conduct tests to determine the wear and tear on the state's roadways and bridges.

Planning provides policy direction and local government coordination for short- and long-range transportation project planning. Production Management schedules projects and district contracts in accordance with budget instructions and restrictions.

The Office of Work Program develops the Five Year Work Program and Program and Resource Plan, and monitors management of funds and annual budgets and schedules. Public Information provides information to legislators, public officials, department employees, and the media about the department's operations and programs.

Public Transportation manages department involvement in multi-modal transportation including air, waterway, rail (pdf document), transit, bicycle and pedestrian travel. (Learn more about aviation, transit, rail, and seaports.)

Procurement oversees the purchasing of goods and services necessary for department operation. Right-of-Way Administration provides services related to appraisal and acquisition of property needed for department projects, relocation of tenants and the management and/or demolition of structures from those properties prior to road or bridge construction. Safety plans, develops and implements an employee safety program pertaining to vehicle accidents and personal injuries, education and training, and monitoring of contractor's operations for compliance with safety regulations. Surveying and Mapping prepares right-of-way maps and deeds used in the acquisition of property needed for department projects. Traffic Operations oversees studies and projects related to roadway signs, traffic signals, pavement markings, speed limits, school zones, and improved highway safety.

The Estero Bay Watershed is located in FDOT District One..

District One, with a land area of nearly 12,000 square miles, represents 12 counties in Southwestern Florida. Its 2.3 million residents contribute to the 34.7 million miles traveled daily on its state highways. FDOT provides capital and operating assistance to four major transit authorities with 105 passenger vehicles in District One. In addition, there are 115 private airports, 19 public airports, four major rail lines, and one deep-water port in operation.

Florida Fish and Wildlife Conservation Commission

The Florida Fish and Wildlife Conservation Commission came into existence on July 1, 1999 as the result of a constitutional amendment approved in the Constitution Revision Commission. The mission of the Commission is stated as managing the fish and wildlife resources for their long-term well-being and the benefit of the people In the implementation of the Constitutional Amendment, the Florida Legislature combined all of the staff and Commissioners of the former Marine Fisheries Commission, elements of the Divisions of Marine Resources and Law Enforcement of the Florida Department of Environmental Protection, and all of the employees and Commissioners of the former Game and Fresh Water Fish Commission

Five years later, after consulting stakeholders, employees and other interested parties, the FWC adopted a new internal structure to address complex conservation issues of the new century. The new structure focuses on programs, such as habitat management, that affect numerous species. It will focus on moving the decision-making process closer to the public and did not require any additional funding or additional positions.

FWC's seven Commissioners are appointed by the governor and confirmed by the Florida Senate to five-year terms. Their constitutional duty is to exercise the "...regulatory and executive powers of the state with respect to wild animal life and fresh water aquatic life and shall also exercise regulatory and executive powers of the state with respect to marine life, except that all license fees and penalties for violating regulations shall be as provided by law."

Included under the executive director's direct supervision is the Fish and Wildlife Research Institute (FWRI) with headquarters in St. Petersburg. FWRI's statewide research programs focus on obtaining data and information needed by natural resource managers and stakeholders. The legislatively approved agency-wide reorganization of the FWC in 2004 integrated parts of the Division of Wildlife, Division of Freshwater Fisheries, and the Florida Marine Research Institute to create the FWRI. In addition to fulfilling the functions previously provided by three groups, FWRI has added focus areas in spatial analysis, biostatistics and modeling, wildlife forensics, and socioeconomic research.

Florida Statute charges the Fish and Wildlife Research Institute with these responsibilities:

- Monitoring marine and freshwater resources, wildlife, and habitats
- Developing and implementing techniques for restoring plant and animal species and their habitats
- Providing technical support when oil spills and human-related or natural disasters occur
- Monitoring red tides and providing technical support for state and local government public health concerns
- Providing fish and wildlife research technical result to state and local governments

FWRI programs are diversely funded from user fees, grants, state general revenue, and specialty license plates. User fees include charges from items such as hunting and fishing licenses. Over half of the more than 600 FWRI staff members work at the downtown St. Petersburg headquarters. The other employees operate out of field laboratories at key inland and coastal locations throughout the state. The largest concentration of freshwater fisheries staff is located in Eustis, and most wildlife research staff are located in Gainesville. The institute's annual operating budget of approximately $50 million supports about 300 research projects.

Although FWRI is a new part of the FWC, the groups that form the institute have been generating quality science in support of resource management for over 50 years. The Florida Marine Research Institute was founded in 1955; the Division of Wildlife's research-oriented programs date from the 1940s, as do the research efforts of the Division of Freshwater Fisheries. FWRI continues the ongoing collaborative partnerships these groups have established with other government, academic, non-profit, and private fish and wildlife research institutions.

As Florida's human population and the associated environmental stresses have increased, the need for information about our natural resources has become urgent. FWRI strives to fill that need by providing the scientific foundation for management of Florida's fish and wildlife resources. FWRI is organized into five broad, interrelated science sections: Marine Fisheries Research, Freshwater Fisheries Research, Ecosystem

Assessment and Restoration, Wildlife Research, and Information Science and Management. The principal liaison between the Institute and the public is our Outreach Coordination office.

The Division of Freshwater Fisheries Management (DFFM) provides expertise on freshwater fish populations, angler use, or other aspects of freshwater fisheries needed for management decisions by the FWC, and to assess impacts of decisions made by others to ensure quality fisheries and fishing in selected Florida lakes, fish management areas, rivers and streams.

DFFM biologists are the first line of support for inquiries by the public for information on freshwater fisheries management issues, fishing opportunities, fish pond management, fish kills or other general fisheries-related issues. The DFFM also delivers aquatic education and outreach to future anglers to expose them to angler ethics, fisheries management, aquatic ecology, tackle crafting, angling skills, fish identification and other aspects aimed at promoting responsible life-long participation in sport fishing. Additionally, freshwater fish production facilities provide a dependable supply of the specific size, quantity and quality of freshwater fish for specific freshwater fisheries management objectives.

The division has 69.5 full-time positions, two sections (Regional Freshwater Fisheries Management and Hatchery Operations and Stocking) plus a special projects group. These individuals protect and enhance 3 million acres of lakes, ponds and reservoirs, and 12,000 miles of rivers, streams and canals. The recreational fishery resources alone in these waters provide entertainment for more than 1.3 million anglers annually, who have an economic impact of $2.2 billion. Those expenditures provide $37.4 million in taxes and create 19,000 jobs in Florida. In addition, freshwater commercial fishing generates $13 million per year.

With a goal of ensuring healthy, diverse fish and wildlife populations for future generations, the Division of Habitat and Species Conservation uses a mixture of the best available science, applied habitat management and successful partnerships.

To provide the greatest benefits to the widest possible array of fish and wildlife species, projects are designed on the ecosystem or landscape scale. The work includes:

- Aquatic habitat management for marine, estuarine and freshwater systems;
- Habitat management for terrestrial systems, including public lands management;
- Land acquisition;
- Scientific support and assistance for habitat-related issues to private and public sector landowners, including local, state and federal governments;
- Species management and recovery plan development;
- Nonnative species coordination focused on prevention and control divisions;
- Manatee, Florida black bear, Florida panther and sea turtle population recovery.

The Division of Hunting and Game Management facilitates safe and responsible use of game wildlife resources for the long-term benefit of Florida's hunters and other resource users. The Division provides scientific expertise on game wildlife species such as alligators, deer, small game, waterfowl and wild turkeys. It also develops sound management recommendations based upon scientific information.

With a cadre of volunteer instructors, the Division provides hunter safety training and certification, including instruction in safe and lawful use of firearms, principles of wildlife conservation and outdoor ethics. In addition, it constructs and maintains public shooting ranges, coordinates development and management of public shooting ranges, coordinates development of partnerships, and develops rules, regulations and publications pertaining to wildlife management areas, wildlife and environmental areas and other public hunting areas throughout the state.

Through these activities the Division strives to accomplish a high level of satisfaction among those who use and depend on healthy game wildlife resources.

The Division of Law Enforcement represents about half of the agency's personnel, with 902 employees, 722 of whom are sworn officers. The division emphasizes compliance with

- fishing and hunting regulations,
- state and federal laws that protect threatened and endangered species,
- laws dealing with commercial trade of wildlife and wildlife products, and
- boating safety laws and regulations.

The division is a partner with other state law enforcement agencies in Florida's Mutual Aid Plan, administered by the Department of Community Affairs. Officers perform search and rescue, as well as provide information and law enforcement service and assistance to citizens and visitors alike.

The Division of Marine Fisheries Management develops regulatory and management recommendations for consideration by FWC Commissioners designed to ensure the long-term conservation of Florida's valuable marine fisheries resources. The director of the division serves as a liaison to a number of federal agencies on marine issues and is the state's representative on the Gulf of Mexico Fishery Management Council and South Atlantic Fishery Management Council.

Division activities include recreational and commercial marine fisheries outreach and education programs, facilitating artificial reef development and deployment, preparation of fishery strategic plans, issuance of special activities licenses, conducting wholesale fish dealer audits and assisting trap-retrieval efforts. The division has 26 employees.

The FWC established the Office of Policy and Stakeholder Coordination in 2004 in response to a survey that told us people interested in Florida's fish and wildlife resources saw conservation as a top priority for the FWC to address. The Office of Policy and Stakeholder Coordination serves to coordinate how the agency's divisions, offices and Fish and Wildlife Research Institute interact with other agencies that regulate actions that can affect fish and wildlife resources; interact with stakeholder groups on issues that affect fish and wildlife resources; and establish and enhance partnerships that promote conservation of fish and wildlife resources. To this end, it also coordinates development of agency policies, positions and guidelines on resource-conservation issues; and it assists the divisions and regional directors in FWC rulemaking.

South Florida Water Management District

The South Florida Water Management District (SFWMD) is a regional agency of the state of Florida, and is charged with managing and protecting water resources of the region by balancing and improving water quality, flood control, natural systems and water supply. SFWMD's boundaries extend from central Florida to Lake Okeechobee, and from coast to coast, from Fort Myers to Fort Pierce, south through the sprawling Everglades to the Florida Keys and Florida Bay.

The SFWMD spans 16 counties with a total population of more than six million residents. This geographic region covers 17,930 square miles and includes vast areas of agricultural lands, water conservation areas, and areas of enormous urban growth and development.

The SFWMD includes all or part* of the following 16 counties: Broward, Charlotte*, Collier, Dade, Glades, Hendry, Highlands*, Lee, Martin, Monroe, Okeechobee*, Orange*, Osceola*, Palm Beach, Polk* and St. Lucie.

The headquarters is in West Palm Beach, at 3301 Gun Club Road. Other offices and facilities, including Service Centers, the Big Cypress Basin and Field Stations, are located throughout the 16-county region.

The "seeds" for the creation of the SFWMD were planted in the late 1940s, by flood and drought. Today, the agency's responsibilities include regional flood control, water supply and water quality protection as well as ecosystem restoration.

The region's subtropical extremes of hurricane, flood and drought – combined with efforts to safely populate this "new frontier" – led the U.S. Congress to adopt legislation creating the Central and Southern Florida Flood Control Project (C&SF) in 1948.

In 1949, the Florida Legislature created the Central and Southern Florida Flood Control District, the predecessor to the South Florida Water Management District (SFWMD), to manage the huge project being designed and built by the U.S. Army Corps of Engineers. In 1972, with the Florida Water Resources Act (Chapter 373), the state created five water

management districts, with expanded responsibilities for regional water resource management and environmental protection. In 1976, voters approved a constitutional amendment giving the districts the authority to levy property taxes to help fund these activities.

All five of the state's water management districts' boundaries are determined by watersheds and other natural, hydrologic and geographic features.

Today, the South Florida Water Management District operates and maintains approximately 1,800 miles of canals and levees, 25 major pumping stations and about 200 larger and 2,000 smaller water control structures.

The SFWMD provides flood control protection and water supply protection and is working to restore and manage ecosystems from the Kissimmee River to the Everglades and Florida Bay.

In addition, the SFWMD also has a number of operations facilities to help field staff to effectively maintain and monitor the pumping stations and water control structures, levees and canals, as well as the construction and land management activities required to keep this vast system working smoothly.

Much of the work being done by the SFWMD depends on a variety of partners: including other local, state and federal governments as well as educational, community and professional groups.

The South Florida Water Management District (SFWMD) protects the supply and the quality of water resources by regulating the management and storage of surface waters and the dredging or filling of wetlands with Environmental Resource Permits.

We also regulate ground and surface water withdrawals ("water use" or "consumptive use") by major users such as water utilities, agriculture and nurseries, golf courses, mining and other industrial users. The District also issues water well construction permits and license information.

Right of Way (ROW) permits are issued to protect the SFWMD's ability to effectively and safely use the canal and levee rights of way of the Central and Southern Florida Flood Control Project, the related water conservation areas, the works of the Big Cypress Basin, and certain other canals and rights of way - while providing for compatible public and private uses. For temporary access to SFWMD rights of way, local governments, contractors and others can request key permit access.

The District also issues Surface Water Improvement and Management (SWIM) "Works of the District" permits to property owners working to reduce nutrient/pollution flows into areas such as Lake Okeechobee and the Everglades.

The SWFWMD has instituted a program of ePermitting. It is an on-line alternative to permit application submission, queries and reporting. The functionality provided includes

online Electronic Submittals, Application/Permit Search, Noticing Search, Subscriptions, Agency Comments and Additional Information. First time users must register to get an account. A Getting Started help document has been provided to assist applicants through the ePermitting process.

Every submittal applicant must register as a user in order to use the online ePermitting system. During the submittal application process, the submittals may be routed to any relevant parties or individuals by the submittal originator; however, these 'routees' must be registered as users as well. System users must not be registered to use the following section and features:

Once the application has been fully submitted and the fee payment has been processed, the application will

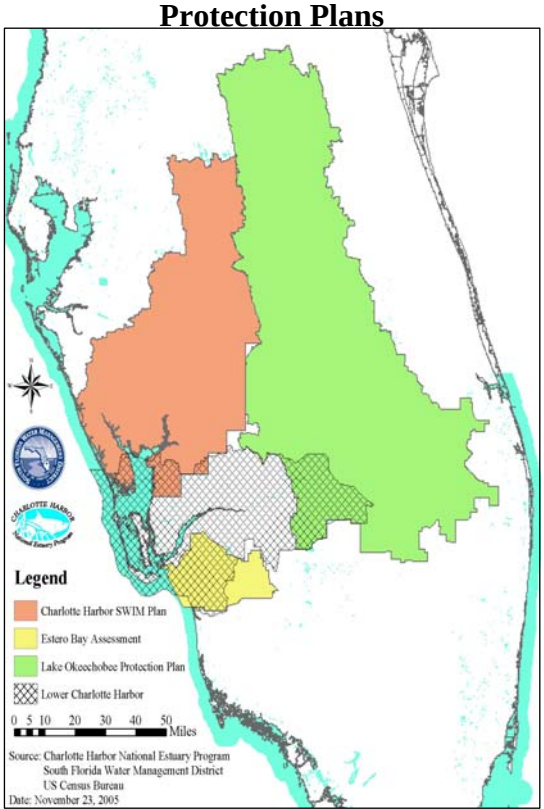
go through the SFWMD review process. The applicant receives a confirmation email stating that the

application as been submitted for the review process.

South Florida Water Management District Plans and Programs

Because of the flat topography of the southern peninsula of Florida, basin boundaries are not pronounced. South Florida geomorphology, water management district boundaries, and some dredging projects that have connected water bodies, result in the need for overlapping watershed-based planning and protection. There are three protection plans which overlap the Lower Charlotte Harbor area yet extend beyond its boundaries. These include the Lake Okeechobee Protection Plan (LOPP), the Charlotte Harbor SWIM Plan, and the Estero Bay and Watershed Assessment. In addition, the District maintains overlapping water supply plans and prepared a South Lee County Watershed Plan that also overlap with the LCH study area. These plans are described below.

Figure 44: Overlapping SWIM Protection Plans



Charlotte Harbor SWIM Plan

Charlotte Harbor within the SWFWMD service area was designated a SWIM waterbody in 1990. With the establishment of the Charlotte Harbor National Estuary Program in 1996, the waterbody boundaries were expanded in 2000 to include Lemon Bay and coastal Venice watersheds. The plan includes priority projects, some of which are in the Lower Charlotte Harbor SWIM boundaries. These include water quality monitoring, Alligator Creek Restoration, development of a Pollutant Load Reduction Goal (PLRG) for Charlotte Harbor Proper, continued seagrass mapping, and Charlotte Harbor educational efforts. The

SWIM Plan can be found at: http://www.swfwmd.state.fl.us/documents/.

Estero Bay and Watershed Assessment

The flooding events of 1995 showed that as water levels rise, the direction of water flow changed and the Estero Bay basin is enlarged to include Lake Trafford and environs. This finding as well as other pressures within the Estero Bay basin prompted the SFWMD to prepare the Estero Bay and Watershed Assessment. This assessment was prepared within the same timeframe as the South Lee County Watershed Plan; both were completed in 1999. This assessment was designed to establish a foundation for future management strategies and a framework for the future identification and evaluation of management options. The assessment, completed in 1991, is comprised of six reports presented in separate volumes, which together comprise the completed findings of the study. The Estero Bay and Watershed Assessment can be found at: http://www.sfwmd.gov/org/exo/ftmyers/report-text/

The Assessment has been used to inform such projects as the Estero Bay Management and Improvement Plan and the Estero Bay Nutrient Management Partnership (EBNMP). It also provides background information for the Estero Bay Agency on Bay Management.

It is important to note that the watershed for Estero Bay in this assessment extends farther east than that in the Lower Charlotte Harbor study area. The FDEP watershed definitions were used for the study. However, after the 1995 flooding events, SFWMD discovered that the watershed boundary changes depended on amount of rain and water. The assessment uses the maximum area the watershed constitutes.

Lower West Coast, Lower East Coast, and Caloosahatchee Water Supply Plans

The SFWMD has published a series of document to address agricultural and urban water supplies. The 2000 Lower West Coast Water Supply Plan (LWCWSP) covers the entire EB as part of the LCH area plus the Big Cypress Basin. The 2000 Caloosahatchee Water Supply Plan (CWSP) and the Caloosahatchee Water Management Plan (CWMP) provides more detailed analysis for the Caloosahatchee watershed.

The Lower West Coast Water Supply Plan (LWC Plan) is one of four long-term, comprehensive regional water supply plans that has been developed by the District. The 2005-2006 LWC Water Supply Plan, documents existing demands, and projects future water demands through 2025 for agricultural and urban water sectors; identifies resource issues including constraints on development of new traditional fresh water sources, and the effects of urbanization on coastal resources; identifies and discusses water resource development and water supply projects tat will meet future human and environmental needs; focuses on Alternative Water Supply (AWS) Projects such as brackish water desalination, harvest of seasonally available surface water and expanded use of reclaimed water to meet increased future demands and describes funding opportunities available through the District to foster AWS development; describes the legislative, planning, and regulatory framework around which future water use and development decisions in the region will take place; identifies areas where collection of resource data and technical studies are necessary; and, established an implementation timeframe for LWC Plan recommendations and requirements.

A complete update of the Lower West Coast Plan is required every five years. The District will consider more frequent updates of portions of the plan, including updating water supply project lists, population projections, etc., as circumstances require.

The 2005-2006 Lower West Coast Plan includes a single volume Planning Document and nine appendices. These documents provide a common set of data such as present and future water demands, assumptions, and potential water source options. The Lower West Coast Plan will be used by local governments, water users, and utilities to modify and update their local comprehensive plans, ordinances, and individual or utility plans. Previous Water Supply Plans for the region were completed in February 1994 (planning horizon 2010), and April 2000 (planning horizon 2020).

The SFWMD maintains four Water Supply Plans for its jurisdiction, which can be reviewed at : http://www.sfwmd.gov/org/wsd/wsp/. Two Water Supply Plans affect the Lower Charlotte Harbor area: The Lower West Coast Water Supply Plan (LWCWSP) and the Lower East Coast Water Supply Plan. Although the LWCWSP covers the entire study area, the Lower East Coast Water Supply Plan (LECWSP) includes some areas of the freshwater Caloosahatchee. This area of overlap, and its associated complexities necessitated the development of the CWMP, found at: http://www.sfwmd.gov/org/exo/cwmp/index.html. The CWMP was adopted April 2000 and will be included as a component of both of the lower coast water supply plan updates, as well as the SWFFS. Three documents comprise the 2000 LWCWSP: Planning Document (Volume I), Support Document (Volume II), and Appendices (Volume III). These documents provide a common set of data such as present and future water demands, assumptions, and potential water source options. The LWCWSP will be used by local governments, water users, and utilities to modify and update their local comprehensive plans, ordinances, and individual or utility plans.

The LWCWSP states the projected 2020 water demands in the LWC Planning Area can be met during a 1-in-10 year drought condition while not causing harm to the water resources and natural systems, but not relying solely on historically used sources of water. In the western portions of the LWC Planning Area, several sources, primarily the Surficial Aquifer System (SAS) and the Intermediate Aquifer System (IAS), in the urban coastal areas are not adequate to meet the growing needs of the LWC Planning Area during a 1-in-10 year drought condition due to potential impacts on wetlands and the potential for saltwater intrusion. The plan points to diversifying supply sources such as developing brackish supplies from the Floridan aquifer, increased use of reclaimed water and surface water, and Aquifer Storage and Recovery (ASR) as alternatives. "The use of reclaimed water and supplemental sources was emphasized to meet the projected irrigation demands in the urban areas, especially along the coast. Additional work is necessary to identify the most effective method to make these sources available for use at the local level, including storage." A distribution system was discussed in the 2000 LWCWSP and is now being implemented.

South Lee County Watershed Plan

The South Lee County Watershed Plan, completed in 1999, was developed as a response to serious flooding that occurred in the region in 1995. The plan identified the

improvements that could be implemented to mitigate flooding while improving water quality and included an analysis of improvements to re-establish historic flows. Flow-way restoration and enhancement projects were completed, initiated or funded during the development of the plan. Projects such as Bonita Bay's The Brooks, reconstruction of the Kehl Canal weir on the Imperial River, clean and snag removals from the Imperial and Estero Rivers have resulted from the plan. A summary of the plan can be found at: http://www.sfwmd.gov/org/exo/ftmyers/proj/slee.html.

Federal

There are many coordinated restoration planning processes and projects in the Lower Charlotte Harbor area that are a targeted area within a unit of government or are partnership program involving one or more units of government. Summaries of these are provided in this section with the major categories of Programs with Federal Involvement, State Initiated Programs, and Local Efforts.

Programs with Federal Involvement include the Comprehensive Everglades Restoration Plan, the Southwest Florida Feasibility Study, the Southwest Florida Regional Restoration Team, the Charlotte Harbor National Estuary Program, the South Florida Multi-Species Recovery Plan, and the Southwest Florida Environmental Impact Statement.

Comprehensive Everglades Restoration Plan

The Comprehensive Everglades Restoration Plan (CERP) is a framework and guide to restore, protect, and preserve the water resources of central and southern Florida. It includes the everglades and centers on the update of the Central and Southern Florida (C&SF) Project. The goals of the plan are to restore the ecosystem, ensure clean and reliable water supplies, and provide flood protection. The organizational structure for Everglades Restoration is complex, however, the South Florida Ecosystem Restoration Task Force (www.sfrestore.org) facilitates coordination of the program while the U.S. Corps of Engineers (COE) and SFWMD implement the program.

The Task Force has adopted 3 strategic goals:

1. Get the water right (both quantity and quality)
2. Restore, preserve, and protect natural habitats and species
3. Foster compatibility of the built and natural systems.[2]

Each goal is supported by sub-goals and measurable objectives. More information may be found in the biennial report of the Task Force to Congress at: http://www.sfrestore.org/documents/index.html.

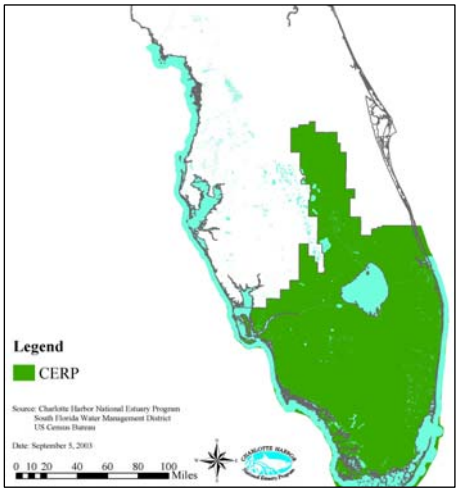


Figure 45: Comprehensive Everglades Restoration Plan

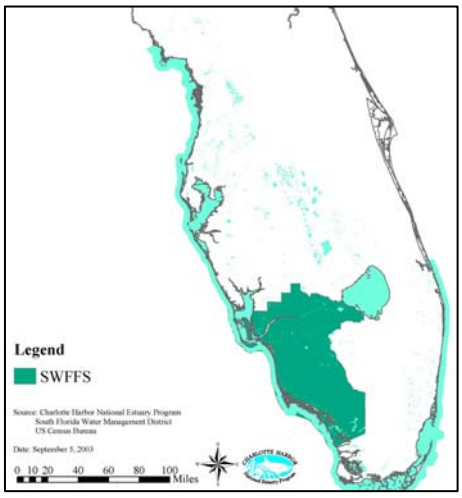
CERP was approved by Congress in the Water Resources Development Act of 2000 (WRDA 2000). CERP includes more than 60 elements, will take more than 30 years to construct, and will cost an estimated $7.8 billion (revised to $10.2 billion). Major CERP components are:

1) Surface Water Storage Reservoirs
2) Water Preserve Areas
3) Resource Management of Lake Okeechobee
4) Improved Water Deliveries to the Estuaries
5) Underground Water Storage
6) Treatment Wetlands
7) Improved Water Deliveries to the Everglades
8) Removal of Barriers to Sheetflow
9) Storage of Water in Existing Quarries
10) Reuse of Wastewater
11) Pilot Projects
12) Improved Water Conservation
13) Additional Feasibility Studies

Website information can be found at http://www.evergladesplan.org/. New and summary information regarding Everglades Restoration projects can be found at the South Regional Project Delivery Team site at: http://www.evergladesplan.org/pm/rpdts_docs_south.cfm.

Southwest Florida Feasibility Study

Figure 46:Southwest Florida Feasibility Study



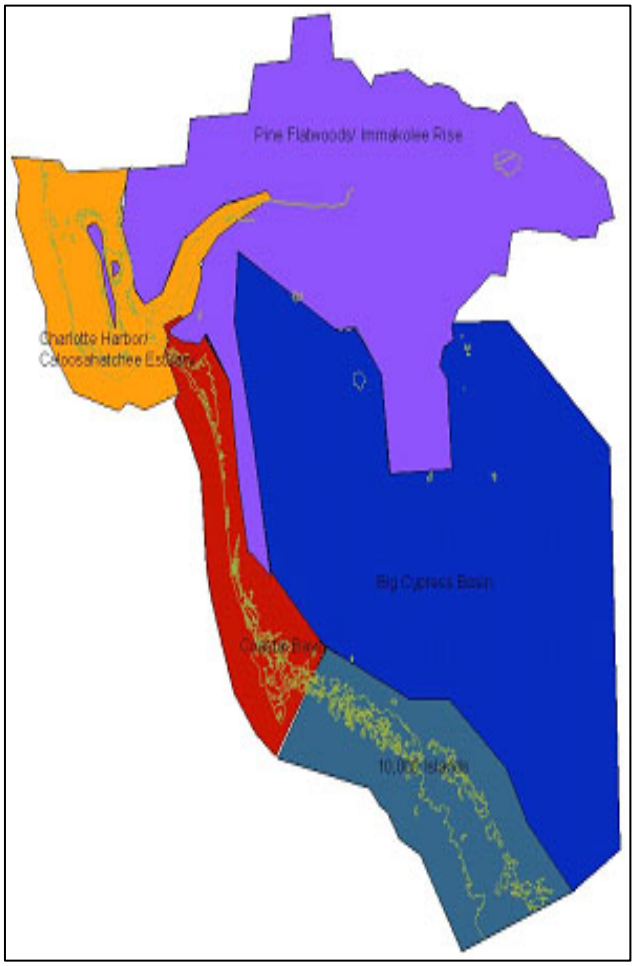
The SWFFS is one of a series of feasibility studies recommended in CERP and was funded through WRDA 2000. "The end-product of the SWFFS will be an integrated Feasibility Report and *National Environmental Policy Act (NEPA)* document that will serve as the basis for obtaining Congressional authorization of the plan components determined to be feasible and cost-effective (SFWMD and COE, 2002)." Alternative measures to be considered include surface water storage, improve water delivery to estuaries, aquifer storage and recovery, stormwater treatment areas, reestablish sheetflow, reuse wastewater, water conservation, and land acquisition. The SWFFS includes several conceptual ecological models that will drive restoration planning in the area. Website information can be found at:http://www.evergladesplan.org/pm/studies/swfl.cfm.

The conditions that have led to the need for restoration or protection in the Estero Bay Watershed have been documented through the development of the SWFFS and by

FDEP's Impaired Waters Rule (IWR; see following "Impaired Waters" section). The three Conceptual Ecological Models (CEMs) developed through the SWFFS that summarize these conditions for the Estero Bay Watershed includes the Pine Flatwoods /Immokalee Rise CEM, the Coastal Bays and Barrier Islands CEM., and the Big Cypress Basin CEM. The major stressors in the Estero Bay Watershed include:

- Altered hydrology and freshwater flow,
- Changes in water quality and increased sediment and water column contaminants,
- Habitat alteration, loss, and fragmentation,
- Exotic plant and animal invasion,
- Boating and fishing pressure,
- Human Use, and
- Altered Fire Regime.

Figure 46: Conceptual Ecological Models (CEMs) Map



The CEMs for the SWFFS will be posted at www.evergladesplan.org.

Figure 47: Pine Flatwoods/Immokalee Rise Conceptual Ecological Model

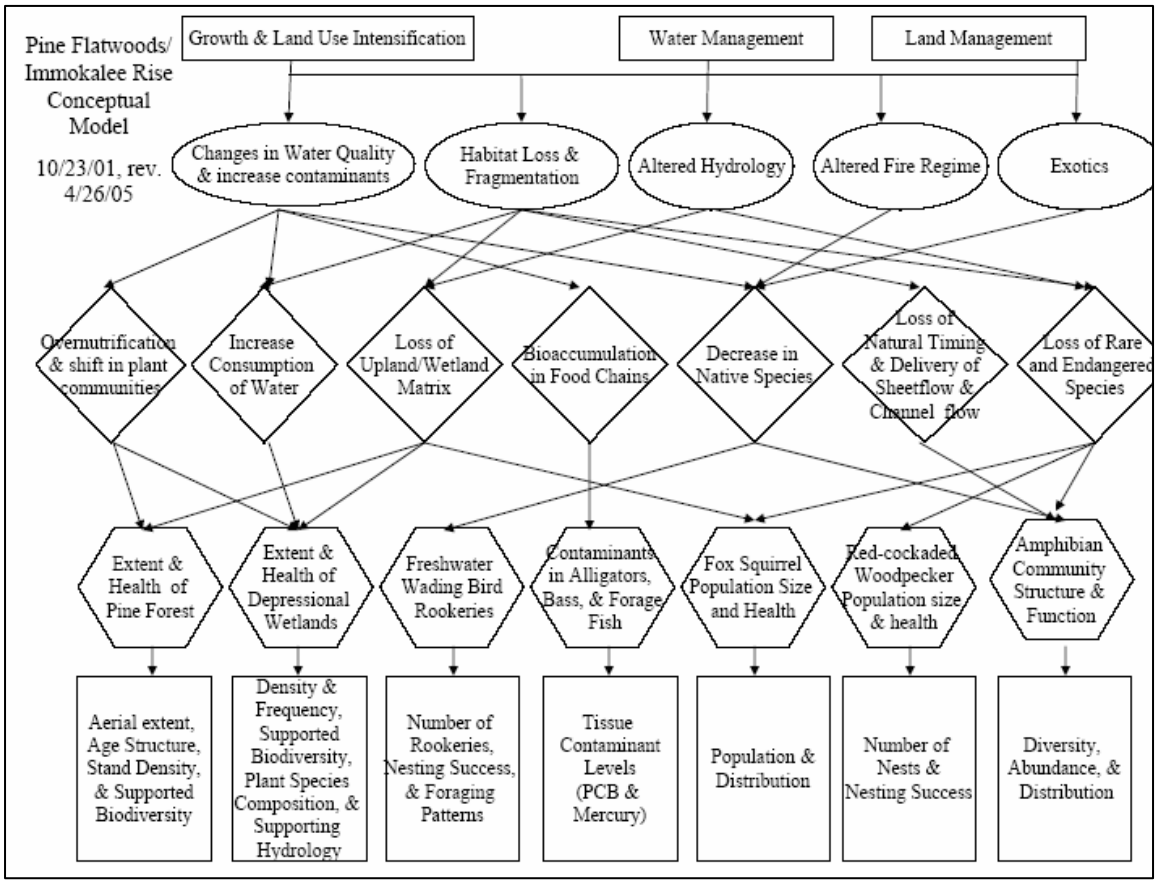


Figure 48: Coastal Bays and Barrier Islands Conceptual Ecological Model

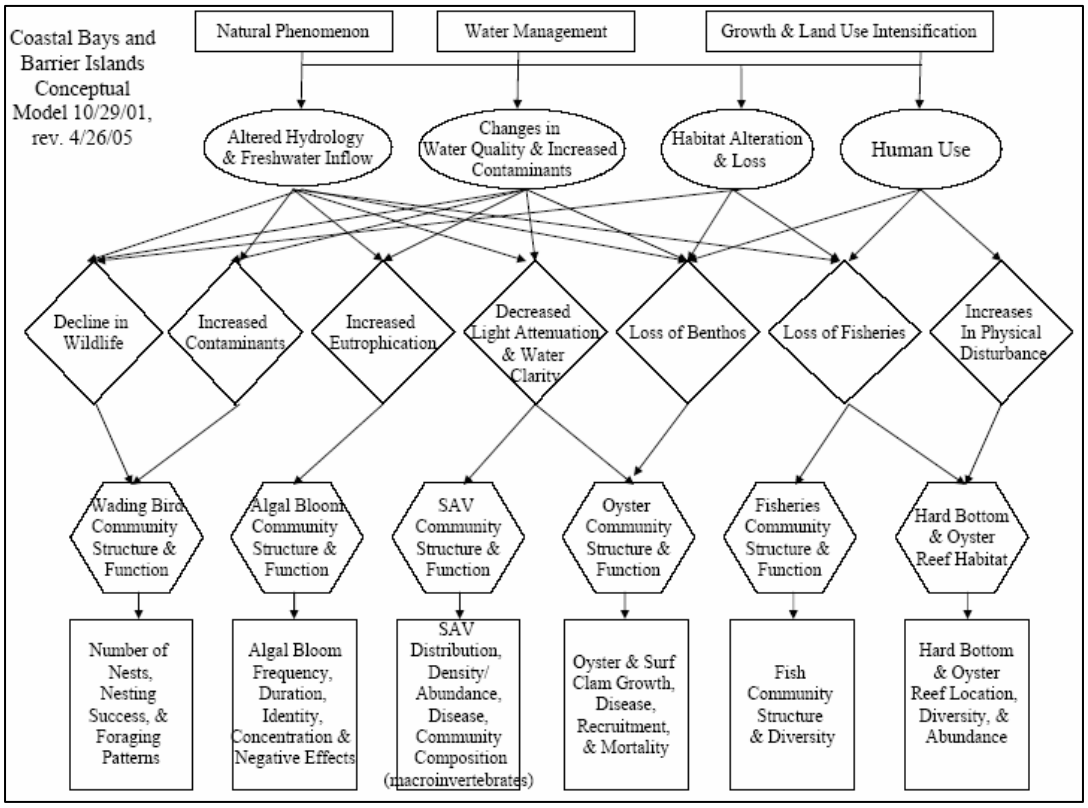
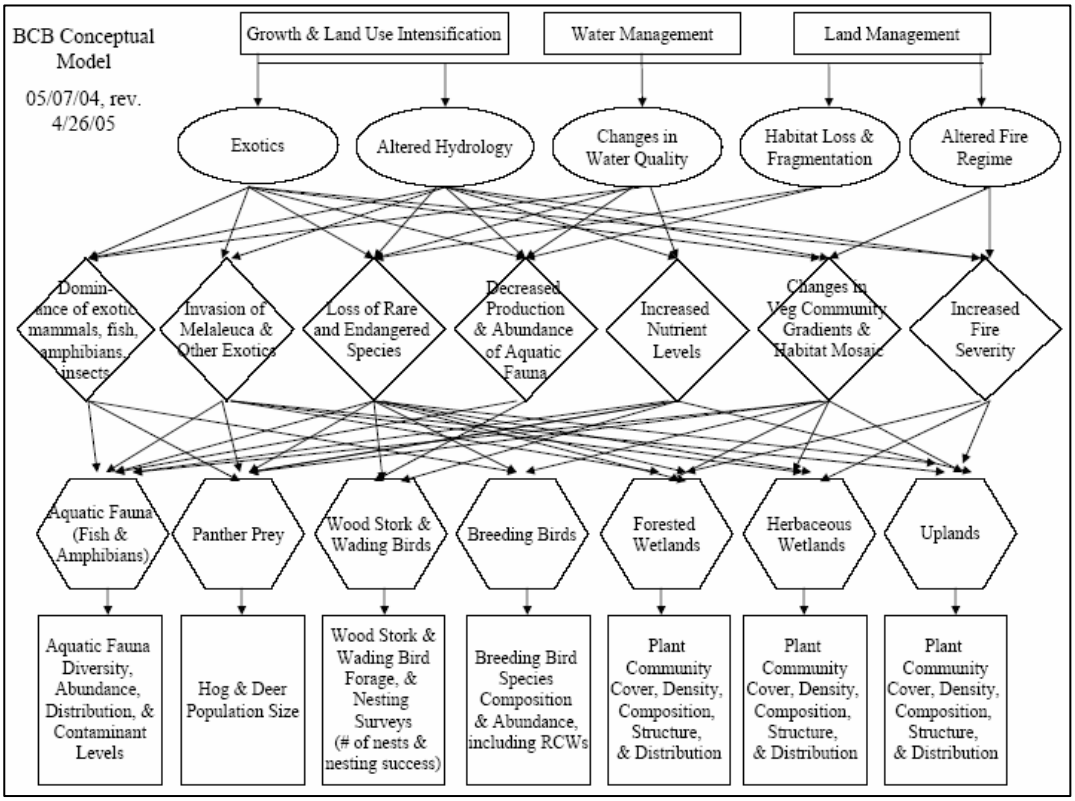


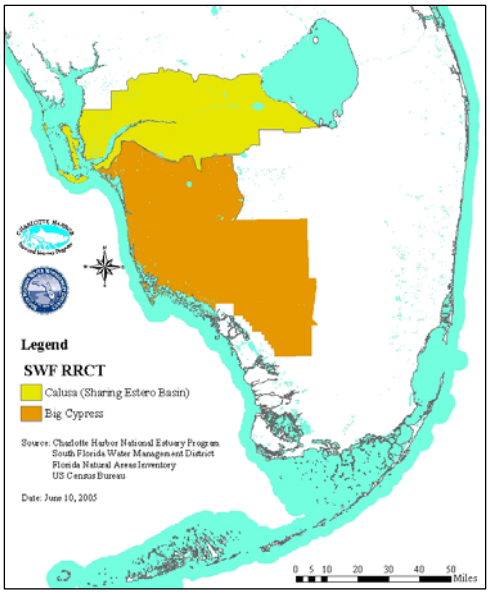
Figure 49: Big Cypress Basin Conceptual Ecological Model



Southwest Florida Restoration Coordination Team

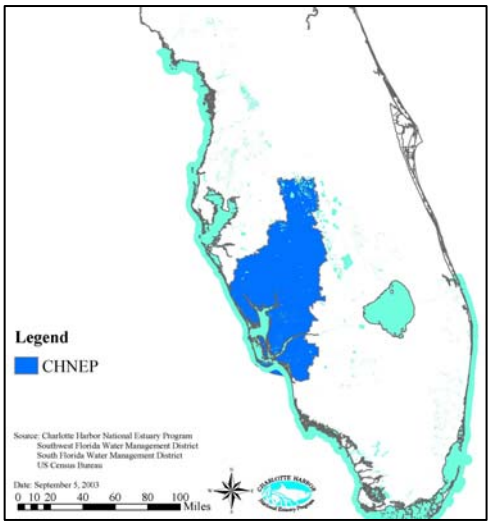
The Southwest Florida Restoration Coordination Team (SWFRRCT) was created by the Everglades Restoration Working Group in 2002 to receive recommendations regarding restoration and restoration science in southwest Florida. It inherited and expanded the responsibilities of the Big Cypress Basin Project Coordination Team.

Figure 50: Southwest Florida Restoration Coordination Team Boundary



The duties of the SWFRRCT have expanded to include the rest of the Lower Charlotte Harbor study area. In addition, two geographic subteams have been created to support the RRCT's efforts: the Calusa Restoration Coordination Team (CRCT) and the Big Cypress Restoration Coordination Team (BC RCT). The CRCT represents Charlotte Harbor, Caloosahatchee, and Estero watershed basins in Southwest Florida within the Greater Everglades. The CRCT is tasked with the integration, coordination, and evaluation of the region's environmental restoration activities and to make recommendations to the SWFRRCT. Its principal activities include the identification and prioritization of restoration science gaps and restoration projects. The CRCT is composed of representatives from environmental agencies, academic institutions, not-for-profit environmental groups, and other environmental consortia. As defined in the by-laws, all members of the CRCT and its sister group, the BC RCT, are members of the SWFRRCT. The SWFRRCT functions with a representational structure. Website information can be found at: http://www.swfrpc.org/RCT/about.htm and http://ocean.floridamarine.org/bcb/.

Charlotte Harbor National Estuary Program



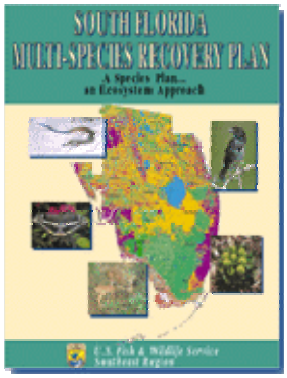
The Charlotte Harbor National Estuary Program (CHNEP) was established in 1995 pursuant to section 320 of the Clean Water Act. It is one of 28 NEPs in the U.S. and one of four in Florida. NEPs are organized and funded though the Environmental Protection Agency (EPA). Information on the NEP nation-wide can be found at: http://www.epa.gov/owow/estuaries/. EPA's National Estuary Program was established by Congress in 1987 to improve the quality of estuaries of national importance. The Clean Water Act Section 320 directs EPA to develop plans for attaining or maintaining water quality in an estuary. This includes protection of public water supplies and the protection and propagation of a balanced, indigenous population of shellfish, fish, and wildlife, and allows recreational activities, in and on water, requires that control of point and nonpoint sources of pollution to supplement existing controls of pollution.

Figure 51:Charlotte Harbor National Estuary Program Boundary

All basins, with the exception of the Freshwater Caloosahatchee, are within the CHNEP area. The entire 4,400 square-mile CHNEP area encompasses all or part of Lee, Charlotte, Polk, Manatee, Sarasota, Hardee, and DeSoto counties. Invited participants of the NEP management conference include Federal, state, and local governments and agencies as well as citizens and organizations within the study area. The CHNEP

maintains a Comprehensive Conservation and Management Plan (CCMP) which is implemented through the partnership of member organizations. It details the actions needed to protect and improve the watershed by finding the balance between meeting human needs and maintaining a healthy natural system. The plan identifies common, priority issues for the region. The priority issues are hydrologic alterations, water quality degradation, fish and wildlife habitat loss, along with land use and land use management impacts. The plan outlines the goals and objectives for the CHNEP study area and identifies the priority actions that are needed to meet those goals and objectives as well as the parties responsible for completing them. The CHNEP prepares Research Needs Inventories and Restoration Needs through a geographic information system. The CCMP and other publications of the CHNEP can be found at www.charlotteharbornep.org.

South Florida Multi-Species Recovery Plan



The South Florida Multi-Species Recovery Plan (MSRP) was published by the U.S. Fish and Wildlife Service, Southwest Region, in May 1999. The Multi-Species Recovery Plan was prepared to help fulfill major objectives of the South Florida Ecosystem Restoration Initiative and to support the recovery of species identified in the plan. The plan includes recovery objectives for the 68 species. In addition, actions needed for each of the 68 species are identified. These actions include: species-level recovery actions and habitat-level recovery actions. A total estimated cost of the recovery in 1999 was $7.8 billion. The plan can be found at: *http://www.fws.gov/verobeach/Programs/Recovery/vbms5.html*.

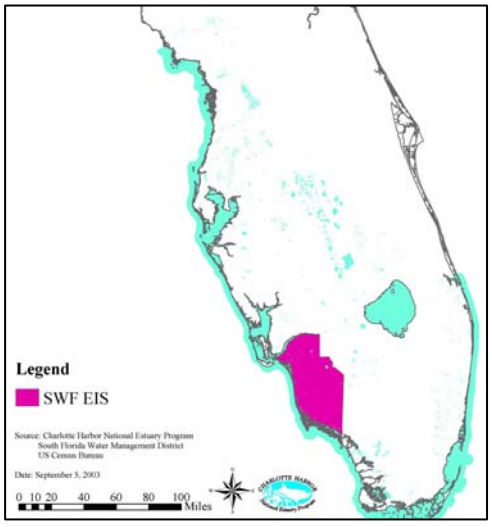
Figure 52: South Florida Multi-Species Recovery Plan Cover

Southwest Florida Environmental Impact Statement

The Southwest Florida Environmental Impact Statement (EIS) was prepared "to improve the U.S.

Army Corps of Engineers' reviews of permit applications under Section 404 of the Clean Water Act." The final "Environmental Impact Statement on Improving the Regulatory Process in Southwest Florida, Lee and Collier Counties, Florida" was issued on August 1, 2000. The purpose of the EIS is to introduce better information into this process, not to change the process itself. In addition, the EIS disclosed potential cumulative impacts and compared the cumulative environmental and other effects resulting from five alternative predictions of future conditions. Finally, the EIS described proposed "Permit Review Criteria" for use in staff's day-to-day review of incoming applications. The record of decision, released August 18, 2003, described revisions to and implementation of the "Permit Review Criteria". The documentation related to the EIS can be found at: http://www.saj.usace.army.mil/permit/hot_topics/SFLAEIS/contents.htm.

Figure 53: Southwest Florida Environmental Impact Statement Boundary



U.S Department of Commerce- National Oceanographic and Atmospheric Administration

The Office of Ocean and Coastal Resource Management (OCRM), part of the National Oceanic and Atmospheric Administration (NOAA), provides national leadership, strategic direction, and guidance to state and territory coastal programs and estuarine research reserves. The Office further works with state and territory coastal resource managers to develop a scientifically-based, comprehensive national system of marine protected areas (MPAs) and supports effective management and sound science to protect, sustain and restore coral reef ecosystems. These activities are mandated by the Coastal Zone Management Act, the MPA Executive Order, and the Coral Reef Conservation Act. The Office is comprised of five divisions: Coastal Programs, Estuarine Reserves, National Policy and Evaluation, MPA Center, and the Coral Program.

The National Coastal Zone Management (CZM) Program is a voluntary partnership between the federal government and U.S. coastal states and territories authorized by the Coastal Zone Management Act of 1972. The Coastal Programs Division, within the National Oceanic and Atmospheric Administration's Office of Ocean and Coastal Resource Management, administers the program at the federal level and works with state coastal zone management partners to:

- Preserve, protect, develop, and, where possible, restore and enhance the resources of the nation's coastal zone for this and succeeding generations;
- Encourage and assist the states to exercise effectively their responsibilities in the coastal zone to achieve wise use of land and water resources, giving full consideration to ecological, cultural, historic, and aesthetic values, as well as the need for compatible economic development;
- Encourage the preparation of special area management plans to provide increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas and improved predictability in governmental decision-making; and
- Encourage the participation, cooperation, and coordination of the public, federal, state, local, interstate and regional agencies, and governments affecting the coastal zone.

The Coastal Programs Division is also responsible for advancing national coastal management objectives and maintaining and strengthening state and territorial coastal management capabilities. It supports states through financial assistance, mediation, technical services, and participation in priority state, regional, and local forums.

Thirty-four coastal and Great Lakes states, territories and commonwealths have approved coastal management programs. Together, these programs protect more than 99 percent of the nation's 95,331 miles of ocean and Great Lakes coastline.

To comprehensively manage our coastal resources and balance often competing land and water uses while protecting sensitive resources, state coastal zone management programs are expected to:

- Protect natural resources;
- Manage development in high hazard areas;
- Manage development to achieve quality coastal waters;
- Give development priority to coastal-dependent uses;
- Have orderly processes for the siting of major facilities;
- Locate new commercial and industrial development in, or adjacent to, existing developed areas;
- Provide public access for recreation;
- Redevelop urban waterfronts and ports, and preserve and restore historic, cultural, and aesthetic coastal features;
- Simplify and expedite governmental decision-making actions;
- Coordinate state and federal actions;
- Give adequate consideration to the views of federal agencies;
- Assure that the public and local governments have a say in coastal decision-making; and
- Comprehensively plan for and manage living marine resources.

A unique aspect of coastal zone management is "Federal Consistency" which ensures that federal actions that are reasonably likely to affect any land or water use or natural resource of the coastal zone will be consistent with the enforceable policies of a coastal state's or territory's federally approved Coastal Zone Management Program.

The Coastal Zone Management Act (CZMA) was enacted on October 27, 1972, to encourage coastal states, Great Lake States, and United States territories and commonwealths (collectively referred to as coastal states) to develop comprehensive programs to manage and balance competing uses of and impacts to coastal resources. The CZMA emphasizes the primacy of state decision-making regarding the coastal zone. Section 307 of the CZMA (16 USC § 1456), called the federal consistency provision, is a major incentive for states to join the national coastal management program and is a powerful tool that states use to manage coastal uses and resources and to facilitate cooperation and coordination with federal agencies.

Federal consistency is the CZMA requirement where federal agency activities that have reasonably foreseeable effects on any land or water use or natural resource of the coastal zone (also referred to as coastal uses or resources and coastal effects) must be consistent to the maximum extent practicable with the enforceable policies of a coastal state's federally approved coastal management program. (Federal agency activities are activities and development projects performed by a federal agency, or a contractor for the benefit of a federal agency.)

Federal license or permit activities and federal financial assistance activities that have reasonably foreseeable coastal effects must be fully consistent with the enforceable policies of state coastal management programs. (Federal license or permit activities are activities proposed by a non-federal applicant requiring federal authorization, and federal financial assistance activities are proposed by state agencies or local governments applying for federal funds for activities with coastal effects.)

A lead state agency performs federal consistency reviews (usually the same agency that implements or coordinates the state's federally approved coastal management program). At the federal level, the Office of Ocean and Coastal Resource Management (OCRM), within the National Oceanic and Atmospheric Administration's (NOAA's) National Ocean Service (NOS), among other duties and services, interprets the CZMA and oversees the application of federal consistency; provides management and legal assistance to coastal states, federal agencies, tribes and others; and mediates CZMA related disputes. NOAA's Office of the Assistant General Counsel for Ocean Services assists OCRM and processes federal consistency appeals to the Secretary of Commerce.

For more detailed information, please see the document "Federal Consistency Requirements" and NOAA's federal consistency regulations. Both of these documents are found at the Federal Consistency Resources page.

In 1990, Congress created a new program under the Coastal Zone Management Act, called the Coastal Zone Enhancement Program. The program provides incentives for states and territories to make changes in any of eight areas of national significance.

Dramatic population growth along the coast brings new challenges to managing national coastal resources. Challenges include: protecting life and property from coastal hazards; protecting coastal wetlands and habitats while accommodating needed economic growth; and settling conflicts between competing needs such as dredged material disposal, commercial development, recreational use, national defense, and port development.

In 1990, to meet mounting public concern for the well-being of the nation's coastal resources, Congress created a new program under Section 309 of the Coastal Zone Management Act, known as the Coastal Zone Enhancement Program. The program is designed to encourage states and territories to develop program changes in one or more of the following nine coastal zone enhancement areas of national significance: wetlands, coastal hazards, public access, marine debris, cumulative and secondary impacts, special

area management plans, ocean/Great Lakes resources, energy and government facility citing, and aquaculture.

To help states target Section 309 Coastal Enhancement Program funds to identified program needs, every five years, coastal states and territories conduct an assessment of their coastal management activities within the nine enhancement areas. Through this self-assessment process, state coastal programs identify high-priority enhancement areas. In consultation with NOAA's Office of Ocean and Coastal Resource Management (OCRM), state coastal programs then develop five-year strategies to achieve changes (enhancements) to their coastal management programs within these high-priority areas. Program changes often include developing a new or revising an existing law, regulation or administrative guideline, developing or revising a special area management plan (SAMP), or creating a new program such as a coastal land acquisition or restoration program.

Unlike the other issue sections, a special area management plan is a management tool for programs to address difficult resource management issues, or land/water use conflicts in a more integrated manner through the application of comprehensive land and water use planning and management.

"Special Area Management Plans" (SAMPs) are broadly defined in the Coastal Zone Management Act (CZMA) as "plans which provide for increased specificity in protecting significant natural resources, reasonable coastal-dependent economic growth, improved protection of life and property in hazardous areas, including those areas likely to be affected by land subsidence, sea level rise, or fluctuating water levels of the Great Lakes, and improved predictability in governmental decision making." The CZMA encourages states to prepare these types of plans.

SAMPs are resource management plans and implementation programs developed to improve the management of a discreet geographic area. SAMPs are employed most often to supplement existing management programs, in specific areas where the broad program policies are not working well, or where there is a need to better align coastal policy or to address complex multi-jurisdictional coastal issues.

A number of states have developed SAMPs or similar regional plans. What the plans share in common is their uniqueness—SAMPs can address a range of geographic areas, tackle a variety of issues, advance a number of differing objectives, and enlist an assortment of levels of governments and interest groups to develop and implement the plans. As a management tool, SAMPs have been used with varying degrees of success nation-wide.

Special Area Management Plans (SAMPs) can be useful coastal management tool. SAMPs are used to address one or more specific management goals within a specific geographic area. These goals can include: managing wetlands, beaches, dunes and water bottoms; improving public access to coastal waters; reducing properties and people at risk in coastal high hazard areas; improving coastal water quality; promoting waterfront

redevelopment, port expansion or redevelopment; managing dock and pier proliferation; and protecting cultural, historic or aesthetic resources, among others.

The goal of SAMPs in the Coastal Zone Management Act (CZMA) is to increase policy specificity, and improve predictability of government decision making. To do this, SAMPs can be used to advance a number of objectives:

SAMPs can refine or tailor existing policy in situations where more general coastal policies do not adequately address the specific conditions found in a particular area. Thus SAMPs can be considered a potential tool for adaptive management when needed to provide more specificity and predictability for certain areas.

SAMPs may also align policy and integrate planning, so that local, state and/or federal authorities have the same goals and policies. A SAMP can be a useful tool to address coastal issues where considerable policy fragmentation and/or multiple jurisdictions exist.

SAMPs can address areas with a history of long-standing disputes between various levels of authority concerning coastal resources, which have resulted in protracted negotiations over the acceptability of proposed uses. The SAMP planning process can be used to ensure all parties are working with the same data and information, to identify common goals and to work through specific disagreements.

SAMPs can provide a means to better manage the cumulative and/or secondary impacts of individually innocuous uses (e.g., docks and piers) when permitting programs lack the ability to do so. For instance, it may be very difficult for a permit analyst to legally defend modifying or prohibiting a structure based on cumulative impacts due to issues of scientific uncertainty and/or equity issues. Community development plans can in some cases bridge these permitting gaps and provide a means to regulate and manage cumulative and secondary impacts. In some cases SAMPs can be used to jump start comprehensive or collaborative planning in areas where there are few to no existing formal mechanisms to conduct such planning at state, regional, or local levels.

SAMP boundaries can vary widely, depending on the issues and objectives being addressed. Historically, SAMP boundaries have encompassed one or more of the following:

- a waterfront or port area (e.g., New York Local Waterfronts);
- significant resource areas (e.g., the New Jersey Hackensack Meadowlands); portions of, or whole water bodies such as embayments, estuaries, or rivers (e.g., Pleasant Bay, MA);
- watersheds (e.g., Rhode Island Salt Ponds and Narrow River);
- one or more local jurisdictions;
- a coral reef habitat or a marine sanctuary .

Effective SAMPs address a number of issues including: evaluating the need for a SAMP; project leadership; the appropriate scope of the plan; key participants; effective implementation mechanisms; involvement of affected parties including the public; and time and resources.

SAMPs can be time and resource intensive so it is helpful to determine early on if a SAMP is really needed. Criteria for this determination include threats to significant resources or significant use conflicts which cannot be addressed with simple changes to existing authorities. Often multiple policies and authorities are involved; or a history of long standing disputes among jurisdictions.

SAMP effectiveness can be greatly improved with a strong commitment and willingness at all levels of government to enter into a collaborative planning process to produce enforceable plans. A designated leader or lead agency is needed to sponsor, organize and move the planning process forward. The leader or lead agency needs to be seen as an objective and neutral entity. If local communities are involved, identifying a "local champion" for the various localities involved can improve success. Commitments to the planning process from identified "key participants" also greatly enhance the chances for a successful plan. To ensure better success, specific plan goals, benefits of, and desired outcomes should be identified and clearly articulated as early as possible. Key issues and conflicts should be identified and prioritized. Key participants should be identified and included in the planning process.

Plan boundaries should be clearly identified early on and based on the relevant issues and the jurisdictions involved. Designating the smallest geographic area necessary to address the issues or advance the SAMP's objectives is often the most effective.

SAMPs are most effective when they can transcend paper-plans and result in tangible on-the-ground improvements. Often, this means implementing the revised policies through changes to local or state ordinances, regulations, enforceable policies, or other substantive programmatic changes. Also, SAMP implementation is more effective when participants' roles and responsibilities are clearly outlined, often through a Memorandum of Understanding or Agreement.

As with any coastal decision making process, SAMPs must provide for appropriate, timely, meaningful stakeholder and public participation in the development and implementation of the plan. SAMP planning can be resource intensive and the process may take substantially longer than envisioned – especially when aligning or coordinating policy across many jurisdictions or if issues are controversial.

Another important component of coastal zone management programs is the Coastal Nonpoint Pollution Control Program. Authorized by Section 6217 of the Coastal Zone Act Reauthorization Amendments of 1990, this amendment requires states and territories with approved coastal zone management programs to develop and implement programs to control nonpoint source pollution from six main sources: agricultural, forestry, urban

development, marinas, hydromodifications (such as dams or stream channel modifications), and the loss of wetland and riparian areas

The Coastal Nonpoint Pollution Control Program was established by Congress in 1990 to encourage better coordination between state coastal zone managers and water quality experts to reduce polluted runoff in the coastal zone. Poor water quality is not just a result of what we do to the water but what we do on the land as well. Therefore, establishing shared responsibilities for managing coastal water quality between state coastal zone management agencies, which make land use decisions, and water quality agencies, who deal directly with the quality of our coastal waters, is needed.

The Coastal Nonpoint Pollution Control Program, which falls under Section 6217 of the Coastal Zone Act Reauthorization Amendments (CZARA), is jointly administered by NOAA and the Environmental Protection Agency (EPA). The Program is unique in that it establishes a set of management measures for states to use in controlling polluted runoff. The measures are designed to control runoff from six main sources: forestry, agriculture, urban areas, marinas, hydromodification (shoreline and stream channel modification), and wetlands and vegetated shorelines, or riparian areas. These measures are backed by enforceable state policies and actions-state authorities that will ensure implementation of the program. All coastal and Great Lakes states and territories, which participate in the Coastal Zone Management Program are required to develop coastal nonpoint pollution control programs.

The Coastal Nonpoint Program focuses on pollution prevention, minimizing the creation of polluted runoff rather than cleaning up already contaminated water—a very difficult and expensive process. The program encourages pollution prevention efforts at a local level, particularly improvements to land use planning and zoning practices to protect coastal water quality. Some of the land use practices NOAA recommends through the program include: preserving natural vegetation, avoiding development within sensitive habitats and erosion-prone areas, and limiting impervious surfaces such as pavement, decking, and roof tops, to the maximum extent practicable.

The National Environmental Policy Act (NEPA) was created in 1969 under 42 U.S.C. ßß 4321-4347. NEPA requires all federal agencies, including NOAA, to consider the impacts of their major federal activities on the environment. OCRM's primary responsibilities under the Coastal Zone Management Act (CZMA) that typically require NEPA review include: (1) approval of state coastal management programs and changes to these programs; (2) designation of National Estuarine Research Reserves; and (3) distributing federal funds in the form of grants and cooperative agreements to states and universities.

When NOAA takes a major federal action that is determined as subject to NEPA review, the environmental impacts must be documented at one of three levels of NEPA analysis depending upon the potential impact:

1. A brief memorandum to the administrative record documenting that the activity qualifies for a Categorical Exclusion (CE);
2. A concise Environmental Assessment (EA), and, if appropriate, a Finding of No Significant Impact (FONSI);
3. A detailed Environmental Impact Statement (EIS).

More information on NEPA is available at the following websites:

- The National Environmental Policy Act (NEPA)
- NOAA's NEPA Website — Provides an overview of NEPA, information about NOAA's responsibilities under NEPA as well as guidance documents and tools to assist in determining the appropriate level of NEPA review.
- Regulations for Implementing the National Environmental Policy Act (NEPA)
- Coastal Zone Management Act Regulations (15 CFR 923)

U.S Department of Homeland Security- U.S. Coast Guard

The United States Coast Guard is a military, multi-mission, maritime service and one of the nation's five Armed Services. Its mission is to protect the public, the environment, and U.S. economic interests – in the nation's ports and waterways, along the coast, on international waters, or in any maritime region as required to support national security. Nationally, on an average day the Coast Guard will save 15 human lives, assist 114 people in distress, protect $4.9 million in property, interdict 26 illegal migrants at sea, conduct 82 search and rescue cases, seize $2.4 million worth of illegal drugs, conduct 23 waterfront facility safety or security inspections, respond to 11 oil and hazardous chemical spills, and board 202 vessels of law enforcement interest.

The United States Coast Guard, one of the country's five armed services, is also one of the most unique agencies of the federal government. The Coast Guard is one of the oldest organizations of the federal government. On August 4, 1790, the first Congress authorized the construction of ten vessels, known variously as the Revenue Marine and the Revenue Cutter Service, to enforce tariff and trade laws, prevent smuggling, and protect the collection of the federal revenue. Until the Navy Department was established in 1798, the Coast Guard served as the nation's only armed force afloat.

Added responsibilities included humanitarian duties such as aiding mariners in distress. Congress tasked the Coast Guard with enforcing laws against slavery, piracy, and enlarged the responsibilities to prevent smuggling. The Coast Guard was also given the responsibility to protect the marine environment, explore and police Alaska, and chart the growing nation's coastlines, before the turn of the twentieth century.

The service received its present name in 1915 under an act of Congress when the Revenue Cutter Service merged with the Life-Saving Service. The nation now had a single maritime service dedicated to saving life at sea and enforcing the nation's maritime laws. The Coast Guard began to maintain the country's aids to maritime navigation, including operating the nation's lighthouses, when the Lighthouse Service was transferred to the Coast Guard in 1939. Later, in 1946, Congress permanently transferred the Bureau of Marine Inspection and Navigation to the Coast Guard, thereby placing merchant marine licensing and merchant vessel safety under Coast Guard purview.

In times of peace the Coast Guard operates as part of the Department of Homeland Security, serving as the nation's front-line agency for enforcing our laws at sea, protecting our coastline and ports, and saving life. In times of war, or on direction of the President, the USCG serves under the Navy Department.

In 1967, the Bridge Program was transferred from the Army Corp of Engineers to the U.S. Coast Guard within the Department of Transportation. On 01 March 2003, the U.S. Coast Guard became an agency of the U.S. Department of Homeland Security. The Coast Guard is responsible for approval of the location and plans of bridges and causeways constructed across navigable waters of U.S. In addition, the Coast Guard is responsible for approval of the location and plans of international bridges and the alteration of bridges found to be unreasonable obstructions to navigation. Authority for these actions is found in the following laws: 33 U.S.C 401, 491, 494, 511-524, 525 and 535a, 535b, 535c, 535e, 535f, 535g, and 535h (Note: these are all separate sections, not subsections of 535). Section 535 and following is popularly known as the International Bridge Act of 1972. The Implementing regulations are found in Title 33, Code of Federal Regulations Parts 114 through 118.

The Goals of the Bridge Program rules are **t**o provide reasonably free, safe, and unobstructed passage for waterborne traffic while considering the needs of land transportation.

1. Ensure that drawbridge operating regulations provide for the reasonable needs of navigation and land transportation.
2. Identify unreasonably obstructive bridges and order their removal or alteration.
3. Ensure the timely engineering of bridge design and construction for bridge removal or alteration projects to remove unreasonable obstructions to navigation with due consideration for land traffic needs and the environment.
4. Regulate bridge lighting for the safety of navigation and land traffic for every bridge which crosses waterways with significant nighttime navigation.
5. Optimize resources to best meet growing workload and customer needs

U.S. Army Corps of Engineers

The Department of the Army regulatory program is one of the oldest in the Federal Government. Initially it served a fairly simple, straightforward purpose: to protect and maintain the navigable capacity of the nation's waters. Time, changing public needs,

evolving policy, case law, and new statutory mandates have changed the complexion of the program, adding to its breadth, complexity, and authority.

The legislative origins of the program are the Rivers and Harbors Acts of 1890 (superseded) and 1899 (33 U.S.C. 401, et seq.). Various sections establish permit requirements to prevent unauthorized obstruction or alteration of any navigable water of the United States. The most frequently exercised authority is contained in Section 10 (33 U.S.C. 403) which covers construction, excavation, or deposition of materials in, over, or under such waters, or any work which would affect the course, location, condition, or capacity of those waters. The authority is granted to the Secretary of the Army. Other permit authorities in the Act are Section 9 for dams and dikes, Section 13 for refuse disposal, and Section 14 for temporary occupation of work built by the United States. Various pieces of legislation have modified these authorities, but not removed them.

In 1972, amendments to the Federal Water Pollution Control Act added what is commonly called Section 404 authority (33 U.S.C. 1344) to the program. The Secretary of the Army, acting through the Chief of Engineers, is authorized to issue permits, after notice and opportunity for public hearings, for the discharge of dredged or fill material into waters of the United States at specified disposal sites. Selection of such sites must be in accordance with guidelines developed by the Environmental Protection Agency (EPA) in conjunction with the Secretary of the Army; these guidelines are known as the 404(b)(1) Guidelines. The discharge of all other pollutants into waters of the U. S. is regulated under Section 402 of the Act which supersedes the Section 13 permitting authority mentioned above. The Federal Water Pollution Control Act was further amended in 1977 and given the common name of "Clean Water Act" and was again amended in 1987 to modify criminal and civil penalty provisions and to add an administrative penalty provision.

Also in 1972, with enactment of the Marine Protection, Research, and Sanctuaries Act, the Secretary of the Army, acting through the Chief of Engineers, was authorized to issue permits for the transportation of dredged material to be dumped in the ocean. This authority also carries with it the requirement of notice and opportunity for public hearing. Disposal sites for such discharges are selected in accordance with criteria developed by EPA in consultation with the Secretary of the Army.

The geographic jurisdiction of the Rivers and Harbors Act of 1899 includes all navigable waters of the United States which are defined (33 CFR Part 329) as, "those waters that are subject to the ebb and flow of the tide and/or are presently used, or have been used in the past, or may be susceptible to use to transport interstate or foreign commerce." This jurisdiction extends seaward to include all ocean waters within a zone three nautical miles from the coast line (the "territorial seas"). Limited authorities extend across the outer continental shelf for artificial islands, installations and other devices (see 43 U.S.C. 333 (e)). Activities requiring Section 10 permits include structures (e.g., piers, wharfs, breakwaters, bulkheads, jetties, weirs, transmission lines) and work such as dredging or disposal of dredged material, or excavation, filling, or other modifications to the navigable waters of the United States.

The Clean Water Act uses the term "navigable waters" which is defined (Section 502(7)) as "waters of the United States, including the territorial seas. " Thus, Section 404 jurisdiction is defined as encompassing Section 10 waters plus their tributaries and adjacent wetlands and isolated waters where the use, degradation or destruction of such waters could affect interstate or foreign commerce.

Activities, requiring Section 404 permits are limited to discharges of dredged or fill materials into the waters of the United States. These discharges include return water from dredged material disposed of on the upland and generally any fill material (e.g., rock, sand, dirt) used to construct fast land for site development, roadways, erosion protection, etc.

The geographic scope of Section 103 of the Marine Protection Research and Sanctuaries Act of 1972 is those waters of the open seas lying seaward of the baseline from which the territorial sea is measured. Along coast lines this baseline is generally taken to be the low water line. Thus, there is jurisdiction overlap with the Clean Water Act. By interagency agreement with EPA, the discharge of dredged material in the territorial seas is regulated under the Section 103 criteria rather than those developed for Section 404.

Most of these permit authorities (with specific exception of Section 9) have been delegated by the Secretary of the Army to the Chief of Engineers and his authorized representatives. Section 10 authority was formally delegated on May 24, 1971, with Section 404 and 103 authorities delegated on March 12, 1973. Those exercising these authorities are directed to evaluate the impact of the proposed work on the public interest. Other applicable factors (such as the 404(b)(1) Guidelines and ocean dumping criteria) must also be met, of course. In delegating this authority, the Secretary of the Army qualified it to "...[be] subject to such conditions as I or my authorized representatives may from time to time impose."

Additional clarification of this delegation is provided in the program's implementing regulations (33 CFR 320-331). Division and district engineers are authorized to issue conditioned permits (Part 325.4) and to modify, suspend, or revoke them (Part 325.7). Division and district engineers also have authority to issue alternate types of permits such as letters of permission and regional general permits (Part 325.2). In certain situations the delegated authority is limited (Part 325.8).

This delegation recognizes the decentralized nature and management philosophy of the Corps of Engineers organization. Regulatory program management and administration is focused at the district office level, with policy oversight at higher levels. The backbone of the program is the Department of the Army regulations (33 CFR 320-331) which provide the district engineer the broad policy guidance needed to administer day-to-day operation of the program. These regulations have evolved over time, changing to reflect added authorities, developing case law, and in general the concerns of the public. They are developed through formal rule making procedures.

If a district engineer has the authority under Part 325.8 to make a final decision on a permit application and he makes that decision in accordance with the procedures and authorities contained in the regulations, there is no formal administrative appeal of that decision.

The basic form of authorization used by Corps districts is the individual permit. Processing such permits involves evaluation of individual, project specific applications in what can be considered three steps: pre-application consultation (for major projects), formal project review, and decision making.

Pre-application consultation usually involves one or several meetings between an applicant, Corps district staff, interested resource agencies (Federal, state, or local), and sometimes the interested public. The basic purpose of such meetings is to provide for informal discussions about the pros and cons of a proposal before an applicant makes irreversible commitments of resources (funds, detailed designs, etc.). The process is designed to provide the applicant with an assessment of the viability of some of the more obvious alternatives available to accomplish the project purpose, to discuss measures for reducing the impacts of the project, and to inform him of the factors the Corps must consider in its decision making process.

Once a complete application is received, the formal review process begins. Corps districts operate under what is called a project manager system, where one individual is responsible for handling an application from receipt to final decision. The project manager prepares a public notice, evaluates the impacts of the project and all comments received, negotiates necessary modifications of the project if required, and drafts or oversees drafting of appropriate documentation to support a recommended permit decision. The permit decision document includes a discussion of the environmental impacts of the project, the findings of the public interest review process, and any special evaluation required by the type of activity such as compliance determinations with the Section 404(b)(1) Guidelines or the ocean dumping criteria.

The Corps supports a strong, partnership with states in regulating water resource developments. This is achieved with joint permit processing procedures (e.g., joint public notices and hearings), programmatic general permits founded on effective state programs, transfer of the Section 404 program in non-navigable waters, joint EISs, special area management planning, and regional conditioning of nationwide permits.

Of great importance to the project evaluation is the Corps public interest balancing process. The public benefits and detriments of all factors relevant to each case are carefully evaluated and balanced. Relevant factors may include conservation, economics, aesthetics, wetlands, cultural values, navigation, fish and wildlife values, water supply, water quality, and any other factors judged important to the needs and welfare of the people. The following general criteria are considered in evaluating all applications:

1. the relevant extent of public and private needs;

2. where unresolved conflicts of resource use exist, the practicability of using reasonable alternative locations and methods to accomplish project purposes; and

3. the extent and permanence of the beneficial and/or detrimental effects the proposed project may have on public and private uses to which the area is suited.

No permit is granted if the proposal is found to be contrary to the public interest.

There are alternate forms of authorization used in certain prescribed situations. Letters of permission may be used where, in the opinion of the district engineer, the proposed work would be minor, not have significant individual or cumulative impact on environmental values, and should encounter no appreciable opposition. In such situations, the proposal is coordinated with all concerned fish and wildlife agencies, and generally adjacent property owners who might be affected by the proposal, but the public at large is not notified. The public interest balancing process is again central to the decision making process on letters of permission. Another form of authorization is the general permit. General permits are not normally developed for an individual applicant, but cover activities the Corps has identified as being substantially similar in nature and causing only minimal individual and cumulative environmental impacts. These permits may cover activities in a limited geographic area (e.g., county or state), a particular region of the county (e.g., group of contiguous states), or the nation. The Corps element developing such permits is that one which has geographic boundaries encompassing the particular permit. Processing, such permits closely parallels that for individual permits, with public notice, opportunity for hearing and detailed decision documentation.

A programmatic general permit is one founded on an existing state, local or other Federal agency program and designed to avoid duplication with that program. Nationwide general permits are issued by the Chief of Engineers through the Federal Register rulemaking process. Nationwide general permits are found at 33 CFR Part 330, Appendix A.

Public involvement plays a central role in the Corps' administration of its regulatory program. The major tools used to interact with the public are the public notice and public hearing. The public notice is the primary method of advising all interested parties of a proposed activity for which a permit is sought and of soliciting comments and information necessary to evaluate the probable beneficial and detrimental impacts on the public interest. Public notices on proposed projects always contain a statement that anyone commenting may request a public hearing. Public hearings are held if comments raise substantial issues which cannot be resolved informally and the Corps decision maker determines that information from such a hearing is needed to make a decision. Public notices are used to announce hearings. The public is also informed by notice on a monthly basis of permit decisions.

Any project on which an Environmental Impact Statement (EIS) will be prepared is subject to additional public involvement. The preparation of EISs is governed by regulations implementing the National Environmental Policy Act (NEPA). The first stage of EIS development is the scoping process which is the means by which substantive

issues are identified for further study in the EIS. The NEPA scoping process begins with the publication of a Notice of Intent to prepare an EIS. The scoping process itself often involves actual face-to-face participation of the interested public. The availability of the draft EIS is announced through public notice. It is the notice which is intended to solicit comments not only on the NEPA document but substantive comments on the proposal itself. Again, with these complex projects, the public may request a public hearing. Sometimes the Corps decision maker will independently decide to hold a public hearing and announcement of it will be incorporated into the notice of availability of the NEPA document. The public is also informed through notice of the availability of the final EIS, any EIS supplement, and the availability of the decision maker's record of decision. Thus, a permit application requiring preparation of an EIS can involve five or more notices to the public during the review process.

The permit evaluation process contains many safeguards designed to ensure objectivity in the evaluation process. Even before an application is formally submitted, such safeguards come into play, for example, in the pre-application consultation stage. Probably the single biggest safeguard of the program is the Corps public interest review, which also forms the main framework for overall evaluation of the project. This review requires the careful weighing of all public interest factors relevant to each particular case. Thus, one specific factor (e.g., economic benefits) cannot by itself force a specific decision, but rather the decision represents the net effect of balancing all factors, many of which are frequently in conflict.

The public interest review is used to evaluate applications under all authorities administered by the Corps. There are additional evaluation criteria used for specific authorities. For example, applications for fill in waters of the United States are also evaluated using, the Section 404(b)(1) Guidelines developed by EPA in conjunction with the Department of the Army. These guidelines are heavily weighted towards preventing environmental degradation of waters of the United States and so place additional constraints on Section 404 discharges. Likewise, ocean dumping permits (Section 103) are evaluated using special criteria developed by EPA in consultation with Army. These criteria are also primarily aimed at preventing environmental degradation and set up some very stringent tests which must be passed before a Section 103 permit can be granted. Although required for permit issuance, compliance with these authority specific criteria is only a part of the public interest review. Therefore, projects which comply with the criteria may still be denied a permit if they are found to be contrary to the overall public interest.

The above safeguards are basically internal standards or procedures with which projects are evaluated. There are also a series of external safeguards which work to maintain objectivity. One is EPA's Section 404 or so called "veto" authority. EPA may prohibit or withdraw the specifications of any disposal site if the EPA Administrator determines that discharges into the site will have unacceptable adverse effects on municipal water supplies, shellfish beds and fishery areas, wildlife, or recreational areas. This authority also carries with it the requirement for notice and opportunity for public hearing. EPA may invoke this authority at any time. An application need not be pending.

Section 404(q) of the Clean Water Act requires the Department of the Army to enter into interagency agreements to minimize duplication, needless paperwork, and delays in the Section 404 permit process. Current agreements allow EPA and the Department of Commerce and the Interior to request higher level review within the Department of the Army when they disagree with a permit decision which is about to be made by the district engineer. Higher level review can only be requested when certain criteria are met and must be conducted within time limits specified in the agreements. These criteria are insufficient coordination at the district level, development of significant new information, or the need for policy level review of nationally important issues. Honoring such requests is at the discretion of the Assistant Secretary of the Army for Civil Works.

Individual state permitting and water quality certification requirements provide an additional form of objective safeguard to the Corps regulatory program. Section 401 of the Clean Water Act requires state certification or waiver of certification prior to issuance of a Section 404 permit.

Section 307 of the Coastal Zone Management Act of 1972, as amended (16 U.S.C. 1458(c)), requires the applicant certify that the project is in compliance with an approved State Coastal Zone Management Program and that the State concur with the applicants certification prior to the issuance of a Corps permit. The Corps' standard permit form contains a statement notifying the permittee that the Federal permit does not remove any requirement for state or local permits. This has the effect of making the Corps' permit unusable without these additional authorizations. If the state or local permit is denied before the Corps has made its decision, the Corps permit is also denied.

In addition to these requirements, the Corps' implementing regulations require that district engineers conduct additional evaluations on applications with potential for having an effect on a variety of special interests (e.g., Indian reservation lands, historic properties, endangered species, and wild and scenic rivers).

Another form of external safeguard, of course, is legal challenge of a permit decision. As mentioned earlier, there is no mechanism in the program's regulations for formal administrative appeal nor is there a legal requirement to conduct a formal ad judicatory hearing. However, any member of the public, may challenge, in court, a Corps decision to issue or deny a permit. Generally, such a challenge alleges failure to comply with procedural requirements, such as NEPA documentation, the 404(b)(1) Guidelines, or the procedures in the Corps permit regulations.

On average, individual permit decisions are made within two to three months from receipt of a complete application. In emergencies, decisions can be made in a matter of hours. Applications requiring EISs (far less than one percent) averaging about three years to process.

Procedures for enforcing Corps permitting authorities are found at 33 CFR Part 326. The following paragraphs briefly summarize those procedures.

Inspection and surveillance activities are carried out by all means at the district engineer disposal. Corps of Engineers employees are instructed on the observation and reporting of suspected unauthorized activities in waters of the United States and of violations of issued permits. The assistance of members of the public and other interested Federal, State and local agencies is encouraged.

When the district engineer becomes aware of any unauthorized activity still in progress, he must first issue a "cease and desist" order and then begin an investigation of the activity to ascertain facts concerning alleged violations. If the unauthorized activity has been completed he will advise the responsible party of his discovery and begin an investigation. Following his evaluation, the district engineers may formulate recommendations on the appropriate administrative course or legal action to be taken.

The district engineer's evaluation contains an initial determination of whether any significant adverse impacts are occurring which would require expeditious corrective measures to protect life, property, or a significant public resource. Once that determination is made, such remedial measures can be administratively ordered and a decision can be made on whether legal action is necessary. In certain cases, district engineers, following the issuance of a cease and desist order, coordinate with state and Federal resource agencies in deciding what action is appropriate. Further evaluation of the violation takes into consideration voluntary compliance with a request for remedial action. A permit is not required for restoration or other remedial action.

For those cases that do not require legal action and for which complete restoration has not been ordered, the Department of the Army will accept applications for after-the-fact permits. The full public interest review is deferred during the early stages of the enforcement process. A complete public interest review is conducted only if and when the district engineer accepts an application for an after-the-fact permit.

The laws that serve as the basis for the Corps regulatory program contain several enforcement provisions which provide for criminal, civil, and administrative penalties. While the Corps is solely responsible for the initiation of appropriate legal actions pursuant to enforcement provisions relating to its Section 10 authority, the responsibility for implementing those enforcement provisions relating to Section 404 is jointly shared by the Corps and EPA. For this reason Army has signed a Section 404 enforcement memorandum of agreement (MOA) with EPA to ensure that the most efficient use is made of available Federal resources. Pursuant to this MOA, the Corps generally assumes responsibility for enforcement actions with the exception of those relating to certain specified violations involving unauthorized activities.

If a legal action is instituted against the person responsible for an unauthorized activity, an application for an after-the-fact permit cannot be accepted until final disposition of all judicial proceedings, including payment of all fees as well as completion of all work ordered by the court.

Presently about 5,500 alleged violations are processed in Corps district offices each year. The approximate breakdown by authority is: Section 10, 10 percent; Section 404, 75 percent; and Section 10/404, 15 percent.

The Corps strives to reduce violations by effective publicity, an aggressive general permit program. and an efficient and fair evaluation of individual permit applications.

In 1997, the U.S. Corps of Engineers (USACE) initiated an EIS for Southwest Florida to improve USACE review of permit applications under Section 404 of the Clean Water Act. The Final Record of Decision, issued in August 2003, includes a proposal that USACE staff utilize a Permit Review Criteria document to supplement the review process. The implementation and effectiveness of the USACE's ROD has not been formally evaluated.

U.S. Environmental Protection Agency

Growing public awareness and concern for controlling water pollution led to enactment of the Federal Water Pollution Control Act Amendments of 1972. As amended in 1977, this law became commonly known as the Clean Water Act. The Act established the basic structure for regulating discharges of pollutants into the waters of the United States. It gave EPA the authority to implement pollution control programs such as setting wastewater standards for industry. The Clean Water Act also continued requirements to set water quality standards for all contaminants in surface waters. The Act made it unlawful for any person to discharge any pollutant from a point source into navigable waters, unless a permit was obtained under its provisions. It also funded the construction of sewage treatment plants under the construction grants program and recognized the need for planning to address the critical problems posed by non-point source pollution.

Subsequent enactments modified some of the earlier Clean Water Act provisions. Revisions in 1981 streamlined the municipal construction grants process, improving the capabilities of treatment plants built under the program. Changes in 1987 phased out the construction grants program, replacing it with the State Water Pollution Control Revolving Fund, more commonly known as the Clean Water State Revolving Fund. This new funding strategy addressed water quality needs by building on EPA-State partnerships.

Over the years, many other laws have changed parts of the Clean Water Act. Title I of the Great Lakes Critical Programs Act of 1990, for example, put into place parts of the Great Lakes Water Quality Agreement of 1978, signed by the U.S. and Canada, where the two nations agreed to reduce certain toxic pollutants in the Great Lakes. That law required EPA to establish water quality criteria for the Great Lakes addressing 29 toxic pollutants with maximum levels that are safe for humans, wildlife, and aquatic life. It also required EPA to help the States implement the criteria on a specific schedule. The electronic version of the Clean Water Act posted at their web site is a thirtieth anniversary snapshot of the law, as amended through the enactment of the Great Lakes Legacy Act of 2002 (Public Law 107-303, November 27, 2002). Provided by the Congressional Great Lakes Task Force, it is the amended law as of that particular point in time. This electronic

version annotates the sections of the Act with the corresponding sections of the U.S. Code and footnote commentary on the effect of other laws on the current form of the Clean Water Act.

The Clean Water Act (CWA) is the cornerstone of surface water quality protection in the United States. The CWA does not deal directly with ground water nor with water quantity issues. The statute employs a variety of regulatory and non-regulatory tools to sharply reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. These tools are employed to achieve the broader goal of restoring and maintaining the chemical, physical, and biological integrity of the nation's waters so that they can support "the protection and propagation of fish, shellfish, and wildlife and recreation in and on the water."

For many years following the passage of CWA in 1972, EPA, states, and Indian tribes focused mainly on the chemical aspects of the "integrity" goal. During the last decade, however, more attention has been given to physical and biological integrity. Also, in the early decades of the Act's implementation, efforts focused on regulating discharges from traditional "point source" facilities, such as municipal sewage plants and industrial facilities, with little attention paid to runoff from streets, construction sites, farms, and other "wet-weather" sources.

Starting in the late 1980s, efforts to address polluted runoff have increased significantly. For "non-point" runoff, voluntary programs, including cost-sharing with landowners are the key tool. For "wet weather point sources" like urban storm sewer systems and construction sites, a regulatory approach is being employed.

Evolution of CWA programs over the last decade has also included something of a shift from a program-by-program, source-by-source, pollutant-by-pollutant approach to more holistic watershed-based strategies. Under the watershed approach equal emphasis is placed on protecting healthy waters and restoring impaired ones. A full array of issues are addressed, not just those subject to CWA regulatory authority. Involvement of stakeholder groups in the development and implementation of strategies for achieving and maintaining state water quality and other environmental goals is another hallmark of this approach.

