

# EXECUTIVE SUMMARY

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The Cypress Creek Watershed is located in northern Hillsborough County in an area in which a number of land and water management issues are currently being addressed by citizen's action groups and state, regional and local government agencies. The URS Corporation Team was retained by Hillsborough County to prepare the Cypress Creek Watershed Management Plan as a part of the County's overall watershed management program. The objectives of the plan were to describe the existing drainage, flooding, water quality, natural systems and water supply conditions within the watershed and to develop alternatives to improve areas not currently meeting the County's level of service.

The watershed in Hillsborough County is characterized as rural and contains approximately 33 square miles or about 21,000 acres. It is generally bordered on the east by I-75, U.S. 41 on the west, by Pasco County on the north and by Bruce B. Downs Boulevard (S.R. 551) on the south. The total Cypress Creek Watershed including areas within Pasco and Hillsborough Counties is approximately 160 square miles.

The watershed in Hillsborough County includes ten outfalls that discharge into the Cypress Creek main channel that discharges into the Hillsborough River. These outfalls include the: Cypress Creek Main Channel, County Line Drainage System (Hillsborough/Pasco County Line), Country Oaks System, Ridge Lake System, Sherry Brook System, Hanna Lake System, Blind Pond Avenue System, Thirteen Mile Run System, Flynn Lake Outfall System, Silver Lake Outfall System, 149<sup>th</sup> Avenue Outfall System, and Bruce B. Downs System.

Topography varies from a high of 75 feet National Geodetic Vertical Datum (NGVD) in the northwestern portion of the watershed to a low of 25 feet NGVD at its outfall at the Hillsborough River. Land uses within the watershed boundaries are diverse and include large wetland/lake areas, major and minor roadways, old residential subdivisions with little or no stormwater management systems, and some agricultural activities. Flooding in several areas of the watershed was reported during the El Niño rainfall events during late 1997 and early 1998.

The Cypress Creek Watershed is approximately 20,922 acres in size and is comprised of urban and developed (approximately 4668 acres), agricultural (914 acres), pasture (approximately 1760 acres), recreation (approximately 47 acres), open and disturbed land (approximately 1186 acres), transportation (approximately 810 acres) and natural (approximately 11749 acres) areas. The majority of the area west of I-275 is residential. The southern half of the section of Cypress Creek Watershed located between I-75 and I-275, along Bruce B. Downs Boulevard, contains an area known as the Tampa Palms region. In the Tampa Palms region, uplands are rapidly being developed with houses and commercial businesses. The northern half of the section of Cypress Creek Watershed located between I-275 and I-75 is primarily undeveloped and has retained its somewhat natural state. Hillsborough County has bought approximately 1517 acres of this section of the Cypress Creek Watershed through the Environmental Land Acquisition Protection Program (ELAPP). This area includes land located between I-75 and I-275 and land located directly east of I-275. Approximately 75% of the lands acquired by the County consist of forested wetland, while the remaining 25% are upland.

# EXECUTIVE SUMMARY

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Several state and federal listed threatened and endangered species occur in the Cypress Creek Watershed including: Southern three-awned grass (*Aristida simpliciflora*), Tampa vervain (*Glandularia tampensis*), woodstork (*Mycteria americana*), eastern indigo snake (*Drymachon corais couperi*), short-tailed snake (*Stilosoma extenuatum*), Florida sandhill crane (*Grus canadensis pratensis*) and bald eagles (*Haliaeetus leucocephalus*) auricled spleenwort (*Asplenium auritum*), hand fern (*Chionanthus pygmaeus*), chaffseed (*Schwalbea americana*), broad-leaved nodding-caps (*Triphora latifolia*), wild coco (*Pteroglossaspis ecristata*), rain lilly (*Zephyranthes simpsonii*), and South American kestrel (*Falco sparverius paulus*).

One purpose of the study was to develop a computer simulation model of the Cypress Creek watershed under current conditions. Runoff parameters for the watershed were developed from land use, soils and topographic maps. Hydraulic input data for the County SWMM stormwater model was developed from survey data, topographic maps and permit data. The model was calibrated to historical storm events to ensure the accuracy of the model. The calibrated model was then used to calculate the location and degree of flooding within the watershed for the 2.33-year, 5-year, 10-year, 25-year, 50-year and 100-year design storm events. The model was then used to determine the level of service based on County criteria for the watershed.

Pollutant loads for several selected pollutants (chemicals, parameters) were estimated using the Hillsborough County supplied spreadsheet model, the Pollutant loading and Removal Model (PLRM). Pollutants considered include 12 parameters: BOD, TSS, oil/grease, TN, Nox, TKN, TP, TDP, Cd, Cu, Pb, and Zn. The water quality level of service (LOS) was calculated by comparing the actual net load to the load for a low-density single family residential land use without treatment of the same areas. Five levels of LOSs were considered (A, B, C, D, and F). Depending upon the difference in these loads, LOS designation ranging from A through F was determined for each subbasin in the watershed.