Federal Water Quality Standards (WQS)

Water quality standards (WQS) are aimed at translating the broad goals of the CWA into waterbody-specific objectives. Ideally, WQS should be expressed in terms that allow quantifiable measurement. WQS, like the CWA overall, apply only to the waters of the United States. As defined in the CWA, "waters of the United States" apply only to surface waters–rivers, lakes, estuaries, coastal waters, and wetlands. Not all surface waters are legally "waters of the United States." Generally, however, those waters include the following: all interstate waters; intrastate waters used in interstate and/or foreign commerce; tributaries of interstate waters; intrastate waters used in interstate and/or foreign commerce; territorial seas at the cyclical high tide mark; and wetlands adjacent to

interstate waters; intrastate waters used in interstate and/or foreign commerce and territorial seas at the cyclical high tide mark.

The exact dividing line between "waters of the United States" according to the CWA and other waters can be hard to determine, especially with regard to smaller streams, ephemeral waterbodies, and wetlands not adjacent to other "waters of the United States." In fact, the delineation changes from time to time, as new court rulings are handed down, new regulations are issued, or the Act itself is modified. WQS should be set for all surface waters meeting the definition of "waters of the United States."

States, territories, and designated tribes can, using their own authorities, adopt standards for additional surface waters. Also, though the CWA does not require WQS for ground water, states, tribes, and territories can use their own authorities to set targets for ground water.

Designated uses, water quality criteria, and an antidegradation policy constitute the three major components of Water Quality Standards Program.

The designated uses (DUs) of a waterbody are those uses that society, through various units of government, determines should be attained in the waterbody. The DUs are the goals set for the waterbody. In some cases, these uses have already been attained, but sometimes conditions in a waterbody do not support all the DUs.

Water quality criteria (WQC) are descriptions of the conditions in a waterbody necessary to support the DUs. These can be expressed as concentrations of pollutants, temperature, pH, turbidity units, toxicity units, or other quantitative measures. WQC can also be narrative statements such as "no toxic chemicals in toxic amounts."

Antidegradation policies are a component of state/tribal WQS that establish a set of rules that should be followed when addressing proposed activities that could lower the quality of high quality waters, that is, those with conditions that exceed those necessary to meet the designated uses.

To understand the regulations that apply to designating uses under WQS, several key terms must be defined. As noted previously, a designated use is a use specified in water quality standards for each waterbody whether or not they are being attained (it might be helpful to think of these as desired uses).

The term "existing use" has a somewhat different meaning, in the context of the CWA, than one might expect. Rather than actual or current uses, it refers not only to those uses the waterbody is capable of supporting at present but also any use to which the waterbody has actually attained since November 28, 1975. Even if the waterbody is currently not supporting a use attained since November 28, 1975, for purposes of the CWA, it is still an "existing use." (Even if there has been no documentation that a use has occurred since November 28, 1975, evidence that water quality has been sufficient to support a given

use at some time since November 28, 1975 can be the basis for defining an "existing use" for a waterbody.)

The process of changing a use designation is called use reclassification. The terms downgrading and upgrading are sometimes used in this context. Removing a designated use and replacing it with a "lower" use is often referred to as "downgrading". "Upgrading" is just the reverse. It is important to note, however, that in the parlance of the CWA, the difference between a "higher" and "lower" use is a reflection of the quality of water needed to support each use. Those uses needing cleaner water are considerably "higher." The terms "high" and "low" are not intended to suggest that one use of a waterbody (fishing, for example) is inherently more important than another (industrial water supply, for example). Hence, removing from the designated uses of a waterbody one that required an average daily concentration of pollutant "x" of 20 mg/L or less, so that the next highest use was one needing concentrations of 30 mg/L or less would be a "downgrading."

Typically, the DUs assigned to a waterbody reflect the public's answer to the question, "To what uses do we, or might we want to, put this waterbody?" Answers might include: swimming, boating, water skiing, wind surfing, recreational fishing, commercial fishing, subsistence fishing, supporting communities of aquatic life, supplying water for drinking, irrigating crops and landscaping, and industrial purposes.

Commonly used use designations include the following:

- Drinking water
  - **Treated/untreated**
- Water-based recreation
  - **Noncontact/short-term/long-term**
- Fishing/eating
- Aquatic life
  - **Warm water species/habitat**
  - **Cold water species/habitat**
- Agriculture water supply
- Industrial water supply

The terms listed in bold text are examples of subcategories of uses. For example, a water segment could be designated for "public drinking water supply (PWS)--no treatment before use." It could also be designated "PWS--treatment provided." If water from a river or lake goes through a filtration facility before being sent to a public water distribution system, then levels of certain pollutants in the raw water supply (river/lake) could be allowed to be higher than if no treatment occurred. The higher level in the raw water would be proportional to the degree to which the particular drinking water treatment plant removed that pollutant.

The subcategories under water-based recreation refer to the proportion of time in which someone engaging in certain types of activities would come into direct contact with the water. Noncontact uses would include riding in a large boat, for example. Short-term contact (that is, "secondary contact" or "partial body contact") might include jet skiing, speed boating and canoeing. Long-term contact (that is, "primary contact" or "whole body contact") would include snorkeling, swimming, kayaking and wind surfing. Obviously, it can be difficult to draw distinct lines between these different activities, because the extent of exposure can be affected

In general, different waterbodies, and different portions of a given waterbody, are assigned various combinations of the DUs. A given segment will almost always be classified for more than one DU.

Economic factors can be considered when setting the DU for a waterbody. In contrast, economics cannot be factored in when developing the WQC to protect a DU.

The first policy is that if a use is an "existing" use for a waterbody, then the waterbody must have that use in its designated uses (sometimes called use classifications). Remember, as noted previously, the term "existing use" has a special meaning in the context of water quality standards.

The second rule is simply a reflection of the CWA's "fishable/swimmable" goal (protection and propagation of fish, shellfish, and wildlife and recreation in and on the water), as articulated in EPA's regulations, which say that these uses should be designated for all waters, unless it is demonstrated that it is impractical to meet them. Only in those cases where the "downgrading" process has been followed (see next slide) can these uses be excluded from the DUs for a waterbody.

The third rule is that "waste transport" is not an acceptable DU, because in passing the 1972 CWA, Congress said that our nation's surface waters should no longer be used as waste conveyances or treatment systems.

When a waterbody has been classified for more than one DU, as is usually the case, regulatory activities and other programs are "driven" by the DU that requires the cleanest water. This is simply because if one DU requires a concentration of pollutant "x" of 50 mg/L or less and a second DU requires 25 mg/L, then meeting the second DU (and the corresponding WQC of 25 mg/L) automatically results in meeting the first DU and its corresponding WQC.

The last key rule regarding the setting of DUs is that economic and social factors can be considered, although this is not required.

EPA regulations prohibit the removal of an "existing" or actual use from the DUs for a waterbody. However, a DU that has not been attained may be removed under limited circumstances (downgraded).

A key part of the process through which a state, territory, or tribe would enact a "downgrading" is called a use attainability analysis (UAA). In the UAA, the state would have to demonstrate that one or more of a limited set of situations exists.

First, it must be shown that the current DU cannot be achieved through implementation of: (1) applicable technology-based limits or point sources and (2) cost-effective and reasonable best management practices (BMPs) for nonpoint sources.

If it has been shown that DUs can't be met with the above measures, then another set of other factors should be considered. These factors are as follows:

- natural background conditions prevent attainment.
- irreversible human-caused conditions prevent attainment.
- what is needed to attain the DU would cause substantial environmental damage.
- achieving the use would involve widespread social and economic costs.

If a UAA indicated that conditions for authorizing a removal of one or more DU existed, the UAA and the accompanying proposal to downgrade a DU must go through the public review/participation process that is required for any change in a WQS and must be approved by EPA.

EPA has provided some guidance on the meaning of key terms such as "substantial and widespread social and economic costs," particularly as it relates to "point source" dischargers such as municipal sewage treatment plants and industrial facilities.

Some indication of how EPA might interpret the language regarding nonpoint sources can be obtained by looking at the guidance it has issued with regard to the nonpoint source provisions of the Coastal Zone Management Act. Additional, more recent, EPA guidance on management measures applicable to forestry and agriculture is also available. However, one must remember that the U.S. EPA has no regulatory authority over nonpoint sources, so it could not force a state to require that these BMPs be applied by normal farming operations or other nonpoint sources.

Water Quality Criteria (WQC) are levels of individual pollutants or water quality characteristics, or descriptions of conditions of a waterbody that, if met, will generally protect the designated use of the water. For a given DU, there are likely to be a number of criteria dealing with different types of conditions, as well as levels of specific chemicals. Since most waterbodies have multiple DUs, the number of WQC applicable to a given waterbody can be very substantial.

Water quality criteria must be scientifically consistent with attainment of DUs. This means that only scientific considerations can be taken into account when determining what water quality conditions are consistent with meeting a given DU. Economic and social impacts are not considered when developing WQC.

WQC can be divided up for descriptive purposes in many ways. For instance, numeric criteria (weekly average of 5 mg/L dissolved oxygen) can be contrasted with narrative criteria (no putrescent bottom deposits). Criteria can also be categorized according to what portion of the aquatic system they can be applied to: the water itself (water column), the bottom sediments, or the bodies of aquatic organisms (fish tissue). The duration of time to which they apply is another way of dividing WQC, with those dealing with short-term exposures (acute) being distinguished from those addressing long-term exposure (chronic).

Criteria can also be distinguished according to the types of organisms they are designed to protect. Aquatic life criteria are aimed at protecting entire communities of aquatic organisms, including a wide array of animals and various plants and microorganisms. These can be expressed as parameter specific (daily average of 30 ug/L of copper) or in terms of various "metrics" that directly measure numbers, weight, and diversity of plants and animals in a waterbody (community indices).

Human health criteria can apply to two exposure routes: (1) drinking water and (2) consuming aquatic foodstuffs.

Wildlife criteria, like human health/fish consumption criteria, deal with the effects of pollutants with high bioaccumulation factors. To date, EPA has issued and/or adopted fewer wildlife criteria than aquatic life or human health criteria. Such criteria are designed to protect terrestrial animals that feed upon aquatic species. Examples are ospreys, herons and other wading birds, and mink and otters.

Most state/tribal WQS require that all surface waters be free from the following:

- Putrescent or otherwise objectionable bottom deposits
- Oil, scum, and floating debris in amounts that are unsightly
- Nuisance levels of odor, color, and other conditions
- Undesirable or nuisance aquatic life
- Substances in amounts toxic to humans or aquatic life

It is not always easy to translate these rather subjective descriptions into quantitative measures. EPA guidance can be found in chapter 3, section 3.5.2, page 3-24, of the EPA *Water Quality Standards Handbook* and can be found at this site. (PDF format, 4.4MB, 46 pages)

"No toxics in toxic amounts" does lend itself to quantitative measurement. Toxicity testing, one way to translate this narrative into a quantitative measure, will be covered later in this module.

Narrative criteria are usually applicable to all waterbodies, regardless of their use designations.

Numeric criteria are usually parameter specific -- they express conditions for specific measures, such as dissolved oxygen, temperature, turbidity, nitrogen, phosphorus, heavy metals such as mercury and cadmium, and synthetic organic chemicals like dioxin and PCBs. They do not consist merely of stated levels/concentrations, such as 15 ug/L or a pH above 5.0. They should also specify the span of time over which conditions must be met. This is the "duration" component of a WQC. Combining the concentration/magnitude and duration components of a WQC results in wording such as "the average 4-day concentration of pollutant X shall not exceed 50ug/L".

A numeric WQC should also indicate how often it would be acceptable to go beyond specified concentration/duration combinations. This is often called the frequency or the recurrence interval component of the WQC. For instance, for protection of aquatic life, as a general rule, EPA recommends a recurrence interval of once in 3 years. The purpose of the recurrence interval is to recognize that aquatic ecosystem can recover from impacts of exposure to harmful conditions, but to make such conditions sufficiently rare as to keep the community of aquatic organism from being in a constant state of recovery.

Simply because one sample has exceeded the concentration component of a WQC does not necessarily mean the WQC has been violated and a designated use affected. This is true only in the case of "instantaneous criteria" -- levels that are never to be exceeded. But if there was a criterion of 50 mg/L of "x," for a 7-day average, then having one sample at a concentration above 50 mg/L would not "prove" that this criterion had actually been exceeded. Likewise, having just one or two samples below 50 mg/L is not a good basis for concluding a waterbody is indeed meeting WQS.

EPA publishes recommended water quality criteria corresponding to a number of key designated uses. For aquatic life uses, criteria for both short-term (acute) and long-term (chronic) exposures are provided. Different criteria for freshwater systems and marine (saline) systems are often provided. Most human health criteria, except certain pathogens, address chronic exposures (This can be found at the OST WQS web site).

States, tribes, and territories are not required to adopt the exact numbers that EPA has published, but once EPA has issued a criterion for a parameter, they must adopt a corresponding criterion. Such criteria must provide the same level of protection as EPA's, and state/tribe must document that this is the case.

Note that the toxicity of pollutants differs depending on whether they are in fresh or salt water environments. However, there is no predictable pattern as to whether a pollutant is more or less toxic in fresh vs. salt water (copper is more toxic in marine water, cadmium in fresh water).

On the other hand, the chronic criterion for a pollutant is always more stringent than the acute criterion, as shown by the cadmium numbers in the table to the left. This is because of the well-known fact that long-term exposure to lower concentrations of contaminants can cause exactly the same negative effects as short-term exposure to much higher pollutant levels.

Finally, the table illustrates the fact that the form (or species) a pollutant is in changes its toxicity. Hexavalent chromium is much more toxic than trivalent chromium.

As the temperature of the water increases, the toxicity of ammonia (NH3) also goes up -- the criterion gets "lower." To further complicate matters, the acidity (pH) of the water also affects the toxicity of ammonia.

EPA is currently developing and issuing technical guidance that can be used to help set WQC for nutrients (nitrogen, phosphorus) (This can be found at the OST Nutrient Criteria Webpage).

Biological criteria apply only to aquatic life designated uses. The use of biological or ecological assessments requires spending considerable time in the field collecting organisms and other data. Various techniques focus on different kinds of organisms, such as fish, large invertebrates, and/or plants.

Once the target types of organisms have been collected, they are sorted into easily identifiable groups, usually to the family level, rather than genus or species. These are then quantified according to a variety of measures, each of which is used to indicate certain aspects of ecosystem health.

Examples of measures include feeding guilds, trophic levels, generalists, and specialists. As an example of how these metrics may be used as indicators of the health and integrity of an aquatic ecosystem, a waterbody that has mostly generalists is usually less healthy than those that have a substantial number of specialists. Likewise, a waterbody dominated by species that can tolerate very polluted conditions is generally less healthy than one dominated by pollution-intolerant species.

Symptoms of Impairment

- Larger percent of tolerant species
- Lower proportion of predators
- Higher number of generalists
- Greater proportion of exotics
- More disease, malformations, and lesions

It is critical to recognize that bioassessments are not "absolute." The number of stonefly species that ecologists would say reflects "biological integrity" in one type of aquatic ecosystem would not necessarily be appropriate to apply to another type of waterbody. Hence, relatively unimpacted reference waterbodies for each major type of aquatic ecosystem in a state must be identified, and then the results of the biosurvey done in these waterbodies are compared with the results from surveys in other waterbodies of the same ecological category. Around the country, citizen volunteers are collecting and interpreting biological data from streams and other waterbodies.

EPA regulations give states, authorized tribes, and territories the flexibility to "waive" applicable WQS under certain circumstances. The two most common forms of exemptions are: (1) mixing zones and (2) stream design flows. Hence, mixing zones can be thought of as "spatial exemptions" and design flows as "temporal exemptions".

Mixing zones exempt certain portions of a waterbody from meeting applicable designated uses and water quality criteria. Such exemptions are usually employed "downstream" of point source discharges.

Sometimes mixing zones are divided into subzones . In the innermost zone, which is the zone closest to the discharge pipe, exceedance of both acute and chronic WQC may be allowed. In the outer zone, acute criteria must be met, but chronic criteria can be exceeded.

EPA policy holds that mixing zones should never extend from bank to bank in a river. There should always be a "zone of passage" in which all WQS are met. Likewise, an entire lake or reservoir should not be encompassed by a mixing zone.

Often, mixing zones are not allowed to overlap with important areas, such as popular swimming beaches, shellfish beds, and critical habitat for commercially, recreationally, or ecologically important species.

Design flow exemptions have also been employed primarily in the context of regulation of point sources. They waive applicability of WQS during certain periods, most commonly during extreme low flow events. Low flow exemptions are usually associated with relatively continuous discharges. Increasingly, waivers of WQS during extreme high flow events are being employed in association with municipal wet weather discharges -- combined sewer overflows, for example. Such exemptions provide a means of avoiding the imposition of extremely high costs upon regulated discharges, as meeting WQS under any and all circumstances would likely be very expensive.

In contrast, narrative WQC apply in all parts of the waterbody at all times.

Antidegradation

To protect the existing uses of waters, and to protect waters with water quality levels better than necessary to support propagation of fish, shellfish and wildlife, and recreation in and on waters of the states, a set of policies called "antidegradation" comes into play. The purpose of these policies is to keep clean waters clean. States, tribes, and territories usually cover this program as part of their water quality standards regulations.

Antidegradation is generally considered to have three components, or "tiers" of protection: (1) protection and maintenance of existing uses of waters, (2) protection of high quality waters, and (3) outstanding national resource waters.

Antidegradation Policies

This component of water quality standards programs focuses on waters that are "better than standards" -- they have high water quality.

The high quality water component of antidegradation can be applied using one of two approaches. Each has its benefits for a state to consider. One approach is to identify and protect high quality waters based on consideration of the level of each parameter to the criteria necessary to support propagation of fish, shellfish and wildlife, and recreation in and on the water. The second approach is to use a variety of factors to judge a water body's overall quality. Regardless of the approach taken, states should apply their antidegradation policies in a way that requires a public review to determine whether proposed activities that might affect water quality should be authorized.

This component of water quality standards programs focuses on waters that are "better than standards" -- they have high water quality.

Antidegradation applies parameter by parameter in general. This means that if 6 designated uses are assigned to a waterbody, and 5 of those uses are impaired, antidegradation policies still apply to the protection of the 1 attained use. Likewise, if pollution levels are greater (worse) than the criteria for 28 of 30 parameters, antidegradation would still apply to the 2 parameters for which waterbody conditions are better than the criteria. Use attainment is not based solely on whether a given use is actually occurring but also on whether the conditions in the waterbody could fully support or protect the use.

Hence, a waterbody could have antidegradation apply to some uses and criteria, whereas a cleanup strategy, such as a Total Maximum Daily Load (TMDL) would be needed, for others.

In a hypothetical example, the chronic criterion for toxic pollutant "x" is 18 mg/L and the concentration of "x" in the waterbody is 10 mg/L. Since the ambient concentration of "x" is lower than the criterion concentration, antidegradation applies.

Rule/Tier 1 of antidegradation means that under no circumstances can the state, authorized tribe, or territory allow regulated activities to increase the level of "x" beyond the criterion (18 mg/L). Allowing levels of "x" to go beyond the criterion would result in impairment of the existing uses that the criterion is designed to protect. Hence, "Tier 1" appears to the right of the arrow with "NO" superimposed, in the area of the graph where concentrations of "x" would be greater than 18 mg/L.

The broken arrow going from the existing concentration (10 mg/L) to the criterion (18 mg/L) is meant to indicate Rule/Tier 2 of antidegradation. Lowering of water quality from high levels down to ones barely better than applicable criteria is not prohibited, but it can take place only in very limited circumstances.

Tier 3 appears to the right of the line corresponding to the existing level of "x" in the waterbody (10 mg/L), to indicate that for Tier 3-designated waters, virtually no

degradation of water quality would be allowed. (Tier 3 is placed in parentheses as a reminder that Tier 3 applies only to specially designated waters.)

EPA must approve the WQS adopted by states, authorized tribes, and territories. If EPA ultimately decides that it cannot reach agreement with a state, tribe, or territory, the Agency can promulgate substitute WQS by going through the formal federal rulemaking process.

Opportunities for public comment on proposed WQS are provided at a minimum of two steps in the approval process.

The responsibility for establishing WQS has always been vested in the states and territories, however EPA must assign WQS authority to tribes. More information on water quality standards, can be found at the EPA-Office of Science and Technology's Water Quality Criteria and Standards Program web site.

Monitoring

First, water quality standards (WQS) consistent with the statutory goals of the CWA must be established. Then waterbodies should be monitored to determine whether the WQS are being met.

The responsibility for monitoring of rivers, lakes, bays, wetlands, estuaries, and nearshore marine waters falls primarily on the states. Contrary to what many believe, EPA does not operate a large national network of water quality monitoring stations, though it is involved in a number of monitoring projects across the country at any given time.

Unfortunately, most states do not have the funding required to carry out ambient monitoring on the scale needed to keep close track of the condition of our nation's surface waters. Most of the waters in the United States are not monitored several times a year or even once over a period of several years. A high degree of uncertainty, therefore, is associated with what can be said about the condition of most rivers, lakes, bays, and other surface waters.

In order to be virtually certain that WQS *are* being met, instruments capable of performing continuous monitoring and analysis would need to be employed. Unfortunately, this is rarely the case, particularly for certain types of pollutants like synthetic organic chemicals. Consequently agencies are usually able to make only statistical inferences -- often at high levels of uncertainty -- as to whether a waterbody *is* actually *meeting* WQS."

On the other hand, considerably less data is needed to have strong evidence that WQS is *not* being *met* (i.e.-WQC are exceeded.) This asymmetry in needed amounts of data is due simply to the fact that severe harm can come to aquatic ecosystems (and virtually all forms of life) from brief (minutes, hours) exposure to high levels of contaminants. Hence, proving that such short term conditions occurred *at no time* over a given period of years

requires essentially continuous monitoring. On the other hand, if available data represents only a small fraction of the time period in question, and those limited data points include one or more exceedances of specified magnitude/duration combinations, then simple probability tells us that collection of a substantial number of additional samples will reveal additional exceedances. Therefore, we can be very confident that WQC are being exceeded several times instream during the specified periods.

Decisions about what, where, and when to monitor are most important, and the answers to these questions can vary depending on the purpose of the monitoring program.

For example, if the program is supposed to measure the effectiveness of the CWA's regulatory program dealing with "point sources," then monitoring should generally take place just above and just below the discharge pipes coming from such sources. In addition, it would usually make most sense to analyze for pollutants that are covered in the source's permit. On the other hand, if the aim is to get an overall picture of water quality in a state (e.g., what percentage of waters are meeting WQS), then a statistically chosen random set of sampling locations would usually be best. Moreover, the types of pollutants to be tested for would need to be broader than just those known to be coming from a particular type of discharger. Currently, state ambient monitoring programs tend to be focused on waters that the state has declared impaired or suspects is polluted.

States, tribes, and territories are required to provide the results of their monitoring efforts in the form of two reports, submitted to EPA and made available to the public. These reports are generally submitted on April 1 of every even-numbered year (i.e., biennially).

The first report is the "305(b) Report," after the requiring section of the CWA. It should include all that which the state, tribe, or territory knows about all its waters -- healthy, threatened, and impaired.

The second is the "303(d) List" and should include only those waters that are either threatened or impaired. (Waters attaining WQS should not be on the list).

Starting in 2002, EPA is asking states, tribes, and territories to submit the information previously contained in separate 305(b) and 303(d) reports in one consolidated format. Under this new approach, all waters would be placed in one of five categories. These categories are defined by the amount of information available regarding a waterbody and the condition of the waterbody

In addition to the information on the condition of all waters in the state, tribal land, or territory, the 305(b) report should also provide information on which pollutants (chemicals, sediments, nutrients, metals, temperature, pH) and other stressors (altered flows, modification of the stream channel, introduction of exotic invasive species) are the most common causes of impairment to waterbodies and what are the most common sources of those stressors.

The report should also include a discussion of progress made toward meeting the CWA's goals since the time of the last 305(b) Report

A summary of the condition of assessed waters, nationwide can be found here, at this web site.

If monitoring and assessment indicate that for some uses and/or parameters, a waterbody or segment is not meeting WQS, then that water is considered "impaired" and goes on a special list called the "303(d) list," named after the section of the CWA that calls upon states, approved tribes, and territories to create such lists.

The 303(d) list should include not only currently impaired waterbodies but also waters believed to be threatened that are likely to become impaired (i.e., not meet WQS) by the time the next 303(d) list is due.

Current EPA regulations call for 303(d) lists to include only waters impaired by "pollutants," not those impaired by other types of "pollution" (altered flow and/or channel modification). If it is certain that a waterbody's impairment is not caused by a "pollutant" but is due to another type of "pollution" such as flow, the waterbody does not need to be on the 303(d) list. If, however, biological monitoring indicates there is impairment of aquatic life uses, but it is not clear whether a pollutant is at least one of the reasons, the water should be on the 303(d) list, and further analysis to identify the causes are needed. Waters impaired by "non-pollutant pollution" should be identified in 305(b) reports.

EPA guidance documents mention a number of different types of data and information that are considered "exiting and readily available." EPA has stated that such data include: (1) evidence of exceedance of a numeric WQC, (2) direct evidence of beneficial use impairment, (3) evidence that narrative standards are not being met, and (4) results of computer modeling of the waterbodies. EPA also requires that data from sources other than the state agency itself -- federal agencies, universities, volunteer monitoring groups -- must be considered if they meet the state's requirements for data quality.

Some of the above actions may initially seem obvious, such as evidence of numeric WQC exceedances. But even this can be subject to debate. For instance, suppose you are dealing with a WQC expressed as a 30-day average concentration of pollutant "x," and you have only two data points for the relevant 30-day period, each representing just one "grab sample." Suppose both were higher (more polluted) than the WQC. Should this water be listed as "impaired," or should more data be collected before putting the water on 303(d) list?

Use of a biological assessment of aquatic life uses could be one method to measure impairment of a designated use directly. Epidemiological studies showing a correlation between people swimming in the water and incidence of waterborne disease could be a direct measure of impairment of contact and recreation uses.

How should narrative WQC be interpreted? For example, how much "scum or floating debris" would constitute an exceedance? Would algal mats floating on a surface of the lake represent an exceedance of this narrative WQC, or perhaps of an "undesirable or nuisance aquatic life" narrative?

What if water quality computer modeling studies indicated that WQC would be exceeded at critical low flows, but actual monitoring data available from numerous samples from more typical flow conditions showed no exceedances of criteria. Should the waterbody be listed?

What level of training for volunteer monitors and what extent of quality assurance/quality control (QA/QC) measures should be required before data collected via volunteer monitoring efforts could be used as the basis of putting a waterbody on the 303(d) list?

The Atlas of American Waters which reflects a national picture of waterbody impairment as reported in the 1998 303(d) list. This can be found on the website located here. This table was compiled by EPA from information submitted in the states' 1998 and 2000 305(b) reports and represents the number of waterbodies for which the listed stressors or categories of stressors were cited as a cause of impairment.

The sediment referred to here is clean sediment/silt, not toxics-laden bottom sediments. Nutrients are phosphorus and/or nitrogen. "Other habitat alterations" means dams, channelization, bank destabilization, and removal of riparian vegetation, but usually not flow alteration. Organics refers to synthetic organics, not naturally occurring organic materials. Noxious aquatic plants includes blooms of blue-green algae and invasive species such as hydrilla.

The two most common causes of impairment, nutrients (nitrogen and phosphorus) and clean sediments, are parameters for which EPA and most states do not currently have numeric WQC. EPA is in the process of issuing criteria guidance for nutrients. Visit the EPA Office of Science and Technology's (OST) nutrient criteria homepage at http://www.epa.gov/ost/standards/nutrient.html.

Not all categories of stressors are mutually exclusive. For example, impaired biologic community is a condition that could result from any number of stressors (e.g., flow alteration, pH, temperature, and/or metals) listed in the table, but it could also mean impairments resulting from the introduction of exotic species. Fish consumption advisories would overlap with pesticides, metals, and/or organics.

The precise numbers presented in these tables should not be assigned a great deal of significance. Even the exact order in which the different stressors are listed should not be considered definitive. What can be said with considerable confidence is that the three most frequently encountered causes of impairment are nutrients, pathogens and sediments. By contrast "toxic chemicals" such as metals, pesticides, synthetic organics, and ammonia are not as frequently encountered. This graph shows that the most commonly cited causes of impairment vary from one major waterbody type to another.

Of course, this does not mean that the key pollutants for a particular river, lake, or estuary would reflect the national picture shown here.

Because of the implementation of CWA regulatory programs controlling point sources of pollution over the last three decades, industrial facilities and municipal sewage treatment plants no longer are the major cause of impairment of most of the nation's surface waters. On the other hand, diffuse sources of precipitation-induced runoff (nonpoint sources under the CWA) are the sole cause of impairment of nearly half of the waters that states, territories, and authorized tribes list in their 303(d) reports. It is also likely that in many of the 50 percent of the impaired waters where both point and nonpoint sources are significant contributors, nonpoint sources contribute considerably more pollutant loads than do point sources.

TMDLs

If monitoring and assessment indicate that a waterbody or segment is impaired by one or more pollutants, and it is therefore placed on the 303(d) list, then the relevant entity (state, territory, or authorized tribe) is required to develop a strategy that would lead to attainment of WQS.

Note: The CWA requires that Total Maximum Daily Loads (TMDLs) be developed only for waters affected by pollutants where implementation of the technology-based controls imposed upon point sources by the CWA and EPA regulations would not result in achievement of WQS. At this point in the history of the CWA, most point sources have been issued NPDES permits with technology-based discharge limits. In addition, a substantial fraction of point sources also have more stringent water quality-based permit limits. But because nonpoint sources are major contributors of pollutant loads to many waterbodies, even these more stringent limits on point sources have not resulted in attainment of WQS.

Such strategies must consist of a TMDL or another comprehensive strategy that includes a functional equivalent of a TMDL. In essence, TMDLs are "pollutant budgets" for a specific waterbody or segment that if not exceeded, would result in attainment of WQS.

TMDLs are required for "pollutants," but not for all forms of "pollution." Pollutants include clean sediments, nutrients (nitrogen and phosphorus), pathogens, acids/bases, heat, metals, cyanide, and synthetic organic chemicals. As noted previously, pollution includes all pollutants but also includes flow alterations and physical habitat modifications.

At least one TMDL must be done for every waterbody or segment impaired by one or more pollutants. TMDLs are done pollutant by pollutant, although if a waterbody or segment were impaired by two or more pollutants, the TMDLs for each pollutant could be done simultaneously.

EPA is encouraging states, tribes, and territories to do TMDLs on a "watershed basis" (e.g., to "bundle" TMDLs together) in order to realize program efficiencies and foster more holistic analysis. Ideally, TMDLs would be incorporated into comprehensive watershed strategies. Such strategies would address protection of high quality waters (antidegradation) as well as restoration of impaired segments (TMDLs). They would also address the full array of activities affecting the waterbody. Finally, such strategies would be the product of collaborative efforts between a wide variety of stakeholders.

TMDLs must be submitted to EPA for review and approval/disapproval. If EPA ultimately decides that it cannot approve a TMDL that has been submitted, the Agency would need to develop and promulgate what it considers to be an acceptable TMDL. Doing so requires going through the formal federal rulemaking process.

The first element of a TMDL is "the allowable load," also referred to as the pollutant "cap." It is basically a budget for a particular pollutant in a particular body of water, or an expression of the "carrying capacity." This is the loading rate that would be consistent with meeting the WQC for the pollutant in question. The cap is usually derived through use of mathematical models, probably computer based.

The CWA requires that all TMDLs include a safety factor as an extra measure of environmental protection, taking into account uncertainties associated with estimating the acceptable cap or load. This is referred to as the margin of safety (MOS).

Once the cap has been set (with the MOS factored in), the next step is to allocate that total pollutant load among various sources of the pollutant for which the TMDL has been done. This is in essence the "slicing of the pie."

TMDLs set loading caps for individual pollutants such as clean sediments, nitrogen, phosphorus, coliform bacteria, temperature, copper, mercury, and PCBs. Indicators of a group of forms of pollution can also be used, such as biochemical oxygen demand (BOD), which is often used when doing TMDLs for waterbodies with low dissolved oxygen. (Again, TMDLs are not required for non pollutant forms of "pollution," such as streamflow patterns and stream channel modification.) States, territories, and authorized tribes are free to develop TMDLs for such pollutants, as they see fit. The CWA and EPA regulations put no limits on these other government entities going beyond what the Act requires.

Though the CWA itself uses the term Total Maximum Daily Loads, EPA has determined that loadings rates (caps) can be expressed as weekly, monthly, or even yearly loads. Which time period to use depends on the type of pollutant for which the TMDL is being done. Toxic chemicals that exhibit acute effects would probably call for daily or weekly loads, whereas nutrients and sediments could be expressed as monthly or yearly loading rates.

The CWA allows for seasonal TMDLs, that is, it allows different rates of loading at different times of the year. For example, colder waters can absorb more oxygen-

demanding substances than can warm water, so allowable loadings could be higher in the winter than in the summer.

EPA regulations use the terms Wasteload Allocations (WLA) and Load Allocations (LA) to describe loadings assigned to point and nonpoint sources, respectively.

Generally, point sources that are required to have individual NPDES permits are also required to be assigned individual WLAs. On the other hand, a group of sources covered under a "general" NPDES permit would be assigned one collective WLA.

Although ideally, load allocations should be assigned to individual nonpoint sources, this is often not practical or even scientifically feasible; hence, loads can be assigned to categories of nonpoint sources (all soybean fields in the watershed, for example), or to geographic groupings of nonpoint sources (all in a particular sub watershed).

Even though the CWA provides no federal authority for requiring nonpoint sources to reduce their loadings of pollutants to the nation's waters, the Act does require states (and authorized territories and tribes) to develop TMDLs for waters where nonpoint sources are significant sources of pollutants. TMDLs do not create any new federal regulatory authority over any type of sources. Rather, with regard to nonpoint sources, TMDLs are simply a source of information that, for a given waterbody, should answer such questions as the following:

- Are nonpoint sources a significant contributor of pollutants to this impaired waterbody?
- What are the approximate total current loads of impairment - causing pollutants from all nonpoint sources in the watershed?
- What fraction of total loads of the pollutant(s) of concern come from nonpoint sources vs. point sources?
- What are the approximate loadings from the major categories of nonpoint sources in the watershed?
- How much do loads from nonpoint sources need to be reduced in order to achieve the water quality standards for the waterbody?
- What kinds of management measures and practices would need to be applied to various types of nonpoint sources, in order to achieve the needed load reductions?

A common misconception about TMDLs is that EPA has issued regulations specifying how the pollutant cap in a TMDL should be allocated among sources -- equal reductions for all or equal loadings from each, for example. EPA has no such regulations. States, territories, and tribes are free to allocate among sources in any way they see fit, so long as the sum of all the allocations is no greater than the overall loading cap. However, when thinking about changing the share of allowed loads among sources, it is important to realize that in all but very small waterbody segments, load **location matters**. In many cases, the farther away from the zone of impact that a loading enters into the waterbody

system, the less of an effect that load will have on the impaired zone. For example, studies of large watersheds, such as Long Island Sound, have indicated that one pound of pollutant (nitrogen in the case of the Sound) discharged close to the impaired zone has the same impact on that zone as 10 pounds discharged substantially farther away. Furthermore, even after accounting for location-related relative impacts on a particular segment or zone, care must be taken to ensure that localized exceedances of WQS do not result from moving loads from one tributary/segment to another.

For more information on allocation of loads under TMDLs, click here. This is a conceptual diagram showing how loads under a TMDL might be allocated to various kinds of sources and other factors. These include the margin of safety (MOS), the reserve capacity, the background, the nonpoint source categories, individual wasteload allocations for point sources, and load allocation to specific sub-basins.

Obviously, the bigger the slice of the pie, the less load that can be "given" to current or future sources. Deciding how much of the allowed load to assign to future growth and development presents some very interesting issues. There is an inevitable tradeoff between the interests of existing sources and those of future sources. If a TMDL does not set aside anything for the future, it will be harder to accommodate development that generates new loads of the pollutant in question. But if a relatively large amount is set aside for growth, then existing sources will get lower allocations and will therefore have to achieve greater reductions.

The background is the allocation of the total allowed load must reflect the contribution from uncontrollable sources. Of course, this would include loadings from truly natural sources. It would also include loadings from manmade sources that are essentially uncontrollable.

Loads can be assigned to entire categories of nonpoint sources, such as all of a certain type of farming operation. A TMDL can assign different-size slices to each of these sources. These allocations in the TMDL would be the basis for each source's NPDES permit discharge limit for the pollutant addressed by the TMDL.

Load allocation to specific sub-basins could be an option in situations where there are no significant individual point sources and the sub watershed is not dominated by one or two categories of nonpoint sources.

For more information on TMDLs, go to the webpage located here.

TMDLs are not "self-implementing." Hence, other authorities and programs must be used to implement the pollutant reductions called for by a TMDL or other strategy to achieve water quality standards. The exact authorities and programs a state, territory, or authorized tribe uses will depend on the type of sources present, as well as on social, political, and economic factors. A variety of federal, state, local, and tribal authorities and programs can be brought to bear, together with initiatives from the private sector.

Federal Wetland and Waters Regulation

The CWA provides a number of regulatory and voluntary tools that can be useful in achieving needed reductions. (It is likely, however, that the CWA tools alone may not be sufficient to achieve needed reductions, especially in situations where nonpoint sources dominate loadings. Other tools may be available from other federal programs, state and local government programs, academic institutions, the business community, nongovernmental organizations such as land trusts, and other sources.)

The NPDES permit program, established in Section 402 of the Clean Water Act, regulates a wide array of discharges falling under the CWA's definition of "point" sources. The permit program established by Section 404 of the CWA deals with the placement of dredged or fill materials into wetlands and other "waters of the United States."

Section 401 of the CWA requires that before a federal agency can issue a license or permit for construction or other activity, it must have received from the state in which the affected activity would take place a written certification that the activity will not cause or contribute to a violation of relevant state water quality standards. Downstream states whose WQS might be exceeded as a result of federal approval of the activity can also play a role in the 401 process.

CWA Section 319 created a federal program that provides money to states, tribes, and territories for the development and implementation of programs aimed at reducing pollution from "nonpoint" sources of pollution. The CWA provides no federal regulatory authority over nonpoint sources, in contrast to point sources.

By far, the largest federal source of money from the CWA comes through federal grants to states for the capitalization and operation of Clean Water State Revolving Loan programs. (In 1996, Congress created a Drinking Water State Revolving Loan Program under the Safe Drinking Water Act.)

CWA Section 106 authorizes federal grants to states, tribes, and territories to support the development and operation of state programs implementing the CWA.

NPDES Program

The CWA makes it illegal to discharge pollutants from a point source to the waters of the United States. Section 402 of the Act creates the National Pollutant Discharge Elimination System (NPDES) regulatory program. Point sources must obtain a discharge permit from the proper authority (usually a state, sometimes EPA, a tribe, or a territory). Though the CWA does contain a long-range goal of zero discharge of pollutants, these permits do not, as the name of this program might suggest, simply say "no discharge." Rather, they set limits on the amount of various pollutants that a source can discharge in a given time.

In most cases, the NPDES permitting program applies only to direct discharges to surface waters. Some cases in which discharges to ground water are directly hydrologically connected to a surface water have been incorporated into the NPDES program.

A wide variety of manmade conveyances are considered point sources, including pipes, ditches, channels, tunnels, certain kinds of ships, and offshore oil rigs.

NPDES permits cover industrial and municipal discharges, discharges from storm sewer systems in larger cities, storm water associated with numerous kinds of industrial activity, runoff from construction sites disturbing more than one acre, mining operations, and animal feedlots and aquaculture facilities above certain thresholds.

Special Exemptions

A number of types of discharges that meet the definition of a "point" source are not required to obtain an NPDES permit because of either statutory (congressional) or administrative (EPA) exemptions. These include the following:

- Some abandoned mines on nonfederal lands (state, local, private).
- Sewage (not other types of discharges) from ships covered by EPA's Vessel Sewage Discharge Program.
- Return flows from irrigated agriculture.
- Most drainage ditches associated with logging roads.
- Most smaller feedlots and aquaculture facilities.

Also, all so-called "indirect" dischargers are not required to obtain NPDES permits. The drawing at the following web site explains the difference between "direct" and "indirect" discharges (click here for slide). An indirect discharger is one that sends its wastewater into a city sewer system, so it eventually goes to a sewage treatment plant (POTW). Though not regulated under NPDES, "indirect" discharges are covered by another CWA program, called pretreatment. "Indirect" dischargers send their wastewater into a city sewer system, which carries it to the municipal sewage treatment plant, through which it passes before entering a surface water.

All permits state their issuance and expiration date. In accordance with the CWA, permit terms may not exceed 5 years. EPA's regulations require that permit applications be submitted to the permitting authority 180 days prior to discharge (if a new discharger) or permit expiration (if already an NPDES permit holder).

The first thing to determine is whether the state is "authorized" to administer the NPDES program. This authorization (sometimes referred to as delegation or primacy) is granted by EPA to a state if it can demonstrate that it has a program at least as stringent as EPA's regulations. If the state does not have authorization to administer the NPDES program, then EPA will be the permitting authority. Therefore, the EPA regional office issues the

permits, takes all the enforcement actions, and does the inspections and monitoring visits as necessary.

If a state, tribe, or territory has authorization then it is the permitting authority and performs all of the day-to-day permit issuance and oversight activities. In this case, EPA acts in an oversight role, providing review and guidance for the state's program. Under certain circumstances (e.g., objection to a permit, failure to enforce), EPA may determine that the state action is insufficient and may issue its own permit.

Regardless of who is the permitting authority, all draft permits must be made available for at least a 30-day public review and comment period. If the public expresses sufficient interest during the comment period or if issues require clarifications, a public hearing may be scheduled. After a final permit has been issued, stakeholders still have access to administrative (state/EPA) or judicial (courts) appeal processes.

The NPDES program is structured to provide permit coverage to point sources in one of two ways: developing a unique permit for each discharger, or developing a single permit that covers a large number of similar dischargers. We call these types of coverage: individual permits and general permits, respectively.

An individual permit is just what it sounds like. An individual facility gets its own unique permit designed for its specific discharge and situation. For example, ACME, Inc. has a process wastewater discharge to Pristine Creek. ACME completes an application that describes its operation and discharge and requests a permit to allow it to continue discharging. The permitting authority reviews the application and crafts and issues a permit that is unique to the ACME, Inc. facility and provides specific conditions that ACME must meet.

A general permit is a permit that covers a large number of similar facilities with a single permit document. In this case, the permitting authority identifies a large number of very similar facilities and determines that the permit conditions that would apply to these facilities would be virtually identical. The permitting authority then crafts and issues a general permit that can be used to cover any discharger that meets criteria established by the permitting authority. Once the general permit is issued, any dischargers that think they meet the general permit criteria can submit a Notice of Intent (or other appropriate notification) to the permitting authority requesting coverage and promising to comply with the conditions in the permit. The permitting authority can then grant coverage or require the facility to apply for an individual permit.

General permits are limited by certain regulatory and practical constraints. The regulations at 40 CFR 122.28 require the permitting authority to define the geographical area and sources. Geographical area can be just about anything (e.g., watershed, county lines, state boundaries). Sources covered can include storm water or a discharger category with similar operations, similar wastes, and needing similar limits. Very numerous, small sources are more appropriately controlled by general permits. The more complex the discharge, the more likely an individual permit will be required.

All individual NPDES permits include a certain set of basic elements. The first is perhaps the most obvious -- a specific, numeric, measurable set of limits on the amount of various pollutants that can appear in the wastewater discharged by the facility into the nation's waters. Such limits are often expressed as concentrations, combined with allowed volumes of discharge. Or, limits can be expressed as mass discharged per unit time (day, week, and so forth). Limits must be expressed in such a way that they cannot be met simply by diluting the facility's effluents with clean water just before they are released into the receiving water.

As explained in more detail later, such limits can be either technology based or water quality based. Regardless of how they are derived, effluent limits are performance standards; a permittee is free to use any combination of process modification, recycling, end-of-pipe treatment, or other strategies to meet them.

NPDES permits can also require the use of certain structural or non-structural BMPs. For "traditional" point sources, municipal wastewater plants and industrial facilities, BMPs are supplemental to end-of-pipe performance standards. For wet weather-related point sources, such as combined sewer overflows (CSOs) and municipal and industrial storm water runoff, BMPs are often the only "control" requirements in the permit.

If meeting the effluent limits in a permit will require upgrading in-plant or wastewater treatment processes, it would not be reasonable to require compliance with such limits upon issuance of the permit (in the case of existing sources). Hence, permits for such sources can include a compliance schedule. Such schedules usually include not only a final date upon which effluent limits must be met but also interim milestones, such as dates for onset of needed construction. EPA guidance specifies that compliance schedules extend no longer than the term of the permit.

Most individual NPDES permits include detailed monitoring requirements that specify what pollutants the permittee must monitor for in their discharge, how frequently the monitoring should be done, and what sampling and analytic techniques should be used. (Though EPA and states conduct some inspections and compliance monitoring, the vast majority of data about the contents of the discharges from NPDES facilities are collected by the permittees themselves.) In the past, permits required only monitoring of the facility's discharges, but in recent years, some states have required some facilities to sample and analyze the waters into which they discharge as well.

If a permit contains monitoring requirements, it will also include reporting requirements. Permittees are required to regularly submit the results of the monitoring required in their permit. Most commonly these Discharge Monitoring Reports must be submitted monthly, but in some cases they are less frequent. (General permits often require few, if any, monitoring or reporting requirements.)

All NPDES permits include a standard set of clauses, including provisions for reopening the permit if new information or other specific circumstances justify possible changes,

authority to revoke the permit for cause, and authority for the permitting authority to enter the facility and perform inspections.

An NPDES permit also includes a cover page (permitting authority, permittee, statutory and regulatory authorities, and effective/expiration dates), special conditions (e.g., studies, compliance schedules), and standard conditions (boiler plate language included in all permits). Along with a draft permit, the regulatory authority must include an explanation of how the discharge limits were derived.

The U.S. Environmental Protection Agency (EPA) developed the federal National Pollutant Discharge Elimination System (NPDES) stormwater permitting program in two phases. Phase I, promulgated in 1990, addresses the following sources:

"Large" and "medium" municipal separate storm sewer systems (MS4s) located in incorporated places and counties with populations of 100,000 or more, and eleven categories of industrial activity, one of which is large construction activity that disturbs 5 or more acres of land.

Phase II, promulgated in 1999, addresses additional sources, including MS4s not regulated under Phase I, and small construction activity disturbing between 1 and 5 acres.

In October 2000, EPA authorized the Florida Department of Environmental Protection (DEP) to implement the NPDES stormwater permitting program in the State of Florida (in all areas except Indian Country lands). DEP's authority to administer the NPDES program is set forth in Section 403.0885, Florida Statutes (F.S.). The NPDES stormwater program regulates point source discharges of stormwater into surface waters of the State of Florida from certain municipal, industrial and construction activities. As the NPDES stormwater permitting authority, DEP is responsible for promulgating rules and issuing permits, managing and reviewing permit applications, and performing compliance and enforcement activities.

The NPDES stormwater permitting program is separate from the State's stormwater/environmental resource permitting programs (found under Part IV, Chapter 373, F.S. (593KB) and Chapter 62-25, F.A.C. and local stormwater/water quality programs, which have their own regulations and permitting requirements.

The sources of stormwater discharges regulated under the NPDES program fall into three categories. Follow the links to the right for more information on each.

Effluent Limits

Technology-based effluent limits do not specify what technologies must be employed, but only the state levels of specific parameters that are allowed in the discharger's wastewater. Such limits are called "performance standards."

Technology-based limits are derived from studies of facilities within a specific industrial category aimed at determining what levels of discharge, pollutant by pollutant, can be achieved using the most cost-effective set of available pollution prevention and control techniques applicable to those types of facilities. EPA publishes packages of regulations, called "effluent guidelines," which lay out performance standards for different types of facilities within major industrial categories. All dischargers within each of these subcategories are required to meet these end-of-pipe limits, regardless of the condition of the water into which they discharge, their contribution of a pollutant relative to other sources, or other "risk-based" factors.

For existing direct dischargers, effluent guidelines are referred to as best available technology economically achievable (BAT). For new sources, technology-based limits are called New Source Performance Standards. Limits for new sources are often more stringent than those for existing sources, because new facilities can employ more options for building pollution prevention systems into their in-plant processes.

EPA also includes in its effluent guidelines package for a specific industrial category technology-based limits for "indirect" dischargers. These are called "categorical pretreatment standards," and cover performance standards for both existing and new sources. (Click here for EPA's effluent guidelines web site).

Water Quality-Based Effluent Limits (WQBELs) are used when it has been determined that more stringent limits than technology-based effluent limits must be applied to a discharge in order to protect the designated use (DU) of the receiving waters. WQBELs are "back calculated" from ambient water quality standards, setting allowable pollutant levels in the effluent, which after accounting for available dilution, will meet WQS in-stream.

The permitting authority performs such calculations when a TMDL for the receiving water has not been established. When an EPA-approved TMDL is available, the effluent limits must be consistent with the wasteload allocation (WLA) assigned to the source by the TMDL.

When numeric water quality criteria are available, dilution calculations or more sophisticated mathematical models are used to determine corresponding loading rates. When only narrative standards are present, translator mechanisms can be employed. For instance, a translator for a "no toxics in toxics amount" narrative could be a limit on the overall toxicity of the discharge–a so-called Whole Effluent Toxicity (WET) limit.

WQBELs are risk based and therefore generally place much less emphasis on economic and technological factors than do technology-based limits.

Click here for slide illustrating the differences between technology-based and water quality-based approaches to setting limits on loadings of pollutants. "Waterbody" is put in parenthesis to make the point that under the technology-based approach, success is

measured primarily by reductions in discharges of pollutants, not effects on receiving waters. Hence, ambient monitoring has often not been a high priority for states..

Effluent Monitoring

Besides effluent discharge limits, permits usually include effluent monitoring requirements. Fundamentally, permitting authorities require monitoring of pollutants limited in the permit so that the permittee can demonstrate compliance with its limits. If the monitoring demonstrates noncompliance, then the data can be used as the basis for an enforcement action.

The permittee must retain records for all monitoring information (which includes maintenance and calibration records, strip charts, reports, etc.) for at least 3 years from the date of sampling (sewage sludge data must be maintained for 5 years).

Monitoring may also serve to provide data about treatment efficiency and to characterize effluents for permit reissuance. Instream monitoring (above and below the outfall) may also be useful to assess impacts of the discharge, but is infrequently required.

The technology-based limits for municipal sewage treatment plants publicly owned treatment works (POTWs) are, with some exceptions, the same everywhere. As with all technology-based limits, permit requirements are expressed as end-of-pipe conditions, rather than spelling out what particular technologies should be employed. This set of numbers reflects levels of three key parameters: (1) biochemical oxygen demand (BOD), (2) total suspended solids (TSS), and (3) pH acid/base balance.

These levels can be achieved by well-operated sewage plants employing "secondary" treatment. Primary treatment involves screening and settling, while secondary treatment uses biological treatment in the form of "activated sludge."

Biosolids

EPA Biosolids is an actual excerpt from the Code of Federal Regulations, showing examples of technology-based limits.

The following definitions apply:

- BAT—Best Available Technology or Best Available Technology Economically Achievable (BATEA)
- NSPS—New Source Performance Standards
- PSES—Pretreatment Standards for Existing Sources
- PSNS—Pretreatment Standards for New Sources

The limits that appear on the right side of the table (PSES and PSNS) apply to indirect discharges–those going into community sewer systems rather than a stream, lake, bay, estuary, and so forth. These technology-based requirements for indirect industrial

discharges are often called "categorical" pretreatment requirements. Note: For cadmium, limits on new sources (NSPS, PSNS) are more than those for existing sources (BAT, PSES). New facilities can build pollution prevention and other techniques into their systems. This pattern does not always hold. For copper, for example, BAT, NSPS, PSES, and PSNS are all the same. Note that for both chemicals, BAT and PSES are the same, as are NSPS and PSNS.

EPA has published national regulations dealing with municipal sludge. The focus of these regulations is on toxics, pathogens, and "vectors" (flies, mosquitoes, rodents, and other carriers of disease). Sewage sludge can be disposed of in landfills, lagoons, incinerated, or land applied to serve as a soil enhancer or fertilizer. Land application of sewage sludge is often done on parks, golf courses, abandoned mines, and construction site restoration. It can also be applied to crops, including crops for human consumption.

The sludge program is designed to encourage communities to keep levels of contaminants in their sludge as low as possible. The cleaner a city's sludge is, the fewer are the federal limitations on disposal and use.

Municipal Wet Weather Flows

Initially, EPA and state water quality agencies focused on point source discharges that were essentially continuous, that is discharging at more or less the same rate year-round. Starting in the mid-1980s, attention was also directed to point source discharges that happened only during and after precipitation events–so called "wet weather flows." These included rainfall-induced runoff from industrial facilities, as well as two types of urban wet weather flows–combined sewer overflows and municipal separate storm sewers.

Combined sewer overflows, or CSOs, and municipal separate storm sewer systems, also called MS4s, are subject to regulatory control under the NPDES program.

A combined sewer system is one that, by design and by function, carries both sanitary sewage (wastewater from homes, offices, factories) and storm water. During dry weather these systems carry all sanitary flows to the wastewater treatment plant for treatment to levels specified in the NPDES permit. (EPA regulations prohibit untreated discharges from combined sewer systems during dry weather.)

During periods of rainfall or snow melt, the carrying capacity of the sewer collection system may be exceeded, causing a combined sewer overflow (CSO) at relief points in the sewer system. These relief points are designed into the sewer system to prevent basement flooding, backup onto the streets or overloading of the wastewater treatment facilities.

Overflow discharges from combined systems contain not only storm water but also untreated human and industrial waste, oil and grease, metals, sediments, and floating debris. Untreated discharges from CSOs can necessitate beach closing and shell fishing restrictions, to avoid the spread of human pathogens and resulting illness.

Cities with CSOs tend to be older than those with MS4s. They are concentrated in the Northeast, the Great Lakes States, and the Pacific Northwest..

While combined sewer systems have one set of pipes to carry both storm water and wastewater, municipal separate storm sewer systems (MS4s) have separate lines–one set for the storm water and another set for sewage. MS4s that discharge to surface waters are also required to get NPDES permits, since they are, in effect, point source discharges of water mixed with various pollutants–oil and grease, metals, pesticides, pathogens, sediment and nutrients.

Because they deal with systems that are quite different from the point source discharges covered by "traditional" NPDES permits, MS4/CSO permits take a different approach in several aspects.

Because MS4/CSO systems often have large numbers of outfalls (discharge points), permits for such systems do not usually address outfalls individually. Rather, one permit is issued covering all the outfalls in a city's CSO or MS4.

Because we have much less experience with treating pollutants in wet weather-dependent urban discharges, and because the volume of wastewater being dealt with varies greatly, relatively few reliable and cost-effective treatment methods are available. Hence, it is difficult to predict with any precision what treatment levels can be achieved on a regular basis. Consequently, pollutant-by-pollutant end-of-pipe discharge limits are the exception rather than the rule in NPDES permits for MS4s and CSOs.

Instead, requirements for installation of certain types of structural devices or employment of various management strategies are (Click here for information on urban storm water BMPs.)

In addition, NPDES permits for urban wet weather discharges require cities to develop an overall strategic plan for addressing runoff of pollutants from various types of land use currently employed and expected in the future.

NPDES permits have already been issued MS4s serving more than 100,000 people.

To receive a permit, these "Phase I" communities were required to submit detailed application forms. These applications include a wide array of information, such as what was then known about separate storm sewer pipes underneath the city and where they emerged as outfalls (discharges to surface waters).

Because of the large number of outfalls associated with most MS4s, unlike "traditional" point sources, these systems were not required to sample and analyze discharges from every outfall. Only a subset of what were thought to be outfalls representative of the system as a whole had to be tested and reported upon.

Cities applying for Phase I NPDES permits for their MS4s were required to develop a plan for reducing pollutant loadings into the MS4 and remove what had gotten into the system regardless, to the "maximum extent practicable." They also had to provide an estimate of the degree of effectiveness of the overall program they proposed, in terms of reduction in pollutant discharges from MS4s and consequent changes in stream conditions.

One of the most basic requirements in permits for MS4s calls for elimination of all "non-storm water" discharges. The reason for this provision is that if sewage coming from homes, businesses, industries, hospitals, and other facilities goes into a MS4, that sewage will be discharged to a receiving water without going through the municipal sewage treatment plant (because of the basic design of an MS4). Once an illegal/illicit connection has been located--in itself no small task, one option is to dig down to the point where the pipe(s) from the home/business/other waste-generating facility connect with the MS4, and move the connection over to the sanitary sewer line. Another option is to leave the connection in place, but treat it like a direct point source discharge, and require it to obtain an NPDES permit.

Another key requirement is implementation of a program to reduce loadings of pollutants in stormwater runoff from existing sources in all major urban land use categories to the "maximum extent possible" (MEP). Because EPA has not issued detailed, precise regulations or guidance regarding what activities or levels of pollutant removal constitute MEP, this key term is being defined on a MS4-by-MS4 basis.

MS4 communities are also required to develop and implement a program aimed at controlling levels of polluted runoff generated by new development activity. Such controls should not only address runoff during the construction stage, but also post construction runoff.

The basic requirements applied to all CSO systems -- often referred to as the "minimum measures" -- do not include a statement of required or expected end-of-pipe concentrations of individual pollutants, as would be the case with technology-based limits on POTWs or industrial process wastewater. Rather, the nine measures are a listing of key operating principles for CSOs, all aimed at reducing the volume of wastewater that is routed around the POTW and lowering the amount of pollutant loads associated with CSO events.

These principles are translated into greater detail on a CSO permit-by-permit basis. Still, most current CSO permits do not contain end-of-pipe limits.

Because it is often impractical to eliminate CSO events entirely, especially in major storms, communities are required to notify the public that CSO events have occurred, and that this will make it unsafe to swim in the receiving waters of CSO outfalls (discharges) for a certain period. Such notification can take the form of signs posted at popular swimming areas, radio or television public service announcements, or other means of informing the public.

Communities with CSOs are also required to develop a long-term plan for dealing with water quality problems caused by CSOs. Among the provisions of such plans are strategies for eliminating, or at least minimizing, CSO discharges to sensitive area such as locales with significant amounts of primary contact recreation (swimming), shellfish beds, drinking water supplies, and waters with threatened and endangered species and their habitats. Click here to visit EPA's CSO web site.

Operators of industrial facilities falling into 1 of 11 categories listed by EPA in its storm water regulation (several of which are listed in the accompanying slide) need an NPDES permit if the storm water is discharged directly to a surface water or goes into a municipal separate storm sewer system (MS4) . Most such operations are likely to be covered under a general NPDES permit, but some may need an individual NPDES permit.

EPA has included the category under "storm water associated with industrial activity" runoff from construction sites. As of March 10, 2003, Construction activities disturbing 1 or more acres need NPDES permits. At a minimum, these permits require development of a site-specific storm water pollution prevention plan, covering both the construction and the post construction phases of the project.

EPA Industrial Stormwater

A Storm Water Pollution Prevention Plan (SWPPP) must include a site description, including a map that identifies sources of storm water discharges on the site, anticipated drainage patterns after major grading, areas where major structural and nonstructural measures will be employed, surface waters, including wetlands, and locations of discharge points to surface waters.

The SWPPP also describes measures that will be employed, including at least protection of existing vegetation wherever possible, plus stabilization of disturbed areas of site as quickly as practicable, but no more than 14 days after construction activity has ceased. (For more information on regulation of construction activities, click here.)

Permit Violations

In addition to such obvious situations as discharging without having obtained an NPDES permit and exceeding the pollutant discharge levels set forth in the permit, NPDES permittees are also in violation if they fail to comply with monitoring and reporting requirements laid out in their permit.

Often, permits will not require attainment of effluent limits immediately upon receipt of a permit. Permittees will be given time to modify their operations and/or install new equipment. If the "compliance schedule" extends for longer than a year after permit issuance, interim milestones must be included. Examples of such interim steps are (1) completion of detailed design drawings, (2) the letting of contracts to equipment installers, and (3) onset of construction. (Such compliance schedules should, as a general rule, not extend beyond the 5-year term of the project.) Failure to meet such interim deadlines is a permit violation, just as exceedance of an effluent limit would be.

Permittees are required to notify the NPDES authority (usually a state) when they realize they have failed to comply with one or more of the permit conditions. EPA and state NPDES agencies also send inspectors to a permitted facility from time to time.

Enforcement

States, territories, and tribes are primarily responsible for enforcing NPDES permits when given responsibility by EPA. EPA takes enforcement action if these entities fail to do so. EPA must first inform the state, territory, or tribe of its belief that enforcement is necessary and give it time to take action.

The NPDES program promotes compliance assistance, which helps permittees come into, and remain, in compliance with their permit, rather than going immediately to enforcement actions.

Enforcement actions include the following:

- Injunctions
- Fines for typical violations (exceed permit limits, failure to report)
- Imprisonment for criminal violations (repeated, willful violations)
- Supplemental environmental projects (SEP)

With a SEP, instead of simply paying a fine to the federal or state treasury, the violator must spend more money than the amount of the fine on a relevant environmental project, such as wetlands restoration or abandoned mine cleanup.

Citizens can also bring a lawsuit against a violator, but they must provide a 60-day notice to EPA and the state, territory, or tribe to give them time to take action against the violator.

Section 319: Nonpoint Source Program

Nonpoint source pollution (NPS) represents the most significant source of pollution overall in the country. According to states' 305(b) and 303(d) reports, more miles of rivers and acres of lakes are impaired by overland runoff from row crop farming, livestock pasturing, and other types of nonpoint sources than by industrial facilities, municipal sewage plants, and point source runoff from municipal storm sewer systems and storm water associated with industrial activity. The most recent set of 303(d) reports indicated that more than 40 percent of all impaired waters were affected solely by nonpoint sources, while only 10 percent of impairments were caused by point source discharges alone.

The CWA does not provide a detailed definition of nonpoint sources. Rather, they are defined by exclusion -- anything not considered a "point source" according to the Act and EPA regulations. All nonpoint sources of pollution are caused by runoff of precipitation (rain and/or snow) over or through the ground. However, as noted previously numerous

types of precipitation-induced runoff are treated as point sources rather than as nonpoint sources under the CWA -- including stormwater associated with industrial activity, construction-related runoff, and discharges from municipal separate storm sewer systems (MS4s).

Atmospheric deposition is also a form of nonpoint source: pollutants discharged into the air and returned directly or indirectly to surface waters in rainfall and snow, as well as so-called dry deposition between precipitation events. (Of course, "smokestack industries" such as fossil-fueled electric generating plants could be considered "point sources of air pollution". But the diffuse deposition of pollutants emitted by such facilities is a form of nonpoint source in the context of water pollution.)

Pollutants commonly associated with NPS include nutrients (phosphorus and nitrogen), pathogens, clean sediments, oil and grease, salt, and pesticides.

Congress chose not to address nonpoint sources through a regulatory approach, unlike its actions with "point" sources. Rather, when it added Section 319 to the CWA in 1987, it created a federal grant program that provides money to states, tribes, and territories for the development and implementation of NPS management programs.

Under the Clean Water Act Section 319, states, territories, and delegated tribes are required to develop nonpoint source pollution management programs (if they wish to receive 319 funds).

Once it has approved a state's nonpoint source program, EPA provides grants to these entities to implement NPS management programs under Section 319(h). Section 319 is a significant source of funding for implementing NPS management programs, but there are other federal (e.g., Farm Bill), and state, local, and private programs.

Initially, only $38 million a year was appropriated, but funding has increased significantly since then. In FY 2002, Congress appropriated $237 million for Section 319 grants. Recipients of these federal monies must provide a 40 percent match, either in dollars or in-kind services.

States and territories "pass on" a substantial fraction of the 319 funds they receive from EPA to support local nonpoint source pollution management efforts. Depending on the state or territory, a "local match" may be required.

Though there is no CWA federal regulatory authority over nonpoint sources of pollution and the Act does not require states to develop their own regulatory programs in order to obtain 319 grants, states, territories, and tribes may, at their discretion, use 319 funds to develop their own NPS regulatory programs.

Sec. 319 funds can also be used for the development and implementation of TMDLs in watersheds where nonpoint sources are a substantial contributor of loadings of the pollutant(s) causing impairment. Five percent of a state's 319 funds can be used for Clean

Lakes program activities and 319 funds can be used for projects aimed at protecting groundwater.

A state, tribe, or territory receiving Section 319 funds must complete and update an NPS management plan every 5 years. Elements of such statewide strategies are discussed below.

States and tribes must identify waters that are impaired or threatened by nonpoint sources of pollution, develop short- and long-term goals for cleaning them up, and identify the best management practices (BMP) that will be used. The state and tribal NPS programs must also have a monitoring and evaluation plan, which is usually tied into the state 305(b) assessment and reporting program.

The BMP section of the plan requires identification of the most common types of stressors, the categories of sources of those stressors, and the types of BMPs that will be both effective and affordable in addressing the identified stressors and sources in general. (Stressors include pollutants, flow alteration, channel modification, invasive species, and others.) BMP efforts include both "statewide" and targeted elements. The former involves efforts to get a baseline level of BMPs implemented in all land uses that can generate nonpoint source pollution -- farms and forestry operations, for example. Targeted BMP efforts are aimed at having additional amounts and types of BMPs employed in the drainage of impaired or threatened waters.

Nonpoint source management plans also identify strategies for working with other agencies and private entities. For example, the Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture is an extremely valuable partner in farm country, since NRCS has access to technical staff and significant cost-share funding under the Conservation Reserve Program and the Environmental Quality Improvement Program and other programs authorized in the 2002 Farm Bill.

Management plans also include the identification of federal lands and activities, which are to be managed in a manner consistent with program objectives of the 319 management plan.

Early in the life of the 319 program, EPA emphasized development of management strategies, combined with deployment of BMPs for education, demonstration, and research purposes. Recently, EPA has increased emphasis on evaluation of program effectiveness, including attempts to document the water quality benefits of BMPs and other program elements. Also, the Agency has notified some states that, starting in FY 03, a sizeable portion of 319 funds should be spent on on-the-ground BMPs only if they are related to a holistic watershed plan or a TMDL specific to the area in which they are located.

For more information, visit:

- Nonpoint Source Page, What is NPS?: http://www.epa.gov/owow/nps/whatis.html

- NPS, Publications and Information Sources: http://www.epa.gov/owow/nps/pubs.html
- Clean Water Act, Section 319: http://www.epa.gov/owow/nps/cwact.html
- NPS Outreach Page: http://www.epa.gov/owow/nps/outreach.html

Section 404 Program

Although most commonly associated with activities that involve filling of wetlands, Section 404 actually deals with one broad type of pollution -- placement of dredged or fill material into "waters of the United States". Wetlands are one component of "waters of the United States;" however, there are numerous other types -- intermittent streams, small perennial streams, rivers, lakes, bays, estuaries, and portions of the oceans.

One of the controversial aspects of Section 404 is exactly what is and isn't a wetland. Federal regulations define wetlands as:

"Those areas that are inundated or saturated by surface or ground *water* at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of *vegetation* typically adapted for life in saturated *soil*." [33CFR328.3(b)] (italics added)

For an area to be declared a wetland, it should exhibit all three of the key features -- hydrology, wetland-dependent vegetation, and soil types associated with water-saturated conditions. However, some kinds of wetlands, such as bottomland hardwood swamps, are dry during some periods. The absence of water or saturated soil at any given moment does not render a plot "not a wetland," if the vegetation and soils indicate that wet conditions often do occur and hydrological data support this conclusion.

The 404 permit program is administered jointly by EPA and the U.S. Army Corps of Engineers. The Corps handles the actual issuance of permits (both individual and general); it also determines whether a particular plot of land is a wetland or water of the United States. The Corps has primary responsibility for ensuring compliance with permit conditions, although EPA also plays a role in compliance and enforcement. The U.S. Fish and Wildlife Service and National Marine Fisheries Service play special advisory roles because of their expertise regarding wildlife habitat.

EPA issues certain guidelines and policies, including methods for determining whether a particular tract is a wetland. EPA can actually veto a Corps-issued permit (a step rarely taken.)

EPA is also responsible for determining whether portions of the 404 program should be turned over to a state, territory, or tribe. (To date only a few states have assumed 404 responsibility for nontidal waters.) When 404 authority has been given to a state, EPA oversees implementation of the program. If necessary, EPA can "take back" the program.

The essence of Section 404 policies is the concept of "sequencing." This is a step-wise process, in which one must go through one step before going on to the next.

Step 1 is called "avoidance." Whenever practical, filling of waters of the United States should be avoided. A key issue in avoidance is whether the proposed activity is dependent on being located on or adjacent to a body of water. A marina, for example, would be dependent. A tennis court or shopping mall would not. Another issue is whether the plot of property on which the proposed project would be located contains sufficient amounts of dry land to accommodate the project.

If an impact on wetlands cannot be avoided entirely, then attempts to minimize the impacts are required. Often, changes in the position or design of a project can significantly reduce the amount of wetland acreage affected.

The final step in 404 sequencing is compensation. A long-standing federal policy called "no net loss" of wetlands drives compensation requirements under 404. The basic concept is that for every acre of wetland lost, at least one functionally equivalent acre of wetland must be restored. "Creation" of wetlands at sites where wetlands did not naturally occur is less acceptable than restoration of destroyed or degraded wetlands, because efforts to create wetlands have been deemed largely unsuccessful. Only in exceptional circumstances will preservation of existing healthy wetlands be accepted as mitigation for loss of wetlands permitted under Section 404.

WQS Certification

Section 401(a) of the CWA requires that before issuing a license or permit that may result in any discharge to waters of the United States, a federal agency must obtain from the state in which the proposed project is located, a certification that the discharge is consistent with the CWA, including attainment of applicable state ambient water quality standards. (The CWA also provides a mechanism whereby downstream states whose water quality may be affected by a federally-permitted or licensed project can engage in the 401 process.)

CWA provisions to which Section 401 certification applies include 404 permits from the Corps of Engineers and EPA-issued NPDES permits.

Section 401 certification has been a key issue in the relicensing of private hydropower dams by the Federal Energy Regulatory Commission (FERC.) In a number of cases, states have convinced FERC to include conditions in the new licenses for dams, requiring changes in dam management designed to prevent impairment of uses designated for affected waters in state water quality standards.

State Revolving Loan Funds

In 1987, Congress voted to phase out the old construction grants program for funding of municipal sewer and wastewater treatment plant upgrades, replacing it with the Clean Water State Revolving Fund (CWSRF).

Under the CWSRF, EPA provides annual capitalization grants to states, which in turn provide low interest loans for a wide variety of water quality projects. States must match the federal funds with $1 for every $5 (20 percent match). As a result of federal capitalization grants, state match, loan repayments, and leverage bonds, the total amount of assets in all the CWSRFs is approaching $40 billion. Between $3 and $4 billion is loaned annually from CWSRFs nationwide.

Some funds are also provided to territories and tribes to be used as grants for municipal wastewater treatment projects. Territories must match the federal funds with a 20 percent match, while the tribes are not required to provide a match.

Loans are usually made at low (sometimes even no) interest. Although most loans have gone to local governments, they can also go to businesses or nonprofit organizations. Payback periods for loans extend to 20 years.

Most of the CWSRF dollars loaned to date have gone for construction expansion, repair, or upgrading of municipal sewage collection and treatment systems. But CWSRF loans can also be made for (1) NPS control projects consistent with a state, territorial, or tribal Section 319 program, or (2) implementation of a management plan developed under the National Estuary Program.

As of the end of 2001, over 30 CWSRFs had lent over $1.4 billion for nonpoint source projects. Such projects include loans to:

- Homeowners for repair and upgrade of septic systems
- Land trusts for purchase of sensitive lands/easements
- Purchase and restoration of degraded wetlands
- Dry cleaners to clean-up soil and ground water contamination on brownfields
- Farmers for equipment and structures to minimize runoff from fields

Managers of SRFs must comply with several basic requirements:

- Protect the capital (principle) in the fund -- ensure funds circulating in the CWSRF do indeed "revolve" and not diminish over the long run.
- Develop "intended use plans" -- develop project lists of upcoming loans in the next fiscal year.
- Provide for public participation and comment on intended use plans.
- Create a NEPA-like process, whereby the environmental impacts of projects getting loans are analyzed and options are considered.

Web Resources

For more information on the Federal programs discussed above, visit:

EPA's Section 404 of the Clean Water Act: An Overview web page:
http://www.epa.gov/owow/wetlands/facts/
fact10.html

Army Corps of Engineers Regulatory Program: http://www.usace.army.mil/inet/functions
/cw/cecwo/reg/

Wetlands Regulations: http://www.epa.gov/owow/wetlands
/regs.html

State, Local, and Tribal Initiatives: http://www.epa.gov/owow/wetlands
/initiative/

Water Quality and 401 Certification: http://www.epa.gov/owow/wetlands
/waterquality/

Monitoring and Assessment: http://www.epa.gov/owow/wetlands
/monitor/

Wetland Restoration: http://www.epa.gov/owow/wetlands
/restore/

Outreach:
http://www.epa.gov/owow/wetlands
/resources/information.html

Click here for more information about the CWSRF.

U.S Fish and Wildlife Service

The South Florida Ecological Services Office of the US Fish and Wildlife Service review all federally sponsored and/or federally funded projects to ensure that they are in compliance with all applicable Federal environmental regulations, including the Clean Water Act - Section 404 wetlands protection provisions, Endangered Species Act provisions, Migratory Bird and Raptor Protection provisions, and any other appropriate environmental statutes that apply to the project.

Technical assistance includes a species list by County and community types used by each species. Species specific guidelines are under development.

The joint U.S. Fish and Wildlife Service and National Marine Fisheries Service handbook is available on-line but the following appendices are not available electronically:

- Appendix A -- regulations and policies relating to consultation
- Appendix C -- sample biological opinions
- Appendix D -- Fish and Wildlife Service Solicitor's opinions

The full version of the handbook can be purchased from the Government Printing Office. Questions on the contents of the handbook should be directed to the Fish and Wildlife Service Regional Office nearest you. Page numbers in this electronic version may not match the printed version due to the size of the file and formatting requirements. The handbook files below are in .pdf format. To view this file, you will need Acrobat Reader which is available for **free** from Adobe, Inc.)

- Cover Page, Forward, Table of Contents, Executive Summary, Glossary and Chapter 1
- Chapters 2 - 3 - Coordination and Informal Consultation
- Chapter 4 - Formal Consultation
- Chapters 5 - 9 - Special Consultations; Conference; Early Consultation; Emergency Consultation; Monitoring
- Appendix A (Cover Page Only)
- Appendix B
- Appendices C-H (Cover Page Only for Appendices C & D)

U.S. Geological Service

The U.S. Geological Service (USGS) serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. USGS has become a world leader in the natural sciences thanks to our scientific excellence and responsiveness to society's needs.

The USGS employs the best and the brightest experts who bring a range of earth and life science disciplines to bear on problems. By integrating diverse scientific expertise, the USGS is able to understand complex natural science phenomena and provide scientific products that lead to solutions. Every day the 10,000 scientists, technicians, and support staff of the USGS are working for you in more than 400 locations throughout the United States.

As the Nation's largest water, earth, and biological science and civilian mapping agency, the U.S. Geological Survey (USGS) collects, monitors, analyzes, and provides scientific

understanding about natural resource conditions, issues, and problems. The diversity of our scientific expertise enables us to carry out large-scale, multi-disciplinary investigations and provide impartial scientific information to resource managers, planners, and other customers.

The USGS is organized with a Headquarters and Eastern Region facility in Reston, Virginia. Central Region and Western Region offices are located in Denver, Colorado, and Menlo Park, California, respectively. Thousands of other USGS employees are working in every State in the Nation. The office that serves the Estero Bay Watershed in the Florida Integrated Science Center, St. Petersburg at
600 Fourth Street South, St. Petersburg, FL 33701,Phone: (727) 803-8747,Fax: (727) 803-2030

Other Federal Management Actions

Everglades Restoration

The overview of Everglades Restoration is described in Section 3: Programmatic Context. Projects funded through the Everglades Restoration Process in the Estero Bay Watershed include:

- Lakes Park Restoration,
- The Southern CREW Project.

Lakes Park Restoration

The project is expected to enhance surface water runoff quality by creating a meandering flowway with shallow littoral zones and removing aquatic and upland exotic vegetation. The littoral zone will be harvested periodically to remove excess nutrients from the system. Exotic vegetation will be removed and replaced with native vegetation on 11 acres of upland. Additional information can be found at:

http://www.evergladesplan.org/pm/projects/proj_94_lakes_park.cfm.

Lower Charlotte Harbor, Caloosahatchee and Estero Bay Initiatives

In FY 2004, the SFWMD funded 5 basin initiatives including one for Estero Bay. For FY 2005, the State of Florida provided additional funding for the program. During the 2005 Legislative session, a specific appropriation was approved for Lower Charlotte Harbor for $450,000. Also, SB 444 was passed providing a source of funding for implementation of priority waterbody SWIM Plans throughout the State. Funding amounts for each waterbody will be included in the SFWMD's final budget each year.

Descriptions of the SFWMD FY04 and FY05 Lower West Coast projects, including initiative-funded projects are found in Appendix B: Lower West Coast Project Descriptions.

2004 Restoration Projects

Each year, land acquisition and restoration projects are tracked by the CHNEP as a requirement of Federal Government Performance and Review Act (GPRA) as implemented by the EPA. Annually, a database is prepared that details the accomplishments within the CHNEP study area, including Lower Charlotte Harbor, Tidal Caloosahatchee, and Estero Bay basins. As an example, the following table details the restoration projects undertaken during 2004. In addition, nearly 450 acres were acquired at a cost of $6,400,000 in 2004 and within the CHNEP area of LCH.

Table 31: CHNEP Lower Charlotte Harbor 2004 Restoration Projects In The Estero Bay Watershed

project name	project description	partners	acreage	linear miles	project cost
Lee County Flow way Exotics Removal	removal of exotic invasive plants from creeks and flow ways	SFWMD, Lee County		55.00	$2,762,000.00
San Carlos Bay-Bunch Beach Preserve	Remove invasive exotic plants	Lee County, FDEP		1.00	$44,990.00
Imperial Marsh Preserve	Removal of invasive exotic Brazilian pepper	Lee County, Department of Corrections	5.00		$0.00
San Carlos Bay-Bunch Beach Preserve	Remove invasive exotic plants	Lee County, FWS	103.00		$25,000.00
Big Hickory Island Preserve	exotic plant removal	Lee County, FDEP	7.00		$49,500.00
Southwest Florida Regional Airport	Remove exotic invasive species, restore hydrology- net gain of wetlands	Lee County Port Authority	540.00		$1,080,000.00
Estero Bay Watershed Initiative	water quality improvements to the riparian area of Imperial River	SFWMD, City of Bonita Springs		2.00	$172,232.00
Lakes Park Master Plan	Exotic removal, planting of native vegetation	Lee County, Lakes Park Enrichment, Inc.	121.00		$451,497.00
			776.00	58	$4,582,219.00

The CHNEP CCMP calls for a 25% increase in land under stewardship over 1998 levels. This objective was accomplished NEP-wide by 2000 but also in the Estero Bay Watershed. In the 6 fiscal years since 1998, over ,000 acres have been placed under stewardship in the Charlotte Harbor, Tidal Caloosahatchee, and Estero basins.

Table 32: Lands in Stewardship

	Base (1998)	1999	2000	2001	2002	2003	2004	Total	Percent over Base
Estero	22,502	122	3,032	1,491	2,429	3,887	167	33,630	
% of 1998 base		1%	13%	7%	10%	18%	2%		50%
Cumulative% over 1998 base		1%	14%	21%	31%	49%	50%		50%

The following table provides the individual land acquisitions for the Estero Bay Watershed area for 2004.

Table 33: 2004 Estero Bay Acquisitions for Stewardship

project name	project description	partners	acreage	cost
Critical CREW/Imperial Flow way	Acquisition to preserve historic sheet flow through the Corkscrew Regional Ecosystem	SFWMD	20.58	$116,096.08
Newton Beach Park	Acquisition to preserve beach and dune, loggerhead turtle nesting habitat	Trust for Public Land, Town of Fort Myers Beach, Florida Community Trust, Lee County	1.00	$2,700,000.00
Six Mile Cypress Preserve	Extension of a cypress arm flow-way corridor which also serves as a corridor for wildlife	Lee County Department of Parks and Recreation	2.00	$15.20
Critical CREW-Evans	Acquisition for preservation and restoration of historic flow way	SFWMD	10.00	$43,905.00
Critical CREW-Baumert	Acquisition to preserve and restore historic flow way	SFWMD	5.00	$75,974.25
Critical CREW project	Acquisition to protect and restore historic flow way	SFWMD	4.50	$106,000.00
Critical CREW	Acquisition to maintain and restore historic flow way, 2 parcels, 2.5 and 5 acres	SFWMD	7.50	$294,717.00
Critical CREW - Holton parcel	Acquisition for habitat preservation and preservation of sheet flow	SFWMD	10.00	$185,735.00
Critical CREW Zimmerman Acquisition	Acquisition of land for permanent preservation, and preserve sheet flow through	Florida Department of Forestry	0.98	$268,750.00

project name	project description	partners	acreage	cost
	Corkscrew swamp			
Total			61.56	$3,806,377.33

Private Regional and Local Organizations

The Conservancy of Southwest Florida

Since its grass-roots beginnings when citizens rallied to put the brakes on a road slated to run through pristine Rookery Bay, the Conservancy has emerged as the leader in the challenge to protect and sustain Southwest Florida's natural resources.

Now over 40 years old, the Conservancy's commitment to conservation is stronger than ever. Since 1964, when it emerged from a single cause, the Conservancy has fully embraced its mission using advocacy, education and scientific research to advance its work. The Environmental Science Division has become a respected center for scientific data relevant to Southwest Florida and uses this research to promote Conservancy efforts. Environmental policy staff inform legislators and other key leaders so they can make decisions that favorably impact the environment. Meanwhile, education remains a cornerstone of the Conservancy with programs that teach adults and children how to care for the environment and how individual actions can make a positive difference.

The Conservancy has been providing care to injured Wildlife at its Rehabilitation Center since 1973. In 2001, The Conservancy's Sea Turtle Monitoring and Protection Program celebrated its 20th anniversary and the program enjoys the distinction of being one of the country's most established and respected such programs.

Given today's rampant pace of development and other current environmental concerns, the Conservancy is at a critical juncture. The organization continues to build on its history and forge ahead in the crusade to preserve precious natural resources and to ensure the highest quality of life afforded by Southwest Florida's rich and unique environment.

The Conservancy’s Division of Environmental Policy plays a critical role in protecting and preserving the area’s natural resources. The division continues to help shape area land use and environmental preservation to protect Southwest Florida’s wetlands, wildlife and water supply.

Conservancy policy staff advocate for land use policies that direct development away from environmentally sensitive areas and oppose new developments that threaten the environment.

Water Quality:

- Conservancy contested new Florida Impaired Waters List for Collier County which delisted most water bodies from 1998 list
- Data collected by Collier County was not included in database—2/3 of data for County

- Florida DEP agreed to reassess data, revise list

SFWMD Rule Challenge Background Info.

On November 13, 2003, the Conservancy filed an Administrative Challenge to the South Florida Water Management District's (SFWMD) Basis of Review for issuing Environmental Resource Permits. The premise of the rule challenge is that the District's stormwater permit rules fail to address dissolved nutrients, which are a serious water quality problem in southwest Florida. When building new projects, developers are currently required only to treat the first inch of stormwater runoff, typically with wet detention ponds. The District agreed that a different approach was needed in order to address dissolved nutrients, and thus we entered negotiations to formulate a new approach and draft rule.

We have been meeting monthly with the SFWMD and other stakeholders over the past year in order to create an alternative approach and draft rule that would give credit for implementing best management practices, including pollution prevention as well as alternative treatment methods. On May 11, 2005, the SFWMD board voted unanimously to write the new rule and work to get it on the books, a process that involves holding public hearings. "This is a good thing for Southwest Florida," said Alice Carlson, president of a real estate consulting firm in Naples and the newest board member representing Southwest Florida. "I would hope that you do get a similar task force for east of there." (News-Press)

Last week, staff attended the public workshops and gave comment in support of the draft rule. There was a large amount of opposition voiced at the public workshop from the development community (even from stakeholders who have participated in negotiations with us the past year to draft the proposed rule) on the proposed more stringent standards. In order for this proposed rule to go forward through development and be approved for rule making, it will need a solid coalition of support for improved water quality treatment standards.

Corkscrew Regional Ecosystem Watershed Trust

The Corkscrew Regional Ecosystem Watershed (CREW) Land & Water Trust was established in 1989 as a nonprofit organization to coordinate the land acquisition, land management, and public use of the 60,000-acre CREW. This watershed straddles Lee and Collier Counties and provides aquifer recharge, natural flood protection, water purification, preservation of wildlife habitat, and public recreation. Since 1990, CREW has coordinated the purchase of nearly 27,500 acres. The CREW Land & Water Trust was the first public/private partnership approach to an ecosystem-based acquisition project in Southwest Florida. CREW is a Florida Forever project and the SFWMD continues to acquire land within the designated boundary of CREW and restore the natural habitat. http://www.crewtrust.org/.

Council of Civic Associations

The Council of Civic Associations, comprised of over 100 civic and homeowner associations scattered across Lee County, is a networking organization that strives to educate, inform and encourage citizens to become more involved with their government. For several years it published a free newsletter mailed to civic, environmental and neighborhood organizations, community leaders and elected officials. Due to the availability of computers they now forward e-mail alerts to interested parties. The board members are active in their own organizations and communities and now conduct most of the meetings via e-mail. It is a registered 501C-3, not for profit, organization comprised of Directors, Officers, Member Organizations, Members, Governmental Liaisons, and Networking Organizations, incorporated in May of 1996. There is no charge to become a member.

Public positions taken by the organization represent the majority vote of the Board of Directors only, and do not represent the component entities. At the time of the study the president is Mr. Brian Griffin, Smart Growth co-Chair; vice-Chair, Charter Review Committee; member, Matlacha Civic Association; Greater Pine Island Civic Association, RGMC. The Vice President is Ms. Kathy Malone, Matlacha Civic Association; Greater Pine Island Civic Association; RGMC. The Secretary is Ms. Ann Hauck, Federal Government Liaison; National news media liaison; Board member, former Nelson Institute for Environmental Studies, Univ. of Wisconsin, Appointed to PEER Leadership Council, July 2007 The Treasurer is Dr. David R. Dilley, Ph.D., Economist, Residents Association of Pelican Landing. Other board members include Mr. Arnold Rosenthal, Estero Council of Community Leaders; Mr. Donald Eslick, Chair, Charter Review Committee; Estero Council of Community Leaders; and Mr. Noel Andress, Lee County Planning Agency; Greater Pine Island Civic Association David Scott, Geologist; board member, Lee County Electric Company; Charlotte Harbor National Estuary Program; Northwest Cape Coral Neighborhood Association.

The CCA actively supported the Conservation 2020 Land Acquisition Initiative; petitioned Army Corps of Engineers to conduct the PEIS (Programmatic Environmental Impact Statement) study; provided a highly rated technical document for the EIS Public Scoping Process; commissioned Dr. David R. Dilley, former chief economist, US Steel, to prepare a study of the costs of growth to the taxpayer entitled "Ranches to Rooftops". Through the efforts of board member Mr. Arnie Rosenthal, CCA initiated School Impact Fees. CCA successfully petitioned the federal government to bestow more grant dollars on Lee County projects, over two million dollars in 1997. It successfully encouraged the state of Florida to re-value all Conservation & Recreational Lands (CARL) in Lee County by partnering with other groups in addressing the state DCA (Department of Community Affairs).

CCA led the effort to defeat the one cent county infrastructure tax known as the Penny Sales Tax. CCA also serves as a public outreach resource for government agencies, environmental groups and supply information to citizens to start up new civic associations. CCA also appealed, successfully, to the county commissioners to open up the Smart Growth committee to civic and environmental representation.

Through the efforts of Ann Hauck, the National Academy of Sciences held a meeting in Lee County to gather information on growth issues in Southwest Florida. Ann also conducted a two-day symposium in June of 2006, to review the effectiveness of the Southwest Florida FEIS. Over 50 scientists, government regulatory officers (EPA, FWS, COE, GAO USGS, SFWMD, FDEP) regional, county and local government representatives and environmental organizations attended or participated.

Subsequently, in March of 2006, CCA conducted a book tour for Washington Post reporter, Michael Grunewald, who wrote "The Swamp, The Everglades, Florida, and the Politics of Paradise" with encouragement from Ann Hauck and input from local citizens.

CCA requested a congressional investigation into permitting concerns in southwest Florida over what appears to be, "the disregard for the enforcement of existing laws that has become commonplace among governmental bodies at the federal, state and local levels." An oral presentation before the U.S. House of Representatives, Committee on Natural Resources on May 9, 2007 was made by Mr. Jeff Ruch, Executive Director, PEER and a "White Paper" prepared by Ann Hauck was presented. Public Employees for Environmental Responsibility (PEER) is a Washington-based environmental employee watchdog organization that works to protect scientists and others employed by federal, state and local agencies from undue political pressure.

Environmental Confederation of Southwest Florida (ECOSWF)

ECOSWF is a regional coalition which focuses its efforts on protecting the conservation interests of Southwest Florida, including Charlotte, Collier, DeSoto, Lee, Manatee, and Sarasota Counties. It accomplishes this through active stewardship of Southwest Florida's wildlife, water, soil and air, through citizen participation and education, and the support of preservation and conservation. Meetings are the last Thursday of the month at 6 pm in Charlotte County, location TBA.

During its 25-Year history, the Confederation provided much-needed networking for the regional environmental groups. It consistently works to protect surface and ground waters through participation in working groups, public forums, and when needed, rule challenges

ECOSWF is an active participant in the Charlotte Harbor Surface Water Improvement and Management (SWIM) Program

ECOSWF is actively pursuing the Estero Bay SWIM with the South Florida Water Management District

ECOSWF sponsors informational symposiums and consensus building on wildlife protection and critical resources such as Estero Bay and Charlotte Harbor

ECOSWF was an active participant in the review of CMI Mine in Desoto County and objected to the issuance of a ground water withdrawal permit. The Department of Administrative Hearings found for ECOSWF and CMI withdrew their application

ECOSWF was instrumental in the designation of eight waterbodies in the region as Aquatic Preserves—three in Lee County, two in Collier County, two in Charlotte County, and one in Charlotte/Sarasota Counties

ECOSWF promoted the use of the Environmentally Endangered Lands, Conservation and Recreation Land, and Save Our Rivers funds to help purchase undeveloped parts of Cayo Coast and North Captive Islands, Charlotte Harbor Reserve Lands, Charlotte Harbor Flatwoods, Corkscrew Regional Ecosystem Watershed, and Rookery Bay Lands.

ECOSWF was the primary motivator in persuading Governor Graham to establish the Charlotte Harbor Resource Planning and Management Committee whose work resulted in the Charlotte Harbor Management Plan

ECOSWF was the principal participant in action preventing a developer from installing 700 septic tanks in a sensitive area on the shores of Charlotte Harbor. This issue involved a lawsuit that ended victoriously as a landmark case that will have far-reaching effects on preserving the environment and confirming the right of the public to challenge, petition, and be heard

ECOSWF was one of the primary forces behind the designation of the tributaries of the Estero Bay Aquatic Preserve as Outstanding Florida Waters

ECOSWF has been actively involved in maintaining the status of Fisheating Creek as a Historic Navigable Waterway, monitoring activities and legislation threatening the creek and other state/public owned submerged lands (MARTA), and helping to form the nonprofit organization Save Our Creeks

Estero Bay Buddies

The Estero Bay Buddies (EBB) is a non-profit Citizen Support Organization (CSO) for the Estero Bay Aquatic Preserve and the Estero Bay Preserve State Park. The mission of the EBB is to support the further protection, conservation, restoration, management and the enhancement of the natural and cultural resources of the coastal and aquatic ecosystems of the Estero Bay estuary and watershed for the enjoyment and appreciation of current and future generations. Any person regardless of age, sex, race, religion, national origin or possible handicap who supports the purpose of the Estero Bay Buddies is eligible for membership.

The goals of the Estero Bay Buddies include the following:

- To increase public awareness through involvement in educational programs, resource-based activities and special events.
- To develop stewardship and a sense of shared responsibility for our estuaries and our public lands.
- To improve and restore the natural and cultural resources of Estero Bay coastal and aquatic ecosystems.

Estero Chamber of Commerce

The goals of the Estero Chamber of Commerce is to foster and achieve a healthy business and economic climate for all the citizens of the Estero area , through the unity and efforts of its membership. They base the mission on the belief that, with a healthy economic climate, character and unique history of the community will be maintained and enhanced.

They believe educational opportunities, cultural enrichment and improved quality of life can best be achieved in areas where the free enterprise system is allowed to thrive. They state they understand that the unique character of our community must be preserved and this is best achieved when government, business and the general citizenry work together.

The acknowledged mission of the Chamber cannot be achieved without support from a growing number of members. In order to attract and involve the business community, the Chamber must create value in the form of service to their members.

The Bylaws of the Estero Chamber of Commerce state that it shall provide a unified and coordinated community-wide voice:

- To promote responsible economic, business and cultural development within the Estero area.
- To preserve our natural resources and our quality of life.
- To project Estero's political, commercial and cultural influence toward an ever improving quality of life for all our citizens.

The role of the Estero Chamber is to:

- Promote, advocate, educate, assist and involve our members and the Estero community.
- Represent Estero at all local, state and national levels.

The Estero Chamber program of work will be developed and implemented by the following committees, with the input and approval of the Board of Directors and is divided into 7 sections:

- Education
- Membership
- Public Safety
- Retail
- Housing
- Tourism
- Governmental Affairs

Estero Community Planning Panel

The Estero Community Planning Panel (ECPP) was established for the primary purposes of

(a) creating an overall Estero Vision Statement and Community Plan amendment to the Lee County Comprehensive Plan (LEE PLAN),

(b) preparing related Land Development Code (LDC) amendments,

(c) potentially preparing a Future Land Use Map (FLUM) revision, and

(d) consulting with Developers and County Staff regarding proposed Developments within the Estero Community Planning Area.

ECPP is a not for profit corporation in compliance with Chapter 617, Florida Statutes. It was incorporated November 28, 2001 after operating previously as The Estero Community Planning Committee. By incorporating, ECPP became eligible for public funding under the newly established Lee County Administrative Code AC13-3. The ECPP operates according to its Articles of Incorporation and Bylaws, the Florida Sunshine Law, and Lee County Administrative Code AC13-3. The ECPP functions primarily as a recommending body to Lee County government, and has no independent approval powers over LEE PLAN, LDC or FLUM amendments/revisions, Zonings or Development Orders.

ECPP is composed of six members, representing The Estero Civic Association, The Estero Council of Community Leaders, The Estero Chamber of Commerce, and the local Development Community. In addition to the six Panel Members, there are two Recording Secretaries, a Treasurer and a Technical Advisors from Estero Fire Rescue and San Carlos Park Fire and Rescue.

ECPP solicits input from local Citizens, Landowners, the Development Community, The Lee County Department of Community Development, The Land Development Code Advisory Committee, The Executive Regulatory Oversight Committee, The Local Planning Agency, the Land Development Code Advisory Committee, The Florida Department of Community Affairs, and other Boards and Planning Agencies. It has conducted eight public planning workshops, distributed questionnaires and as of December 12, 2005 has conducted 70 public meetings, attended by over 3000 people. Input received is subsequently synthesized into proposed amendment(s) and submitted to Lee County DCD staff for their review and shepherding through their development reviews and the amendment process.

ECPP and Lee County entered into an agreement under in which the ECPP received a grant of $25,000 in public funds to help fund this planning effort. Additional funding has been provided by The Estero Chamber of Commerce, The Estero Civic Association,

members of ECCO, many individual citizens, and community organizations. In all, the total cost of these efforts is expected to exceed $50,000.

ECPP utilizes the paid services of private sector planning firms, consultants, and works closely with the Lee County Department of Community Development and local developers, citizens, landowners and other representatives of the development industry in accomplishing its tasks.

ECPP has completed Phase One (The Plan), The Estero Vision and Community Plan, which, after multiple public reviews and government hearings, was adopted by the Board of County Commissioners on January 10, 2002. Phase Two (LDC Revisions) continues, with the first of multiple planned Land Development Code Revision cycles for Estero adopted by the BOCC in June, 2002, and a second Land Development Code Revision cycle adopted by the BOCC in June, 2003. A third Land Development Code Revision cycle was adopted in December, 2005. Preparations for the next LDC amendment and a review of The Community Plan will begin in 2006.

ECPP conducts regular public meetings at 6 pm on the second Monday of each month in the Marsh Landing Clubhouse, at which Developers present to the Estero Community their plans for Zoning/Rezoning of property within the Estero Planning Community. Community participation and active interest in these meetings is high, with attendance normally ranging from 25 to 50, with a high of more than 150 people. Community recommendations and concerns are then summarized and included, along with the developer's proposed solutions, with the Developer's Zoning Request Submission Package to Lee County DCD. As of December 12, 2005, one hundred and eight presentations related to area development, proposed projects and zonings have been made to the Estero Community at public meetings hosted by the ECPP.

Estero Design Review Committee

ECPP created in October 2002 the Estero Community Appearance Committee (ECAC), which has been subsequently renamed as the **Estero Design Review Committee (EDRC)** which provides Professional Review of Developer projects at the Development Order Stage. These reviews, which are conducted monthly at 5:00 p.m. on the second Wednesday of every month at the Rapallo clubhouse, include Architectural, Landscaping, Site Location, Berming, Signage and other aspects of Estero specific Land Development Code requirements for the Estero Planning Community. The EDRC is currently composed of eight Professionals in the fields of Architecture, Landscape Architecture, Engineering, Planning, and Business. Professional Secretarial services are contracted by the EDRC. The EDRC has conducted more than 35 public meetings during which more than 75 projects have received one or more reviews. Recommendations and concerns are summarized and forwarded in parallel with the Developer's Development Order Request submission package to Lee County Development Order Services Department. Nearly 1000 people have attended

Estero Concerned Citizens Organization (ECCL)

The ECCL serves the residents of Estero as a voluntary, "grass roots" community organization that listens to the concerns of all Estero residents and provides a forum for each residential community to obtain community-wide support for its concerns.

About four years ago the all volunteer Estero Concerned Citizens Organization (ECCO) began to study the zoning plans for Coconut Point, the largest commercial project ever proposed for Estero: 500 acres, 1,800,000 square foot of retail, 300,000 square foot of office and 600 hotel rooms. In the process ECCO recruited representatives of all the surrounding residential communities to identify the concerns of these communities. As we progressed the group developed a position paper, discussed it with County zoning and transportation staff and sat down to negotiate our concerns with Coconut Point's developers. The developers agreed to address all of our concerns and entered into a written agreement with the communities to follow through with those commitments, most of which were also made conditions of the zoning.

After Coconut Point's zoning was approved in September 2002 the members of this group saw the need to include all of Estero's residential communities and all community-wide organizations in the group in order to deal with all the large number of development projects proposed throughout the community. The Estero Council of Community Leaders emerged from this effort.

The ECCL serves the residents of Estero as a voluntary, "grass roots" community organization that listens to the concerns of all Estero residents and provides a forum for each residential community to obtain community-wide support for its concerns. Then the ECCL presents the consensus of its members' opinions to the appropriate county and state decision makers for action.

The ECCL meets monthly throughout the year to discuss and take action on community growth management issues ranging from new zoning and development projects to the needed infrastructure improvements from roads, to parks, roadway landscaping, post office and emergency medical service facilities. All meetings are open to the public and have received outstanding newspaper coverage.

The ECCL has successfully represented the community on many commercial zoning projects and in obtaining or accelerating funding for several county and state infrastructure projects. Like other Estero community organizations we focus on problem solving and selling the solutions that we develop to private sector leaders and public officials who ultimately make the decision.

As more and more of Estero's residential communities have been turned over to the residents, we have asked the resident elected Boards of each community to designate one voting member and one alternate member to the ECCL. To date twenty (20) residential community Boards have designated their members of the ECCL.

Eleven (11) other developer controlled residential communities have ECCL members who have been appointed in accordance with the ECCL By-laws. They will be replaced by resident elected Board-designated delegates when the homeowners take over governance of the community. In addition five community organizations are members of the ECCL.

All ECCL delegates report back to their respective community boards and residents directly and through their community media systems ranging from email networks to newsletters to websites or television channels.

In addition all ECCL activities are widely reported through the monthly Estero Development Report. They are:

- Estero Civic Association
- Estero Community Planning Panel
- Estero Fire Rescue District
- Estero Historical Society
- Friends of the South County Regional Library, Inc.

Estero Design Review Committee

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Lee Building Industry Association

The Lee Building Industry Association is a non-profit association, which represents Lee, Hendry and Glades Counties, is a powerful voice for the building industry in the regulatory arena. It is a resource for technical assistance, information and educational services.

Real Estate Investment Society

The Real Estate Investment Society is. an independent organization, dedicated to assisting members in the effective utilization of real estate through networking, education, public service, and a common voice on pertinent issues.

Membership in the Real Estate Investment Society is open to: Registered Principals and Representatives, Real Estate Brokers and Property Managers, Developers and Builders, Bankers and Lenders, Land Planners and Development Consultants, Investors and Land Owners, Business Consultants in Real Estate Investment, Architects and Engineers, Attorneys, Appraisers and Title Insurance Agents, CPA's, and Financial Planners Membership is limited to 275 individuals.

The Real Estate Investment Society sponsors monthly luncheon meetings for its members and their guests. The luncheons feature speakers on topics concerning various aspects of economic growth and development, as well as current issues affecting the real estate investment community. The luncheons provide a forum for discussion of issues and valuable networking opportunities. The luncheon meetings are on the second Tuesday of each month.

Panel discussions and workshops on growth management issues are presented on a periodic basis to bring government regulators and elected officials together with industry professionals. EDUCATION: Professional educational courses and seminars are also sponsored by the Society on a periodic basis, in cooperation with other professional organizations. These programs provide useful information on proper procedures and techniques for land acquisition, investment strategies, structuring group investments, and marketing investment properties and professional services.

The Society also represents the real estate investment profession to the media and government in Florida. The organization monitors legislative issues and advocates legislation and regulations that are in the best interests of the real estate community.

Members of the Real Estate Investment Society receive e-mail bulletins with links to the "REIS Report," an online newsletter which reports on industry trends and techniques, legislative issues, and news of the local commercial and investment real estate market. Members may also receive special e-mail bulletins alerting them to regulatory issues and meetings of concern to the industry.

Members' names, addresses, telephone and fax numbers are published in the Membership Directory and distributed to all other members. The directory is also provided to government agencies, elected officials and the press, who are encouraged to rely on the membership as a source of expertise on real estate issues.

The Real Estate Investment Society's annual social event provides an opportunity for members and their guests to become better acquainted on a personal basis.

The Real Estate Investment Society has established a permanent scholarship fund with Florida Gulf Coast University to encourage and support students interested in commercial real estate. The fund was established in 1999 with a $10,000 endowment. The REIS

Scholarship Foundation, a not-for-profit, registered 501(c)3 corporation provides an opportunity to make charitable donations for college scholarships. REIS provides management of the Foundation, allowing 100% of donations to be awarded as scholarships. Information: Tom Woodyard, REIS Scholarship Chairman, (239) 425-6011.

Membership information is available by contacting Membership Chairman Kevin Fitzgerald, (239) 437-3330. The membership roster is presently full, however the Society maintains a waiting list of those interested in becoming members. Those on the list receive notices of meetings and are welcome to attend as guests. Membership openings are offered to persons on the waiting list in January.

Responsible Growth Management Coalition (RGMC)

Since 1988, the RGMC has been a vocal proponent of sound growth management strategies and plans. Today, civic participation is more important than ever. In 2005 Lee County was one of the top ten fastest growing counties in the nationFlorida promises a beautiful climate and quality of life, but pressures from the growth economy threaten to destroy this dream. The Responsible Growth Management Coalition fosters and supports practices that help to ensure that Southwest Florida (SWFL) remains a desirable place to live for all citizens. RGMC advocates for sustainable development practices that link growth to appropriate infrastructure, minimize environmental impacts, permanently preserve public space, and provide a safe and accessible lifestyle. RGMC accomplishes this through informed public participation, education, innovation, and litigation. Working together it attempts to protect and restore Southwest Florida's quality of life.

Southwest Florida Transportation Initiative (SWFTI)

The Southwest Florida Transportation Initiative (SWFTI) is a privately funded regional coalition established to ensure that the region receives additional transportation revenues in order to maintain a strong economy and exceptional quality of life. The organization has researched the efforts of similar private sector initiatives in high growth areas statewide, enlisted the support of a team of transportation experts and initiated a comprehensive, long-term effort to ensure that the region has a strong and unified voice on transportation issues at the local, state, and federal level.

SWFTI membership includes a broad base of business and community leaders working together for a common goal. In addition to the support of the region's leading companies, the initiative is endorsed by the Southwest Florida Regional Planning Council, area chambers of commerce, economic development councils and industry associations.

The goals of the initiative are:

- To increase awareness of the critical need for additional transportation funding for Southwest Florida among members of the United States Congress, the local

legislative delegation, key members of the Florida House and Senate, the Governor and the Florida Department of Transportation;

- To build a local and statewide support network among regional business and community organizations and statewide industry organizations that share transportation concern;
- To identify creative funding options and transportation alternatives;
- To mobilize the Southwest Florida community into a vocal and highly effective force in the transportation arena;
- To secure funding for the six-laning of I-75 throughout Southwest Florida;
- To increase FDOT allocations at the District level so that MPOs can address local priorities.

Southwest Florida Watershed Council

The mission of the Southwest Florida Watershed Council is to protect, conserve, manage and/or restore the land and water resources of the Caloosahatchee and Big Cypress Watersheds. Through increased awareness, participation and cooperation among all stakeholders in consensus building, planning and decision making, we are working to meet the economic, natural and cultural needs for this and succeeding generations.

The Southwest Florida Watershed Council is a grass-roots, multi-county coalition of individuals, organizations, agencies and businesses that have come together to address the issues affecting the Caloosahatchee and Big Cypress watersheds. The purpose of the Watershed Council is to ensure that the interests and concerns of all stakeholders are addressed, and that long term management strategies balance the needs of this region's growth and the natural systems upon which our economy and quality of life depend. The Guiding Principals of the Watershed Council are Stakeholder Partnerships, Geographic Focus, and Sound Science.

The Southwest Florida Watershed Council works on building partnerships between Public and Private Sector, different levels of Government, different water-using sectors, and between technical experts and laypeople.

Opportunities for partners include pooling financial and technical resources, gathering scientific and socio-economic data, charting a course for watershed conservation and restoration and implementation of protection and restoration. Primary benefits of the Southwest Florida Watershed Council include improved coordination and promote integration among the various interests involved and facilitation of policy development from good science. Potential products planned include development of a regional database on water quality, water levels and conditions, providing Internet news and networking forum on agency and stakeholder activities in the region, creation of a forum for dispute resolution and consensus building, promotion of citizen based sub watershed associations, proposed amendments to land use plans, sponsoring research and

educational seminars on water resource issues, and developing a regional watershed management plan.

Urban Land Institute – Southwest Florida Chapter

ULI–the Urban Land Institute is a 501(c) (3) nonprofit research and education organization supported by its members. As the preeminent, multidisciplinary real estate forum, ULI facilitates the open exchange of ideas, information and experience among local, national and international industry leaders and policy makers dedicated to creating better places. The mission of the Urban Land Institute is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide.

The Urban Land Institute was founded in 1936, when many American cities were experiencing both suburban expansion and urban decay, with limited public sector planning and no guidance available to the private sector. No organization existed in the country to research, analyze, or encourage responsible patterns for long-term urban growth, or to conduct inquiries into what constitutes sound real estate development projects and practices. These circumstances led Cincinnati real estate entrepreneur Walter Schmidt and six other prominent community builders to petition the National Association of Real Estate Boards (the forerunner of today's National Association of Realtors) to establish a separate research institute within NAREB. This proved to be too limiting, and in 1940, ULI became a completely independent institute.

Born during the Great Depression, the Urban Land Institute had original objectives that were very similar to its guiding principles today. These early objectives were: to study and interpret real estate trends; to examine principles through which private enterprise could effectively develop real estate; to develop a body of knowledge in real estate and allied subjects; to publish informative texts and technical journals based on that knowledge; and to act as a statistical clearinghouse for the dissemination of real estate data. The Institute's continuing focus on nonpartisan research and education has made it one of the world's most respected and quoted organizations in urban planning, land use, and development.

ULI membership has grown from 230 members at its start to more than 30,000 professionals in 50 states and 88 countries today. The members of the Urban Land Institute are community builders, the people who develop and redevelop neighborhoods, business districts and communities across the U.S. and around the world. Leading property owners, investors, advisers, developers, architects, lawyers, lenders, planners, regulators, contractors, engineers, university professors, librarians, students and interns.

Most ULI members participate through district councils and more than 20% work in government, academia, and public-private partnerships. ULI members control, own or enhance the value of more than 80% of the U.S. commercial property market.

ULI initiates research that anticipates emerging land use trends and issues, proposing creative solutions based on that research. ULI's practice program is interdisciplinary and practical, focusing on trends and the basics of many different parts of the industry including resort and residential, retail and destination development, office and industrial development, transportation and parking, and real estate finance and capital markets. ULI documents best practice and publishes books to impart cumulative knowledge to help the development community continuously improve its performance. To bring attention to advances in policy and practice, the ULI JC Nichols Prize for Visionary Urban Development is presented to an individual whose career or institution demonstrates the highest standards of responsible development.

In local communities, ULI district councils bring together a variety of stakeholders to find solutions and build consensus around land use and development challenges. ULI's current mission is to provide leadership in the responsible use of land and in creating and sustaining thriving communities worldwide.

Water Enhancement and Restoration Coalition (WERC)

In early 2002, local developers began working with EPA to meet what EPA referred to as the Water Quality Initiative (WQI)--no net increase in nutrient discharges over pre-development conditions. The first applicant to willingly agree to meet the WQI was the Southwest Florida International Airport (Lee County Port Authority). Soon after, Lee County signed a memorandum of agreement (MOA) whereby EPA would remove objections to road projects, as long as Lee County provided increased water quality treatment in basins where these projects would be built. This included the Ten Mile Canal filter marsh and proposed filter marshes in Briarcliff and Island Park.

Agreements between Lee County and EPA and problems with Lee County public works projects initiated the formation of the Water Enhancement and Restoration Coalition (WERC), a partnership composed primarily of local developers in Lee and Collier Counties. The Bonita Bay Group received the first annual "Outstanding Business" Environmental Stewardship Award from the Estero Bay Agency on Bay Management (ABM) for its initiative in organizing the Water Enhancement and Restoration Coalition (WERC), a public/private partnership that is committed to enhancing and improving water quality and preserving water resources in Southwest Florida, including the long-term protection of Estero Bay. WERC is designed to bring together individuals, businesses, organizations and government agencies and the different perspectives to achieve regulatory solutions to water quality.

Following the MOA with Lee County and formation of WERC, the Bonita Bay Group signed an MOA with EPA committing them to reduce their pollutant discharges at their Shadow Wood Preserve project. As other developers began committing to greater water quality protection, the State and the COE became concerned. In late 2002, the USACOE requested a formal meeting with EPA to address aspects of the WQI.

On March 21 & 22 of 2003, FDEP, COE, and EPA met in Orlando and the agencies

agreed to continue the WQI in Southwest Florida and expand it to the entire state. The expansion would depend on the completion of work by Dr. Harvey Harper of Environmental Research & Design, Inc.

Dr. Harper was hired by WERC in the fall of 2002 to conduct an assessment of Lee and Collier counties. The WERC-funded report by Dr. Harper opposed the EPA position that wetlands are not sources of nutrient pollution. Dr. Harper used data from water quality samples in wetlands collected next to roads and bridges where surrounding developments discharge, to come up with a single pollutant-loading rate for all wetlands in Southwest Florida. Thus, the WERC report found that wetlands are pollutant generators, not "nature's kidneys" as identified in the scientific literature.

In July 2003, the State, COE, and EPA, agreed to adopt this WERC-funded water quality evaluation, even though the state and COE agree that wetlands should not be considered as pollutant sources for purposes of the WQI, because wetlands remove pollutants from surrounding uplands.

WERC's first effort has been to develop a plan for creating a filter marsh flanking the Ten-Mile Canal between Daniels Parkway and Six Mile Cypress Parkway. Ten-Mile Canal is particularly significant because it runs from Fort Myers into Mullock Creek, which empties into Estero Bay. The project also includes a mechanism for using water from the canal as a source of rehydration for the Six-Mile Cypress Slough.

Water Resources Advisory Council (WRAC)

The SFWMD Water Resources Advisory Commission (WRAC) is an advisory body to the SFWMD Governing Board and the South Florida Ecosystem Restoration Task Force, and is a forum for improving public participation and decision-making on water resource issues in south and central Florida.

The WRAC Purpose and Mission is to

1. Build consensus in the public and private sectors regarding water resource activities impacting south Florida, including the further development and implementation of the Comprehensive Everglades Restoration Plan and Accelerate Projects, Regional Water Supply Plans; and, Lake Okeechobee and Estuary Recovery.
2. Examine the effects of continued population growth, development and agriculture on south Florida's natural resources.
3. Assist in developing actions needed to restore, preserve, and protect the greater south Florida ecosystem while providing for other water-related needs of the region, including water supply and flood protection.

WRAC assists in promoting and monitoring the implementation of its recommendations to the Governing Board. Members are appointed to the Commission by the SFWMD Governing Board, and represent a broad range of business, agricultural, environmental, tribal, governmental and public interests. The Commission meets once a month and holds Issues Workshops as needed. Governing Board member Mike Collins is the Chair of the WRAC. It is co-chaired by fellow Board member Malcolm S. Wade, Jr.

Rick Smith, Lead Ecosystem Restoration Representative, Governing Board & Executive Services, provides professional support and coordination for the group. Contact him at (561) 682-6517; or by email at rismith@sfwmd.gov. View the WRAC Priority Plan Update (2005) [pdf 1mb]

The WRAC, as it is known, serves as an advisory body to the Governing Board of the South Florida Water Management District, and as a forum for improving public participation and decision-making in water resource issues affecting South Florida. Four Council members -- Mike Bauer (Natural Resources Manager for the City of Naples), Beverly Grady (Attorney with Roetzel & Andress, LPA) and Howard Wegis (Engineer with Lee County Utilities) are appointed members of the WRAC. From 2005 to 2006, Susan Brookman represented the Southwest Florida Watershed Council on the WRAC, and she prepared reports on each meeting she attended. Summaries of WRAC meetings prepared by the South Florida Water Management District are posted on the District's web site at http://www.sfwmd.gov/gover/wrac/minutes.html.

Chapter 2:

Interviews of a representative number of builders, developers, land owners, contractors/consultants and agency staff to determine the "real world" application of the processes identified in Chapter 1.

Description of this Project

Within the project area, development has accelerated greatly over the past decade. Estimates indicate that in 1995, approximately 11 percent of the Estero Bay Watershed was comprised of urban land uses (residential, commercial, and industrial) concentrated in the western developed corridor. In 2000, the Southwest Florida Regional Planning Council projected that urban land use would increase to 35 percent by 2020, while agricultural use would increase only an additional 2 percent by 2010. Based on Lee County's FLUM, there may be up to 60,000 acres with the Estero Bay Watershed that could be developed and impact the achievement of water quality targets.

Over time, a regulatory and public investment structure has developed in the Estero Bay basin that has not provided desired environmental quality, infrastructure, and quality of life. Federal, state, regional, and local agencies and non-profit and for-profit organizations have engaged in separate and distinct efforts to evaluate and manage the

impacts of growth in the Estero Bay Watershed through research, planning, investment and regulatory measures. However, there has not been a comprehensive study and evaluation of the decision framework utilized by government and private entities for development, investment and permitting activity.

This project will examine the Decision Framework as currently applied to land development projects within the Estero Bay Watershed; identify key points in the process where modifications will result in growth outcomes that are desirable; consider water storage issues in the context of development; estimate pollutant loading using results of the Lee County BMP Study; the mitigation map of the LMMP for Estero Bay for the practicality (administratively and environmental output) of the planning and permit system implementing the map's project list (as amended by SWFFS BAT ADG analysis underway.)and review land monitoring issues.

The Decision Framework for permitting and development practices will be developed utilizing the Future Land Use Maps and watershed build-out projections to the year 2050. Alternatives build-out projections will be based upon the output of the decision framework and will depict possible land use and land development patterns, impacts to wetlands and estimated infrastructure requirements.

Finally, recommendations for changes, improvements or additions to the decision framework to modify development outcomes will be developed. The recommendations may suggest changes to the text of or alternative interpretations of current codes, regulations, statutes or policies.

The project outputs will be directly applicable throughout southwest Florida and throughout the CHNEP study area, where development is regulated in a similar manner by local governments and permitting is regulated by the same agencies in a similar manner. The project outcomes should also be applicable elsewhere, where wetland impacts are permitted based on requirements for private mitigation actions.

The CHNEP anticipates real-time transfer of technology to the rest of the CHNEP study area, Sarasota Bay NEP, and Tampa Bay NEP during the life of this project.

The ultimate project outcome will be implementation of changes to the Decision Framework by improving its efficiency and effectiveness and to ensure environmental quality is maintained and improved, infrastructure needs are determinable, and quality of life is enhanced.

The interviews occurred in the initial stages of the study.

Fifty-nine interviews were completed during the course of the study. Three rounds of invitations were provided to participants. Fifty of the interviews were performed in person ands nine were performed by telephone with the participant having copies of the questions in hand during the interview. Approximately 10 invitees declined to be interviewed ranging from availability of schedule to concern of potential professional consequences if the response were linked to them by supervisors. The recording process is anonymous and the interview response can not be linked back to specific participants. Because of concerns expressed by participants in both public and private agencies' actions no list of the participants has been kept and upon compilation of the response, the records of the interviews were shredded. When the study receives final acceptance from the granting agency, the shredded records of the anonymous response will be destroyed in fire.

The relative distribution of the interview participants by area of employment (Federal Government, State Government, Regional Government, Local Government or Private) is indicated in Figure 54. No participant has retired or was unemployed. No minors were interviewed.

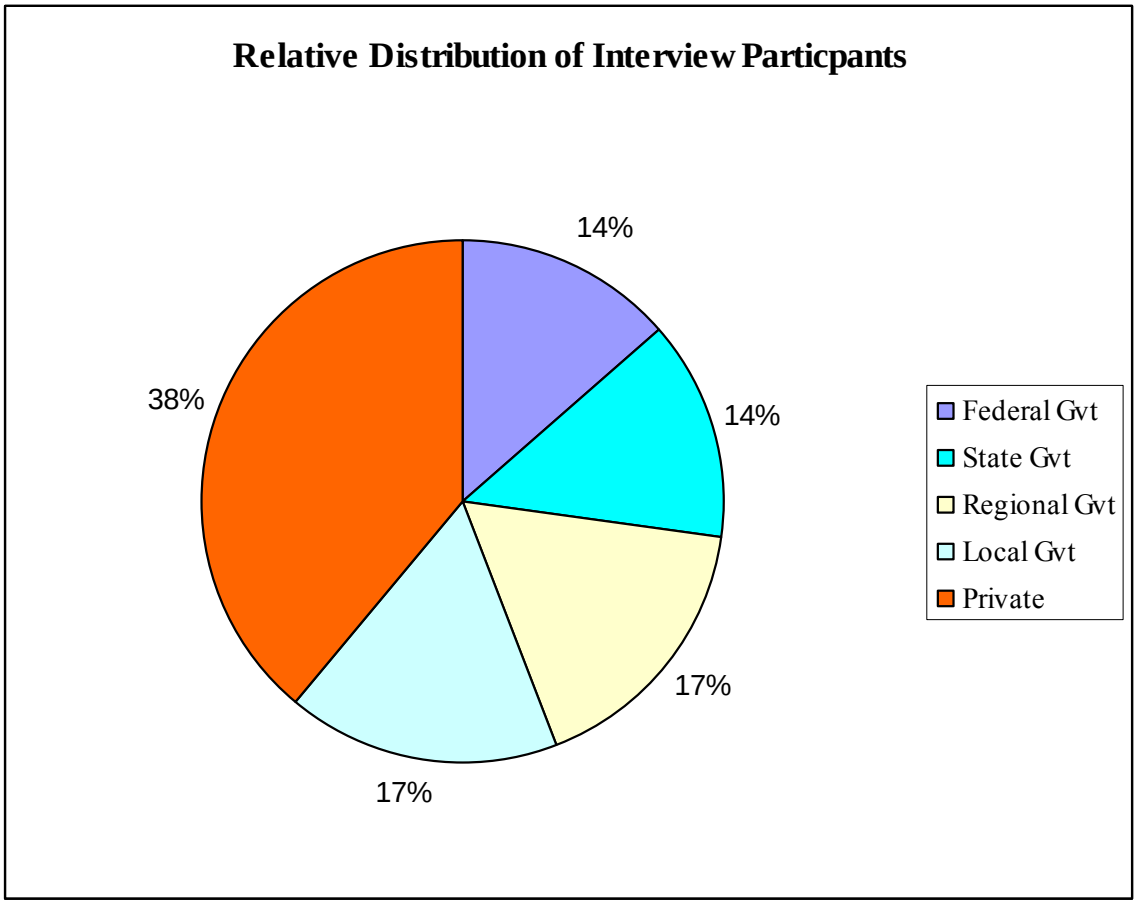


Figure 54: Relative Distribution of Interview Participants

The relative distribution of the government participants by relationship to the regulatory process is indicated in Figure 55.

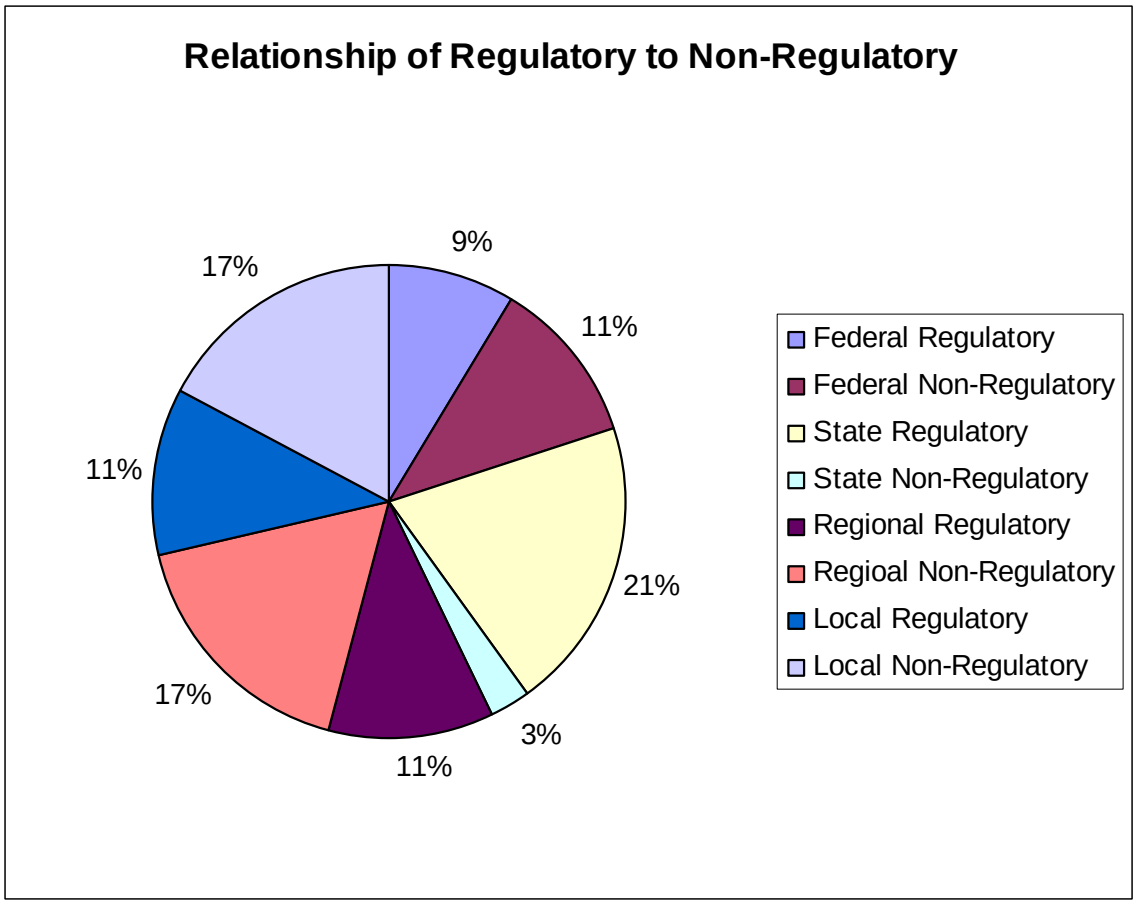


Figure 55: Relationship of Regulatory to Non-Regulatory Government Interview Participants

The relative distribution of the private sector participants by relationship to the development process is indicated in Figure 56.

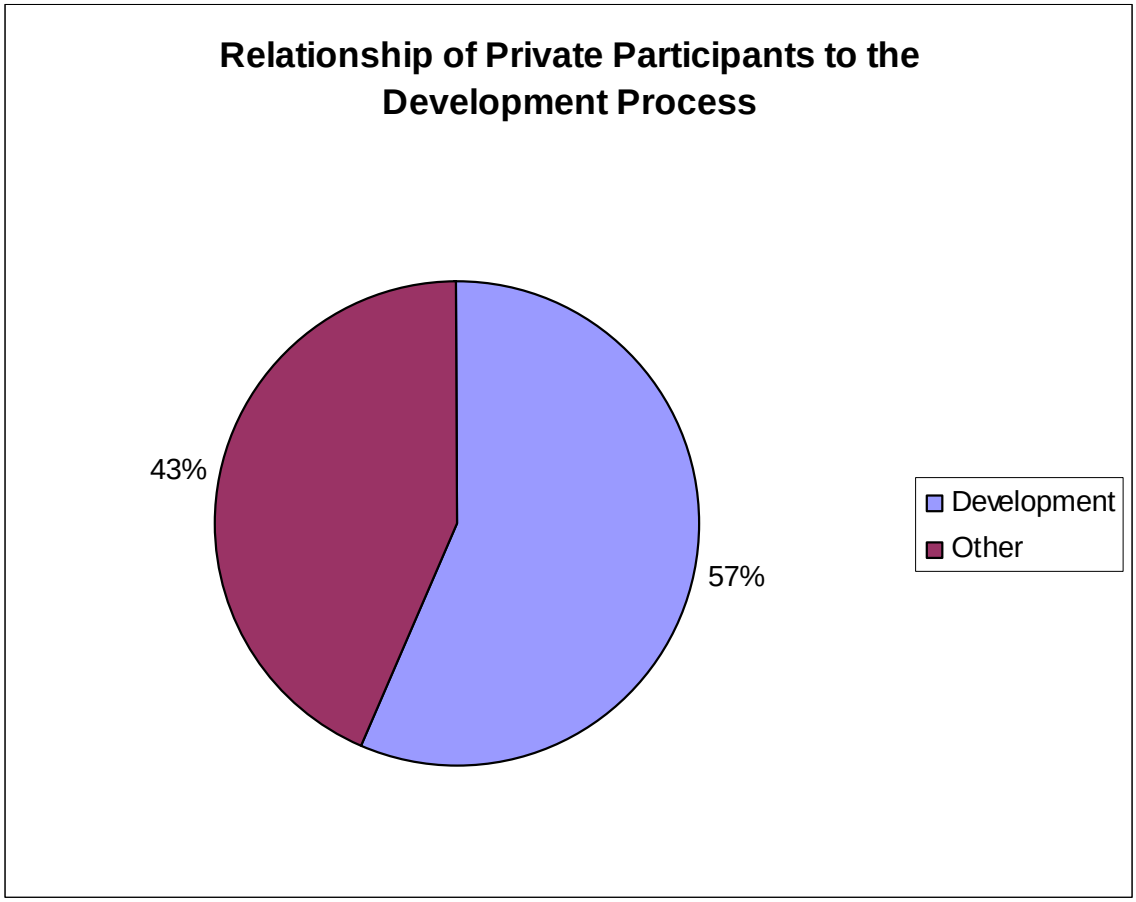


Figure 56: Relationship of Private Participants to the Development Process

Eight-three percent of the participants were involved in the Estero Bay Watershed in other capacities outside of the regulatory participant process. Many were vary active in community activities and eco-friendly recreational activities. Kayaking, canoeing and hiking were the top recreational activities in both the public and private participants. Only on respondent had not ever been in the Estero bay Watershed. Thirty-three percent of the participants currently resided in the watershed.

All of the government respondents were familiar with their own applicable rules and regulation they utilized and were often familiar with the applicable rules and regulation of other agencies both up and down the hierarchy of the decision making process or are familiar with including Federal, State and County statutes, regulations, rules, Comprehensive Plan Elements, Land Development Code ordinances, and policies for land development decisions in the Estero Bay Watershed. Participants were most likely to have knowledge of local government rules and regulations, followed by State, then Federal, and then regional. The rules and regulations related to wildlife issues both state and federal were the area of least familiarity for both the public and private respondents.

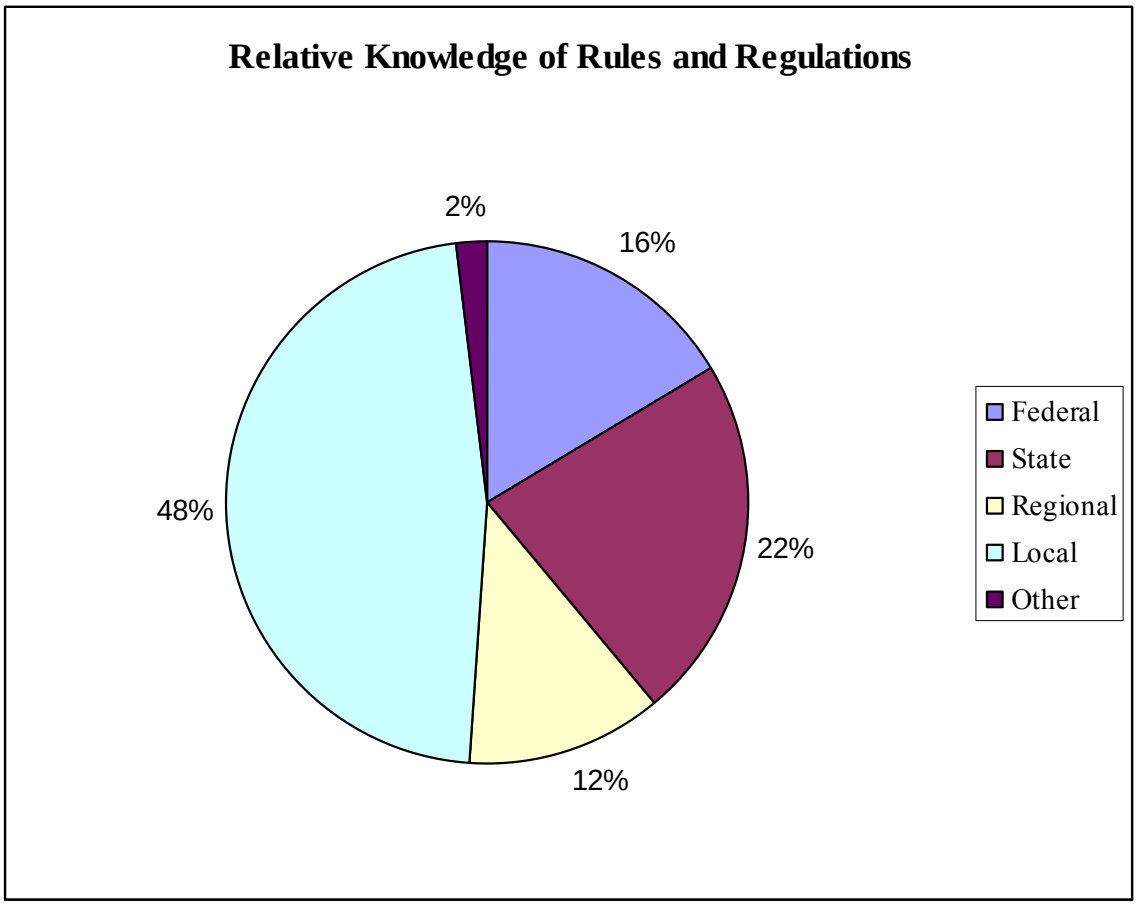


Figure 57: Relative Knowledge of Rules and Regulations

Only one governmental entity, the Southwest Florida Regional Planning Council had an existing graphical/ flow-chart representation and narrative text of the Decision-Framework utilized by their group or agency that outlines the land development/land use approval process for their area of work. Several participants had suggestions to improve the graphical representation that I provided for review during the interview. These suggestions included expansion to the pre-application process or expansion on the post decision administrative hearing mediations process when a challenge to the regulatory decision is rendered by regulatory agency either by the applicant or the third party. Since these processes were agency specific these revisions do not fit into a generic Decision Framework flowchart.

The issues identified with the "real world" application of the processes in the Decision-Framework utilized or encountered by the group or agency in the land development/land use project approval process were often unique to each respondent. Some respondents did not identify issues.

Table 34: "Real World" Identified Issues

Identified Issues	Number of respondents
Time to permitting	1
90% of projects are out of compliance	1
Agencies do not achieve cooperation or consensus	3
Agencies are not proactive in review	1
Area already has an adequate vested supply of approved development for total build out	1
Apathy	1
Attorney involvement increasing	2
Blocks to restoration	1
Confusion	1
Consultants can drag out the process to increase their billings	1
Consultants can provide poor quality work and then blame the agency when it is not accepted	1
Developers and lawyers have intimate relations with staff	1
Duplication of review	3
Frustration with block to public input	1
Guidelines not followed	1
Hard to find information	1
Ignorance	1
Inconsistent outcomes	1
Insufficient time to coordinate interagency	1
Insufficient staffing	2
Lack of Funding	1
Lack of Secondary and Cumulative impact review	1
Meeting during business hours excludes public	1
Need development line	1
Need to reassemble land from platting	1
No compliance	1
No learning from experiments or experience	1
No set time in federal process	1
Non-native landscape created by development	1
Not enough time to do compliance	1
No good way to store and record the large amounts of paper that are generated in permitting	1
Old timeframes do not fit projects of large size	1
Platted unused vacant lands not yet developed are a population time-bomb and are already impacted	1
Project size does not relate to the time needed for review	1
Public is excluded from deals	1
Push to approve more further east while vesting is not developed but all will be developed	1
Retrofit	1
Run-around among agencies	1
Scheduling confusion postpone changes	1

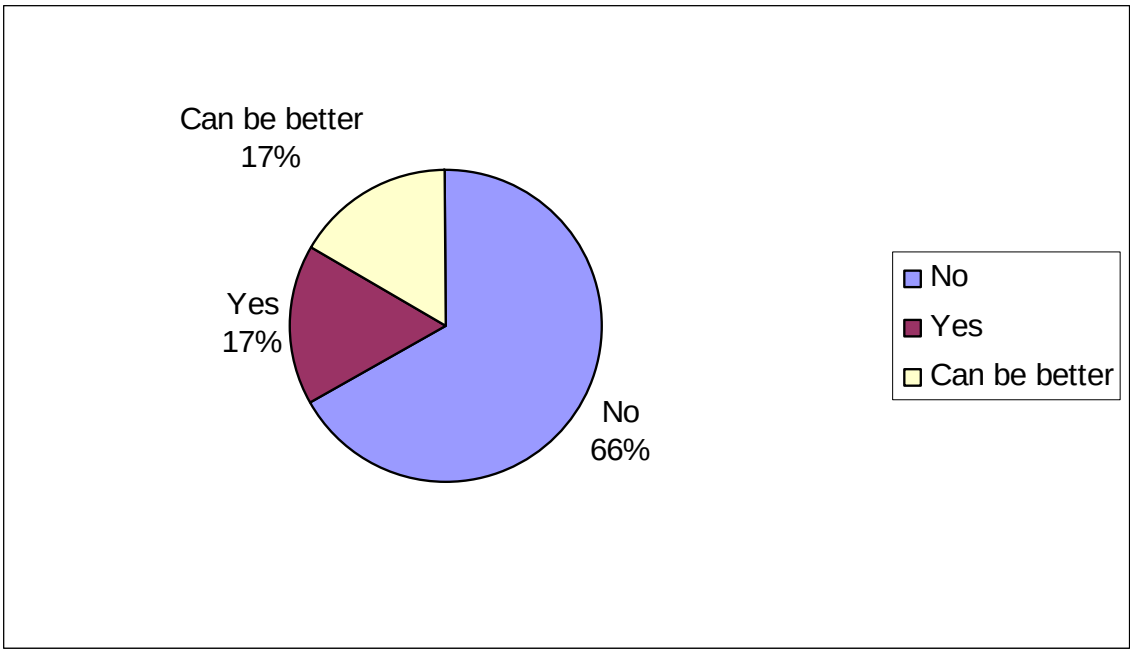
Short timeframes	2
Short timeframes do not allow revision of complex issues	2
Staff turnover	2
Standards current practices are not adapted tot south west Florida	1
Subjective decisions	1
Unfamiliar applicants need time to learn	1
Water quality ruined through drainage and vested rights of the platted development	1
Weak enforcement	1
Work load	3

Table 36: The Top Seven "Real World" Identified Issues

Agencies do not achieve cooperate or consensus
Duplication of review
Work load
Attorney involvement increasing
Insufficient staffing
Short timeframes and Short timeframes do not allow review of complex issues
Staff turnover

The majority of the respondents thought that the current decision making framework is not working properly. Among the reasons given was the presumptive water quality criteria so not work, voluntary Best Management Practices do not work, new rules for federal and state regulatory agencies are weaker, violations are not enforcement upon, TMDLs will not work when PLRG cannot be set, there are too many variances granted, the mitigation system does not work due to UMAM and off-site standards. Those who said the system can be better also thought the system was not generally working properly. Those that thought the system was working said that it did so with difficulty and identified local government as the agency that was working properly in it decision making process. No respondent thought the federal or state the current decision making framework is working properly.

Figure 58: Responses to the question " Do you think the current decision making framework is working properly?



The respondents had a variety of responses to who they thought was best to work with in the current decision making framework. Local government and good consultants scored the best. The federal agencies were not singled out as being good to work with.

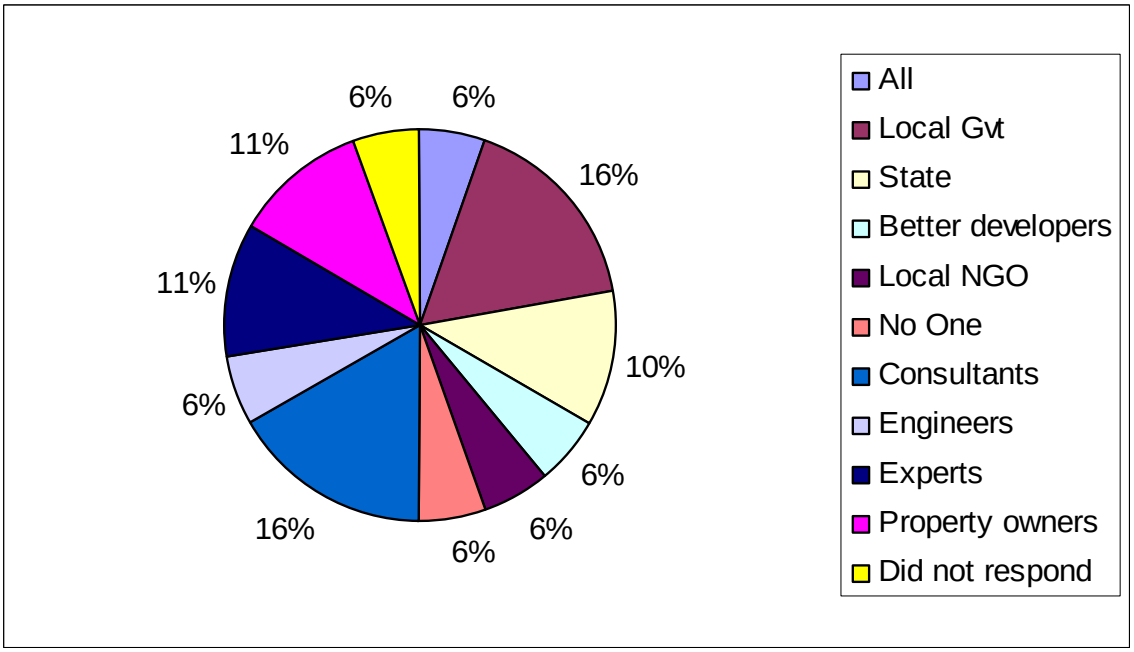
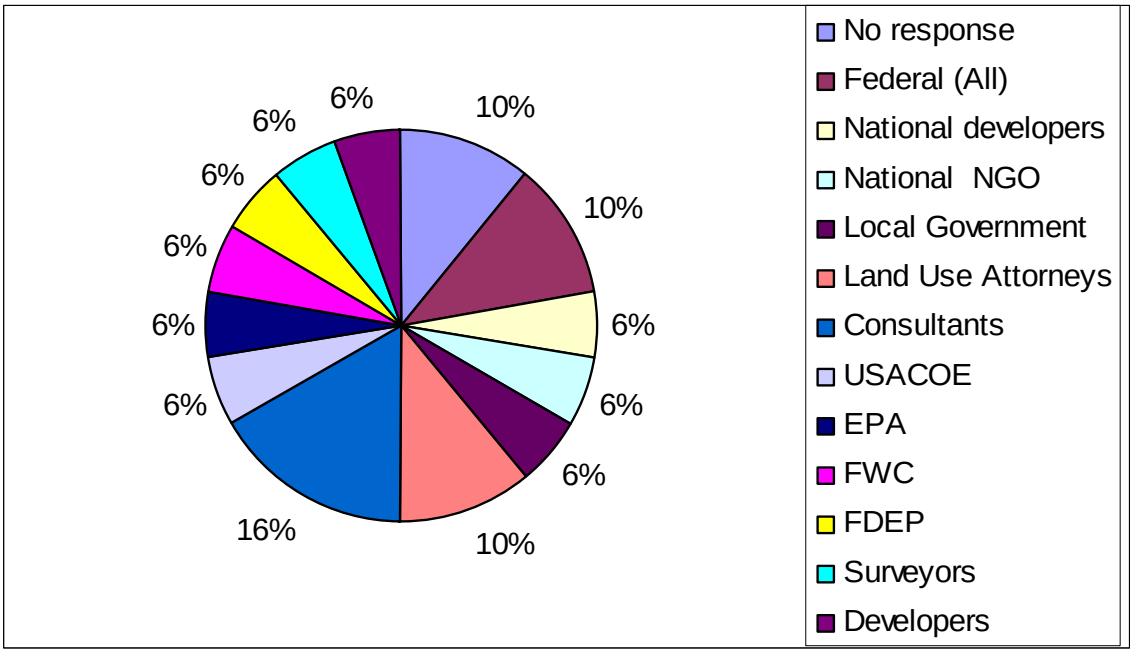


Figure 59: Responses to the question "What entities are the best to work with in the current decision making framework?

Figure 60: Responses to the question "What entities are the worst to work with in the current decision making framework?



The respondents had a variety of responses to who they thought was worst to work with in the current decision making framework. Bad or incompetent consultants were the most frequently identified with federal agencies second worst. When the federal agencies are combined into one category and those who work on development from the private sector are combined the results are displayed on Figure 61.

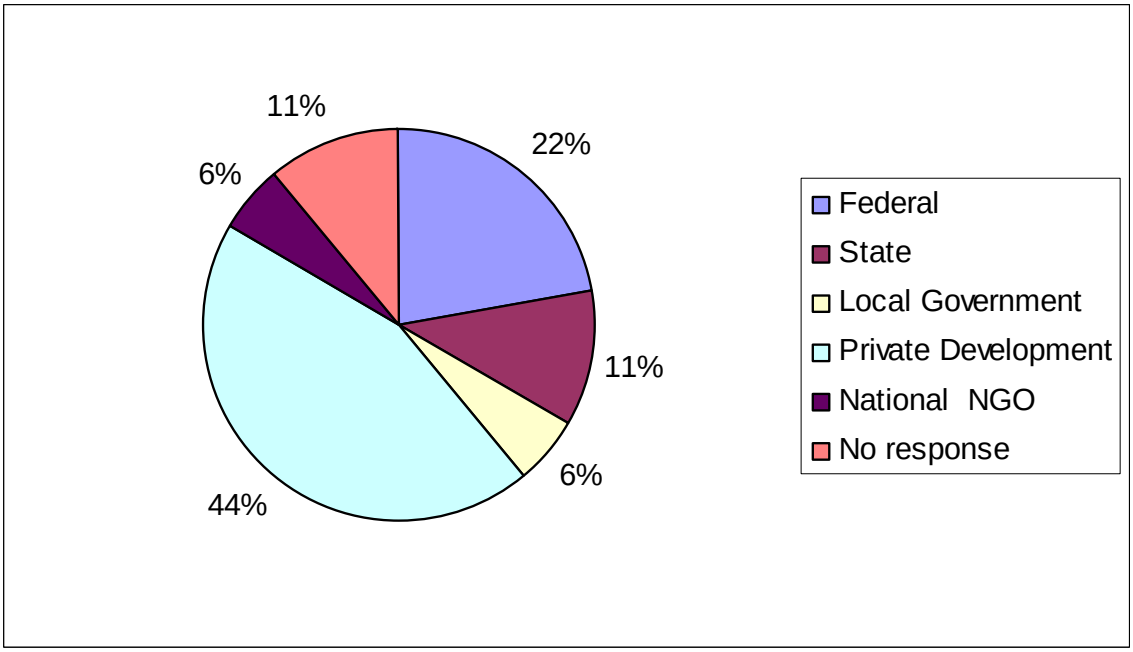
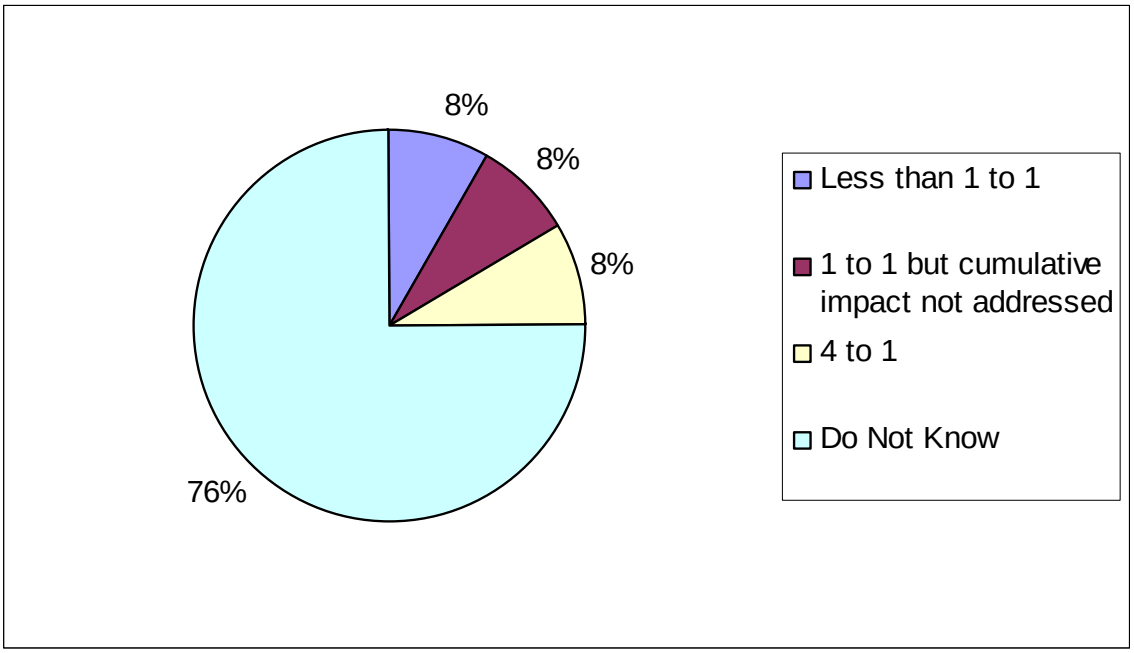


Figure 61: Combined Responses to the question "What entities are the worst to work with in the current decision making framework?

None of the respondents thought that the 2050 build-out projection for the Estero Bay Watershed was a good future outcome or sustainable. Some expressed appreciation for those conservation areas and preserves that have been established. Most were concerned with the loss of agriculture land uses projected. Most of the respondents did not know nor ventured to guess the relative balance of impacts to mitigation in the Estero Bay Watershed. The balance thought it could range from less than 1 to 1 to as high as 4 to 1.

Figure 62: Responses to the question "Do you know the relative balance of impacts to mitigation in the Estero Bay Watershed?



Most of the respondents did not know nor ventured to guess estimated habitat loss ratios and/or infrastructure cost ratios in the Decision-Framework utilized by your group or agency in the Estero Bay Watershed. The balance thought it could range from as low as 1 to 8 to as high as 1 to 1 or what the Uniform Wetland Assessment Methodology would determine.

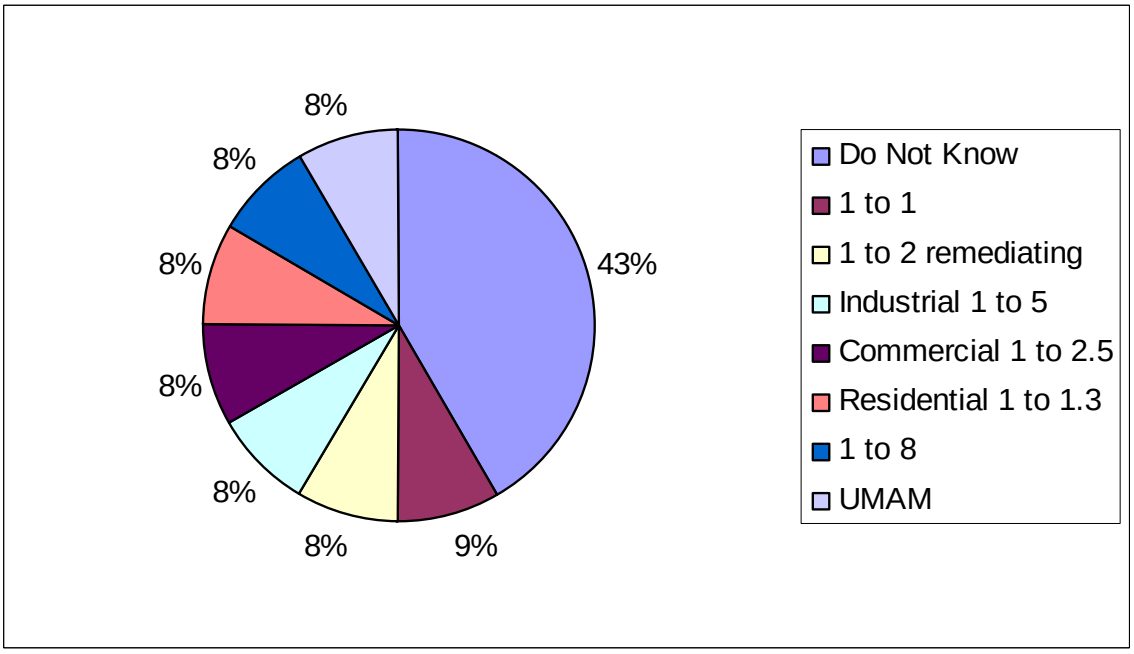


Figure 63: Responses to the question "Do you know the estimated habitat loss ratios and/or infrastructure cost ratios in the Decision-Framework utilized by your group or agency in the Estero Bay Watershed?

Sixty-four percent of the respondents thought that land acquisition for conservation and preservation is the most important tool for regulation in the Estero Bay Watershed. Other responses that include proposals for change are listed below in Table 37.

Table 37: The Most Important Tool For Regulation in the Estero Bay Watershed

Communication among agencies
Coordination of agency timelines for permit review
Elimination of the Burt Harris Law for local government
Full staffing of agencies
GIS analysis tools
Increased time to review by granted extensions
Informed public
Interagency project review
Joint issuance of land and water footprint permits
Land Acquisition / Preservation
Land use decisions at local level
Local Government Support for Environmental Protection
Mandated retrofit for agriculture
Minimization
Mitigation in Basin
Overlay districts with a community plans
Planning for long term conservation goals
Pooled restorations
Pre-application coordination
Real data not presumptive standards
Remove permit cascade and permit shopping
Regional Offsite Mitigation Areas (ROMA)
Water budget planning
Watershed specific guidelines and criteria
Wetland delineation

The answers to the questions 14 through 18 are addressed in chapters 8 and 9.

The majority of the respondents thought that local government should have the final authority with regard to the land use change decision. Other saw the need for a regional authority that is either regulatory or separate from the normal regulatory processes.

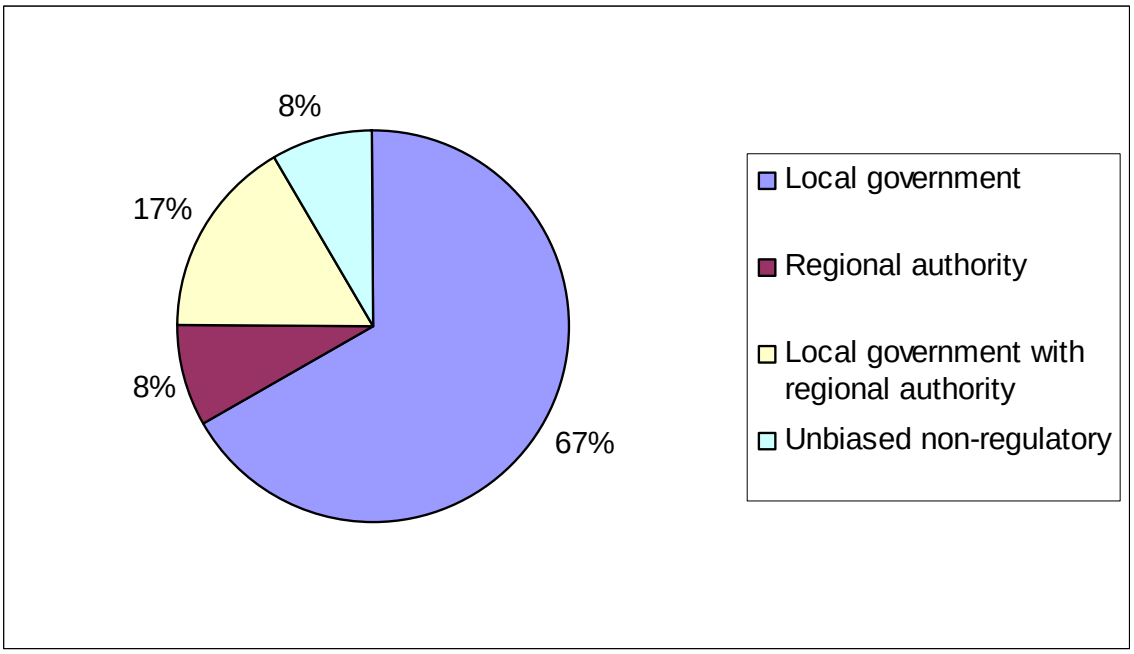


Figure 64: Responses to the question "What entity should have the final authority with regard to the land use change decision?

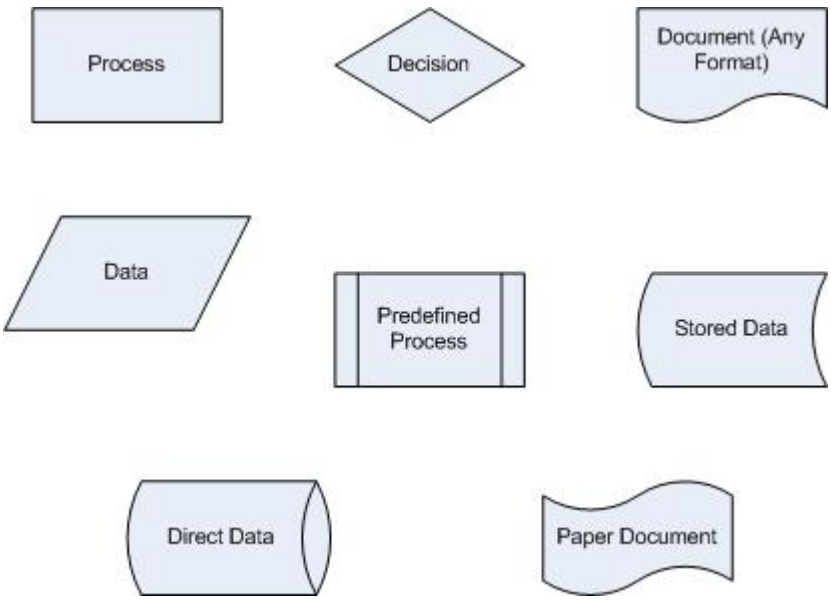
Chapter 3:

The Decision-Framework utilized by entities that have input into the land development/land use approval and public investment processes.

A graphical representation and narrative text of the Decision-Framework utilized by entities that have input into the land development/land use approval and public investment processes in the Estero Bay Watershed was developed based upon the information gather from the review of agency rules, published procedures and practices, and the response to the interviews a generic graphical representation of the Decision-Framework utilized by entities that have input into the land development/land use and public investment processes utilized in the Estero Bay Watershed.

Microsoft Visio was identified to provide graphics for this task. The flow-chart key (Figure 64) indicates the type of actions and documents that are utilized within the flowchart. During the interview processes the document was improved. The basic simplified generic flowchart is show in figure 65. In order to expand on closer processes separate flowcharts of the pre-application process and the application process until decision are shown in figures 66 and 67.

Figure 64: KEY for Flowcharts



The Decision Making Process for the applicant begins with an evaluation of the potential of the project to create a functional profit or in the case of public projects achievement of the desired policy goal such as transportation or conservation. The private applicant examines market preferences for the project, the location of the market, the current and projected coast of borrowing money through the life of the project, the prior track record of successes with this type of project this results in a estimate of the expected financial return of the land use the developer expects to have approved. The specific site is

examined for its general site condition, the costs of obtaining the site and the regulatory environment that the site is located in at the federal, state, regional and local government levels. From these experiences development planners project an expected base coat for the site and the costs of going thorough the regulatory process. From these analyses the applicant can project a return to cost ratio and estimate if the project will generate a profit, or in the case of a public project generate a projected project cost to see if it meets or exceeds budget.

From this preliminary work a decision can be made as to whether the project should proceed in development (GO) or not be pursued at this time (NO GO). If conditions change in the market, regulatory, financial resources or other budgetary environment a project that is NO GO in a period of limited resources and enforcement of environmental protections might become GO when the regulatory environment is weakened, finances are more readily available during a period of "irrational exuberance", or a sweetener such as a university or a sport stadium is added to project design.

If the GO decision is made then the project manager begins the Due Diligence process and begins background studies. Wise and competent project planners schedule per-application meeting with the regulatory entities prior to even developing a site plan or making design commitments. The pre- Pre-application meeting s review the methods that would be best used to gather and present the information to the regulator entities and to provide information to the applicant on the best land uses and design for the project site.

Generally for any project that involves residential, commercial, industrial or transportation components or some combination of these attributes the major categories of Environmental resources, Transportation Resources, Human Impact Resources, and Issues Special to the project will need to have information collected and presented for review.

Within the Environmental Resources Issues information is gathered on soils, existing vegetation, wildlife, wetlands, floodplains, water quality, the presence of impaired waters, the availability of potable water, the presence of solid wastes on the site, the availability of solid waste removal, the presence of hazardous wastes on the site, and the availability off handling hazardous wastes that might be generated by the proposed project.

Either by gathering materials from existing public and private sources or by directly field reviewing the project site a collection is made of water quality data, soils maps, hydrologic data and maps, topographic surveys, vegetation data and maps, and wildlife data or maps are generated. The applicant will generally determine from the vegetation map if they believe that wetlands are present on the site. The applicant will generally propose the location of Federal and State wetland jurisdiction lines. Some applicants then obtain a review and confirmation for the regulatory agencies of the location of that line. Other applicants wait until the permit review process for that to set the location of the wetland jurisdiction. (Note that this can generate significant project redesign needs if the

regulatory agency requires avoidance and minimization prior to allowing mitigation for wetland impacts.) From this process and estimate of the extent and location of impacts to wetlands can be determined.

Similarly the applicant will generally determine from the vegetation map if they believe that listed wildlife species have the potential to be present on the site. An experienced applicant will generally propose the list of potentially occurring listed animal and plant species that are on Federal and State lists. Some applicants then obtain a review and confirmation for the regulatory agencies of the location of that list. Other applicants wait until the permit review process for that to be determined. This can lead to significant project delays and potentially redesign needs if listed species not expected or are intentionally ignored by the applicant are found in subsequent listed species surveys or that needed surveys are seasonally dependent and can only be performed during certain seasons of the year. Consequently required avoidance and minimization may substantial alter proposed project designs developed in the absence and prior to wildlife surveys. From this process and estimate of the extent and location of impacts to listed species can be determined. Subsequently avoidance minimization and mitigation plans can be developed into wildlife management plans to accompany the application.

Combining the expected wetland plan to address impacts with the wildlife management plan and the draft stormwater management plan to address the projected land use change can generate the overall environmental resources mitigation plan for the project.

If the project is anticipated to effect the existing transportation infrastructure by converting existing land uses with minimal to no transportation needs for humans than a projection of the potential transportation effects of the new traffic generated and other transportation demands for mass and other transit is made by collecting existing traffic data on the corroders that serve the project site and projected demands of future traffic generated by the land use increases on the site and the traffic coming to the site to construct and utilize the new project features. This is incorporated into a transportation model that projects effect on existing and the need for new transportation corridors. (Note this can be an area of significant project delay when the applicant elects to utilize non-standard models or make unrealistic assumptions that the project has significantly less than normal transportation impacts for intense development land uses and then expects these non-standard results to be accepted by regulatory entities. Another matter that can delay a project, though not as frequent, is when the proposed project intends to significantly increase land use intensity in hurricane high hazard zones without mitigation for the negative outcomes when a weather disaster occurs). Often the results of the transportation studies can change site design to increase the negative effects of the project on environmental resources by impacting wetlands, wildlife, floodplains and water quality with additional roadways, stormwater systems and other development features.

When the project involves human use for residential, commercial, industrial, educational, institutional or recreational purposes Human Resource Impacts need to be evaluated. Issues associated with projects that are of larger scale include the availability of low cost or work force housing, the presence (existing or projected) of police and fire protection,

the availability of recreation and open space, educational facilities, and health care to projected residents or workers, the availability of basic utilities for potable water and, sewage treatment, and the level and extent of energy conservation. For all project the presence and potential impacts to historical and archeological features of the site need to be determined by a survey for these features. This can take the form of a formal study with subsequent plan to avoid, minimize impacts to or mitigation impacts to identified features.

Combining all the gather information can, in the hands of skilled planners generate a proposal for the project design that addresses the presence of the identified resources and to a large extent avoids impacts by designing with site features rather than against them and in some cases can actually provide improvement to some resources.

Unfortunately this is not common that a proposal for the project design that addresses the presence of the identified resources and to a large extent avoids impacts by designing with site features rather than against them is proposed and most submitted designs include plans to mitigate impacts to resources at some reduced level and a distant location that does not benefit those resources.

The resulting plan is now ready for a pre-application review process with the regulatory and commenting agencies. In many cases it will be determined that the project qualifies for an existing exemption or general permit that if the proper conditions are followed will not require additional review. This step can eliminate a large number of small residential projects or changes on an existing project site.

In some cases this review will send the applicant's planner back to data gathering and project planning to address resource that have not been considered or improperly examined. In most current permitting cases, this is the first time the applicant has communicated the interest in pursuing the project with the agencies. The pre-application meeting will take on the attributes of data gathering steps and the pre-preapplication meeting becomes the forum for the agencies to communicate to the applicant the needed materials for project review. Often a redesign of the project is recommended during the pre-application review in order to avoid or minimize impacts to identified resources. Sometimes the mitigation proposal is found to be insufficient and new plans are recommended. Often alternative designs for the project are discussed and recommended. Some applicants will bring the pre-application proposal to the general citizenry or with selected non-governmental organization to inform them and gather feed-back on the project design.

Subsequently the applicant has the opportunity to incorporate the recommendations of the reviewing entities or to ignore them and proceed. A small number of applicants are responsive to recommendation and will bring back alternatives for further pre-application reviews. Most will incorporate some of the recommendations and then bring a somewhat revised project into the formal application stage. A few including both public and private entity applicants will ignore agency recommendation and apply with a substandard

impactive design with expectations to prevail during permitting review through political force, litigation, or other means to avoid standards and resource protection.

When the application is received this will begin the process of timed review for all regulatory agencies. Time frames vary depending upon the agency and can be short, medium or large depending upon the complexity of the project, the completeness of the application, and the responsiveness of the application to requests for needed information in order for the agency to make an informed decision. Most agencies make the initial application available for public review either on a computer web site or at their office through a public notice. In the past hard copes were available to requestors but this has been or will be substantially eliminated in favor of electronic means. Commenting agencies and the public, including NGOs, have the opportunity to provide comments and questions to the regulatory agency. These are almost always transmitted to the applicant for their response.

The application is subsequently reviewed, first for completeness to determine if all information needed for review is received and required application questions are answered. After this review in almost all cases the agency responds to the applicant with a request for the missing and/or additional information that will clarify the application materials. This is knows as the Request for Additional Information but it often is basically a request for unsubmitted information required by the application process in the first place. This RAI has a specified time limit for response form the applicant and these time limits can vary from short time periods to extended times. Often an applicant will request an extension to gather the information for a response. Some applicants refuse to provide answers and either repeat the first submission the area of request or argue that they do not need to answer such questions. In either case if the RAI is not fully responded to, then the agency will make a second request for the information. There is no limit to this cycle unless the applicant becomes completely unresponsive. If the applicant refuses to respond, then after some time, which is longer for the Federal government, the agency will deny the permit application for lack of information. In a few rare cases, the applicant will move up the chain of command in an agency and have a supervisor at some location distant from the project location to make a finding that the information requested by the lower ranked agency reviewer is not needed. In rare cases the distant office will declare the project complete and ready for further review without the necessary information. In very rare cases, the initial reviewer will be removed from project review and the project reassigned to another agency reviewer more friendly to or indifferent to the project design as proposed by the applicant.

However the permit has been determined to be complete, the application is now subject to final review concerning whether it meets the standards set forth by rule, statute, policy, and current practices for that agency. On rare occasion the comments of a commenting agency will be held in major consideration and the applicant is told to satisfy those issues through project redesign. This was a common practice in the past. Currently, during the course of this study in the Estero Bay Watershed, there were projects where commenting entities recommendations were simply ignored. In general there are significantly fewer

commenting agency comments being received as some agencies are withdrawing from the regulatory review process.

Most projects, approximately 98%, are found to be permittable and for the larger more controversial projects (those with negative third party comments during the review process) an intent to issue is issued. In the past these were mailed to all parties including the objectors. Again the movement to the electronic media has made it the responsibility of the commenters to seek out intents on-line to determine if the projects of concern are moving forward to permitting. Most projects are not objected to and are subsequently issued by the entity with authority to do so, ranging from regional directors to agencies secretary or a board. Many more projects are approved through on a consent agenda and receive no careful consideration by the final authority that depends entirely upon the staff recommendation.

In a few rare cases a third party will request a hearing on a permit that is intended to be issued that the third party objects to. Subsequently if the third party is found to have standing then a train of procedures ensue that can include negotiation and arbitration without judicial procedure to full legal proceedings with depositions and a hearing in formal format with an appointed hearing officer. After the hearing, the hearing officer will make a recommended finding to the agency head of the regulatory entity whose permit action is in dispute. Sometimes these recommendations are for denial of the permit, but in most cases the recommended order will include recommendations to modify the project to render it permittable under the applicable standards for that agency. The agency head then has the opportunity to accept, reject, or accept- in- part the hearing officer recommendations. A finding is then made and the project acted upon with an intent-to-issue, or an intent-to-deny, of a modified design with a new intent-to-issue. Depending upon the outcome the third party may or may not appeal. The appeal would then be elevated if the third party achieves standing to either the highest adjudicatory authority such as the Governor and Cabinet or a full Judicial process in state or federal courts, depending upon the permit type.