Upon completion of the existing conditions analysis, an analysis of alternatives to reduce flooding, water quality, and natural systems problems was performed. Many projects were recommended for the Cypress Creek Watershed to address flood control and water quality/natural system improvements. The construction or implementation of these projects will be dependant on funding availability, right-of-way availability, permitting, and other related issues.

Hillsborough County has taken a positive step forward in the implementation of the recommended projects by coordinating the alternatives with SWFWMD and HCEPC and by obtaining public input by holding three public meetings throughout the development of the watershed management plan.

The listing of final recommended projects in the Cypress Creek watershed include:

- Cleanup 149<sup>th</sup> Street ditch between Livingston Ave. and 149<sup>th</sup> Street outfall detention basin. Cleanup Lake Forest ditches from B.B. Downs Boulevard to Lake Forest Drive. Increase the weir width at the 149<sup>th</sup> Street detention pond from 79 feet to 150 feet. Construct new weir structure north of Lake Forest Avenue pond. Estimated cost \$44,560.

# EXECUTIVE SUMMARY

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- Construct Hillsborough County projects: CIP 47005, CIP 47117, CIP 47251 and CIP 47014.
- Construct new storm sewer system from 18<sup>th</sup> Street/143<sup>rd</sup> Avenue to the existing storm sewer along 143<sup>rd</sup> Avenue. Upgrade existing storm sewer system on 143<sup>rd</sup> Avenue from 20th Street to existing ditch east of 22<sup>nd</sup> Street. Upgrade ditch from east of 22<sup>nd</sup> Street to B.B. Downs Boulevard. Upgrade existing pipes which cross from west to east and then from south to north under B.B. Downs Boulevard. Estimated cost \$2,065,090.
- Construct Hillsborough County projects: CIP 47137 and CIP 47251.
- Improve Flynn Lake outfall to two existing cross drains (STR-3 and STR-6) at Livingston Ave. Construct ditch from Flynn Lake to these two cross drains. Upgrade cross drains sizes at STR-3 and STR-6 at Livingston Ave. Improve outfall from the cross drains to Cypress Creek. Estimated cost \$91,410.
- Improve ditch to connect from Blind Pond sub-division to Clement Road roadside ditch. Construct ditch to connect to existing cross drain at Livingston Avenue (STR-15). Estimated cost \$56,100.
- Regrade existing ditch at northside of the basin. Construct roadside ditch along Wein Range Lane. Connect the roadside ditch of Wein Range Lane to north swale through existing low area. Replace crushed pipe at Livingston Ave. (STR-19). Estimated cost \$65,970.
- Construct roadside ditch from the intersection of Newburger Road and Livingston Ave. to connect to the existing cross drain (STR-38). Increase culvert size of STR-38. Estimated cost \$41,140.
- Construct a positive outfall from Newburger Road to the pond/wetland in Rhodes Wood Acre subdivision. Install a 30-inch cross drain, two ditch bottom inlets, and pipes at Newburger Road. Convey stormwater to wetland south of Newburger Road. Estimated cost \$29,300.
- Construct 400 feet of force main from Hog Island Lake west to Lake Kell. Use portable pump unit to release extra water to Lake Kell. Upgrade the existing culvert at County Line Road at Basin 541140. Coordinate with Pasco County to improve Hog Island Lake outflow through Willow Bend Subdivision culverts. Estimated cost \$32,190.
- Remove invasive species located throughout Cypress Creek Basin in ditches and along right-of-ways (e.g. cogongrass along right-of-ways, skunkvine and air potato in ditches). Continue public education on the importance of controlling invasive species in yards. Cost will vary.
- Utilize grassed swales or detention areas where feasible, for water quality treatment for proposed CIP projects.

# EXECUTIVE SUMMARY

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- Coordinate with Pasco County to improve water quality from areas coming into Hillsborough County from Pasco County and the City of Tampa.
- Regrade, stabilize and vegetate the channel banks and keep cattle out of the channel by fencing at outfall channels east of Livingston Avenue and south of Max Smith Road and Clement Road. Construct energy dissipaters or riprap to reduce velocities from Livingston Avenue culverts. Estimated cost \$ 127,000.

Several general recommendations can also be made regarding the Cypress Creek Watershed which include:

- It is recommended that the existing conditions model be updated with as-built information as improvements are constructed within the watershed.
- Hillsborough County should periodically review and update the watershed plan to reflect new development conditions and to identify potential new areas of concern from a flood control, water quality and natural systems perspective.
- It is recommended that maintenance activities be integrated into the GIS database of the watershed. This would include maintenance problem areas, frequency of maintenance inspections, and maintenance activities.
- Regulatory agencies such as SWFWMD, USACOE, FDEP, FDOT and the City of Tampa should be advised of the availability of the watershed management plan for future project review and implementation.
- Hillsborough County should provide the Cypress Creek Watershed Management Plan on the County website to provide consultants, agencies and the public with access to the study.