Figure 65 Master Generic Flowchart

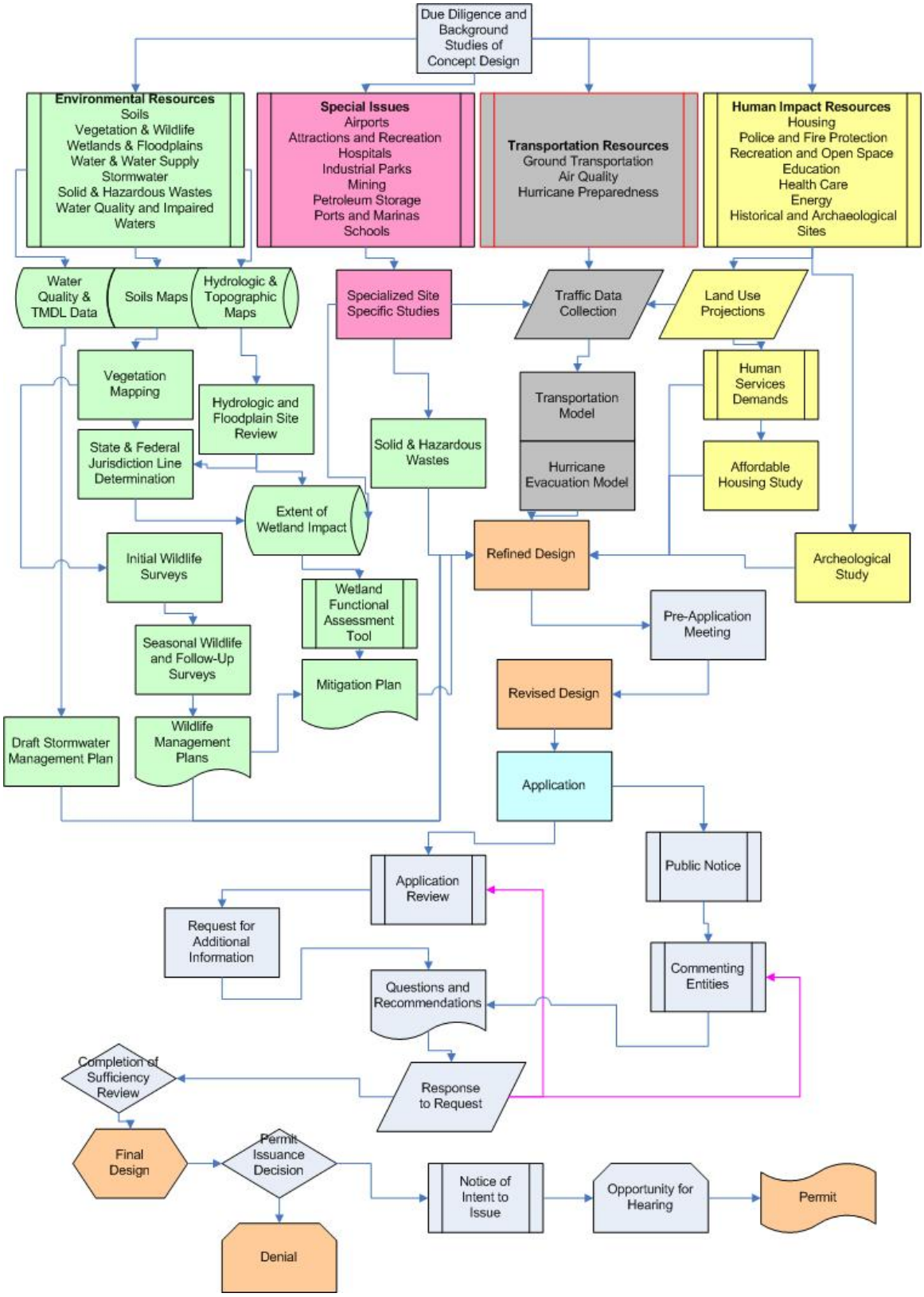
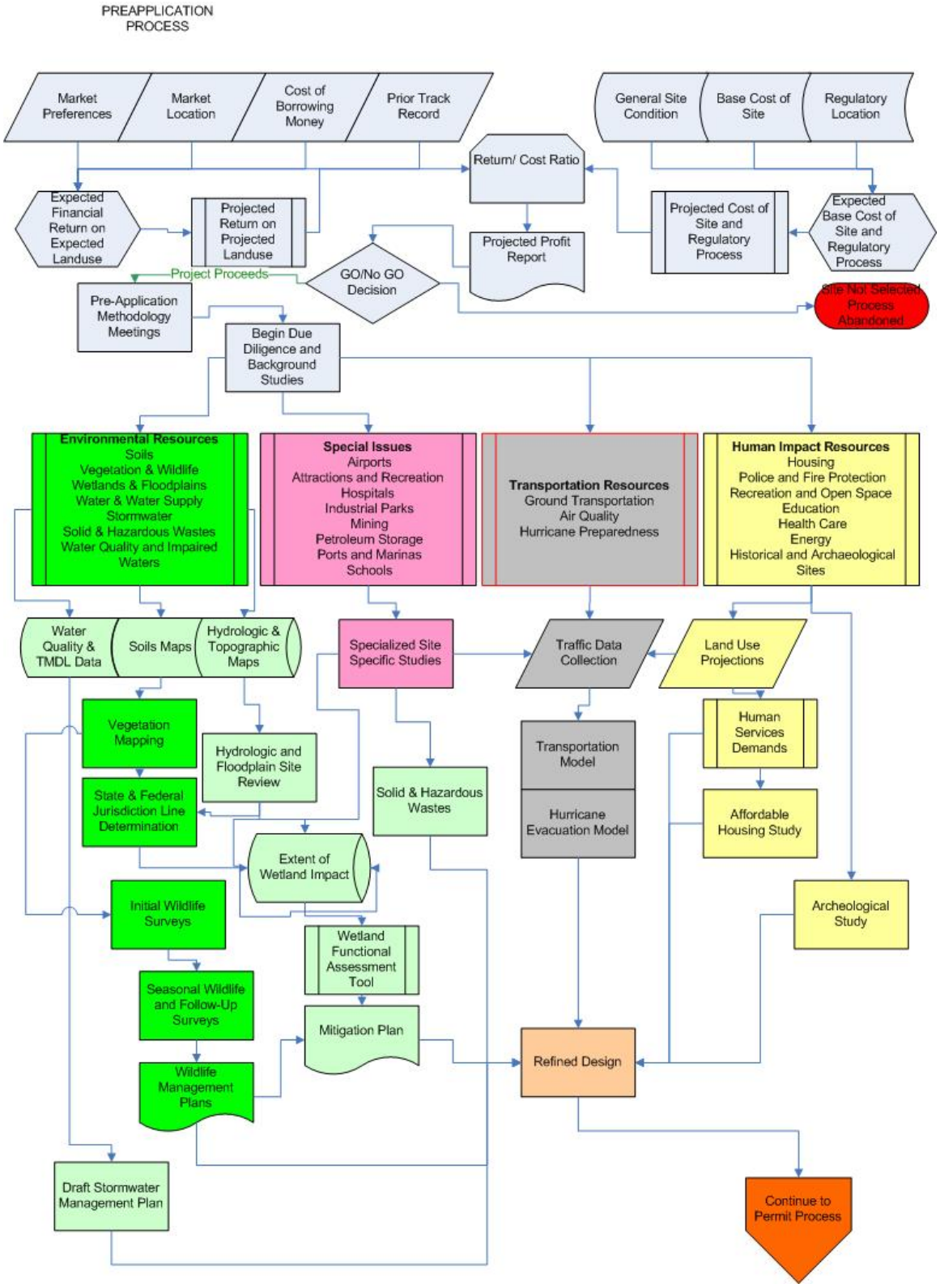
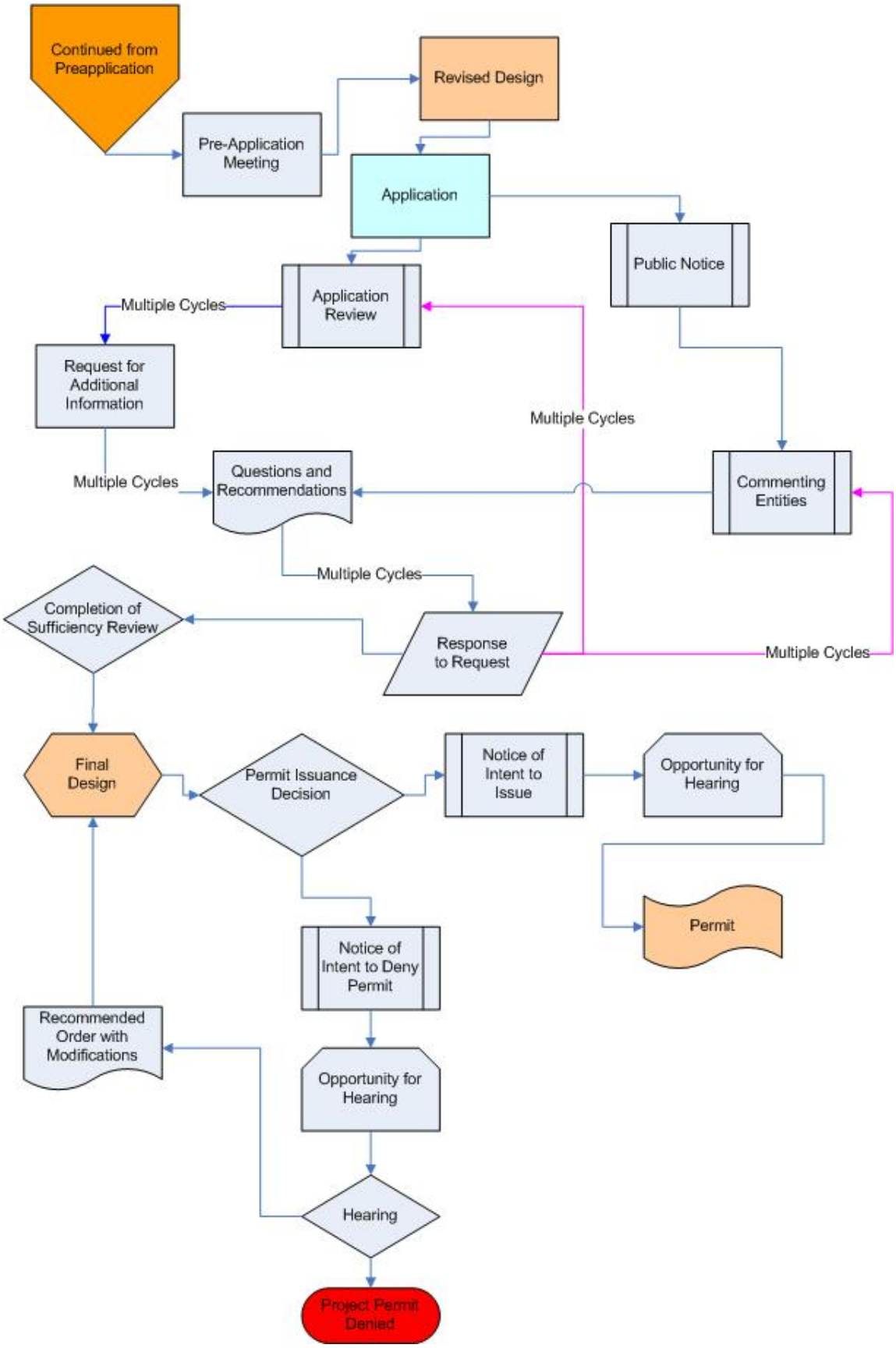


Figure 66: Pre-Application and Application Processes



Application Review Process



Chapter 4:

Future Land Use

SFWMD predicted likely changes in land use for 2025 using the City and County Comprehensive Plan Future Land Use Maps (FLUMs) and University of Florida Bureau of Economic and Business Research (BEBR) population forecasts. Urban infill is predicted by 2025 but also significant growth in the Estero Bay Watershed, along major roadways and east of Interstate 75 (Figure 6X).

2000 Land Use

Both the SFWMD and SWFWMD maintain Existing Land Use information using the Florida Land Use and Cover Classification System (FLUCCS). Typically these are updated every 5 years. FLUCCS is the state standard and was developed by the Florida Department of Transportation (FDOT) in cooperation with state agencies. The manual which details the classification system is available at: http://www.dot.state.fl.us/surveyingandmapping/geographic.htm.

Land designated as urban land use or urban purpose, depicted in orange in the figure below are concentrated along the coast including barrier islands and major roadways (See Figure 67). Pockets of urbanization have expanded in the Estero Bay Basin. Agricultural Uses are concentrated within the DR/GR. Upland Forest is found predominately as a band in existing coastal preserve and in the CREW. Wetlands are found as a mangrove fringe surrounding the estuarine waters of the study area and large cypress systems such as the Flint Pen Strand.

Year 2000 Land Use Map of the Estero Bay Watershed

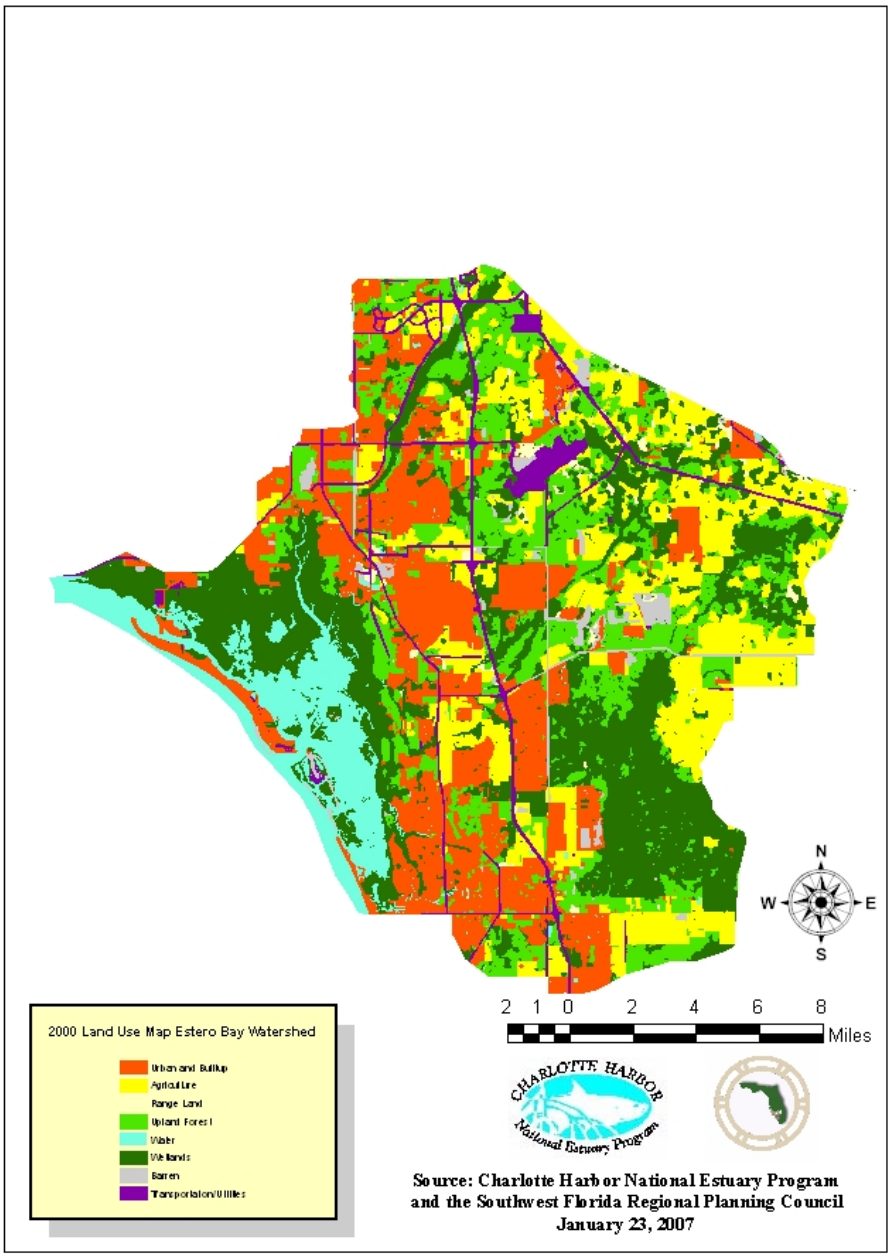


Figure 67: 2000 Land Use Map

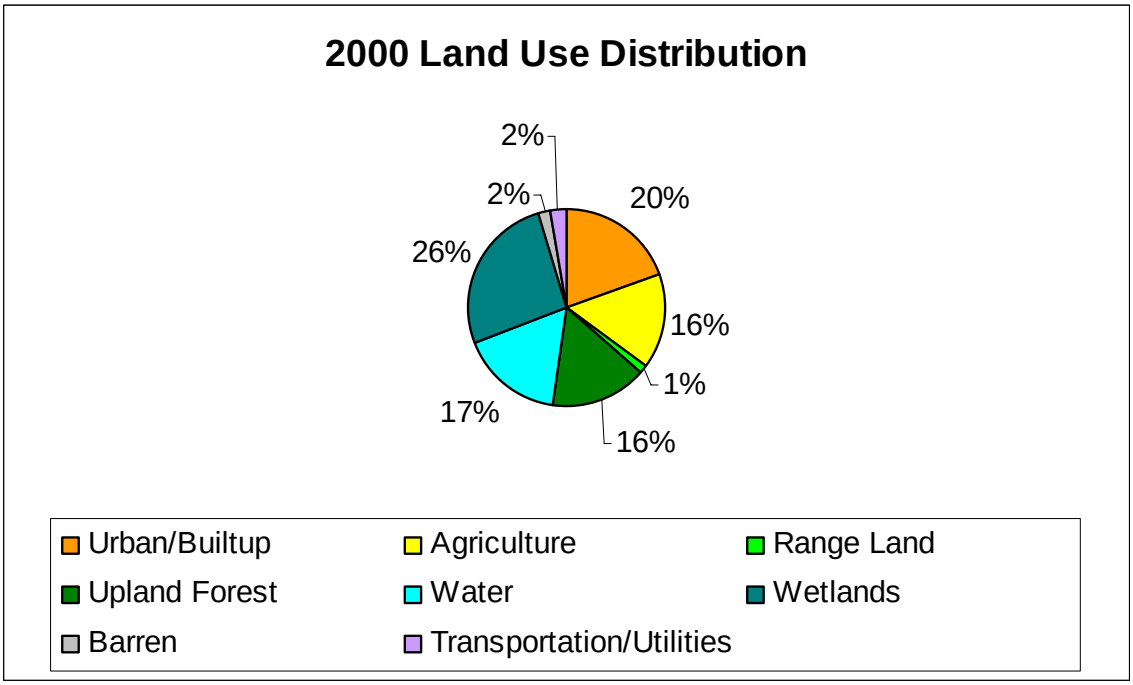
The following table details the land acreages at the FLUCCS level 2.

Table 38: 2000 Land Uses at Level 2 (in acres)

FLUCFCS Land Use Code	Description	acres
100	Urban/Built-up	2,001
110	Residential, Low Density <Less than two dwelling units per acre>	5,720
120	Residential, Medium Density <Two-five dwelling units per acre>	12,607
130	Residential, High Density	3,194
140	Commercial and Services	2,237
150	Industrial	2,138
160	Extractive	4,200
170	Institutional	461
180	Recreational	6,467
190	Open Land	4,097
210	Pastures/Row Crop	31,254
220	Tree Crops	2,249
230	Feeding Operations	0
240	Nurseries and Vineyards	248
250	Specialty Farms	86
260	Other Open Lands <Rural>	1,071
310	Herbaceous (Dry Prairie)	80
320	Shrub and Brushland	981
330	Mixed Rangeland	1,143
410	Upland Coniferous Forests	31,609
420	Upland Hardwood Forests	2,559
430	Upland Hardwood Forests Cont.	975
440	Tree Plantations	107
510	Streams and Waterways	589
520	Lakes	157
530	Reservoirs	1,988
540	Bays and Estuaries	34,229
560	Slough Waters	387
610	Wetland Hardwood Forests	16,867
620	Wetland Coniferous Forests	24,972
630	Wetland Forested Mixed	5,403
640	Vegetated Non-Forested Wetlands	10,437
650	Non-Vegetated/Tidal Flats	656
710	Beaches Other Than Swimming Beaches	123
720	Sand Other Than Beaches	10
740	Disturbed Lands	4,241
810	Transportation	4,006
820	Communications	20
830	Utilities	1,443

Total Area	221,012

Figure 68: 2000 Land use Distribution



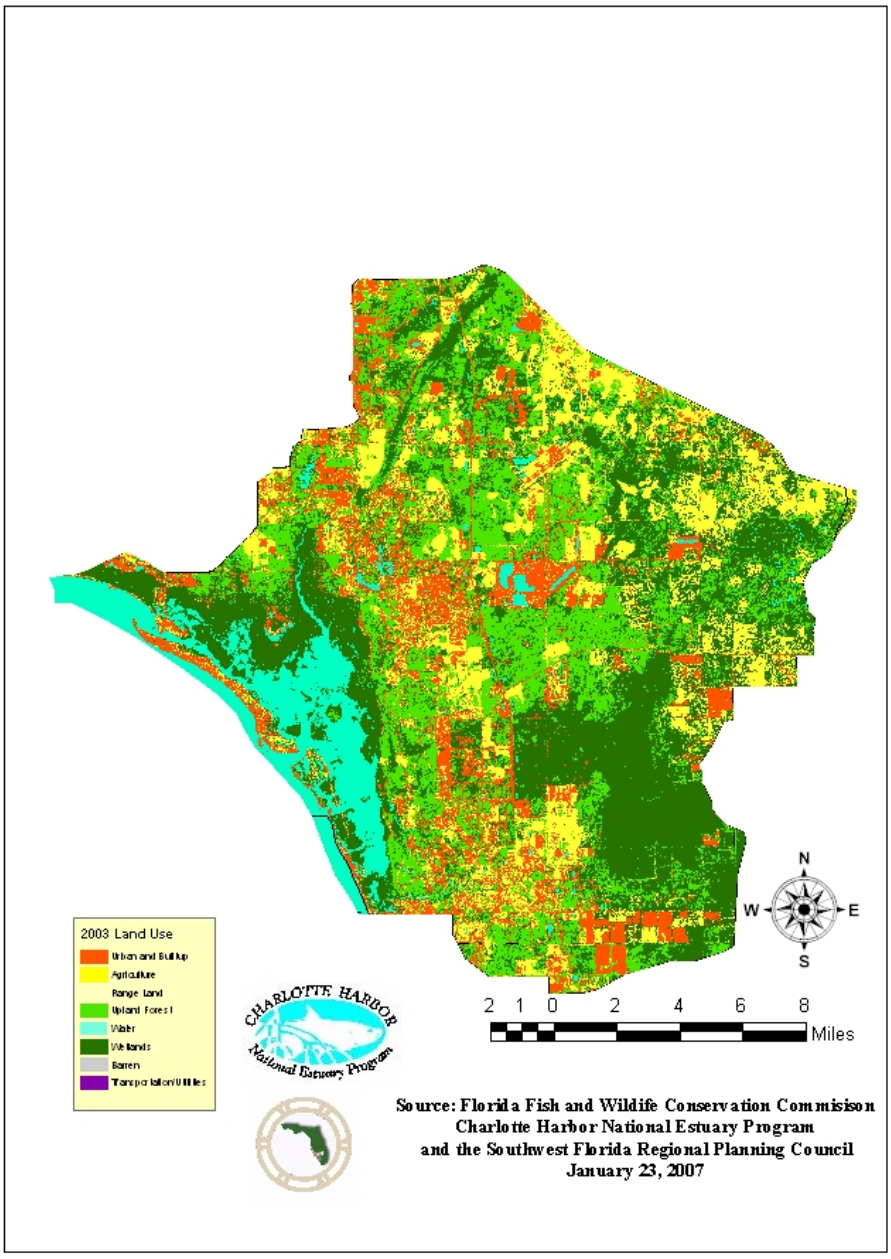


Figure 69: 2003 Land Use Map

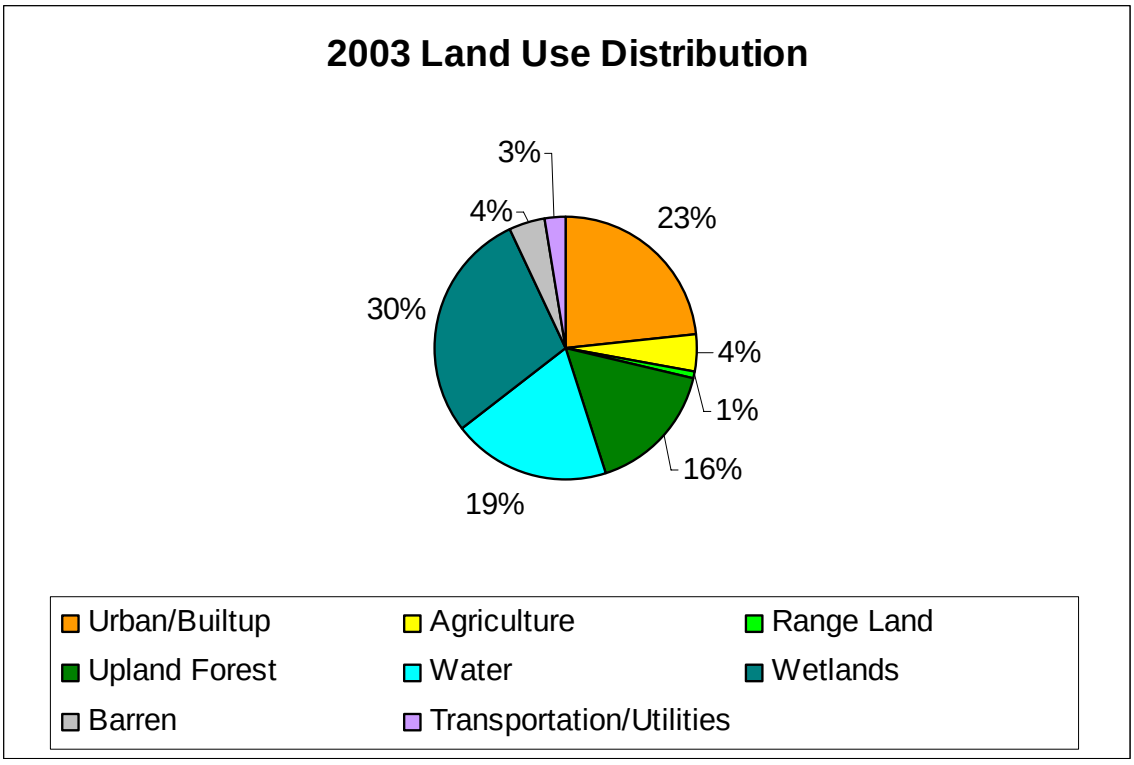


Figure 70: 2003 Land Use Distribution

2025 Future Land Use

SFWMD predicted likely changes in land use for 2025 using the City and County Comprehensive Plan Future Land Use Maps (FLUMs) and University of Florida Bureau of Economic and Business Research (BEBR) population forecasts. Urban infill is predicted by 2025 but also significant growth in rural communities along the Caloosahatchee (Figure 71).

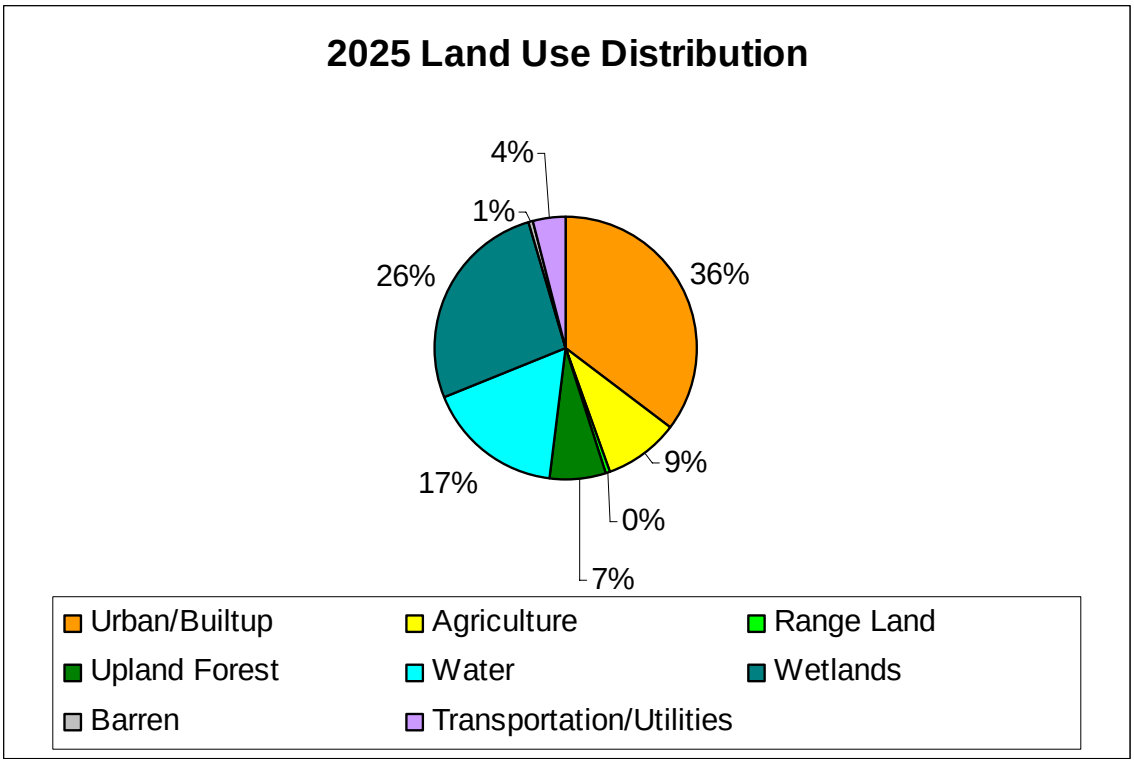


Figure 71: 2025 Land Use Distribution

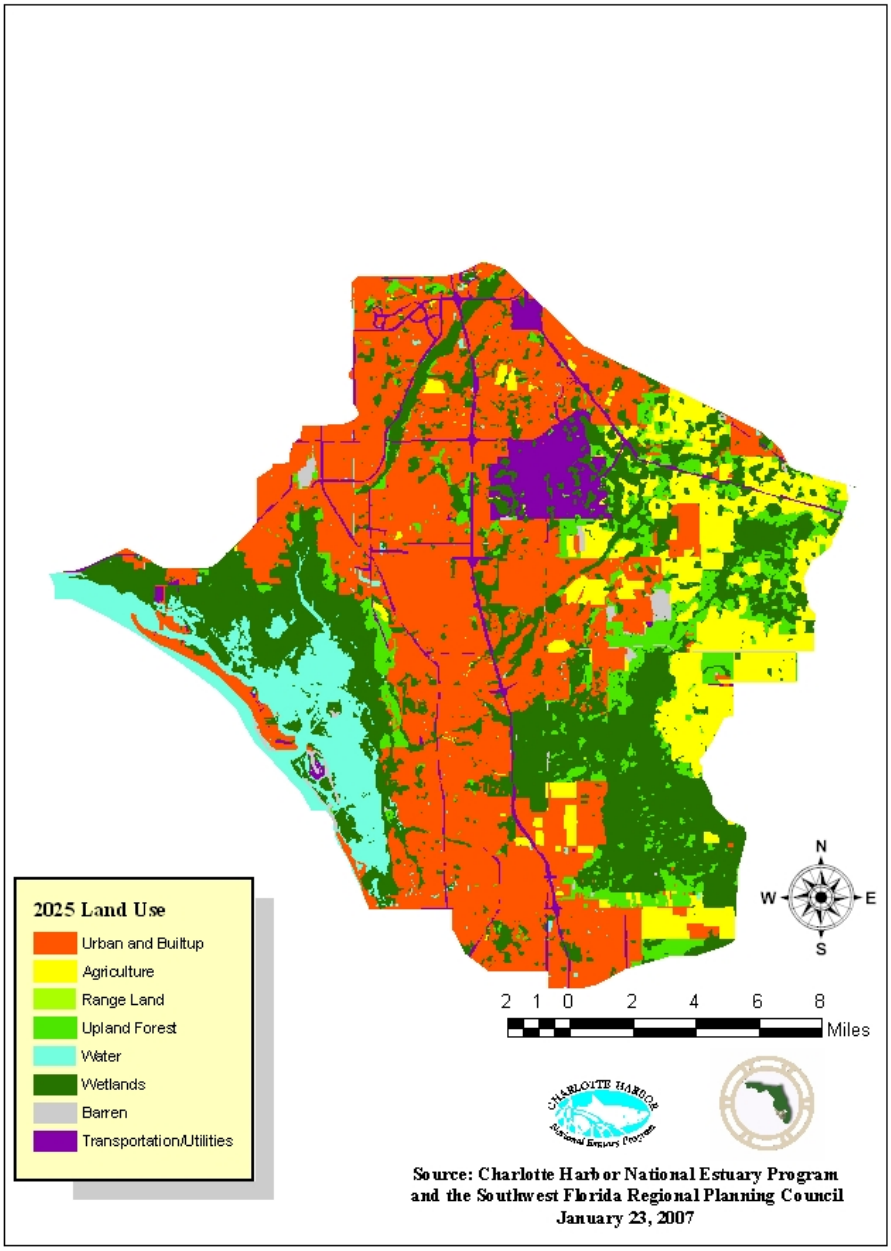


Figure 72: 2025 Land Use Map

2050 Future Land Use

Similar projections have been made by SFWMD for 2050 future land uses. If no amendments to comprehensive plan FLUMs are made before 2050, most of the population growth is predicted to be accommodated by urban infill (Figure 24).

Table 38: Projected Land Use Changes by Basin (in acres)

Estero Bay		2000	2003 Land Use	2003 Land Cover	2025	2050	Total Change	%change
1	Urban/Builtup	43,122	51,152	51,546	78,067	82,064	38,944	90%
2	Agriculture	34,908	9,319	18,472	20,465	16,468	-18,441	-53%
3	Range Land	2,204	2,280	2,281	909	909	-1,295	-59%
4	Upland Forest	35,250	35,250	35,957	15,404	15,404	-19,846	-56%
5	Water	37,350	42,460	42,476	37,349	37,349	0	0%
6	Wetlands	58,335	62,886	51,773	58,336	58,336	0	0%
7	Barren	4,374	9,534	9,278	1,594	1,594	-2,779	-64%
8	Transportation/Utilities	5,469	5,470	9,228	8,887	8,887	3,418	62%
	Total	221,012	220,354	221,012	221,012	221,012	0	0%

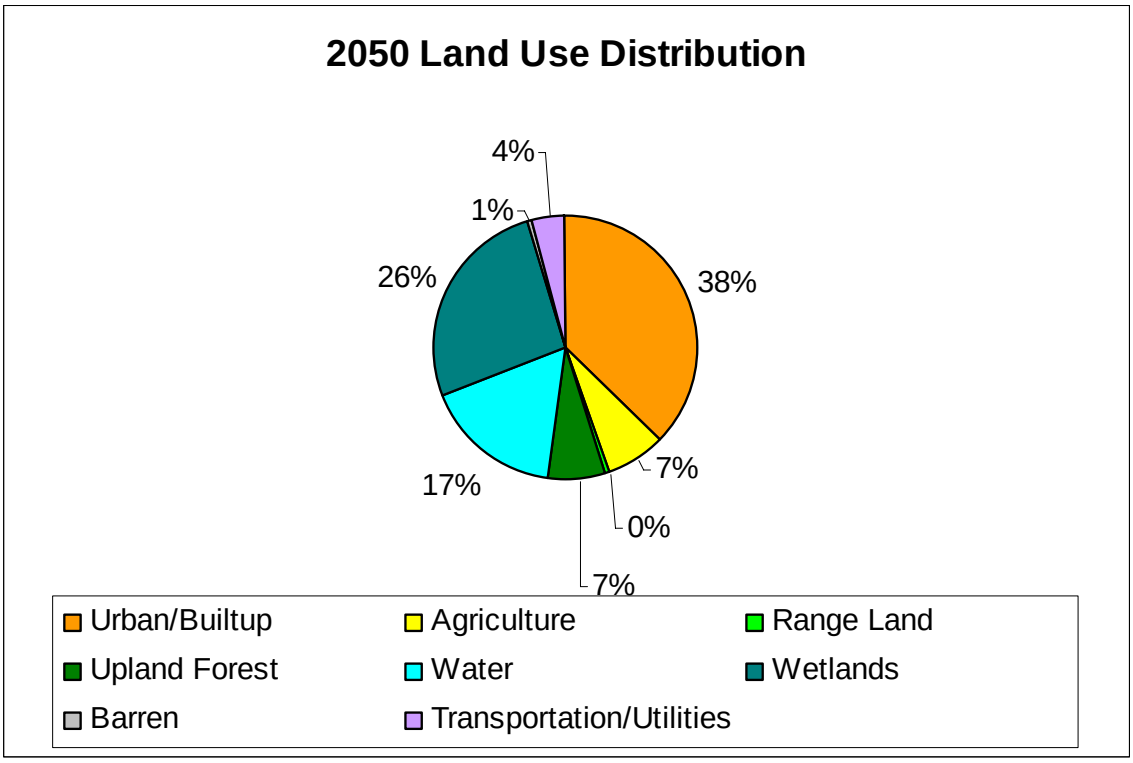


Figure 73: 2050 Land Use Distribution

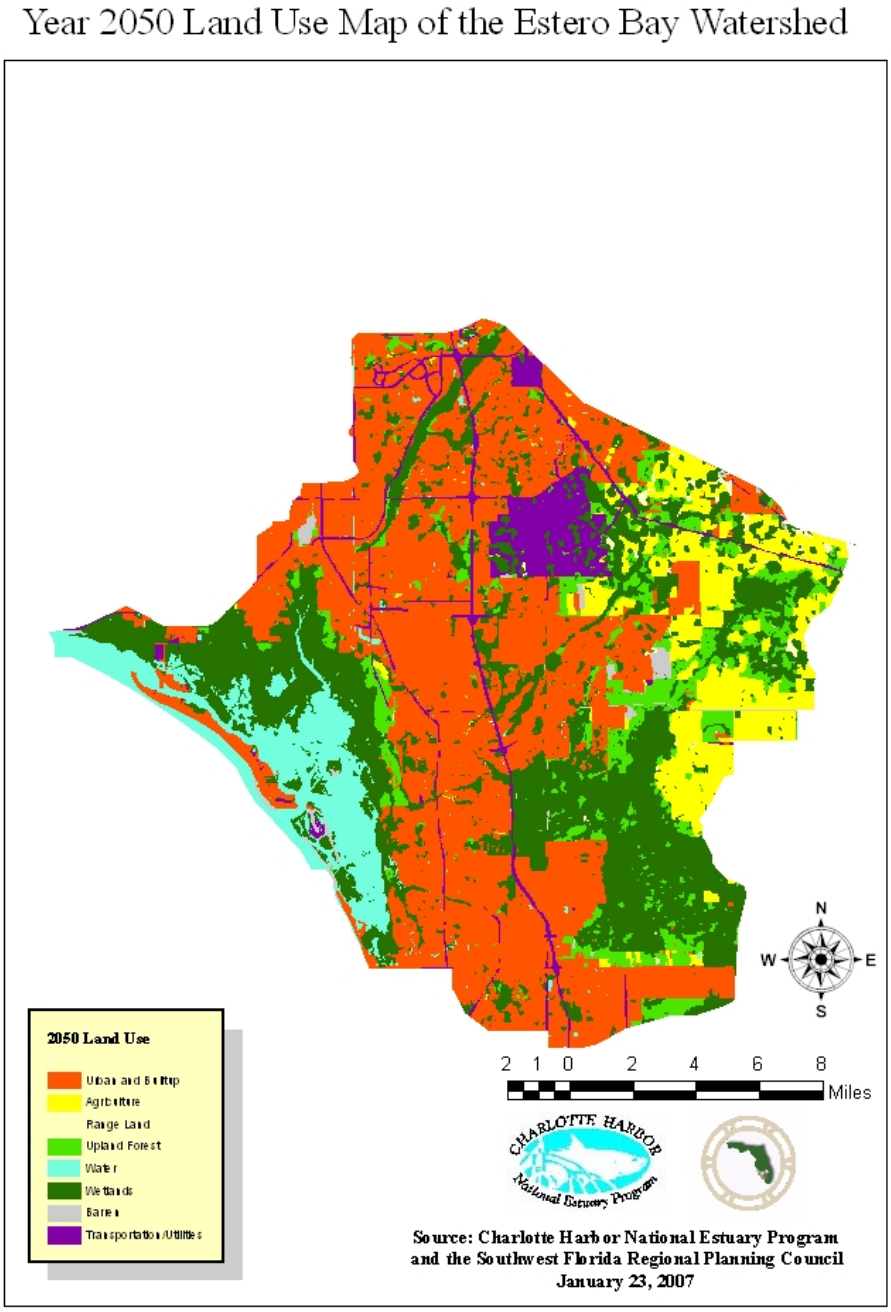


Figure 74: 2050 Land Use Map of the Estero Bay Watershed

Table 39: Projected Land Use Changes Estero Bay Watershed (in acres)

Estero Bay		2000	2025	2050	Total Change	%change
1	Urban/Built-up	43,121	78,067	82,064	38,944	90%
2	Agriculture	34,909	20,465	16,468	-18,441	-53%
3	Range Land	2,205	909	909	-1,295	-59%
4	Upland Forest	35,250	15,404	15,404	-19,846	-56%
5	Water	37,349	37,349	37,349	0	0%
6	Wetlands	58,336	58,336	58,336	0	0%
7	Barren	4,373	1,594	1,594	-2,779	-64%
8	Transportation/Utilities	5,470	8,887	8,887	3,418	62%
	Total	221,012	221,012	221,012	0	0%

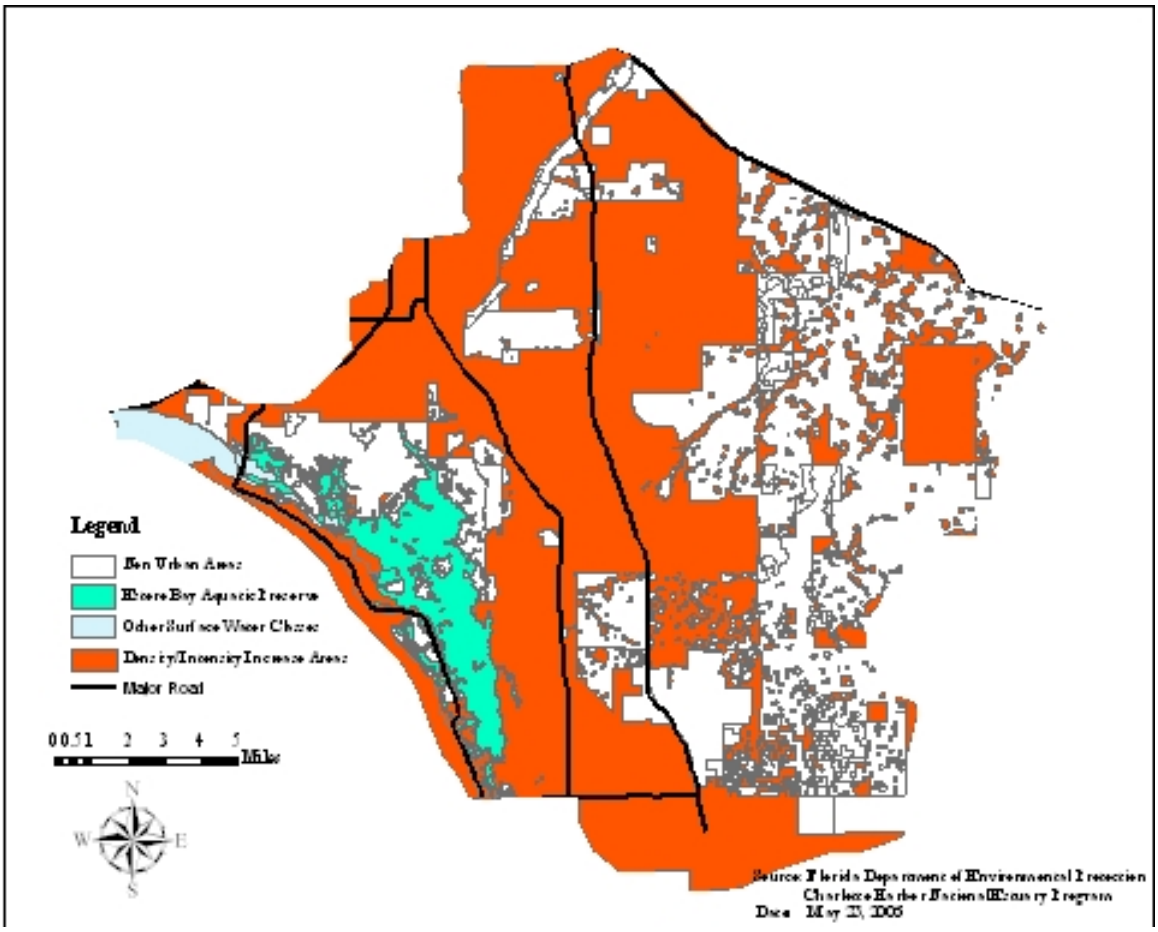


Figure 75: 2000-2050 Density/ Intensity Increase

Between year 2000 and 2050, urbanization is projected to be highest in the rural areas within the Freshwater Caloosahatchee basin, both by percentage and by total acreage. Agriculture, rangeland, and upland forests are anticipated to be reduced by a quarter as a result of projected urban expansion.

Table 40: Projected Land Use Change Summary (in acres)

LCH Study Area		**2000**	**2025**	**2050**	**Total**	**% change**
1	Urban/Builtup	227,715	380,126	399,020	171,305	75%
2	Agriculture	414,917	343,456	324,561	-90,356	-22%
3	Range Land	60,306	43,488	43,488	-16,818	-28%
4	Upland Forest	233,419	173,058	173,058	-60,361	-26%
5	Water	296,851	296,734	296,734	-116	0%
6	Wetlands	254,567	254,810	254,810	243	0%
7	Barren	15,584	7,679	7,679	-7,905	-51%
8	Transportation/Utilities	23,094	27,101	27,101	4,007	17%
	Total	1,526,453	1,526,453	1,526,453	0	0%

Chapter 5

A sample of recently developed private and public projects.

The following are some examples of the types of projects that have been involved in the decision-making process of land conversion permitting in the Estero Bay Watershed. They range form a single –family residence to projects affecting thousands of acres.

Estero Bay Proper

Tavira at Bonita Bay is a proposed residential project located within the existing Bonita Bay Development of Regional Impact in Section 29, Township 47 South, Range 25 East. The site encompasses 6.5 acres with 3.03 acres of impervious surface for a coverage of 46.62%. The undeveloped on-site condition includes 0.28 acres of 424, 0.36 acres of 510, and 6.05 acres of 740. Prior to the approval of the DRI the area of lake and barren ground was xeric 412 and 625. The development plan will eliminate the 0.28 acres of 424. The control elevation is listed as 15 feet NGVD and the finished floor elevation will be 20.8 feet NGVD.

Estero River

In 1991, the Edison Farms property was part of what was called Gulfview New Town, a proposed 7,100-acre, 15,000-home community. Part of the land was sold to the Bonita Bay Group, which developed it as The Brooks. The existing flowways to Halfway Creek were restored when The Brooks was built by the Bonita Bay Group.

In 1999, Agripartners sought a permit to fill 1,000 acres to create upland pastureland. That application was withdrawn when the U.S. Army Corps of Engineers saw it that way. Agripartners petitioned for annexation into the city of Bonita Springs in 2002, seeking a development density of up to six homes per acre. The City of Bonita Springs Council voted down the petition.

Edison Farms, previously known as Agripartners, has in the past unsuccessfully applied for permits for various clearing or development activity on the land. There have been several prior proposals to develop the Agripartners site (SWFWMD #36-00088-D and SFWMD # 031014-4), and remove significant areas of forest and wildlife habitat found on the property as agricultural or silvicultural pre-preparation for future development. This included the mechanized land clearing of 949.53 acres of forested wetlands, placing fill on 52.72 acres of hydric pine flatwoods and 61.89 acres of mixed forested wetlands, excavating 79.46 acres of hydric pine flatwoods and 99.79 acres of mixed forested wetlands, constructing a 1.5 mile entrance road from the existing Corkscrew Road and constructing an eastern perimeter berm.

The South Lee Conveyance application (SFWMD Application No: 0501 12-1 8) is located in Sections 1 & 12, Township 45S, Range 25E and Sections 5-8, Township 47S,

Range 26E. It is a request for an Environmental Resource Permit authorizing the construction of an approximately 5- foot deep, 4-mile long ditch/canal drainage conveyance system with a 198.85 acre area known as South Lee Conveyance, part of the 3,937.3 acre site, variously known as M & A Ranch, AKA Agripartners, AKA Edison Farms, AKA Aronoff Property, which will discharge via the existing 1-75 culverts through the Brooks Master SWMS flow-way restoration and mitigation areas that are part of Halfway Creek and to the Estero River, OFW, an outstanding Florida water and then to Estero Bay Aquatic Preserve (OFW). The current proposed project appears to be part of the previously proposed perimeter ditch.

The project site consists of 3,408.5 acres of wetlands and 528.78 acres of uplands. This includes 437.48 acres of upland pine flatwoods, 50 acres of hardwoods, 83 acres of power transmission line berm, 1.126 acres of hydric pine flatwoods, 801.3 acres of cypress, 1,408.3 acres of mixed pine/cypress (including hydric pine flatwoods), and 31 acres of borrow pits. The six-square mile site is within the Estero Bay basin east and adjacent to Interstate 75, 1.5 miles south of Corkscrew Road. This site was previously part of the Sweetwater Ranch and subsequently was proposed as a golf-course residential development as part of the unapproved 7,100-acre Gulfview Communities Development of Regional Impact. Currently, the portion of Sweetwater Ranch west of I-75 is developed as The Brooks residential project.

The project site is documented habitat for the Florida panther, wood stork, little blue heron, tricolored heron, snowy egret, white ibis, and roseate spoonbill. The site currently provides suitable habitat for the red cockaded woodpecker, the eastern indigo snake, the Big Cypress fox squirrel, and the Florida black bear, all species found in southeast Lee County east of I-75. The six sections of the project site are Priority 1 Florida panther habitat, as part of the Corkscrew Regional Ecosystem Watershed (CREW) Ecological Unit (USFWS 2006). The site is a critical link in the Estero Bay Watershed, connecting the western extent of the CREW through the headwaters of the Estero River and Halfway Creek to Estero Bay. The project site is a regionally significant, critical wildlife habitat of southwest Florida and necessary to support the present panther population in south Florida.

The proposed project would have had a total direct wetland impact to 1,283.2 acres of fresh water forested wetlands through construction and long term drainage of short hydroperiod sheet flow wetlands. The staff report does not address the wetlands impacts of this scale and the proposed mitigation plan is insufficient to off-set the projects impacts to on-site and off-site wetlands.

There will also be a significant change to water quality on the site as the high oxygen low nutrient sheetflow natural waters are confined to a deeper incised canal there will be decreases in dissolved oxygen, increases in BOD, and subsequent shifts from a periphyton to a deeper water algal community with concomitant nutrient generation and increases in nitrogen and p0hosphorus in the waters discharging through the Brook flowway. If the anticipated land development on the drained site follows then subsequent water quality degradation will ensue with negative water quality impacts to the Brooks Master SWMS flow-way restoration and mitigation areas that are part of Halfway Creek and to the Estero River, OFW, an outstanding Florida water and then to Estero Bay Aquatic Preserve (OFW).

Conservation lands established in project reviews for both Stoneybrook and Wildcat Run will be affected by the proposed project. A proposed alignment for a proposed future extension of Treeline Avenue, connecting Corkscrew Road in Lee County and CR 951 in Collier County is within the area of influence of this project. The application does not indicate the location or sizes of several non-permitted silviculture haul roads within the Agripartners site.

Wildlife surveys submitted for the project were out-dated and inadequate in scope and effort. Contrary to assertions in the SFWMD staff report there is no evidence that the applicant had satisfied the issues and concerns expressed by the Florida Fish and wildlife Conservation Commission or the U.S. Fish and Wildlife Service with regard to wetland-dependent listed species.

The Michigan-based company is currently in negotiations with the South Florida Water Management District over a $76,000 fine and required mitigation assessed by the agency, which says the company illegally cleared wetlands early 2005. The U.S. Army Corps of Engineers also is investigating to determine the "extent of violation" caused by clearing the wetlands.

According to the application, which was filed under the name of South Lee Conveyance, the application states that the ditch is needed because the nearby Citrus Park manufactured home community plugged a ditch into which water from the Edison Farms property used to flow. Therefore by definition the canal would not facilitate restoration of flowways to the south since the purpose of the canal is to drain the wetlands. After wetlands drainage the site would be preconditioned for future land development.

The water management district staff initially had many concerns about effects of the ditch on wetlands. In the meantime, the enforcement arm of the water management district also is trying to wrap up a restoration plan for the earlier clearing on the property. The company had an 180-day period after the water management district board ruled on the case, a schedule that is neared expiration at the end of 2006.

The extent of fines and restoration the Army Corps might require of the company for the same violation has not yet been determined. The Corps' investigation is still at the phase of determining the” extent of violation. The USACOE also received a permit application for the ditch but said it was returned because the agency does not allow any other activity on a property while an investigation for a prior violation is continuing. While the investigation is under way, the company has not been required to correct the violation. The USACOE admitted the wetlands were still being affected but said the Corps doesn't require a violation be corrected before a determination has been made on the extent of the violation.

Agency concerns expressed regarding the proposed project include 1) the lack of on-site project minimization of impacts to wetlands, 2) the loss of critical habitat for endangered and threatened species and special of special concern, 3) the major landscape fragmentation and drainage of a critical watershed connection in the Estero Bay Watershed, 4) the loss of sheet-flow hydrology to over-drainage, 5) the potential for deleterious impacts to downstream systems including hydrologic alternations that have a strong potential to negatively effect Outstanding Florida Waters and an Aquatic Preserve, 6) the potential for secondary impacts from project construction and management

including a strong potential for implementation of the golf-course residential build-out of the site post agricultural conversion, 7) the potential for the use of the perimeter berm as the first segment of the western CREW berm proposed as an alternative in the Lee County Watershed Study (SFWMD 1998) to significantly alter regional hydrology in the Estero Bay Watershed, 8) the potential for nutrient and agricultural chemical impacts from improved pasture management with increased grazing, 9) the loss of biodiversity from disproportionate impacts on shorter hydroperiod wetlands, including hydric slash pine flatwoods, and 10) the cumulative threat to the implementation of regional wildlife habitat planning including the panther recovery plan.

The proposed project site is critical habitat for many listed species and vital to the functioning of the CREW. The cumulative impacts to Federal and state listed species and wetland plant habitats at the headwaters of Outstanding Florida Waters could lead to a finding of inconsistency with the Coastal Zone Management Act.

The SFWMD staff report for this project was completed on December 12, 2006, and became available for public review on December 13, 2006. There was a very short time-frame prior to the project being approved by the SFWMD board on the consent agenda of the December 2006 meeting.

The Southwest Florida Regional Planning Council (SWFRPC) reviewed the application, and recommended denial of the proposed project as it was currently designed.

The Conservancy of Southwest Florida and Lee County have filed a petition to oppose the South Florida Water Management District's permit. In response water management district officials now say the canals will help restore flowways to Halfway Creek and the Estero River, which were impeded when the state built Interstate 75.

Agripartners and Edison Farms are dedicating 100 acres to preservation to help offset environmental impacts from the canals. But the report reveals that the canals would harm the wetlands on the Edison Farms site and on neighboring properties, including the Corkscrew Regional Ecosystem Watershed lands, about 60,000 acres that are home to wildlife. The possibility of development remains a major factor as well.

A controversial plan to add an exchange at Coconut Road and I-75 is proposed as a relief to traffic on Bonita Beach and Corkscrew roads — the connections to I-75 for Bonita Springs and Estero. The access is also proposed to provide access to a future proposed County Road 951 extension through and to the Edison Farms and Agripartners land, making it more valuable if it is developed.

The Conservancy and other environmental groups were awaiting the January water management district governing board meeting to speak against the plan, but those plans made it onto the December consent agenda instead, before the holiday break, and the deadline to petition was immediately after the holiday break. The NGOs have expressed concerned about the decision-making process in the hearing petition,

Eighteen community organizations, ranging from neighborhoods of The Brooks, The Conservancy of Southwest Florida and the Florida Wildlife Federation to the Estero Council of Civic Leaders, have invested their resources to question the permit and also the decision making process whereby the Coconut road Interchange study has been funded.

Hendry Creek

The Lee County Island Park/Hendry Creek Wetland and Water Quality Enhancement Project's
purpose is to provide wetland and water quality enhancement within the Hendry Creek Basin.

Under the Conservation 2020 program, Lee County acquired two parcel of land in Section 12, Township 46 South, Range 24 East, Lee County, Florida. Parcel #66 contains approximately 83 acres. Parcel #128 contains approximately 160 acres. A location map is attached that shows the location these parcels. A powerline easement is located a portion of the northern boundary of parcel #66. This easement also bisects parcel #128. Residential development is located to the north and east of the two parcels.

Runoff from the adjacent development and Island Park Road itself is currently channelized through ditches and swales east into Hendry Creek. The intent of the enhancement project is to restore sheet flows where possible, restore wetland habitat in areas that are heavily invaded by exotics and to provide additional water quality treatment in filter marshes which would be a part of the wetland habitat restoration areas.

The filter marshes would be located both north and south of the powerline easement in parcel #128 and just west of Island Park Road in the southeast portion of parcel #66. These marshes will be located areas that are heavily invaded by exotics. Approximately 17.23 acres of filter marsh would be created. Of this acreage 7.12 acres would be created north of the powerline easement and 5.84 acres south of the easement. The waters that currently travel west through the ditches adjacent to the powerlines would be directed into these marshes allowing for restoration of sheetflow to the wetlands and well as providing additional water quality treatment. An additional 4.27 acres of marsh will be created in the southeastern area of Parcel #66. The waters that currently travel along the roadside ditches would be directed west, into this marsh area.

Another aspect of the project is additional restoration of historic sheetflow through the removal of a berm located along the northern boundary of Parcel #128. This berm currently prevents flows in the adjacent ditch from entering the wetlands. The runoff currently travels west in the ditch into Hendy Creek. Removal of the berm will allow flows into the exiting wetlands on Parcel #128 providing for restoration of hydroperiod in the wetlands as well as providing additional water quality treatment of the runoff.

The specific details of the marsh creation and berm removal are still under development. The program intent is outlined above but the specific acreages and locations of the enhancement activities may change during the design and implementation of the plan.

Imperial River

The Mr. & Mrs. Wallerstein project site is a 1.14-acre parcel containing 1.14 acres of disturbed freshwater-forested wetlands within the Imperial River Watershed of the Estero Bay Drainage Basin. The project site is located at 24677 Red Robin Drive in Section 15, Township 47 South, Range 25 East, Bonita Springs, Lee County, Florida. The project plan is to construct a single family residence with driveway and drain-field in Bonita Springs, Lee County, Florida. The applicant is proposing to construct a single family residence with driveway and drain-field in Bonita Springs, Lee County, Florida. The project site is a I .l4-acre parcel containing 1.14 acre of disturbed freshwater-forested wetlands. The applicant proposes to discharge 2,172 cubic yards of clean fill into 0.61 acre of wetlands. As mitigation for direct impacts to 0.61 acre of wetlands the applicant proposes to enhance and preserve the remaining 0.53 acre of wetlands onsite. Details of the compensation plan including wetland functional analysis and adequacy of the compensation have not been finalized. The applicant proposes direct impacts to 0.61 acre of freshwater forested wetlands within a core foraging area (CFA) of a wood stork (*Mycteria americana*) rookery. As compensation for wetland impacts the applicant is proposing to enhance and preserve the remaining 0.53 acre of freshwater forested wetlands onsite therefore the Corps determined that this project "may affect" the wood stork and will request formal consultation from the US Fish and Wildlife Service (FWS) for this determination via a separate letter. The project site contains habitat suitable for the Eastern indigo snake (*Drymarchon corais couperi*). The permit if issued would include the Standard Protective Measures for the Eastern indigo Snake as a special condition therefore the Corps has determined that the project "may affect, but is not likely to adversely affect" the indigo snake. This determination will be coordinated with the FWS via a separate letter. The Corps is unaware of any other threatened or endangered species issues at this site.

Six-Mile Cypress

"The Fountains" project is a proposed 2,769 acre development, including 1,644 acres of uplands and 1,124 acres of wetlands located south of SR 82, bisected by Daniels Parkway, northeast of the Southwest Florida International Airport, west of the Gateway Elementary School and Commercial Lakes Drive in Sections 4, 5, 8, 9, 16, 17, 20, 21 of Township 45 South, Range 26 East in eastern Lee County. Currently the site is ranchland pasture with significant areas of native habitat.

Wildlife surveys submitted by the applicant's consultant indicate on-site observations of Florida panther (*Puma concolor coryi*) (endangered- E), wood stork (*Mycteria americana*) (E), Big Cypress fox squirrel (Sciurus niger avicennia) (threatened -T), southeastern American kestrel (*Falco sparverius paulus*) (T), Florida sandhill crane (*Grus canadensis pratensis*) (T), little blue heron (*Egretta caerulea*) (species of special concern – SSC), snowy egret (*Egretta thula*) (SSC), tricolored heron (Egretta tricolor) (SSC), roseate spoonbill (*Platalea ajaja*) (SSC), white ibis (*Eudocimus albus*) (SSC), gopher tortoise (*Gopherus polyphemus*) (SSC), and American alligator (*Alligator mississippiensis*) (SSC).

The endangered (E) Florida panther (Puma concolor coryi), is documented in the project vicinity aerial telemetry. Based upon site land cover, biogeographic landscape location,

and geographic information system review, the additional potential listed species that occur on-site include the Florida mastiff bat (*Eumops glaucinus floridanus*) (E), peregrine falcon (*Falco peregrinus*) (E), snail kite (*Rostrahamus sociabilis plumbeus*) (E), Florida black bear (*Ursus americanus floridanus*) (T), least tern (*Sterna antillarum*) (T), crested caracara (*Caracara cheriway*) (T), bald eagle (*Haliaeetus leucocephalus*) (T), eastern indigo snake (*Drymarchon corais couperi*) (T), limpkin (*Aramus guarauna*) (SSC), burrowing owl (*Athene cunicularia floridana*) (SSC), Sherman's short-tailed shrew (*Blarina carolonensis shermani*) (SSC), red-cockaded woodpecker (*Picoides borealis*) (SSC), Florida pine snake (*Pituophis melanoleucus mugitus*) (SSC), and gopher frog (*Rana capito*) (SSC).

The following non-listed rare animal species of interest have the opportunity to occur on the project site: yellow bat (*Lasiuris intermedius*), bobcat (*Felis rufus floridanus*), Florida weasel (*Mustela frenata peninsulae*), river otter (*Lutra canadensis lataxina*), glossy ibis (*Plegardis falcinellus*), great egret (*Casmerodius albus*), least bittern (*Ixobrychus exilis*), Cooper's hawk (*Accipiter cooperii*), mottled duck (*Anas fulvigulas*), merlin (*Falco columbarius*), swallow-tailed kite (*Elanoides forficatus*), wild turkey (*Meleagris gallopavo*), black rail (*Laterallus jamaicensis*), hairy woodpecker (*Picodes villosus*), and eastern diamondback rattlesnake (*Crotalus adamanteus*).

Existing land cover for the project site includes 884.52 acres of Improved pastures, 6.86 acres of woodland pastures, 8.35 acres of shrub & brushland, 24.01 acres of palmetto prairies, 425.95 acres of mesic slash pine flatwoods, 17.13 acres of mesic oak and pine forest, 293.98 acres of hydric slash pine flatwoods, 14.58 acres of melaleuca forest uplands, 21.69 acres of Brazilian pepper thicket, 6.21 acres of cabbage palm, 11.88 acres of hardwood forest, 7.54 acres of live oak hammock, 105.43 acres of wetland exotic forest, 308.7 acres of cypress swamp, 434.89 acres of freshwater marsh, 61.62 acres of wet prairies, 19.66 acres of borrow pits, 14.45 acres of spoil areas, 21.04 acres of roads, and 101.02 acres of electrical power transmission lines and their cleared area.

Proposed land cover for the project site includes 348.61 acres of single-family residential, 170.43 multi-family residential, 42.55 acres of commercial retail office, 85.45 acres of warehouse-distribution, 11.44 acres of hotel, 375.13 acres of golf course and impacted open space, 41.44 acres of school site, 8.04 acres of civic use, 207.77 acres of upland conservation, 1166.5 acres of wetland conservation, 209.89 acres of stormwater management, and 102.24 acres of utility corridor easement. The upland conservation area will include 10.46 acres of palmetto prairies, 167.14 acres of mesic slash pine flatwoods, 1.1 acres of mesic oak and pine forest, 14.58 acres of melaleuca forest uplands, 21.69 acres of Brazilian pepper thicket, 6.2 acres of cabbage palm, and 15.55 acres of other uplands including exotics and impacted habitats. The wetland preserve will include 112.18 acres of wetland exotic forest and borrow pits, 337.56 acres of cypress swamp, 199.16 acres of hydric slash pine flatwoods, and 420.09 acres of freshwater marsh.

Based upon the submitted figures there will be a loss of 427.11 acres of native habitat, 25.8% of current extent, when the proposed development plan is implemented. This includes 56% of the palmetto prairie, 61% of the mesic pine flatwoods, 94% of the mesic-pine and oak, 32% of the hydric pine flatwoods, and 100% of the wet prairies. Additional significant and productive habitat and wildlife resources occur within the project area including the following:

The site Priority Wetlands Habitat map indicates habitats capable of supporting 1 to 3 focal species in upland areas, and from 1 to 3 focal species in wetlands.

Project area contains both Primary Zone and Secondary Zone for the Florida Panther. Florida panther have been documented to occur in the vicinity of the site and are likely to traverse the site.

FWC Strategic Habitat Conservation Areas for the Florida panther (Puma concolor coryi), Florida black bear (Ursus americanus floridanus), Big Cypress fox squirrel (Sciurus niger avicennia), Florida sandhill crane (Grus canadensis pratensis), eastern indigo snake (Drymarchon corais couperi), Sherman's short-tailed shrew (Blarina carolonensis shermani), gopher tortoise (Gopherus polyphemus), Florida pine snake (Pituophis melanoleucus mugitus), and American alligator (Alligator mississippiensis) are also overlapped by the proposed project area.

The project will have substantial impacts on productive and sensitive habitat for a variety of listed species which will be very difficult to mitigate. Impacts include loss of valuable habitat for the Florida panther and black bear, and increased road-kills of these species on Daniels Road and SR 82 from increased levels of traffic. Human access to the area will be vastly improved which will facilitate residential and commercial development in a sensitive area resulting in the substantial loss of habitat loss from secondary and cumulative impacts in an area recognized as Florida Panther habitat.

To date Lee County has found that the project is not consistent with the current Lee County Comprehensive Plan since it proposes land uses inconsistent with the Density Reduction Groundwater Recharge area of the Estero Bay Watershed

Spring Creek

Gulf Coast Town Center Road Modification (SFWMD ERP #36-06211-P-02) is a proposed transportation project linked to a commercial project located in Sections 10 and 11, Township 46 South, Range 25 East. The site encompasses 4.96 acres with 0.9 acres of impervious surface for coverage of 18.15%. The undeveloped on-site condition includes 0.61 acres of 411, and 4.35 acres of 630. The development plan will eliminate all on-site upland habitats and 4.27 acres of on-site wetlands. As mitigation an acquisition of 1.56 acres of off-site mitigation is proposed with purchase of mitigation credits at the Panther Island Mitigation Bank. The elevations are not reported.

Ten Mile Canal

Carissa Commercial Park is a proposed commercial project located in Section 17, Township 45 South, Range 25 East. The site encompasses 27.42 acres with 14.47 acres of impervious surface for coverage of 52.77%. The undeveloped on-site condition includes 16.46 acres of 300, and 10.96 acres of 641. The development plan will eliminate all on-site habitats. There will be an increase of 4.36 acres of open water on the site as mitigation an acquisition of 7.23 acres of off-site mitigation is proposed with purchase of mitigation credits at the Big Cypress Mitigation Bank. The control elevation is listed as

17.35 feet NGVD and the finished floor elevation will be 20 feet NGVD. Natural ground elevation is 15 feet NGVD. Prior to conversion of the pasture the 16.46 acres was 621.

Chapter 6:

Apply estimated habitat loss ratios and infrastructure cost ratios to the 2050 build-out.

This process of estimating habitat loss ratios and infrastructure cost ratios began with the acquisition of the information form the SFWMD, DEP and USACOE file systems both on-line and in hard copy when on-line resources were insufficient or lacked information. This information was followed by the development of Microsoft Excel files for collection, tabulation, and analysis of the impact data. The period of record will extend from the inception of the project date to the spring of 2007. This task is continuing and will be complete in July. Interim results indicate significant wetland and upland habitat losses with expansive impervious surfaces.

In the period from May 2006 to June 2007 in the Estero Bay Watershed the SFWMD reviewed 351 Environmental Resource Permits (ERP) for development projects encompassing 15,863.11 total acres of land and enclosed waters. Of these projects 2 were denied for lack of response and lack of information, 1 was transferred to FDEP for falling into their jurisdiction, 205 were permitted and 43 are still in review by June 30, 2007.

Of these 305 projects were permitted by June 30, 2007. For a total of 305 Environmental Resource Permits (ERP) for development projects that were permitted by the SFWMD in the period from May 2006 to June 2007 in the Estero Bay Watershed encompassing 11,428.26 total acres there is:

- A total of 3,802.58 acres of impervious surface permitted to be created. This is a 33.27% impervious surface coverage within the permitted areas
- There were at the initiation of project review 2,685.56 acres of upland habitat and 2,016.38 acres of wetland habitat, 190.16 acres of existing development, 1,794.24 acres of agriculture, 634.93 acres of native range, 2,461.89 acres of barren ground, and 858.97 acres of open water prior to project permitting.
- Within the listing of barren ground 1,876.59 acres were wetlands prior to the land clearing that rendered the site barren ground before the SFWMD ERP wetland impact assessment for permitting.
- After permitting there will be 124.26 acres of native upland habitat and 1,010.41 acres of native wetland habitat remaining. This is a loss of 95.4% of the native uplands and 50% of the native wetlands under review.
- A total of 1,005.97 acres of wetlands were permitted to be eliminated from within the Estero Bay Watershed in the SFWMD ERP permitting process. If the barren ground wetland losses are included then 2,882.56 acres of wetlands were permitted to be eliminated from within the Estero Bay Watershed during this

period of record. This is a 4.9% loss of remaining wetlands from the Estero Bay Watershed in a 1 year period.

- A total of 958.41 acres of off-site, out-of-basin mitigation wetland credits were used as mitigation in the SFWMD ERP permitting process.
- There were 745.23 acres of new open water proposed to be created in the SFWMD ERP permitting process.
- When mitigation occurs in a permit, the mitigation to impact ratios could be calculated. The ratios range from 43.06 to 0.0. The overall mean ratio, that includes off-site mitigation, is 1.96. This ratio is skewed by projects that have a mitigation requirement for federally listed wide-ranging species that have the high mitigation ratios relative to wetlands impacts
- There were 16 projects (5%) that had a total loss of 222.09 acres of wetland losses with no mitigation required.

There were, as of June 30, 2007, a total of 43 Environmental Resource Permits (ERP) for development projects that were under review but not yet permitted by the SFWMD in the period from May 2006 to June 2007 in the Estero Bay Watershed encompassing 4,427.69 total acres. Within this group there is:

- A total of 1,579.08 acres of impervious surface proposed to be created in the in the SFWMD ERP permitting process. This is a 35.66% impervious surface coverage within the permitted areas
- There were 847.37 acres of upland habitat and 1,664.68 acres of wetland habitat, 25.45 acres of existing development, 287.96 acres of agriculture, 24.01 acres of native range, 423.52 acres of barren ground, and 26.31 acres of open water prior to project permitting.
- Within the listing of barren ground 144.04 acres were wetlands prior to the land clearing that rendered the site barren ground before the wetland impact assessment for in the SFWMD ERP permitting process.
- If the projects are permitted as proposed by the applications and modified versions of the projects to date, after permitting there will be 243.77 acres of upland habitat and 1,014.62 acres of wetland habitat remaining. This is a loss of 71% of the native uplands and 39% of the native wetlands under review.
- If the projects are permitted as proposed by the applications and modified versions of the projects to date, a total of 650.06 acres of wetlands will be eliminated from within the Estero Bay Watershed in the in the SFWMD ERP permitting process. If the barren ground wetland losses are included then 794.1 acres of wetlands will be eliminated from within the Estero Bay Watershed following completion of these in the SFWMD ERP permitting process. This is a 1.3% loss of remaining wetlands from the Estero Bay Watershed from this set of permits.

- A total of 42.65 acres of off-site, out of basin mitigation wetland credits are proposed to be used as mitigation in these in the SFWMD ERP permitting process.
- An additional 31.21 acres of new open water would be created in these in the SFWMD ERP permitting process.
- When mitigation occurred, the mitigation to impact ratios could be calculated. They ranged from 6.72 to 0.0. The overall mean ratio, that includes off-site mitigation, is 1.62. This ratio is skewed by projects that have a mitigation requirement for federally listed wide-ranging species that have the high mitigation ratios relative to wetlands impacts
- There are 2 projects (4.6%) that could have a total loss of 357.97 acres of wetland losses with no mitigation proposed at this time.

The Florida Department of Environmental Protection reviewed 18 projects in the Estero Bay Basin between May 2006 and June 2007. Three were withdrawn by the applicant. For the remaining 13 Florida Department of Environmental Protection ERP Permits and two mangrove alteration permits with continued review by FDEP in the Estero Bay Watershed between May 2006 and June 2007, encompassing 158.91 total acres there is:

- A total of 8.03acres of impervious surface proposed to be created. This is a 0.05% impervious surface coverage within the permitted areas
- There were initially 25.12 acres of upland habitat and 106.94 acres of wetland, 0 acres of existing development, 0 acres of agriculture, 0 acres of native range, 4.96 acres of barren ground, and 27.16 acres of open water prior to project permitting.
- After permitting there will be 0 acres of upland habitat and 28.32 acres of wetland habitat remaining. This is a loss of 100% of the native uplands and 82% of the native wetlands under review.
- A total of 78.62 acres of wetlands will be eliminated from within the Estero Bay Watershed in the FDEP permitting process. This is a 0.01% loss of remaining wetlands from the Estero Bay Watershed in a 1 year period.
- A total of 14.72 acres of off-site, out of basin mitigation wetland credits would be used as mitigation in the FDEP permitting process.
- When mitigation is proposed, the mitigation to impact ratios could be calculated. They ranged from 3.1 to 0.12. The overall mean ratio, that includes off-site mitigation, is 2. Every project that had wetlands losses had mitigation required.
- All of the 15 projects reviewed by the FDEP were not reviewed by the SFWMD. Five of the projects were not considered for review by USACOE since they involved dredging channels with no fill or mangrove alteration with no fill. Only one of the projects obtained full USACOE permitting review since the remainder fell within USACOE Nationwide Permitting criteria.

In the period from May 2006 to June 2007 in the Estero Bay Watershed the SFWMD and FDEP combined reviewed 371 Environmental Resource Permits (ERP) for development projects encompassing 16,014.86 total acres of land and enclosed waters. Of these projects 2 were denied for lack of response and lack of information, 3 were withdrawn by the applicant, 306 were permitted and 61 are still in review by June 30, 2007. The combined permitted and proposed projects, not denied or withdrawn include:

- A total of 5,389.69 acres of impervious surface permitted to be created. This is a 33.65% impervious surface coverage within the permitted areas
- There were at the initiation of project review 3,558.05 acres of upland habitat and 3,788.00 acres of wetland habitat, 215.61 acres of existing development, 2,082.20 acres of agriculture, 658.94 acres of native range, 2,885.41 acres of barren ground, and 912.44 acres of open water prior to project permitting.
- Within the listing of barren ground 2,020.63 acres were wetlands prior to the land clearing that rendered the site barren ground before the SFWMD ERP wetland impact assessment for permitting.
- After permitting there will be 368.03 acres of native upland habitat and 2,053.35 acres of native wetland habitat remaining. This is a loss of 90% of the non-developed uplands and 46% of the wetlands under review.
- A total of 1,734.65 acres of wetlands were permitted to be eliminated from within the Estero Bay Watershed in the SFWMD ERP permitting process. If the barren ground wetland losses are included then 3755.28 acres of wetlands were permitted to be eliminated from within the Estero Bay Watershed during this period of record. This is a 6.4% loss of remaining wetlands from the Estero Bay Watershed in a 1 year period.
- A total of 1,015.78 acres of off-site, out-of-basin mitigation wetland credits were used as mitigation in the SFWMD ERP permitting process.
- There were 776.44 acres of new open water proposed to be created in the SFWMD ERP permitting process.
- When mitigation occurs in a permit, the mitigation to impact ratios could be calculated. The overall mean ratio, that includes off-site mitigation, is 1.83. This ratio is skewed by projects that have a mitigation requirement for federally listed wide-ranging species that have the high mitigation ratios relative to wetlands impacts
- There were 18 projects (5%) that had a total loss of 580.06 acres of wetland losses with no mitigation required.

For a total of 11 U. S. Army Corps of Engineers Permits (ERP) for development projects that were noticed by the USACOE in the period from March 2007 to July 2007 in the Estero Bay Watershed encompassing 196.85 total acres there is:

- A total of 94.65 acres of impervious surface proposed to be created in the USACOE permitting process. This is a 48.08% impervious surface coverage within the permitted areas
- There were initially 3.08 acres of upland habitat and 96.75 acres of native wetland, 0 acres of existing development, 29.36 acres of agriculture, 0 acres of native range, 4.96 acres of barren ground, and 4.38 acres of open water prior to project permitting by USACOE.
- After USACOE permitting there will be 0 acres of native upland habitat and 31.38 acres of native wetland habitat remaining. This is a loss of 100% of the native uplands and 68% of the native wetlands under review.
- A total of 65.37 acres of wetlands will be eliminated from within the Estero Bay Watershed in the USACOE permitting process. This is a 0.01% loss of remaining wetlands from the Estero Bay Watershed in a 5 month period.
- A total of 21.16 acres of off-site, out of basin mitigation wetland credits would be used as mitigation in the USACOE permitting process.
- When mitigation is proposed, the mitigation to impact ratios could be calculated. They ranged from 4.54 to 0.0. The overall mean ratio, that includes off-site mitigation, is 0.79. This ratio is skewed by projects that have a mitigation requirement for federally listed wide-ranging species that have the high mitigation ratios relative to wetlands impacts
- There was 1 project (9%) that had a total loss of 0.08 acres of wetland loss with no mitigation required.
- Four of the 11 projects reviewed by the USACOE are not reviewed by the SFWMD, but are covered by the FDEP review of these project types. These are single family residences.

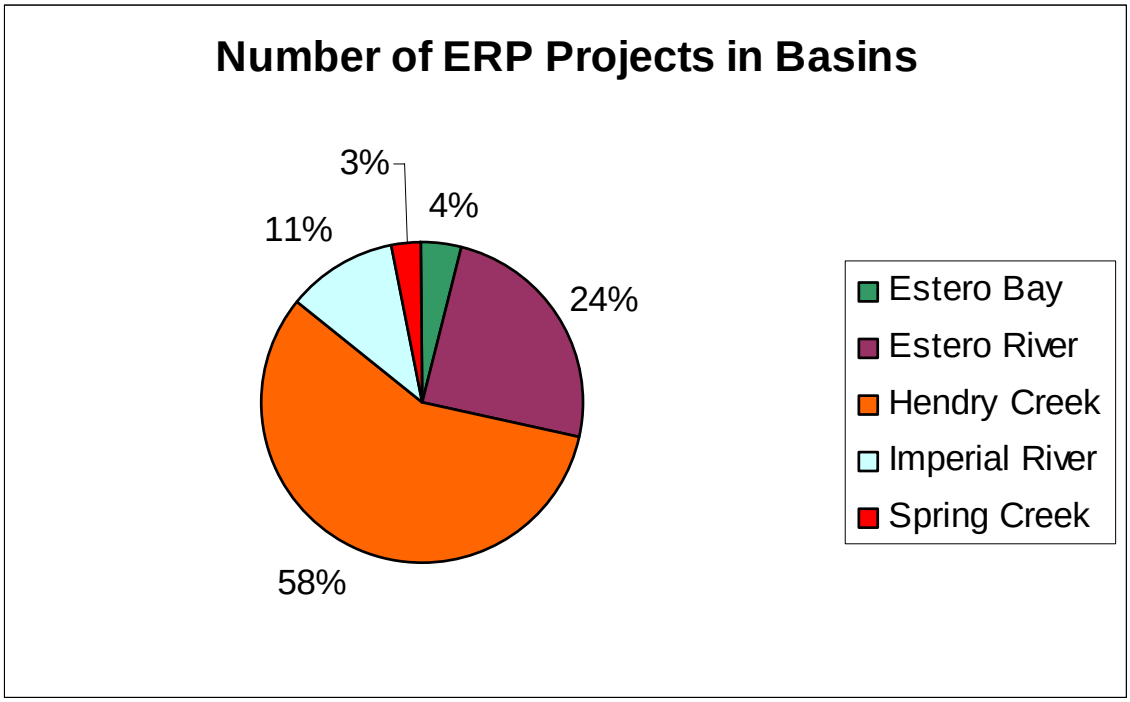


Figure 76: Relative Proportion of ERP Projects Reviewed by Basin

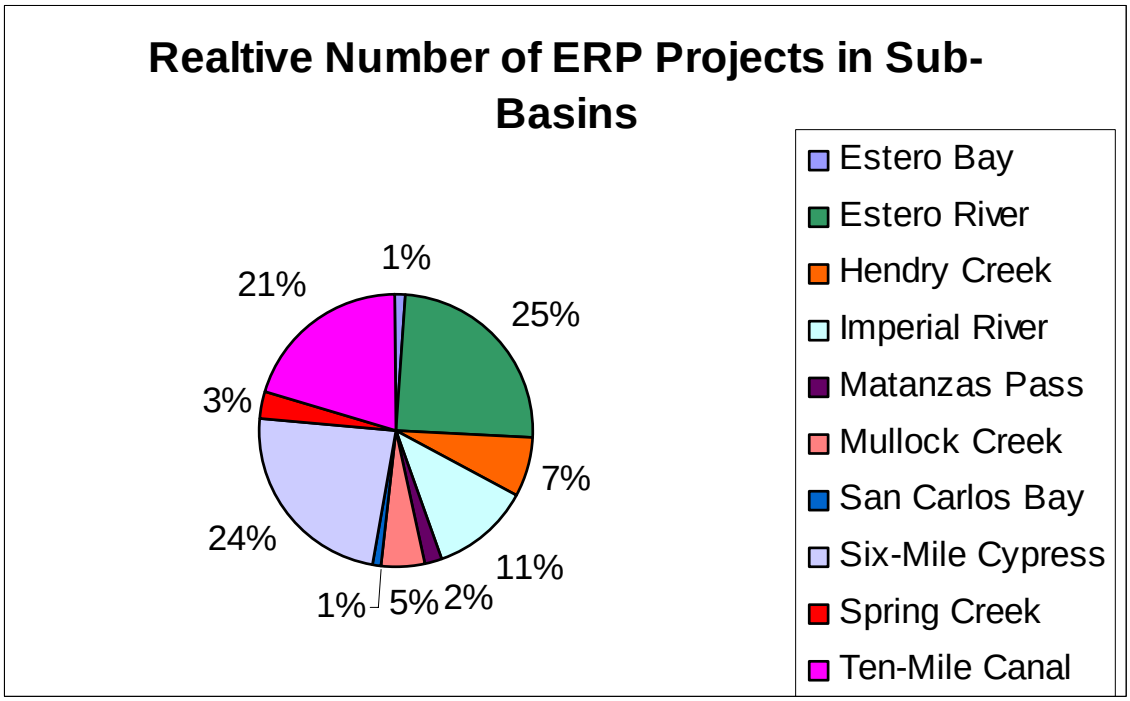


Figure 77: Relative Proportion of ERP Projects Reviewed by Sub-Basin

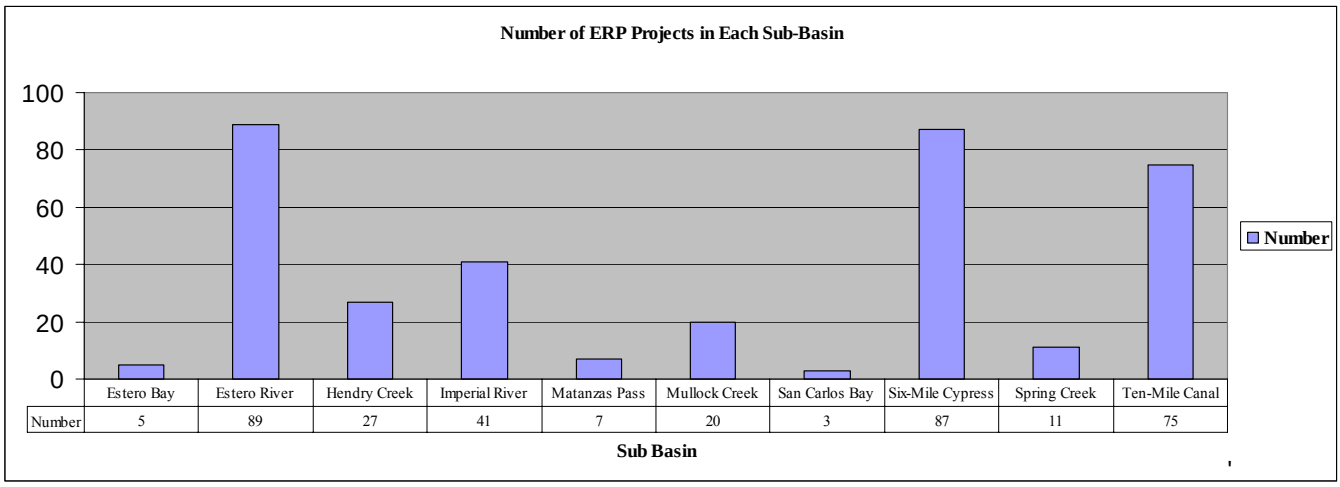


Figure 78: Number of ERP Projects Reviewed by Sub-Basin

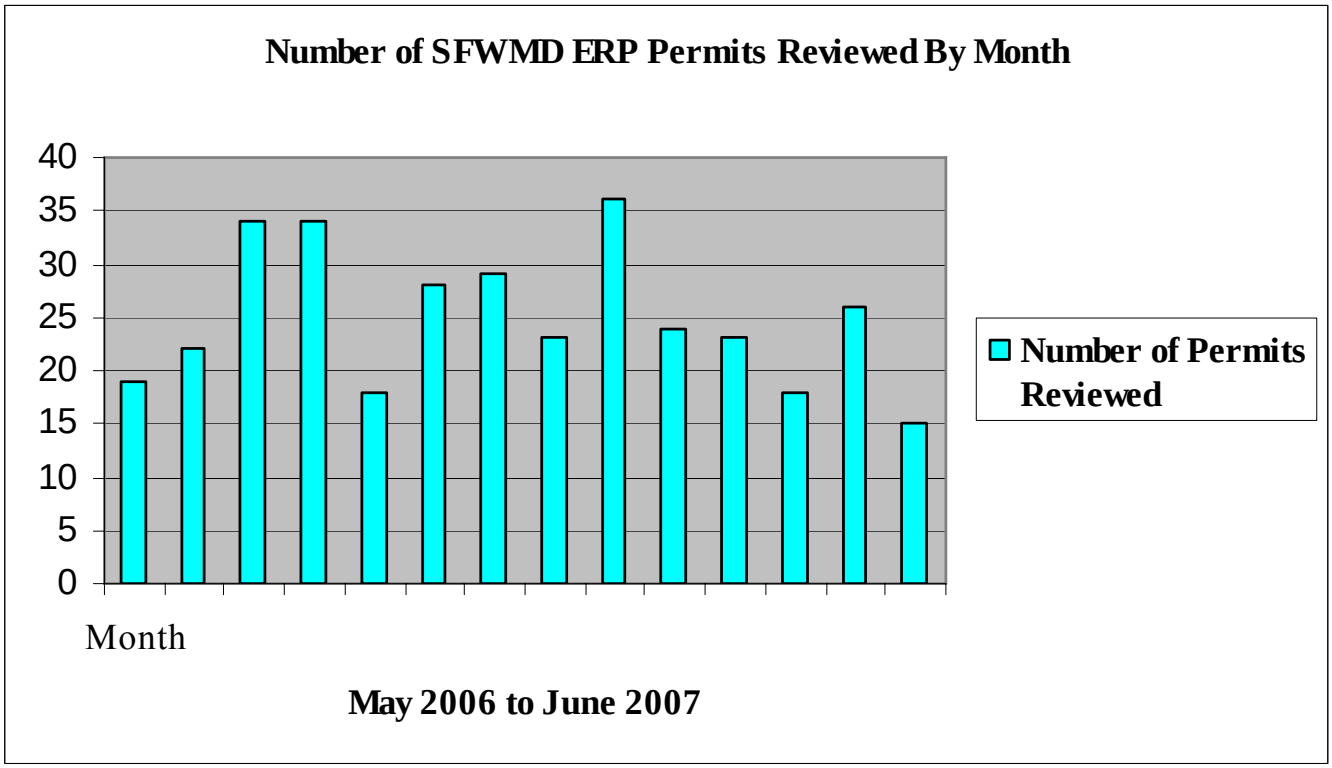


Figure 79: Number of ERP Projects Reviewed by Month

Chapter 7

Alternative scenarios that can better accommodate the projected growth and maintain or improve quality of Life. Test of these alternative scenarios in the 2050 Build-out and with the Decision Framework.

In order to evaluate alternative scenarios for projected growth in the Estero Bay Watershed that would better accommodate the projected growth and maintain or improve the quality of life for existing residents, future residents, wildlife and habitats and improve water quality within the watershed it is important to know the base or control condition of the future 2050 Land Use without any addition public land acquisitions, without any new private conservation lands acquisition, without any new conservation easements, and without any new fee simple mitigation.

Alternative 0: The Lee County Comprehensive Plan and the SFWMD Projected 2050

This 2050 alternative future as currently projected by the Lee County Comprehensive Plan and the SFWMD has the following landscape characteristics:

Table 41: 2000-2050 Change in Land Use per Lee County Comprehensive Plan

Estero Bay		**2000**	**2050**	**Total Change**	**%change**
1	Urban/Built-up	43,121	82,064	38,944	90%
2	Agriculture	34,909	16,468	-18,441	-53%
3	Range Land	2,205	909	-1,295	-59%
4	Upland Forest	35,250	15,404	-19,846	-56%
5	Water	37,349	37,349	0	0%
6	Wetlands	58,336	58,336	0	0%
7	Barren	4,373	1,594	-2,779	-64%
8	Transportation/Utilities	5,470	8,887	3,418	62%
	Total	221,012	221,012	0	0%

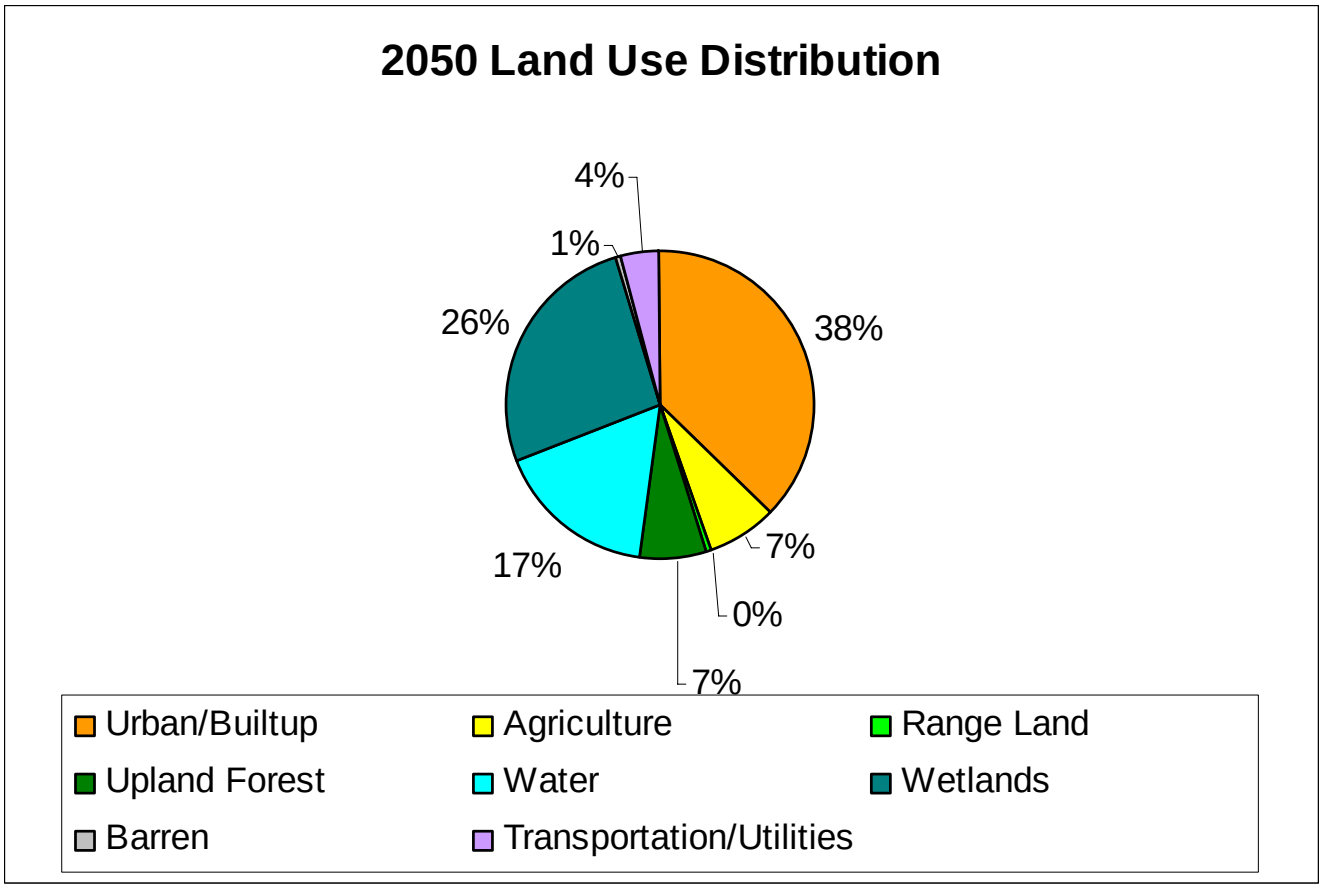


Figure 80: 2050 Land Use Distribution per the Lee County Comprehensive Plan

Year 2050 Land Use Map of the Estero Bay Watershed

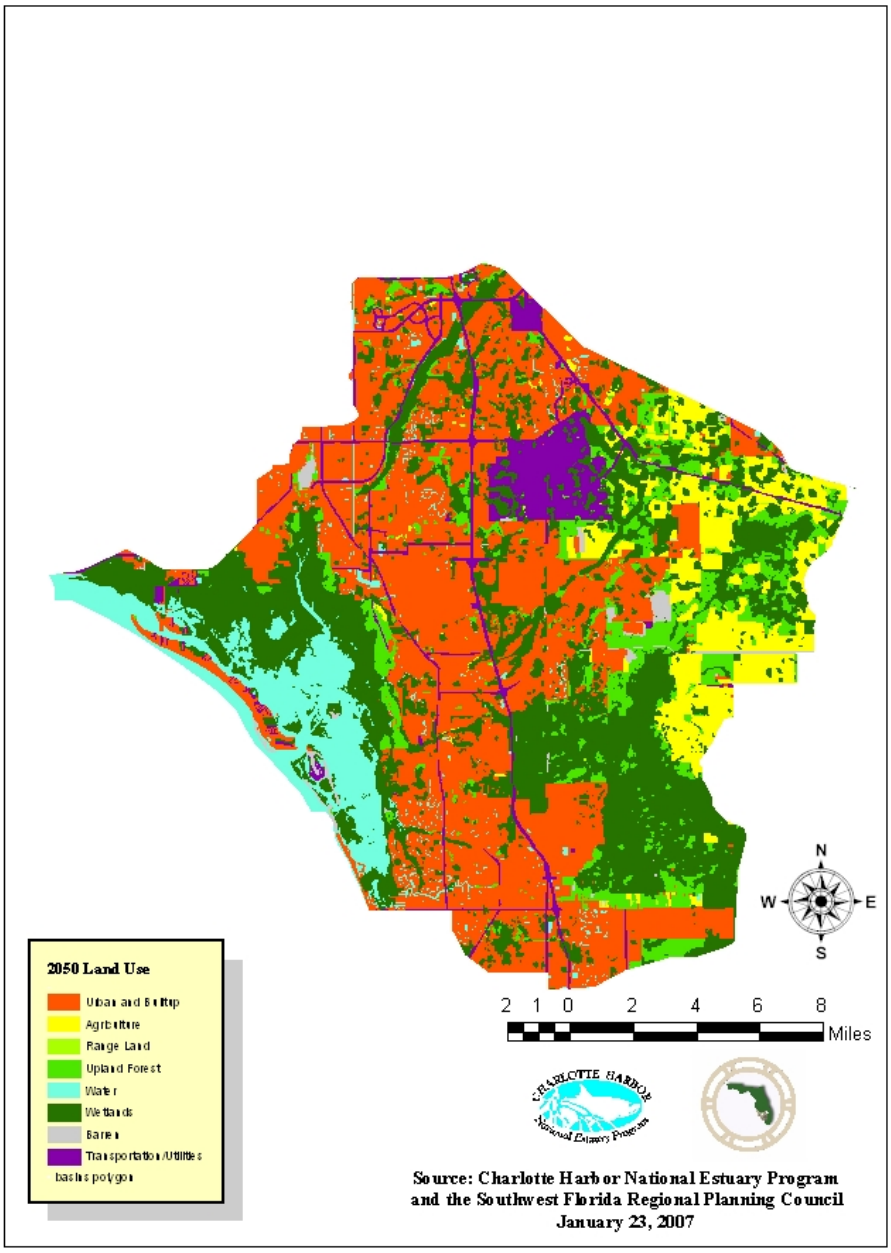


Figure 81: 2050 Land Use Map

Alternative 1: The current rate and distribution of land conversion in the Estero Bay Watershed derived from the review of ERP permits 2006-2007 added to Lee County Comprehensive Plan and the SFWMD Projected 2050

This 2050 alternative future as projected by the current rate of land conversion derived from the review of ERP permits in the period from May 2006 and June 2007. Lee County Comprehensive Plan and the SFWMD have the following landscape characteristics:

Table 41: 2000-2050 Change in Land Use per Current Rate and Pattern of Land Conversion Permitting in ERP added to the Lee County Comprehensive Plan

Estero Bay		**2000**	**2050 Adjusted Projection Based On Current Rate of Permitting**	**Total Change**	**%change**
1	Urban/Built-up	43,121	123,761	72,215	140%
2	Agriculture	34,909	1,037	-17,435	-94%
3	Range Land	2,205	185	-2,096	-92%
4	Upland Forest	35,250	4,789	-31,168	-87%
5	Water	37,349	59,558	17,082	40%
6	Wetlands	58,336	22,601	-29,172	-56%
7	Barren	4,373	194	-9,084	-98%
8	Transportation/Utilities	5,470	8,887	-341	-4%
	Total	221,012	221,012	0	0%

Year 2050 Map of the Estero Bay Watershed
No New Land Acquisition and Agriculture Converted to Development

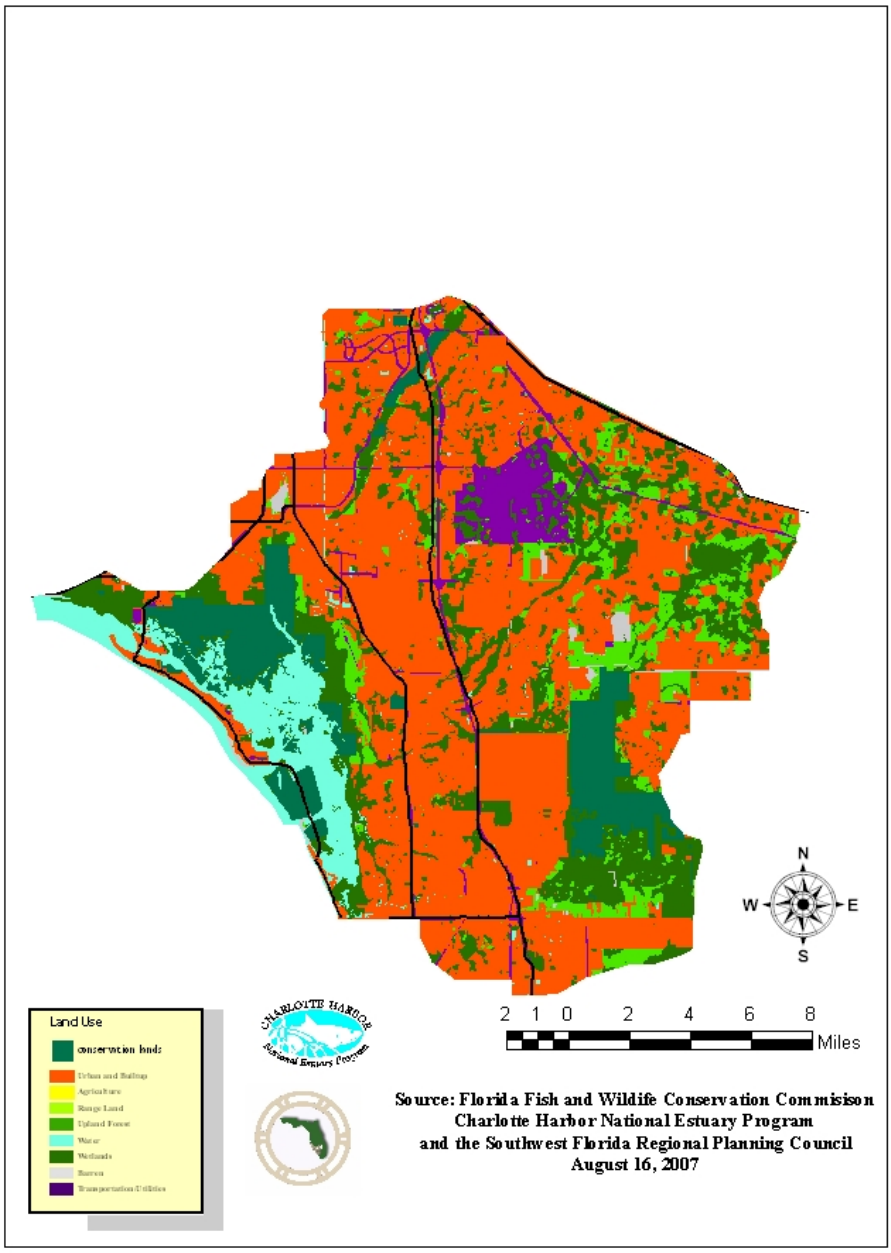


Figure 82: 2000-2050 Change in Land Use per Current Rate and Pattern of Land Conversion Permitting in ERP added to the Lee County Comprehensive Plan

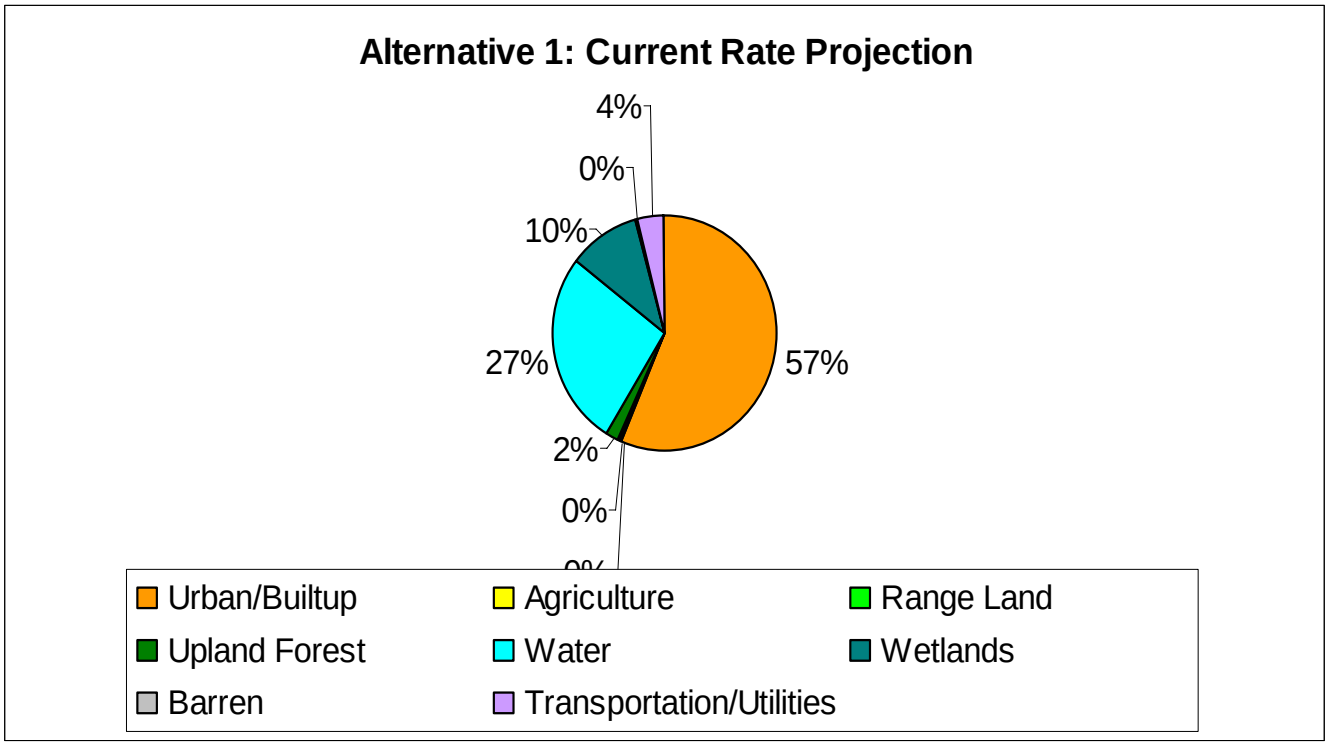


Figure 83: 2050 Land Use Distribution per Current Rate and Pattern of Land Conversion Permitting in ERP added to the Lee County Comprehensive Plan

Alternative 2: The Lee County Comprehensive Plan and the SFWMD Projected 2050 with full implementation of the Lee County Master Mitigation Plan

There are several different alternative scenarios for projected growth in the Estero Bay Watershed that would better accommodate the projected growth and maintain or improve the quality of life for existing residents, future residents, wildlife and habitats and improve water quality within the watershed. These alternatives provide protection for larger areas of native upland and wetland habitats while accommodating future population growth in a denser and less automobile intensive transportation infrastructure.

The first alternative is the implemented Lee County Master Mitigation Plan (LMMP). The Lee County Master Mitigation Plan (Mitigation Plan) is an investment strategy for economic stability. With tourism and retirement as the major components of the County's economic base, ensuring that there are a diversity of open space features, quality outdoor experiences, and healthy air and water quality makes tremendous economic sense. The Mitigation Plan has three main purposes:

1. To provide a master strategy by which critical environmental features continue to be preserved,

2. To provide "safe harbor" approaches for mitigation projects that are required for the infrastructure needed to accommodate growth, which in turn will enable the budgeting process to be reliable, and

3. To restore degraded resources that are important for the health, safety, and welfare of the public.

The adopted Mitigation Plan is a component of the implementation of the Lee County Comprehensive Plan. Implementation includes incorporation into the Administrative Code, capital budget direction, and land development code reform.

The Mitigation Plan is designed to compensate for the environmental impacts of infrastructure projects in an environmentally and economically sound manner. Between the years 2000 and 2020, the growth rate of Lee County is projected to be more than 35%. The addition of over 200,000 permanent residents to the community will necessitate the construction of new and expanded roadways, utilities, stormwater management facilities and other public works projects. While all public works projects are designed to avoid negative impacts to natural resources, there are times when impacts cannot be avoided. Such impacts, even when minimized, must be mitigated for, and such mitigation cannot always effectively occur on the site of the project. Lee County is proposing the Mitigation Plan to provide consistency and a cumulative accountability for the primary and secondary impacts of its public works program. In addition, the County proposes to

pursue restoration and preservation opportunities for water pollution, fire hazards, wildlife and natural habitats as mitigation requirements are addressed through synergistic planning, budgeting and operational efforts. A team of representatives of public and private entities developed the Mitigation Plan in 2003 and 2004. Members of the team identified private and publicly owned parcels that could be candidate projects for preservation, restoration, or mitigation activities. These parcels were assessed in a preliminary manner and deemed potentially suitable for such activities. A map series has been created to facilitate the initiation of more detailed analysis. The Mitigation Plan is not intended to provide an in-depth analysis of potential projects. The maps will serve as a starting point for efforts to select appropriate preservation, restoration, or mitigation sites.

The Mitigation Plan envisions modest modifications to Lee County's Capital Improvements Program (CIP). While capital projects are now identified in the five-year CIP, the Mitigation Plan calls for including a quantification of impacts that will result from each capital project, a listing of mitigation projects that provide the remedy for these impacts, and funding estimates and identification of sources for mitigation. A *Capital Improvement Mitigation Plan* would capture this information and serve as an addendum to the overall CIP. Implementation of the Mitigation Plan will be facilitated through the County's Annual Workplan. It will draw from the CIP the forthcoming year's capital needs and identify and fund the parallel mitigation. It will also include the County's restoration and mitigation targets so that opportunities for synergistic efforts can be identified and included. Successful implementation of the Mitigation Plan will depend on several key elements: 1) its adoption as a supporting document to the Lee County Comprehensive Plan, 2) the partnership of regulatory agencies, and 3) a process that ensures ongoing review and updating so that it reflects changes that occurring the restoration and protection priorities of the County, as well as changes to the land and water resources within Lee County. Once in place, the Mitigation Plan will allow Lee County to more effectively accommodate the growth that is occurring and ensure the restoration and protection of the important natural resources that provide the framework for our economy and quality of life.

Table 42: 2000-2050 Change in Land Use per Current Rate and Pattern of Land Conversion Permitting in ERP added to the Lee County Mitigation Plan

Estero Bay		**2000**	**2050**	**Total Change**	**%change**
1	Urban/Built-up	43,121	78,623	35,502	82%
2	Agriculture	34,909	12,282	-22,627	-65%
3	Range Land	2,205	255	-1,950	-88%
4	Upland Forest	35,250	27,324	-7,926	-23%
5	Water	37,349	34,601	-2,748	-7%
6	Wetlands	58,336	59,040	704	1%
7	Barren	4,373	0	-4,373	-100%

8	Transportation/Utilities	5,470	8,887	3,418	62%
	Total	221,012	221,012	0	0%

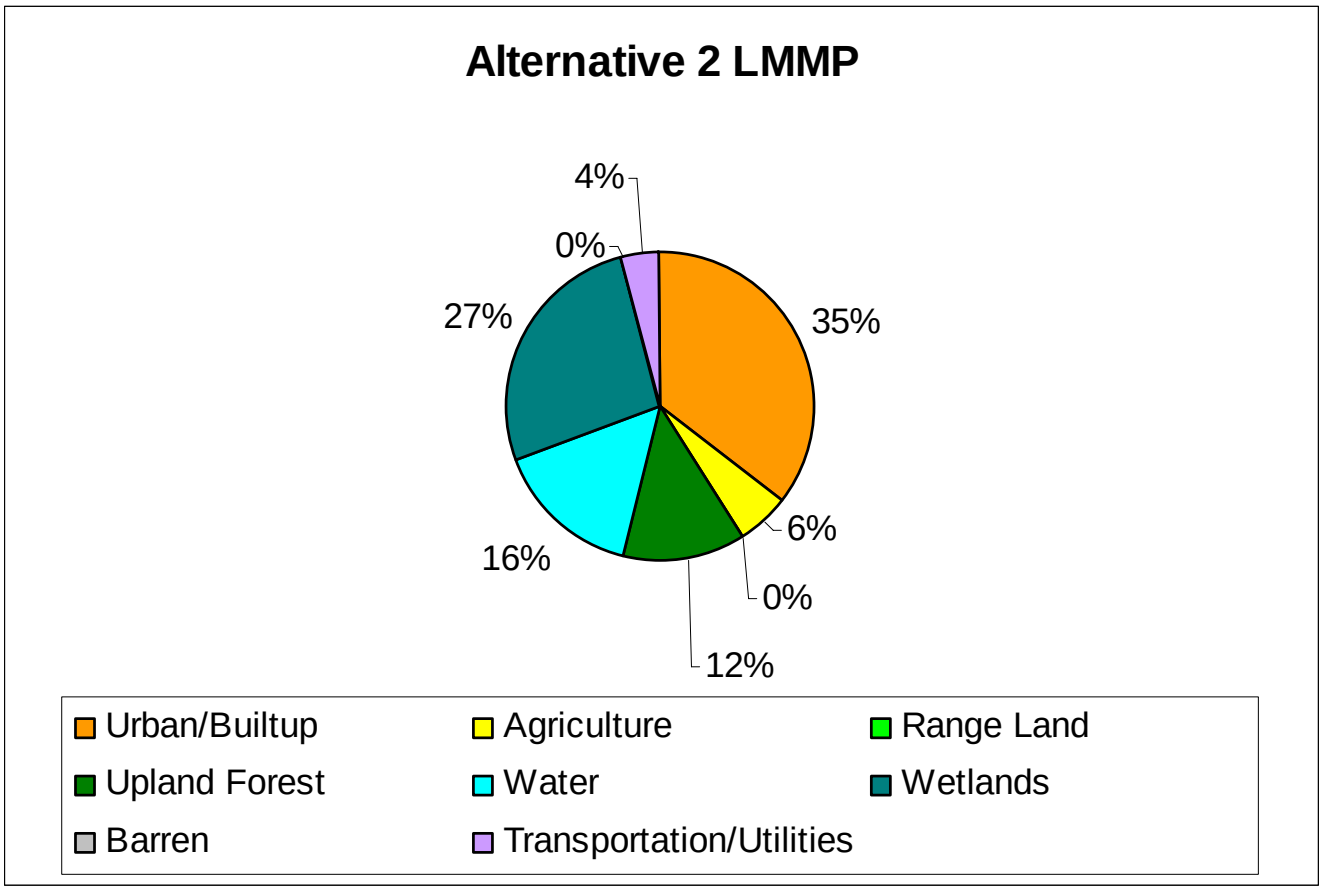


Figure 84: 2050 Land Use Distribution with Lee County Master Mitigation Plan

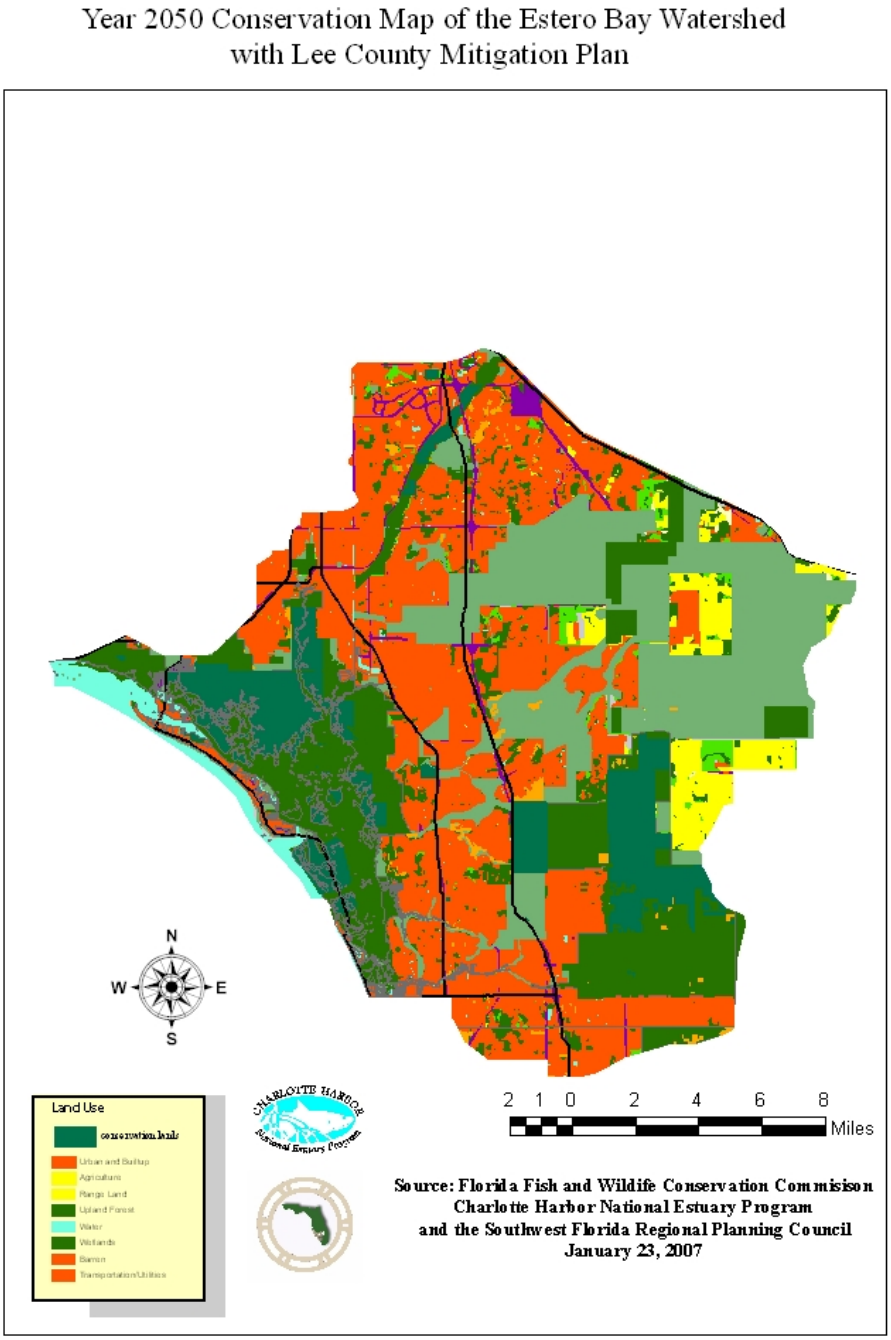


Figure 85: 2050 Land Use Map with full implementation of the Lee County Master Mitigation Plan

Alternative 3: The Lee County Comprehensive Plan and the SFWMD Projected 2050 with full implementation of the Regional Restoration Coordination Team Plan

The Southwest Florida Restoration Coordination Team (SWFRRCT) was created by the Everglades Restoration Working Group in 2002 to receive recommendations regarding restoration and restoration science in southwest Florida. It inherited and expanded the responsibilities of the Big Cypress Basin Project Coordination Team.

The duties of the SWFRRCT have expanded to include the rest of the Lower Charlotte Harbor study area. In addition, two geographic subteams have been created to support the RRCT's efforts: the Calusa Restoration Coordination Team (CRCT) and the Big Cypress Restoration Coordination Team (BC RCT). The CRCT represents Charlotte Harbor, Caloosahatchee, and Estero watershed basins in Southwest Florida within the Greater Everglades. The CRCT is tasked with the integration, coordination, and evaluation of the region's environmental restoration activities and to make recommendations to the SWFRRCT. Its principal activities include the identification and prioritization of restoration science gaps and restoration projects. The CRCT is composed of representatives from environmental agencies, academic institutions, not-for-profit environmental groups, and other environmental consortia. As defined in the by-laws, all members of the CRCT and its sister group, the BC RCT, are members of the SWFRRCT. The SWFRRCT functions with a representational structure. Website information can be found at: http://www.swfrpc.org/RCT/about.htm and http://ocean.floridamarine.org/bcb/.

Year 2050 Conservation Map of the Estero Bay Watershed
with the Regional Restoration Coordination Team Projects

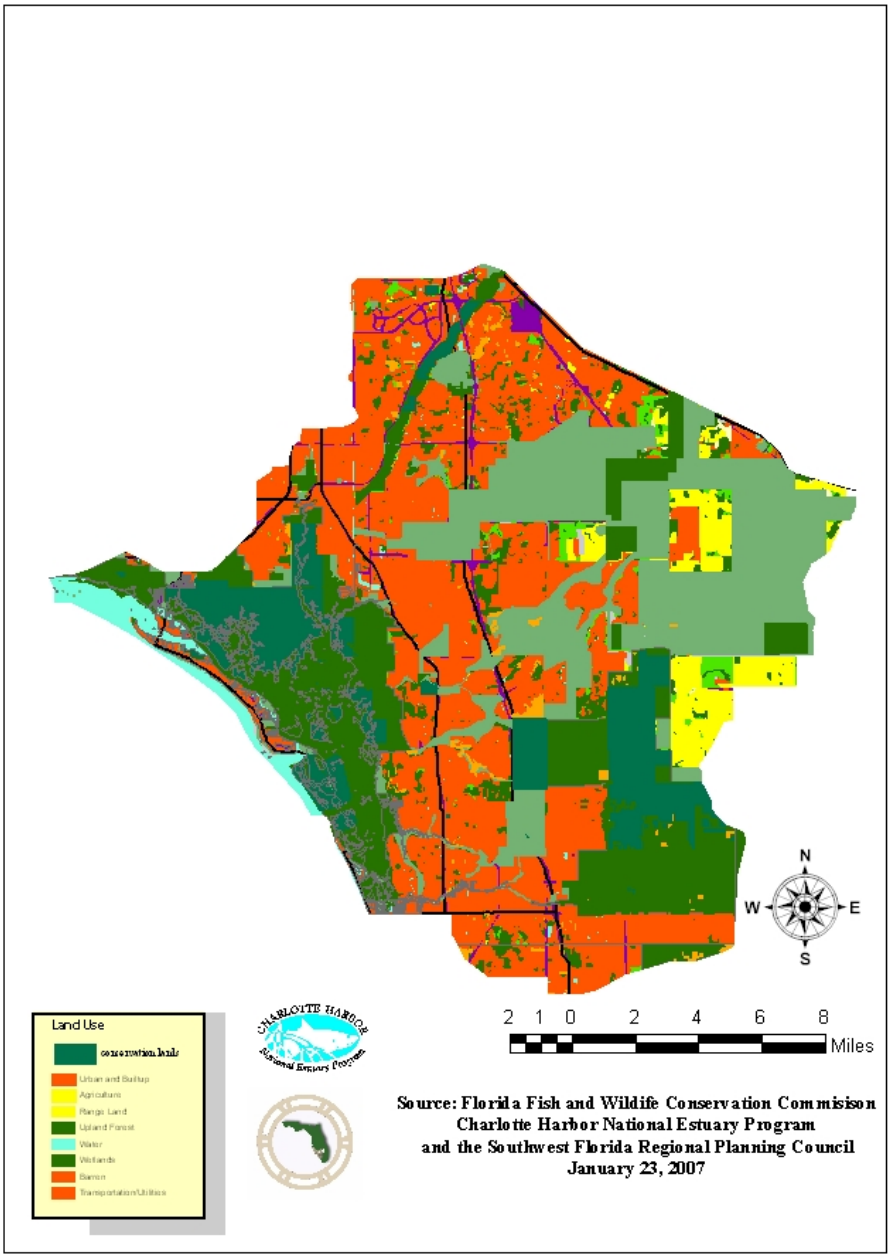


Figure 86: 2050 Land Use Map with full implementation of the Regional Restoration Coordination Team Plan

Alternative 4: The Lee County Comprehensive Plan and the SFWMD Projected 2050 with full implementation of the Southwest Florida Feasibility Study Alternative Development Group Landscape Projects Plan

The SWFFS is one of a series of feasibility studies recommended in CERP and was funded through WRDA 2000. "The end-product of the SWFFS will be an integrated Feasibility Report and *National Environmental Policy Act (NEPA)* document that will serve as the basis for obtaining Congressional authorization of the plan components determined to be feasible and cost-effective (SFWMD and COE, 2002)." Alternative measures to be considered include surface water storage, improve water delivery to estuaries, aquifer storage and recovery, stormwater treatment areas, reestablish sheetflow, reuse wastewater, water conservation, and land acquisition. The SWFFS includes several conceptual ecological models that will drive restoration planning in the area. Website information can be found at: http://www.evergladesplan.org/pm/studies/swfl.cfm

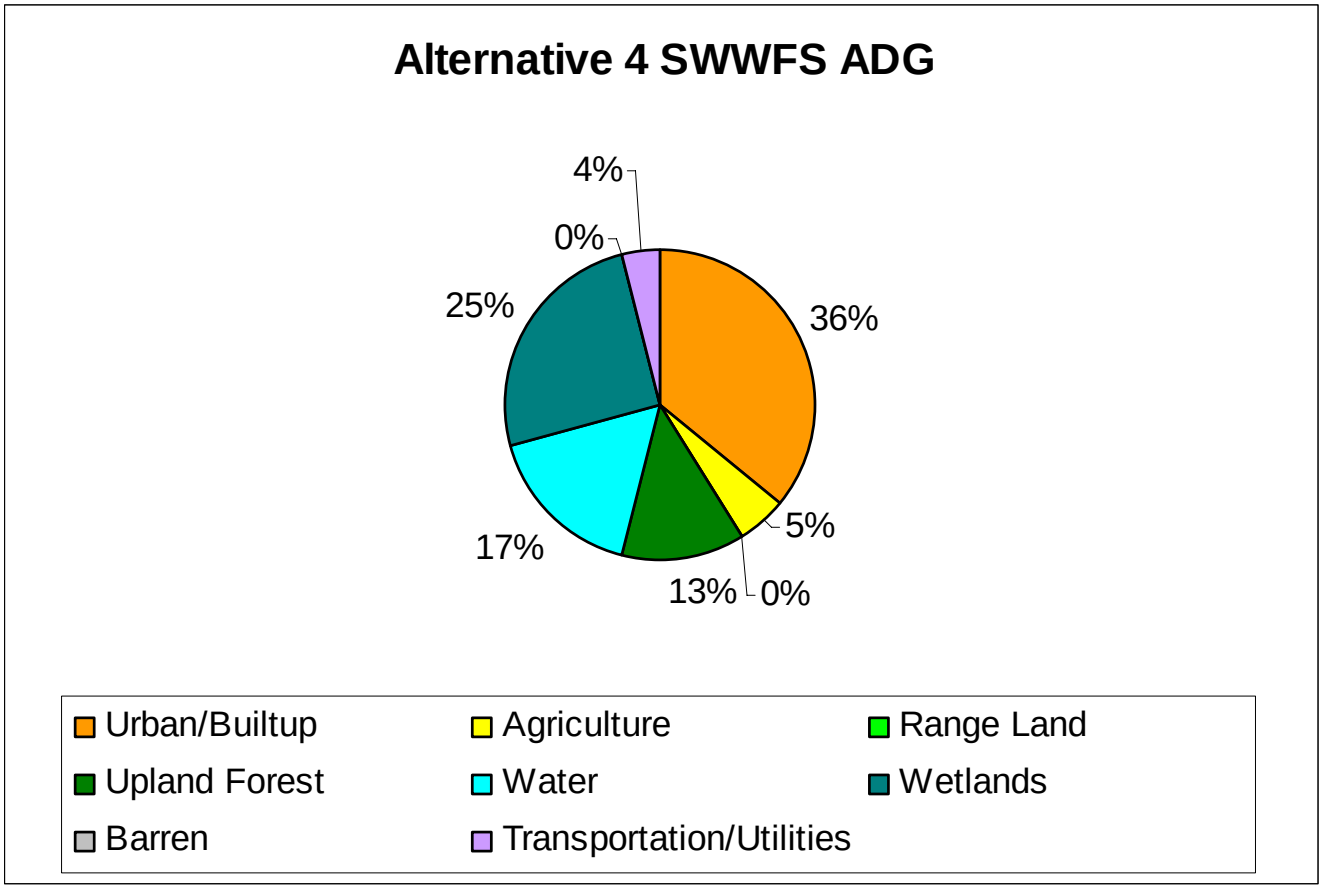


Figure 87: 2050 Land Use Distribution with the Regional Restoration Coordination Team Plan and the Southwest Florida Feasibility Study Plan

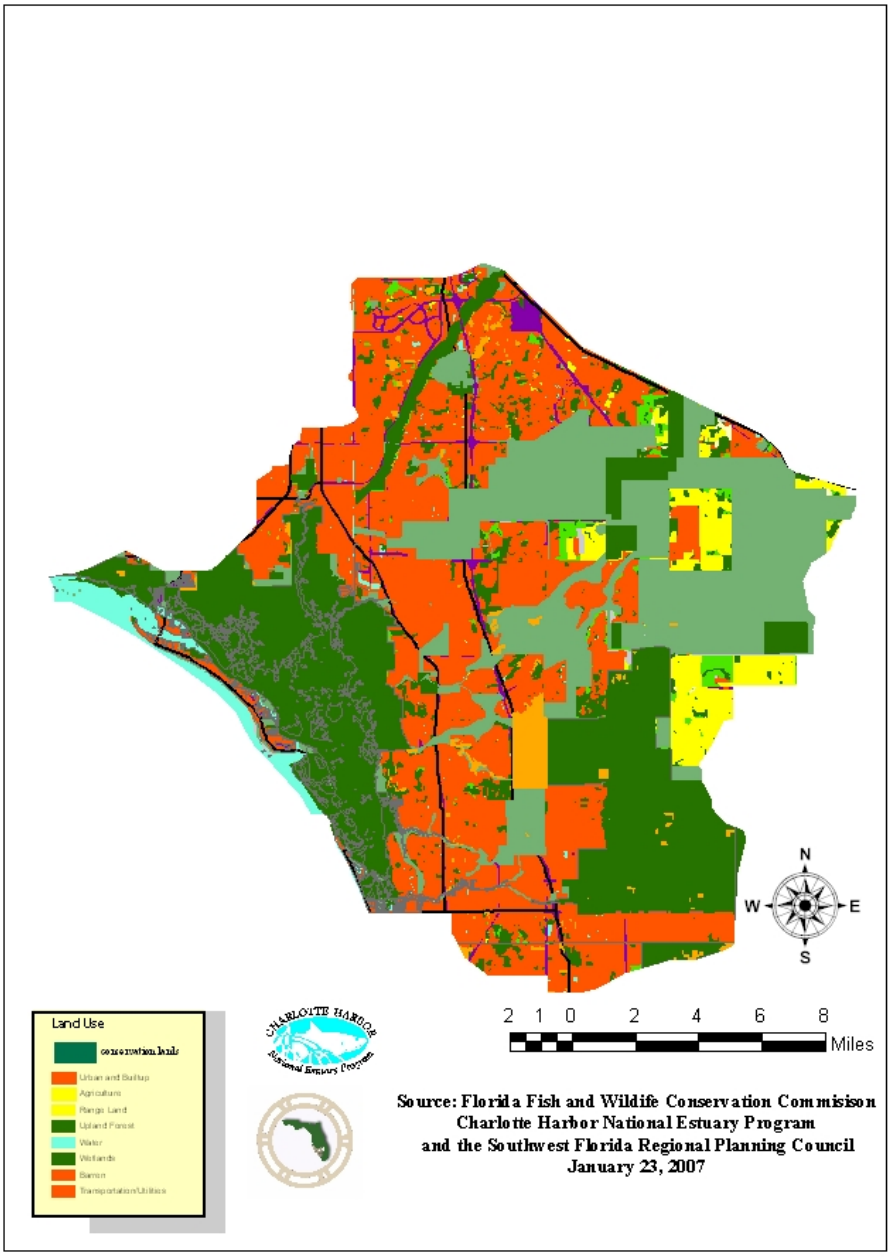


Figure 88: 2050 Land Use Map with full implementation of the SWFFS

Alternative 5: The Lee County Comprehensive Plan and the SFWMD Projected 2050 with full implementation of the FDEP Ecological Greenways Plan

In 1995, the Florida Greenways Coordinating Council was created to continue the pioneering work of the Greenways Commission. That same year, the Department of Environmental Protection was directed to take the agency lead in the state's greenways efforts. Working in coordination with the Florida Recreational Trails Council, these groups spent the next three years developing the Plan, identifying existing and potential pieces of the statewide system and developing specific strategies for making it a reality.

The Plan was completed in September of 1998 and was legislatively adopted in 1999. The Florida Department of Environmental Protection, Office of Greenways and Trails is charged with overseeing implementation of the Plan in coordination with the Florida Greenways and Trails Council. To learn more about how the Office of Greenways & Trails provides assistance to implement the plan, visit the website Community Assistance.

The broad vision underlying the Plan is summed up in its title, "Connecting Florida's Communities with Greenways and Trails." A Statewide System of Greenways and Trails not only connects human and natural communities, but also helps to reconnect people with one another and to nature. At its core, the Plan promotes a system that will help to ensure a more sustainable future for Florida. To learn more about the Plan, download the Executive Summary or call at 850-245-2052 to request a hardcopy.

One of the important foundations for Florida's greenways and trails planning effort has been the identification of ecological greenways throughout the state through the Florida Statewide Greenways System Planning Project. The goal of this effort is preparation of a recommended design or physical plan for Florida's greenways system. A premise behind the project is that *connecting* ecologically important areas results in a system that is truly greater than the sum of its parts. By linking native ecosystems and landscapes, greenways provide habitat for sensitive wildlife species and corridors for the movement of wildlife. Greenways are, in essence, an important component of statewide, regional and local conservation strategies. To learn more about the Florida Statewide Greenways System Planning Project, visit the website of our partner, the University of Florida GeoPlan Center

Greenway is defined in the Florida Statutes (Chapter 260) as a linear open space established along either a natural corridor, such as a riverfront, stream valley, or ridgeline, or over land along a railroad right-of-way converted to recreational use, a canal, a scenic road, or other route; any natural or landscaped course for pedestrian or bicycle passage; an open space connector linking parks, nature reserves, cultural features, or historic sites with each other and populated areas; or a local strip or linear park designated as a parkway or greenbelt. Within the landscape, greenways serve at least

three major functions: they protect and/or enhance remaining natural, cultural and historic resources; they provide linear open space for compatible human use; and they maintain connectivity between conservation lands, communities, parks, other recreational facilities, and cultural and historic sites. These connections are critical to the health, well-being and aesthetic values of human communities, and vital to native ecosystems and landscapes.

Trails are defined as linear corridors and their adjacent land or water that provide public access for recreation or authorized alternative modes of transportation. Greenways can expand recreational opportunities when trails are located within them. Cultural sites also enhance the quality of the recreational experience for trail users. Compatible recreational opportunities should be actively promoted to encourage maximum usage throughout the system with due consideration for environmental and archaeological sensitivity.

Connecting Florida's Communities with Greenways and Trails is the five year implementation plan (the Plan) for the Florida greenways and trails system. The Plan was developed through the work and consensus of a broad range of groups and stakeholders. The foundation for its development consists of various legislative actions and efforts that occurred throughout the more than 20 years prior to its adoption. Among those important steps was the legislative establishment of the Recreational Trails System in 1979. Nearly a decade later, 1000 Friends of Florida and the Conservation Fund began the visionary work of creating a connected Florida. In subsequent years, the Florida Greenways Commission was established making the bold recommendation that Florida create a system to link natural areas and open spaces, conserve native landscapes and ecosystems and offer recreational opportunities across the state. This "green infrastructure" would connect residents and visitors to the state's natural heritage, enhance their sense of place, and enrich their quality of life. Above all, it would be an integral step toward creating a more sustainable Florida. The Commission's report is located at Creating a Statewide Greenways System.

Information on the Statewide Greenways and Trails System, can be found at Community Assistance and Resources web page and the Ecological Greenways and Trails Networks web page.

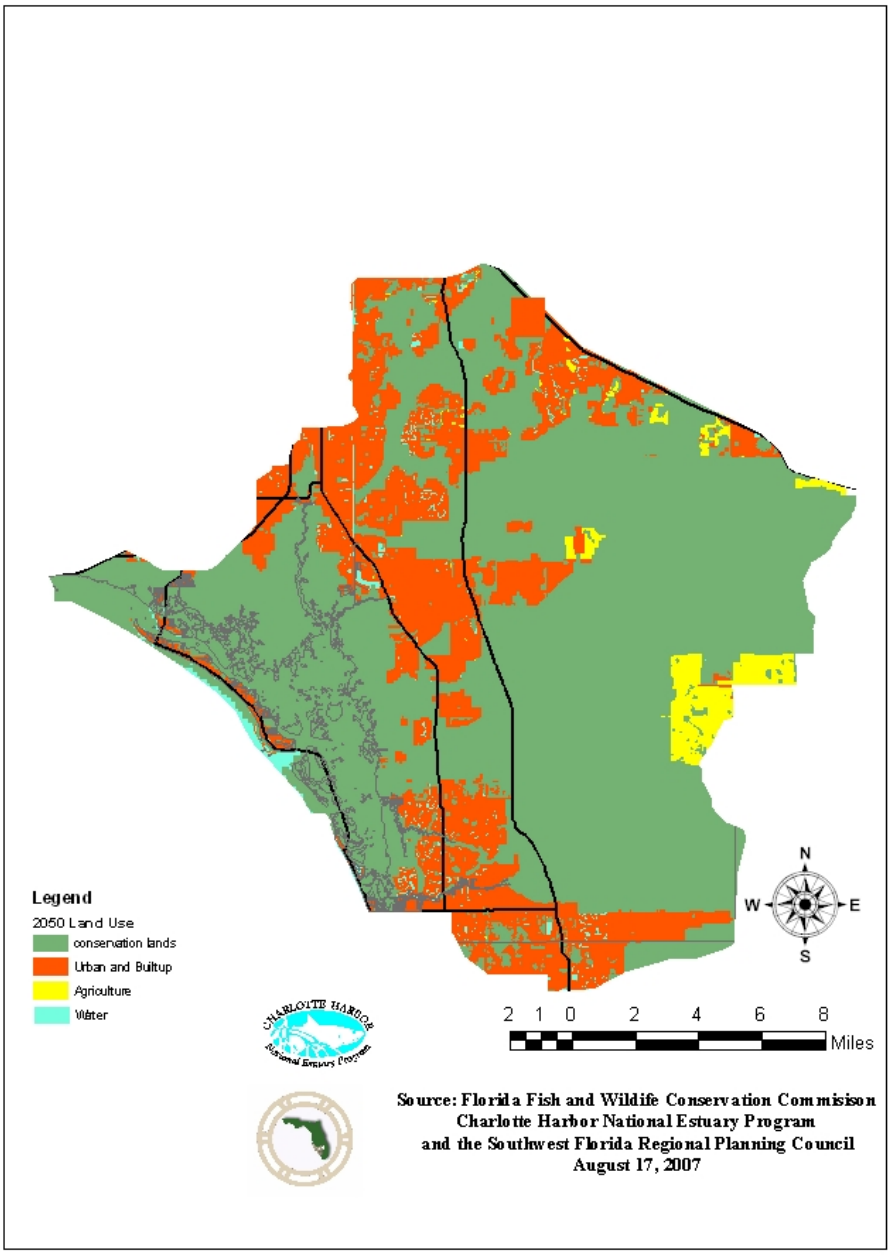


Figure 89: 2050 Land Use Map with full implementation of the FDEP Ecological Greenways Plan

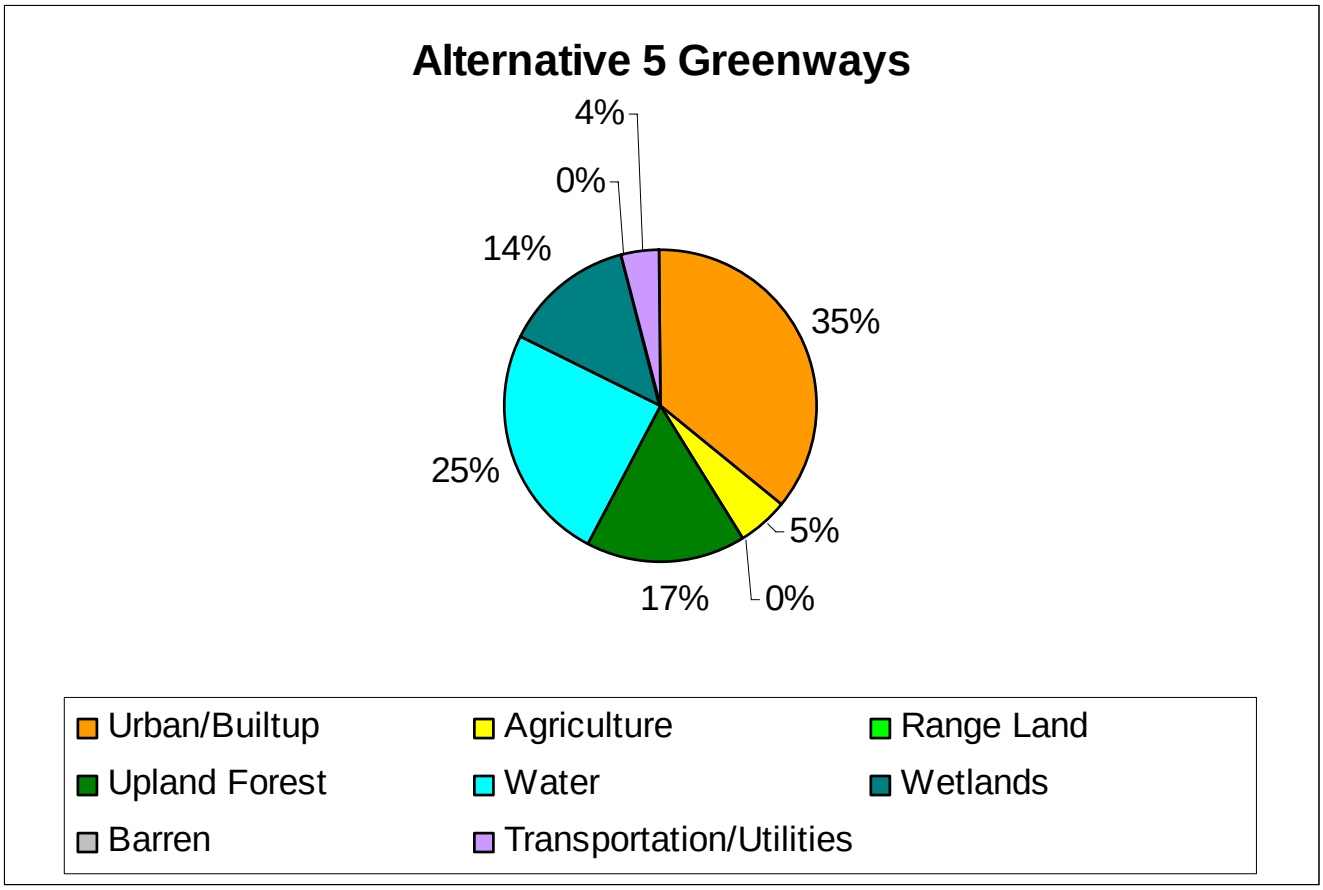


Figure 90: 2050 Land Use Distribution with FDEP Greenways Plan

A comparison of the past and future land use alternatives is tabulated in Table 43.

Map Alternative	Urban/Builtup	Agriculture	Rangeland	Upland Forest[	Water	Wetlands	Barren	Transporta Utilities
Year 2000	20	16	1	16	17	26	2	2
Year 2003	23	4	1	16	19	30	4	3
Year 2025 Projection	36	9	0	7	17	26	1	4
Year 2050 Projection	38	7	0	7	17	26	1	4
2050 Alt 1 Current Rate of Development	57	0	0	2	27	10	0	4
2050 Alt 2 Lee Master Mitigation Plan	35	6	0	12	16	27	0	4
2050 Alt 3 Regional Restoration Coordination Team Plan	36	5	0	13	17	25	0	4
2050 Alt 4 Southwest Florida Feasibility Study Plan	36	5	0	13	17	25	0	4
2050 Alt 5 FDEP Greenways	35	5	0	17	25	14	0	4

Table 43: Comparison of percentage of known land uses, projected land uses, and the evaluated alternatives in the Estero Bay Watershed

Map Alternative	Urban/Builtup	Agriculture	Rangeland	Upland Forest[	Water	Wetlands	Barren	Transporta Utilities
Year 2025 Projection	80%	-44%	-100%	-56%	0%	0%	-50%	100%
Year 2050 Projection	90%	-56%	-100%	-56%	0%	0%	-50%	100%
2050 Alt 1 Current Rate of Development	185%	-100%	-100%	-88%	59%	-62%	-100%	100%
2050 Alt 2 Lee Master Mitigation Plan	75%	-63%	-100%	-25%	-6%	0%	-100%	100%
2050 Alt 3 Regional Restoration Coordination Team Plan	80%	-69%	-100%	-19%	0%	-4%	-100%	100%
2050 Alt 4 Southwest Florida Feasibility Study Plan	80%	-69%	-100%	-19%	0%	-4%	-100%	100%
2050 Alt 5 FDEP Greenways	75%	-69%	-100%	0%	47%	-46%	-100%	100%

Table 44: Comparison of percentage of Change In Land Use from the Year 200 Base Map of the Estero Bay Watershed

From the review of future land uses all of the considered alternatives provide a significant increase in urban lands of 75% to 80%. Among the alternatives the Lee Master Mitigation Plan provides the best protection for agriculture and wetlands. The FDEP Greenways Plan provides the best protection for native uplands. The Regional Restoration Coordination Team Plan and the Southwest Florida Feasibility Study plan both perform well for wetlands.

Map Alternative	Agriculture	Upland Forest[	Water	Wetlands
2050 Alt 2 Lee Master Mitigation Plan	37%	63%	65%	62%

2050 Alt 3 Regional Restoration Coordination Team Plan	**31%**	**70%**	**59%**	**58%**
2050 Alt 4 Southwest Florida Feasibility Study Plan	**31%**	**70%**	**59%**	**58%**
2050 Alt 5 FDEP Greenways	**31%**	**88%**	**12%**	**16%**

Table 45: Comparison of percentage of level of improvement over Alternative 1, (the current rate of development for the Estero Bay Watershed).

Chapter 8 Conclusions

Recommended changes to the Decision Framework (regulations, policies, statutes, ordinances, etc.), identified modifications to the Decision Framework that when implemented will facilitate achieving better alternative scenario futures and strategies for implementing changes to the Decision Framework to improve efficiency and effectiveness and to improve development outcomes.

Interviews of a representative number of builders, developers, land owners, contractors/consultants and agency staff to determine the "real world" application of the regulatory processes identified in Chapter 1.were performed in the initial stages of the study. Fifty-nine interviews were completed during the course of the study. Three rounds of invitations were provided to participants. Fifty of the interviews were performed in person ands nine were performed by telephone with the participant having copies of the questions in hand during the interview. Approximately 10 invitees declined to be interviewed ranging from availability of schedule to concern of potential professional consequences if the response were linked to them by supervisors. The recording process is anonymous and the interview response can not be linked back to specific participants. Because of concerns expressed by participants in both public and private agencies' actions, no list of the participants has been kept and it is upon compilation of the response, the records of the interviews were shredded.

Details on the relative distribution of the interview participants by area of employment (Federal Government, State Government, Regional Government, Local Government or Private) and other survey specifics are found in Chapter 2. No participant has retired or was unemployed. No minors were interviewed.

In the interview the applicants were asked a set of questions relating to how they would improve the Decision-Making Process and achieve a better outcome for the Estero Bay Watershed than what was expected to occur in the existing landscape of regulations and landuse decisions. These questions are on the table 46 below.

Table 46: Questions regarding improvement of the Decision-Framework in the Estero Bay Watershed?

14	Can you think of any alternatives that can result in a better Decision-Framework in the Estero Bay Watershed?
15	Can you think of alternatives that can better accommodate the projected growth and maintain or improve quality of life in the Estero Bay Watershed?
16	Can you identify modifications to the Decision Framework (regulations, policies, statutes, ordinances, etc.) that when implemented will facilitate achieving better alternative scenarios.
17	What recommended changes to the Decision Framework do you have?
18	Who should implement these changes and how would you pay for it?

The responses to questions 14, 16, and 18 are listed in Appendix XIV. Duplicate responses were combined to a single recommendation. For each response the statement, or group of statements, is presented, a description of the situation that the recommendation addresses is provided, the method of implementation of the suggestion

is described and the entities responsible for the implementation and the funding of the change are identified. The results of this study have been available to the participants since September 2007 and several of the recommendations are currently being implemented by entities that have an interest in improving the Decision-Making Framework. These are identified as well.

The responses to questions 15, 17 and 18 are listed in Appendix XV. Duplicate responses were combined to a single recommendation. For some selected responses the statement, or group of statements, is presented as a recommendation, a description of the situation that the recommendation addresses is provided, the method of implementation of the suggestion is described and the entities responsible for the implementation and the funding of the change are identified. The results of this study have been available to the participants since September 2007 and several of the recommendations are currently being implemented by entities that have an interest in improving the decision Making Framework. These are identified as well.

Some of the responses to questions 14 through 18 are explored in the following review that in a format the identifies the:

- **Recommendation**
- **Description of problem:**
- **Implementation strategy:**
- **Responsible Parties:**
- **Probability of implementation:**
- **Level of current implementation**

Not all the recommendations are expanded upon since this is beyond the scope of this study and would require an interagency participatory process that would be public and beyond the scope of this study.

Recommendation A: Amend local government rules that grant increased density on filled wetlands

Description of problem:

The granting of upland densities on filled wetlands encourages the filling of wetlands increasing water pollution, hydrologic alteration, wildlife and fish habitat loss, increased demand on infrastructure, and decrease in quality of life.

As part of the expanding Lee County coordination with natural resource management and permitting agencies, the Lee County Board of County Commissioners directed a more proactive staff presence. To this end, a particular position has been created, approved, and staffed to track and comment on federal, state, and local environmental permits.

One project examined in the course of this study proposed the destruction of a large percentage of the site's wetlands, and the site itself is mostly wetlands. The site's wetlands are described as deteriorated, and the site itself abuts wetlands purchases into public conservation programs. As Lee County staff reviewed the permit information, it became more broadly known that the County practice has been to grant upland density to the part of any site that receives "dredge and fill" permits. In that light, it can be expected that it would be an uncommon practice for developers to pursue wetland integrity.

More specifically, the county practice is tied to two footnotes in a table (Table 1a of the LeePlan), with a reference in LeePlan Policy 114.1.1

Policy 114.1.1: Development in wetlands is limited to very low density residential uses and uses of a recreational, open space, or conservation nature that are compatible with wetland functions. The maximum density in the wetland category is one unit per 20 acres, except that one single family residence will be permitted on lots meeting the standards in Chapter XIII of this Plan, and except that owners of wetlands adjacent to Intensive Development, Central Urban, Urban Community, Suburban, and Outlying Suburban areas may transfer densities to developable contiguous uplands under common ownership in accordance with Footnotes 9b and 9x of Table 1(a), Summary of Residential Densities (Amended by Ordinance #94-30, 00-22).

Intensive Development has a maximum standard density of 14 dwelling units per gross acre (du/ga), (a maximum total density of 22, counting bonuses) Central Urban has a maximum 10 du/ga, (15, counting bonuses), Urban Community has a maximum of 6 du/ga (10, counting bonuses), Suburban has a maximum standard density of 6 du/ga (no bonuses) and Outlying Suburban has a maximum of 3 du/ga (no bonuses).

Table 1(a) footnote 9(b) states: *dwelling units may be relocated to developable contiguous uplands designated Intensive Development, Central urban, or Urban Community at the same underlying density as is permitted for those uplands, so long as*

the uplands density does not exceed the maximum standard density plus one half of the difference between the maximum total density and the maximum standard density. Using the Intensive Development as an example, the standard maximum density is 14, the maximum total is 22, so one half of the difference added on is 18. Note the additional density is discretionary—"…may be located…"

Table 1 (a) footnote 9 (c) states: *Dwelling units may be relocated from freshwater wetlands to developable contiguous uplands designated Suburban or Outlying Suburban at the same underlying density as is permitted for those uplands, so long as the uplands density does not exceed eight (8) dwelling units per acre for lands designated Suburban and four (4) dwelling units per acre for lands designated Outlying Suburban, unless the Outlying Suburban lands are located in those areas described in 6 above (a footnote that describes where Outlying Suburban is limited to 2 dwelling units per acre), in which case the maximum upland density will be three (3) units per acre. (Amended by Ordinance 00-22).* Note the additional density is discretionary—"…may be located…"

In summary the policies and footnotes provide for the conversion of wetlands from having a stated density of 1 unit per 20 acres, to an allowable density as high as 14 units an acre, if transferred to uplands.

The practice that has occurred, though, has been to pursue a dredge and fill permit to destroy wetlands, and make the dredge and fill permit the basis for claiming upland status for the fill area for the land use plan, and then pursue the densities of the remaining wetlands in accord with the footnotes above. The practice, though, is pursued as a speculative effort under the discretion of the Board of County Commissioners.

Providing this example shows the dramatic change the impact the dredge and fill permit is having on overall development:

> A hypothetical site of 30 acres designated "Central Urban", (10 units per acre maximum standard density, 15 per acre with bonus) has 10 acres of uplands, and 20 acres of wetlands, after a wetland jurisdiction line determination is made by a permit agency. Under a straight up calculation, the central urban would generate 100 units, and the wetlands 1 unit=101 units.
> Pursuing the density bonus without filling, the 10 acres of upland could be eligible for up to 200 more units if the underlying density is fully applied, but since the cap is 5 additional per acre, only 50 could be captured. Central Urban, 10 per acre, bonus 5 per acre, total units=150 units.
> Getting a dredge and fill permit for 10 acres, half of the remainder, and then given the standard density, increases the unit count even more, with the unfilled Central Urban getting 10/acre=100 units, and the filled 10 acres getting 10 per acre=100 units, new total=200 units.
> However, the remaining 10 acres of unfilled wetlands now give the maximum benefit to the proposed development, with the bonus, with the original Central urban getting 10 units per acre, standard, and 5 per acre bonus=150 units, and the

filled land getting 10 units per acre, standard, and 5 units per acre bonus=150 units, new grand total =300 units.
In summary, adhering to the land use map densities provides 101 to (discretionary) 150 units, pursuing the dredge and filling permits provides 200 to (discretionary) 300 units.

As a side note, each "filled area" receiving these increases in density are de facto small scale or not so small scale amendments to the Future Land Use Map of the Comprehensive Plan. This conclusion is tied to the policy that notes that wetlands, whether shown on the Future Land Use Map or not, are "wetlands" for the calculation of land use density. (LeePlan Objective 114.1, The natural functions of wetlands and wetlands systems will be protected and conserved through the enforcement of the county's wetland protection regulations and the goals, objectives and policies of the is plan. "Wetlands" include all those lands, whether shown on the Future Land use Map or not, that are identified as wetlands in accordance with FS 373.019 (17), through he use of the unified state delineation methodology described in FAC Chapter 17-340, as ratified and amended by FS 373.4211.)

Using the permits to convert wetlands to uplands does physically change the nature of the resource at a geographically specific setting, and thus makes a geographically specific change of the land use.

Recently, there have been three events that provide a basis for reexamining the current practice. These are:

1. *The Board approved staff position for tracking permit agency permits has been filled*. The County does get copies of the permit requests. The County now has the capacity to notify the permit agency and applicant of the land use plan's density and intensity ranges, tied to the jurisdictional determination line BEFORE any permit is issued. The agencies then lack or have reduced the hypothetical "public benefit test" that is claimed for development. This review would not particularly impact permit requests for infrastructure (unless the County proffers a different approach).

2. *The Total Maximum Daily Load program is going into effect, requiring basin wide approaches to water quality improvements.* The County is liable for the costs of water quality improvements. The most common form of water quality improvement is retention and detention systems, and the natural variety of these are wetlands and natural water bodies, which are "public trust" systems. Preventing filling of jurisdictional wetlands helps preserve the County's ability to meet its responsibility to the public in protecting and restoring the quality of our public waters. Wetlands thus preserved will also help the County meet its water supply needs for the public and for the public resources, including the receiving waters of the estuaries.

3. The Comprehensive Plan amendments included new policy direction. The Board stated an intention to manage towards optimal rather than minimal outcomes for natural

systems, "promote optimal conditions rather than minimum conditions for the natural system, as the basis for sound planning." (LeePlan policy 107.2.13)

A single policy is difficult to interpret correctly, if taken in isolation. In the review of other County Policy in the LeePlan, the general theme is to not support wetland destruction. There is also a theme, however, to eliminate unnecessary duplication. Direction is given on that 114.1.2, specifically parts 1-4:

1. In accordance with FS 163.3184 (6)(c), the county will not undertake an independent review of the impact to wetlands resulting from development in wetlands that is specifically authorized by a DEP or SFWMD dredge and fill permit or exemption.

2. No development in wetlands regulated by the State of Florida will be permitted by Lee County without the appropriate state agency permit or authorization.

3. Lee County will incorporate the terms and conditions of state permits into county permits and will prosecute violations of state regulations and permit conditions through its code enforcement procedures.

4. Every reasonable effort will be required to avoid or minimize adverse impacts on wetlands through the clustering of development and other site planning techniques. On or off-site mitigation will only be permitted in accordance with applicable state standards.

In summary, the county policy is to not second guess State permit agencies decisions, but to still protect wetlands.

Implementation strategy:

Unless requested, the County has not commonly been participating in State agency permit reviews. There are numerous examples of county participation, the SFWMD invites the County and others to monthly meetings to review District activities at the interagency project review committee. Guidance for staff participation, though, has been the practice mentioned above.

Agency permit issuance is dependent upon an evaluation of the public interest. Lee County needs to be more explicit on the public interest, as determined by the LeePlan, at strategically important points of the permit review.

The most strategically important point of the review process, and consistent with existing policy, is the determination of the wetland jurisdictional line. This is an early step of the permit review, and determines the jurisdiction the permit agency has to exercise. This step—the determination of the wetland boundary—is quite compatible with the LeePlan's intent to identify wetlands for the application of land use categories.

1. Upon determination of the wetland jurisdiction line, Lee County staff should provide an immediate assessment of allowable densities of the parcel under review, based upon the wetland and upland densities. This should be a strict interpretation, with the bonus underlying density provided as an option, made clearly dependent upon the degree of protection and restoration afforded the wetlands. This serves the permitting agency

notice in regard to the land planning agency of jurisdiction's determination of public interest density, and bonuses tied to good environmental management. This would eliminate the environmental agency's review of impacts of development in wetlands not submitted to Lee County for approval, and restore the appropriate responsibility for land use management decisions to Lee County.

2. The record of density determination should then be part of any file for a land use approval which is subsequently requested for the property.

3. In the event that the land use approvals are solicited first, prior to environmental permits, the owner's incorporation of good wetlands management and protection should be considered the basis for recommendations of bonuses tied to the underlying density assumptions.

In practical terms, using the example above, this would result in the awarding of the 150 units (49 extra) over the base amount, and not in the awarding of the density (199 extra) which constitutes an unrecorded FLUM change of the filled wetlands.

Responsible Parties: Local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs)

Probability of implementation: Likely to possible

Level of current implementation: Currently under consideration by Lee County

Recommendation B: Develop basin specific regulations for the direct concerns most important to the watershed.

Description of problem:

The use of statewide and national water quality and wetland jurisdictional standards does not recognize the unique conditions and environment of southwest Florida and the Estero Bay Basin. Meeting the minimum standards continues on-going water quality, hydrologic and habitat loss degradation.

The *Southwest Florida Environmental Impact Statement* found in 2000 that the cumulative impacts of land development was the chief cause of declining water quality in the region. Federal and state laws mandate the protection and restoration of impaired and threatened waters, as well as protection of Outstanding Florida Waters from any degradation. The existing stormwater treatment rule has been scientifically demonstrated as inadequate to achieve these purposes.

Increase stormwater treatment is needed to truly reduce the amount of pollutants identified to occur within the subbasins of the Estero Bay Watershed.

Implementation strategy:

It is important to identify where the water quality pollution is generated within each subbasin of the Estero bay watershed. While a specific landuse is identified to be a primary contributor to an impairment it follows that the plan should be to not increase that type of landuse within the watershed. An alternative would be to change the landuse decision to a less polluting land use.

A current alternative is the draft Special Basin Rule has been developed by the South Florida Water Management District, in coordination with the public and other agencies, for the Southwest Florida Basin. It strengthens water quality protection in environmental resource permits for new development in Southwest Florida. This rule is an important step towards reducing the water pollution in southwest Florida water resources, and scientifically supported as a more efficient and effective approach.

The draft rule requires the pollution prevention measures and additional treatment necessary to provide additional assurances that new development will not contribute to the continued degradation of water quality in Southwest Florida.

The draft rule provides flexibility for designing measures into developments to improve water quality. The rule is constructed to require a variety of best management practices from a wide range of options in order to accommodate a variety of project types, from residential to commercial. In addition, the rule continues to allow off-site and retrofitting

options if the applicant can demonstrate that they cannot meet water quality treatment standards on-site.

The draft rule for new development is not the only measure necessary to deal with declining water quality in the region, but it needs to be done as soon as possible to ensure that new developments will not need to be retrofitted in addition to the older ones. The TMDL process and watershed planning and restoration efforts will eventually deal with retrofit of existing sources, which is also an important part of cleaning up our waters. The adoption of the Special Basin rule will complement this by preventing further degradation from new developments in Southwest Florida. It is more cost effective to implement these BMP's now rather than having to retrofit these communities later. The development of this rule also serves as a model of cooperation among stakeholders to achieve the no net increase of pollution loadings from pre-development to post-development, ensuring that our growth is sustainable.

Responsible Parties: USEPA. FDEP, SFWMD, The Conservancy of Southwest Florida, Southwest Florida Watershed Council

Probability of implementation: Likely although there are currently significant pre-emption of local rights and plans factions in the Florida legislature and within parts of FDEP and the SFWMD that desire uniformity in rules and practices.

Level of current implementation: A special basin rule has been proposed for southwest Florida and is in rule development with the SFWMD.

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Recommendation C: Cap future population carrying capacity to the current planned population capacity total.

Description of problem:

Currently although the Lee County Comprehensive Plan Plans for and allocates growth within discrete planning units of the County (LEEPLAN Map16) there is no permanent cap of the total population of the Estero Bay Watershed.

Implementation strategy:

The Lee Plan is designed to depict Lee County as it will appear in the year 2020. Given the projected increase in population (to 602,000 permanent and 764,171 seasonal residents) and the probable rate of technological and economic change between the present date and 2020, it is impossible to describe the future face of the county with any degree of certainty or precision.

Functionally the existing land use map provides a total planned population related to density per zoning type. From this a population total could be calculated and land use changes could then be predicated on this total. When a development site was identified to have a higher density Than the population units could be extracted from other lands within the watershed providing a balance without new population total increase. However in current practice regular zoning changes and land use amendments continue to increase densities, and subsequently total planned population, often without a commensurate transfer of density or development rights A form of this type of planning currently occur in the City of Sanibel.

This may require new statutory language within the state planning regulations to allow this type of balanced planning.

Responsible Parties: Local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs), Regional Planning Council, DCA

Probability of implementation: Unlikely. Recent economic downturns in the area of real estate and development have encouraged public decision-making in the opposite direction. Some existing state and federal rules could be interpreted to block restrictions on population through interstate commerce rules and the “takings” provisions.

Level of current implementation: None at this time.

Recommendation D: Stop deferring DRI conditions until permitting by other agencies. The DRI conditions should provide specific standards and not use terms such as "where appropriate." Development Orders need to adopt more specific standards.

Description of problem:

In Development of Regional Impact reviews the applicants and commenting agencies often propose conditions that defer consideration of effects on water quality, hydrology, and wildlife habitat to some future date in another agencies'' permit(s). As a result the DRI recommended order and the local governments development order are vague and incomplete in areas relating to vegetation and wildlife, water supply, water quality, stormwater, wetlands, and other environmental issues.

Implementation strategy: During the DRI all parties, including the applicant and their agents, the reviewing entity and the commenting agencies, would work on specific response to issues and provide exact comments and conditions on the environmental issues for a particular project site and project. Specific development order conditions would be stated directly in both the recommended development order and the local government development order. Performance measures to achieve the specific conditions will be specified with monitoring to the performance measures. The terms "where appropriate", "deferred until later permitting by agency XX", "where practicable", etc. would not be utilized in the DO.

Responsible Parties: Regional Planning Council, Local Governments, FDEP, SFWMD, FWC

Probability of implementation: Likely, although there is strong resistance from some private land use attorneys that want vague development orders that require later legal interpretation.

Level of current implementation: Some current DRI development orders have been more exact and contain specific conditions that are accurate and enforceable.

Recommendation E: Provide public education for support of increased building height with removal of limitations on building height that would get more open space. Trade off building height and density for more open space and conservation lands.

Description of problem:

Currently there is a strong resistance to increased building heights for a variety of reasons including aesthetic preferences, concerns for avifauna, and the increased density without offset to the surrounding infrastructure. Currently increase building heights are granted on a case-by-case basis without a concurrent environmental benefit accrued.

Implementation strategy: The granting of approvals for taller buildings and increased density to a preferred area of development such as an urban development zone should generate an increase in open space and a decrease in building density and intensity on the project site or elsewhere within the watershed. A possible program would occur as follows.

A hypothetical site of 30 acres designated "Central Urban", (10 units per acre maximum standard density, 15 per acre with bonus) has 10 acres of uplands, and 20 acres of wetlands, after a wetland jurisdiction line determination is made by a permit agency. Under a straight up calculation, the central urban would generate 100 units, and the wetlands 1 unit=101 units.

Pursuing the density bonus without filling, the 10 acres of upland could be eligible for up to 200 more units if the underlying density is fully applied, but since the cap is 5 additional per acre, only 50 could be captured. Central Urban, 10 per acre, bonus 5 per acre, total units=150 units.

The 150 units could be distributed as 150 single story units per acre in 1/15 acre parcels, which would be very uncomfortable for everyone. If instead the proposed plan would be to build the 50 units within a 5 acre footprint with under-unit parking, the resulting landscape could possess 5 acres of structure and 5 acres of upland open space and 20 acres of wetlands. The net landscape would be 16% impervious surface, 84% open space.

Alternatively if the plan would be to have 200 units over the 10 acres with no upland preserve the additional units could be offset by off-site within basin acquisition of alternate environmentally sensitive lands in the Lee Mitigation Plan. So for example the additional 50 units could be generated by the offset of 1000 acres of wetland conservation easement, 500 acres of DR/GR uplands, or 50 acres of Outer Island lands. In order to incentivise this idea the transfers could be multiplies based on local government policy goals.

In order for this plan to work in the Estero Bay Watershed, it would be necessary to have interlocal agreements among the local governments to allow transfer form the natural system of the County to more urban areas in cities and towns. It would be vital that none of the local governments allow density and height to be created without it being generated from other existing densities. As long as new density is created from nothing by a local government then there is no incentive to utilize transfers and the incentive is to be annexed into the jurisdiction that does not honor density control.

Responsible Parties: Local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs), DCA

Probability of implementation: Possible, Interlocal Agreement among Local governments could be the hardest part.

Level of current implementation: No current implementation action.

Recommendation F: Eliminate the ability of state and district regulatory agencies to issue permits for projects that do not have local government approval. No permit cascade that allows applicants to obtain one permit to force the hand of other permitting agencies.

Description of problem:

Currently the FDEP, SFWMD, and FWC will issue permits irrespective of whether the local government has determined that the proposed landuse in the new development is compatible with the local government comprehensive plan.

Existing law provides that all land use decisions are vested in and made at the local government level.

Standard language is included in the State and Regional permits state the following:

a) Should any other regulatory agency require changes to the permitted system, the permittee shall notify the District in writing of the changes prior to implementation so that a determination can be made whether a permit modification is required.

b) This permit does not eliminate the necessity to obtain any required federal, state, local and special district authorizations prior to the start of any activity approved by this permit. This permit does not convey to the permittee or create in the permittee any property right, or any interest in real property, nor does it authorize any entrance upon or activities on property which is not owned or controlled by the permittee, or convey any rights or privileges other than those specified in the permit and Chapter 40E-4 or Chapter 40E-40, F.A.C..

c) The permittee is hereby advised that Section 253.77, F.S. states that a person may not commence any excavation, construction, or other activity involving the use of sovereign or other lands of the State, the title to which is vested in the Board of Trustees of the Internal Improvement Trust Fund without obtaining the required lease, license, easement, or other form of consent authorizing the proposed use. Therefore, the permittee is responsible for obtaining any necessary authorizations from the Board of Trustees prior to commencing activity on sovereignty lands or other state-owned lands.

d) The permittee must obtain a Water Use permit prior to construction dewatering.

Irrespective of these admonitions, the review of the proposals by the FDEP, SFWMD and FWC, for all forms of development in areas designated by local government for special protection such as wetlands, the DR/GR, and conservation areas is apparently unaffected by the local government standards for these areas. The state and WMD regional entities have issued permits for canals, water management structures, wetland fill, mangrove removal, bald eagles and gopher tortoises and other forms of development prior to or without consideration for local government standards and planning and in some cases are now in administrative hearing dispute with local governments over these issues. This effectively preempts the local landuse decision making process and the local land use

authority. The developer can then utilize the granted permit as an argument for the basis for a "takings" threat against the local government to obtain a land use change contrary to the local government plans and standards.

Implementation strategy:

The issuance of a state or regional permit should not be issued in contravention to adopted local government comprehensive plan and rules. If a landuse proposal in a state or regional permitting action is not in accordance with the local government land use plan and local government protections of the environment then the state and regional permit should not be issued and held in abeyance until the local government agrees to the land use change or rule variance. This should constitute a completeness item in the permit review for state and regional permits. This will require a rule change in the State and WMD permitting process adding this check to the permitting standards.

It is in the interest of the state to not preempt local government authority since the state is composed of the local governments and is not a separate entity of differing environmental interests. The state should retain the right to deny permits that do not meet the standards set forth in the rule and statutes adopted by the state. The environmental regulations of the state and WMD do not provide the authority to make or override local land use decisions made by a dully constituted local government in order to favor a permit applicant in advance of the local government decision.

Responsible Parties: FDEP, SFWMD, FWC

Probability of implementation: Possible, but this will require statutory and rule change at the state level to change current language that remains silent or allows the state agencies to ignore the local government and proceed with permitting as a separate process.

Level of current implementation: In discussion but no current draft of operant language for consideration.

Recommendation G: Eliminate the Burt Harris Law for local government comprehensive plan land use map changes.

Description of problem:

The Burt Harris Law, addressing takings of property rights, has had a chilling effect on the ability of local governments to manage growth, protect water quality, hydrology and natural resources, and develop a sustainable plan for the Estero Bay Watershed.

Implementation strategy:

Section 70.001 Florida statutes states in the preamble;

(1) This act may be cited as the "Bert J. Harris, Jr., Private Property Rights Protection Act." The Legislature recognizes that some laws, regulations, and ordinances of the state and political entities in the state, as applied, may inordinately burden, restrict, or limit private property rights without amounting to a taking under the State Constitution or the United States Constitution. The Legislature determines that there is an important state interest in protecting the interests of private property owners from such inordinate burdens. Therefore, it is the intent of the Legislature that, as a separate and distinct cause of action from the law of takings, the Legislature herein provides for relief, or payment of compensation, when a new law, rule, regulation, or ordinance of the state or a political entity in the state, as applied, unfairly affects real property.

(2) When a specific action of a governmental entity has inordinately burdened an ***existing use of real property*** *or a* ***vested right to a specific use of real property****, the property owner of that real property is entitled to relief, which may include compensation for the actual loss to the fair market value of the real property caused by the action of government, as provided in this section.*

The law defines "existing use" as *an* ***actual, present use or activity on the real property****, including periods of inactivity which are normally associated with, or are incidental to, the nature or type of use or activity or such reasonably foreseeable,* ***nonspeculative*** *land uses which are suitable for the subject real property and compatible with adjacent land uses and which have created an existing fair market value in the property greater than the fair market value of the actual, present use or activity on the real property.*

Unfortunately some development interests, including some agencies, have adopted a practice of invoking the *"Bert J. Harris, Jr., Private Property Rights Protection Act."* for speculative landuse changes incompatible with the local government comprehensive plans. Investment based expectation is not an existing use of real property or a vested right to a specific use of real property.

Legislation is needed to clarify that imaginary futures do not constitute entitlements for speculative development interests and that bad real estate investing and panning should

not be salvaged at the expense of the environment and quality of life for the Estero Bay Watershed.

Responsible Parties: Florida legislature, local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs), DCA.

Probability of implementation: Unlikely in the current political environment.

Level of current implementation: None at this time.

Recommendation H: Field issue permits for projects with small effects on resources using hand held equipment

Description of problem: Small projects of limited to minimal environmental impact have to go through the same extensive review, paper work, and timeframes as development proposals the truly need a thorough review. This can burden the small permit review staff and prevent an adequate review of the major projects that should receive a significant amount of attention and review.

Implementation strategy:

Using the precedent of the issuance of emergency repair permits following a natural disaster, the regulatory staff could field issue permits related to restoration activities of both human property and habitats without a complex exchange of information other than the site visit and a written description of the proposed activity. The availability of GPS systems and an on-line computer menued form system could both produce the permit and record it for the agency records. The site visit is a critical part of this concept since the opportunity for abuse, similar to that experienced for exemptions, could be high if no site review occurs.

The following is an example form from FDEP's permitting website:

Joint
Department of the Army/Florida Department of Environmental Protection
Emergency Permit

To:

1. Inspection of your property located at
indicates that damage has occurred from

The repair of this damage requires permits from the U.S. Army Corps of Engineers and the Florida Department of Environmental Protection.

2. This permit is emergency authorization to perform the work as follows and in accordance with the attached plans and/or the permits listed below:

U.S. COE Permit
FDEP Permit

3. The work authorized by this permit is subject to the following conditions:
a. The work authorized by this permit shall be performed so as to not violate or exceed water quality standards of the State as specified in Chapter 17-3, Florida Administrative Code.
b. All work authorized by this permit shall be completed within sixty (60) calendar days of the date of issuance of this permit unless extended in writing by either the USACOE or DEP. Under no circumstances will extensions exceeding sixty (60) days be considered

Figure 91: Model Joint Department of the Army/Florida Department of Environmental Protection Emergency Permit

Responsible Parties: FDEP, SFWMD, FWC, local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs),

Probability of implementation: Unlikely, until staffing levels are restored to agencies.

Level of current implementation: None in this form at this time.

Recommendation I: Insure that there are hydrologic models available for permit review and restoration of the Estero Bay Watershed.

Description of problem:

In order to predict the spatial and temporal salinity patterns in estuaries, the dynamics of tidal and freshwater mixing and the effects of alterations in hydrology on water quality and fish and wildlife habitat the hydrologic conditions of Estero Bay and its tributaries must be understood.

Implementation strategy:

The establishment of the minimum freshwater flows is needed to maintain estuarine health is a principal goal for all Southwest Florida's hydrologic restoration projects. In order to predict the spatial and temporal salinity patterns in estuaries, the dynamics of tidal and freshwater mixing must be understood. Hydrologic modeling techniques now exist to make those predictions. Once produced, the effectiveness of estuarine restoration can be tested by comparing model-driven predictions of salinity patterns with those empirically measured. Consequently, the development of mixing / circulation models and their calibration are critical to estuarine restoration efforts.

Comparable estuarine hydrologic models have been developed by the U.S. Geological Survey's Water Resources Division for restoration projects in Florida Bay, and presently the Survey is pursuing this effort for Estero Bay.

Five goals are defined for this project: (1) Determine if the existing estuarine circulation models are useful in determining salinity distribution under various freshwater inflow regimes. (2) Determine what water quality monitoring efforts are needed in these regions for model calibration. If those do not exist, funding must be made available for these prerequisite efforts. (3) Adopt and modify existing circulation models for use in these regions. (4) Models must be calibrated using existing, varying flow conditions.

Responsible Parties: USGS, FDEP, USACOE, SFWMD, SWFFS, CHNEP

Probability of implementation: Currently occurring.

Level of current implementation: U.S. Geological Survey and the SFWMD have acquired bathymetry data for the estuary to improve model effectiveness and adopting and have been modifying an existing circulation model for use in Estero Bay.

Recommendation J: Joint issuance of land and water impact permits

Description of problem: Currently permitting is Balkanized, separating the effects of the proposed project on the uplands from the impacts on wetlands. This can result in negative effects on one in order to attempt to protect the other.

Implementation strategy:

There are two very different methods that could be utilized to remove the problem. One would be to adopt the state upland habitat protection rule that was proposed by DCA in the early 1990's (HB 2304 1992). The other would be for each local government to individually and separately adopt upland habitat protection rules. Some local governments have a version of such standards for selected upland habitat protection, including Sarasota County and Hillsborough County. This alternative would vest all upland regulatory permit authority in the local government with a period of technical transference and assistance for the federal, regional, and state entities.

Responsible Parties: DCA, FDEP, WMD, FWC, local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs)

Probability of implementation: Unlikely.

Level of current implementation: None.

Recommendation K: Mandated retrofit for agricultural stormwater discharges.

Description of problem:

Old methods of agricultural practices can contribute significant water quality pollution. Modern retrofits for water, fertilizer and pesticide management under Best Management Practices (BMPs) can reduce these negative impacts. Currently agricultural BMPs are voluntary in the SFWMD but are a requirement for Water Use Permits in the SWFWMD jurisdiction.

Implementation strategy:

Currently agricultural best management practices are voluntary (BMP) in the Estero Bay Watershed. Many agricultural operations have implemented the BMPs at some scale and enjoyed significant savings in water use and in some cases cost of operation.

Implementation of mandated BMPs for agriculture would follow the example provide by the Division of Forestry BMP program.

Since 1981 the Florida Division of Forestry has monitored BMP implementation by conducting a biennial Compliance Survey. Like BMPs in general, the survey has traditionally been heavily oriented toward forestry activities involving intensive pine management, near streams and lakes. With the new and expanded practices in this silviculture manual, BMP compliance monitoring was also revised. Following the development of this silviculture manual in 1993, a silviculture BMP Monitoring Task Force revised the Compliance Survey making it compatible with the new BMPs, and more technically and statistically sound. The revised Survey was first used in 1995 and includes significant procedural changes such as a numerical scoring system for determining silviculture BMP compliance, special criteria for identifying a significant risk to water quality, and an expansion of the Survey into all Florida counties. Through 1999, the Survey has determined a statewide, long-term average of 92% compliance with silviculture BMPs.

In addition, a silviculture BMP Effectiveness Study was completed in 1999, using the survey as a measure of BMP compliance and using stream bio-assessment techniques to measure water quality. The study concluded that where silviculture BMPs were properly applied water quality, aquatic habitat and overall stream ecosystem health were protected.

The silviculture BMPs in this manual are intended for implementation on all silviculture operations regardless of whether or not the operation is subject to other regulatory standards or permits. Anyone who desires to conduct silviculture activities that are not in compliance with this manual must necessarily seek and obtain a permit from the appropriate local, state and/or federal government agency prior to conducting the operation. In addition, the maintenance of State water quality standards is required during all silviculture operations.

Responsible Parties: Florida Department of Agriculture

Probability of implementation: Low.

Level of current implementation: None.

Recommendation L: There is a need for areas that cannot receive Transfer of Development Rights (TDR) transferred to. TDR units from preserve lands should be sold and funds returned to the preserve lands for land management use. TDR funds could be used for exotic removal.

Description of problem:

The Lee Plan's land use accommodation is based on an aggregation of allocations for 22 Planning Communities. Currently development rights in the form of density can be transferred from any property to any other property within and sometimes between Planning Communities. When lands are acquired for preservation the densities on those lands are not extinguished but are instead transferred to other locations within or outside the Planning Communities.

Implementation strategy:

The idea is similar to transfer of development rights programs that have a sending area and receiving area designation, typically by mapping. An example of this would be to designate lands in a conservation overlay that could be utilized to move density to preferred urban infill areas. In order for this to work in Lee County it would be necessary to allow densities to be moved from one Planning Community to another.

The steps would involve:

1) Identification of an overall open space/green space/natural resource base strategy, with supporting public policy. (Link to CLASAC, Greenways initiative, etc.).
   a) Use the existing ecological models to identify the location and size of resource preservation areas.
   b) Study and establish a goal to determine a viable and maintainable percentage of the county's area to be identified as preservation land. Privately and publicly held lands that are preserved and protected will be included in the analysis. The Odum Study will be evaluated as part of this analysis. With a goal of achieving a minimum of 33% of the county's area to be managed for such purposes.
   c) Identify preservation areas and then develop incentives and planning techniques to establish the best application for future development such as new community plans, watershed plan, clustering and TDRs, with preservation areas of maximum functionality, and this evaluation used to determine the range of incentives and best application of the urban service boundary.
   d) Develop specific community plans or watershed plans for the future of the DR/GR designated areas.
   e) Review the existing county TDR system and other incentive programs including public/private partnership opportunities and amend/adopt as needed to make them it workable and financially feasible within the smart growth framework.

Responsible Parties: Local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs).

Probability of implementation: Possible.

Level of current implementation: In discussion by the Lee County Smart Growth Committee.

Recommendation M: Light rail should be implemented in the Estero Bay watershed.

Description of problem:

Transportation networks depending upon roadways for automotive vehicles are failing within the Estero Bay watershed. Construction of new roadways will incur significant environmental cost to hydrology, water quality, and fish and wildlife habitat while providing at best a short term improvement prior to reaching capacity as the landscape and the roadways' access become developed as a secondary impact of the roadway construction.

Currently the Lee County 2050 MPO Long Range Transportation Plan does not include light rail in the Estero Bay Watershed.

Implementation strategy:

Light rail or light rail transit (LRT) is a form of urban rail public transportation that generally has a lower capacity and lower speed than heavy rail and metro systems. The term is used to refer to modern streetcar/tram systems with rapid transit-style features that usually use electric rail cars operating mostly in private rights-of-way separated from other traffic but sometimes, if necessary, mixed with other traffic in city streets.

Light rail, unlike rapid transit, is not fully grade-separated from other forms of traffic and thus is a step below a true rapid transit system. The term light rail was devised in 1972 by the U.S. Urban Mass Transit Association (UMTA) to describe new streetcar transformations which were taking place in Europe and the United States. In Germany the term stadtbahn was used to describe the concept, and many in the UMTA wanted to adopt the direct translation, which is city rail. However, the UMTA finally adopted the term light rail instead. Light in this context is used in the sense of "intended for light loads and fast movement", rather than referring to physical weight, since the vehicles often weigh more than those on so-called heavy rail systems. The investment in infrastructure is also usually lighter than would be found for a heavy rail system.

The American Public Transportation Authority (APTA) in its Glossary of Transit Terminology defines *light rail* as: "An electric railway with a 'light volume' traffic capacity compared to heavy rail. Light rail may use shared or exclusive rights-of-way, high or low platform loading and multi-car trains or single cars." However, some diesel powered transit calls itself light rail, such as the O-Train in Ottawa, Canada and River Line in New Jersey, United States, which use diesel multiple unit cars. In traditional transit terminology, these would be considered commuter rail lines.

The cost of light rail construction varies widely, largely depending on the amount of tunneling and elevated structures required. A survey of North American light rail projects shows that costs of most LRT systems range from $15 million per mile to over $100

million per mile. Seattle's new light rail system is by far the most expensive in the U.S. at $179 million per mile, since it includes extensive tunneling in poor soil conditions, elevated sections, and stations as deep as 180 feet below ground level. These result in costs more typical of subways or rapid transit systems than light rail. At the other end of the scale, four systems (Baltimore MD, Camden NJ, Sacramento CA, and Salt Lake City UT) incurred costs of less than $20 million per mile. Over the U.S. as a whole, excluding Seattle, new light rail construction costs average about $35 million per mile

Combining highway expansion with LRT construction can save costs by doing both highway improvements and rail construction at the same time. As an example, Denver's T-REX (Transportation Expansion) project rebuilt interstate highways 25 and 225 and added a light-rail expansion for a total cost of $1.67 billion over five years. The cost of 17 miles of highway improvements and 19 miles of double-track light rail worked out to $19.3 million per highway lane-mile and $27.6 million per LRT track-mile. The project came in under budget and 22 months ahead of schedule.

LRT cost efficiency improves dramatically as ridership increases. the Calgary, Alberta C-Train used many common light rail techniques to keep costs low, including minimizing underground and elevated trackage, sharing transit malls with buses, leasing rights-of-way from freight railroads, and combining LRT construction with freeway expansion. As a result, Calgary ranks toward the less expensive end of the scale with capital costs of around $24 million per mile. However, Calgary's LRT ridership is much higher than any comparable U.S. city at over 250,000 rides per weekday and as a result its efficiency of capital is also much higher. Its capital costs were ⅓ that of the San Diego system, a comparably sized one in the U.S., while its ridership is well over twice as high. Thus, Calgary's capital cost per weekday rider is less than 1/6 that of San Diego. Its operating costs are also lower. A typical C-Train vehicle costs only $163 per hour to operate, and since it averages 600 passengers per operating hour, Calgary Transit estimates that its LRT operating costs are only 27 cents per ride, versus $1.50 per ride on its buses.

As part of the Long Range Transportation Plan (LRTP), the Transit Element includes an analysis of the density and different types of rail (heavy, light, Commuter, fixed guideway etc.) mainly within the Seminole Gulf Railway corridor and essentially comes to the conclusion that Lee County should move forward with Bus Rapid Transit (BRT). Based on the LRTP, LeeTran is now conducting a BRT study that is focusing on routes on US 41 and Colonial Boulevard to start with since those routes meet the grant funding tests that the Federal Transit Agency looks for. There is also a multi-modal corridor in the median of I-75 that was identified as part of the I-75 Masterplan but the use of this is not defined any more specifically in any of the planning documents to date.

The first step of the process would be to evaluate the feasibility of a light rail system that serves the Estero Bay watershed. A likely structure would involve a main trunk along US 41 with connections to Treeline Boulevard that would pass along Bonita Beach Road, Corkscrew Road, Daniels Parkway, Colonial Boulevard and San Carlos Boulevard to Estero Boulevard and back to US 41 forming loops with the barriers islands, FGCU and the major commercial facilities and one spur to the SWFIA.

Responsible Parties: Lee County MPO, local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs)

Probability of implementation: Unlikely.

Level of current implementation: None.

Recommendation N: Agricultural lands uses need to be protected from speculative land conversion to residential, commercial and industrial land uses.

Description of problem:

Much of the change in landscapes in southwest Florida is the conversion of existing active and fallow agricultural lands to more intense residential, commercial, and industrial land uses.

Every 60 seconds, two acres of agricultural land is converted to other forms of development in the United States. Farm and ranch land is desirable for building because it tends to be flat, drained and affordable. Over the past 20 years, the average acreage per person for new housing almost doubled with the best agricultural soils being developed the fastest.

New residential and commercial development requires services such as schools, roads and fire/police protection, whereas privately owned and managed agricultural land requires very few services. Cost of Community Services (COCS) studies show that, nationwide, farm, forest and open lands more than pay for the municipal services they require, while taxes on residential uses, on average, fail to cover costs.

Implementation strategy:

The Florida panther has been virtually eliminated from most of its range in the southeastern United States. Forty-seven percent of the habitat in which the remaining adults live is publicly owned; the other 53 percent is privately held. Through a unique partnership, the result of a town meeting where landowners expressed disapproval over current proposals to protect panthers on their land, the Florida Advisory Council for Environmental Education (FACEE), Florida Game and Fresh Water Fish Commission (Commission), and American Farmland Trust, utilized a new approach: asking landowners what they thought would be effective ways to protect the panther's habitat. Too much land is at stake to allow for the option of land acquisition. Without any mechanism in place to help the vast majority of Florida farmers pass on the costs of environmental protection to the public, providing landowner's with economic incentives to protect land will help increase the panther's habitat. The plan's intention is to turn panthers and natural resource protection into an asset for landowners. Part of the Conceptual Panther Protection Plan seeks to compensate landowners for giving up non-agricultural development rights – those rights not related to or required for agricultural production – for a minimum of 25 years – long enough to determine if the Florida panther can be saved and to work out long-term protection and management strategies. The Conceptual Plan proposed by the landowner working groups offers three levels of possible compensation, with economic analysis and plan review done by a diverse 44 member review committee. The landowners' Conceptual Plan includes: planning and implementation; compensation, with a variety of calculation samples; the advantages of the conceptual plan; methods of monitoring and plan evaluation; and, comments from the review committee.

The landowner working group would like to implement the conceptual plan within the next two years. Some proposals to turn concept into reality include:

- Asking landowners to appoint a new working group to represent their interests in refining and implementing the conceptual plan;
- Expanding the review committee to represent a broader number of interests — conservation, scientific, agriculture, business, property rights and affected government agencies;
- Bringing together the diverse groups interested in — and affected by — the panther's survival in a series of workshops with the purpose of working out differences and refining elements of the conceptual plan.

These workshops would bring together the landowner working group and review committee, and be held for:

- Landowners with property containing Priority 1 and 2 panther habitat (as described in the Florida Panther Habitat Preservation Plan);
- Representatives of federal, state and local agencies who would coordinate permitting;
- County commissioners, planners and other key county staff in counties with Priority 1 and 2 panther habitat; and
- Other interested parties.

It is also proposed that several community education conferences be conducted in counties with Priority 1 habitat.

- Conducting another, more extensive economic analysis to:
- Determine the estimated costs and benefits of the landowners' strategy to local, state and federal government entities;
- Compare costs of the landowners' strategy with other protection options;
- Determine where savings can be made by adopting the landowners' strategy; and
- Evaluate the most cost-effective way of paying for wildlife protection programs at the state and federal level.
- Conducting research on each aspect of the landowners' strategy that must be implemented at the federal, state and local levels — including tax code revisions, coordinated permitting and comprehensive plan amendments to determine the most effective ways each can be carried out.
- Using two or three farms in the Estero Bay watershed in southwest Florida as test parcels for developing whole-farm plans; single, coordinated permits; and determining the "mosaic" of land uses that will form the basis for calculating landowner compensation and ensuring the panther's recovery.

Responsible Parties: Local governments (Lee County, City of Bonita Springs), FWC, USFWS, DEP, SFWMD, NRCS, FDACS.

Probability of implementation: Possible.

Level of current implementation: Report available but level of implementation not active in the Estero Bay watershed.

Recommendation O: Utilize more native plants in the developed landscape of the Estero Bay Watershed.

Description of problem:

The native vegetative landscape of the Estero Bay watershed is being replaced by an exotic plant community not found in any natural biogeographic region. Plants from other continents and other parts of North America are being inserted into a subtropical climate with pronounced wet and dry seasons. Many of these species have high demands for irrigation water, fertilizers, and pesticides in order to survive in an environment where they are not adapted.

Appropriate native vegetation is defined as vegetation found in the natural community that is suited to the soil, topography, and hydrology of a particular site. Current landscape laws and regulations in Florida fail to adequately protect and encourage the use of native plant species, leading to a landscape that is damaging to the natural environment. Key issues that threaten Florida's native plant populations that warrant analyzing regulatory and incentive-based policies are to eliminate harmful, invasive exotic plant species and to provide much needed protection for threatened and endangered native species.

Implementation strategy:

Currently Lee County requires 75% native vegetation for required tree species and 50% native vegetation is for required for shrub and groundcover species.

The Florida Native Plant Society (FNPS) has model landscape guidelines and landscape ordinance suggestions that require the use of only appropriate native vegetation in all public landscaped areas and minimum percentages of appropriate native vegetation for private, newly landscaped areas. Local governments can derive substantial benefits from promoting and protecting native vegetation that is appropriate to the area. "Appropriate native vegetation" is vegetation found in the natural community that is suited to the soil, topography, and hydrology of a particular site. The use of appropriate native vegetation in local landscaping can help achieve water conservation goals, preserve habitat in urban areas, greatly reduce maintenance costs for landscaping, and protect property values.

The FNPS model ordinance is intended to be used by local governments that wish to adopt or amend their existing landscape ordinance to encourage or require the use of appropriate native vegetation in all landscaped areas. This document provides sample language that can be adopted by a local government that wants to promote these goals and acquire the benefits of appropriate native landscaping. The ordinance guidelines have been annotated to provide background information and rationales behind the key provisions. These annotations, noted in italics, serve to explain the importance of each provision and are not official language that would be adopted as a part of the landscape ordinance.

The model ordinance is designed to be used by local governments to improve the landscape principles that guide landscaping of all new developments. Local governments may decide to adopt this ordinance in whole or only certain provisions, as others may be covered by existing regulations. The annotations also include alternative drafting options that provide flexibility for a community to adopt a landscape ordinance that promotes appropriate native vegetation and meets its particular needs.

The goal of the model ordinance is to provide a plan to promote appropriate native vegetation and best landscaping practices. It therefore includes provisions to address issues such as education about native plants, including a requirement for a landscape manual that delineates best landscaping practices using native plants. In addition, this model ordinance provides a framework against which existing ordinance provisions can be questioned, including those which allow the expansive use of invasive exotic plants that are detrimental to the environment. It includes provisions that prohibit these harmful plants as well as establishes protection methods for endangered and threatened plants that are often weakly protected or ignored in existing landscape codes.

Responsible Parties: Local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs).

Probability of implementation: Possible.

Level of current implementation : Limited to current stated standard.

Recommendation P: Abandon the existing Lee Planning Community Plan and establish a true urban boundary. Develop this urban boundary based on natural resource information.

Description of problem:

The Lee Plan's land use density accommodations are based on an aggregation of allocations for 22 Planning Communities. These communities have been designed to capture the unique character of each of these areas of the county. Within each community, smaller neighborhood communities may exist; however, due to their geographic size, a planning community could not be created based on its boundaries. These communities within the Estero Bay Watershed are: (Amended by Ordinance No. 99-15)

- **Planning Community 3 : Bonita -** (Added by Ordinance No. 99-15)
- **Planning Community 11: Daniels Parkway -** (Added by Ordinance No. 99-15)
- **Planning Community 21: Estero**
- **Planning Community 9: Fort Myers Beach -** (Added by Ordinance No. 99-15)
- **Planning Community Gateway/Airport 10: -** (Amended by Ordinance No. 04-16)
- **Planning Community 13: San Carlos**
- **Planning Community 15: South Fort Myers** - (Added by Ordinance No. 99-15)
- **Planning Community 18: Southeast Lee County -** (Added by Ordinance No. 99-15)

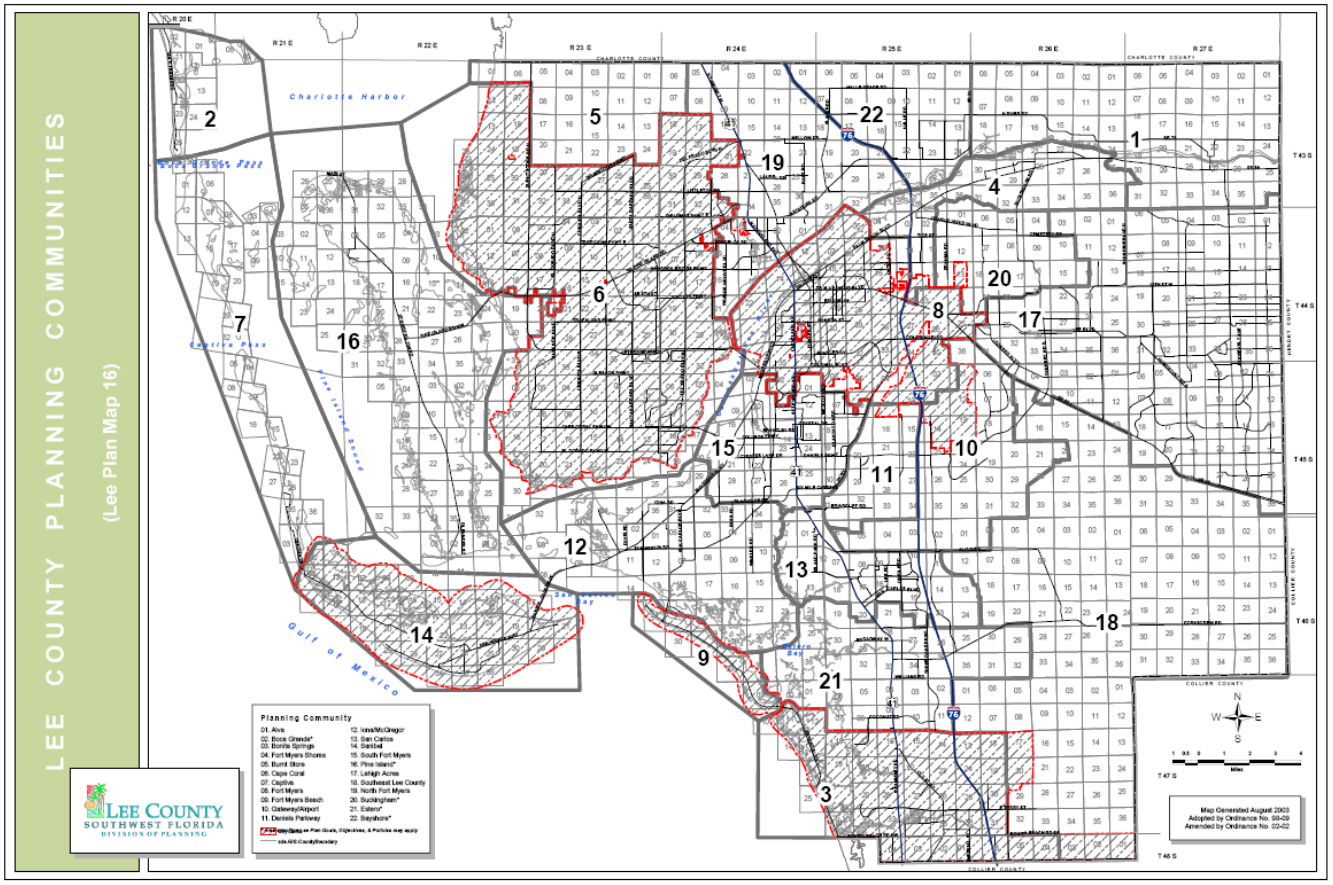


Figure 92: Lee County Planning Communities

Implementation strategy: Currently the planning communities strategy yields both positive and negative results in terms of density allocations and the extent of development occurring within a given community. In the positive it can restrain growth until infrastructure is available to provide services for that development. On the other hand the method has been misused to move density allocations from purchased conservation lands that should have been extinguished or at the least credited to the conservation entity for use for future conservation funding, and instead allocated these densities to an inappropriate location among sensitive lands where infrastructure is not present, all within the same Planning Community 3.

At this time Lee County, and by extension the Estero Bay watershed does not have an urban boundary and urban land uses can and have been allocated to the four corners of the county into environmentally sensitive coastal barrier islands and interior Florida panther habitat.

An alternative would be to evaluate the natural resources, hydrologic, water quality, and habitat for the entire county and then describe legally the urban boundary as those lands separate from these critical resources. This would prevent the leap-frog "new towns, villages and hamlets" that are located at those areas of the County furthest away from

resources in the most environmentally sensitive areas. The areas outside of the urban boundary could send density into the urban areas for further increased densities but no density could be reallocated from the urban areas into the sensitive lands designation. This would shift and concentrate density to where infrastructure exists and is less costly to extend or expand. This would reduce sprawl, public tax welfare for distant land speculation, and concentrate population into a more functional quality of life that supports an economy less dependent on individual vehicle transportation.

Responsible Parties: Local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs).

Probability of implementation: Unlikely.

Level of current implementation: None.

Recommendation Q: Assist the SWFRPC Lower West Coast Watersheds Subcommittee (LWCWS) to develop improved standards for wastewater treatment, package plants treatment, septic tank use, domestic fertilizer use, stormwater treatment and the design and operation of regional water drainage systems.

Description of problem:

Southwest Florida is a region where the water quality of the bays, estuaries, rivers, lakes, wetlands, bayous and the Gulf of Mexico is critical to the region's environmental, economic, and recreational prosperity and to the health, safety and welfare of the citizens of this region. Recent increased frequency and duration of red tide blooms and increased accumulation of red drift algae on local beaches and other algae and water related problems have heightened community concerns about water quality and cultural eutrophication of surrounding waters. With the deteriorating condition of the Caloosahatchee River, and the dependent estuary, since 2000, a motion was passed on February 16, 2008 to form the Lower West Coast Watersheds Subcommittee (LWCWS). The Subcommittee's purpose is to

- Review existing plans to a 5 year horizon, and identify sequences proposed and needed to effectuate LOER.
- Identify gaps needed to be filled in order to have an effective basin water quality initiative.
- Make recommendations to member entities that would act to improve sequencing and fill gaps.
- Propose a successor coordination tool/entity to implement the emerging recommendations of the SWFFS and the TMDL plan.

While these efforts were underway, the deteriorating condition of the Lake due to the stirred sediments and the unusual wet and dry seasons was becoming apparent. The apparent nature was emphasized in the Caloosahatchee River by the unusual and continuous exceedances of the maximum flow and level established for the River and estuary. Recently, the needs of the Lake and Estuary have gotten greater attention from State Government. The announcement made in Okeechobee contained a time sequence of actions. It also contained land use, stormwater, and operational components that involve a refocused commitment from existing Land and Water managers. A great number of the details are understood to need more involvement from area local governments.

Implementation strategy: The LWCWS has developed and adopted resolutions as part of a multi-pronged effort by the Southwest Florida Regional Planning Council to reduce nutrient leaching and runoff problems by actions including, but not limited to, stormwater management, water conservation, septic systems, central sewage treatment, public education, restoration of surface and groundwater levels; and regional drainage of native habitats; and onsite wastewater treatment systems are commonly used

in various forms throughout southwest Florida; and leaching and runoff of nutrients, pharmaceuticals, personal care products and pathogen contamination from substandard, improperly located or malfunctioning onsite wastewater treatment systems can contribute to pathogen, nitrogen and phosphorus pollution of the Southwest Florida's water resources.

The LWCWS is currently working on resolutions relating to onsite wastewater treatment and disposal systems and the treatment of stormwater form developed non-agricultural areas.

Responsible Parties: Southwest Florida Regional Planning Council, local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs).

Probability of implementation: Certain.

Level of current implementation: To date the SWFRPC has adopted resolutions with regard to lawn fertilization (SWFRPCRes2007-01), large central wastewater treatment plants (SWFRPCRes2007-02), and package treatment plants (SWFRPCRes2007-05). The LWCWS is currently working on resolutions relating to onsite wastewater treatment and disposal systems and the treatment of stormwater form developed non-agricultural areas.

Recommendation R: Examine the Harper Method for Surface Stormwater Treatment and identify errors and problems. This includes calibration to natural water quality conditions, the question of whether natural wetlands pollute, the run-off coefficients, and the presumption of effective treatment areas within deep lakes relative to the problems of anoxia.

Description of problem:

In August of 2003, in order to address concerns about whether incremental permit reviews under Section 404 of the Clean Water Act were adequately addressing cumulative and secondary effects of wetland fills in the rapidly growing southwest Florida area, the U.S. Army Corps of Engineers (Corps) released the *Final Environmental Impact Statement on Improving the Regulatory Process in Southwest Florida, Lee and Collier Counties, Florida* (EIS). The EIS predicted continued water quality degradation with the "no action" alternative and recommended the use of specific permit review criteria to reduce habitat fragmentation and provide greater predictability for the applicant. For water quality protection, the EIS recommended that applicants show that post-project pollutant loadings will not exceed pre-project loadings. In order to make this determination, an interim method was agreed to by the federal and state wetland regulatory agencies. The selected method is described in a 2006 report by Harvey H. Harper, Ph.D., P.E. entitled, *Evaluation of Alternative Stormwater Regulations for Southwest Florida* (Harper Method). The Harper Method will need to be revised as new performance data become available.

Ongoing development in southwest Florida and addressing cumulative stormwater pollutant loads have several interrelated aspects. These include defining appropriate stormwater treatment, defining water quality permit conditions and monitoring requirements, obtaining water quality certification, and meeting water quality standards and assuring that the designated use of Florida waters is met. In addition, cumulative water quality degradation resulting from future stormwater pollutant loads could result in water body impairments, mandating development of Total Maximum Daily Loads (TMDLs). It is imperative that post-project pollutant loads are not greater than pre-project pollutant loads so that impairments and TMDLs can be avoided. The U. S. Army Corps of Engineers is currently requesting the water quality determinations described in the EIS, and the South Florida Water Management District is certifying them as part of their water quality certification under Section 401 of the Clean Water Act. The Harper Method is currently being used by SWFWMD and federal regulatory agencies as a tool to assure that post-project pollutant loadings do not exceed pre-project loadings for projects that involve filling over 5 acres of wetlands. Criticisms have been raised regarding the method, its assumptions, and its use.

This voluntary change in guidelines was supported by WERC and is an effort to bring clarity and quantification to the permitting process. The EBABM supported those goals, as achieved by a scientifically accurate, externally reviewed process, and WERC's efforts to bring a public/private partnership to bear on this issue. EBABM was supportive of the current efforts you reported to initiate an independent review of this new approach. Following the presentation by Dr. Harper to the EBABM on May 12, 2003 the EBABM had several opportunities to discuss this approach, and a number of ABM members responded to the request for feedback. EBABM received both the August 2003 revised approach and the most recent revision (2006).

Much of the EBABM current concerns are the result of the paucity of data relevant to Southwest Florida ecosystems, and the generalizations that occur for this type of approach. EBABM concerns are summarized below, but should be viewed as opportunities for additional research and revision of this approach.

The 1 inch design criteria is regularly exceeded in southwest Florida.

> According to Figure 3-4 of the Report, southwest Florida as designated by the Ft Myers gage, receives rainfall amounts over 1 inch per event almost 15% of the time. Thus, design criteria standards should exceed the 1 inch criteria in this region. It is difficult to determine if this is the case in the report's proposed criteria.

Inconsistent treatment efficiencies utilized in calculations.

> The mean treatment efficiencies for wet detention systems listed in Table 5-2 based upon previous work does not match either the report text or Table 5-5. For example, the mean removal efficiency for TSS in Table 5-2 is listed as 77%, while in the text and in Table 5-5, it is listed as 85%. Since the latter number is then used throughout the report as the TSS removal efficiency for wet detention systems, this discrepancy needs to be explained. Similar issues arise for other variables discussed.

The Harper Method identifies and treats wetlands as a source of pollution

> The efforts to pull together all available data to aid in determining loading factors tends to disproportionately represent impacted waters, and some of these data are nonrandom, synoptic samples, rather than inflow and outflow samples. A more systematic survey of current ecosystems is needed. The EBABM identified and made available additional water quality data that reflected natural water quality conditions in southwest Florida. These have not been utilized
>
> Throughout Section 4 of the 2006 report, land use pollutant loading values were calculated as the arithmetic mean of a compilation of corresponding land use loading data. The exception to this is in Section 4.1.12 Wetlands where the wetland land use is purported to be so complex, no value could be assigned. Instead there is a recommendation that local "wetland characterization data" be

required. This approach is inconsistent with the method applied to the other categories with equally variable data and complexity for which a mean was used, and is inferior in creating an accurate regulatory standard.

Though not creating a mean standard for wetlands and instead using local data may sound reasonable, it allows for egregious misuse and inaccurate characterization of scientific data. This application allows for subjectivity and biased sampling in taking samples from extremely degraded wetland areas (such as off roadways or downstream of agricultural areas, which do not account for and remove the amount nutrient inflow into the wetland) and extrapolating a positive "loading" value as being indicative of wetlands elsewhere. This is inaccurate and in some cases has been used to infer that natural wetlands are more polluting (i.e. have higher positive loading values) than commercial development! In essence, this creates a recipe for wetlands destruction where in a subsequent water quality analysis based on this faulty methodology and data utilization, it is essentially professed to be better for water quality to replace wetlands with development.

The science is indisputable, with innumerable studies for various wetland types (both forested and non-forested) demonstrating that though wetlands may in limited instances (such as in seasonal or storm events) export nutrients, they are nutrient reducers and nutrient converters on the whole with negative average annualized loading values. Natural and created wetlands (both forested and non-forested) have been used extensively worldwide, as they are in Everglades Restoration, for their capacity to remove nutrients because they remove more than they themselves produce. Because of this, they are universally recognized as "sinks" (nutrient removers), not sources (nutrient producers). Examples of scientific literature that support that both forested and non-forested wetlands are sinks, thus having annualized average negative loading rates, include:

McCormick, Paul V. and James A. Laing. "Effects of increased phosphorus loading on dissolved oxygen in a subtropical wetland, the Florida Everglades." *Wetlands Ecology and Management.* 11:199-216, 2003.

> "Natural wetlands typically exhibit a high capacity for nutrient removal and have been used both incidentally and intentionally for this purpose. However, this removal is associated with ecological changes (e.g. changes in species composition, increased rates of primary productivity and decomposition) that diminish the biotic integrity of these ecosystems."

Mitsch, William J. and James G. Gosselink. *Wetlands.* New York: Van Nostrand Reinhold Company; 1986.

Defines sink as "if it has a net retention of an element or a specific form of that element (e.g. organic or inorganic), that is, if the inputs are greater than the outputs." Under section entitled "Forested Swamps", it states

> "Several studies in Florida were initiated to further investigate the value of wetlands as nutrient sinks. These studies, from the Center for Wetlands at the University of Florida, included studies of purposeful disposal of

high-nutrient wastewater in cypress domes and long-term inadvertent disposal of wastewater by small communities in forested wetlands. In all of these studies, the wetlands acted as sinks for nitrogen and phosphorus (emphasis added)."

"The functioning of forested wetlands as nutrient sinks was suggested by Kitchens et al. (1975) in a preliminary winter-spring survey in a swamp forest-alluvial river swamp complex in South Carolina. These scientists found significant reduction in phosphorus as the waters passed over the swamp."

"In the cypress dome experiments, the nutrients were essentially retained in the water, the sediments and vegetation with little outflow. Bolt, Bayley, and Zoltek (1977) described nutrient uptake that occurred in a mixed hardwood swamp …They found that total phosphorus and total nitrogen in the outflow were reduced by 98% and 90%, respectively, compared with the inflow."

"The idea that many wetlands are sinks for chemicals, particularly nutrients, is illustrated in most of the ecosystem chapters (Chapters 9-15) in this book."

"The use of wetlands for municipal wastewater treatment stimulated by the studies described previously in Florida and Michigan, demonstrated the ability of natural wetlands to remove suspended sediments and nutrients, particularly nitrogen and phosphorus, from domestic wastewater. Today, these natural wetland systems have been supplanted by constructed wetlands."

"One of the largest wetlands constructed for the control of nutrients in stormwater, the Everglades Nutrient Removal (ENR) project, a 1,545-ha. Constructed marsh, removed 82 percent of phosphorus and 55 percent of total nitrogen applied to it over 3 years."

"In an agricultural watershed, this inflow will include nutrients such as nitrogen and phosphorus as well as sediments and possible pesticides. Wetlands in urban areas can have all of the chemicals plus other contaminates such as oils and salts. Wastewater, when added to wetlands, had high concentrations of nutrients and, with incomplete primary treatment, high concentrations of organ matter (BOD) and suspended solids. At one time or another, wetlands have been subjected to all of these chemicals, and they often serve as effective sinks."

Ewel, Katherine Carter and Howard T. Odum. *Cypress Swamps.* Gainesville, Florida: University Presses of Florida, 1986.

"The small losses of nitrogen and phosphorus found for the mass balances on the cypress dome system indicate that cypress domes serve as efficient nutrient traps and hence as effective natural tertiary treatment systems for wastewater."

> "The removal efficiencies (87% for nitrogen, which includes denitrification, and 92% for phosphorus) reported here are among the highest reported for any wetland receiving treated wastewater."
>
> "The swamps are the natural kidneys of the landscape, buffering the fluids of the biosphere in the same way that kidneys do in blood circulations of the body. The filtering of phosphorus and nitrogen by domes is discussed extensively in Chapters 9-11. Uptake by a floodplain forest was demonstrated by Davis (1981). Many other studies of wetland uptake of fertilizer nutrients were summarized by Davis."

Lodge, Thomas E. *The Everglades Handbook: Understanding the Ecosystem.* Boca Raton, Florida: DRD Press, 2005.

> "With its conversion into the EAA, the northern Everglades became a nutrient source instead of its historical role as a sink."

Additionally, this assertion that wetlands have a positive nutrient pollution loading rate was severely criticized and discredited in the peer reviewer of the previous Harper report (2003), the "External Peer Review of "Evaluation of Alternative Stormwater Regulations for Southwest Florida" (The 'Harper Method') prepared for the USEPA by Versar in April 2005. Among the reviewer's comments:

> "I am perplexed as to how the data in Table 5 (wetlands) and Table 6 (lakes/open water) can be used to represent land use data. I presume that these data represent samples taken within these systems and are not outflow data. *Wetlands and lakes/open water are normally considered to be part of the subset of wet weather controls that can have a significant positive impact on water quality* (emphasis added). Residence times in these systems range from a few weeks to many months. For wetlands, Kadlec and Knight (1996) present a thorough overview of the expected performance of wetlands for water quality control. Extensive data on wetlands are available from numerous studies associated with the Everglades Restoration. Similar evaluations have been done for lakes and reservoirs for many years. From a process engineering point of view, they may be viewed as relatively large reactors that have a significant influence on flow patterns through a storage effect and pollutant concentrations through physical, chemical, and biological processes." (Reviewer Heaney)
>
> "The text states that wetland monitoring data are available from 19 separate stations, representing a variety of wetlands with various degrees of impact. However, the text goes on to indicate that these 19 wetlands will be used as estimates of pre-development wetland characteristics for loading evaluation purposes. Based on our current (limited) understanding, it would not appear appropriate to use impacted wetlands as the basis for pre-development wetland characteristics". (Reviewer Jones)

> "As mentioned earlier, wetlands and open water/lakes are usually viewed as controls, not sources." (Reviewer Heaney) [pg 54 of 84 sec.2.1] [pg3 of 84,sec.3.4]
>
> "Because of plant uptake, physical processes, and peat accretion, an isolated wetland would be expected to export less phosphorus than it receives from the atmosphere." (Reviewer Walker) [pg 74 of 84, sec. 3.5.1]

A sampling of some of the other comments that were critical of the Harper Methodology in this same Peer Review include:

> "The Method is lacking in two areas with respect to the state of knowledge that exists in stormwater management field: 1) The Method assumes that the Water Quality Capture Volume (WQCV) is fully recovered between storms, which is not always true: and the use of percent removal versus time to compute the efficiency of constituent removal in the BMPs. The result of the assumption regarding availability of detention storage is that overflow frequency is underestimated." (Reviewer Jonathan E. Jones)

Under Final Conclusion, "The Harper Methodology is based on technologies that I would question for estimating pre- and post-development average annual loads of constituents in stormwater surface runoff." (Reviewer Ben Ulbonas)

In response to whether the Harper Methodology is an appropriate method for use, Reviewer Urbonas says, "In my judgment the answer is no. This is because the runoff volumes are not being calculated accurately and "percent removals" are used instead of average annual effluent concentrations. In addition, there appear to be questionable recommendations as to the vertical separation between bottom of retention pond and high groundwater table. The approach also appears to underestimate the "retention basin" volumes and, as a result, overestimates the pollutant loads removed." Other reviewers such as Walker also state they have "concerns about some of the assumptions." Reviewer James Heaney said that "some of its assumptions appear to be unrealistic."

When asked if the Method reflected the reviewers current state of knowledge, Reviewer Jonathan Jones said that "Onsite methods for stormwater management, often referred to as "low impact development" (…etc) are not mentioned, yet they are highly desirable for water quality management."

The influence of differing wetland watersheds does not appear to be incorporated into the analysis. Table 5 includes a variety of wetland types with a diversity of surrounding habitats and land uses. Refining the understanding of the role of surrounding upland systems in both loading and treatment would result in a more powerful model.

The approach appears to not recognize the retention value of isolated wetlands. Section 3.5.1 reads, "isolated wetlands are considered to have a runoff coefficient (C Value) of 0.225." By current definition, isolated wetlands have no connection to surrounding wetlands, and therefore cannot be calculated as have a PLR. Although wetlands may have a runoff coefficient of 0.225, we believe isolated wetlands should have a coefficient of 0.

The current approach does not include Pollution Loading Efficiencies appear to Pre-Development wetlands, their loads are based on estimated nutrient concentrations in the water column. A refinement of this approach could include the PLE of existing native wetlands to better estimate pre-development loads.

Pre-development is considered current land use grandfathering existing nutrient loading. "Pre versus Post" versus current 80-95% pollution removal standard

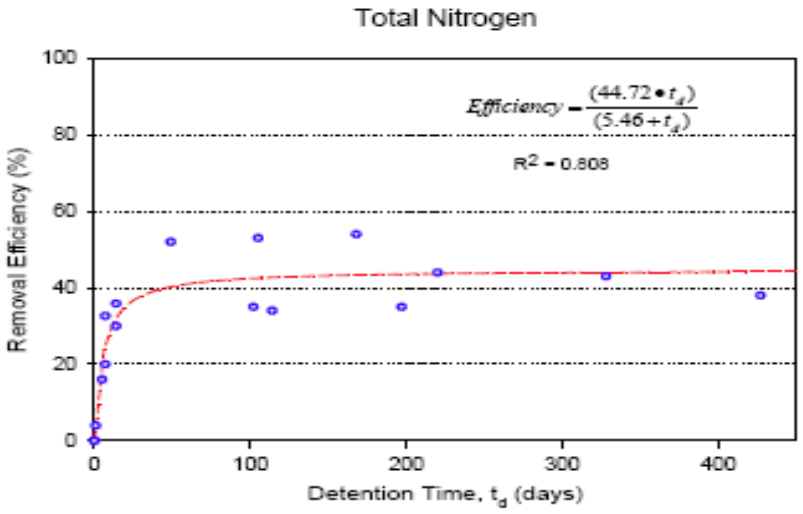
The Harper Report in 2003 and still in 2006 has the pre-development as current land use, This has been the basis of opposition by environmental scientists to his methodology for the past five years . It is the wrong benchmark. The legal requirement only involves post-development and the applicant *reducing their post-development loads by 80%*. The 2006 Harper Report still characterizes wetlands as a positive loading "sources" of TN and TP. This is the recipe for permitting development in wetlands from a water quality perspective. DR. Harper has been retained by DEP for assistance in the creation of a state stormwater rule and by EPA for TMDL development. This is being applied as presumptive criteria for gaining water quality certification from the SFWMD in its ERP permitting of new development. The method has been utilized by development proposals to justify the filling of wetlands to improve water quality.

In Section 6 of the report, there is an assertion that to move from the current 80-95% pollutant removal standard to a "pre versus post-development" water quality standards (as is done for pre versus post-development water quantity) would "achieve a condition of no net increase in pollutant loadings", inferring that a more stringent water quality standard would be the result. In fact, "pre v. post" has produced the opposite effect, with the majority of existing cases reviewed resulting in a removal rate far less than 80-95%. The benchmark for new development is not, and should not be, that they can pollute as much as the land use before them, thereby benefiting from a policy that essentially vests pollution rights. In many cases, the previous land uses had little to no runoff retention and treatment, best management practices were not implemented, and the previous land uses were extremely polluting. If development is only measured so as to not worsen water quality, it will fall below the existing legal standard and result in decreased water quality for the watershed. This methodology and even the draft version of this report is being applied as "pre-development" meaning *current* land uses. Even if pre-development is "natural" land uses such as wetlands, with these faulty inflated loading values for natural land uses, less treatment is required as a result of this approach.

Reliance in using wet detention systems in achieving 80-95% pollutant removal efficiency

In Section 6.1of the "Evaluation of Current Stormwater Design Criteria in Florida" report, it states that “removal of 80% of pollutant mass is achieved by retention of 80% of the annual runoff volume”; however, there are certain major pollutants such as nitrogen which will never reach 80% removal in retention/detention systems, regardless of retention duration. Additionally, it states that “If 80% removal is necessary for total nitrogen…” (which we would emphatically advocate that it is), “…wet detention ponds must be used as part of a treatment train approach to achieve target removal efficiency for both nitrogen and phosphorus.” Later in the document, a treatment train approach in this document is described as a series of wet detention ponds. However, another expert in the field, Dr. Marty Wanielista, in his “An Evaluation of Southwest Florida Basin Rule BMP Efficiencies” Report published August 31, 2006 states that “Since the detention ponds do not achieve 80% mass reduction in and of themselves, *additional BMPs in a treatment train are necessary* to achieve higher removals.” (emphasis added) This is also represented in the exhibit excerpted from the Wanielista report below:

Figure 93: Removal efficiency of Total Nitrogen as a Function of Detention Time in Stormwater Ponds



Excessive nitrogen is one of the primary pollutant conditions that is plaguing Southwest Florida’s waterbodies and causing impairment (i.e. causing them to not meet state water quality standards). To not address and require 80-95% nitrogen removal is to miss the major factor responsible for water quality degradation in Southwest Florida and allow inadequate treatment of it to continue. Retention and detention systems alone cannot adequately reach the 80-95% pollutant removal

legal requirement due to the fact that they are designed to settle out suspended solids, and not to filter out the dissolved phosphorus and nitrogen. To perpetuate wet detention ponds as adequate stormwater treatment in of themselves, and string several together and refer to them as a "treatment train", as witnessed in the implementation of the Harper methodology, will not adequately remove dissolved nutrients and undermines implementing proper stormwater treatment (which incorporates low impact development design and non-structural and structural stormwater best management practices in combination with retention/detention systems - a true treatment train approach).

Retention/Detention pond depths

In Section 6.1.2, the idea that the development of an anoxic zone (an aquatic zone without dissolved oxygen), is entirely dependent on the anticipated algal productivity of the lake is proposed. It goes on to say that there should be no depth limitations or restrictions as to lake depth, as long as the distance between the inlet and outlet is maximized. This is not supported by numerous scientific studies in Florida that show that small deep lakes routinely become anoxic at depth of 10-16 feet (3-5 meters) due thermal stratification from the lack of adequate vertical mixing. The anoxic water below the level at which this stratification is occurring may in fact be contributing to low dissolved oxygen, a pollutant condition.

Examples of literature supporting this include:

For a Florida small deep lake named Johnson Pond, a study indicated that "Dissolved color and algal turbidity limit light and heat penetrations, causing steep gradients in temperature, oxygen, dissolved inorganic C, and remobilized sedimentary P during stratification from March through November. Water below 5 m is cool and anoxic throughout the year." (Whitmore, T.J., et. al.1991).

Another study of Lake Jasmine in Lee County, FL (1.2 ha. with a 3m depth) monitored phosphorus, nitrogen, turbidity, conductivity, temperature, dissolved oxygen, chlorophyll a, etc. noted that "the mean dissolved oxygen concentration dropped sharply in May 1981 and May 1982, the month when summer stratification occurred."

In a study that analyzed the impacts of weather and wind, lake shape, lake turbidity and other factors that may influence stratification, it concluded that ratio of surface area to mean depth (R) "proved to be superior to mean depth as a predictor of stratification." (Demers and Kalff 1993)

In a study of 55 shallow lakes, the results indicated that "The relative importance of lake size, chlorophyll a, and color in explaining variation in percent oxygen saturation was examined using multiple regression. Percent oxygen saturation was negatively correlated with color during the winter, spring, and summer, and positively correlated with lake size in the winter and spring. However, percent

oxygen saturation showed no relationship with chlorophyll a during any season." (emphasis added) (Crisman et. al. 1998).

The idea that stratification and resulting anoxia are primarily dependent upon chlorophyll-a levels and are not directly correlated with lake depth, as proposed in this report, is not scientifically supported and from a practicality standpoint, could not be predicted with any accuracy anyhow. In fact, a local limnological expert from Lee County has been conducting ongoing studies which indicate that the primary factor that affects thermal stratification, the type of stratification we most often experience in Southwest Florida, is fetch (the ability to have enough wind and surface area for adequate vertical mixing), which is directly correlated to the ratio of surface area to mean depth (*R*, as indicated in the scientific study reference above) . The method for determining anoxia proposed in the "Evaluation of Current Stormwater Design Criteria in Florida" report does not reflect this.

Natural wetlands utilized for stormwater treatment

One disturbing trend in local development projects attaining their state water quality certification, is that the South Florida Water Management District is allowing Waters of the State jurisdictional wetlands be used for private development to meet their minimum stormwater pollution treatment requirement. Traditionally, wetlands were allowed only to be used as "polishing", meaning for water quality treatment above and beyond that required. According to SFWMD guidelines however, wetlands are allowed to be incorporated into stormwater treatment systems to meet the minimum requirement *only if* the hydroperiod, ecological function, and other aspect of the wetlands are not adversely impacted.

However, in recent permitting in the Cocohatchee watershed, wetlands that are short hydroperiod hydric slash pine flatwoods are permitted to be utilized for ½ inch (1/3 of entire retention and treatment volume required) of polluted stormwater discharge in order to reach the required treatment. This amount of stormwater lengthens the natural hydroperiod and will degrade the existing short-hydroperiod wetlands, as well as reducing their habitat value to wood storks (which depend upon short hydroperiod wetlands to generate their prey base.) These same wetlands were at the same time determined to be more polluting than commercial development for the project's pre versus post analysis, yet were credited as providing a third of the project's required stormwater treatment in the post-development scenario. This would be impossible if they are already so degraded that they are past their assimilative capacity, and nutrients were passing through them unabsorbed in their predevelopment state. Additionally, these same wetlands that were used as part of the stormwater management system, were also counted as wetland and wood stork mitigation - though they certainly were not preserved and enhanced as short-hydroperiod hydric pine flatwoods and as wood stork habitat. This illustrates just how far awry the Harper methods is from assuring that development provides sufficient treatment for its generated pollution, as well as in protecting and preserving wetlands.

Implementation strategy:

A comprehensive peer review of this *"Evaluation of Current Stormwater Design Criteria in Florida"* has been conducted, and the reviewer's comments (both applicable previous, as well as current ones) are critical and need to be addressed, and the methodology changed before this report is considered finalized and utilized in the development of the statewide stormwater regulation.

Accurate scientific data (which accounts for and removes inflow loads) needs to be used to create a valid mean wetlands land use negative loading rate, or that wetlands at least be counted as a zero, as they are physically and legally under the Clean Water Act, incapable of creating "runoff" to begin with (they instead receive or convey runoff generated from upland land uses). Not only would this resolve one of the most fundamentally flawed aspects of this report, but it would assign appropriate water quality credit for the preservation of wetlands - as well as disincentivize the destruction of them. Therefore, the Department of Environmental Protection (DEP) needs to assess utilizing a similar approach to implementing and upholding the current legal standards as the proposed SFWMD Southwest Florida Basin and Lake Okeechobee and Estuary Watershed rules throughout Florida. Conversely, DEP should *not* use a "Pre versus Post" approach for water quality that considers existing land uses as Pre, which was developed for, and is more appropriate for dealing with water quantity and volume. Instead the methodology in this report should consider "pre-development" as natural environmental conditions (i.e., native uplands and wetlands) and should calculate pollutant loadings for such.

The legal standard of 80-95% removal of project-generated pollution should remain intact and enforced. The benchmark should be how a project can adequately prevent and treat its own pollution within its water management and treatment systems. Previous unacceptably high pollutant loading rates should not be allowed to be perpetuated in the permitting of brand new development - where there is the legal right, technology and knowledge to do better. Criteria that require 80-95% pollutant removal for pollutants, including 80-95% removal of nitrogen and phosphorus must be developed. A treatment train should be defined in the state-wide stormwater regulation as using a variety of non-structural and structural stormwater best management practices in combination with the retention and treatment of an inch and a half of the first flush of runoff in retention/detention systems.

The Southwest Florida Stormwater Best Management Practices Manual in support of the proposed Southwest Florida Water Management District SW FL Basin and Lake Okeechobee and Estuary Watershed Rules embodies an approach that would incentivise prevention of runoff and pollution, provide additional retention and treatment of stormwater in traditional wet detention systems, as well as would require additional stormwater best management practices and low impact development design standards in order to ensure that 80-95% pollution is, in fact, removed.

The South Florida Water Management District (SFWMD) is already employing the "Pre versus Post" water quality approach as "additional reasonable assurance". Upon their own modeling of their current permitting criteria and the Southwest Florida Basin Rule Standard in the Caloosahatchee Basin, the SFWMD have determined that the Southwest Florida Basin Rule is more effective in preventing additional water quality degradation from new development. In fact they, in a presentation given by District personnel recommended that the Southwest Florida Basin Rule approach should be implemented in the near future.

A more rigorous approach would be to assess the approximate size of an average retention/detention pond and survey corresponding scientific literature to create a depth limitation standard that would prevent anoxia from occurring in the majority of applications. The water volume below that level should not be counted toward water treatment crediting calculations. To allow small ponds deeper than nine feet to have their entire volume included in water quality treatment calculations is falsely inflating the amount of treatment that will actually occur in most instances.

All required stormwater management and treatment should occur prior to discharging into natural wetlands, as they are receiving waterbodies and should be protected from pollution as such. Additionally, there should be adequate assessment conducted beforehand to ensure that the volume of the discharge will not adversely impact the hydroperiod, ecology, vegetative composition, or function of the wetlands in their preexisting natural state.

The implementation of the methodology recommended in the Harper Report by the State has the potential to derail superior methods of controlling pollution such as those demonstrated in the draft SFWMD Basin Rule. There are many tools to treat polluted stormwater other than dry retention and wet detention that need to be implemented to achieve nutrient and suspended matter reduction. The goal of no net increase in pollutant loadings from pre-development to post-development conditions is useful as is a "list" of methods specific to each region, such as that used in the draft SFWMD Basin Rule. There was some treatment of several other removal methods; however, this treatment was much less robust than the treatment of commonly used existing systems. The evaluation of alternatives should be greatly strengthened.

The decline in efficiency of wet detention systems is not incorporated into this report potentially allowing this type of treatment too much credit for treating pollution. As these systems age, they become less effective and are often a source of pollution in Southwest Florida. The use of treatment trains in which other removal strategies are included with wetland detention systems so that a minimum of 80% removal efficiency can be attained is essential

To summarize the following recommendations should be implemented

1. Existing peer review recommendation critics should be incorporated into a new revised method.

2. The new product should be subjected to a comprehensive independent scientific peer review be conducted including independent non-agency scientists
3. The Wetlands Land Use should be assigned an arithmetic mean value as was done for the other land use categories based on best available science of natural wetlands, or that it be assigned a zero value as wetlands do not generate runoff per se,
4. The current legal standard of 80-95% pollutant removal should remain in effect
5. The adoption of a Pre versus Post type of analysis for water quality certification that considers existing conditions as Pre should not be implemented
6. The new regulation should incorporate all appropriate and applicable aspects of the South Florida Water Management District's proposed Southwest Florida Basin and Lake Okeechobee and Estuary Watershed proposed rules
7. The new regulation should include a requirement for removing at least 80-95% of project-generated Nitrogen and Phosphorus loading,
8. The new regulation should define treatment train as using various structural and non-structural best management practices in addition to wet retention/detention
9. The wet retention/detention ponds should either be limited to depths such that stratification is ensured to not occur or at least, that below these depths that volume should not be included for water quality/stormwater treatment calculation purposes
10. Full required treatment should occur prior to discharge into natural wetlands (such that they only receive water that meets the proper Class I, II, or III water quality standards) with discharge amounts limited so as to not adversely impact the hydroperiod, ecology, vegetative composition, or function of the wetlands in their preexisting natural state.

Responsible Parties: FDEP, SFWMD, USACOE, USEPA.

Probability of implementation: Possible.

Level of current implementation: Regulatory entities are adopting the Harper Method without corrections incorporating the peer review comments.

Recommendation S: Update the Lee County Master Mitigation Plan and further implement it by incorporating it into the state and federal mitigation processes including gaining a slot in the SFWMD mitigation projects list.

Description of problem:

In the past mitigation for public projects was often a matter of unplanned, often costly, use of fastest available methods. The Lee County Master Mitigation Plan (LCMMP) provides an effective and often less costly opportunity to improve and restore habitats within the watersheds that environmental impacts occur. Unfortunately many public applicants for federal, state and even local agencies are not utilizing it to the best extent and are instead sending mitigation out-of-watershed at higher costs to the public. The LCMMP needs regular updating and more participation.

Implementation strategy:

The Lee County Master Mitigation Plan was developed through a coordinated effort of the Estero Bay Agency On Bay Management, the Charlotte Harbor National Estuary Program, the Southwest Florida Regional Planning Council, and Lee County. Copies of the Plan were distributed for multiple agency review and input. The purpose of the Plan is to provide a master strategy to foster the continued growth of Lee County and the infrastructure such growth will require while restoring degraded natural resources important for the health, safety and welfare of the public and preserving critical environmental resources, thereby assuring a reliable and effective planning/budgeting process.

Several GIS maps were created for the Plan. The maps identify the CIP projects that may require mitigation, the CIP projects aimed at environmental restoration and protection and the potential sites that have been identified for future protection/restoration efforts within Lee County. Overlays on these maps allow analysis of hydrologic issues, wildlife habitats, and water quality considerations. All maps related to this project will ultimately find a home on the web site of either Lee County or the Southwest Florida Regional Planning Council so that they can be used by all stakeholders for analysis and planning.

Members of the Interagency Task Team reviewed the documents and provided further information, comments and suggestions. Development of the project was managed by the Lee County Director of Smart Growth Wayne Daltry (wdaltry@leegov.com, 335-4820), and the author of this study.

The following is the adopted agenda item utilized in initiating the Lee County Master Mitigation Plan:

MASTER PLANNING FOR THE ENVIRONMENT.

The condition of our natural systems is critical for our own sense of community, as well as the greatest contribution to our economic success. Lee County recognizes that the natural system needs to have its own planning program, interrelated to all of the other capital improvement programs and growth plans. Given the high buildout numbers, it is critical for communities to recognize the resource base needed to support the population. It is also critical to protect the natural resources, or remedy the problems for those resources in order to maintain our tourism and retirement economy. Recognizing the importance of managing towards the sustainability of our resources, Lee County commissioned the preparation of the Lee Master Mitigation Plan (August 2004). The Plan is based upon a county wide assessment of the remaining natural resources of the County and identified those which should have the highest priority for preservation, for remediation of current problems, and as most suitable for mitigation for the unavoidable consequences of the County public works program. The Plan was developed under contract through the Southwest Florida Regional Planning Council, and was assisted by the Charlotte Harbor National Estuary Program, and a variety of Federal, State, and local agencies, and private persons from both the development and environmental sectors.

The adopted Lee County local government policies are:

Policy 2.11.2: Prepare a general assessment (barometer of variables) that links the goal of (and) capacity of development (built environment) to environment (natural or green space).
Policy 2.11.3: Set science based goals to assess what is necessary to maintain desired environmental factors (i.e. panthers extant, Estero Bay health, etc.).
Policy 2.11.4: Identify and map and update, through a science based process, those lands with the environmental science based opportunities for mitigation, remediation, or preservation. Promote such areas for such uses through County programs.
Policy 4.1.5: Promote optimal conditions rather than minimum conditions for the natural system as the basis for sound planning.
Objective 4.3: Pursue a common set of local permitting criteria, incentives, and regulatory measures specifically for Southwest Florida conditions.
Policy 4.3.1: The permitting measures developed should aim towards rehydrating the region and attaining minimum flows and levels for county waterbodies.
Policy 40.5.4: Improve the storage within existing natural and manmade flowways.
Policy 40.5.5: Develop a capital improvements program to provide for the reconstruction and maintenance of all programmed flowways and include incentives for private participation.
Policy 40.5.6: The master flowways plan should be identified on a map and ground-truthed. It should incorporate opportunities for canal restoration and the creation of urban greenways that need restoration, preservation, and maintenance.
Policy 41.1.6: Pursue funding a "mixing model" (freshwater flow into saltwater) as a management tool that will benefit recreation, water quality, public health, etc.
Policy 41.3.15: To ensure most effective treatment, the County will reevaluate the relationship of volume/area to stormwater management and storage, and promote permit agencies to do the same.
Policy 41.3.16: To improve water quality in more impacted areas, the County will link Best Management Practices (BMPs) to impervious cover of the impacted sub-watershed and to runoff from various land use types.
Policy 77.1.2: To increase protection of natural resources, the County will create a public/private management team to coordinate area wide conservation easements.
Policy 77.1.4: The County will build upon the Conservation 20/20 program for funding a green infrastructure and natural functions program, which will be within the County CIP program**.**
Policy77.1.7: Create a formalized regional land management restoration collaboration to plan and pool resources and equipment.
Objective 77.13: Environmental Monitoring. Ensure criteria for local programmatic monitoring and enforcement are specific to Southwest Florida.

Responsible Parties: Lee County, Regulatory Agencies (SFWMD, FDEP, USACOE, FWC, USFWS)

Probability of implementation: High

Level of current implementation: The Lee County Master Mitigation Plan was adopted by the Lee County Commission in a vote of 5-0 on April 11, 2007. To date five public infrastructure projects have employed the plan for mitigation restoring wetlands and upland habitats in the Six-Mile Cypress, Hendry Creek and Estero River watersheds.

Recommendation T: Application of existing basis of review water quality standards have not prevented the water quality degradation experienced and will not prevent future declines in water quality. The existing basis of review standards should be examined for gaps, errors, and presumptions. Subsequently a new regional basis of review should be developed for the Estero Bay Watershed for a higher level of treatment of nutrients and turbidity.

Description of problem:

Southwest Florida is one of the fastest growing coastal areas in the United States. Extensive areas including wetlands are rapidly being developed into residential and commercial sites. Stormwater management and potential water quality degradation are inherent issues. Florida rules require permits for new stormwater discharges, under which performance standards and water quality standards are presumed to be met wherever best management practice design criteria are implemented. The required performance is 80 % removal of the average annual pollutant load for fishable/swimmable waters and 95% removal of the average annual pollutant load for potable, shellfish and Outstanding Florida Waters. Unfortunately, data that would confirm that the commonly used stormwater system designs meet these Florida performance standards do not exist.

Implementation strategy:

In coordination with many pubic and private partners in the environmental community in southwest Florida the South Florida Water Management District has proposed a rule pursuant to the following Rule Chapters: Definitions 40E-41.421; Southwest Florida Basin 40E-41.423; Implementation 40E-41.433; and Application of Part V 40E-41.443. The specific legal authority for the rule is found in 373.044, 373.113, F.S. and the laws implemented are 373.413 and 373.416, F.S.

The purpose and effect of the rule is to establish supplemental water quality criteria for Environmental Resource Permits in the Southwest Florida Basin by providing a menu approach for selecting source controls and Best Management Practices to enhance water quality.

The preliminary text of the proposed rule development is as follows:

40E-41.421 – Definitions

(1) “Best Management Practices (BMPs)” means structural and non-structural facilities or practices intended to reduce pollution either through source control or treatment of stormwater.
(2) “Primary Detention/Retention Treatment System or Component” means that portion or component of the surface water management system providing the volumetric requirements of Section 5.2.1(a) of the Basis of Review For Environmental Resource Permit Applications Within The South Florida Water Management District.
(3) “Post Construction Pollution Prevention Plan” means a document that provides details of controls and practices to be implemented after construction is completed to reduce or eliminate the generation and accumulation of potential stormwater runoff contaminants at or near their source. The Post Construction Pollution Prevention Plan shall include plans for surface water management system operation and maintenance, nutrient and pesticide management, solid waste management, and/or animal/livestock waste storage and disposal if applicable. The Plan shall require maintenance, operation and annual inspection of the surface water management system.
Specific Authority: 373.044, 373.113, F.S.
Law Implemented: 373.413, 373.416, F.S.
New _____

40E-41.423 - Southwest Florida Basin
The Southwest Florida Basin boundary is shown in Figure V-1.

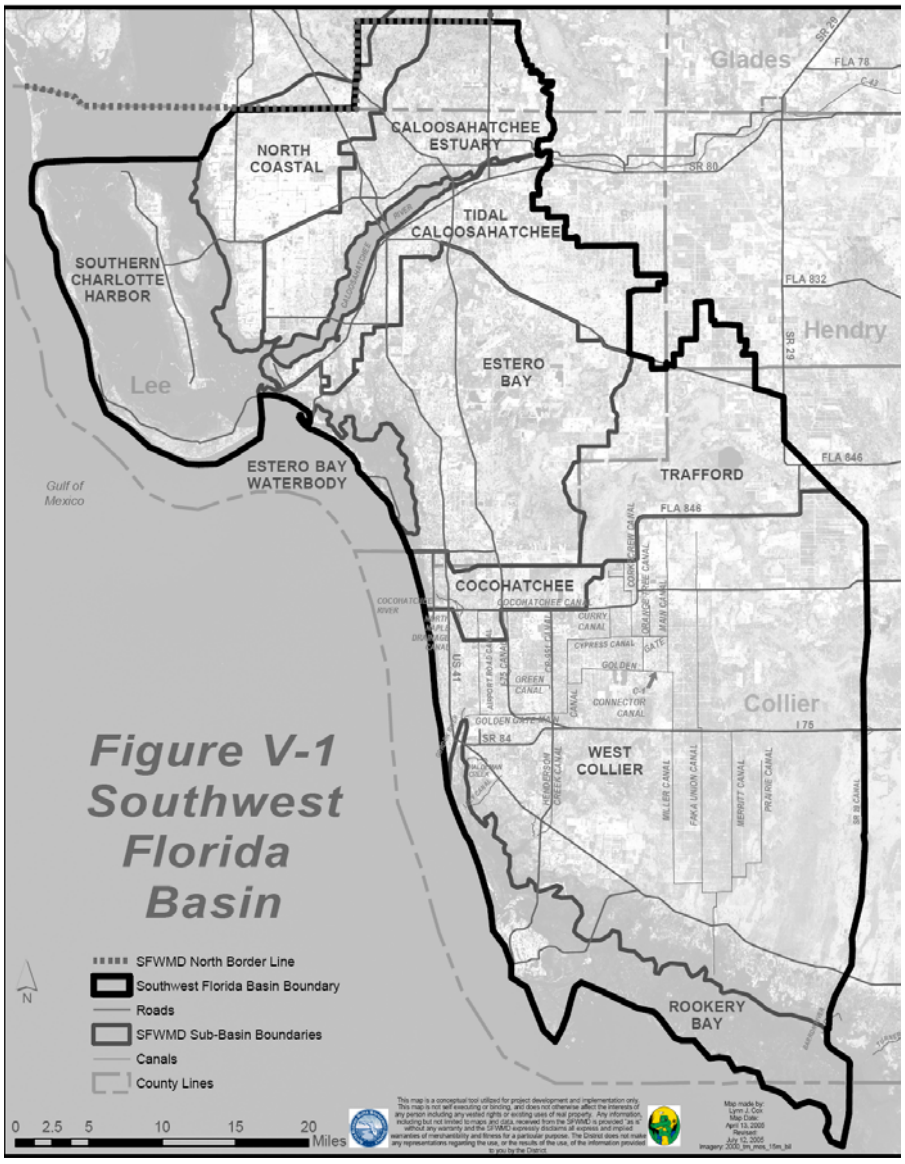


Figure 94: Southwest Florida Basin as Defined in 40E-41.423 FAC.

Specific Authority: 373.044, 373.113, F.S.
Law Implemented: 373.413, 373.416, F.S.
New _____

40E-41.433 – Implementation
(1) The rules contained in this part will be applied to all projects within the Southwest Florida Basin which do not have complete applications, as evidenced by a letter of completeness under Rule 40E-1.603(1)(a) F.A.C., on the effective date of the rule. An application which is submitted and complete prior to the effective date of this rule shall

be reviewed under the rules in existence prior to the effective date of this rule unless the applicant elects to have such activities reviewed under this rule.

(2) Activities approved in a conceptual, general, or individual permit which were permitted prior to the effective date of this rule, or exempt from regulation, shall be exempt from this rule. This exemption shall be for the plans, terms, and conditions approved in the permit and shall be valid for the term of such permit. This exemption shall also apply to any modification of the plans, terms and conditions of the permit, including new activities which are consistent with a conceptual approval. However, this exemption shall not apply to a modification that would extend the permitted time limit for construction beyond 2 additional years or to any modification which is reasonably expected to lead to substantially different water resource impacts, unless that modification would lessen the impact to water resources.
Specific Authority: 373.044, 373.113, F.S.
Law Implemented: 373.413, 373.416, F.S.
New

40E-41.443 - Application of Part V
All projects located within the Southwest Florida Basin which require permits pursuant to Rule 40E-4.041, F.A.C. shall be constructed, altered, operated, maintained and abandoned in accordance with the criteria specified in Rules 40E-4.301, 40E-4.302, and 40E-40.302, F.A.C., as applicable, (Environmental Resource Permits Conditions for Issuance) and Rule 40E-41.463, F.A.C. (Conditions for Issuance of Environmental Resource Permits in the Southwest Florida Basin).
Specific Authority: 373.044, 373.113, F.S.
Law Implemented: 373.413, 373.416, F.S.
New

40E-41.463 - Conditions for Issuance of Environmental Resource Permits in the Southwest Florida Basin
(1) A Post Construction Pollution Prevention Plan shall be submitted as part of the permit application. If a property owners' association or other entity will be formed that is responsible for operating and maintaining the surface water management system, the Post Construction Pollution Prevention Plan shall be incorporated into the entities' Articles of Incorporation, Declaration of Protective Covenants or Deed Restrictions.
(2) Records of maintenance, operation and inspection required pursuant to the Post Construction Pollution Prevention Plan shall be kept by the permittee and shall be made available for inspection and copying to the District staff upon request to determine compliance with the Post Construction Pollution Prevention Plan and District rules.
(3) The criteria below shall apply to all projects within the Southwest Florida Basin that are forty (40) acres or more in size or propose impacts to five (5) acres or more of wetlands; except that the criteria below shall not apply to agricultural, public roadway or airport projects.
(a) An additional fifty (50) percent retention/detention water quality treatment is required over that required in Section 5.2.1(a) of the Basis of Review for Environmental Resource Permits within the South Florida Water Management District.

(b) Dry detention water quality treatment systems shall not be used as the primary detention/retention component of the water management system. Dry detention

water quality treatment components shall only be incorporated as pretreatment components upstream of the primary detention/retention components of a surface water management system.
(c) Wet detention areas shall provide an average hydraulic residence time of at least fourteen (14) days during the wet season (June – October). The maximum detention area depth allowed in calculations to demonstrate compliance with the average hydraulic residence time is twelve (12) feet from the control elevation. The actual depth may be greater than twelve (12) feet to a maximum of twenty (20) feet if it can be demonstrated that the additional depth will not cause water quality degradation of the water discharging from the wet detention area.
(d) Wet detention areas shall include planted littoral zones covering a minimum of XXXX (XX) percent of the wet detention areas measured at the control elevation. The depth of the littoral zone must be from one (1) foot above to three (3) feet below the control water elevation and have a slope no steeper than 4:1 (horizontal: vertical). The littoral zone must be planted at a minimum density of two (2) feet on-centers. Location of the plantings, species to be planted and a maintenance plan shall be submitted as part of the application.
(e) The site and the surface water management system design shall include: a minimum of two (2) BMPs from Group A of Table V-1; and a minimum of two (2) BMPs from Group B of Table V-1; and a minimum of one (1) BMP from Group C of Table V-1. The District will consider alternative BMPs which are not listed in Table V-1, provided that the application includes: descriptions and construction plans for the proposed BMPs; information demonstrating the effectiveness of the proposed BMPs; calculations that demonstrate that no impacts to flood protection will occur; and operation and maintenance plans for the proposed BMPs.
(f) If the activities proposed will produce livestock or equestrian waste, the Post Construction Pollution Prevention Plan must provide for the management, storage and disposal of such wastes primarily through the use of waste containment which retains solids and liquids and transports excess waste off-site. Restrictions on the type and number of animals allowed may also be included in the Post Construction Pollution Prevention Plan.
Specific Authority: 373.044, 373.113, F.S.
Law Implemented: 373.413, 373.416, F.S.
New

TABLE V-1 Southwest Florida Basin Best Management Practices (BMPs)

BMP	Description
Group A – Site Design Source Controls and BMPs	
1. Reduced Turf Coverage	For projects with less than seventy-five percent (75%) impervious area within the project area, less wet detention areas or wetland and upland conservation areas established in a conservation easement, the following BMPs may be utilized: a. Projects with turf coverage of less than or equal to fifty percent (50%) of the pervious area of the developed portion of the project (excluding wetland and upland conservation areas) shall receive credit for one (1) BMP.
	b. Projects with turf coverage of less than or equal to a total of thirty percent (30%) of the pervious area of the developed portion of the project (excluding wetland and upland conservation areas) shall receive credit for two (2) BMPs.
2. Native Landscape Plantings	a. Projects with non-turf plantings consisting of at least fifty percent (50%) native species, of which fifty percent (50%) must be drought tolerant, shall receive credit for one (1) BMP. Native species are defined in Nelson, Gil. *Florida's Best Native Landscape Plants: 200 Readily Available Species for Homeowners and Professionals*, University Press of Florida, 2003
	b. Projects with non-turf plantings consisting of at least seventy-five percent (75%) native species, of which seventy-five percent (75%) must be drought tolerant, shall receive credit for two (2) BMPs.

BMP Description	
3. Stormwater Recycling	Projects which incorporate systems for storing stormwater runoff to be used for irrigation or other reuse shall receive credit for one (1) BMP. Reuse systems must be designed with surface water management systems that ensure no impacts to flood protection or water quality treatment. An operating entity meeting the requirements of Section 9.1, Basis of Review for Environmental Resource Permits within the South Florida Water Management District dated _____, must be designated.
4. Rooftop Runoff	Building rooftop runoff which will be managed using one or more of the following shall receive credit for one (1) BMP: a. Bioretention: building and home rooftop runoff must be discharged onto shallow landscaped depressions designed to capture the first 0.5 inches of roof runoff, which are planted with native vegetation, and backfilled with soil-rock aggregate (bioretention cell). An analysis is required of the pervious area's ability to infiltrate roof runoff and accept roof runoff from the design storm event without erosive impacts. b. Vegetated Roof Cover (for non-residential buildings): for engineered roofing systems that allow for the propagation of rooftop vegetation while protecting the integrity of the underlying roof, the minimum coverage of the roof area must be sixty percent (60%). A maintenance and monitoring plan shall also be submitted.
5. Cisterns	Building and home rooftops which direct fifty percent (50%) of their runoff into cisterns for storage and reuse shall receive credit for one (1) BMP.

BMP Description	
6. Pervious Pavement	Projects which incorporate and maintain pervious or porous material on parking lots, driveways, or other applicable areas shall receive credit for one (1) BMP. The projects must include a minimum of thirty percent (30%) of non-roadway vehicle impervious area. Details of pervious pavement area foundation design, construction methods and a post construction maintenance plan shall be submitted with the permit application.
7. Detention/Retention Pond Side Slope Buffers	Projects which incorporate planted non-turf side slopes leading to stormwater detention/retention ponds located above normal water control elevation designed to prevent direct runoff from turf landscapes into ponds shall receive credit for one (1) BMP. A minimum coverage of fifty percent (50%) of the pond perimeter is required. Plans must demonstrate the area will not cause erosion impacts, will be properly maintained, and will maintain access for maintenance. Average five (5) foot wide strips planted on a minimum of two (2) foot centers with wetland and/or transitional plant species are required.
Group B – Stormwater Conveyance and Pretreatment BMPs	
1. Filter Strips / Vegetated Stormwater Inlets, or Vegetated Swales	a. Projects which contain vegetated buffers with less than five percent (5%) slope located between impervious areas and stormwater inlets shall receive credit for one (1) BMP. There must be a minimum of twenty (20) feet between impervious areas and inlets. The buffer area must be designed to minimize concentrating flows by spreading the flow over an area of at least five (5) feet wide. A minimum of thirty-five percent (35%) of the proposed project drainage area must be designed to discharge through the vegetated buffers. Areas that do not discharge through vegetated buffers must not be areas of high potential pollutant discharges, unless they have an alternate pretreatment BMP. For the purposes of this table, areas of high potential pollutant discharges are defined as areas where potential pollutants are stored or transferred and include maintenance areas, trash bin areas, fueling areas, and loading docks.

BMP Description	
b. Projects where a total of seventy percent (70%) of the proposed project drainage area is designed to discharge through the vegetated buffers described above shall receive credit for two (2) BMPs.	
2. Vegetated (Grassed) Swales	Projects which utilize vegetated or grassed swales to receive stormwater runoff from roadways and parking lots, as opposed to curbs, gutters, or culverts, to convey stormwater shall receive credit for one (1) BMP. A minimum of thirty-five percent (35%) of the proposed project drainage area must be designed to discharge through these swales. Areas that do not discharge through these vegetated buffers must not be areas of high potential pollutant discharges, unless they have an alternate pretreatment BMP.
3. Sediment Trap Structures	a. Projects which incorporate the installation of baffle boxes, or equivalent proprietary designs, upstream of the primary detention/retention system, shall receive credit for one (1) BMP. Long-term operation plans must include mandatory manual or vacuum cleanout of accumulated sediments. An operating entity meeting the requirements of Section 9.1, Basis of Review for Environmental Resource Permits within the South Florida Water Management District dated _____, must be designated and a maintenance schedule must be established. A minimum of thirty-five percent (35%) of the proposed project drainage area must be designed to discharge through these facilities. Areas that do not discharge through these facilities must not be areas of high potential pollutant discharges, unless they have an alternate pretreatment BMP.
	b. Projects where a total of seventy percent (70%) of the proposed project drainage area is designed to discharge through the above described baffle boxes or equivalent proprietary designs shall receive two (2) BMP credits.

BMP Description	
4. Dry Detention / Retention Pre-Treatment	a. Projects with dry detention/retention pre-treatment areas constructed upstream of primary detention/retention systems shall receive credit for one (1) BMP. A minimum additional one-half (½) inch detention/retention volume is required in addition to the detention/retention volume required in the primary detention/retention system. These areas are not subject to the twenty-five percent (25%) and fifty percent (50%) volume credits provided in Section 5.2.1 of the Basis of Review for Environmental Resource Applications within the South Florida Water Management District. A minimum of thirty-five (35%) of the proposed project drainage area must be designed to discharge through the dry detention/retention pretreatment areas. Portions of the project that do not discharge through dry detention/retention pretreatment areas must not be areas of high potential pollutant discharges, unless they have an alternate pretreatment BMP.
	b. Projects where seventy percent (70%) of the proposed project drainage area is designed to discharge through the dry detention/retention pretreatment areas described above shall receive two (2) BMPs.
Group C – Stormwater Management System Design Enhancement BMPs	
1. Extended Hydraulic Residence Time	Surface water management systems which provide for an extended average Hydraulic Residence Time of at least 21 days during the wet season (June – October) shall receive credit for one (1) BMP. The maximum detention area depth allowed in calculations to demonstrate compliance with the average hydraulic residence time is twelve (12) feet from the control elevation. The actual depth may be greater than twelve (12) feet to a maximum of twenty (20) feet if it can be demonstrated that the additional depth will not cause water quality degradation of the water discharging from the wet detention area.

BMP Description	
2. Wetlands	Projects which utilize on-site created wetlands in a treatment train as a polishing cell after primary treatment shall receive credit for one (1) BMP. Created wetland mitigation areas are acceptable if primary treatment is provided prior to discharge into the mitigation area. Discharges into wetlands must not adversely impact the wetlands. Potential impacts include, but are not limited to, alteration of hydroperiod, erosion, recruitment of exotic species, or other water quality impacts.
3. Littoral Berms / Settling Basins / Phyto-Zones within Detention Areas	Projects with constructed basins within detention areas (lakes) below the control elevation that provide an area for discharges into the lake to disperse, allowing pollutants to settle out of the water column prior to overflowing an earthen or rock berm, into the remainder of the detention area shall receive credit for one (1) BMP. The earthen or rock berm must be located at or below the control elevation. A minimum of seventy percent (70%) of the proposed project drainage area must be designed to discharge through these facilities. Areas that do not discharge through these facilities must not be areas of high potential pollutant discharges, unless there is an alternate pretreatment BMP.
4. Planted Filter Marsh	Projects designed with a planted wetland marsh just upstream of project outfall structure shall receive credit for one (1) BMP. These areas shall be designed as shallow areas with a minimum size of ten percent (10%) of the total lake area measured at the control elevation constructed within the lake and planted with wetland vegetation such that all stormwater must flow through the marsh area prior to discharging through the project outfall structure. A sump area between the marsh area and outfall structure is also required. Detailed plans of the marsh area are required that include marsh area location, dimensions, elevations, species to be planted and a maintenance plan.

BMP Description	
5. Increased Flow Path	Projects which incorporate internal levees and/or berms within the stormwater detention ponds or locate inflow and outflow structures to maximize effective treatment time by increasing the flow path distance shall receive credit for one (1) BMP. The minimum flow path distance between inflows and outflows for each pond must be twice the average width of the pond.
6. Chemical Treatment	Addition of chemicals, such as Alum, to the stormwater management system shall result in credit for one (1) BMP. Detailed plans are required on chemical injection methods, rates, mixing of chemicals and stormwater, calculations for sizing settling basin, and location of each component. Operation and maintenance plans and monitoring of the system effectiveness is also required. The operating entity shall be a government entity with resources to operate and maintain the system.

Responsible Parties: SFWMD, local governments (Lee County, City of Fort Myers, Town of Fort Myers Beach, City of Bonita Springs), The Conservancy of Southwest Florida

Probability of implementation: Possible.

Level of current implementation: Postponed.

Summary Conclusion

There are major gaps and problems in protecting the Estero Bay Watershed from degradation in hydrology, water quality, wetland and upland habitats and general quality of life. The current pace of regulatory decision-making is eliminating 1,734.65 acres of wetlands and 90% of the reviewed acres of upland habitat in the study year. At this rate the watershed will have exceeded the projected 2050 build-out scenario envisioned in the Lee County Comprehensive Plan before the year 2025. There are significant threats to existing overlays of low density such as the DR/GR and to existing preserve lands from a variety of forces including the desire for road-building materials and major transportation projects that have been permitted this year (2006-2007) and are anticipated to advance in the future. While local government has generally stood firmer than State and Federal entities for protection of the Comprehensive Plans and existing conservation areas there is significant pressure from State and Federal entities to over-ride local authorities with omnibus legislation that removes the ability to control or regulate mining, dredging in protected waters, transportation projects, utility projects and even the application of fertilizers. At the same time the local government authorities are being held responsible for increasing standards relating to water quality; the very tools they need that would provide most useful in achieving improved water quality such as Pollution Load Reduction Goals (PLRG), stricter stormwater treatment standards, local watershed-based regulation, stricter protections of coastal habitat such as mangrove, and an accurate functional assessment of wetlands based upon empirical science are being denied to those local governments.

Traditional watchdog commenting agencies have or are withdrawing from the Estero Bay Watershed. The FWC intends to no longer comment, and currently is functionally, no longer commenting, upon Developments of Regional Impact, ERP permits, Water Development Projects and Local Government Permitting. The EPA and USFWS have eliminated the southwest Florida field offices for regulatory matters and have reduced staff that was deeply involved with water quality and wildlife issues in the Estero Bay Watershed. Changes in the federal wetland definitions and the definition of what constitutes fill created by the U.S. Supreme Court, have significantly reduced the USACOE review of projects in the Estero Bay Watershed to the point that a four-mile long, five-foot deep open canal through wetlands providing habitat to federally-listed species is not even reviewed by the federal process. The 34 to 1 ratio of State to Federal wetland project regulatory reviews demonstrated the disparity of the level of federal wetland oversight.

Water Quality

The delegation of authority for the enforcement for the provisions of the Clean Water Act to the USACOE and then the delegation of that authority to the Florida Department of Environmental Regulation that subsequently delegated that authority to the South Florida Water Management District has resulted in a consistent erosion of what constitutes the necessary actions within a project design and construction in order to achieve a permit that complies with water quality standards. The current “Basis of Review” allows from 60% to 20% of water quality constituents from developed sites to leave with little to no treatment. Under these design criteria the resulting landscapes will inevitably have excessive impervious surfaces with a resultant polluted watershed.

The Southwest Florida Environmental Impact Study projected significant water quality degradation of the receiving waters and estuary if the standard operating procedures of the SFWMD Basis of Review are continued. The South Florida Water Management District itself has identified that additional actions are needed to be taken to meet legislated water quality standards. Application of existing Basis of Review water quality standards have not prevented the water quality degradation experienced and will

not prevent future declines in water quality. The existing Basis of Review standards should be examined for gaps, errors, and presumptions. Subsequently a new Regional Basis of Review should be developed for the Estero Bay Watershed for a higher level of treatment of nutrients and turbidity. Unfortunately the U. S. EPA has no regulatory authority over non-point sources, so it could not force a state agency to require that BMPs be applied by development or other nonpoint sources.

The state of Florida eliminated the ability to set Pollution Load Reduction Goals by statute and is depending upon voluntary Best Management Practices and TMDLs to resolve water quality problem in Florida. However no TMDLs have been established for N and P due to the narrative standard for these nutrients adopted by the State of Florida. To date PLRG have been the only successful documented method to reduce nutrient pollution in Florida and the setting of local watershed standards for nitrogen and phosphorus are a essential part of addressing water quality problems related to water clarity and eutrophication.

It is recognized by water quality experts in southwest Florida that the current presumptive water quality standards are not succeeding in protection of water quality in freshwater and estuaries waterbodies. It is time to return to basic federal Clean Water Act standards In their own reports and presentations, the SFWMD has proposed solutions to the problem that the existing "Basis of Review" provides only 40% to 80% treatment of stormwater quality. These proposed solutions include Enhanced BMPs (LOEW Basin Criteria), Lower Impervious Area (LID Practices), retrofits, stormwater recycling, reservoir retention, re-direction of flows, sediment legacy removal and the Southwest Florida Basin Rule (SWFBR). The draft SWFBR has been in development through a partnership of the SFWMD, development community, and environmental organizations, and is ready for adoption.

Unfortunately the SFWMD, USCAOE, and now the FDEP is utilizing or proposing to utilize the Harper Method (2006) that provides even less protection to water quality due to errors in baseline assumptions, errors in root data and incorrect applications of loading rates. In recent reviews of the report "Evaluation of Current Stormwater Design Criteria within the State of Florida," by Harvey H. Harper and David B. Baker it has been documented that the errors of this method have not been corrected in spite of three rounds of public and internal peer reviews that have identified its many flaws.

Local governments are made increasingly responsible for solving water quality problems within the watersheds they are responsible for. The state impaired water rule requires local governments to develop programs of Basin Management Action Plans (BMAP) to resolve impaired waters identified and to prevent future water quality degradation. At the same time the State of Florida in particular is impairing the ability of the local government by preempting their ability to protect water quality and habitat through some of the most effective methods and increased protection that provide stronger standards than often weak state standards and guidelines. The state has already preempted the local governments' ability to protect mangroves, define wetlands, and require mitigation in excess of the weakened state criteria. During the course of this study legislation was introduced but not passed to preempt the local governments' abilities to regulate and prevent pollution from fertilizers, mining, and dredging. The current attempt by DEP to enshrine the Harper Method is another example of the lowest common denominator standardization and the use of methods based on incorrect assumption or basic suppositions.

Any functional BMAP for the Estero Bay Watershed will need to decrease the percentage of pervious surfaces permitted to 15% or less and allow the setting of Pollution Load Reduction Goals (PLRG) that follow a watershed specific established set of numerical water quality standards for nitrogen, phosphorous, chlorophyll-a, turbidity, and Total Suspended Solids.

The Lower West Coast Watershed Subcommittee of the South West Florida Regional Planning Council has been working with local governments, the FDEP, the SFWMD and many other concern entities including the private sector to adopt resolutions (Appendix XIV) concerning Fertilizer Use, Wastewater Treatment, and Stormwater Treatment with the goal of water quality improvement. At this time more than half of the several local governments of Southwest Florida have adopted or are endeavoring to adopt Local Government Standards for Reduced Fertilizer Use, and anticipate actions to improve Wastewater Treatment and Stormwater Treatment. It is important that these positive steps toward improvement of water quality and habitats of the Estero Bay Watershed not be derailed by state and federal preemptions of local standards for wetlands and habitat protection. In addition the State of Florida should remove the existing preemptions on mangrove protection, wetland definition, mitigation evaluation, and the setting of Pollution Load Reduction Goals in order for successful Basin Management Action Plans to be developed for the Estero Bay Basin. If the state and federal government want to improve wetland protections, water quality, and listed species habitat as well as avoid wasteful administrative hearings they should eliminate the ability of the state and federal government entities to approve wetland loss and habitat loss prior to the local government land use decision.

Wetland and Upland Habitats

Currently isolated wetlands are not adequately protected by the federal government or state. The wetland environmental resource permit program under chapter 62-312, F.A.C., only regulates dredging and filling in wetlands greater than 1 acre and wetlands and other surface waters that are connected to those "named" waters. With the recent federal SWANCC and Rapanos decisions, many of those isolated wetlands also are no longer regulated by the federal process administered by the USACOE. Other exemptions and general permits allow the loss of "isolated wetlands" and create a terrain not natural to southwest Florida. In the pre-development landscape of Estero Bay there were approximately 70 depressional wetlands visible in aerial photography per square mile. These depressional wetlands filled with water during the wet season and interconnected into a sheet flow ecosystems that provided an abundance of aquatic life and the base of the aquatic and wetlands food web. During dry season as these pools contracted and they became the essential foraging areas of the many wading bird species and essential to the federally endangered wood stork. This year (2006-2007) multiple projects were reviewed and permitted that eliminated these wetland habitats in favor of deep lakes and drainage canals. Some of the most significant projects in scale and effect were designed specifically to short circuit sheetflow wetlands and lower water tables.

Extensive wetland and other surface water acreage in Florida have been, and continue to be, degraded by exotic and invasive species infestations. Florida has a regulatory program for exotic and invasive species, and spends millions of dollars each year on controlling those species. Regulatory permits also often include mitigation that targets removal and control of exotic and invasive species. However, despite those efforts, Florida remains one of the most susceptible states in the nation to continued exotic and invasive species due to a favorable climate and past actions of man that have disturbed historic natural conditions. Some of the applications reviewed indicated that wetland areas with exotic vegetation are designated as uplands and these FLUCCS mapping errors are not corrected during project review so that the tally of impacts is only for those wetlands that are exotic free. For example from a reviewed project in the Estero Bay watershed a project had 6.81 acres of wetlands, but only 0.81 acres were free of melaleuca and the total impacts estimate from the applicant's consultant was tallied at 0.81 acres. This fell below the standard of wetland impact area for consideration for mitigation and the project was permitted by the SFWMD without any wetland mitigation required.

The current state wetlands regulatory method, as it is being applied, regularly calculates net wetland area losses based upon a qualitative evaluation of unmeasured wetland functions. The Uniform Wetland Mitigation Assessment Method (UMAM) in practice creates inverse ratios There is a need to adopt a Wetland Functional Assessment based on science rather than opinion from a short visual inspection that gives any existing wetland with some presence of exotic vegetation and no wildlife visible on the day of site review a very low score relative to some promissory wetland mitigation future that may or may not occur in the watershed and that may not even exist as a real acre of wetland habitat in the future.

The off-site mitigation banking processes sent 1,015.78 areas of wetland mitigation out of the Estero Bay watershed basin, subsequently resulting in a total acreage loss of 1,734.65 real, on-the-ground acres and functional loss of 1,015.78 wetland functional units from within the Estero Bay Watershed. Translated through the language of the UMAM process, 1,734.65 actual acres lost form the Estero Bay watershed was tallied as “no net loss” of wetlands.

A dangerous set of precedents emerged during the recent permitting of drainage and transportation projects in the Estero Bay Watershed. Public entities with the responsibility of performing engineered public works have undertaken to ignore existing preserve land protections and to advocate projects that impact natural sheetflow, natural flowways and tributaries and eliminate wetlands and uplands on preserved lands with condemnation of existing preserve lands to make transportation projects cost feasible or otherwise less expensive. The UWAM has further reduced “proposed” impacts for these projects and then subsequently shunted that mitigation out of the watershed. In order to stop this permitting method that impacts hydrology, water quality, and wildlife and wetlands habitats of the Estero Bay basin, it is important to separate the public works, drainage and water supply arms of agencies from their regulatory and review section. In any case no agency should be in the position to approve permits and self-certify water quality compliance for wetlands and habitat destruction projects it also promotes as public works.

Ultimately the best alternative future evaluated for the Estero Bay Watershed planned to date is the one that:

- utilizes the existing Lee County Comprehensive Plan
- implements the Lee County Master Mitigation Plan
- retains or improves the existing DR/GR protections
- does not open the DR/GR up to some form of hybridized rural land stewardship that allows intensive development that requires expanded drainage and transportation infrastructure.

In order to achieve that preferred alternative future it will be important to build toward the acquisition and protection of the Lee County Mitigation Plan lands and achieve memoranda-of-understanding (MOU) with all Federal, State, Regional and Local Agencies including Lee County Public Works to utilize that plan and not to generate reduced ratios based on flawed wetland functional assessment methods or to send mitigation out of the Estero Bay watershed.

APPENDICES

Appendix I: Milestones by Task

Task	Description	Performance
1.0		Months 1 – 2
2.0	Interview a representative number of builders, developers, land owners, contractors/consultants and agency staff to determine the "real world" application of the processes identified in Step 1	Months 2 – 3
3.0	Develop a graphical representation and narrative text of the Decision-Framework utilized by entities that have input into the land development/land use approval process.	Months 2 – 4
4.0	Test the Decision Framework by applying it to recently approved residential and commercial development in the Watershed.	Months 4 – 5
5.0	Develop 2050 build-out projection for the Estero Bay Watershed by utilizing the Decision Framework. Graphically present the build-out as a layer in a map depicting current (2006) wetlands locations, the Lee County Master Mitigation Plan, conservation lands, and infrastructure.	Months 2 – 5
6.0	Select a sample of recently developed projects; evaluate quality and quantity of wetland losses, infrastructure costs, listed species habitat losses, and mitigation. Determine impacts (quantity and quality) of the projected build-out to wetlands, natural resources and quality of life values in the watershed.	Months 6 – 7
7.0	Apply estimated habitat loss ratios and infrastructure cost ratios to the 2050 build-out	Month 7
8.0	Identify alternative scenarios that can better accommodate the projected growth and maintain or improve quality of Life. Test these alternative scenarios in the 2050 Build-out and with the Decision Framework.	Months 8 – 9
9.0	Identify modifications to the Decision Framework (regulations, policies, statutes, ordinances, etc.) that when implemented will facilitate achieving alternative scenarios.	Months 6 – 10
10.0	Draft recommended changes to the Decision Framework, and develop strategies for implementing changes to the Decision Framework.	Months 11 -12

Describe Support for Long-term Management and Commitments for On-site Management:

The information and evaluations developed will be applied to the Estero Bay Watershed management efforts of: Lee County's Master Mitigation Plan, Lee County's surface water management program, South Florida Water Management District's SWIM program for Lower Charlotte Harbor, and the Estero Bay Agency on Bay Management. The information will also be useful for the State of Florida for achieving water quality targets and TMDLs. Finally, the information will be disseminated by the CHNEP to its partner organizations.

Identify How the Proposed Project will integrate with other Programs in the Area and State.

Completion of the project will provide improved understanding of the impacts of allowable development for the Estero Bay Watershed.

The project results will be directly applicable to the SFWMD Lower Charlotte Harbor SWIM program, and Lee County's LMMP. Furthermore, the project implements the CHNEP's Comprehensive Conservation and Management Plan Quantifiable Objective FW-2, restore, maintain, and manage freshwater wetland systems in current extents and to a quality capable of maintaining all natural functions within the range of natural variability. Finally, the results will be relevant to wetland permitting programs implemented by FDEP and USACE.

Identify Anticipated Measurable Environmental Results:

The Decision Framework will provide regulatory agencies and applicants a tool for improving existing regulatory requirements for better environmental, infrastructure, and quality of life outcomes.

Goals and Accomplishments

1. A description of program accomplishments (programmatic, environmental, etc.) and transferable success stories made during the past year;
2. A discussion of which goals were achieved;
3. Discussion of major goals/focus for the coming year and any changes in priorities;

Ongoing Projects

4. Status of projects that is ongoing from previous year. This shall include a summary of the deliverables and associated milestones or completion delivery dates, project name or CCMP action, the cost, and organization responsible;

New Projects

5. A description of new projects, activities, or products to be produced in coming year(s) to meet those goals, a discussion of how they are linked to CCMP action plans or seven purposes of section 320, milestones and/or completion/delivery dates for new tasks, cost of the project, activity, or product, and the source of funds to carry it out;

6. Organization responsible for each new project/activity/product and the role of any partners in their development/use;

Administrative and Financial

7. List of staff and description of their responsibilities/activities;

8. A description of Grants provided from the NEP to local entities. This should include the amount provided, organization conducting the work, purpose, deliverables, and completion dates;

9. Total funds leveraged (section 320 and others) and their source;

10. The non-Federal cost share (match) and its source (specify in-kind or cash from particular entity; if in-kind, indicate type - e.g., office space); if staff, please specify individual, their position and employer, and an estimated dollar value of their contribution to the match; and

11. Travel Documentation.

Acronym/Abbreviation	Long Form
ABM	Estero Bay Agency for Bay Management
ASR	Aquifer storage and recovery
AWS	Alternative Water Supply
AWWTP	Advanced Wastewater Treatment Plant
BC RCT	Big Cypress Regional Coordination Team
BEBR	Bureau of Economic and Business Research
BMAP	Basin Management Action Plans
BOD	Bio-chemical oxygen demand
CARL	Conservation and Recreational Lands
CCCP	Southwest Florida Coastal Conservation Corridor Plan
CCMP	Comprehensive Conservation and Management Plan
CDD	Community Development Districts
CEMs	Conceptual Ecological Models
CERP	Comprehensive Everglades Restoration Plan
CHAP	Charlotte Harbor Aquatic Preserves
CHEC	Charlotte Harbor Environmental Center
CHNEP	Charlotte Harbor National Estuary Program
CIP	Capital Improvements Program
COE	U.S Army Corps of Engineers
CREW	Corkscrew Regional Ecosystem Watershed
CRCT	Caloosa Restoration Coordination Team
CWA	Clean Water Act
CWSP	Caloosahatchee Water Supply Plan
CY	Cubic Yards
DER	Florida Department of Environmental Regulation
DERM	Miami-Dade Department of Environmental Resource Management
DO	dissolved oxygen
DR/GR	Density Reduction Groundwater Recharge
DWMP	District Water Management Plan

Acronym/Abbreviation	Long Form
EAR	Evaluation and Appraisal Report
EBAP	Estero Bay Aquatic Preserve
EBNMP	Estero Bay Nutrient Management Partnership
EIS	Southwest Florida Environmental impact statement
EPA	Environmental Protection Agency
ERP	Environmental Resource Permit
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FFWCC	Florida Fish and Wildlife Conservation Commission
FGCU	Florida Gulf Coast University
FLUCFCS	Florida Land Use, Cover and Forms Classification System
FLUM	Future Land Use Map
FMRI	Florida Marine Research Institute
FNAI	Florida Natural Areas Inventory
FS	Florida Statutes
FSUTMS	Florida Standard Urban Transportation Model Structure
FWRI	Florida Wildlife Research Institute
FWS	U.S. Fish and Wildlife Service
FY	fiscal year
GAC	Gulf American Corporation
GICIA	Gasparilla Island Community Improvement Association
GIS	Geographic Information System
GPRA	Government Performance and Review Act
Ha	hectare
IWR	Impaired Waters Rule
kg	kilogram
LCH	Lower Charlotte Harbor
LCHCD	Lee County Hyacinth Control District
LOPP	Lake Okeechobee Protection Plan
LOS	Level of Service
LRTPs	Long Range Transportation Plans

Acronym/Abbreviation	Long Form
LWCWSP	Lower west coast water supply plan
Mgd	Million gallons per day
MPOs	Metropolitan Planning Organizations
MS4	Municipal Separate Storm Sewer Systems
MSBU	Municipal Service Benefit Units
MSMP	Master Stormwater Management Plan
MSRP	South Florida Multi-Species Recovery Plan
MSTU	Municipal Service Taxing Unit
mya	million years ago
NEPA	National Environmental Policy Act
NPDES	National Pollutant Discharge Elimination System
OFW	Outstanding Florida Water
O&M	Operation and maintenance
PALMM	Publication of Archival, Library and Museum Materials
PLRG	Pollution load reduction goal
PRMRWSA	Peace River/Manasota Regional Water Supply Authority
RCP	Reinforced Concrete Pipe
RRCT	Regional Restoration Coordination Team
SAS	Surficial Aquifer System
SAMP	Special Area Management Plan
SCCF	Sanibel-Captiva Conservation Foundation
SFWMD	South Florida Water Management District
SHCAs	Strategic Habitat Conservation Areas
SMP	Stormwater Master Plan
SR	State Road
STAs	Stormwater Treatment Area
STORET	Storage and RETrieval
SWFFS	South West Florida Feasibility Study
SWFRC&D	Southwest Florida Resource Conservation and Development Council, Inc
SWFRPC	Southwest Florida Regional Planning Council
SWFRRCT	Southwest Florida Regional Restoration Coordination Team
SWFWMD	Southwest Florida Water Management District

Acronym/Abbreviation	Long Form
SWIM	Surface Water Improvement Management
SWP3	storm water pollution prevention plan
TDC	Tourist Development Council
TDS	total dissolved solids
TMDL	total maximum daily limits
TNC	The Nature Conservancy
TSS	total suspended solids
TYA	Thousand years ago
UF IFAS	University of Florida Institute of Food and Agricultural Sciences
USDA	U.S. Department of Agriculture
US EPA	U.S. Environmental Protection Agency
USGS	U.S. Geological Survey
UZAs	urbanized areas
WBID	Water Body Identification Code
WERC	Water Enhancement and Restoration Coalition, Inc.
WRDA 2000	Water Resources Development Act of 2000
WTP	Water Treatment Plant
WWTP	Wastewater Treatment Plant

Appendix III: The applicable Federal, State and County statutes, regulations, rules, Comprehensive Plan Elements, Land Development Code ordinances, and policies for land development permitting and public investment decisions in the Estero Bay Watershed.

Federal

Coastal Zone Management Act of 1972

as amended through P.L. 104-150, The Coastal Zone Protection Act of 1996

16 U.S.C. § 1451. Congressional findings (Section 302)

16 U.S.C. § 1452. Congressional declaration of policy (Section 303)

16 U.S.C. § 1453. Definitions (Section 304)

16 U.S.C. § 1454. Management program development grants (Section 305)

16 U.S.C. § 1455. Administrative grants (Section 306)

16 U.S.C. § 1455a. Coastal resource improvement program (Section 306A)

16 U.S.C. § 1455b. Protecting coastal waters

16 U.S.C. § 1456. Coordination and cooperation (Section 307)

16 U.S.C. § 1456a. Coastal Zone Management Fund (Section 308)

16 U.S.C. § 1456b. Coastal Zone Enhancement Grants (Section 309)

16 U.S.C. § 1456c. Technical assistance (Section 310)

16 U.S.C. § 1457. Public hearings (Section 311)

16 U.S.C. § 1458. Review of performance (Section 312)

16 U.S.C. § 1459. Records and audit (Section 313)

16 U.S.C. § 1460. Walter B. Jones Excellence in Coastal Zone Management Awards (Section 314)

16 U.S.C. § 1461. National Estuarine Research Reserve System (Section 315)

16 U.S.C. § 1462. Coastal Zone Management Reports (Section 316)

16 U.S.C. § 1463. Rules and Regulations (Section 317)

16 U.S.C. § 1464. Authorization of appropriations (Section 318)

16 U.S.C. § 1465. Appeals to the Secretary (Section 319)

16 U.S.C. § 1451. Congressional findings (Section 302)

The National Environmental Policy Act of 1969, as amended

(Pub. L. 91-190, 42 U.S.C. 4321-4347, January 1, 1970, as amended by Pub. L. 94-52, July 3, 1975, Pub. L. 94-83, August 9, 1975, and Pub. L. 97-258, § 4(b), Sept. 13, 1982)

An Act to establish a national policy for the environment, to provide for the establishment of a Council on Environmental Quality, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That this Act may be cited as the "National Environmental Policy Act of 1969."

Purpose

Sec. 2 [42 USC § 4321].

The purposes of this Act are: To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality.

TITLE I

CONGRESSIONAL DECLARATION OF NATIONAL ENVIRONMENTAL POLICY

Sec. 101 [42 USC § 4331].

(a) The Congress, recognizing the profound impact of man's activity on the interrelations of all components of the natural environment, particularly the profound influences of population growth, high-density urbanization, industrial expansion, resource exploitation, and new and expanding technological advances and recognizing further the critical importance of restoring and maintaining environmental quality to the overall welfare and development of man, declares that it is the continuing policy of the Federal Government, in cooperation with State and local governments, and other concerned public and private organizations, to use all practicable means and measures, including financial and technical assistance, in a manner calculated to foster and promote the general welfare, to create and maintain conditions under which man and nature can exist in productive harmony, and fulfill the social, economic, and other requirements of present and future generations of Americans.

(b) In order to carry out the policy set forth in this Act, it is the continuing responsibility of the Federal Government to use all practicable means, consistent with other essential considerations of national policy, to improve and coordinate Federal plans, functions, programs, and resources to the end that the Nation may --

1. fulfill the responsibilities of each generation as trustee of the environment for succeeding generations;
2. assure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings;
3. attain the widest range of beneficial uses of the environment without degradation, risk to health or safety, or other undesirable and unintended consequences;
4. preserve important historic, cultural, and natural aspects of our national heritage, and maintain, wherever possible, an environment which supports diversity, and variety of individual choice;
5. achieve a balance between population and resource use which will permit high standards of living and a wide sharing of life's amenities; and
6. enhance the quality of renewable resources and approach the maximum attainable recycling of depletable resources.

(c) The Congress recognizes that each person should enjoy a healthful environment and that each person has a responsibility to contribute to the preservation and enhancement of the environment.

Sec. 102 [42 USC § 4332].

The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall --

(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decision-making which may have an impact on man's environment;

(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by title II of this Act, which will insure that presently unquantified environmental amenities and values may be given appropriate consideration in decision-making along with economic and technical considerations;

(C) include in every recommendation or report on proposals for legislation and other major Federal actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on --

(i) the environmental impact of the proposed action,

(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

(iii) alternatives to the proposed action,

(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

(D) Any detailed statement required under subparagraph (C) after January 1, 1970, for any major Federal action funded under a program of grants to States shall not be deemed to be legally insufficient solely by reason of having been prepared by a State agency or official, if:

(i) the State agency or official has statewide jurisdiction and has the responsibility for such action,

(ii) the responsible Federal official furnishes guidance and participates in such preparation,

(iii) the responsible Federal official independently evaluates such statement prior to its approval and adoption, and

(iv) after January 1, 1976, the responsible Federal official provides early notification to, and solicits the views of, any other State or any Federal land management entity of any action or any alternative thereto which may have significant impacts upon such State or affected Federal land management entity and, if there is any disagreement on such impacts, prepares a written assessment of such impacts and views for incorporation into such detailed statement.

The procedures in this subparagraph shall not relieve the Federal official of his responsibilities for the scope, objectivity, and content of the entire statement or of any other responsibility under this Act; and further, this

subparagraph does not affect the legal sufficiency of statements prepared by State agencies with less than statewide jurisdiction.

(E) study, develop, and describe appropriate alternatives to recommended courses of action in any proposal which involves unresolved conflicts concerning alternative uses of available resources;

(F) recognize the worldwide and long-range character of environmental problems and, where consistent with the foreign policy of the United States, lend appropriate support to initiatives, resolutions, and programs designed to maximize international cooperation in anticipating and preventing a decline in the quality of mankind's world environment;

(G) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

(H) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

(I) assist the Council on Environmental Quality established by title II of this Act.

Sec. 103 [42 USC § 4333].

All agencies of the Federal Government shall review their present statutory authority, administrative regulations, and current policies and procedures for the purpose of determining whether there are any deficiencies or inconsistencies therein which prohibit full compliance with the purposes and provisions of this Act and shall propose to the President not later than July 1, 1971, such measures as may be necessary to bring their authority and policies into conformity with the intent, purposes, and procedures set forth in this Act.

Sec. 104 [42 USC § 4334].

Nothing in section 102 [42 USC § 4332] or 103 [42 USC § 4333] shall in any way affect the specific statutory obligations of any Federal agency (1) to comply with criteria or standards of environmental quality, (2) to coordinate or consult with any other Federal or State agency, or (3) to act, or refrain from acting contingent upon the recommendations or certification of any other Federal or State agency.

Sec. 105 [42 USC § 4335].

The policies and goals set forth in this Act are supplementary to those set forth in existing authorizations of Federal agencies.

TITLE II

COUNCIL ON ENVIRONMENTAL QUALITY

Sec. 201 [42 USC § 4341].

The President shall transmit to the Congress annually beginning July 1, 1970, an Environmental Quality Report (hereinafter referred to as the "report") which shall set forth (1) the status and condition of the major natural, manmade, or altered environmental classes of the Nation, including, but not limited to, the air, the aquatic, including marine, estuarine, and fresh water, and the terrestrial environment, including, but not limited to, the forest, dryland, wetland, range, urban, suburban an rural environment; (2) current and foreseeable trends in the quality, management and utilization of such environments and the effects of those trends on the social, economic, and other requirements of the Nation; (3) the adequacy of available natural resources for fulfilling human and economic requirements of the Nation in the light of expected population pressures; (4) a review of the programs and activities (including regulatory activities) of the Federal Government, the State and local governments, and nongovernmental entities or individuals with particular reference to their effect on the environment and on the conservation, development and utilization of natural resources; and (5) a program for remedying the deficiencies of existing programs and activities, together with recommendations for legislation.

Sec. 202 [42 USC § 4342].

There is created in the Executive Office of the President a Council on Environmental Quality (hereinafter referred to as the "Council"). The Council shall be composed of three members who shall be appointed by the President to serve at his pleasure, by and with the advice and consent of the Senate. The President shall designate one of the members of the Council to serve as Chairman. Each member shall be a person who, as a result of his training, experience, and attainments, is exceptionally well qualified to analyze and interpret environmental trends and information of all kinds; to appraise programs and activities of the Federal Government in the light of the policy set forth in title I of this Act; to be conscious of and responsive to the scientific, economic, social, aesthetic, and cultural needs and interests of the Nation; and to formulate and recommend national policies to promote the improvement of the quality of the environment.

Sec. 203 [42 USC § 4343].

(a) The Council may employ such officers and employees as may be necessary to carry out its functions under this Act. In addition, the Council may employ and fix the compensation of such experts and consultants as may be necessary for the carrying out of its functions under this Act, in accordance with section 3109 of title 5, United States Code (but without regard to the last sentence thereof).

(b) Notwithstanding section 1342 of Title 31, the Council may accept and employ voluntary and uncompensated services in furtherance of the purposes of the Council.

Sec. 204 [42 USC § 4344].

It shall be the duty and function of the Council --

1. to assist and advise the President in the preparation of the Environmental Quality Report required by section 201 [42 USC § 4341] of this title;
2. to gather timely and authoritative information concerning the conditions and trends in the quality of the environment both current and prospective, to analyze and interpret such information for the purpose of determining whether such conditions and trends are interfering, or are likely to interfere, with the achievement of the policy set forth in title I of this Act, and to compile and submit to the President studies relating to such conditions and trends;
3. to review and appraise the various programs and activities of the Federal Government in the light of the policy set forth in title I of this Act for the purpose of determining the extent to which such programs and activities are contributing to the achievement of such policy, and to make recommendations to the President with respect thereto;
4. to develop and recommend to the President national policies to foster and promote the improvement of environmental quality to meet the conservation, social, economic, health, and other requirements and goals of the Nation;
5. to conduct investigations, studies, surveys, research, and analyses relating to ecological systems and environmental quality;
6. to document and define changes in the natural environment, including the plant and animal systems, and to accumulate necessary data and other information for a continuing analysis of these changes or trends and an interpretation of their underlying causes;
7. to report at least once each year to the President on the state and condition of the environment; and
8. to make and furnish such studies, reports thereon, and recommendations with respect to matters of policy and legislation as the President may request.

Sec. 205 [42 USC § 4345].

In exercising its powers, functions, and duties under this Act, the Council shall --

1. consult with the Citizens' Advisory Committee on Environmental Quality established by Executive Order No. 11472, dated May 29, 1969, and with such representatives of science, industry, agriculture, labor, conservation organizations, State and local governments and other groups, as it deems advisable; and
2. utilize, to the fullest extent possible, the services, facilities and information (including statistical information) of public and private agencies and organizations, and individuals, in order that duplication of effort and expense may be avoided, thus assuring that the Council's activities will not unnecessarily overlap or conflict with similar activities authorized by law and performed by established agencies.

Sec. 206 [42 USC § 4346].

Members of the Council shall serve full time and the Chairman of the Council shall be compensated at the rate provided for Level II of the Executive Schedule Pay Rates [5 USC § 5313]. The other members of the Council shall be compensated at the rate provided for Level IV of the Executive Schedule Pay Rates [5 USC § 5315].

Sec. 207 [42 USC § 4346a].

The Council may accept reimbursements from any private nonprofit organization or from any department, agency, or instrumentality of the Federal Government, any State, or local government, for the reasonable travel expenses incurred by an officer or employee of the Council in connection with his attendance at any conference, seminar, or similar meeting conducted for the benefit of the Council.

Sec. 208 [42 USC § 4346b].

The Council may make expenditures in support of its international activities, including expenditures for: (1) international travel; (2) activities in implementation of international agreements; and (3) the support of international exchange programs in the United States and in foreign countries.

Sec. 209 [42 USC § 4347].

There are authorized to be appropriated to carry out the provisions of this chapter not to exceed $300,000 for fiscal year 1970, $700,000 for fiscal year 1971, and $1,000,000 for each fiscal year thereafter.

The Environmental Quality Improvement Act, as amended (Pub. L. No. 91- 224, Title II, April 3, 1970; Pub. L. No. 97-258, September 13, 1982; and Pub. L. No. 98-581, October 30, 1984.

42 USC § 4372.

(a) There is established in the Executive Office of the President an office to be known as the Office of Environmental Quality (hereafter in this chapter referred to as the "Office"). The Chairman of the Council on Environmental Quality established by Public Law 91-190 shall be the Director of the Office. There shall be in the Office a Deputy Director who shall be appointed by the President, by and with the advice and consent of the Senate.

(b) The compensation of the Deputy Director shall be fixed by the President at a rate not in excess of the annual rate of compensation payable to the Deputy Director of the Office of Management and Budget.

(c) The Director is authorized to employ such officers and employees (including experts and consultants) as may be necessary to enable the Office to carry out its functions ;under this chapter and Public Law 91-190, except that he may employ no more than ten specialists and other experts without regard to the provisions of Title 5, governing appointments in the competitive service, and pay such specialists and experts without regard to the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates, but no such specialist or expert shall be paid at a rate in excess of the maximum rate for GS-18 of the General Schedule under section 5332 of Title 5.

(d) In carrying out his functions the Director shall assist and advise the President on policies and programs of the Federal Government affecting environmental quality by --

1. providing the professional and administrative staff and support for the Council on Environmental Quality established by Public Law 91- 190;
2. assisting the Federal agencies and departments in appraising the effectiveness of existing and proposed facilities, programs, policies, and activities of the Federal Government, and those specific major projects designated by the President which do not require individual project authorization by Congress, which affect environmental quality;
3. reviewing the adequacy of existing systems for monitoring and predicting environmental changes in order to achieve effective coverage and efficient use of research facilities and other resources;

4. promoting the advancement of scientific knowledge of the effects of actions and technology on the environment and encouraging the development of the means to prevent or reduce adverse effects that endanger the health and well-being of man;
5. assisting in coordinating among the Federal departments and agencies those programs and activities which affect, protect, and improve environmental quality;
6. assisting the Federal departments and agencies in the development and interrelationship of environmental quality criteria and standards established throughout the Federal Government;
7. collecting, collating, analyzing, and interpreting data and information on environmental quality, ecological research, and evaluation.

(e) The Director is authorized to contract with public or private agencies, institutions, and organizations and with individuals without regard to section 3324(a) and (b) of Title 31 and section 5 of Title 41 in carrying out his functions.

42 USC § 4373. Each Environmental Quality Report required by Public Law 91-190 shall, upon transmittal to Congress, be referred to each standing committee having jurisdiction over any part of the subject matter of the Report.

42 USC § 4374. There are hereby authorized to be appropriated for the operations of the Office of Environmental Quality and the Council on Environmental Quality not to exceed the following sums for the following fiscal years which sums are in addition to those contained in Public Law 91- 190:

(a) $2,126,000 for the fiscal year ending September 30, 1979.

(b) $3,000,000 for the fiscal years ending September 30, 1980, and September 30, 1981.

(c) $44,000 for the fiscal years ending September 30, 1982, 1983, and 1984.

(d) $480,000 for each of the fiscal years ending September 30, 1985 and 1986.

42 USC § 4375.

(a) There is established an Office of Environmental Quality Management Fund (hereinafter referred to as the "Fund") to receive advance payments from other agencies or accounts that may be used solely to finance --

1. study contracts that are jointly sponsored by the Office and one or more other Federal agencies; and
2. Federal interagency environmental projects (including task forces) in which the Office participates.

(b) Any study contract or project that is to be financed under subsection (a) of this section may be initiated only with the approval of the Director.

(c) The Director shall promulgate regulations setting forth policies and procedures for operation of the Fund.

___ *CEQ - Regulations for Implementing NEPA*

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- 1506.2 Elimination of duplication with State and local procedures.
- 1506.3 Adoption.
- 1506.4 Combining documents.
- 1506.5 Agency responsibility.
- 1506.6 Public involvement.
- 1506.7 Further guidance.
- 1506.8 Proposals for legislation.
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Part 1507 - Agency Compliance

- 1507.1 Compliance.
- 1507.2 Agency capability to comply.
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Part 1508 - Terminology and Index

- 1508.1 Terminology.
- 1508.2 Act.
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- 1508.7 Cumulative impact.
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- 1508.10 Environmental document.
- 1508.11 Environmental impact statement.
- 1508.12 Federal agency.
- 1508.13 Finding of no significant impact.
- 1508.14 Human environment.
- 1508.15 Jurisdiction by law.
- 1508.16 Lead agency.
- 1508.17 Legislation.
- 1508.18 Major Federal action.
- 1508.19 Matter.
- 1508.20 Mitigation.
- 1508.21 NEPA process.
- 1508.22 Notice of intent.
- 1508.23 Proposal.
- 1508.24 Referring agency.
- 1508.25 Scope.
- 1508.26 Special expertise.
- 1508.27 Significantly.

- 1508.28 Tiering.

Appendices NEPA Implementation Procedures; Appendices I, II, and III
(49 Fed. Reg. 49750, December 21, 1984)
Note: Particular contacts may in some instances be outdated.

- Appendix I - Federal and Federal-State Agency National Environmental Policy Act Contacts
- Appendix II - Federal and Federal-State Agencies with Jurisdiction by Law or Special Expertise on Environmental Quality Issues
- Appendix III - Federal and Federal-State Agency Offices for Receiving and Commenting on Other Agencies' Environmental Documents

U. S. Army Corps of Engineers Statutory Authorities

- Rivers and Harbors Act of 1899 - Sec. 9
- Rivers and Harbors Act of 1899 - Sec.10
- Clean Water Act - Section 404
- Marine Protection Research and Sanctuaries Act of 1972 - Section 103

U.S. Army Corps of Engineers Regulatory Program Regulations (33 CFR 320-331)

- 33 CFR Part 320 - General Regulatory Policies
- 33 CFR Part 321 - Permits for Dams & Dikes in Navigable Waters of the U.S.
- 33 CFR Part 322 - Permits for Structures in or Affecting Navigable Waters of the U.S.
- 33 CFR Part 323 - Permits for Discharges of Dredged or Fill Material Into Waters of the U.S.
- 33 CFR Part 324 - Permits for Ocean Dumping of Dredged Material
- 33 CFR Part 325 - Processing of Department of the Army Permits
- 33 CFR Part 326 - Enforcement
- 33 CFR Part 327 - Public Hearing
- 33 CFR Part 328 - Definition of Waters of the United States
- 33 CFR Part 329 - Definition of Navigable Waters
- 33 CFR Part 330 - Nationwide Permit Program
- 33 CFR Part 331 - Administrative Appeal Process
- Further Revisions to the Clean Water Act Regulatory Definition of Dredged Material - January 17, 2001
- Final Revisions to the Clean Water Act Definitions of Fill Material and Discharge of Fill Material - May 9, 2002

Related Regulations

- 40 CFR Part 230 - Section 404(b)(1) Guidelines
- 40 CFR Part 22 - Administrative Assessment of Civil Penalties & the Revocation or Suspension of Permits
- 40 CFR Part 233 - State Program Regulations
- 40 CFR Part 233G - Tribal Regulations
- 40 CFR Part 1500 et seq - Council on Environmental Quality
- 36 CFR Part 800-899 - Advisory Council on Historic Preservation
- 50 CFR Parts 400-499 - Endangered Species Regulations
- 50 CFR Part 600 - Essential Fish Habitat Regulations

Related Laws

- Native American Graves Protection and Repatriation Act
- Clean Water Act - Section 401
- Clean Water Act - Section 402
- Coastal Zone Management Act of 1972

- Endangered Species Act
- Marine Mammal Protection Act
- National Environmental Policy Act
- National Historic Preservation Act
- Wild & Scenic Rivers Act
- Marine Protection Research and Sanctuaries Act of 1972 - Section 302
- Fish and Wildlife Coordination Act

Selected Related Code of Federal Regulations

- Consolidated Rules of Practice Governing the Administrative Assessment of Civil Penalties and the Revocation or Suspension of Permits - USEPA, 40 CFR Part 22
- Section 404(b)(1) Guidelines - USEPA, 40 CFR Part 230
- USEPA, State Program Regulations - 40 CFR Part 233
- Eligible Indian Tribes - 40 CFR Part 233G, USEPA, State Program Regulations
- Council on Environmental Quality 40 CFR 1500 et seq
- Advisory Council on Historic Preservation 36 CFR 800-899
- Endangered Species Regulations 50 CFR 400-499

Corps of Engineers Administrative Materials

- Memoranda of Understanding and Agreement (MOU/MOAs)
- Current Regulatory Guidance Letters
- Memorandum to the Field: Application of Best Management Practices to Mechanical Silvicultural Site Preparation Activities for the Establishment of Pine Plantations in the Southeast

Presidential Directives and Executive Orders

- Executive Order 11990 - Protection of Wetlands
- Executive Order 11988 - Floodplain Management
- Presidential Wetland Policy 1993
- Reaffirmation of the Presidential Wetland Policy 1995
- White House Hotlink

Enforcement

- Enforcement MOA
- Joint MOA Letter - January 1989
- Modification to January 1989 MOA Letter - Feb 1994
- EPA/Corps Enforcement Priorities Guidance - Dec 1990
- Corps/EPA Enforcement Procedures (Flowchart)

Other Guidance

- Guidance on Preparation of Taking Implication Assessments (TIA)
- USEPA's Wetlands Silviculture Site Preparation Guidance & Resolution of Silviculture Issues
- CEQ's Considering Cumulative Effects Under the National Environmental Policy Act
- Guidance on Environmental Impact Statement Preparation, Corps Regulatory Program
- Required Special Condition of Department of the Army Permits Involving Corps of Engineers Authority Under Section 10 of the Rivers and Harbors of 1899

Administrative Appeals

- Current Appeals
- 33 CFR Part 331 - Administrative Appeals Process
- Establishment of an Administrative Appeal Process - March 9, 1999 - *Federal Register Notice*
- Final Rule Establishing an Administrative Appeal Process - March 28, 2000 - *Federal Register Notice*

USEPA Administrative Materials

- Guidance for Corps and EPA Field Offices Regarding Clean Water Act Section 404 Jurisdiction Over Isolated Waters in Light of United States v. James J. Wilson

USGS Statutes

2 U.S.C. 681-688 Congressional Budget and Impoundment Act of 1974, as amended.

5 U.S.C. 305 Classification Act of 1949, Civil Service et seq. Retirement Act, Federal Employees' Compensation Act, Federal Employees' Health Benefits Act, Performance Rating Act of 1950, Civil Service Reform Act of 1978, etc.

5 U.S.C. 552 Freedom of Information Act.

5 U.S.C. 552a Privacy Act of 1974.

5 U.S.C. 8101 Federal Employees Compensation Act Amendment of 1960.

5 U.S.C. 8509 Omnibus Reconciliation Act of 1980.

7 U.S.C. 2201 Transfer of Functions from Secretary of Interior to Secretary of Agriculture Act of 1960. Under this Act, the USGS provides summary reports to the Forest Service on locatable minerals preparatory to exchanges of non- Federal lands for national forest lands or timber.

15 U.S.C. 631 et seq. Small Business Act.

15 U.S.C. 2901, 2908 The National Climate Program Act of 1978 established a national climate program to assist the Nation and the world to understand and respond to natural and man-induced climate processes and their implications.

15 U.S.C. 5652 The Land Remote Sensing Policy Act of 1992 enables the United States to maintain its leadership in land remote sensing by providing data continuity for the Landsat program. The Act assigns responsibility for the "National Satellite Land Remote Sensing Data Archive" to the Department of the Interior. The Act also authorizes and encourages the Department of the Interior and other Federal agencies to carry out research and development programs in applications of these data.

16 U.S.C. 1-4, 17j-2, 18f, 431-433, 461-467 National Park Service Organic Act, as amended and supplemented.

16 U.S.C. 661 et seq. Fish and Wildlife Coordination Act of March 10, 1934, (P. L. 79-732) authorizes the Secretary of the Interior to prepare plans to protect wildlife resources, to conduct

surveys on public lands, and to accept funds or lands for related purposes; authorizes the investigation and reporting of pro posed Federal actions that affect the development, protection, rearing, and stocking of all species of wildlife and their habitat in controlling losses, minimizing damages, and providing recommendations to minimize impacts on fish and wildlife resources.

16 U.S.C. 703-711 Migratory Bird Treaty Act of 1918, as amended, implements four international treaties that individually affect migratory birds common to the United States, Canada, Mexico, Japan, and the former Soviet Union. This Act establishes Federal responsibility for protection and management of migratory and nongame birds, including the establishment of season length based on scientific information relative to zones of temperature, distribution, abundance, breeding habits and times and lines of migratory flight of migratory birds. It also establishes the Secretary of the Interior's responsibility for bag limits, and other hunting regulations, and issuance of permits to band, possess, or otherwise make use of migratory birds.

16 U.S.C. 715 Migratory Bird Conservation Act of May 25, 1900, establishes the Migratory Bird Conservation Commission; authorizes the Secretary of the Interior to conduct investigations and publish documents related to North American Birds.

16 U.S.C. 742(a)-742d, 742e-742j-2 Fish and Wildlife Act of 1956 authorizes the Secretary of the Interior to conduct investigations, prepare and disseminate information, and make periodic reports to the public regarding the availability and abundance and the biological requirements of fish and wildlife resources; provides a comprehensive national fish and wildlife policy and authorizes the Secretary of the Interior to take steps required for the development, management, advancement, conservation, and protection of fisheries and wildlife resources through research, acquisition of refuge lands, development of existing facilities, and other means.

16 U.S.C. 753a The Fish and Wildlife Improvement Act of 1978 as amended by P.L. 95-616, authorizes the Secretary of the Interior to enter into cooperative agreements with colleges and universities, State fish and game agencies, and nonprofit organizations for the purpose of developing adequate, coordinated, cooperative research and training programs for fish and wildlife resources.

16 U.S.C. 931-939 Great Lakes Fishery Act of 1956 implements the Convention on Great Lakes Fisheries between the United States and Canada; authorizes construction, operation and maintenance of sea lamprey control works; and established the Great Lakes Fisheries Commission.

16 U.S.C. 1131 The Wilderness Act of 1964 and numerous subsequent related Acts require that the USGS and Bureau of Mines assess the mineral resources of each area proposed as wilderness or established as wilderness. The studies are to be on a planned and recurring basis.

16 U.S.C. 1361-1362, 1372-1384, 1401-1407 Marine Mammal Protection Act of 1972, as amended establishes a responsibility to conserve marine mammals with management authority vested in the Department of the Interior for the sea otter, walrus, polar bear, dugong, and manatee.

16 U.S.C. 1531-1543 Endangered Species Act of 1973, as amended provides for the conservation of threatened and endangered species of fish, wildlife, and plants; and authorizes establishment of cooperative agreements and grants-in- aid to States that establish and maintain active and adequate programs for endangered and threatened wildlife and plants.

16 U.S.C. 1600 et seq. Forest and Rangeland Renewable Resources Planning Act of 1974, as amended by the National Forest Management Act of 1976. The USGS is a party in an interagency agreement with the Bureau of Mines and the Forest Service to assess the mineral resources of National Forests.

16 U.S.C. 2801-2810 National Aquaculture Act of 1980 directs the Secretary of the Interior to participate in the development of a National Aquaculture Development Plan and authorizes research, development, and other activities to encourage the development of aquaculture in the United States.

16 U.S.C. 3141 et seq. As a result of the Alaska National Interest Lands Conservation Act (1980), the Geological Survey has made and may be called upon to make water studies pertinent to implementation of the act.

16 U.S.C. 3141-3150, 3161 The Alaska National Interest Lands Conservation Act of 1980. Section 1001 of the Act requires that the Geological Survey will assess the oil and gas potential of Federal lands north of 68 degrees north latitude, east of the National Petroleum Reserve and west of the Arctic National Wildlife Refuge, and participate in a review of the wilderness characteristics of the area. Section 1008 of the Act authorizes the Secretary to conduct studies, or collect and analyze information obtained by permittees, of the oil and gas potential of non-North Slope Federal lands. Section 1010 of the Act requires that the Secretary of the Interior assess the oil, gas, and other mineral potential, and expand the minerals data base, for all public lands in Alaska. This responsibility has been delegated to the USGS. Section 1011 of the Act requires an annual minerals report be presented to Congress; the preparation of this report also has been delegated to the USGS.

16 U.S.C. 3501 et seq. Coastal Barrier Resources Act of 1982 designates various underdeveloped coastal barrier islands, depicted by specific maps, for inclusion in the Coastal Barrier Resources System.

22 U.S.C. 3201 et seq. The Nuclear Non-Proliferation Act of 1978 provides that under Title V United States Assistance to Developing Countries the Geological Survey assists, through the State Department and Agency for International Development, in evaluation of nuclear facilities sites in other countries.

29 U.S.C. 651 Occupational Safety and Health Act of 1970.

30 U.S.C 21(a) The Mining and Minerals Policy Act of 1970 The Materials and Minerals Policy, Research and Development Act of 1980, emphasizes the USGS's responsibility to assess the mineral resources of the Nation.

30 U.S.C. 201 The Federal Coal Leasing Amendments Act of 1976 provides that no lease sale may be held on Federal lands unless the lands containing the coal deposits have been included in a comprehensive land-use plan. The Act provides that the Secretary is authorized and directed to conduct a comprehensive exploratory program designed to obtain sufficient data and information to evaluate the extent, location, and potential for developing the known recoverable coal resources within the coal lands. The USGS provides data and information from its coal research and field investigations which are useful to the Bureau of Land Management to meet the requirements of the coal leasing program.

30 U.S.C. 1026 Section 6 of the Geothermal Steam Act Amendments of 1988 requires the Secretary of the Interior to (1) maintain a monitoring program for significant thermal features within units of the National Park System, and (2) establish a research program to collect and assess data on the geothermal resources within units of the National Park System with significant thermal features in cooperation with the USGS. Section 8 of the Geothermal Steam Act Amendments of 1988 requires the USGS to conduct a study of the impact of present geothermal development in the vicinity of Yellowstone National Park on the thermal features within the park.

30 U.S.C. 1028 The Energy Policy Act of 1992 directs the USGS to establish a cooperative Government-private sector program with respect to hot dry rock geothermal energy resources on public lands, to convene a workshop of interested governmental and private parties to discuss the regional potential for hot dry rock geothermal energy in the Eastern U.S., and to submit a report to Congress containing a summary of the findings and conclusions of the work shop. The act also supports recurring assessments of the undiscovered oil and gas resources of the United States.

30 U.S.C. 1121 The Geothermal Energy Research, Development and Demonstration Act of 1974 provides that the Department of the Interior is responsible for the evaluation and the assessment of the geothermal resource base, including the development of exploration technologies.

30 U.S.C. 1201 et seq. Surface Mining Control and Reclamation Act of 1977, as amended, established the Office of Surface Mining Reclamation and Enforcement (OSM). OSM depends in part upon the Geological Survey for a determination of the probable hydrologic consequences of mining and reclamation operations.

30 U.S.C. 1419 et seq. The Deep Seabed Hard Mineral Resources Act of 1980 provides authorization for conducting a continuing program of ocean research that "shall include the development, acceleration, and expansion, as appropriate, of the studies of the ecological, geological, and physical aspects of the deep seabed in general areas of the ocean where exploration and commercial development are likely to occur . . ." The USGS, based on expertise developed in regional offshore geologic investigations, provides geological and mineral resource expertise in responding to the requirements of the Act.

30 U.S.C 1601 et seq. The Mining and Minerals Policy Act of 1970 Materials and Minerals Policy, Research and Development Act of 1980, reemphasize the USGS's responsibility to assess the mineral resources of the Nation.

31 U.S.C. 97 Fees and Charges for Government Services and Things of Value. This section directs that each service or thing of value provided to a person be self sustaining to the extent possible. Further, the head of each agency may prescribe regulations establishing the charge for each service or thing of value. Each charge is to be fair, based on the costs to the Government or the value of the service or thing to the recipient, public policy or interest served, and other relevant facts.

31 U.S.C. 501 note Chief Financial Officers Act of 1990.

31 U.S.C. 1535 Economy Act of 1932, as amended, authorizes any agency to obtain goods and services from and reimburse any other agency.

31 U.S.C. 3501-3514 Budget Accounting and Procedures Act of 1950.

31 U.S.C. 3512 Federal Managers' Financial Integrity Act of 1982.

31 U.S.C. 3901-3906 Prompt Payment Act.

31 U.S.C. 6301 et seq. Federal Grant and Cooperative Agreement Act of 1977 provides criteria for distinguishing between contract, grant and cooperative agreement relationships and provides discretionary authority to vest title to equipment or other tangible personal property purchased with contract, grant or cooperative agreement funds in nonprofit research or higher education institutions.

33 U.S.C. 883(a) The Great Lakes Shoreline Mapping Act of 1987 in Section 3202(a) requires that the Director of the National Oceanic and Atmospheric Administration "...in consultation with the Director of the United States Geological Survey, shall submit to the Congress a plan for preparing maps of the shoreline of the Great Lakes under section 3203." The act further requires in Section 3203 that "...subject to authorization and appropriation of funds, the Director, in consultation with the Director of the United States Geological Survey, shall prepare maps of the shoreline areas of the Great Lakes."

33 U.S.C. 1251 et seq. Federal Water Pollution Control Act Amendments of 1972 and its successors, the Clean Water Act of 1977 and the Water Quality Act of 1987, authorize extensive water quality planning, studies, and monitoring under the direction primarily of the Environmental Protection Agency (EPA). The Geological Survey is called upon to participate in many of these activities, partly by EPA and partly by State agencies in the Federal-State Cooperative Program. The act of 1987 includes new water quality work concerning Chesapeake Bay, the Great Lakes, Estuary and Clean Lakes Programs, and studies of water pollution problems in aquifers.

33 U.S.C. 2201 et seq. Water Resources Development Act of 1990, authorizes a program for planning, construction, and evaluation of measures for fish and wildlife habitat rehabilitation and enhancement; cooperative effort and mutual assistance for use, protection, growth, and development of the Upper Mississippi River system; implementation of a long-term resource monitoring program; and implementation of a computerized inventory and analysis systems.

33 U.S.C. 2701 et seq. The Oil Pollution Act of 1990, provides enhanced capabilities for oil spill response and natural resource damage assessment. Includes the identification of ecologically sensitive areas and the preparation of scientific monitoring and evaluation plans. Research is to be directed and coordinated by the National Wetlands Research Center.

40 U.S.C. 471 Federal Property and Administrative Services Act of 1949.

40 U.S.C 601 Public Buildings Amendment Act of 1972.

40 U.S.C. 606 Public Buildings Act of 1959.

41 U.S.C. 252 Competition in Contracting Act of 1984.

41 U.S.C. 601-613 Contract Disputes Act of 1978.

42 U.S.C. 300f et seq. Pursuant to the Safe Drinking Water Act, as amended, the Geological Survey and EPA have an interagency agreement covering aquifer studies conducted by the Survey relating to sole source aquifers.

42 U.S.C. 1006 et seq. Solid Waste Disposal Act of 1976.

42 U.S.C. 2021b et seq. Low-Level Radioactive Waste Policy Act (1980) required intra-State or multi-State (regional) arrangements for disposal of low-level radioactive waste by July 1, 1986. The Geological Survey provides geohydrologic research and technology to Federal and State agencies developing plans for low level waste management. The amending Act of 1985 included approval of seven interstate compacts.

42 U.S.C. 2210b, 2231 The Nuclear Regulatory Commission Authorization Act requires the Secretary of Energy to monitor and report to the President and Congress on the viability of the domestic uranium industry. Under a Memorandum of Understanding between the Department of Energy and the Department of the Interior, the USGS provides information on domestic uranium resources to the Energy Information Agency, beginning in FY 1985.

42 U.S.C. 4321 et seq. The National Environmental Policy Act of 1969 requires the Geological Survey to comply with Section 102(2)(C) which pertains to review of Environmental Impact Statements (EIS's) prepared by other agencies. The Geological Survey reviews EIS's for nuclear power plant sites and other critical facilities.

42 U.S.C. 4331 et seq. National Environmental Policy Act of 1969 (NEPA), requires prior to action determination that any major Federal action will not have a significantly adverse effect upon the environment. Consequently, the Geological Survey is called upon to provide technical review or inputs to resource related actions proposed by other Federal agencies.

42 U.S.C 5201 et seq. The Disaster Relief Act of 1974, Section 202(a), states that "The President shall insure that all appropriate Federal agencies are prepared to issue warnings of disasters to State and local officials." In addition, Section 202(b) states that "The President shall direct appropriate Federal agencies to provide technical assistance to State and local governments to insure that timely and effective disaster warning is provided." The Director of the Geological Survey, through the Secretary of the Interior, has been delegated the responsibility to issue disaster warnings "...for an earthquake, volcanic eruption, landslide, or other geologic catastrophe."

42 U.S.C. 5845(c) The Energy Reorganization Act of 1974 directs all other Federal agencies to "...(2)...furnish to the [Nuclear Regulatory] Commission... such research services for the performance of its functions; and (3) consult and cooperate with the Commission on research development matters of mutual interest and provide such information and physical access to its facilities as will assist the Commission in acquiring the expertise necessary to perform its licensing and related regulatory functions." The USGS conducts geological mapping in areas where future nuclear reactor construction is anticipated and conducts topical investigations of various geologic processes that could imperil the safe operation of the reactors or other critical energy facilities.

42 U.S.C. 6901 et seq. Resource Conservation and Recovery Act of 1976 and the Hazardous and Solid Waste Amendments of 1984 require EPA to promulgate guidelines and regulations for identification and management of solid waste, including its disposal. The Geological Survey's expertise is a present and potential source of assistance to EPA in defining and predicting the hydrologic effects of waste disposal.

42 U.S.C. 7418, 7470, et seq. The Clean Air Act of 1977, amended by P.L. 95-95; 91 requires Federal facilities to comply with air quality standards to the same extent as nongovernmental

entities; and establishes requirements to prevent significant deterioration of air quality and, in particular, to preserve air quality in national parks, national wilderness areas, national monuments and national seashores.

42 U.S.C. 7701 et seq. The Earthquake Hazards Reduction Act of 1977 sets as a national goal the reduction in the risks of life and property from future earth quakes in the United States through the establishment and maintenance of a balanced earthquake program encompassing prediction and hazard assessment research, seismic monitoring and information dissemination. P.L. 101-614 reauthorizes the Act.

42 U.S.C. 8901 et seq. Acid Precipitation Act of 1980 (Title VII of the Energy Security Act) calls for an "Acid Precipitation Program and Carbon Dioxide Study." The Geological Survey is continuing some monitoring activities as well as quality assurance and quality control for the program.

42 U.S.C. 9601 et seq. Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) establishes a superfund to pay in part for the massive cleanup programs needed at sites that are heavily contaminated with toxic wastes. The Geological Survey is called upon by EPA and State agencies to investigate and determine the extent of contamination and remedial measures at some of these sites.

42 U.S.C 10101 et seq. Nuclear Waste Policy Act of 1982 on disposal of high-level radioactive wastes defines DOE as lead agency with responsibility for siting, building, and operating high-level radioactive waste repositories. The law requires participation by the Geological Survey in a consultative and review role to the DOE. The Nuclear Waste Policy Amendments Act of 1987 (Title V of the Omnibus Budget Reconciliation Act of 1987) identifies the Yucca Mountain, Nevada, site as the first site to be studied to see if it is suitable for disposal of high level nuclear waste. The 1987 Act also provides that the Department of Energy conduct a survey of potentially suitable sites for a monitored retrievable storage (MRS) facility.

42 U.S.C. 10301, note Section 1121, the Water Resources Development Act of 1986 (P.L. 99-662), amends the Water Resources Research Act of 1984 by adding, as title III, "Ogallala Aquifer Research and Development." P.L. 104-147 amends the Water Resources Research Act of 1984 to extend authorization of appropriations through fiscal year 2000.

43 U.S.C. 31 et seq. The Organic Act of March 3, 1879, that established the Geological Survey, as amended (1962); and restated in annual appropriation acts. This section provides, among others, that the Geological Survey is directed to classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain. This section also establishes the Office of the Director of the Geological Survey, under the Interior Department. The Director is appointed by the President by and with the advice and consent of the Senate. P.L. 102-285 Sec. 10(a) establishes United States Geological Survey as its official name.

43 U.S.C. 31, Section 4 of the Continental Scientific Drilling and Exploration Act of 1988 requires that "The Secretary of the Department of Energy, the Secretary of the Department of the Interior through the United States Geological Survey, and the Director of the National Science Foundation assure an effective, cooperative effort in furtherance of the Continental Scientific Drilling Program of the United States."

43 U.S.C. 38 Topographic surveys; marking elevations. This section provides for the establishment and location of permanent benchmarks used in the making of topographic surveys.

43 U.S.C. 41 Publications and reports; preparation and sale. This section provides that the publications of the Geological Survey shall consist of geological and economic maps illustrating the resources and classification of lands and other reports.

43 U.S.C. 42 Distribution of maps and atlases, etc. This section authorizes and directs the Director of the Geological Survey, upon the approval of the Secretary of the Interior, to distribute topographic and geologic maps and atlases of the United States. The prices and regulations are to be fixed by the Director with the approval of the Secretary. This Section further provides that copies of each map or atlas, not to exceed five hundred, shall be distributed gratuitously among foreign governments, departments of our own Government, literary and scientific associations, and to educational institutions or libraries.

43 U.S.C. 43 Copies to Senators, Representatives and Delegates. This section provides that one copy of each map and atlas shall be sent to each Senator, Representative, and Delegate in Congress, if published within his term, and that a second copy be placed at the disposal of each.

43 U.S.C. 44 Sale of transfers or copies of data. This section provides that the Geological Survey may furnish copies of maps to any person, concern, institution, State or foreign government.

43 U.S.C. 45 Production and sale of copies of photographs and records. This section authorizes the Geological Survey to produce and sell on a reimbursable basis, copies of aerial or other photographs, mosaics, and other official records.

43 U.S.C. 49 Extension of cooperative work to Puerto Rico. This section authorizes the making of topographic surveys in Puerto Rico by the Geological Survey.

43 U.S.C. 50 The share of the Geological Survey in any topographic mapping or water resources investigations carried on in cooperation with any State or municipality shall not exceed 50 per centum of the cost thereof.

43 U.S.C. 371 note Reclamation Projects Authorization and Adjustment Act of 1992.

43 U.S.C. 506 et seq. The Reclamation Safety of Dams Act of 1978 requires the Geological Survey to participate in direct interchange of science information with other agencies. Geologic data developed under the Geologic Hazards Surveys are applicable to dam safety analyses.

43 U.S.C. 1301 The Marine Protection, Research, and Sanctuaries Act of 1972 provides that the Secretary of Commerce must consult with the Secretary of Interior prior to designating marine sanctuaries. The USGS provides information regarding the energy and mineral resource potential in areas being considered for designation as marine sanctuaries.

43 U.S.C. 1318 Geological Survey; classes and sizes of publications. This section requires that publications of the Geological Survey shall include maps, folios, and atlases required by law. This Section further provides for printing and reprinting of Geological Survey reports and distribution to Congress and the Library of Congress.

43 U.S.C. 1334; 43 U.S.C. 1346 Outer Continental Shelf (OCS) Lands Act, authorizes the Secretary of the Interior to prescribe rules and regulations to provide for the prevention of waste and conservation of the natural resources of the OCS; to conduct geological and geophysical explorations of the OCS; directs the Secretary of the Interior to conduct a study of any region in any gas and oil lease sale to obtain information necessary for assessment and management of environ mental impacts on human, marine and coastal areas which may be affected by oil and gas development on such areas.

43 U.S.C. 1701 et seq. As part of the implementation of the Federal Land Policy and Management Act of 1976, the Bureau of Land Management (BLM) enlists the Geological Survey's hydrologic data base and expertise in connection with BLM's responsibility regarding coal reserves on and beneath Federal lands.

43 U.S.C. 1701 et seq.; 43 U.S.C. 1737 The Federal Land Policy and Management Act of 1976 (FLPMA) and the Studies, Cooperative Agreements, and Contributions Implementation Provisions, authorize the Secretary of the Interior to conduct investigations, studies, and experiments involving the management, protection, development, acquisition, and conveying of public lands; and to prepare and maintain inventories of all public land and resources.

43 U.S.C. 1865 The OCS Lands Act Amendments of 1978 provide for management of oil and natural gas in the Outer Continental Shelf and for other purposes. The Minerals Management Service is responsible for carrying out all functions in direct support of management of the OCS program. The USGS provides indirect support to the Department's management activities through its basic mission to examine the geological structure, mineral resources, and products of the national domain which, offshore, includes the EEZ.

44 U.S.C. 31 Records Management by Federal Agencies (Federal Records Act)

44 U.S.C. 33 Disposal of Records

44 U.S.C. 35 Paperwork Reduction Act.

44 U.S.C. 1318, 1319, and 1320

46 U.S.C. 31(a) and (b) The Coastal Zone Management Act of 1976 provide that each department, agency, and instrumentality of the Executive Branch of the Federal Government may assist the Secretary (of Commerce), on a reimbursable basis or otherwise, in carrying out research and technical assistance for coastal zone management.

50 U.S.C. 98 The Strategic and Critical Materials Stock Piling Act of 1946 as amended by its Revision Act of 1979. Section 8 of the Act supports the Survey's programs for assessment of domestic minerals, especially for strategic and critical minerals, to complement the Federal mineral stockpile program.

P.L. 81-82, Arkansas River Compact and P.L. 82-231, Yellowstone River Compact Congress has granted its consent to many interstate water compacts. For such compacts, the Geological Survey provides administrative support for the Federal representative, usually appointed by the President. Also, the Geological Survey collects hydrologic data for 25 interstate compacts. The data collection is supported by the Water Resources Investigations activity.

P. L. 92-516 Federal Environmental Pesticide Control Act of 1972 amended the 1947 Federal Insecticide, Fungicide and Rodenticide Control Act (P.L. 80-102) program for controlling the sale and distribution of "economic poisons"; requires registration of pesticides to avoid unreasonable adverse affects to humans or the environment.

P.L. 93-322 Special Energy Research and Development Appropriation Act, 1975, provided funds "for energy research and development activities of certain departments ...." The Geological Survey's water resources investigations in coal hydrology support that legislation.

P.L. 98-502 Single Audit Act of 1984.

P.L. 101-397 Water Resources Research Act reauthorization through 1995 provides for water resources research, information transfer, and student training in grants and contract programs that will assist the Nation and the States in augmenting their science and technology to discover practical solutions to water shortage and quality deterioration problems.

P.L. 101-509 Section 529 The Federal Employees Pay Comparability Act of 1990.

P.L. 101-549 The Clean Air Act Amendments of 1990 call for continuation of the National Acid Precipitation Assessment Program (NAPAP) that was established under the Acid Precipitation Act of 1980. The Secretary of the Interior is re named as a member of the task force that directs NAPAP. The Geological Survey has been an active participant in the research program and coordinates interagency monitoring of precipitation chemistry. The USGS National Coal Resources Data System was named by the Environmental Protection Agency as the official data base for information on coal quality. EPA, utility companies, and coal mining industries use the data base to estimate the amount of air pollution derived from coal-combustion.

P.L. 101-606 The Global Change Research Act of 1990 established the United States Global Change Research Program aimed at understanding and responding to global change, including the cumulative effects of human activities and natural processes on the environment, to promote discussions toward international protocols in global change research, and for other purposes.

P. L.101-646 Nonindigenous Aquatic Nuisance Prevention and Control Act of 1990, establishes a Federal program to prevent introduction of and to control the spread of introduced aquatic nuisance species and the brown tree snake.

P.L. 102-285 National Geologic Mapping Act of 1992. Establishes in the U.S. Geological Survey a National Cooperative Geologic Mapping Program. Section 4(c) states "The objectives of the geologic mapping program shall include (1) determining the Nation's geologic framework through systematic development of geologic maps at scales appropriate to the geologic setting and the perceived applications, such maps to be contributed to the national geologic map data base; (2) development of a complementary national geophysical-map data base, geochemical-map data base, and a geochronologic and paleontologic data base that provide value-added descriptive and interpretive information to the geologic- map data base; (3) application of cost-effective mapping techniques that assemble, produce, translate and disseminate geologic-map information and that render such information of greater application and benefit to the public; and (4) development of public awareness for the role and application of geologic-map information to the resolution of national issues of land use management."

P.L. 102-580 Water Resources Development Act of 1992 establishes a National Contaminated Sediment Task Force, with USGS as a Member, to conduct a comprehensive national survey of aquatic sediment quality.

49 Stat. 1894 Outdoor Recreation Act of June 23, 1936 authorizes the Secretary of the Interior to sponsor, engage in, and assist in research relating to outdoor recreation, directly or by contract or cooperative agreements, and make payments for such purposes; undertake studies and assemble information concerning outdoor recreation; and cooperate with educational institutions and others in order to assist in establishing education programs and activities and to encourage public use and benefits from outdoor recreation.

State

Florida Administrative Code Water Resource Management Rules in Numerical Order

Chapter 18
Chapter 40
Chapter 62B to 62C
Chapter 62-4 to 62-345
Chapter 62-503 to 62-560
Chapter 62-600 to 62-625
Chapter 62-640 to 62-699

Chapter 18			
Chapter	Title	Description	Effective Date
18-14	Administrative Fines for Damaging State Lands or Products Thereof		07/07/85
18-18	Biscayne Bay Aquatic Preserve		06/05/96
18-20	Florida Aquatic Preserves		08/01/01
18-21	Sovereign Submerged Lands Management (Forms)		01/01/06

Chapter 40			
Chapter	**Title**	**Description**	**Effective Date**
40B-1	General and Procedural Rules		10/03/95
40B-4	Regulations		10/03/95
40B-400	Environmental Resource Permits		10/03/95
40C-1	Organization and Procedure		10/03/95
40C-4	Environmental Resource Permits: Surface Water Management Systems		10/03/95
40C-8	Minimum Flows and Levels		10/03/95
40C-40	Standard General Environmental Resource Permits		10/03/95
40C-41	Surface Water Management Basin Criteria		10/03/95
40C-42	Regulation of Stormwater Management Systems		10/03/95
40D-1	Procedural		09/04/05
40D-4	Individual Environmental Resource Permits		09/04/05
40D-8	Water Levels and Rates of Flow		09/04/05
40D-40	Standard General Environmental Resource Permits		09/04/05
40D-45	~~Surface Water Management for Mining Materials other than Phosphate~~ **(REPEALED)**		09/4/05
40E-1	General and Procedural		10/03/95
40E-4	Surface Water Management		10/03/95
40E-40	General Surface Water Management Permits		10/03/95
40E-41	Surface Water Management Basin and Related Criteria		10/03/95

Chapter 62B to 62C

Chapter	Title	Description	Effective Date
62B-26	Setback line	The legal description of the location of the Coastal Construction Control Lines in the coastal counties of Florida.	02/07/97
62B-33	Coastal Construction Control Line	Rules and Procedures for Permits for construction seaward of the Coastal Construction Control Line	07/03/05
62B-34	Coastal Construction Control Line	Rules and Procedures for General Permits for activities seaward of the Coastal Construction Control Line	11/21/05
62B-36	Beach Management Assistance Program	Governs policy on the ranking and cost sharing of state-funded restoration and inlet management projects. Provides procedures for executing a comprehensive, long-range, statewide beach management plan for the protection of Florida's critically eroded shoreline.	12/25/03
62B-41	Rules and Procedures for Application for Coastal Construction Permits	Contains criteria and procedure for obtaining a Coastal Construction permit.	10/23/01
62B-49	Joint Coastal Permits and Concurrent Processing of Proprietary Authorizations	Contains the rules and procedures for obtaining a Joint Coastal Permit pursuant to section 161.055, Florida Statues.	02/18/98
62B-54	Administrative Fines and Damage Liability	Provides a method for determining the amount of fines or damages to be assessed for violations pursuant to 161.054 FS, and the procedure for imposing and collecting such fines or damages.	03/20/00
62C-16	Mandatory Phosphate Mine Reclamation	Administrative procedures and reclamation standards for land disturbed by mining operations related to the extraction of phosphate rock or any other person who is obligated to reclaim mined lands pursuant to subsection 211.32(1), F.S.	05/28/06
62C-17	Master Reclamation Plan for Lands Disturbed by the Severance of Phosphate prior to July1, 1975	Administrative procedures and reclamation standards that implement the provisions of Part I of Chapter 378, F.S. related to the reclamation of lands mined for phosphate prior to July 1, 1975.	11/11/93
62C-35	Certification to Administer Reclamation Rules	Procedures for local governments to petition for delegation of authority to administer the mined land reclamation program.	01/22/02
62C-36	Limestone Reclamation Requirements	Administrative procedures and reclamation standards for land disturbed by mining operations related to the extraction of material composed principally of calcium or magnesium carbonate, including limestone, dolomite, shell and coquina.	07/16/87
62C-37	Heavy Mineral Reclamation Requirements	Administrative procedures and reclamation standards for land disturbed by mining operations related to the extraction of resources found in conjunction with sand deposits which have a specific gravity of not less than 2.8, including zircon, staurolite, and titanium minerals.	01/22/02
62C-38	Fuller's Earth Reclamation Requirements	Administrative procedures and reclamation standards for land disturbed by mining operations related to the extraction of clay possessing a high absorptive capacity and consisting of montmorillonite or palygorskite (also known as attapugite).	11/29/90
62C-39	Reclamation Requirements for Solid Resources Other Than Phosphate, Limestone, Heavy Minerals, and Fuller's Earth	Administrative procedures and reclamation standards for land disturbed by mining operations related to the extraction of material such as gravel (noncarbonate), sand, clay (other than fuller's earth), dirt, soil, peat.	01/19/89

Chapter 62-4 to 62-345

Chapter	Title	Description	Effective Date
62-4	Permitting	DEP's general authority to issue permits	04/03/03
62-25	Regulations of Stormwater Discharge		08/30/88

62-40	Water Resource Implementation Rule	Provides water policy goals, objectives, and guidance for the development and review of programs, rules, and plans relating to water resources.	05/07/06
62-113	Delegations	Lists delegation agreements which have been entered into by the Department with another state agency, political subdivision, or water management district.	07/16/01
62-160	Quality Assurance (Tables)	Defines the minimum field and laboratory quality assurance, methodological and reporting requirements of the Department	06/08/04
62-301	Surface Waters of the State	Defines the landward extent of surface waters of the state (for use in the Northeast part of the State only).	01/08/96
62-302	Surface Water Quality Standards (Table 62-302.530 - Surface Water Quality Standards)	Establishes the minimum criteria which are necessary to protect the designated uses of a water body, the classification of surface waters, lists specially protected Outstanding Florida Waters.	06/28/06
62-303	Identification of Impaired Surface Waters		06/10/02
62-312	"Joint Coastal Permitting, Northwest Florida" (Forms)	Dredge and Fill permitting rules Northwest Florida	08/04/05
62-330	Environmental Resource Permitting		08/02/06
62-340	Delineation of the Landward Extent of Wetlands and Surface Waters	Provides a unified statewide methodology for the delineation of the extent of wetlands and surface waters.	07/01/94
62-341	Noticed General Environmental Resource Permits		09/04/05
62-342	Mitigation Banks		05/21/01
62-343	Environmental Resource Permit Procedures (Forms)		12/19/03
62-343.900(1)	ERP Joint Application Booklet		10/03/95
62-344	Delegation of the Environmental Resource Program to Local Governments (Forms)		05/09/00
62-345	Uniform Wetland Mitigation Assessment Method (Forms)		04/27/05

Chapter 62-503 to 62-560			
Chapter	**Title**	**Description**	**Effective Date**
62-503	State Revolving Loan Program for Water Pollution Control		07/29/2004
62-505	Small Community Wastewater Construction Grants Program		07/22/1999
62-520	Ground Water Classes, Standards, and Exemptions	Establishes minimum criteria for ground water, defines the classification of groundwater according to designated uses, procedures for ground water quality exemptions.	12/09/96
62-521	Wellhead Protection Rule	Permitting requirements and prohibitions for installations within wellhead protection areas.	07/13/95
62-522	Ground Water Permitting and Monitoring Requirements	Establishes permitting and groundwater monitoring requirements, including zones of discharge, for installations discharging to ground water.	08/27/01
62-524	Delineation Rule	Requirements for construction and testing for potable wells within a delineated area.	06/27/00
62-528	Underground Injection Control	Establishes criteria for the construction and operation of injection wells.	12/27/05
62-532	Water Well Permitting and Construction Requirements	Requirements to obtain a permit and construct a water well.	03/28/02
62-550	Drinking Water Standards, Monitoring and Reporting	Establishes the primary and secondary drinking water standards. Provides treatment, monitoring, and reporting requirements for Public Water Systems.	01/17/05

62-551	Lead and Copper Rule	Adopted U.S. Environmental Protection Agency's Lead and Copper Rule	
62-552	State Revolving Fund Program for Drinking Water Facilities		07/20/1999
62-555	Permitting and Construction of Public Water Systems	Construction, operation, and maintenance standards for public water systems as well as treatment and monitoring requirements for water systems which use surface water.	01/17/05
62-560	Requirements for Public Water Systems that are out of Compliance	Adopts EPA rules on the actions a water system must take when it is not in compliance with the established standards	01/17/05

Chapter 62-600 to 62-625

Chapter	Title	Description	Effective Date
62-600	Domestic Wastewater Facilities	Provides minimum standards for the design and operational criteria of domestic wastewater facilities. Establishes minimum treatment requirements for domestic wastewater facilities.	04/13/06
62-601	Domestic Wastewater Treatment Plant Monitoring Figure 1 - Approved Test Procedures Figure 2 - Minimum Schedule for Sampling and Testing of Domestic Wastewater Treatment Plant Monitoring Parameters Figure 3 - Minimum Ground Water Monitoring Schedule	Establishes minimum requirements for monitoring of domestic wastewater facilities.	12/24/96
62-602	Drinking Water and Domestic Wastewater Treatment Plant Operators	Establishes requirements for certification of drinking water and domestic wastewater treatment plant operators.	02/06/02
62-603	Detergents	Establishes limitations on the amount of phosphorus contained in domestic household laundry detergents sold in the state.	12/26/96
62-604	Collection Systems and Transmission Facilities	Establishes design, construction, and operation requirements for wastewater collection and transmission systems.	11/06/03
62-610	Reuse of Reclaimed Water and Land Application	Defines reuse as the deliberate application of reclaimed water, in compliance with Department rules, for a beneficial purpose. Provides a comprehensive and detailed set of requirements for the design and operational criteria of a wide range of reuse and land application systems consistent with EPA's Guidelines for Water Reuse.	03/09/06
62-611	Wetlands Application	Provides State regulations and standards for domestic wastewater discharges to wetlands, both man-made and natural. Establishes frequencies and monitoring criteria for all treatment, receiving and man-made wetlands.	12/26/96
62-620	Wastewater Facility and Activities Permitting	Establishes the procedures to obtain a permit to construct, operate or modify domestic and industrial wastewater facilities. Includes requirements for establishing permit limitations and conditions. Contains requirements for monitoring and reporting after the permit is issued.	07/10/06
62-621	Generic Permits (For specific permitted activities, see the Wastewater Program page.	Establishes the procedures to obtain a generic permit with applicable NPDES authorization.	12/23/04
62-624	Municipal Separate Storm Sewer Systems	Establishes procedures for permitting Phase I and II municipal separate storm sewer systems (MS4s).	01/28/04
62-625	Pretreatment Requirements for Existing and New Sources of Pollution	Establishes pretreatment requirements as part of the State National Pollutant Discharge Elimination System (NPDES). Provides for the protection of domestic wastewater facilities from pass through or interference from pollutants	01/08/97

		contributed by industrial users of the domestic wastewater facility.	

Chapter 62-640 to 62-699			
Chapter	**Title**	**Description**	**Effective Date**
62-640	Domestic Wastewater Residuals	Defines residuals as the solid, semisolid or liquid residue generated during the treatment of domestic wastewater in a domestic wastewater treatment facility but not including solids removed from pump stations and lift stations or screenings and grit removed from the preliminary treatment components of domestic wastewater treatment facilities. Regulates the beneficial use of residuals in Florida, including the distribution and marketing of residuals and the land application of residuals.	03/30/98
62-650	Water Quality Based Effluent Limitations	Establishes guidelines for the Water Quality Based Effluent Limitations (WQBEL) determinations, level I and level II.	12/26/96
62-660	Industrial Wastewater Facilities	Provides minimum operation and treatment standards, and effluent limitations for industrial wastewater facilities. Establishes the design, treatment and operation requirements of general permits for Laundromats, pesticide waste degradation systems, car wash systems, sand and limestone mines, and tomato wash water.	05/10/05
62-670	Feedlot and Dairy Wastewater Treatment and Management Requirements	Establishes the design, construction and operation requirements for animal feeding operations, dairy farms in the lake Okeechobee drainage basin, and commercial egg production facilities. Establishes definition of Concentrated Animal Feeding Operations.	12/26/96
62-671	Phosphate Mining Waste Treatment Requirements	Establishes effluent guidelines, limits and standards for mineral mining and processing, and new source requirements.	12/24/96
62-672	Minimum Requirements for Earthen Dams, Phosphate Mining and Processing Operations	Part I provides requirements for phosphate mining and beneficiation operations including new dam construction, operational requirements, inspections, contingency plans, and non-clay phosphate mining impoundments. Part II provides requirements for phosphogypsum stack system impoundments which includes construction, assessment, operational, procedural, inspection, and maintenance requirements for perimeter earthen dikes and phosphogypsum stacks. Training, contingency plans and emergency measures are also included.	07/19/06
62-673	Phophogypsum Management	Contains procedures and permitting requirements for phosphogypsum stack systems. Also provides operational and closure requirements.	07/19/06
62-699	Treatment Plant Classification and Staffing	Establishes minimum staffing requirements for facilities based on capacity and type of treatment process utilized by the facility.	07/05/01

CHAPTER 373 WATER RESOURCES

http://www.leg.state.fl.us/Statutes/index.cfm?App_mode=Display_Statute&URL=Ch0373/titl0373.htm&StatuteYear=2004&Title=%2D%3E2004%2D%3EChapter%20373

Florida Statutes subsection 373.019(17) defines Florida Wetlands are those areas usually inundated or saturated by water long enough to create oxygen poor soils which under normal circumstances support wetland vegetation as defined in Chapter 62-340.450 of the Florida Administrative Code (F.A.C.).

Chapter 62-340.450 of the Florida Administrative Code (F.A.C.). wetland vegetation definition.

Local

LAND DEVELOPMENT CODE, County of LEE, FLORIDA, Codified through
Ord. No. 06-10, adopted June 12, 2006. (Supplement No. 8, Update 2), first Adopted: April 20, 1994

Appendix IV: Applicable Federal, State and Local Wetland Permit Agencies

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION - (DEP)

South Florida District Office
2295 Victoria Avenue, Suite 364
Fort Myers, FL 33901
Telephone (239) 332-6975
Fax (239) 332-6969
http://www.dep.state.fl.us/

LEE COUNTY DIVISION OF ENVIRONMENTAL SCIENCES

1500 Monroe Street, 4the Floor
Fort Myers, FL 33901
Telephone (239) 479-8585
Fax (239) 479-8144

http://www.lee-county.com/dcd/Environmental/Environmental.htm

SOUTH FLORIDA WATER MANAGEMENT DISTRICT - (SFWMD)

Fort Myers Service Center
2301 McGregor Boulevard
Fort Myers, FL 33901
Telephone (239) 338-2929
Fax (239) 338-2936
http://www.sfwmd.gov/

U.S. ARMY CORPS OF ENGINEERS - (ACOE)

Fort Myers Regulatory Office
1520 Royal Palm Square Blvd., Suite 310
Fort Myers, FL 33919
Telephone (239) 334-1975
Fax (239) 334-0797
http://www.saj.usace.army.mil

U.S. NATURAL REASOURCES CONSERVATION SERVICE - (NRCS)

Lee County Office
3434 Hancock Bridge Parkway, Suite 209-B
North Fort Myers, FL , 33903 33919
Telephone (239) 995-5678
Fax (239)

Appendix V: Bibliography Links

Guidebooks, Brochures, Websites, Other Educational Materials (materials available to the public)

- *This Old Pond* Video (approximately 5,000 copies distributed), available from the Southwest Florida Water Management District at: http://swfwmd.state.fl.us.
- NPDES Stormwater Construction Permitting brochures (approximately 800 distributed, with 800 more brochures ordered), available from the Southwest Florida Water Management District at: http://swfwmd.state.fl.us.
- One Stop Permitting – Permitting Information – available at www.watermatters.org – (* denotes brochures available in pdf*):
  Getting A Permit: The Steps
  *AGSWM Process
  *ERP Permitting
  *Tips about Agricultural Permitting
  How to Operate & Maintain Your Stormwater Management System
- Publications and reports of the South Florida Water Management District SFWMD, including a link to educational sites can be accessed at:: http://www.sfwmd.gov/newsr/2_publication.html**.** Additional information from the SFWMD also is available at http://www.sfwmd.gov/ and click on "site map."
- The Department of Environmental Protection's Office of Environmental Education provides a listing of many of the Department's publications at (note-- DEP: For the following publications audience designations are provided as G for general, and E, M, and H for elementary, middle and high school, respectively):
  – http://www.dep.state.fl.us/secretary/education/default.htm. A listing of the publications pertinent to wetland education from the Department education site also is available below. For specific information on the wetland and surface water programs, please refer to the specific web sites provided for each of the programs below:
  – Stormwater & Non–Point Source Management Program-- http://www.dep.state.fl.us/water/stormwater/index.htm. Scroll down to Publications and Reports. The publications and reports site also provides information on the implementation of "best management practices" (BMPs).
  – NPDES Stormwater Program-- http://www.dep.state.fl.us/water/stormwater/npdes/guidance_links.htm. This site provides links to many EPA and DEP NPDES publications and guidance.
  – Bioassessment of Florida's Aquatic Ecosystems-- http://www.dep.state.fl.us/water/bioassess/index.htm. This site describes biological approaches to measure and evaluate the consequences of human actions on biological systems. Posters also can be obtained at http://www.dep.state.fl.us/water/bioassess/posters.htm.
  – Mine Reclamation Program--http://www.dep.state.fl.us/water/mines/index.htm This site provides links to the following aspects of the program: Environmental Resources; Management Plan for the Integrated Habitat Network – Lease Nos. 3963 and 3995; Dam Safety; Mandatory Non–Phosphate; Mandatory Phosphate; Nonmandatory Reimbursement; Mine Safety, Phosphogypsum Management; Technical Section, and Mine Reclamation Rules. For more information, contact: FDEP - Mine Reclamation, Collins Building, 2051 E. Dirac Drive, Tallahassee, FL 32310-3760, Phone (850) 487-3894, Fax (850) 488-1254.
  – Wetland Resource Program (often referred to as the Environmental Resource Program)-- http://www.dep.state.fl.us/water/wetlands/index.htm. This site includes information inclusive of the Wetland Resource Permitting program, the Environmental Resource Permitting program, and the Sovereign Submerged Lands Program applicable throughout the state. The program's training and education site is at http://www.dep.state.fl.us/water/wetlands/erp/edutrain.htm. This site contains access to publications developed for the program.
  – Sovereign Submerged Lands Program--http://www.dep.state.fl.us/water/wetlands/erp/ssla.htm.

- Southwest Florida Aquatic and Buffer Preserves--941-575-5861
  - ✔ Aquatic Preserves of Southwest Florida – Brochure on the aquatic preserves of the region – G
  - ✔ Pine Island Sound Aquatic Preserve – Brochure on the aquatic preserves – G
  - ✔ Introduction to Aquatic Preserves in The Charlotte Harbor Estuary – "Do You Know Where Your Aquatic Preserves Are?" – G
  - ✔ Aquatic & Buffer Preserves of Southwest Florida – Summary Table – G
  - ✔ Charlotte Harbor Estuaries Volunteer Water Quality Monitoring Network – Background information for interested volunteers – G
- WATER--850–487–1855
  - ✔ Florida State of the Environment: Ground Water, Reuse of Reclaimed Water, Stormwater Management – 3 booklets that describe the program areas of stormwater management, ground water and reuse of reclaimed water in Florida – G-H
  - ✔ Florida Water Quality Assessment – Section 305 (b) Report 1998 for the State of Florida – G
  - ✔ Florida Ground Water Guidance – Brochure providing numeric screening levels for assessing the ground water concentrations minimum criteria standards believed to affect human health – G
  - ✔ Pointless Personal Pollution – Brochure on nonpoint sources of pollution and what we can do to reduce nonpoint sources – G
  - ✔ Save the Swales – Brochure on runoff, purpose and importance of swales and what you can do to reduce runoff – G
  - ✔ Eastman and Laird's "Teenage Ninja Turtles Storm Drain Savers" – Activity books on purpose of storm drains and how we can keep them clean – E-M-H
  - ✔ The Waterfront Property Owner's Guide – 58-page brochure describes homeowner tips on how to protect waterbodies and how to maintain your water front property – G
  - ✔ How to Judge Environmental Planning for Subdivisions – 45-page Citizens guide to help individuals not professionally trained to be able to evaluate land development plans – G
  - ✔ EnviroScape Training Aid – LOAN ONLY - portable kit with landscape allows hands-on demonstrations of nonpoint and point sources of water pollution and ways to prevent pollution – E–M–H–G
- Mine Reclamation--850-488-8217
  - ✔ Ongoing Projects & Programs Which are Interrelated With the Implementation of the Integrated Habitat Network Coordinated Development Area – Information for participants in the State Phosphate Mine Reclamation Program – G
  - ✔ A Regional Conceptual Reclamation Plan for the South. Phosphate District of Florida – An analysis of environmental, economic & political factors within a 9 county region of central Florida. Includes maps – G
- Wetland Resource Permitting 850–488–0130
  - ✔ Florida State of the Environment Wetlands Resource Permitting – Describes wetland types, why we should protect our wetlands, and the rules and regulations for permitting – G-H
  - ✔ Single-Family Dredge and Fill and the DEP, Single-Family Dock Construction and the DEP, Shoreline Stabilization and the DEP – Three brochures that describe single-family dredge & fill dock construction & shoreline stabilization – G
  - ✔ Take It Back – Video(5 min) on stewardship of the earth – Upper elementary to adult.
  - ✔ Wetlands Delineation Manual. – 98-page manual discussing Wetlands Delineation Methodology followed by examples of practical application of Methodology at nineteen reference sites located throughout the state – G
  - ✔ Florida Wetland Plants: An Identification Manual – 588-page manual that reveals Florida's wetlands with over 800 colored photographs. Provides description of plants, their habitat and associates plant communities – G
- Environmental Education--850–488–9334

- Florida-State of the Environmental Series – 7 booklet series describes the regulatory programs. -Air Quality, Ground Water, Reuse of Reclaimed Water, Solid Waste Management, Stormwater Management, Wastewater Management, and Wetlands – G-H
- Classroom and Field Experiments for Florida's Environmental Resources – Booklet describes 14 laboratory and field experiments for middle and high school environmental and science classes – M
- Environmental Education Leaflets #1 thru #10 – #1 Wetlands in Florida, #2 Ground Water in Florida, #3The Automobile and the Environment, #4 Solid Waste and Recycling, #5 The Water You Drink, #6 Mercury in Florida's Environment, #7 Invading Exotic Species in Florida, #8 Global Climate Change & Florida, #9 Making Recycling Work, #10 Watershed and River Basin – M-G
- Your Environment – Booklet aimed at upper elementary/middle school children with information and activities describes Florida's environment and how you can help to protect it – E-M
- Color the Coast With Pelican Pete & Molly Manatee – Activity book for K-3 grades describes beach and coastal environmental problems – E
- Florida's Beaches and Shores – Activity book for 3--5 grades describes the beach and coastal areas – E
- The Indian River-An Exceptional Lagoon – Teacher supplemental guides to developing an understanding of the lagoon and the interdependence of its plants and animals – T
- Aquatic Plants – Activity book for 3-8 grades describes plant life and animal life in aquatic areas – E-M
- Estuarine Habitats-Elementary Teaching Activities Series – A set of seven Supplemental Teaching Activities for Estuarine Habitats – T
- EPA "Wetlands--Reading List" – Reading list for pre-kindergarten through K-12 on Wetlands – E-H
- People, Growth, and Endangered Ecosystems: Exercise in Biodiversity Grades 6-10 – Lesson guide for 6-10 grades describing activities to help students understand ecosystems – M-H
- Surveying and Ecosystem – An exercise for 9-12 grades familiarizing students with an ecosystem – H
- Studying A Piece of an Ecosystem – A class exercise for 9-12 grades familiarizing students with ecosystems – H
- Resort or Resource…Either… Or Both? An Environmental Citizenship Activity Grades 9-11 – Activity book for 9-11 grades describes environmental citizenships and wetlands – H

(ACCORDING TO THE USDA / SOIL CONSERVATION SERVICE SOIL SURVEY OF LEE COUNTY)

Hydric soils are those soils that in their natural conditions are saturated, flooded, or ponded long enough during the growing season (February-December in Lee County) to develop anaerobic conditions that favor the growth and regeneration of hydrophytic (wetland) vegetation.

FLOODING

Soil flooded by moving water from stream overflow, run off or high tides.

Field Symbol	Field Mapping Unit Name
8	Hallandale fine sand, tidal
15	Estero Muck
16	Peckish mucky fine sand
23	Wulfert muck
24	Kesson fine sand
56	Isles muck
57	Boca fine sand, tidal

SLOUGH (SHEET-FLOW)

Broad nearly level, poorly defined drainage way that is subject to sheet-flow in the rainy season.

Field symbol	Field Mapping Unit Name
5	Captiva fine sand
10	Pompano fine sand
12	Felda fine sand
14	Valkaria fine sand
26	Pineda fine sand
34	Malabar fine sand
38	Isles fine sand, slough
74	Boca fine sand, slough
75	Hallandale fine sand, slough

77	Pineda fine sand, limestone substratum

PONDING

Standing water on soils in closed depressions. The water can be removed only by percolation or evapotranspiration.

Field Symbol	Field Mapping Unit Name
19	Gator muck
20	Terra Ceia muck
27	Pompano fine sand, depressional
39	Isles fine sand, depressional
40	Anclote fine sand, depressional
41	Valkaria fine sand, depressional
44	Malabar fine sand, depressional
45	Copeland sandy loam, depressional
49	Felda fine sand, depressional
51	Floridan fine sand, depressional
53	Myakka fine sand, depressional
62	Winder sand, depressional
73	Pineda fine sand, depressional
78	Chobee muck

Note: Soil #6 - Hallendale fine sand and #13 - Boca fine sand have indicated a high percentage of hydric soils within the mapping unit and may also indicate a wetland area.

Appendix VII: Indigenous Plant Communities

Indigenous native vegetation means those plant species that are characteristic of the major plant communities of the county. Areas where invasive exotic vegetation has exceeded 75 percent of the plant species by quantity will not be considered indigenous vegetation. Per LDC Section 10-701**, listed below are the major indigenous plant communities of the county.**

Communities	(1)	(2)	(3)	(4)
	FLUCCS	LONG	WARD	SCS
Uplands:				
Coastal strand	X	X	X	X
Tropical hammock	X	X	X	X
Coastal hammock	X	X	X	X
Xeric oak scrub	X	X	X	X
Scrubby flatwoods	X	X	X	X
Xeric pine flatwoods	X	X		X
Mesic pine flatwoods	X	X	X	X
Hydric pine flatwoods	X	X		X
Hardwood pine hammock	X	X	X	X
Hardwood hammock	X	X	X	X
Rangeland	X	X	X	X
Unimproved Pasture	X	X	X	X
Ruderal	X	X	X	X
Exotic Invaded	X	X	X	X
Wetlands:				
Tidal waters		X	X	
Mangroves	X	X	X	X
Tidal marshes	X	X	X	X
Tidal flats	X			
Inland ponds/sloughs	X			
Submergent/emergent	X			

Aquatic marsh	X	X	X	X
Cypress swamp	X	X	X	X
Hardwood swamp	X	X	X	X
Wet prairie	X	X	X	X
Intermittent ponds	X			
Cypress-pine	X			
Exotic Invaded	X			

***Due to the extraordinary number of species of grasses, herbaceous and woody plants, and trees that are indigenous to Southwest Florida, each species cannot be listed in this section. The following sources, which are referenced in the table in this section, contain the names of those indigenous plant species recognized as characteristic of each represented plant community:**

(1) Florida Land Use, Cover and Forms Classification System. Department of Transportation, State Topographic Bureau, Thematic Mapping Section.

(2) A Flora of Tropical Florida, Robert W. Long and Olga Lakela.

(3) Rare and Endangered Biota of Florida, Volume Five--Plants, edited by Daniel B. Ward.

(4) 26 Ecological Communities of Florida, Soil Conservation Service.

Note: the following is the accepted revision of the Principles of the Estero Bay Agency on Bay Management dated May 13, 2002.

The Estero Bay Agency on Bay Management (ABM) is a non-regulatory body whose directive is to make comments and recommendations for the management of Estero Bay and its watershed. The waters of Estero Bay provide a tremendous resource for local residents and tourists who enjoy fishing and appreciate the local vegetation and wildlife. It is also important to note that Estero Bay is Florida's first aquatic preserve. Due to the forthcoming increase in population density on and near the shores of Estero Bay and its watershed and the attendant increase in boat traffic, the Estero Bay Agency on Bay Management have adopted the following guiding principles. These principles are an attempt by the ABM to make strong and clear recommendations for the preservation and restoration of this rare and unique ecosystem. The ABM realizes that some situations within the Estero Bay Watershed may not allow the strict adherence to these principles; however, the ABM recommends that they be utilized wherever and whenever possible.

I. General

I. A. The ABM will be cognizant of the "big picture" and to the concept of "ecosystem management" and sustainable development.
I. B. Water conservation practices and wastewater reuse will be encouraged throughout the watershed to protect potable water supplies."
I.C. All re-zoning requests within the Estero Bay Watershed will be critically evaluated to ensure protection of water quality, rare and unique habitats, listed wildlife, and ecosystem functions.
I.D. Variances from environmental regulations and deviations from development standards will be the exception, not the rule.
I.E. Environmental protection and long-term quality of life will not suffer based on short-term economic impacts or political pressures.

I.F. Zoning resolutions that are required as a part of the approval for re-zoning must be tracked for future compliance and enforcement.
I.G. Compliance and enforcement of existing environmental regulations will be a top priority for regulatory agencies.
I.H. Additional staff will be hired to assist in the compliance and enforcement of zoning resolutions related to environmental issues.
I.I. Agency staffing will keep pace with increased demand on services, especially environmental protection issues. Trained and experienced wildlife biologists and environmental scientists will be hired to ensure adequate development review.
I.J. Activities in the watershed by any regulatory agency shall provide the opportunity for public participation.

II. Uplands, Headwaters and Isolated Wetlands

II. A. Land Management and Acquisition

II. A. (1) Lands identified as critical for listed species shall be targeted for public purchase and managed to maintain their environmental value.
II. A. (2) The Lee County Conservation Land Acquisition and Stewardship Advisory Committee will consider priorities for land purchases adopted by the "Arnold Committee" and the ABM.
II. A. (3) The Lee County Conservation Land Acquisition and Stewardship Advisory Committee

will use proactive approaches to investigate the willingness of landowners to be voluntary sellers, as specified in the requirements of the ordinance that established the land acquisition program.
II. A. (4) Regulations within the existing "Notice of Clearing" process by Lee County will be developed that require wildlife surveys, habitat assessments, and a development plan for the agricultural operations so that critical habitats for state and federal listed species can be preserved.
II. A. (5) Conservation easements will be used as an option to protect critical habitats.
II. A. (6) Programs such as the "Keep It Clean" and "Florida Yards and Neighborhoods" programs should be promoted, to minimize inputs of storm water pollutants into the bay.
II. A. (7) Before off-site mitigation for wetland and listed-species upland impacts is considered, opportunities for avoidance, minimization, and on-site mitigation must be exhausted.
II. A. (8) Off-site mitigation projects should be within watershed and within habitat type wherever possible.

II. B. Vegetation

II. B. (1) Natural, native vegetation within natural systems will be retained to the greatest extent possible.
II. B. (2) Physical removal of invasive vegetation will be utilized for control rather than widespread chemical treatment.
II. B. (3) Limited application of herbicides that rapidly degrade may be used, according to the product label, on a case by case basis for the control of nuisance and invasive non-native vegetation and to maintain native plant communities.
II. B. (4) Promote, whenever possible, the active and aggressive removal of invasive non-native plants from all common areas, conservation easements, preserves and natural areas within the Estero Bay Watershed.

II. B. (5) Isolated and seasonal wetlands are recognized for their importance for flood protection, unique fish and wildlife habitat, water quality, and water quantity. These wetlands should be preserved to the greatest extent possible.

II. C. Physiographic

II. C. (1) Consideration will be given to the ancient relief of the watershed by: preserving vegetation that provide the characteristic habitat and canopy; retaining the relic natural features; and reconnecting historic natural flow ways that have been diverted or severed.

II. D. New Construction

II. D. (1) Construction within flood plains shall be avoided wherever possible.
II. D. (2) For construction that must occur within flood plains, utilize techniques that do not adversely impact the capacity of the floodplain (e.g. use of pilings to raise living floor elevations versus use of fill).
II. D. (3) Utilize non-polluting construction materials (e.g. concrete pilings versus treated wood) within flood plains.

II. E. Hazardous Materials

II. E. (1) Specifically placed larvicides and biological controls are the preferred methods for mosquito control. Adulticides should only be used in compliance with Section 388.011(1) Florida Statutes.

II. F. Agriculture

II. F. (1) Tax incentives should be created so that landowners may continue land use practices that maintain ecologically important habitat.
II. F. (2) Adequate staff at Property Appraisers Offices within the watershed will be provided to

review the high number of applications and strictly enforce the rules for Bona fide agricultural tax exemptions.
II. F. (3) The minimum time period for re-zoning of agricultural land should be increased from three years to ten years to reduce the speculative clearing of agricultural land for "higher use" which results in the loss of natural habitat and the loss of tax revenue.
II. F. (4) Legislation should be implemented that provides inheritance tax, real estate tax and estate tax relief for agriculture landowners and their heirs, who will maintain their land in agriculture.
II. F. (5) Legislation should be implemented that provides inheritance tax, real estate tax and estate tax relief for landowners and their heirs, who provide permanent conservation easements on their property.

II. G. Urban

II. G. (1) Old surface water management (SWM) systems built before current regulations will be retrofitted, using best available management practices, to meet current SWM standards.
II. G. (2) Permitting must address cumulative impacts to the water storage capacity of the watershed.
II. G. (3) Grants or incentives should be provided for retrofitting old surface water management systems that are not effectively managing water volume or flow, or removing nutrients and other pollutants.
II. G. (4) Proposal s that reduce impacts to Estero Bay and its watershed that might include: rural village concepts, urban infill, redevelopment sites, greenways; should be encouraged.

II. H. Roadways

II. H. (1) All future roadways to be located in the floodplain within the Estero Bay Watershed will be designed and constructed to not impede flows from a 25-year, 3 day, storm event.
II. H. (2) Transportation planning shall be undertaken with goals of increasing public transportation and enhancing new and existing roads with walkable, bikeable passageways that are connected and landscaped.

III. Water Courses

III. A. Physiographic

III. A. (1) Non-structural approaches versus structural approaches will be used for water resource management solutions.
III. A. (2) No further canalization or dredging of remaining natural watercourses will occur.
III. A. (3) A better balance of ecological needs versus water flow will be used for water resource management decisions.
III. A. (4) Establish and restore the historic basin flood plains to the maximum extent possible.
III. A. (5) The ancient relief of the upper tributary reaches will be maintained by: preserving vegetation that provide the characteristic riparian habitat and canopy, retaining the relic natural features of the tributary bank contours, and reconnecting historic natural flow ways that have been diverted or severed.

III. B. Vegetation

III. B. (1) Natural, native vegetation versus non-native invasive vegetation within flow ways and natural systems will be retained to the greatest extent possible.
III. B. (2) Physical removal of invasive vegetation versus widespread chemical treatment will be utilized for control.
III. B. (3) Limited application of herbicides that rapidly degrade may be used on a case-by-case basis, under the supervision of certified personnel, for control of nuisance and invasive nonnative vegetation and to maintain native plant communities.
III. B. (4) Promote, whenever possible, the active and aggressive removal of invasive non-native

plants from all common areas, conservation easements, preserves and natural areas within the Estero Bay Watershed.

III. C. New Construction

III. C (1) New setback criteria will be developed and implemented along watercourses to provide construction setbacks to the maximum extent possible. These setback criteria will be based on the best available scientific data.

III. C. (2) Construction within tributary flood plains shall be avoided wherever possible.

III. C. (3) For construction that must occur within flood plains, utilize techniques that do not adversely impact the capacity of the floodplain (e.g. pilings to raise living floor elevations versus fill).

III. C. (4) Utilize non-polluting construction materials (e.g. concrete pilings versus treated wood) within flood plains.

III. D. Hazardous Materials

III. D. (1) Specifically placed larvicides and biological controls are the preferred methods for mosquito control. Adulticides should only be used in compliance with Section 388.011(1) Florida Statutes.

III. E. Boating

III. E. (1) No special accommodations will be made for boats (e.g. no cutting of over story vegetation, no removal of oxbows, no dredging or filling except for permitted maintenance of navigation channels).

IV. Bay Waters

IV. A. Water Quality

IV. A. (1) Regulatory agencies will adopt requirements for "Best Management Practices."

IV. A. (2) Operation of overloaded and outdated package wastewater treatment plants will be discontinued.

IV. A. (3) All urbanization will be served by centralized sewage systems.

IV. A. (4) There should be uniform application of water quality protection measures by regulatory agencies. A holistic management scheme should be implemented that takes into consideration ecological impacts of regulated activities.

IV. A. (5) Compliance and enforcement of existing regulations are needed to protect water quality and biological integrity.

IV. A. (6) There shall be no discharge of hazardous materials into Estero Bay.

IV. A. (7) Surface water management systems in new developments will be required to utilize state-of-the-art best management practices and increased BMP’s.

IV. A. (8) Grants and other incentives for retrofitting old or ineffective storm water systems should be encouraged.

IV. A. (9) The State of Florida will actively investigate and prosecute water quality violators.

IV. A. (10) Retrofitting existing shorelines hardened with vertical seawalls to sloping lime rock revetments or native, salt tolerant vegetation, should be encouraged wherever possible.

IV. A. (11) Compliance and enforcement of existing environmental regulations will be a top priority for regulatory agencies.

IV. B. Habitat Alteration

IV. B. (1) No further alteration of Estero Bay bottom shall occur, except as proven necessary for the health, safety and welfare of the natural resources of Estero Bay and of the people in the watershed.

IV. C. New Construction

IV. C. (1) New construction projects should utilize best management practices to minimize

negative impacts to the bay to the greatest extent possible; and in addition, the project as a whole, including mitigation, should be necessary to protect the public health, safety, or welfare, or the property of others, and should improve the current condition and relative value of functions being performed by the areas affected by the project.

IV.C.(2) Utilize non-polluting construction materials (e.g. concrete pilings versus treated wood).

IV. D. Wildlife

IV. D. (1) A manatee protection plan will be adopted to reduce the number of boat-related manatee mortalities and that respects the rights of other users of the bay; to achieve a sustainable manatee population (the goal of the Marine Mammal Protection Act); to protect manatee habitat; to promote boating safety; and to increase public awareness of the need to protect manatees and their environment.

IV. D. (2) Efforts by wildlife protection agencies will be accelerated to reduce other non-boat related manatee mortalities.

IV. D. (3) Maintain and improve the overall ecology of the bay and its watershed.

IV. D. (4) Wildlife resources such as rookeries, sea grass beds and fisheries are under increasing threat from human activity. Greater efforts are required by regulatory and other agencies and groups to insure the sustained productivity of these resources.

IV. D. (5) Additional manatee research funding should be provided.

IV. E. Recreation

IV. E. (1) Regulatory agencies and boaters will make special effort to maintain the bay as a major natural resource for fishing and appreciation of vegetation and wildlife.

IV. E. (2) Safe operation of vessels is mandatory.

IV. E. (3) Respect for wildlife, its habitat, and other bay users are particularly important in a crowded bay.

IV. E. (4) Use of non-motorized boats, such as kayaks and canoes, is encouraged and supported.

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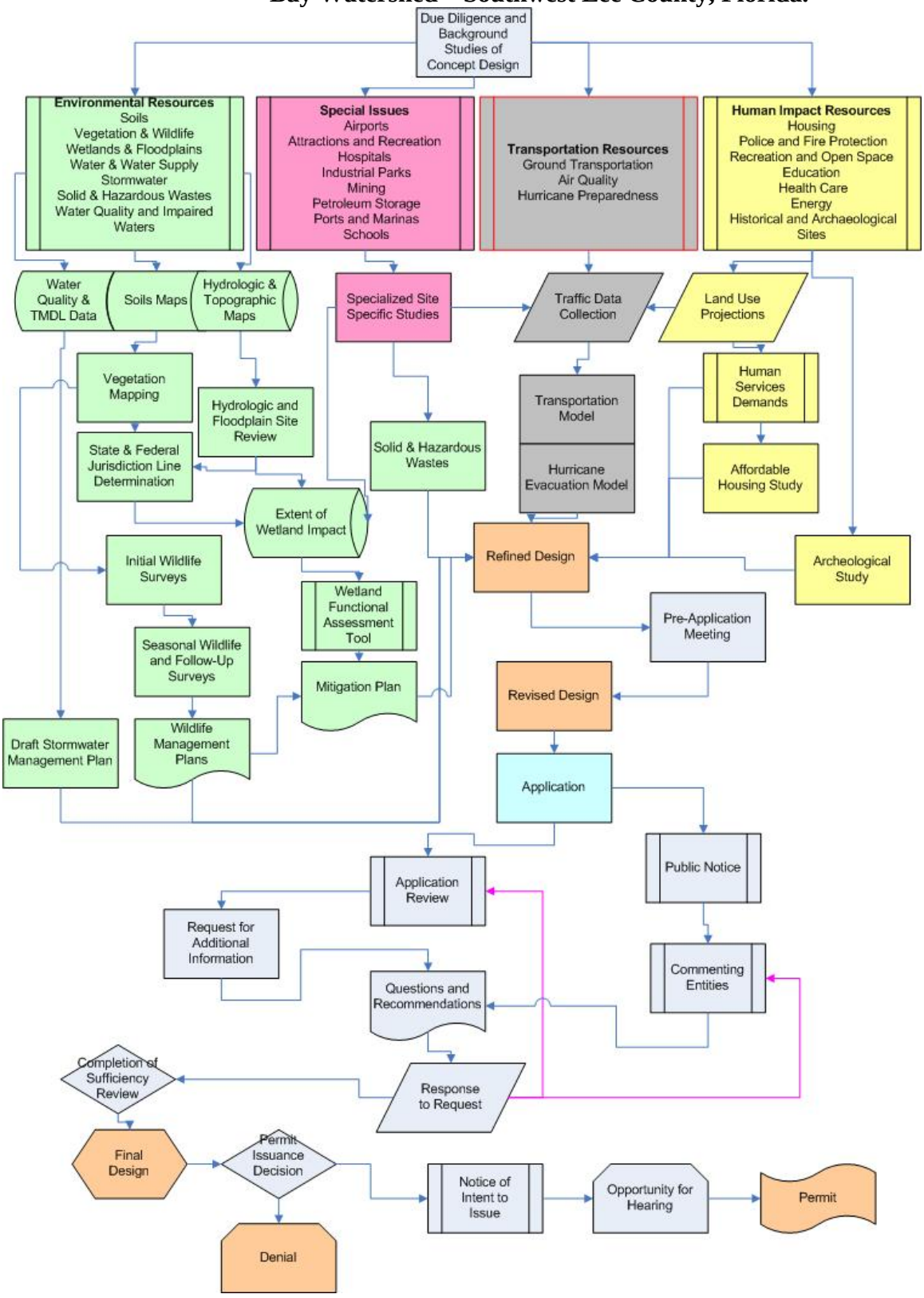
GROUP 1: EVERGLADES WEST COAST (Estero Bay basin Only) – 3/11/03						
WBID	**WATER SEGMENT NAME**	**PARAMETERS IDENTIFIED USING THE IMPAIRED WATERS RULE**	**CONCENTRATIONS CAUSING IMPAIRMENT[2]**	**PRIORITY FOR TMDL DEVELOPMENT[3]**	**PROJECTED YEAR FOR TMDL DEVELOPMENT**	**COMMENTS**
3258B	HENDRY CREEK	DO	< 4.0 MG/L MINIMUM, AND 5.0 AS DAILY AVERAGE	LOW	2007	DO MEET VERIFICATION THRESHOLD PER IWR. BOD IS THE CAUSATIVE POLLUTANT.
3258B	HENDRY CREEK (FRESH)	NUTRIENTS (CHL A)	TN = 0.825 MG/L TP = 0.06 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RESPONSIBLE GROWTH MANAGEMENT COALITION (RGMC), WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL TRIBUTARY WAS DIVIDED INTO A FRESHWATER SECTION (THIS WBID) AND A MARINE SECTION (WBID 3258B1), AND THE RE-ASSESSMENT INDICATES THAT CHOLORPHYLL MET THE VERIFICATION THRESHOLD PER THE IWR INDICATING A NUTRIENT IMPAIRMENT. BOTH NITROGEN AND PHOSPHORUS ARE IDENTIFIED AS CAUSATIVE POLLUTANTS.
3258B1	HENDRY CREEK MARINE	NUTRIENTS (CHL A)	TN = 0.82 MG/L TP = 0.07 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL TRIBUTARY WAS DIVIDED INTO A FRESHWATER SECTION (WBID 3258B) AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT CHOLORPHYLL MET THE VERIFICATION THRESHOLD PER THE IWR INDICATING A NUTRIENT IMPAIRMENT. BOTH NITROGEN AND PHOSPHORUS ARE IDENTIFIED AS CAUSATIVE POLLUTANTS.
3258B1	HENDRY CREEK MARINE	DO	< 5.0 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL TRIBUTARY WAS DIVIDED INTO A FRESHWATER SECTION (WBID 3258B) AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT DO MET THE VERIFICATION THRESHOLD PER THE IWR. NUTRIENTS ARE INDICATED AS CAUSATIVE POLLUTANTS.
3258B1	HENDRY CREEK MARINE	FECAL COLIFORMS	> 800 PER 100 ML	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL TRIBUTARY WAS DIVIDED INTO A FRESHWATER SECTION (WBID 3258B) AND THISAND THE RE-ASSESSMENT INDICATES THAT FECAL COLIFORM SAMPLES ARE ABOVE THE LISTING THRESHOLD. 11 OF 69 SAMPLES EXCEED THE CRITERION.
3258C	ESTERO BAY DRAINAGE (MULLOCK CREEK)	DO	< 5.0 MG/L	MEDIUM	2007	DO MEET VERIFICATION THRESHOLD PER IWR. BOD IS THE CAUSATIVE POLLUTANT.
3258C	ESTERO BAY DRAINAGE (MULLOCK CREEK)	NUTRIENTS (CHL A)	TN = 0.88 MG/L TP = 0.05 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL TRIBUTARY WAS DIVIDED INTO A FRESHWATER SECTION (THIS WBID) AND A MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT CHOLORPHYLL MET THE VERIFICATION THRESHOLD PER THE IWR INDICATING A NUTRIENT IMPAIRMENT.

						BOTH NITROGEN AND PHOSPHORUS ARE IDENTIFIED AS CAUSATIVE POLLUTANTS.
3258D1	ESTERO RIVER MARINE	NUTRIENTS (CHL A)	TN = 0.65 MG/L TP = 0.05 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO A FRESHWATER SECTION AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT CHOLORPHYLL MET THE VERIFICATION THRESHOLD PER THE IWR INDICATING A NUTRIENT IMPAIRMENT. BOTH NITROGEN AND PHOSPHORUS ARE IDENTIFIED AS CAUSATIVE POLLUTANTS.
3258D1	ESTERO RIVER MARINE	COPPER	> 2.9 UG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO A FRESHWATER SECTION AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES COPPER SAMPLES ARE ABOVE THE LISTING THRESHOLD. 8 OF 23 SAMPLES EXCEED THE CRITERION.
3258D1	ESTERO RIVER MARINE	DO	< 4.0 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO A FRESHWATER SECTION AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT DO MET THE VERIFICATION THRESHOLD PER THE IWR. NUTRIENTS ARE INDICATED AS CAUSATIVE POLLUTANTS.
3258E	IMPERIAL RIVER (FRESH)	DO	< 5.0 MG/L	LOW	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO THIS FRESHWATER SECTION AND A MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT DO MET THE VERIFICATION THRESHOLD PER THE IWR. NUTRIENTS ARE INDICATED AS CAUSATIVE POLLUTANTS.
3258E	IMPERIAL RIVER (FRESH)	NUTRIENTS (CHL A)	TN = 0.77 MG/L TP = 0.07 MG/L	LOW	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO THIS FRESHWATER SECTION AND A MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT CHOLORPHYLL MET THE VERIFICATION THRESHOLD PER THE IWR INDICATING A NUTRIENT IMPAIRMENT. BOTH NITROGEN AND PHOSPHORUS ARE IDENTIFIED AS CAUSATIVE POLLUTANTS.
3258E1	IMPERIAL RIVER (MARINE)	COPPER	>2.9 UG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO THIS FRESHWATER SECTION AND A MARINE SECTION, AND THE RE-ASSESSMENT INDICATES COPPER SAMPLES ARE ABOVE THE LISTING THRESHOLD. 10 OF 25 SAMPLES EXCEED THE CRITERION.
3258H1	SPRING CREEK MARINE	NUTRIENTS (CHL A)	TN = 0.675 MG/L TP = 0.05 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL CREEK WAS DIVIDED INTO A FRESHWATER SECTION AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT CHOLORPHYLL MET THE VERIFICATION THRESHOLD PER THE IWR INDICATING A

						NUTRIENT IMPAIRMENT. BOTH NITROGEN AND PHOSPHORUS ARE IDENTIFIED AS CAUSATIVE POLLUTANTS.
3258H1	SPRING CREEK MARINE	COPPER	> 2.9 UG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL RIVER WAS DIVIDED INTO A FRESHWATER SECTION AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES COPPER SAMPLES ARE ABOVE THE LISTING THRESHOLD. 29 OF 60 SAMPLES EXCEED THE CRITERION.
3258H1	SPRING CREEK MARINE	DO	< 4.0 MG/L	MEDIUM	2007	THIS WBID IS BEING ADDED AS A RESULT OF DISCUSSIONS WITH THE RGMC, WHO FILED A PETITION CHALLENGING THE AUGUST 28, 2002, SECRETARIAL ORDER ADOPTING THE INITIAL GROUP 1 LIST. THIS TIDAL CREEK WAS DIVIDED INTO A FRESHWATER SECTION AND THIS MARINE SECTION, AND THE RE-ASSESSMENT INDICATES THAT DO MET THE VERIFICATION THRESHOLD PER THE IWR. NUTRIENTS ARE INDICATED AS CAUSATIVE POLLUTANTS.
8065	SW COAST GULF 5	BACTERIA (SHELLFISH)	EXCEEDS SEAS THRESHOLDS	MEDIUM	2007	LISTED BASED ON CHANGE IN SHELLFISH HARVESTING CLASSIFICATION (DOWNGRADED FROM APPROVED TO CONDITIONAL).
8999	FLORIDA GULF COAST	MERCURY (IN FISH TISSUE)	LESS THAN CURRENT CRITERION (0.025 MG/L)	MEDIUM	2011	AGE OF DATA VERIFIED TO BE WITHIN LAST 7.5 YEARS. NUMERIC CRITERION IS INADEQUATE BECAUSE MERCURY IS ACCUMULATING IN THE FOOD CHAIN SUCH THAT FISH TISSUE MERCURY LEVELS EXCEED RECOMMENDED LEVELS FOR CONSUMPTION. CONFIRMED RECENT DATA FOR COASTAL FISH ADVISORY FOR MACKEREL. INCLUDES NEARSHORE AREAS IN WBIDS 8060, 8061, 8062, 8063, 8064, AND 8065.

Appendix XIII: Sample Interview Document

Questions for the interview section in
Growth Management Regulation, Public Investment and Resource Implications for the Estero Bay Watershed – Southwest Lee County, Florida.

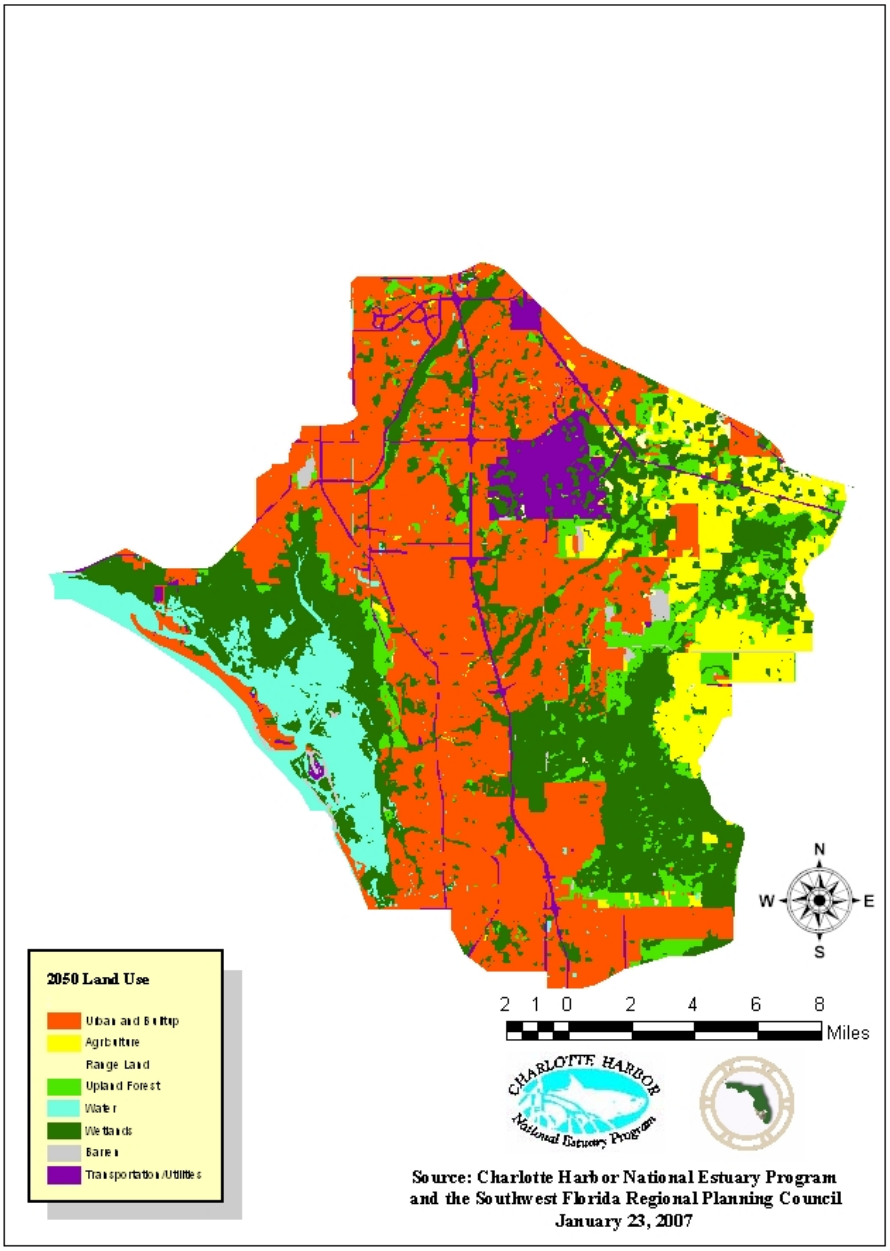


Draft: Simplified Flowchart of the Decisions-Making Process

1	What is your relationship to project review and landuse decision making in the Estero Bay Watershed?
2	In what other capacities have you been involved in the Estero Bay Watershed?
3	Please identify the applicable rules and regulation you use or are familiar with including Federal, State and County statutes, regulations, rules, Comprehensive Plan Elements, Land Development Code ordinances, and policies for land development decisions in the Estero Bay Watershed.
4	Do you have a graphical/ Flow-chart representation and narrative text of the Decision-Framework utilized by your group or agency that outlines the land development/land use approval process? Do you have any corrections to the Draft on Page 1?
5	What are the issues with the "real world" application of the processes in the Decision-Framework utilized or encountered by your group or agency in the land development/land use project approval process?
6	Do you think the current decision making framework is working properly?
7	What entities are the best to work with in the current decision making framework?
8	What entities are the most difficult to work with in the current decision making framework?
9	What recently approved residential and commercial development in the Estero Bay Watershed would you recommend that I review?
10	What do you think of the 2050 build-out projection for the Estero Bay Watershed on page 4?
11	Do you know the relative balance of impacts to mitigation in the Estero Bay Watershed?
12	What is the estimated habitat loss ratios and/or infrastructure cost ratios in the Decision-Framework utilized by your

	group or agency in the Estero Bay Watershed?
13	What do you think is the most important tool for regulation in the Estero Bay Watershed?
14	Can you think of any alternatives that can result in a better Decision-Framework in the Estero Bay Watershed?
15	Can you think of alternatives that can better accommodate the projected growth and maintain or improve quality of life in the Estero Bay Watershed?
16	Can you identify modifications to the Decision Framework (regulations, policies, statutes, ordinances, etc.) that when implemented will facilitate achieving better alternative scenarios.
17	What recommended changes to the Decision Framework do you have?
18	Who should implement these changes and how would you pay for it?
19	What entity should have the final authority with regard to the land use change decision?
20	Do you have any suggestions concerning the Estero Bay Watershed?

Year 2050 Land Use Map of the Estero Bay Watershed



Appendix XIV: Responses to Questions 14 and 15.

1. Amend local government rules that grant increased density on filled wetlands.
2. Develop basin specific regulations for the direct concerns most important to the watershed
3. Cap population capacity to current population capacity
4. Stop deferring review of resource issues in DRIs to other permitting agencies.
5. Education of the public to support increased building height. With removal of limitations on building height that would get more open space. Trade off building height for open space.
6. Eliminate the ability of state regulatory agencies to issues permits for projects that do not have local government approval
7. Eliminate the Burt Harris Law for local government comprehensive planning.
8. Field issue permits for projects with small effects on resources using hand held equipment
9. Increase stormwater treatment. Reduce amount of pollutants. Identify where pollution comes from then do not increase that type of landuse. Change land uses to less polluting landuse types.
10. Insure that there are C & S hydrologic models are available information for project review use.
11. Provide joint issuance of land and water impact permits. All agencies complete action at the same time.
12. All land use decisions are made at the local level. No federal or state preemption allowing resource impacts
13. Mandated retrofit for agriculture
14. Need areas that cannot have density transferred into. Density units from preserves should be sold and funds returned to lands management use. Use Transfer of Development Rights (TDR) Fund for exotic removal. These funds should go to all types of land managers.
15. Upland protection should be provided along with wetlands. Modify mitigation banking rules when the mitigation is credited outside of basin on private banking areas.
16. No permit cascade with one agencies' approval leading to another agencies approval of the project.
17. Allow mixed use multistory
18. Implement light rail
19. Increase density on existing development lands
20. Cluster and provide a plan with less sprawl
21. Protect farms and agriculture
22. Use more native plants
23. More urban centers to provide work where people live and to create areas that provide true mass transit hubs.
24. Change Comp Plan and LDC to require open space easements

25. More transparency in the permit decision process. Explain how the permit decision protects resources.

26. Centralized database available to the public to show all how the process is tracked. This would provide an easier way for public input

27. Incentives for refill redevelopment

28. Generate disincentives for rural growth

29. Generate disincentives for urban growth

30. More compliance for good ordinances and regulations

31. Central reporting for management plans and reports

32. Implement a local government cumulative impact ordinance

33. Create an overlay district with a community plan for the Estero Watershed

34. Increase the size of existing conservation areas and increase funding for administering to these lands..

35. Fewer FLUM changes Protect existing laws and ordnances many good laws not used

36. Increase staff to match preserve sizes.

37. Make LDR make biological sense

38. TDR should not be passed out on request

39. Change in way WMD reviews wetland surveys. Change in State WU review criteria. Discharge criteria of most protected waterbody to GOM.

40. Utilize the Sarasota Ordinance for slow-release fertilizer

41. Preservation of Sensitive Areas. Need to relocate growth

42. Develop Regional Offsite Mitigation Areas (ROMAs) within watershed

43. Master plan to address subsets of basins

Appendix XV: Responses to Questions 16, 17 and 18

1. Abandon the existing Lee Zone Plan and establish a true urban boundary that is not predicated on premises. Develop this boundary based on natural resource information.
2. Agriculture Conservation Easements
3. Allow higher densities in designated urban zones within existing urban and platted areas as an incentive for infill and redevelopment.
4. Allow infrastructure to catch up to growth
5. Application of existing basis of review water quality standards have not prevented the water quality degradation experienced and will not prevent future declines in water quality. The existing basis of review standards should be examined for gaps, errors, and presumptions. Subsequently a new regional basis of review should be developed for the Estero Bay Watershed for a higher level of treatment of nutrients and turbidity.
6. Apply the WMM Nutrient Load Analysis software to the Estero Bay system.
7. Assist the SWFRPC Southwest Watersheds Committee to develop improved standards for wastewater treatment, package plants treatment, septic tank use, domestic fertilizer use, stormwater treatment and the design and operation of regional water drainage systems.
8. Combine and local and state government permitting functions
9. Conservation land buffers adjacent to preserves.
10. Coordinate Lee County Mitigation Plan with municipalities so all local governments have projects and are using it.
11. Cost of preservation is less than the costs of restoration, than the cost of a CERP like project. Determine the cost differentials for the same project area and document the cost difference including traditionally unvalued costs and functions.
12. Develop a land development code that requires a 100 year flood level of retention for new and redeveloped projects.
13. Develop a land use category of real mixed use.
14. Develop a plan for filter marshes on all existing and future major drainage canal systems using existing or required donated easements.
15. Develop a pre-review screening tool based in GIS that identifies the wetlands and wildlife issues for a site separate from depending on the applicant's consultant input. This screening tool would be computer based and used by the local government staff.
16. Develop a rural land stewardship program for Lee County in the DR/GR
17. Develop an alternate comprehensive plan based on need rather than demand.
18. Develop an improved method for assembly of undeveloped approved platted lots including a reduction in costs from local government to encourage infill and reduce new wetland losses.
19. Develop an organization of local public land managers to perform coordinated land management on public properties.
20. Develop and adopt new land use designations for local government that provide smart growth development
21. Develop and implement local program to acquire small parcels that link into greenway corridor connections

22. Develop and local government program that assumes delegation from the State and federal wetland regulatory agencies and applies rules to actually deny projects that do not meet standards.
23. Develop local nutrient standards for Estero Bay and its tributaries.
24. Develop new Regional Off-site Mitigation areas in the public acquisition lands.
25. Develop performance based water quality treatment standards rather than basis of review water quality standards for use in the Estero Bay Watershed
26. Develop Pollution Load Reduction Goals (PLRG) for each of the tributaries and the total Estero Bay and then change Florida law to allow their use.
27. Develop specific flow way acquisition and restoration plans for federal and state funding opportunities.
28. Develop standards for a full cost accounting of new development proposals to provide accurate assessment of impact fee costs.
29. Develop Stormwater Rules that address full treatment
30. Develop the relationships between the extent of impervious surface to N, P, TSS, metals, TOC, pesticides and pharmaceuticals in the Estero Bay basin.
31. Develop, submit and purchase new Florida Forever land acquisition projects.
32. Document the differences between federal, state, and local wetland jurisdictions in the Estero Bay Basin. Document why these are different and identify differences based in reality, differences based in false premises, and differences that are generated by a generalization that does not apply in southwest Florida
33. Document the differences in the identification of the extent of wetland loss between federal, state, and local wetland jurisdictions in the Estero Bay Basin. Document losses not normally evaluated including exemptions and general permits. Compare written and tabulated assessment relative to real mapped losses.
34. DRI developer certification and enforcement by local government
35. Encourage people to get involved more needed Lobby Commissioners AG part of economy fishing boating Do not wait Look for different options Try all local government
36. Establish minimum flows and levels for the tributaries of Estero Bay including Estero River, Hendry Creek, Imperial River, Six-Mile Cypress, and Spring Creek.
37. Examine the Harper Method for Surface Stormwater Treatment and identify errors and problems. This includes calibration to natural water quality conditions, the question of whether natural wetlands pollute, the run-off coefficients, and the presumption of effective treatment areas within deep lakes relative to the problems of anoxia.
38. Examine the impaired water rule implications fro effects on TMDL, PLRG, and habitat protection of tributaries. Outstanding Florida Waters receiving drainage from man-made structures.
39. Examine the TMDLs non-attainments and identify possible resolutions to the identified impairments. Frame the action, location and estimated costs for each pollutant reduction action
40. Examine the various regional drainage structures (10-mile Canal, Briarcliff Canal, Airport Canal, North Colonial Waterway, Kehl Canal, Gateway Conveyance Canal), and identify locations for new water quality treatment features including sumps, filter marshes, settling areas, and littoral shelves.
41. Follow existing rules

42. Form a joint SFWMD/ FEP permit granting authority to combine water supply with other land use change analysis
43. Full cost accounting for projects related to permit cost
44. Identify all documented discharges in to the Estero Bay Watershed and examine the effects on water quality if the improved LWCWC standards are applied.
45. Identify the locations of major flows to the coast and compare to pre-development levels to estimate the extent of over drainage.
46. Improve Wastewater to AWT
47. Incorporate smart growth into state permit review process
48. Increase Land preservation
49. Increase Preserves
50. Legislation in funding additional staffing and resources needs
51. Less low density zoning
52. Listen to staff and empower staff
53. Local government combined between municipalities and County MOU
54. Maintain or restore pre-1960 water yields, normalized for rainfall, by 2020 with measurable recovery by 2010 for Estero River. Allow no further deviations in monthly flow regimes from pre-1960 conditions, unless the deviations are caused by changes in rainfall.
55. Melaleuca forests are better than a cleared landscape
56. Modify ERP to autonomous process though WMD. Need to be put ERP separate from board. Use objective criteria. Local control and be unconstrained by board.
57. More multifamily zoning
58. More retention areas
59. More underpasses of animals and water need to go beyond 100 year floodplain.
60. Need to be proactive instead of reactive.
61. Need to protect DR/GR cannot be fixed if allowed to be opened
62. New gopher tortoise policy is ridiculous. Relocation not solving the problem Translocation does not work. Conservation area needs more thorough look. Particularly near waterways.
63. Non-point source: Is it really non-point or is it dispersed multipoint discharge? Identify this by direct examination and develop a new paradigm for water quality pollution distribution.
64. Obtain more regulatory and enforcement review staff by cost accounting charging permitting and enforcement fees to cover real staffing needs.
65. Pay staff more
66. Plans exist that need implementation
67. Prohibit roads through conservation areas tighter.
68. Purchase identified lands in the Southwest Florida Feasibility study
69. Reexamine the Uniform Wetland Assessment Method and modify it to address southwest Florida conditions. Get the revised version adopted into State rule.
70. Regulate professional landscapers to use natives and less fertilizers
71. Require natural flowways within developments

72. Source reduction is much more efficient than post run-off treatment. Determine how much more efficient and the relative cost-benefit.
73. Statewide review group with local offices providing field support for consistency in UMAM, Mitigation, and to eliminate WM District differences
74. Taxes should cover permit fees.
75. Transfer of Development Rights program with no new density created. Cap current density at existing vesting and assembly requires true extinguishing of density.
76. Underpass siting planning with DOT and local experts
77. Update the Lee County Mitigation Plan and further implement it by incorporating it into the state and federal mitigation processes including gaining a slot in the SFWMD mitigation projects list.
78. Wetlands priority should be looked at. Need upland permitting initially at DEP. Losing upland habitat species.
79. Zero Balance Retrofit and historic old development.

Appendix XVI: Adopted SWFRPC Resolutions

SWFRPC Resolution #07-01

Southwest Florida Regional Planning Council
Fertilizer Resolution

A RESOLUTION SUPPORTING THE REGULATED USE OF FERTILIZERS CONTAINING NITROGEN AND/OR PHOSPHORUS WITHIN SOUTHWEST FLORIDA; PROVIDING SPECIFIC RECOMMENDATIONS AND GUIDELINES TO BE CONSIDERED BY LOCAL GOVERNMENT JURISDICTIONS FOR THE REGULATION AND CONTROL OF FERTILIZER APPLICATION; PROVIDING RECOMMENDED DEFINITIONS; PROVIDING RECOMMENDATIONS RELATING TO TIMING OF FERTILIZER APPLICATION, CONTENT AND APPLICATION RATE, IMPERVIOUS SURFACES, BUFFER ZONES AND MECHANICAL APPLICATION; PROVIDING RECOMMENDED EXEMPTIONS; PROVIDING RECOMMENDATIONS FOR LICENSING OF COMMERCIAL AND INSTITUTIONAL APPLICATORS; PROVIDING RECOMMENDATIONS FOR PUBLIC EDUCATION PROGRAMS; PROVIDING RECOMMENDATIONS RELATING TO THE RETAIL SALE OF FERTILIZER; PROVIDING RECOMMENDATIONS FOR APPEALS, ADMINISTRATIVE RELIEF AND PENALTIES; PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, Southwest Florida is a region where the water quality of the bays, estuaries, rivers, lakes, wetlands, bayous and the Gulf of Mexico is critical to the region's environmental, economic, and recreational prosperity and to the health, safety and welfare of the citizens of this region;

WHEREAS, recent increased frequency and duration of red tide blooms and increased accumulation of red drift algae on local beaches and other algae and water related problems have heightened community concerns about water quality and cultural eutrophication of surrounding waters;

WHEREAS, there is a need to develop a stronger knowledge of the connection between activities in yards, streets, and stormwater systems and natural water bodies among all those who live, work and recreate in the Southwest Florida Region;

WHEREAS, this resolution is part of a multi-pronged effort by the Southwest Florida Regional Planning Council to reduce nutrient leaching and runoff problems by actions including, but not limited to, stormwater management, water conservation, septic systems, central sewage treatment, public education, restoration of surface and groundwater levels; and regional drainage of native habitats;

WHEREAS, nutrients are essential elements for plant growth and are commonly used in various forms as a Fertilizer for lawns (Turf), specialized Turf and landscape application;

WHEREAS, leaching and runoff of nutrients from improper or excess fertilization practices can contribute to nitrogen and phosphorus pollution of the Southwest Florida's water resources;

WHEREAS, the amount of Fertilizer applied should be the minimum necessary for the lawn (Turf), specialized Turf and Landscape Plants to meet initial establishment and growth needs;

WHEREAS, it has been recognized by soil science professionals that the use of slow release nitrogen sources acts to minimize harmful nitrate leaching;

WHEREAS, nitrogen from slow release sources is more likely to be used by plants and less likely to leach into groundwater or wash away in stormwater runoff;

WHEREAS, the amount of Fertilizer applied and the method of application of that Fertilizer has a great impact on the potential for creating water pollution; and

NOW, THEREFORE, BE IT RESOLVED by the Southwest Florida Regional Planning Council that the following provisions are recommended to local government jurisdictions in Southwest Florida as a basis for controlling, regulating and monitoring the use and application of Fertilizers in Southwest Florida:

SECTION 1: PURPOSE AND INTENT

A. **The Southwest Florida Regional Planning Council declares its support for the reasonable regulation and control of Fertilizers containing nitrogen and/or phosphorus and hereby provides specific management guidelines for Fertilization in order to minimize the negative environmental effects said Fertilizers have in and on Southwest Florida lakes, canals, estuaries, interior wetlands, rivers and near shore waters of the Gulf of Mexico. Collectively these water bodies are a natural asset, which are critical to the environmental, recreational, cultural and economic well being of this region and the surrounding areas and contribute to the general health and welfare of the public. Recent red tide blooms, accumulation of red drift algae on local beaches, and the freshwater releases from Lake Okeechobee via the Caloosahatchee River have heightened community concerns about water quality and eutrophication of estuary, bay, river and coastal waters. Regulation of nutrients, including both phosphorus and nitrogen contained in Fertilizer entering the water bodies in this region is a crucial step towards improving and maintaining water and habitat quality.**

B. **The purpose of this Resolution is to provide specific recommendations and guidelines to be considered by local government jurisdictions in Southwest Florida for the regulation and control of Fertilizer application containing nitrogen and/or phosphorus.**

SECTION 2: RECOMMENDED DEFINITIONS

The following are the minimum recommended definitions and the words, terms, and phrases when used in this Resolution shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

Applicator means any Person who applies, in any manner, Fertilizer to Turf and/or Landscape Plants as defined in this resolution.

Blended Fertilizer means a simple physical mixture of dry fertilizer materials. In blended fertilizers, the individual particles remain separate in the mixture, and there is a potential for segregation of the nutrients.

Commercial Fertilizer Applicator means any Person who applies Fertilizer on Turf and/or Landscape Plants in Southwest Florida in exchange for money, goods, services or other valuable consideration.

Fertilize, Fertilizing, or Fertilization means the act of applying Fertilizer to a lawn (Turf), Specialized Turf, or Landscape Plant.

Fertilizer means any substance that contains one or more recognized plant nutrients and promotes plant growth, or controls soil acidity or alkalinity, or provides other soil enrichment, or provides other corrective measures to the soil.

Granulated Fertilizer means a solid, homogenous mixture of fertilizer materials. Each uniform-size fertilizer particle contains all of the nutrients in the grade.

Institutional Applicator means any Person, other than a Non-Commercial or Commercial Applicator (unless such definitions also apply under the circumstances), that applies Fertilizer for the purpose of maintaining Turf and/or Landscape Plants. Institutional Applicators shall include, but shall not be limited to, owners and managers of public lands, schools, parks, religious institutions, utilities, industrial or business sites and any residential properties maintained in condominium and/or common ownership.

Landscape Plant means any native or exotic tree, shrub, or groundcover (excluding Turf).

Non-Commercial Fertilizer Applicator means any Person other than a Commercial Fertilizer Applicator or Institutional Applicator who applies Fertilizer on Turf and/or Landscape Plants in Southwest Florida, such as an individual owner of a single-family residential unit.

Person means any natural Person and shall also mean any business, corporation, association, club, organization, and/or any group of people acting as an organized entity.

Slow Release, Controlled Release, Timed Release, Slowly Available, or Water Insoluble Nitrogen means nitrogen in a form which delays its availability for plant uptake and use after application, or which extends its availability to the plant longer than a reference "Rapid Release Nitrogen" product. Forms of *Slow Release, Controlled Release, Slowly Available*, or *Water Insoluble Nitrogen* include:

1) Isobutylidene diurea (IBDU);
2) Resin, Polymer, or Sulpher coated urea;
3) Biosolids or residuals from domestic wastewater treatment;
4) Urea formaldehyde;
5) Composted animal manure; and
6) Others as may be designated by the appropriate governmental entities.

Slow Release Landscape Management Plan is a service specific schedule and checklist plan that includes contractor requirements, timing of service specifications including mowing, trimming, edging, fertilizing schedule that uses only slow release fertilizer, pH control, weed control, pest control, seeding, pruning, mulch management, herbicide use, and irrigation

Specialized Turf Manager means a Person responsible for fertilizing or directing the fertilization of a golf course or publicly owned ball field.

Turf means a piece of grass-covered soil held together by the roots of the grass; sod; lawn.

SECTION 3: RECOMMENDATIONS RELATING TO TIMING OF FERTILIZER APPLICATION; CONTENT AND APPLICATION RATE; IMPERVIOUS SURFACES; BUFFER ZONES; AND MECHANICAL APPLICATION

A. **Timing of Application**

No Applicator shall apply Fertilizers containing nitrogen and/or phosphorus to Turf and/or Landscape Plants during the "rainy season" (defined as July 1 through September 30 of each calendar year).

B. **Fertilizer Content and Application Rate**

1) No Fertilizer shall be applied to Turf and/or Landscape Plants within Southwest Florida that contains more than 2% phosphorous or other compounds containing phosphorous, such as phosphate, per guaranteed analysis label (as guaranteed analysis and label are defined by Chapter 576 Florida Statutes, such definition incorporated herein). The use of no phosphorus Fertilizer is strongly encouraged, as Florida soils typically contain sufficient phosphorus for a healthy native or man-made landscape

2) Fertilizer applied to Turf and/or Landscape Plants within the Southwest Florida must contain no more than 20% total nitrogen, with at least 70% as Slow Release Nitrogen per guaranteed analysis label (as guaranteed analysis and label are defined by Chapter 576 Florida Statutes, such definition incorporated herein).

3) Fertilizer applied to Turf and/or Landscape Plants within Southwest Florida must be slow release, granulated fertilizer. Blended fertilizer shall not be applied.

4) Fertilizers should be applied to Turf and/or Landscape Plants at the lowest rate necessary without exceeding the maximum weight per application. Fertilizer shall not be applied at a rate greater than one (1) pound of nitrogen per 1000 square feet per application. No more than four (4) pounds of nitrogen per one thousand (1000) square feet shall be applied to any Turf/landscape area in any calendar year.

The above provisions are also applicable to and regulate the application of pesticide/Fertilizer mixtures, including, but not limited to, "weed and feed" products.

C. **Total Yearly Applications**

While single Fertilizer applications in the fall and spring will often suffice, Fertilizers shall not be applied more than six (6) times during any one calendar year to a single area. A Controlled Release Landscape Management Plan is strongly recommended.

D. **Impervious surface**

Fertilizer shall not be applied, spilled, or otherwise deposited on any impervious surfaces. Any Fertilizer applied, spilled, or deposited, either intentionally or accidentally, on any impervious surface shall be immediately and completely removed. Fertilizer released on an impervious surface must be immediately contained and either legally applied to Turf or any other legal site, or returned to the original or other appropriate container.

E. **Buffer Zones**

No Fertilizer shall be applied within 25 feet of any pond, stream, water course, lake, retention areas, drains and drainage ditches or canal, or in any designated wetland or within 25 feet of any wetland as defined by the Florida Department of Environmental Protection (Chapter 62-340, F.A.C. defines Florida Wetland as "Those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils").

F. **Mechanical Application**
Spreader deflector shields are required when fertilizing by use of any broadcast spreaders. Deflectors must be positioned such that Fertilizer granules are deflected away from all impervious surfaces and water bodies, including wetlands.

SECTION 4: RECOMMENDED EXEMPTIONS

A. Section 3, Subsections (A)-(C) of this Resolution shall not apply to:

1) Newly established Turf and/or Landscape Plants for the first 60 days after installation or planting, provided documentation for newly established Turf and/or Landscape Plants is maintained to support this exemption;
2) Damaged Turf and/or Landscape Plants for a period of 60 days and only on the damaged areas, provided documentation for damaged Turf and/or Landscape Plants is maintained to support this exemption;
3) Areas where soil tests confirm, and such tests are confirmed and approved by the local government Natural Resources Director or designee, that phosphorous levels are below 10 parts per million. This is equivalent to a "very low" designation for phosphorus set forth in UF/IFAS Extension Soil Testing Laboratory Analytical Procedures Training Manual (Circular 1248, September 2002);
4) Vegetable gardens, provided they are not within 25 feet of any water body and/or wetland;
5) Yard waste compost, mulches, or other similar materials that are primarily organic in nature and are applied to improve the physical condition of the soil; and
6) Reclaimed water used for irrigation provided it is not used within 25 feet of any water body and/or wetland.

B. For all golf courses, the provisions of the Florida Department of Environmental Protection document, *"Best Management Practices for the Enhancement of Environmental Quality on Florida Golf Courses" January 2007*, as updated, shall be followed when applying Fertilizer to golf course practice and play areas. This document can be accessed on-line on the Florida Department of Environmental Protection website at http://www.dep.state.fl.us. All other Specialized Turf Managers shall use their best professional judgment to apply the concepts and principles embodied in the "*Florida Green Industries Best Management Practices for Protection of Water Resources in Florida, June 2002*" while maintaining the health and function of their Specialized Turf areas. The Florida Department of Agriculture and Consumer Services, division of agricultural and Environmental

Services is in the process of developing Rule 5E-1.003 providing clarification of existing language and establishing labeling criteria for urban lawn or Turf Fertilizer products and adoption of Best Management Practices for Nitrogen applications for the Green Industry and the Golf Course Industry, under the authority of 576.181 F.S. and implemented in 576.021 F.S.

C. All commercial agricultural activities as defined by the Florida Department of Agriculture and Consumer Services, Division of Agriculture and Environmental Sciences are exempt from the recommendations of this resolution. The use of fertilizer and the Best Management Practices (BMP) for commercial agriculture activities is regulated and managed under the authority of the Florida Department of Agriculture and Consumer Services, Division of Agriculture and Environmental Sciences shall be followed when applying fertilizer to agricultural areas.

SECTION 5: RECOMMENDATION FOR LICENSING OF COMMERCIAL AND INSTITUTIONAL APPLICATORS.

A. In the absence of any uniform licensing requirements by the State government for Commercial and Institutional Fertilizer Applicators, it is recommended that, in addition to any current or future training or education requirements mandated by the State or local governments, that each local government jurisdiction establish a licensing procedure that will provide for the regulation and monitoring of Fertilizer use by Commercial and Institutional Applicators. After the implementation of such licensing procedure, no Commercial Fertilizer Applicator or Institutional Fertilizer Applicator shall apply Fertilizer without obtaining a license from the appropriate governmental licensing entity (hereinafter such Person referred to as "Licensee"). Persons working as employees under the direct supervision of landscapers or other contractors who hold a License shall be exempt, provided that such landscaper or other contractor holds a current, valid license.

B. Upon compliance with the requirements set forth in this section, and upon payment of any local government application fee established to recover the application costs of the governmental entity, the applicant would be issued a Commercial/Institutional Applicator License. Thereafter, as continuing conditions and requirements of such Commercial/Institutional Applicator License, such Person, and all Persons working or providing services under the authority granted to such Licensee:

1) Shall apply Fertilizer to Turf and/or Landscape Plants in accordance with all provisions of this Resolution.

2) Shall be responsible for maintaining a record of the pounds of nitrogen, expressed as pounds per 1,000 square feet of land, applied to each site by the Licensee during the year. If applying Fertilizer under any exemption or administrative variance, the Licensee shall also maintain documentation to support said exemption(s) or variance. If applying Fertilizer in accordance with Section 4(A)(3) of this Resolution, the Licensee shall also possess a record of the soil test indicating the amount of phosphorus present and a copy of the approved exemption. Said records shall be kept in the Licensee's possession or vehicle(s) and available for inspection by local staff during all business hours or while the Licensee is at a customer's site.

3) Shall permit the local government to obtain a sample of any Fertilizer applied or to be applied within the jurisdiction of the local government. If the sample analysis shows that nitrogen and/or phosphorus content does not comply with the levels permitted by this Resolution, enforcement may be taken in accordance with the terms of this regulation, and the cost of analyzing Fertilizer samples taken from Commercial Fertilizer Applicators or Institutional Applicators shall be reimbursed by said Applicator to the local government within thirty (30) days after invoicing.

4) A Licensee with a Commercial/Institutional Fertilizer Applicator License shall be on-site at all times when Fertilizers are being applied.

After the initial Commercial/Institutional Fertilizer Applicator License is received, renewal of the Commercial/Institutional Fertilizer Applicator License shall be renewed on an annual basis. Failure of a Licensee to comply with the provisions of the applicable Regulation or Ordinance shall constitute grounds to suspend a license, or to deny renewal of such license.

SECTION 6: RECOMMENDED PUBLIC EDUCATION PROGRAM

A. Public Education is highly recommended regarding the appropriate use of Fertilizers. Local governments will work with the IFAS Cooperative Extension staff to offer "Fertilizer Application" courses to all current and future Applicators wishing to obtain the Commercial/Institutional Fertilizer Applicator License.

B. A general education program will be coordinated with local media to advise the public on the proper use of Fertilizer and the environmental and health problem associated with mis-use. Such education program will be based upon and utilize materials form the Florida Yards and Neighborhoods Program (FY&N).

The objectives of the FY&N program are to:

- reduce stormwater runoff
- decrease non-point source pollution
- conserve water
- enhance wildlife habitat
- create beautiful landscapes

FY&N encourages homeowners to water efficiently, mulch, recycle, select the least toxic pest control measures, put the right plant in the right spot, Fertilize only when necessary, provide food, water and shelter for wildlife, protect surface water bodies (i.e., bays, rivers, streams, ponds, etc.) and minimize stormwater runoff.

SECTION 7: RECOMMENDATIONS RELATING TO THE RETAIL SALE OF FERTILIZER

Retail businesses within the jurisdiction selling Fertilizer shall post a notice in a conspicuous location near the Fertilizer notifying customers of the limitation on the use of Fertilizer containing greater than 2% phosphorus and/or greater than the 20% total nitrogen with a 70% minimum Slow Release nitrogen requirement.

SECTION 8: RECOMMENDATIONS FOR APPEALS, ADMINISTRATIVE RELIEF AND PENALTIES.

Each local government jurisdiction should establish provisions for appeals of administrative decisions and/or denials, provisions for administrative relief in the event of unique circumstances not addressed by local government Fertilizer regulations, and penalty and enforcement provisions necessary to accomplish the goals and objectives of the local jurisdiction's Fertilizer regulations.

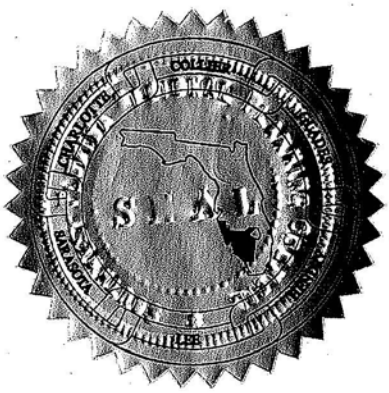
NOTE: **Please note that these provisions do not address farming operations or tree/plant nurseries. (Although the definition of "Fertilize" refers to lawn, Specialized Turf or Landscape Plant).**

PASSED AND DULY ADOPTED BY THE SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL this 15th day of March, 2007.

SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL

Jim Coletta, Chairman

ATTEST:



David Burr, Executive Director

Southwest Florida Regional Planning Council
Wastewater Resolution #2007-02

A RESOLUTION SUPPORTING THE REDUCTION AND ELIMINATION OF SURFACE WATER DISCHARGES FROM WASTEWATER TREATMENT FACILITIES, PROVIDING RECOMMENDED EXEMPTIONS;

WHEREAS, Southwest Florida is a region where the water quality of the bays, estuaries, rivers, lakes wetlands, bayous and the Gulf of Mexico is critical to the region's environmental, economic, and recreational prosperity and to the health, safety and welfare of the citizens of this region, and

WHEREAS, recent increased frequency and duration of red tide blooms and increased accumulation of red drift algae on local beaches and other algae and water related problems have heightened community concerns about water quality and cultural eutrophication of surrounding waters; and

WHEREAS, this resolution is part of a multi-pronged effort by the Southwest Florida Regional Planning council to reduce nutrient leaching and runoff problems by actions including, but not limited to, stormwater management, water conservation, septic systems, central sewage treatment, public education, restoration of surface and groundwater levels, and regional drainage of native habitats; and

WHEREAS, nutrients are essential elements for plant growth and are constituents in treated wastewater effluent; and

WHEREAS, nutrients from treated wastewater effluent can contribute to nitrogen and phosphorus loading within Southwest Florida's water resources;

NOW, THERFORE, BE IT RESOLVED by the Southwest Florida Regional Planning council that the following provisions are recommended to local government jurisdictions in Southwest Florida as a basis for reducing and eliminating discharges of treated wastewater effluent nutrient constituents to open waters and to areas with groundwater transport of constituents of nutrients to open waters or conveyance to same.

SECTION 1: PURPOSE AND INTENT

A. The Southwest Florida Regional Planning council declares its support for the reasonable regulation and control of surface water and adjacent area discharges of treated wastewater effluent containing nitrogen and phosphorus and hereby provides specific guidance for treatment and disposal in order to minimize the negative environmental effects said discharges have in and on Southwest Florida lakes, canals, estuaries, interior wetlands, rivers and near shore waters of the Gulf of Mexico. Collectively these water bodies are a natural asset, which are critical

to the environmental, recreational, cultural and economic well being of this region and the surrounding areas and contribute to the general health and welfare of the public. Recent red tide blooms, accumulation of red drift algae on local beaches, and the freshwater releases from Lake Okeechobee via the Caloosahatchee River have heightened community concerns about water quality and eutrophication of estuary, bay, river and coastal waters. Reduction of nutrients within the treated wastewater stream and or reduction of the wastewater stream itself into water bodies and adjacent areas affected by groundwater transport are a crucial step towards improving and maintaining water and habitat quality.

B. The purpose of this Resolution is to provide specific recommendations and guidelines to be considered by local government jurisdictions in Southwest Florida for the regulation and control of treated wastewater discharges containing nitrogen and/or phosphorus.

SECTION 2: RECOMMENDED DEFINITIONS

The following are the minimum recommended definitions and the words; terms and phrases when used in this Resolution shall have the meanings ascribed to them in this section, except where the context clearly indicates a different meaning:

AA residuals - "Class AA residuals" means Class A residuals that meet all the requirements of Rule 62-640.850, F.A.C. § 62-640.200(9), F.A.C.

Advanced Wastewater Treatment (AWT) - Advanced Wastewater Treatment (AWT) means treatment of Domestic Wastewater to achieve an effluent after disinfection containing not more than are 5 mg/l Biochemical Oxygen Demand (BOD), 5 mg/l of Total Suspended Solids (TSS), 3 mg/l Total Nitrogen, and 1 mg/l Total Phosphorus. § 403.086(4), F.S.

Application Site - "Application site" means a property (such as a farm, a ranch or a mining property) where residuals are applied to land. Application sites are identified as either agricultural sites or reclamation sites. § 62-640.200(5)

Department – "Department" means the Florida Department of Environmental Protection.

Disposal System - "Disposal system" means injection wells, effluent outfalls, subsurface drain systems, and other facilities utilized for the release of effluents into the environment. § 62-600.200(22), F.A.C.

Domestic Wastewater - "Domestic wastewater" means wastewater derived principally from dwellings, business buildings, institutions, and the like; sanitary wastewater; sewage. Where wastewater from sources other than typical domestic sources (e.g., industrial sources) is combined and treated with wastes from domestic sources, the determination of whether or not the wastewater treatment plant is designated as "domestic" shall be made by the Department considering any or all of the following: residuals classification; whether wastewaters have been pretreated or contain constituents within 50-150%, by concentration, of typical domestic wastewater; and whether the permittee, when not required to provide more stringent or otherwise specific levels of treatment, can provide assurance of facility compliance with domestic wastewater treatment standards contained in Chapter 62-600, F.A.C. § 62-600.200(25), F.A.C.

Effluent - "Effluent", unless specifically stated otherwise, means water that is not reused after flowing out of any wastewater treatment facility or other works used for the purpose of treating, stabilizing, or holding wastes. § 62-600.200(27), F.A.C.

Effluent Limitation - "Effluent limitation" means any restriction established by the Department on quantities, rates, or concentrations of chemical, physical, biological, or other constituents which are discharged from sources into waters of the State. § 62-600.200(28), F.A.C.

Holding Pond - "Holding pond" means a storage tank or artificial impoundment or pond constructed above, on, below, or partly below the ground surface that is designed and maintained to store a specific volume of fluid and minimize fluid losses other than those primarily occurring by evaporation; generally, holding ponds are not intended to provide a mechanism for pollutant reduction. When used in conjunction with rapid-rate land application systems or other systems described in Chapter 62-610, F.A.C., holding ponds can also provide a mechanism to accomplish nitrogen reduction. § 62-600.200(36), F.A.C.

Loading Capacity - "Loading capacity" is the greatest amount of a pollutant loading (in terms of mass per time or mass per volume) that a water body can receive without violating water quality standards. Such loading shall be established at a level necessary to implement the applicable water quality standards with a margin of safety which takes into account any lack of knowledge concerning the relationship between effluent limitations and water quality. § 62-600.200(40), F.A.C.

Nitrate - "Nitrate (NO3)" means the nitrogen content present in water or wastewater attributable to the nitrate (NO3) ion and expressed as elemental nitrogen, N, as determined using approved methods. § 62-600.200(53), F.A.C.

Nitrite - "Nitrite (NO2)" means the nitrogen content present in water or wastewater attributable to the nitrite (NO2) ion and expressed as elemental nitrogen, N, as determined using approved methods. § 62-600.200(54), F.A.C.

Total Ammonia - "Total ammonia" means the sum of nitrogen content present as un-ionized ammonia (NH3) and the nitrogen content present as ammonium (NH4+) and expressed as elemental nitrogen, N, as determined using approved methods. § 62-600.200(77), F.A.C.

Land Application - "Land application" means the reuse of reclaimed water or the disposal of effluent on, above, or into the surface of the ground through spray irrigation, other irrigation techniques, rapid-rate systems, absorption fields, overland flow systems, or other methods. § 62-600.200(39), F.A.C.

Ocean Outfall - "Ocean outfall" means the outlet or structure through which effluent is finally discharged to the marine environment which includes the territorial sea, contiguous zone and the ocean. § 62-600.200(55), F.A.C.

Outfall - "Outfall" means the outlet or structure through which effluent is finally discharged to receiving water. § 62-600.200(58), F.A.C.

Percolation Pond – "Percolation pond" means an artificial impoundment similar to a holding pond for which the design and operation provides for fluid losses through percolation/seepage in addition to evaporative losses. § 62-610.200(38), F.A.C.

Pollution - "Pollution" means the presence in the outdoor atmosphere or waters of the state of any substances, contaminants, noise, or man-made or man-induced alteration of the chemical, physical, biological, or radiological integrity of air or water in quantities or levels which are or may be potentially harmful or injurious to human health or welfare, animal or plant life, or property, including outdoor recreation. § 62-600.200(65), F.A.C.

Reclaimed Water - "Reclaimed water" means water that has received at least secondary treatment and is reused after flowing out of a wastewater treatment facility. § 62-600.200(67), F.A.C.

Residuals - "Residuals" or "domestic wastewater residuals" means the solid, semisolid, or liquid residue generated during the treatment of domestic wastewater in a domestic wastewater treatment facility. Not included is the treated effluent or reclaimed water from a domestic wastewater treatment plant. Also not included are solids removed from pump stations and lift stations, screenings and grit removed from the preliminary treatment components of domestic wastewater treatment facilities, other solids as defined in Rule 62-640.200(24), F.A.C., and ash generated during the incineration of residuals. § 62-640.200(31), F.A.C.

Reuse -"Reuse" means the deliberate application of reclaimed water, in compliance with Department and District rules, for a beneficial purpose. § 62-600.200(68), F.A.C.

(a) Where appropriate, said uses may encompass:
1. Landscape irrigation (such as irrigation of golf courses, cemeteries, highway medians, parks, playgrounds, school yards, retail nurseries and residential properties);
2. Agricultural irrigation (such as irrigation of food, fiber, fodder and seed crops, wholesale nurseries, sod farms, and pastures);
3. Aesthetic uses (such as decorative ponds and fountains);
4. Ground water recharge (such as slow-rate, rapid-rate, and absorption field land application systems) but not including disposal methods described in paragraph (b), below;
5. Industrial uses (such as cooling water, process water, and wash waters);
6. Environmental enhancement of surface waters resulting from discharge of reclaimed water having received at least advanced wastewater treatment or from discharge of reclaimed water for wetlands restoration;
7. Fire protection; or
8. Other useful purpose.

(b) Overland flow land application systems, rapid-rate land application systems providing continuous loading to a single percolation cell, other land application systems involving less than secondary treatment prior to application, septic tanks, and ground water disposal systems using Class I wells injecting effluent or wastes into Class G-IV waters shall be excluded from the definition of reuse.

Secondary Treatment – "Secondary Treatment" means treatment of Domestic Wastewater to achieve an effluent after disinfection containing not more than 20 mg/L CBOD5 and 20 mg/L TSS, or 90% removal of each of these pollutants from the wastewater influent, whichever is more stringent. These facilities shall be subject to provisions of Rule 62-600.110, F.A.C., regarding the applicability of the above requirements, and Rules 62-600.440, 62-600.445 and 62-600.740, F.A.C., regarding compliance with these requirements. Appropriate disinfection and pH control of effluents is also required. § 62-600.200(69), F.A.C.

Treatment -"Treatment" means any method, technique, or process which changes the physical, chemical, or biological character or composition of wastewater and thereby reduces its potential for polluting waters of the state. § 62-600.200(85), F.A.C.

Total Kjeldahl Nitrogen - "Total Kjeldahl nitrogen (TKN)" means the sum of free ammonia and organic nitrogen compounds in water or wastewater and expressed as elemental nitrogen, N, as determined using approved methods. § 62-600.200(80), F.A.C.

Total Nitrogen - "Total nitrogen (TN)" means the total content of the nitrogen species of organic nitrogen, ammonia, nitrate and nitrite present in water or wastewater and expressed as elemental nitrogen, N, as determined using approved methods. § 62-600.200(81), F.A.C.

Total Phosphorus - "Total phosphorus (TP)" means the total phosphate content of water or wastewater including all of the orthophosphates and condensed phosphates, both soluble and insoluble, and organic and inorganic species and expressed as elemental phosphorus, P, as determined using approved methods. § 62-600.200(83), F.A.C.

Underground injection - "Underground injection" means effluent disposal or reuse by well injection into underground geologic formations. § 62-600.200(91), F.A.C.

Wastewater treatment facility - "Wastewater facility" or "facility" means any facility which discharges wastes into waters of the State or which can reasonably be expected to be a source of water pollution and includes any or all of the following: the collection and transmission system, the wastewater treatment works, the reuse or disposal system, and the residuals management facility. § 62-600.200(96), F.A.C.

Water Quality-Based Effluent Limitations (WQBELs). – "Water Quality-Based Effluent Limitations (WQBELs)" means an effluent limitation, which may be more stringent than a technology-based effluent limitation, that has been determined necessary by the Department to ensure that water quality standards in a receiving body of water will not be violated. § 62-600.200(99), F.A.C.

SECTION 3: RECOMMENDATIONS RELATING TO REDUCTION OF NUTRIENT LEVELS AND VOLUME OF THE DISCHARGE OF TREATED EFFLUENT TO OPEN WATERS.

Existing Standards for surface water disposal (excluding ocean outfalls) provides that all domestic wastewater facilities are required, at a minimum, to provide Secondary Treatment of wastewater. New facilities and modifications of existing facilities shall be designed to achieve an effluent after disinfection containing not more than 20 mg/L CBOD5 and 20 mg/L TSS, or 90% removal of each of these pollutants from the wastewater influent, whichever is more stringent. All facilities shall be operated to achieve, at a minimum, the specified effluent limitations (20 mg/L). All facilities shall be subject to provisions of Rule 62-600.110, F.A.C., regarding the applicability of the above requirements, and Rules 62-600.440, 62-600.445 and 62-600.740, F.A.C., regarding compliance with these requirements. Appropriate disinfection and pH control of effluents shall also be required.

Existing Standards for surface water disposal via ocean outfall discharging to Class III coastal waters shall meet, at a minimum, the appropriate secondary treatment criteria contained in paragraph 62-600.420(1)(a), F.A.C. Appropriate disinfection and pH control of the effluents shall also be required. Discharges to coastal waters are subject to the applicable limitations of Rule 62-600.520, F.A.C. All domestic wastewater treatment plants discharging to open ocean waters are required, at a minimum, to provide secondary treatment as defined herein. New treatment plants and modifications of existing plants shall be designed to achieve an effluent prior to discharge containing not more than 30 mg/L CBOD5 and 30 mg/L TSS, or 85% removal of these pollutants from the wastewater influent, whichever is more stringent. All facilities, whether new or existing, shall be operated to achieve, at a minimum, the specified effluent limitations (30 mg/L) and shall be subject to the provisions of Rules 62-600.440, 62-600.445 and 62-600.740, F.A.C., regarding compliance with these requirements. Appropriate disinfection and pH control of the effluents shall also be required. Deviations from the minimum treatment

requirements for all facilities, whether new or existing, discharging to open ocean waters shall only be approved pursuant to subsection 62-600.520(5), F.A.C.

The design of new facilities and modification of existing facilities to achieve pollutant reduction to levels beyond that specified by secondary treatment shall be required before discharge to Class I waters. Class I reliability, as described in paragraph 62-600.300(4)(l), F.A.C., shall be provided. The Department shall approve other methods of providing facility reliability (as provided by paragraph 62-600.400(1)(b), F.A.C.) if the permittee provides reasonable assurances in the preliminary design report that the level of reliability provided is equivalent to the class of reliability required. Treatment shall be provided such that reclaimed water or effluent limitations are met after disinfection (however, reasonable assurances shall be provided that the TSS limitation required to achieve high-level disinfection as specified in paragraph 62-600.440(5)(e), F.A.C., shall be achieved before disinfection regardless of the actual reclaimed water or effluent compliance monitoring location).

RECOMMENDATIONS

A. The amount of direct discharge to surface waters should be reduced to the minimum by distributing the effluent into reuse and storage applications.

B. The target goal effluent discharge standards for southwest Florida rivers and streams shall be 2.5 mg/l Biochemical Oxygen Demand (BOD), 1 mg/l of Total Suspended Solids (TSS), 0.9 mg/l Total Nitrogen, and 0.04 mg/l Total Phosphorus.

C. The target goal effluent discharge standards for southwest Florida lakes and reservoirs shall be 2.5 mg/l Biochemical Oxygen Demand (BOD), 1 mg/l of Total Suspended Solids (TSS), 1.27 mg/l Total Nitrogen, and 0.02 mg/l Total Phosphorus.

D. The target goal effluent discharge standards for southwest Florida estuaries shall be 1.1 mg/l Biochemical Oxygen Demand (BOD), 1 mg/l of Total Suspended Solids (TSS), 0.53 mg/l Total Nitrogen, and 0.05 mg/l Total Phosphorus.

E. Existing domestic wastewater facilities should plan to upgrade to Advanced Wastewater Treatment (AWT), or WQBEL limits, whichever is more stringent. This would include all responsible entities seeking funding to improve existing or build new AWT domestic wastewater facilities.

F. All municipal wastewater treatment facilities shall convert to Advanced Wastewater Treatment (AWT) by their next permit renewal cycle.

SECTION 4: RECOMMENDATIONS RELATING TO THE DISCHARGE OF TREATED EFFLUENT TO GROUND WATER AQUIFERS.

Existing Standards for ground water discharge (excluding underground injection) include the secondary treatment criteria specified in paragraph 62-600.420(1) (a), F.A.C., at a minimum, generally are applicable as preapplication waste treatment requirements for all facilities, whether new or existing. The design for more stringent levels of treatment may be required by the Department as a result of the method of reclaimed water reuse or effluent application/distribution; the extent of intended public access; the characteristics of the potential receiving surface waters (i.e., where overland flow runoff or application site under drainage is involved); or ground water protection pursuant to reuse and effluent disposal provisions of Rule 62-600.530, F.A.C.

Under the restricted conditions stipulated in applicable portions of Chapter 62-610, F.A.C., for overland flow and certain under drained slow-rate land application systems, preapplication concentrations of CBOD5 and TSS in the effluent prior to discharge onto application sites are not required to be in conformance with the secondary treatment standard specified above. However, the secondary treatment standard, at a minimum, shall be met prior to final effluent release to surface waters via facilities designed for operational control of effluent.

The secondary treatment criteria specified in paragraph 62-600.420(1) (a), F.A.C., at a minimum, shall apply to all facilities utilizing Class I wells injecting domestic effluent into Class G-IV waters. Deviations from the minimum treatment requirements for such facilities may only be approved pursuant to subsection 62-600.540(5), F.A.C.

The design of new facilities and modifications of existing facilities to achieve pollutant reduction to levels beyond that specified by secondary treatment shall be required for reclaimed water or effluents discharged from Class V wells into Class G-II waters. These levels shall be as specified in subsection 62-600.540(2), F.A.C.

RECOMMENDATIONS

A. Deep well injection- Injection of domestic wastewater effluents to all new Class I Injection wells shall require reuse quality treatment.

B. The treatment standards for discharges of treated effluent to ground water aquifers shall be 5 mg/l TSS and high level disinfection, which is 1 mg/l chlorine residual.

C. Cooperative use of wells through interconnects should be encouraged where feasible in order to reduce the total number of wells utilized..

SECTION 5: RECOMMENDATIONS RELATING TO TREATED WASTEWATER EFFLUENT REUSE APPLICATIONS.

Existing Standards for treated wastewater effluent reuse including reclaimed water or effluent discharge shall meet water quality standards pursuant to Rule 62-600.430, F.A.C. (no mixing zone shall be allowed). Reclaimed water or effluent discharge shall receive high-level disinfection. Reclaimed water or effluent discharge shall not exceed 10 milligrams per liter TN; and Reclaimed water or effluent contains maximum pollutant levels less than those specified for community water systems in Chapter 62-550, F.A.C. These criteria shall be modified, by the Department, up to the level of the ambient receiving surface water characteristics (but in no case to exceed the levels set for Class I waters) where such characteristics exceed the levels stipulated in Chapter 62-550, F.A.C., or to reflect the characteristics of water reaching the sewer system which violate community drinking water standards prior to further contamination (if any) resulting from the introduction of domestic or industrial wastes. Enforcement of community drinking water standards shall be pursuant to Chapter 62-550, F.A.C.

The design of facilities to achieve pollutant reduction to levels beyond that specified by secondary treatment shall be required for reclaimed water or effluents discharged from land application sites (including site under drainage systems) to surface waters if necessary to maintain water quality standards for the receiving waters. These levels may be established via WQBELs (i.e., subsection 62-600.430(1) and Chapter 62-650, F.A.C.).

RECOMMENDATIONS

A. Treatment standards for specific applications-For Public access reuse, the standards shall be 5 mg/l TSS and high level disinfection. The Standards for restricted access sites is 20mg/l TSS and basic level disinfection, which is 0.5 mg/l chlorine residual.

B. Cooperative use of resource through interconnects should be encouraged.

SECTION 6: RECOMMENDATIONS RELATING TO PROCESSING AND DISPOSAL OF SOLIDS/SLUDGE

Must follow the requirements of Chapter 62-640, F.A.C. This rule is being revised and has been under review for over two years.

RECOMMENDATIONS

A. **Use of Solids and Sludge** Sludge shall be applied only to Agriculture Enterprises in which an immediate and calculated benefit is provided. All solids and sludge not specifically used for immediate agricultural benefits shall be processed and treated for use as fertilizer/soil amendment or for a fuel source.

B. **Timing of Application** No Applicator shall apply Solids/Sludge during the "rainy season" (defined as June 1 through October 31 of each calendar year).

C. **Total Yearly Applications** Solids/Sludge shall not be applied more than one (1) time during any one calendar year to a single area

D. **Impervious surface** Solids/Sludge shall not be applied, spilled, or otherwise deposited on any impervious surfaces. Any Solids/Sludge applied, spilled, or deposited, either intentionally or accidentally, on any impervious surface shall be immediately and completely removed. Solids/Sludge released on an impervious surface must be immediately contained and either legally applied to a legal site, or returned to the original site.

E. **Buffer Zones** No Solids/Sludge shall be applied in, on, or located closer than 1,000 feet to any Class I water body, Outstanding Florida Water or Outstanding National Resource Water, or 200 feet from any other surface water of the state as defined in s. 403.031, F.S., including ponds, streams, water courses, lakes, retention areas, drainage ditches or canals, or in any designated wetland or any wetland as defined by the Florida Department of Environmental Protection (Chapter 62-340, F.A.C. defines Florida Wetland as "Those areas that are inundated or saturated by surface water or ground water at a frequency and a duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soils").

PASSED AND DULY ADOPTED BY THE SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL this 17th day of May, 2007.

SOUTHWEST FLORIDA REGIONAL PLANNING COUNCIL

James Coletta, Chairman

David Burr, Executive Director